Sida Evaluation 96/42

Concessionary Credits in Support of Economic Development in Zimbabwe

10 investment projects financed by Sweden

Karlis Goppers

Department for Infrastructure and Economic Cooperation

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EXECUTIVE SUMMARY

The projects

From the start of the Swedish concessionary credit scheme in 1981 until today eleven different credits have been granted to Zimbabwe. The ten which have been completed, representing a total amount of SEK 538 million, are evaluated in this report. The credits, although given at different times and for different purposes, are grouped here to represent the following seven investment projects:

-Importation and assembly of 104 Scania trucks
-Importation and installation of 600 teleprinters
-Computerizing two transmission and generation control centres
-Building a factory for explosives production
-Modernizing a rolling mill steel works
-Excavating and builing rock caverns for fuel storage
-Refurbishing three old thermal power stations

The evaluation

Following the 1995 integration of BITS, the agency which granted the credits, into "new" Sida, and faced with the need to work out a new Swedish aid strategy for Zimbabwe, it was decided to do a complete ex post evaluation of all the projects, none of which had been independently evaluated before.

The questions addressed by this evaluation are all the usual ones. For each of the above projects we will construct an implicit logical framework goal hierarchy and assess performance w.r.t. *implementation*, *outcomes*, *effects/impact*, *financial* and *economic profitability*, *environment*, *gender*, *poverty*, *relevance*, *sustainability*, *procurement*, *repayment* of credit, *project preparation*, and the four original Swedish overall development goals *economic growth*, *economic and political independence*, *social and economic equality* and *democracy*.

Even though this evaluation attempts to be comprehensive it has one important limitation - it is a *summary* evaluation, where many different activities are assessed by a one man evaluation mission in a limited time period. For the questions listed above there was information available in the file only for a few of them. The other source of information - interviews and field visits - became

crucial. About 25 different project sites or other locations were visited, but with the limited time at our disposal much of the information needed was not readily available. So there are many unanswered questions. Often we will attempt to draw conclusion based on general knowledge and various assumptions. But the risk of missing important information or drawing erroneous conclusions is probably quite large. So a reservation w.r.t. to the results presented here is called for.

The outcome

Overall, the outcome of the ten investment credits granted by Sweden to Zimbabwe must be seen as very successful. The pattern of performances which emerges is this:

Every one of the projects seems to have been successfully and efficiently **implemented**, and are today, without exception, producing the **output** and yielding the **effects** which were intended. With respect to regular development projects such an outcome would be remarkable in deed. BITS´ mode of work was so called "contract financing", meaning that BITS decides - or decides *not* to - finance projects that are already well prepared, and where the entire responsibility for design as well as implementation lies with the contracting parties, i.e. the Swedish contractor and the Zimbabwean investor/importer. So, it can be expected that the risk of things going wrong should be relatively less than in conventional aid projects. Maybe so, but it seems clear to this evaluator that a generally professional **project preparation** performed by BITS has contributed to the successful project completions.

When it comes to financial and economic profitability however the results are rather mediocre. For both of these aspects the available cost and price figures are often not of sufficiently high quality to draw safe conclusions. Based on general reasoning and various assumptions we think however that the **financial profitability** *is* probably acceptable in four of the seven projects, clearly questionable in one and impossible to judge in two projects. Regarding ***economic viability*** it is worse. In the two two largest projects - the *fuel storage* and the *old thermal power plants* - and in the *rolling mill steel plant* we believe it is very questionable. In the *truck imports* the viability is hard to judge because of conflicting price information. But in the *teleprinters, control*

centres and the *explosives production* we believe economic viability is clearly positive.

The handling of the economic analysis is really the only point where we are critical w r t *project preparation.* We have found that there was often too much time spent analyzing the financial aspects, while the main focus should instead have been on the *economic* viability. This is so because all the credit recipients are parastatals or state owned stock companies which are, or have been heavily subidized. Moreover, the level of subsidies keeps changing as Government from time to time decides to grant this or that tariff exemption, or introduces a new subidy or tax, thus making the finacial rate of return a function of sometimes arbitrary decisions by the government. We are not saying that the analysis, both financial and economic, was not prefessionally done. It was. But in a few cases simply *too little* was done regarding economic viability. In the two large projects mentioned there were two opposing camps each representing diametrically opposite views on the viability. BITS should have tried to reconcile the two, or at least have stated explicitly which of them it believed in, and why.

In most of the projects there was an important political motive competing with the economic motives for undertaking the project. In two or three cases we do not clearly know whether BITS decison was based on the political motive in spite of a perceived expected negative economic rate of return, or whether BITS in fact believed the economic viablity to be satisfactory.
In terms of **environmental** effect half of the projects, for which this aspect is deemed to be relevant, are doing all right , and half not. The **gender** aspect is only seen to be relevant in three of the projects, and in these it scores a low mark. This is even more true of the **poverty** aspect, which is seen to be important in only one of the projects.
Both **relevance** and **sustainability** are judged to be very high in all the projects except the three where we have seriously questioned the economic viability. The four original **Swedish overall development goals** (*economic growth, economic and political independence, social and economic equality* and *democracy*) seem to be served well in about half of the projects and not so well in the other half. The **procurement** process was found to be smooth and problem-free in all but one of the projects, but also in this one the end solution came out satisfactory to all parties. **Repayment** of credit, finally, has so far been entirely on schedule in all of the projects.

Looking at the individual projects our findings can be summarized like this: ***The "truck-project"*** consisted of delivery of spare part kits from Scania, assembly of these parts in a government operated assembly plant, building of the load carriers in the importer´s workshop, sale of the trucks to various users around the country, and the use of the trucks in gainful economic transport activity. And it can be said to have been successful in all of these stages. *Project preparation, procurement* and *implementation* all went smoothly without problems. All the expected results were achieved at *financial profitability*, and likely effects w.r.t. *environment, gender, poverty* as well as *Sweden´s overall development goals* were all positive. The project was also found to be *relevant* and *sustainable*. There is only one - not unimportant - setback: it is doubtful whether the trucks were *economically profitable* for the country. The Swedish trucks were by the Swedish Embassy at the time characterized as being more than twice as expensive as comparable Japanese trucks. In spite of the price difference the Swedish trucks were chosen due to a political decision by the country´s highest leader.

Also, the purchase of 600 ***teleprinters*** answered to the needs felt at the time. The teleprinters were successfully distributed and installed with clients all over the country, who are today paying a commercial fee to operate them. PTC, being one of the few parastatals which is effeiciently run, has apparently achieved *financial* profitability in this project. We believe that the purchase of these teleprinters was also an *economically* viable proposition for the country, and we see it as being both *relevant* and *sustainable*.
We know little about how the *procurement* process was done, but the *project preparation* phase seems to have been smooth.
As for effects with respect to *environment*, *gender* and *poverty* these are not seen to be applicable in this project, but of Sweden´s overall development goals - that of *economic growth* - has been served. The credit has been fully *repaid* according to schedule.

The three projects to upgrade and computerize Zimbabwe´s generation and ***transmission control centres*** were generally seen as necessary and *relevant.* All three were efficiently carried out although a few question marks remain concerning some small price revisions along the way. The system today functions well and has considerably improved transmission reliabilty. There is not enough data to judge properly neither *financial* nor *economic profitability*

of the projects. But the little information which is available does not contradict a conclusion, arrived at through general reasoning, that the upgrade projects were in deed both *financially profitable* for ZESA who undertook them, as well as *economically viable* for the country.
Project preparations and *procurement* were handled without any apparent problems, and *repayment* of the credits have started and so far been made on schedule. These investments are not seen as having any effect in terms of *environment, gender* nor *poverty* orientation, but does fulfill two of the Sweden´s overall development goals - *economic growth* and economic and political *independence*. It is also judged to be *sustainable*.

Of all the projects the ***explosives production*** is perhaps the most successful overall. It did take a long time in materializing, probably because important outside business interests did not want to see it happen. But when it did, everything went well. *Implementation* was fast and efficient. Today it is producing successfully, and has for the fifth consecutive year paid dividends to its shareholders, as well ashaving heavily increased its own capital. It is the only project among the seven which is clearly profitable not only *financially* but also *economically*. It scores high on *environment, relevans* and probably *sustainability*, and it contributes to *economic growth* as well as to the country´s *economic and political independence.* Its only disappointment is a low mark on *gender* as it employs no women labor. The credit has been fully *repaid,* and on schedule.

The steel producer ***ZISCO*** is one of the government´s notorious loss-makers. Several modernization investments have been undertaken because the government - supported by UNIDO - believes there is a economic potential. The BITS-financed **modernization and computerization of the bar rod rolling mill** was quite successful both in implementation and in on-the-job training, and the plant has been able to increase its production as well as its efficiency. According to UNIDO it also has a clear *financial profitability.* Regarding its *economic viability* we must however remain skeptical, although there is a recent British analysis which claims that ZISCO can be internationally competitive in a certain range of steel products. This project gets the lowest scores of all in *environment, gender, relevance, sustainability,* as well as *the Swedish overall development goals.* But BITS´ *project preparation* was as ususal up to high standards, although we want to criticize its preoccupation with financial profitability when they should instead have

concentrated on the economic profitability. *Procurement* on part of ZISCO was without problems.

The underground rock caverns built by Skanska for the country's **fuel storage** needs is perhaps the best project in terms of efficient *implementation* and achieved *results.* Introducing a new concept of rock caverns instead of conventional above ground cisterns, the contractor faced criticism from the World Bank but prevailed in its arguments, and built a reliable and technically solid storage facility. Regarding *financial profitability* of the investment we do not have sufficient evidence, but there is a risk of it being negative. Nor do we have enough data on the *economic profitability.* But some of the assumptions regarding marketing that have been made seem to be very uncertain, which leads us to the conclusion that there is no economic profitability because the storage facility we believe is far too big for the coountry's needs. For the same reasoning we are also skeptical w.r.t. *relevance* and *sustainability*. It has hardly any ill effects on the *environment* and fulfills the two development goals of *economic growth* and *independence*. The *procurement* procedure was questionable at first but was turned around successfully. *Repayment* has just started but has been on schedule. The aspects of *gender* and *poverty* are not seen as relevant in this project. *Project preparation* was handled professionally especially in the face of problems that arose.

The ***refurbishment of the three old thermal power stations,*** finally, was also *implemented* successfully, and has produced clearly positive *results* just as expected. But the *economic rate of return* seems to be questionable in this project, and we have no reliable information on the likely *financial rate of return*. The *environmental* problem was not addressed in this project, and both *relevance* and *sustainability* are questionable. Only one of the Swedish overall development goals - that of economic and political *independence* - can be said to be satisfied by this project. The aspects of *gender* and *poverty* do not seem to be applicable. The *procurement* process and the *repayment* of credit score high perfomance ratings. Also the *project preparation* was generally of high quality, although we do criticize BITS for not having sufficiently clearly investigated the project's economic viability.

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I BACKGROUND/ PROGRAM CONTEXT

1. Sweden's program of concessionary development credits

Up until 1995 the Swedish concessionary credits were given by the Government´s agency BITS. In July 1995 BITS merged with four other organizations (among them "old" SIDA) to form "new" *Sida,* and from then on these credits are given under Sidas name. Since all the projects and credits evaluated here took place well before 1995, we will be referring to the credits as "BITS-credits".

Sweden´s program of concessionary credits for development was introduced in 1980 with the following general purposes:

(1) a wish to support also other than the poorest LDCs, a support which must then be given on less than grant terms

(2) to give this group of LDCs a wider opportunity to choose Swedish suppliers

(3) to exploit the "multiplier effect" which consists in the grant element attracting additional commercial resources to be invested in the third world, and

(4) to facilitate the transition from grant aid to other (commercial) forms of financing

The main motive was said to be developmental, and the credits would therefore be given only to countries whose development policy was in line with the overall goals of Sweden´s development aid. The Swedish exporter´s interests were obviously also an important motive, but - as emphasized in all official documents - always secondary to the developmental motive. Even though the credits are tied to Swedish goods and services, it was assumed - given the sharp international competition between different suppliers - that the grant element would always accrue to the recipient country and not as a subsidy to the Swedish exporter.

After a revision in 1983 an even greater relative emphasis was laid on the developmental aspects, and also the initiative for applying for a concessional credit would to a higher degree be placed with the recipient country.

As the credit instrument was seen as being most suitable for productive investments yielding economic surplus, it was foreseen that the credits would be mainly used to satisfy the objectives of economic growth and economic independence, and not economic and social equality and democracy, which were then the other overall goals of Sweden´s development aid.

The rules and criteria for the Swedish concessionary credit scheme have evolved somewhat over the years. Currently (January 1996) they have by Sida been defined as follows:

(1) The credits can be given only to countries that are credit-worthy, or which are judged to be able to become credit-worthy in the foreseeable future. Sida classifies countries according to whether they should be receiving only grants, only credits or if they can receive both grants and (soft) credits. This is

a question which is judged on the basis of the country's level of income, but also its macroeconomic performance. It is currently being studied by a special task force at Sida.

(2) The projects must be highly prioritized by the recipient government

(3) The credits are normally directed to the economic sectors of the economy, particularly to projects run by public utilities or corporations. So far, priority has been given to infrastructure projects as energy, transport and telecommunications. These are often projects which, because of low regulated tariffs, can not attain financial viability, but which are seen as economically sound for the country.

(4) The projects must be technically and financially sound, as evidenced by a thorough feasibility study or the like.

(5) Projects must give a satisfacory economic rate of return or create conditions for other activities which would lead to such returns

(6) The projects should have a positive impact on the country´s ability to earn or save foreign exchange

(7) Projects for production for the domestic market should preferably be directed towards basic utilities which benefit a large section of the population

(8) Projects which on balance are deemed to have a negative environmental impact are *not* eligible for financing. This criteria seems to have been added sometime in the late 1980s.

(9) Due to the agreement reached in 1992 within OECD (the *Helsinki-agreement)* projects deemed to be "commercially viable" shall not be eligble for financing by concessionary credits which are tied, such as e.g. the Swedish concessionary credits. Commercial viability is tested according to two criteria. *Firstly*, if the project´s net cash flow is high enough to service credits given on market terms. *Secondly*, if finance at market terms is available for the project.

The logical conclusion of the Helsinki accords is that concessionary credits can now only be given to projects which show a positive economic rate of return but which are *not* financially viable. The Helsinki agreement was signed in 1991 to take effect in 1992. However, there was a transition rule stating that old criteria could apply for another two years in those projects which had

already been notified by 1992. This means that the new restrictive practice took complete effect only in 1993-94, which implies that all the projects evaluated here must be judged against the old rules.

(10) The Sida-credit may finance only up to 85 % of the contract sum, while the rest must be covered by a cash payment. At least 70 % of the part financed by the Swedish credit must be used for products and services of Swedish origin.

(11) The credit is normally a bank-to-bank credit, i.e. from a bank in Sweden to one in Zimbabwe, but the borrower may also be ministry, a public utility or corporation or some other entity like for instance a town.

(12) The grant element of the credit is financed out of Sidas (formerly BITS´) aid budget.

(13) The grant element is at least 35 % which can be achieved by different constellations of the level of the interest rate, the length of grace period and the length of the repayment period. A standard constellation in the Swedish scheme seems to be a 10 year credit period at 0 % interest rate, with a grace period of 1 year and a repayment period of 9 years. The starting point of the credit period is normally the time of commissioning, i.e. when the contract obligations of the Swedish supplier are officially finished.

(14) Sida does not avail itself of the right, given by the OECD consensus rules, to "match" higher grant elements offered by other competing countries.

(15) The concessionary credit terms may, if the government so wishes, be passed on to the end-user of the credit, *or* be retained by the government while other - often more commercial - terms are given to the user of the credit in an on-lending agreement. On this point there seems hwever to be an unsettled situation. While the position referred to here is stated in a memorandum from Sida of January 1996, there is another document (*Guidelines for the concessionary credit scheme* dated December 1995) which says that: "the grant element shall, where at all possible and practicable, be absorbed by a central government authority in order to avoid giving signals which distort efficiency and/or which distort competition in the local market.". We may comment here that BITS´ awareness of this aspect was not always very high, for in the projects evaluated here little or no attention is given to this aspect - at least as evidenced from documentation in the files.

According to one interview the situation changed in the late 1980s when the question of *counter part fund payments* became important in development aid. Then also BITS started to pay attention to what conditions were passed on in the on-lending agreements, when such were at all made. When the grant element is given to an infrastucture public utility like e.g. electricity generation one may of course argue that it is the large mass of consumers who benefit, however at the exclusion of the poorest groups in the countryside who do not have electricity.

(16) The credits are guaranteed, for a fee, by the Swedish Export Credits Guarantee Board (*EKN*) on behalf of Sida.

(17) Procurement should normally be done through international competitive bidding. However, as no specific procedure has been laid down by BITS/Sida, it may also follow guidelines established by the recipient countries, provided that these guidelines are judged to be satisfactory BITS/Sida.

(18) The credit is to finance a *specific* contract won by a Swedish supplier in international competition.

(19) The initiative for Swedish concessionary credit financing may come from the prospective Swedish contractor or the user in the recipient country, but the formal request for credit must always be endorsed by the Finance Ministry or the Ministry responsible for aid coordination. Inherent in a system where the initiative for concessionay credits comes from one of the two contracting parties - the supplier or the client - is the risk of limiting the choice to very few projects, thus risking to lose the view of other alternative uses of the funds.

(20) Regarding competition between the exporters of different countries an important element is that, according to the Helsinki accords, a soft credit - if it is offered at all - must always contain a grant element of at least 35 %. Also, the different donor countries offering concessionary credits are allowed to match each others´ offers with respect to the grant element. The purpose of this rule is that a contract should always be awarded on the merits of the technical quality and the price offered by the exporters, and not on the grounds of a soft credit being available. As was noted above, however, Sweden´s policy has always been not to use this matching option.

(21) Sida may, according to its statutes, decide to grant a credit only *after* the Swedish contractor has already been awarded the contract, won

through international competition or *after* bid closing. This is to safeguard that the knowledge of a prospective granting of a Swedish concessionary credit will not unduly influence the recipient of the credit in his choice of contractor.

If and when there is more than one country offering a subsidized credit there would not seem to be any problem to make sure that a contract is awarded purely on the basis of tecnical quality and on price. However, when there is only *one* offer it is hard to see how the prospect of a soft credit being available would *not* influence the decision. For obviously the swedish contractor will have told the client that a credit is most likely forthcoming if and when a contract is awarded. So, in these cases the formality of deciding about the credit only after the contract has been awarded, would seem to be a mere formality with no practical meaning.

(22) According to BITS´own rules it is very important to evaluate the projects which have been financed by a Swedish concessionary credit. This rule seems not to have been adhered to in the case of Zimbabwe, since only one of the projects evaluated in this report has previously been evaluated independently.

The current **volume of total Swedish concessionary credits** is about MSEK 1200 to 1500 a year, with a grant element of about SEK 400 million. Of the total accumulated amount of credits since the start of the program in 1980, about 5 % has gone to Zimbabwe, making it the fourth largest recipient of this type of aid from Sweden. On a per capita basis Zimbabwe has received SEK 53 per person, which can be compared to about the double for small countries like Lesotho and Maritius, and to SEK 4 per capita in China and India.

2. *The Swedish-financed projects to be evaluated*

The present evaluation covers 10 separate concessionary credits financed by BITS during 1981-1992 representing a total value of SEK 574 million. An overview is given in table 1.

Table 1: Swedish Concessionary credits to Zimbabwe 1981 - 1994; in million SEK

Project	Decision date	MSEK SEK	% Grant element	Contractor	Client	Implemen-tedtation period
Trucks	July 1981	19,3	11	Scania	Tandem	1983
Teleprinters	Feb. 1982	8,1	31	Phillips	PTC	1983
National control centre	Sept.1982	91,8	36	ABB	ZESA	1983-85
Production of explosives	Sept. 1984	9,3	31	Nitro Nobel	IDC	1990-91
Control centre in Bulawayo	April 1985	32,0	39	ABB	Nitro-Nobel Zimbabwe	1990 91
Steel mill	June 1987	12,1	35	ABB	ZISCO	1988-89
Fuel storage I	April 1989	8,7	37	Skanska	NOCZIM	1991-92
Fuel storage II	Jan. 1990	241,5	39	Skanska	NOCZIM	1993-96
Upgraded control syste	July 1991	22,7	34	ABB	ZESA	1993-94
Old thermal power plants	Dec. 1992	92,8	36	ABB Stal	ZESA	1992-95
Total		538,3				

In addition to the 10 credits decided upon and actually paid out, there were another 12 credit decisions made by BITS which were notified but later withdrawn. Usually the reason for such withdrawals was simply that the Swedish contractor had not been awarded the contract.

The 10 credits - though all different in time and purpose - can be grouped into the following seven projects/programs:

a) Sale of 104 Scania trucks plus spare parts. To satisfy the large need for transport capacity in the country BITS decided to extend a SEK 19,3 million credit to finance the purchase of 104 Scania trucks including spares. At the time of decision the need was further exacerbated by an expected surplus harvest of two million tons of maize which could be used for export. These trucks were delivered to Zimbabwe ready assembled, but plans were being made under this project to do local assembly of components in a government run assembly plant for later deliveries. The load carriers were however built in the importer´s own plant using exclusively metal sheets produced in Zimbabwe from local iron ore.

b) Sale of 600 teleprinters. In 1981 BITS decided to finance with a SEK 8.1 million credit the purchase of 600 teleprinters, with accompanying spares and tools, by Zimbabwe's Post and Telecommunication Corporation.These teleprinters were meant to satisfy the big unserved demand of teleprinters all over the country. The supplier Swedish Phillips also undertook to train local personnel in the installation and maintenance of the machines.

c) Building of power transmission control centres. This "project" consists of three different concessionary credits given from 1982 to 1992 to three different investment projects.

(1) In 1983 SEK 91.8 million were granted for the introduction of a complete computer based control system to supervise Zimbabwe's entire power production and transmission grid (excluding the city of Bulawayo), as well as the capital city Harare´s distribution system.

(2) In 1987 SEK 32 million were granted to do essentially the same thing for the country´s second city Bulawayo. The concrete assignment was the delivery, setting up and starting up of equipment for data collection, signal transmission equipment for 18 sub-stations, a central computer unit with control boards.

(3) In 1992 SEK 26.8 million were granted to upgrade the installations made under the first credit eight years earlier. This upgrade was necessitated by the insufficient data processing capabilities and poor response times of the hardware which had become out-dated in the years that had passed.

*d) **Production of explosives.*** In order to replace with domestic production the large import from South Africa of explosives needed for Zimbabwe's fast growing mining industry, BITS decided to grant a credit supporting the setting up of an explosives plant. This was done under a joint venture between Zimbabwe/IDC (51 %), Nitro Nobel of Sweden (25 %) and Swedfund (24 %). Project studies had shown there to be a great potential profit, and good prospects for future growth. The credit amount was SEK 9 million.

*e) **Modernization of the ZISCO rolling mill steel plant.*** This was a program of a *bar rod mill* computerization and introduction of a new series of *thyristor drives* with a view to increasing the efficiency, quality and output of a rolling steel mill. Its main objective was to increase the self sufficiency in steel products in the country. A loan agreement was signed by the government owned steel plant ZISCO and the Swedish bank Götabanken in January 1988 for a total amount of USD 2.2 million to cover delivery of equipment and contractual services by the contractor ABB.

*f) **Building of underground fuel storage tanks.*** In order to increase Zimbabwe's capacity of storing fuel from a volume corresponding to 2.8 months of consumption to about 6 months of consumption, BITS decided to finance the construction of a 360.000 m3 underground storage space consisting of six separate excavated rock caverns. This was considered relevant because of the time unsafe transportation routes through Mozambique, as well as the perceived threat from South Africa. The tanks would also allow the government to buy oil on the international spot market when prices are low and stockpile for future use. One credit of SEK 9 million was approved in 1989 to cover mainly geological tests and to preparation of plans for design, cost and time plan for the construction of an underground storage facility. A second credit of SEK 241 million was approved in January 1991 to cover the construction phase. Skanska was contracted by the Zimbabwe national oil company, NOCZIM, to carry out the work.

*g) **Refurbishment of three old thermal power plants*** . In a situation of severe drought when not only Zimbabwe's own hydroelectric power

generation, but also that of its neighbouring power supplier Zambia was drastically cut, and when simultaneously, the country's coal-driven power plants could not be used fully because of their run-down condition, BITS in October of 1992 decided to finance the refurbishment of three old thermal power stations, two in Harare and one in Munyati. The main task was to refurbish nine boilers and five turbines. Asea Brown Boveri (ABB) was awarded the contract for renovating the turbines while its subcontractor British Babcock Ltd was responsible for relining the boilers.

In connection with the SEK 210 million BITS credit for the refurbishment BITS, in December the same year, also decided to finance the supervisory task of the refurbishment program with a technical assistance grant. The contract for the supervisory responsibility was by ZESA given to the Swedish consulting firm Swedpower.

3. Zimbabwe's economy

(This section draws almost entirely on a report produced by the Swedish Embassy in January 1994, and a World Bank study from July 1995: "Zimbabwe - A macroeconomic review of public expenditures.")

Economic growth in Zimbabwe has since the country´s independence in1980 not kept pace with the the annual growth of population of 3 %. Distribution of welfare was made more equal during the 1980s, but all wage earners have seen their salaries in real terms go down. Only a minority of farmers have in recent years become better off due to an increased local demand for foods. During the recent drought period it is estimated that six million people - or about half the country´s population - were dependent on relief food for their survival.

The economy was during the 1980s extremely regulated and also monopolized. A vast system of subsidies and protection for the large private corporations had been mounted before independence and this was reinforced during the 1980s. The price system was not functioning and parastatals could operate with no budget restrictions. Capacity utilization in industry decreased. In any case the industry was very capital intensive in spite of the country´s low industrial wages, so little employment was created. The structural adjustment program supported by the IMF and the World Bank, has so far not been altogether successful, partly because the need for structural reforms and proper *sequencing* of the reforms were overlooked.

Compared to its neigbours, Zimbabwe has a well developed physical and financial infrastructure, and corruption is seen as being relatively modest. On the other hand it is considered that there is more of a bureaucratic mentality and the state apparatus is more hierarchical and centralized than in the neighbouring countries. Also, the informal sector is less developed in Zimbabwe.

The international trade and capital balances have been completely liberalized, and the rate of foreign exchange is today free. There is, however, still a complicated structure of customs tariffs, with rather high duties on consumption goods as well as on some intermediary products.

Because of the high real interest rates there has been a large inflow of (short term) capital which has increased the stock of money in circulation and pushed up the rate of exchange. The Reserve bank has tried to sterilize supply of money by applying a high discount rate which has further increased the real interest rates. This has prevented credits from going to (long term) industrial investments in the private sector, leading to so called "crowding-out". Losses of the public enterprises continue to be one of the major causes of a high budget deficit. This will be further discussed below. The only sector which today is growing is mining.

The Zimbabwe dollar has depreciated against major foreign currencies since the exchange rate was liberalized in July 1994, but due to the continuing inflation there has in fact been a real appreciation in spite of that. With a liberalized foreign exchange it is no longer correct to speak of a foreign exchange gap. The "gap" which needs filling in Zimbabwe is the *budgetary* gap. The most adequate form of aid - if the purpose is to fill the budget gap - is balance of payments support *seen as* budgetary support, in other words that the conditions attached to the aid is regarding the use and contents of the *budget*, and not imports. This is also assuming that the use of the counterpart funds generated is not tied to specific purposes by the donors. Today there is however a tendency for balance-of-payments support to decrease while various types of investment loans are increasing. This trend should ideally be reversed. Project assistance can make the situation worse, since it is often associated with additional demands on the budget for financing local costs

The government's debt situation. In the beginning of 1995 the governments total debt was ZD 50 billion, and including public enterprises ZD

57 billion. This is over 100 % of GDP. To service this debt cost more than ZD 7 billion in 1994/95, which was about half of the governments total revenues. Interest payments alone amounted to 27 % of 'government's total expenditure including its net lending to public enterprises. This is more than what was spent on health and education combined.

Keeping up with its debt servicing obligations makes it quite difficult for the government to deliver needed public services and cater to the country's many development needs, while at the same time having to reduce inflationary pressures which are caused by the deficit financing.

The budget deficit for 1994/95 was around 12 % of GDP with a domestic financing need of about 8.5 %. This is a level of domestic borrowing which clearly puts great pressure on interest rates and prices as well as on public expenditure, and it correspondingly decreases the possibilities of a recovery in the private sector.

At the same time however as the government is struggling with its large public debt with all its negative consequences, it holds very large assets by way of investments both in private and public enterprises. Most of these investments give returns which are much lower than the government's cost of servicing the public debt. For instance the Industrial Development corporation, the IDC, (which is the Government's holding company of industrial investments) in 1992 gave a return on capital of only 1.6 % (in 1993 it was a loss of 4.1 %), while at the same time the average interest rate on government debt was above 10 % and the interest rate on short term domestic borrowing was 30 % ! So, the government's insistence on holding large assets invested in industry not only prevents it from repaying its debts, but in fact regularly increases its debt burden by the fact that the interest on the debt is many times higher than the revenue from its assets.

The need for the government to divest itself from its investments, has therefore become acute. In an analysis carried out by the World Bank, it is pointed out that such a divestiture would bring along important advantages. It would:

-reduce debt service payments
-reduce the "crowding out" of the private sector which all analysts are convinced has been, and still is taking place in Zimbabwe
-reduce the inflationary impulse from deficit spending
-improve the investment climate

-broaden the dispersion of ownership of assets
-increase the range of outlets for domestic savings

Perhaps even worse than the drain which the parastatals cause in state finances is the detrimental effect which the monopoly position, that these firms enjoy, has on the country´s business climate. There are today regulations that sharply limit private sector activity in mining, agriculture and in all of the public utilities. Private sector activity is severely restricted in transport and ruled out in the public utilities, including telecommunications where the standard of services has seriously deteriorated in recent years. In transport, private trucking companies need to have Government permits, and all petroleum imports are a state monopoly. Most observers today therefore seem to agree that there is an acute need for policy reforms which would allow for private sector investment and operations.

The need for new credit. The general rule is that a country which has potential investments whose rate of return is higher than the cost of borrowing is well advised to take up credits and invest. If the rate of return turns out lower, then the country´s growth will be less than it had been if it had *not* taken the credit. In development circles it is considered the duty of the lending institutions to make sure that the outcome of the investments are such that the country´s ability to pay back the loan is increased not decreased. In a country like Zimbabwe which already has so much inflow of foreign exchange - to the point that its rate of exchange becomes artificially appreciated - it is particulrly important that the credits are used for viable projects. Most of the other inflow of capital is of short term speculative interest attracted by the current high real interest rate.

Credit vs grant. A very pertinent question to this evaluation is the advantages and disadvantages of grant aid as compared to concessionary credits for a certain country at a certain time. This topic is however outside of our terms-of-reference. We will merely state the two main standard arguments that are advanced in favour of credits:

Concessionary credits have the "disciplining" effect of commercial credits. In other words, the borrower is more careful with how the money is spent because he is supposedly aware of the cost of the credit, whereas the user of a grant is said to be unaware.

Concessionary credits has a "lever"effect financially in that every dollar of grant brings along another 3 dollars of commercial credit.

With a credit all parties involved are maximally interested that the project becomes successful, for everyone will suffer economically if something goes wrong.

4. *Parastatals and state owned firms*

Every one of the 10 BITS credits granted to Zimbabwe has gone to government owned companies. They are

ZESA, (Zimbabwe Electrical Supply Authority), responsible for the *control centres* and the *old thermal power plants* projects,

NOCZIM, (the National Oil Company of Zimbabwe), responsible for the *fuel storage* project,

PTC, (the Post and Telecommunications Corporation), responsible for the purchase and distribution of the *teleprinters*,

NRZ, (National Railways of Zimbabwe), whose subsidiary RMS (Road Motor Services) was the end user of part of the Scania *trucks*,

ZISCO, (the Zimbabwe Iron Steel Company), whose *rolling mill steel plant* was modernized, and

IDC, (the Industrial Development corporation), owner of the Nitro Nobel Zimbabwe *explosives plant*

All of these (except ZISCO, which is a limited liability company 89 % owned by the state) are so called *public enterprises,* which means that they are constituted through an act of Parliament. They are defined as autonomous bodies with a legal status, wholly or partially owned by government, and falling under the jurisdiction of a sector ministry. Their activities can range from regulatory functions to selling goods and services.

IDC is the government's holding company, which, among the app. 40 companies in its portfolio, has the private company Nitro-Nobel Zimbabwe, owned 25 % by Nitro-Nobel Sweden and 24 % by Swedfund.

In this section we will provide a brief description of the condition of these government enterprises as a general background for the analysis which follows

in the respective sections below of how profitable the investments financed by the BITS credit turned out to be. Most of the data in the following tables are derived from a recent World Bank publication: *Zimbabwe - a macro-economic review of public expenditure*, July 1995.

Profits and losses. A very important motive - beside the obvious political and social motives - for the government to hold onto at least some of these companies has been its hope that by improving the companies´ financial performance, the government could actually earn money on these enterprises. However, in reality, most of these public enterprises have been constantly making losses. In 1994/95 the losses amounted to 3 % of GDP, which is an amount 50 % higher than the government´s total expenditure on health and child welfare that year.

The profit and loss position of four of the six public enterprises which received concessionary credits from BITS are shown in table 2:

Table 2: Profits and losses of major parastatals, ZD million

	1990/91	91/92	92/93	93/94	94/95
NRZ	-120	-70	-65	-108	-101
ZESA	-65	-22	141	0	0
ZISCO	-159	-150	-125	-187	-255
NOCZIM	-33	-10	163	183	80
All parastatals	-608	-365	-338	-1366	-1555

The figures are estimates made by the World Bank, and reflect the firms´ financial results, including the actual subsidies received and taxes paid by the respective company. The overall picture is clear. The public enterprises are loosing a lot of money, and are thus a drain on the country's finances. This is in spite of the fact that most of the parastatals under the Structural Adjustment Program, SAP, were allowed to increase their prices.

A diagnostic study, recently carried out of the public enterprises by the World Bank, criticized them for being over-staffed and poor at delivering service. Their overall return on capital was found to be only 0.25 %. In some cases the

heavy losses had been incurred as a direct result of over-ambitious, unsound, costly, improperly appraised and badly managed investments. The study found no evidence that the firms had tried to reduce cost. As a general rule the sponsoring ministries had failed in leading and monitoring the enterprises. Communication between ministries and the firms was taking place only in times of crisis and there was a general lack of accountability of the firms managers. In some cases political appointments were cited as the reason for poor performance.

Non-transparent financial reporting. There was a lack of transparency in financial reporting, which made it impossible to determine the actual magnitude of reported losses, and the absence of standard reporting requirements made it difficult to monitor progress.

Some of the parastatals have begun to show profits in the middle 90s, among them are NOCZIM, PTC and ZESA. But the accounting figures are not standardized and it is therefore difficult to judge what the real profit is. It is for instance very difficult to see how funds that have been given as grants by foreign donors to the public enterprises (for instance such as the grant element of the BITS credits) are treated.

Some of the firms simply include such aid funds as regular income and thereby distort the profit figure making it impossible to determine how much of the profit is generated from its operations. The concessionary credits of BITS are obvious cases in point.

In other cases the World Bank study reports that losses have been due to the *governmental and regulatory functions* performed by some of the firms, and not due to their commercial operations. It is important to separate the two in order to see which firms are efficient and which are not. In the case of NOCZIM the opposite seems to be true, namely that the firm is loosing money on its regular operations, but this loss is hidden by the important surplus which NOCZIM makes from levies which should more appropriately have gone directly into the treasury and not to NOCZIM.

Subsidies. Recently the government has stopped subsidizing those public enterprises which are in the process of being commercialized (like ZESA and NOCZIM), and regular access to government guaranteed loans have been curtailed. For some companies, e.g. ZESA and NRZ, performance contracts

have been introduced, and NRZ has had its overdraft facility with the Central Bank withdrawn.

As can be seen from table 2 however the efforts of commercialization have so far not resulted in the firms becoming profitable.

And the public enterprises have continued to receive support from the budget, *either* in the form of subsidies *or* as loans from the budget.

In tables 3 and 4 we can see that while subsidies have gone down drastically, from a total of ZD 1083 million in 1991/92 to ZD 192 million in 1994/95, this decrease in subsidies has been more than made up by a massive increase in the credits received by the same public enterprises. At the end of 1994 direct loans amounting to ZD 3,4 billion had been advanced from the budget to the major public enterprises. This means that the inefficient state enterprises have likely added to a *crowding-out* of private sector investment.

Table 3: Subsidy payments to major public enterprises, million ZD

	87/88	88/89	89/90	90/91	91/92	92/93	93/94	94/95
NRZ	120	100	255	100	149	94	37	47
ZISCO	167	100	100	100	139	100	100	100
ZESA	0	0	0	0	0	0	0	0
NOCZIM	0	0	0	0	0	0	0	0
Others	172	185	208	311	795	826	175	45
total	459	385	563	511	1083	1020	312	192

In table 4 are shown the amount of credit taken from the Reserve Bank of Zimbabwe, and from Deposit money banks by some parastatals.

Table 4: Use of domestic credit by public enterprises, million ZD

	1991	1992	1993	1994	1995
NRZ	65	30	58	32	0
ZISCO	82	143	116	187	148
ZESA	93	82	63	40	20
Others					
Net borrowings from the money market	531	690	273	643	2234
As % of total domestic credit	8,2	4,3	0,8	3,2	9,0

In addition, the public enterprises have taken up large loans from the financial sector in order to cover their losses. The government has issued the guarantees for these loans. Without it nobody would lend to these companies. The net borrowings by the public enterprises from the money market has quadrupled during the last four years - from ZD 531 million in 1991 to ZD 2234 million in April 1995.

The indebtedness of the firms can be seen in table 5

Table 5: Total indebtedness of major parastatals; 1994/1995, million ZD

	Total	of which foreign
ZESA	3121	1905
PTC	782	442
NOCZIM	309	310
NRZ	892	369
ZISCO	2015	5
All parastatals	14194	4081

In table 6 we see that total assets of the public enterprises are valued at ZD 22,8 billion while total liabilities are valued at ZD 20,2 billion, thus apparently yielding a net worth of ZD 2,5 billion. In reality however the figure is

probably negative, because on the asset side has been included some ZD 4,6 billion in subsidies due to the companies from the Ministry of Finance. But it is not clear whether the Finance Ministry actually acknowledges these obligations.

Table 6: Consolidated financial statements of major parastatals, per 31 Dec. 1996, million ZD

	assets	liabili	govt.	govt.	govt.
NRZ	2452	1668	150	591	327
PTC	2097	1241	43	435	0
ZESA	4866	3792	0	433	0
ZISCO	1786	2671	350	1832	329
NOCZIM	2326	1321	300	0	310
Others					
Total	22804	20258	858	5980	988

Privatization. It is obvious that passed efforts on part of the government to strengthen the financial performance of the parastatals have not been successful, and it is therefore generally considered to be necessary that these companies are now privatized. The government has recently classified all its enterprises into groups according to their intended mode of privatization. The parastatals which have received BITS concessionary credits have been classified thus:

In Category 3, which means that they are (potentially) competitive enterprises, which can be privatized forthwith, have been placed:

IDC
NRZ (its trucking operations and some services), and
ZISCO,

while in category 4, meaning that they are monopoly enterprises to be privatized , but which first require the development of a regulatory framework, have been placed

ZESA
PTC, and
NOCZIM

Regarding PTC and NOCZIM it is obvious that the value to potential buyers /investors will to a large degree depend on the future rules regarding monopoly position and pricing policies that are decided upon.

Regarding ZISCO there is a cabinet decision in principle to go ahead with privatization. The government is looking for "strategic" partners, which is taken to mean that they should be foreign with wide international experience in the steel industry.

ZESA would be divided in two parts - one which will assume the regulatory functions in areas of tariffs, safety, and environmental protection, and another part responsible for generation, distribution and transmission along commercial lines. A parliamentary act is needed in order to introduce competition at power generation. A tariff structure needs to be worked out which will be a compromise between financial viability of suppliers and social needs of people such as e.g. rural electrification.

NRZ would remain a public enterprise. Its present parliamentary act already allows for sale of shares in the event it is judged to be desirable. The mode of a possible privatization of PTC is still being studied. As for NOCZIM it is already a (Government owned) limited liability company. The Government however wants to introduce indigenous private sector participation of up to 20 % in order to improve efficiency.

II THE EVALUATION; METHODOLOGY

1. Reasons for, scope and focus of evaluation

The *reasons* for this evaluation can be deduced, not only from the terms-of-refernce for this evaluation, but also from other sources, to be the following:

Firstly, the Foreign Ministry is currently in the process of working out a new country strategy for its future development cooperation with Zimbabwe. One of the bases for such a new strategy are the results and conclusions drawn from past aid to Zimbabwe. Hence there was an acute need to evaluate the projects

financed by the BITS concessionary credits to Zimbabwe. As was mentioned above these had - with one exception - not been evaluated before.

Secondly, as a result of BITS´ recently (July 1995) being integrated into the new consolidated Swedish aid agency - Sida, there is a "stock-taking" going on in the sense that the other members of the organization (apart from BITS there is SIDA, SWEDECORP and SAREC), want to find out "what its colleagues have been doing". There is also an interest that all the projects of the four former independent aid organizations now be evaluated *according to a common format.*

Thirdly, there is currrently a review going on of concessionary credits as an aid form. A committee has been appointed at Sida to analyze and arrive at a proposal for a future system of concessionary credits. In this perspective it is of interest to have the findings and conclusions from earlier credits. Zimbabwe, being the third largest program country for Swedish concessionary credits, then naturally attracts interest for this reason.

Fourthly, we have the obvious reason that none of the ten concessionary credits granted to Zimbabwe so far has been evaluated - at least not independently and in a comprehensive ex post fashion. And according to Sida´s rules and tradition every aid project needs to be evaluated. The reports referred to as "evaluations" which we are aware of are the following. (1) In 1986 Swedepower, who was itself a contracting party in the project, did an evaluation of the technical and operational aspects of the first phase of the National control centre project. (2) In 1992 a graduate thesis (at "C-level") was carried out at the University of Stockholm of the economic viability of the Nitro-Nobel explosives project. (3) In 1995 a report was carried out internally within ZESA of the Control Centre project. (4) In 1991 UNIDO, who was itself responsible for the technical assistance part of the ZISCO steel mill modernization project, carried out an internal evaluation of this project. None of these four evaluations however fulfil the requirements of being *comprehensive* and *independent.*

The **scope and focus** of the evaluation is in the *terms of reference* defined by the following tasks:

For each of the ten concessionary credits granted to Zimbabwe during 1981-1994

- describe and analyze results and effects in relation to planned objectives
- assess financial and economic effects
- describe and analyze procurement procedures
- account for repayment performance, both externally and, in the case of an on-lending arrangement, internally
- account for compliance on part of the borrower and contractor with respect to reporting rules set by BITS
- account for goal achievements with respect to Sweden´s five overall development goals, as well as gender aspects

The evaluation is to be of *ex post* and of *summary* character.

Limitations. A natural limitation for the level of ambition of this evaluation is set by the total number of available man-days, which is 35. For the ten credits to be evaluated this implies that on the average a maximum of 3,5 man-days, including preparations, document reading, field visits and report writing, can be devoted to each credit.

This means that we are prevented from undertaking any independent data gathering. Our data sources are limited to existing documentation and to interviews. Based on scrutiny and discussion of existing documentation, complemented with our visits to the plant sites, as well as with interviews, we will attempt to draw conclusions w r t the aspects to be evaluated.

Nor is it, within this limited time frame, possible to undertake any original calculations of financial and economic profitability. Our mode of work on that score becomes mainly to scrutinize and analyze existing calculations and discuss the feasibility of such calculations, where such have been made. In several of the projects no calculations are available, and then we are limited to presenting a very general discussion of the probable financial or economic impact of various assumptions.

Another limitation particularly due to this being a *summary* evaluation of ten different concessionary credits is the *different maturity* of the projects. The projects financed with these credits were implemented over a 14 year period from 1981 through 1994. This to a certain degree then makes it difficult to get comparability between the various projects, especially when it comes to long run effects and impact.

Implicit objectives. A very important limitation is the difficulty to define which objectives of various kinds, and at various levels, can be said to have been set for the different credits. Above in section I:1, it can be seen that BITS shares - at least in theory - many of the same objectives and side conditions of Sida, which then means that the BITS credits should be evaluated against the same collection of economic and social objectives as SIDA and other aid agencies. But of the dozen or so standard aspects which we are addressing in this evaluation, there are very few which were ever defined explicitly in the BITS projects. Logically, project outcomes should be evaluated against those objectives - and only those - which were set up as targets. But this is not a procedure we can adhere to in this evaluation. If we did, we would have hardly anything to evaluate, because very few of the aspects we are interested in were defined (at least explicitly) as being objectives in the projects.

When an aspect has not been mentioned explicitly among the targets, there is room for several interpretations. *First*, it could be that it was not mentioned because BITS actually meant that it was not relevant or applicable. *Second*, it could be that BITS *implicitly* meant it to be a target, but did not mention it because they forgot, or because they were not experienced in writing log frame project descriptions. *Third*, it could be that BITS at the time explicitly or implicitly thought that it should *not* be a target, but that an analysis of the governing criteria as set down by the Swedish government for BITS´ activities, shows that it *should* be an objective in a particular project. Whatever the interpretation, all the aspects will be included in this evaluation.

Under each of the projects analyzed we will (briefly) attempt to account for which were the aspects that were explicitly or implicitly defined as objectives in the different projects. Our method of analysis is to assess each of the twelve aspects listed below in each of the projects evaluated *whether or not* it was mentioned (explicitly of implicitly) in the decision memoranda or elsewhere as being a target for the project in question. This is because the twelve aspects are today generally seen as being general requirements of any aid project in most aid agencies in the world, and there is an interest on part of the readers of evaluation reports to know what the outcome w.r.t these aspects was - whether or not BITS had actually thought of this aspect at the time they decided to finance the project.

2. *Methodology*

We will follow a conventional "text-book" methodology, and pursue the analysis in the following steps:

The ten different concessionary credits granted by BITS are, as was shown above, grouped into seven different "projects", and for each of these seven projects we will:

Firstly, explicitly define a goal hierarchy based on the logical framework analysis. In none of the projects this has been done by BITS, but the most essential elements usually - if not always - follow from the texts of the relevant documents. The logical framework analysis - although sometimes under a different name - was widely used in most donor agencies already in the early 1950s, and BITS could therefore be criticized for having devoted too little effort in describing the goal structure of its projects in more explicit logframe terms. However this is a criticism which it would then share with very many other aid agencies - also SIDA. For while most agencies at that time officially adhered to some kind of *logical framework analysis,* very few of them actually applied it in their regular project work.

Where possible we will identify an *intended* (again, explicit *or* implicit) *target group* for the project.

Secondly, we will assess against planned targets what has been realized by way of implementation of inputs and activities as well as results, effects and impact.

Thirdly, we will assess the project outcomes with respect to the following aspects:

Financial
Economic
Environment
Gender
Poverty
Relevance/sustainability
Sweden's overall development goals
- *economic growth*
- *economic and social equality*
- *economic and political independence*
- *democracy*

Procurement
Repayment of credit
Project preparation

For reasons mentioned above, namely if the particular *aspect* is not relevant for the project in question or simply due to unavailabiity of data, there will sometimes be nothing or little to say under some of the headings. We have in spite of this chosen to always include the respective heading in order to facilitate for those readers who want to use this evaluation report for reference purposes. For the same reasons there will sometimes appear repetitions of the same or similar type of reasoning under the different projects.

The logical **work plan** for the evaluation to follow was this:

Firstly, do a desk study: compile, systematize and review relevant information retrieved from existing documentation

Secondly, send letters to contractors, borrowers and some other institutions responsible for the projects and solicit "final project reports" to be sent in

Thirdly, carry out field visits to all project sites, and interview relevant persons in the project authorities in Zimbabwe as well as responsible persons at the contractors

Fourthly, analyze information obtained. and

Fifthly, write evaluation report

The idea being that during the field visits and interviews one should try to collect that information which the desk study, as well as the solicited "final project reports" have shown to be missing. That is elementary logic, and in a *summary evaluation* with many projects to be evaluated in a limited time, this sequence of events becomes particularly important. Because the time constraint leaves very little time to seek new information.

In our evaluation however, due not only to a time constraint in terms of total available time, but also a tight deadline set for completing the evaluation, we were unfortunately not able to adhere entirely to this ideal schedule. The tasks had to be undertaken in a more mixed fashion. But the end result, we hope, has come out satisfactorily in spite of this. Also, the planning of the evaluation was

made more complicated by the fact that of about 20 letters sent out by Sida to contractors and Zimbabwe project authorities soliciting "final reports" to be sent in, only one (1!) resulted in a report actually being sent in.

3. *A note on economic analysis*

There are a number of *general methodological problems*, some of which will be mentioned and discussed along the way. One which is of particular importance to this evaluation is the question whether a cost-benefit analysis must always be calculated from the viewpoint of the country or whether it could also be seen from the viewpoint of say, a town or a region. Related to this is the question whether the grant element of the concessionary credit should necessarily accrue to the central government, or whether it could also be for the benefit of the authority (town, parastatal or something else) which uses the credit, i.e. the one whose project it is.

The traditional position of Sida and Swedish development aid is that all grants and grant elements/benefits should accrue to the state or the central state apparatus, normally the treasury. When funds are transferred for use to other entities outside the central government this transfer should be shown both as an income and an expenditure item in the budget. It should be the prerogative of the state/government to decide for what purpose a particular aid or a subsidy should be used. Therefore any grant element should always be given to the state treasury and shown as an income item in the central budget. And on the expenditure side it will correspondingly be recorded as a subsidy - showing in effect a political decision regarding which project the government wishes to subsidize with this particular Swedish grant.

Although this has been the rule for many years there are however in practice many deviations from this rule. Often a confusion seems to be created due to lack of understanding of the nature of the methodology of cost benefit analysis. The question of who should be entitled to get the benefit of the grant element - the state or the user of the credit, is often mixed up with the motives behind doing a cost benefit analysis. The cost benefit analysis must be made in order to see what is and what is not economically profitable for the nation as a whole, and such an analysis must by definition take the national economic interest as its departing point.

There should thus be no contradiction between the two questions. It is perfectly all right for the government to decide that the grant element of a concesionary

credit should accrue to the user. This amounts to no more no less than the government granting the user any other type of subsidy. From the national viewpoint this is a financial transaction which will permit the project to be financially viable. This can however in no way change the need for the government to do an economic analysis, which takes account of real costs, i e the opportunity costs for the country. That such analysis must use a discount rate which is higher than the inflation is self evident, and the cost of capital must of course reflect the *opportunity cost* for the nation to use this capital. Otherwise there is no way for the government to know which projects are better than others. It might, for instance risk favoring a too capital intensive project rather than a less capital intensive one, which would be more in accordance with the country's relative prices.

So, the insistence on doing an economic analysis from the national point of view should have nothing to do with the question whether or not the government would be willing to subsidy this or that township or parastatal. A confusion often seems to arise because of a failure to distinguish the role of *financial* analysis from that of *economic* analysis.

The proper way to go about it is this:

Firstly, an economic analysis is made of different project alternatives using real opportunity costs.

Secondly, the government decides on the degree of subsidy that it is willing to extend to the project - if tariffs and user fees cannot be raised enough to finance it.

Thirdly, the government must find the most convenient way of bringing about a financial package which can make the project happen. This package can then include that the project is allowed to receive the whole grant element of a foreign concessionary credit and/or a combination of other direct and indirect subsidies. What is important is that the full subsidy be shown in the national budget. If it has been shown in a reliable economic analysis to be profitable for the country, then this subsidy will be a financial cost which will actually bring about revenues from the national economic point of view.

4. Availability of data

As was noted above, BITS´mode of work differs from that of Sida and other aid agencies in that it is the contracting parties themselves, i. e. the

supplier/contractor in Sweden and the credit user in Zimbabwe, who take the main responsibility for the project, with BITS remaining somewhat of an outside financier. Because of this it is only logical that the amount of documentation available in the BITS files is much smaller than there would have been in e.g. a Sida project of comparable size. This does not mean that the actual physical volume of documentation in the BITS files is small. It is not. The credits we are evaluating have a total of 24 full ring binders of paper. But the point is that most of it is formalia - contracts, specifications of equipment, covering letters, etc., and very few of the documents are substantive or analytical.

Furthermore, BITS credits cater primarily to infrastructure an economic projects rather than social projects, it may therefore seem logical that there should be little data on particularly the social aspects. This is of course an important shortcoming for our evaluation, for - this being a Sida evaluation - we need to address all the social issues as well as the economic ones.

Another quite striking feature of the documentation available in the BITS files is that all documentation seems to end when the credit agreement has been signed and the actual project work starts. Also this can perhaps be seen as logical in the sense that once the financier BITS has satisfied itself that the project is sound, it is up to the contracting parties to do the job. During the months preceding the final signing of the credit there is an avalanche of documents, mostly dealing with formalia regarding legal and financial matters, but also an abundance of covering letters and short notes. After that there is complete silence, a complete vacuum regarding documentation, which lasts until several years later when BITS sends a letter asking to receive a final report which it has been promised in the credit agreement. As concerns financial data the responsibility to follow-up project reporting rests with the Swedish bank issuing the credit.

Non compliance with reporting obligations. In most cases BITS has not received the reports which it is entitled to. An inventory of the BITS files at the start of this evaluation revealed that of the ten credits only in four cases had the contracting parties complied with the contractual obligation to send in a final report. In two of the the four cases the "reports" were however purely formalistic. One of them a one page letter, the other consisted of 10 lines stating basically that "everything was fine".

This apparent lack of discipline on the part of the contracting parties was again confirmed at the time of this evaluation. Then Sida sent letters to about 20

different contractors and borrowers reminding them of their obligation to send in a final report, and requesting them to do so within a four week period. The result of this letter campaign today, two months later, stands at a total of 1 (!) report having been sent in. Half a dozen of the letters were however politely answered with a message that a report would be forthcoming, but that the time allowed was too short.

What conclusions can we draw from the above shortcomings with respect to data availability in the BITS projects, other than the fact that this evaluation becomes hard pressed to find information from other sources, and that, obviously, some discipline when it comes to sending in reports may have been lacking?

Maybe not so much. Because we do not see anything wrong with the principle that it is the contracting parties who bear the responsibility for the project, not the (outside) financier BITS. If we accept this principle we can not expect that BITS should devote its time to follow up old projects and produce reports analyzing the projects from both social and economic aspects like e.g. is done in a typical SIDA project. What should however be possible to expect from a financier like BITS is that there is enough relevant information to base its credit decision on. No more, no less.

As will be argued in the chapters to follow, we have generally been impressed with the professionalism and the disciplined project preparation work by BITS´s officers. This work of course essentially consists of securing the information needed to safeguard the credit decision, and this is something which we have found nearly all through that the BITS officers have achieved. Exceptions to this are, however, the first two credit agreements made - that about purchase of trucks in 1981, and the other a purchase of teleprinters in 1983. For these two credits granted in the first couple of years of the existence of Sweden´s program of concessionary credits, the documentation is minimal. In the other projects however BITS has, through an active use of outside consultants/advisors, and by undertaking own travels, generally been able to secure enough information base for a credit decision.

In the following we will in some of the projects criticize BITS for not always having been able to secure enough information about a projects *economic viability*. But when this has occurred, it has not been because they have not tried. It has rather had to do with a lack of insight into the importance of economic analysis vs. financial analysis. In these cases there has, in our opinion, been an overly large interest in the project´s financial rate of return

when one should instead have concentrated mainly on the *economic* rate. The issue does however become somewhat blurred by the fact that in these cases there have also been a strong *political motive* present in the decision making, thus obscuring the analysis of a project´s justification on economic grounds. The shortcoming thus experienced by BITS to identify the long run economic consequences of some of the projects has then been due to other reasons than bad project preparation, namely political motives influencing the credit decision and perhaps a lack of real understanding of the difference between the concepts financial and economic rate of return.

In any case, whether or not we think it is appropriate and legitimate for BITS´ documentation to be quite limited, especially when it comes to the social aspects, we can conclude that the availability of needed information in the BITS files *is* very small in deed. Of the 12 aspects listed above to be evaluated, data are normally available only for five namely *implementation* , *results*, *procurement*, *repayment of credit* and *project preparation*. For half of the projects there is also some *financial* data available, and for a few of them there is *some,* but far from complete *economic* data. As for the rest - *environment*, *gender, poverty orientation, relevance/sustainability*, and three of the four Swedish development goals, *equality, independence and democracy.* - there is virtually no information at all. It must of course be noted that some of these aspects were not relevant - either in the form of explicit or implicit goals - in the projects.

This lack of available data could due to the limited time available not entirely be made up for by information gathered through interviews. Many of the aspects are therefore evaluated through attempts to apply a general (common sense) reasoning, rather than deducing from concrete data.

A word of caution. A word of caution is called for regarding the results of this evaluation.

Inherent in a so called *summary* evaluation, covering many different projects in a limited time, is that there is a risk that not all relevant information is brought to the fore, and that therefore erroneous or misleading conclusions regarding a project - either positive or negative - are made.

We have been confined largely to rely on existing documentation. This existing documentation must then be followed up by visits to plant sites and by interviews.

The total time, 35 man-days, allotted to this evaluation, was used such that 10 days were used for preparation and to go through the files of the donor agency BITS, 15 days for field visit to Zimbabwe, and finally 10 days for report writing.

In a normal situation where the files would contain at least some information regarding most of the aspects to be addressed by the evaluation, this time distribution would have been adequate. In this case however it turned out that the masses of filed documentation contained mostly formalia and little concrete information on the aspects that are important to development, namely poverty impact, gender, environment, economic viability, sustainability etc. Ideally one should then compensate this by increasing the time for visits to project sites and for interviews. This however was not possible.

The total number of relevant sites to visit - including plant sites as well as the agencies or ministries responsible - for our 10 credits were above 20. During the two weeks spent in Zimbabwe we managed to visit all but two. We have interviewed many people, and always asked for any available documentation. As far as we know we have been able to secure all existing major *written* information about the projects. We therefore believe that the picture given in this evaluation report is largely the correct one and that it is reasonably well balanced. But, of course, for the reasons stated here, we can have no assurance that this is always the case. And therefore it is our duty to issue this little reservation about our results and findings as reported here.

F I N D I N G S : Chapters III through IX

III DELIVERY OF 104 TRUCKS FROM SCANIA

1. Background

At the time of granting this credit the need for additional transport capacity in Zimbabwe was particularly large. This need was further accentuated by the bumper crop of maize which needed to be brought in from many parts of the

country. The trucks were purchased by a large number of buyers, among them private companies, local communities and government organizations. Many of the trucks were assumed to be involved in hauling in the large crop of maize as well as harvests of cotton and tobacco.

The trucks were imported by the private firm Tandem LTD and fitted with load carriers entirely manufactured with domestically produced steel sheets in Tandems own plant. During the last decade or so Tandem has imported a total of about 1200 Scania trucks. Of these 104 were under the BITS credit and approximately another 50 financed by a Swedish import support grant. Of these later imports a large part went to the government´s transporting company RMS, Road Motor Services, which is a part of the Zimbabwe National Railways

For this project there is virtually no written documentation. So, when evaluating the actual outcomes against what (we think) was planned, we are relying almost entirely on interviews.

2 . Logical framework

In the decision memorandum placed before the board of BITS three different objectives are explicitly mentioned with this credit:

(1) to satisfy an acute need of transport capacity

(2) to promote Swedish exports, and

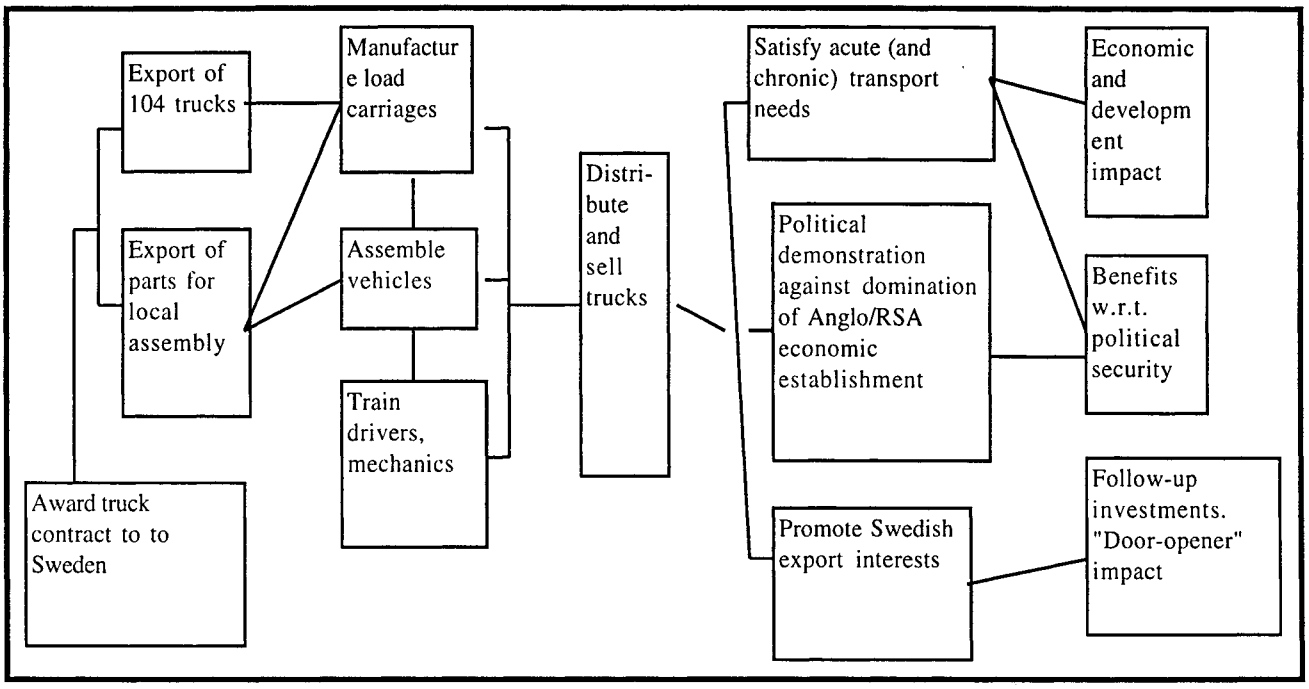
(3) for the government of Zimbabwe - through its own choice of supplier - to make a political demonstration of independence visavis the "the white establishment" in Zimbabwe.

While the first objective is one which is shared between the donor and the recipient alike, the second one is obviously a donor motive only, and the third one presumably only an objective on the recipient side. This political motive had - according to a confidential reports from the Swedish Embassy in Harare - explicitly and forcefully been stated by the Prime Minister.

In terms of a formal *logical framework model* we can construct the following causal relationships in this project:

Figure 1: Goal hierarchy for imports of Scania trucks

Inputs *Implementation* *Output* *Effects* *Impact*



3. *Implementation: Inputs/activities:*

According to all available sources the delivery of the trucks from Sweden and the building of the load carriers in the factory owned by the private importer Tandem using local steel made from local iron ore, all went smoothly and without any problems of major consequence. During the time of these first imports preparations were made for subsequent assembly of component Scania truck parts in the government owned assembly plant Willowdales Motors, which is an old assembly plant built in the 1960s by Ford. It is considered to be fairly sophisticated , and can be seen as having proven this by the largely problem-free assembly of hundreds of Scania trucks imported to Zimbabwe. Scania is still actively collaborating with this plant in providing training and other services.

The construction of the load carriers by Tandem LTD has been accomplished in spite of fairly frequent difficulties of securing from the domestic market rolled steel sheets of sufficient quality. This is of course due to the acute difficulties experienced by the government's steel company ZISCO, which is

the recipient of another of BITS development credit - to finance the modernization of the plant's rolling mills, also evaluated in this report.

4. Results

The recipient government's stated *political objective* was to give the contract of truck imports to a Swedish firm in order to demonstrate to the white establishment of Zimbabwe the government's strength and its independence from old colonial ties, as well as its wish to bring in new and neutral actors like Sweden into Zimbabwe's economic life. In today's situation, with an entirely changed security situation (South Africa free and a peaceful Mozambique), as well as an open and fairly liberal economy, this motive might seem hard to understand. But going back to 1981, when the government of newly independent Zimbabwe did not feel sure of the loyalty neither of its powerful southern neighbor, nor of its own white community, which still today commands a tremendous economic power, it can easily be seen as an entirely legitimate objective to be embraced by the Zimbabwean government, and for BITS to base its decision on.

Even if the decision was understandable, one may - with the benefit of hindsight - perhaps question the wisdom of basing the import of trucks on a political motive instead of purely an economic one. But it is outside the scope of this report to judge what could have happened if the government in the early nineteen-eighties had discarded political side motives in its economic decision making. We conclude that this objective may well have been a legitimate one, but that we are not able to assess whether or not this objective was attained.

Accomplishing the *country's transport needs* is an objective which was most likely achieved. Even though the trucks were not delivered until 1983, two years too late to help exporting the bumper export surplus of maize, which was stated as the most immediate motive of importing the trucks, our interviews have shown that there was plenty of other jobs for the trucks. One example is the transportation activity of RMS (Road Motor Services), then a branch of the National railways, but today a privately chartered company 100% owned by the government, which received Scania trucks in subsequent imports. From our interviews we have gathered that RMS is considered to be very well managed, and to do an efficient job. Their drivers were all trained by the importer Tandem LTD before the trucks were delivered. RMS maintains a

workshop for running repairs of the trucks, but routinely sends the trucks to Tandem for major repairs and overhauls.

The objective of *promoting Swedish business interests* is, as was shown in Chapter I above, a legitimate one in BITS credit operations. Zimbabwe was in the beginning of the 1980s coming out of a long isolation and was economically dominated by the business firms of its former colonial master. Swedish firms had little or no activities in the country. Promoting Swedish business interests in Zimbabwe was therefore an objective promising big potential rewards, and must at the time have seemed to be very relevant. We have therefore no basis to question this objective.

Whether this objective was actually achieved is not easy to prove. However, the opinions and impressions reported by many are that the subsidized export of 104 Scania trucks had in deed a "door opener" effect at least as regards future exports of Scania trucks and perhaps also for other Swedish goods. Since then Tandem has imported another 1100 Scania trucks. Of these reportedly only a few hundred have been aid financed whereas the rest have been purely commercial imports. We must then conclude that the objective of promoting Swedish exports interests in Zimbabwe was most likely achieved by enabling the first 104 trucks to be exported because of a subsidized credit.

5. Financial rate of return

Neither an estimate of the financial nor economic rate of return can be found in the archives of BITS/Sida. This is not surprising since in 1981 few- if any - projects financed by Swedish aid funds (including those of SIDA) were subjected to such analysis. Especially, when the project had an important political or social aspect it was not even thought proper to undertake such analysis. Nor has it been possible to find any financial or economic calculations on the recipient side.

Nevertheless we must raise the question of why this was not done. We have no data which would permit us to judge the financial profitability of the truck imports. But we can draw some very general conclusion regarding the profitability of one of the firms using Scania trucks, namely RMS. According to information provided us, RMS for the first time in 13 years showed a profit in 1984/85, which is the year following its purchase of the Scania trucks. We know that the trucks were used very intensively and that they have been kept in service for many years. The useful life of a truck in Zimbabwe is reported to

be up to 20 years or close to one million kilometers of use. So yearly depreciation cost becomes very small. RMS collected fees for its transport services, although the tariffs of the government agency RMS were regulated and lower than the rates applied by the private transporters.

6. Economic rate of return

The assessment of the economic profitability of importing these trucks depends entirely on the assumptions we make regarding the price of these vehicles. At the time of purchase the Swedish embassy in Harare reported that Japanese trucks with the same capacity could be purchased for less than half the cost of the Scania trucks - USD 11,000 compared to USD24,000 . This information was also presented uncontested in the BITS decision memo. But it seems to us strange that the price would have been so much higher when Scania has in fact over the years sold hundreds of the same trucks to Zimbabwe on purely commercial terms. There is nothing suggesting that the first batch of 104 trucks would have been priced much higher than subsequent deliveries. Theoretically this could have been possible because the first import was carried out with great urgency and there was no time to carry out a competitive procurement.

According to Scania the information from the Embassy is entirely false. A calculation of cost per tonne/kilometres will in Scania´s opinion show that the Scania trucks were in deed competitive. What is puzzling is that such an important matter was not discussed further by BITS and by others. If the price of the Swedish trucks was really that much more expensive than competing trucks it would have been a major scandal to approve of the credit.

As will be argued below the transportation activity carried out with the Swedish trucks brought many positive effects by enabling the marketization of crops which would otherwise not have been profitably marketed. Also, it will be argued that these transports may well have had a quite positive effect on the economic plight of women and of small peasants in general.

But nevertheless, these positive effects and impacts can *not* translate into a positive economic rate of return *if* in fact the Swedish trucks were more than twice as expensive as the Japanese competitor´s trucks, which by the Swedish Embassy at thte time were held to be of comparable quality as the Swedish trucks. Since the alleged price difference would then have been much larger than the grant element of the BITS credit it would in those circumstances

therefore have been a very bad deal for from an economic point of view. In terms of the ERR this can never be positive even if the benefits (id est the positive effects and impacts achieved by the trucks´ transportation activity) are assumed to be extremely high. This is so by definition because the *opportunity cost of capital* is that income which is generated by the best possible use of that capital. And since the benefit side of a transportation project using Japanese trucks would presumably be identical to one using Swedish ones, we would be forced to conclude that using Swedish trucks which are twice as expensive as Japanese can never produce a positive economic rate of return even if the Swedish trucks are subsidized with a 11 % grant element.

We must however attach a reservation to our conclusions here, because it has not been possible to confirm that the price difference was really that big on *comparable* trucks. The Embassy claims it was. However it then becomes difficult to explain how Scania, beside the BITS-financed export, could go on to export so many other trucks to Zimbabwe. Did it become competitive later, or were they competitively priced all along?

7. Environmental effects

In the absence of any data showing exhaust emission levels or other environmental ill-effects in truck transport versus e.g. railways, we accept as basis for our assessment that truck transportation has been found to be an economically efficient mode of transport for Zimbabwe. It therefore comes down to comparing different types of trucks.

We are told that Scania trucks have a proven record of being more environment friendly than many of its competitors in that it has lower levels of emission. The contrast to the fleet of trucks operated by RMS before the purchase of the Scania trucks is said to be dramatic. Whereas the older trucks were constantly embedded in clouds of foul-smelling exhaust fumes, the new trucks are said to have attracted attention in the street because no one could see the exhaust fumes.

So, we venture to conclude that the purchase of the Swedish trucks did in fact contribute to the air becoming somewhat cleaner. This is then assuming that there was a relative substitution out of the old high-polluting trucks as the new ones were introduced.

8. Gender effects

The question whether the delivery of 100 trucks would have any effect on gender equality - either negative or positive - was not considered by BITS. This is quite normal for the early 1980s. Also, even until recently it was considered not necessary to check for gender effects in projects considered to be purely of "technical" nature. In any case, in a production oriented project as trucking, one would normally not expect any particular gender effects.

In actual fact, however, the transport activity carried out by the Scania trucks did and still does have a substantial gender effect. This is so because the trucks are to a large extent engaged in transporting cotton and tobacco from the country side to be sold in various business centres, and the workers harvesting these crops are predominantly - up to 90 % of the work force - women. Therefore, without being able in this report to explore further the economic and social position of women in and outside of the households, we venture the general statement that the transport activity made possible by the Scania trucks likely does have a general beneficial effect on the situation of women. At least, we can clearly say that the truck delivery cannot be said to have had any negative effect on gender equality.

9. Poverty orientation

Although the decision by BITS to subsidize the delivery of trucks obviously did not have any poverty orientation purpose, we can in an indirect way nevertheless discern a certain poverty orientation in the use of these trucks.

This is so because RMS, being a state operation, was mandated to go into the outlying areas often neglected by the private transporters. The Kodoma area is a case in point. Therefore the RMS transport activity can to certain extent be seen as having also a "social mission" by keeping an open line to more remote areas of the country.

Another poverty "profile" of these trucks can be deduced from the fact that many of the Scania trucks are said to have been very active in transporting food relief shipments in the very serious drought of 1992/93, and again in 1995.

10. Relevance and Sustainability

We find it likely that transportation sector studies of Zimbabwe will show that an optimal overall transport solution for the country - given its present state of development - includes a role for trucks to take care of a large share of rural transport. So there should be no doubt that the project is *relevant.*

Also, as regards *sustainability* there does not seem to be much doubt. Organized goods transportation by trucking companies have existed for many decades in Zimbabwe, and there is a well developed infrastructure including the mechanical servicing and repair of trucks, as well as training of drivers.

Tandem LTD has, based on previous bad experiences, today a routine of always including spare parts up to a value of 10 % of the contract sum. This was a necessity all through the 1980s when foreign exchange was hard to come by, but has proved to be an efficient system even today. Tandem also has a long established and apparently well functioning servicing and repair cooperation with the RMS. In addition, RMS maintains its own repair workshop to take care of all running needs. In the last year or so 15 of the RMS trucks have been sent in for total rebuilding at a cost of approximately ZD 250,000 a piece, a cost which RMS is able to cover out of its business surplus.

That the servicing and repair task is being taken seriously is perhaps evidenced by the fact that many of the trucks have now logged in upwards of 600,000 kilometers, and are still running.

As for driver instruction Tandem claims to have a policy of "not letting a truck out of its compound before they have had a chance to train the future driver of that truck". Some of Tandem´s clients were also brought to Sweden for training.

Another factor positively influencing the sustainability of truck transport is the existence of a truck assembly plant in the country which is apparently performing well, and also the fact that there are small firms, like e.g. Tandem, which are able to build their own load carriers using domestic steel made out of domestic iron ore.

All of this leads us to believe that this project, which consists of importing, assemblying, and distributing the Scania trucks, is quite sustainable.

11. Sweden's overall development goals

No reference is made in this project to the overall goals of Sweden's development cooperation, at least not explicitly. Implicitly, however it is fairly clear however that it is mainly the *economic growth o*bjective and partly the *economic and political independence* objective that are the relevant ones.

Even though the purchase of trucks were not economically profitable because of their high price as compared to Japanese trucks, they were nevertheless put to good economic use, so we can conclude that the objective of economic growth was satisfied.

Also, we can safely assume that anything which increased the country's own transport capacity must by definition mean an increased economic independence for that country. So also the goal of economic independence has been served in this project.

The goal of economic and social equality was not intended in this project. However, in accordance with our assessment above regarding gender effects and possible poverty orientation, we must conclude that also the goal of equality may have been at least somewhat served in this project.

The respective goals of democratic development and environmental quality can not be seen as relevant in this project. But based on the reasoning above we can at least assume that those two goals have not been counteracted by the project.

12. Procurement

Since the choice of which trucks to import was mainly a political decision exercised by the country's prime minister, it would seem to be of secondary interest to analyze how the tendering and procurement was carried out. The importation of the first batch of 104 trucks happened with a great sense of urgency and no competitive bidding procedure could be applied. However, we are told that various bid offers were evaluated, and that the importers received the brand and model of truck which they preferred - for technical performance. But we also know that the Scania trucks, as was discussed above, were said to be about twice as expensive as the Japanese competitor. So if this is true we must conclude that the procurement did not live up to international standards of competitive bidding.

13. Repayment of credit

The credit agreement was between the RAL Merchant bank in Zimbabwe and a Swedish bank. Even after interviewing all relevant parties in Zimbabwe, we have so far not been able to ascertain which institution in Zimbabwe was responsible for the loan. Nor do we know what type of on-lending agreement - if any - there was between the Ministry (or the central Bank) and the importer Tandem LTD. BITS own records are of no help. In one document the RAL Merchant Bank LTD is named as the party having signed the credit agreement with the Swedish bank. In a different document the Central Bank of Zimbabwe is named.

As for who was the beneficiary of the 11 % grant element of the BITS credit, the closest we have been able to come is that, in the opinion of the RMS, whose general manager we interviewed, the beneficiary "must have been the ministry".

14. Project preparation

The decision to finance the export of Scania trucks to Zimbabwe was made based on a minimum of documentation. The volume of total documentation, including simple letters and faxes, is less than one centimeter thick. Compared to the huge volume of documents in more recent projects this may of course seem surprising, but there are several explanations for this. *Firstly*, in the first years after independence the development cooperation was influenced by the threatening geopolitical situation, and everything about Zimbabwe often had to be done with a big urgency. *Secondly*, BITS had just started with its scheme of concessionary credits and had perhaps not yet established all its future routines. *Thirdly* and perhaps most importantly, the delivery of trucks was perhaps seen by BITS not as a project but as an importation similar to that taking place under Sweden's import support program. Imports under the import support program are normally *not* subjected to any analysis at all. So perhaps influenced by this program (which by the way did pay for the importation of a about 50 of those same Scania trucks to Zimbabwe) BITS did not choose to subject its decision to finance to usual analysis.

Given the fact that no proper analysis did take place, we do however find that the 5-page decision memo on which BITS based its decision, does account for the most important factors that are relevant. The information apparently came mainly from simple correspondence with the Swedish Embassy in Harare.

Especially impressive is that the memo openly and in a balanced fashion accounts for negative as well as positive aspects. It emphatically points out that Japanese trucks of the same capacity can be procured for less than half the price of the Scania trucks, and concludes that if BITS decides to subsidize a Swedish credit for the export of these trucks, *this subsidy would in effect accrue to the Swedish exporter and not to Zimbabwe.* The memo goes on to weigh the development interests of the recipient country against those of the Swedish exporter, and in the end comes out to recommend the BITS board to *reject* the Scania credit proposal. So the decision by the BITS board to approve the subsidized credit was taken with all the relevant information available, and against management's recommendation.

Our conclusion is that the project preparation by BITS - although not very thorough and penetrating - was quite good. From the time BITS decision was taken in July 1981 two full years passed before the truck component parts were finally started to be delivered in 1983. The only explanation for this which we have been able to find is that bureaucracy for import permits etc. in those days is said to have been quite time-consuming. And also that the delivery time from Sweden was up to eight months after placing the order.

IV IMPORTATION AND DISTRIBUTION OF 600 TELEPRINTERS

1. Background

There are mainly two reasons why there was in the 1980s - and still is today, notwithstanding the advent of faxes and internet - a large demand for teleprinters in Zimbabwe.

Firstly, teleprinters are used to send telexes, and a telex - as opposed to a fax - is a *legal* document. That is one reason why in particular many firms still today choose to operate a teleprinting machine.

Secondly, there is the problem of a very long waiting list for getting a telephone installed and connected in Zimbabwe. The waiting time is today said to be a few years (!) Therefore, according to information received from PTC, many frustrated queuers for telephone services decided to become subscribers of PTC´s telex services.

Thirdly, another factor is said to be the sometimes bad quality of telephone communications, especially in rural areas.

The delivery of the Swedish financed teleprinters took place in 1982. It consisted of 400 units of Phillips PACT 220 S/C, and 200 units of Phillips PACT 220 D/C. All the machines were produced by Phillips Sweden in Järfälla. The BITS credit, amounting to SEK 8.1 million, was 7 years with no grace period. Interest rate charged by BITS was 1.25 % resulting in an overall grant element according to DAC norms of 29.5 %.

The Post and Telecommunications Corporation, PTC is a parastatal organization under the Ministry of Information, Posts and Telecommunications. PTC holds a monopoly position w.r.t. all its services. Telephone density in Zimbabwe is quite high by Sub-Saharan Africa standards (1,4 direct exchange lines per 100 people), but it is considered inadequate for the level and growth of economic activity in Zimbabwe.

The telecommunications network has suffered from under-investment ever since the sanction years against Rhodesia in the 1960´s. The investments which has taken place in recent years have been mainly to replace obsolete equipment and little expansion was done. Therefore, the need for new investment is very high. The quality of the existing network and service is very poor. This, according to an analysis performed by the World Bank, is due to obsolete equipment and inadequate maintenance caused by poor organization and shortages of capital and technically skilled manpower. In addition, tariffs are set at artificially low levels and are not adjusted regularly to reflect cost changes. In order to improve telecommunication links, in the Bank´s view, policies need to be designed to promote the operational efficiency and financial viability of the PTC, and to facilitate private sector investment in this market.

The total telex network capacity today stands at over 4000 customers with one exchange in Harare and telex concentrators in two other cities. The number of connected subscribers are almost 3000 with an additional waiting list of 450.

Apart from the supply of 600 teleprinters in 1983, Sweden has also been involved in Zimbabwe's telecommunications sector through other channels e.g.

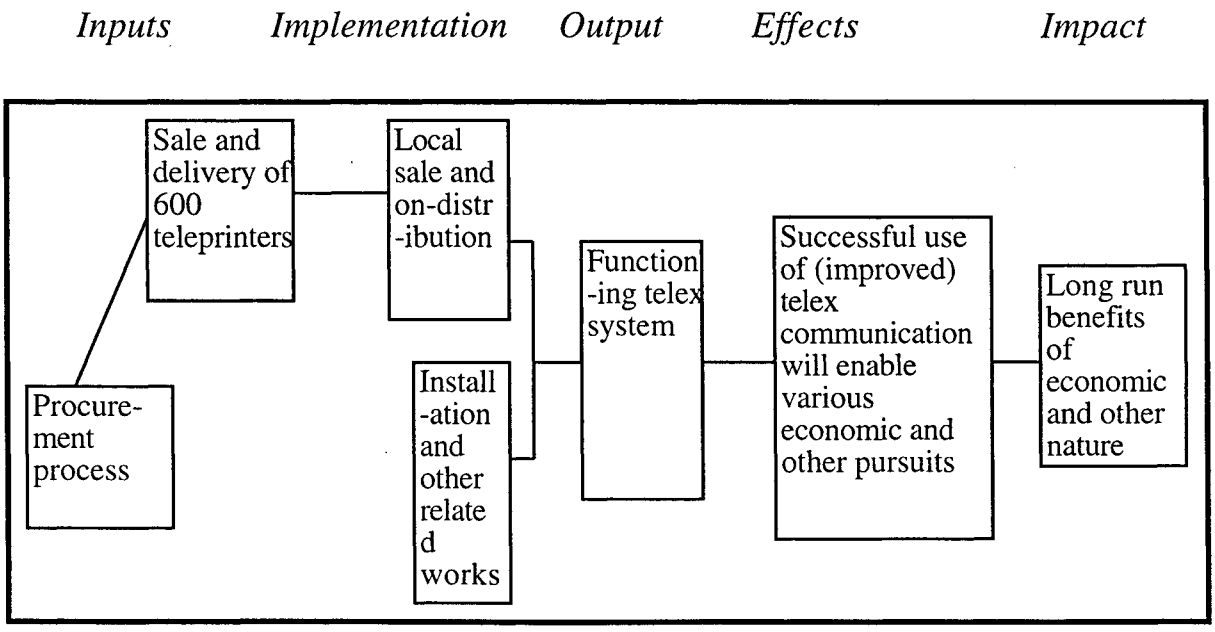
through the African Development Bank, SADCC as well as in co-financing with other donors. In 1995 PTC again turned to BITS with a request to finance its technical assistance needs on a grant basis. Due to the fact that PTC as well as its customers are reported as being very satisfied with the product, Phillips subsequently received several more inquiries from PTC about additional deliveries, for which Phillips also sought additional BITS financing. No such concessionary financing was however received. This, according to our information, also precluded further sales of teleprinters from Sweden to Zimbabwe. The availability of a concessionary credit was seen as a must to deliver to foreign exchange starved Zimbabwe in the 1980´s.

2. *Goal hierarchy/the logical framework*

In the very scant documentation surrounding this credit there is no mention anywhere of which - if any - were the objectives hoped to be achieved with this credit. No decision memorandum exists. The little information we have we can derive from letters sent by PTC, the Swedish Embassy in Harare and by Phillips to BITS in 1985.

Based on the information contained in these (2-3 page letters) we can describe the goal hierarchy of this "project" as follows:

Figure 2: Goal hierarchy for the importation of teleprinters



3. Implementation: input, activities

The 600 Phillips teleprinters - PACT 220, both single and double current machines - were installed successfully in 1983, and were according to our interviews favorably received by both PTC and by its subscribers. The operating experiences are reported to be quite good. Especially the point has been made that the PACT machines are very simple to operate and that they are relatively tolerant w.r.t. the disturbances and amplitude variations which are so frequent in Zimbabwe.

The original order of spares and test/repair equipment turned out to be inadequate however. This led to maintenance problems. But service from the local Phillips agent was said to have been good. Some subscribers complained that the 16,000 character (K) storage memory was not sufficient, which led PTC to conclude that they would buy 32 K in the future.

Another problem was that the lightning protection proved inadequate for high altitude - Harare is situated on 1500 m elevation - tropical climates which have a high incidence lightning. This caused about 10 % of the machines to be damaged. PTC later developed an external lightning protection device to overcome this problem. Static electricity was another problem which caused damage to some machines. But adequate training of the operators has subsequently eliminated this problem.

The delivery of the PACT teleprinters allowed PTC to phase out many of the old mechanical *T100 Siemens* teleprinters that were still in use.

Training was provided by the Phillips agent in Harare and repairs were made both by the Phillips personnel as well as by PTC´s own technicians. The training of technicians for installation and for maintenance was made in two stages. First there were three different five day long field courses, each with about twelve technicians participating. One year later, in February 1984, there was a more advanced workshop course over three weeks for six technicians.

4. Results: Outputs, effects, impact

The PACT machines delivered by Philips have by PTC subscribers been reported to be very reliable and easy to use, which prompted PTC to place additional orders for Phillips teleprinters. In October 1983 PTC commissioned

a new telex exchange which permitted the number of PTC´s telex subscribers to grow from 1400 to 2200. The telex trunk network was increased substantially to provide telex services to smaller urban centres and various rural central points. Further capacity expansions were undertaken to cater to the fast growing demand for telex services from especially rural areas.

The major bottleneck of the system all through the 1980s is reported to have been the lack of teleprinters. All other facilities for telex services - like trunk network, switching points and cable - were available. The waiting list to be able to lease a teleprinter and become a subscriber to PTC´s telex services has always been long. The target of PTC in the middle 80s was to install one teleprinter in each of Zimbabwe's approximately 80 rural post offices. In 1996 there is still a long waiting list to subscribe to telex services. but the situation seems to have been reversed as to the *reason* for the waiting list. Today the main bottleneck is reported to be lack of lack of cable to connect the potential subscriber to the local exchange. The waiting list was almost 900 in July 1995, but half of the clients on the waiting list cancelled their applications. Today there are 480 customers waiting to lease a telex machine from PTC.

Of the 600 machines delivered under the BITS credit in 1983,

302 are in active use today
178 are in PTC´s store
22 are in the workshop being repaired, and
98 have been written off (destroyed or stolen)

The machines in store can only be offered to customers in Harare because of the current lack of installed cables in rural areas.

5. Financial rate of return

According to official data PTC has managed to show financial profitability for the past 5 years. The reputable accounting firm Coopers and Lybrand have investigated PTC and given them high marks for efficiency. PTC is also assumed to be creditworthy enough to raise loans in its own name in the international capital market.

PTC´s representatives claim that the PACT machine is more profitable than PTC´s other machines, due to it being less complicated, with cheaper spare parts and therefore also cheaper to repair. We have no data to judge whether

PTC´s investment in buying the 600 Phillips teleprinters was financially profitable or not. PTC says it *was* with the tariff structure prevailing then.

The 29 % grant element of the BITS credit accrued, according to information given to us by PTC, directly and only to PTC. It would therefore be surprising if it could not make a financial profit on the 600 teleprinters.

6. *Economic rate of return*

We have no data to base any assessment of whether the SEK 9 million investment in 600 teleprinters was also *economically* profitable for Zimbabwe. But in general terms we are inclined to think that the teleprinters should have been a good investment for the country.

Empirical studies from other parts of the world suggest that there is a strong relationship between availability of infrastructure, such as e.g. telecommunications on the one hand, and growth of the national product on the other. Recent data for Africa show that each 1 per cent increase in GDP per capita was associated with a 1.7 % increase in telecommunications investment.

Our belief that the teleprinters were econmically profitable for the country can be said to be based on mainly two assumptions: *Firstly*, that the subscribers did pay a real fee for the leasing of the telex as well as for the traffic. So we can assume that the subscribers had solid (economic) motives to subscribe to and use the telex machines. *Secondly*, we have the impression that PTC is at least reasonably efficient and that not too much resources have been wasted. PTC is today not subsidized by the state budget, at least not in a direct way, and according to available statistics PTC is one of very few parastatals which is not loosing money.

If these two assumptions turn out to be valid it is quite probable that buying (competitively priced) teleprinters in an economic environment as that of Zimbabwe would show a positive economic rate of return. In the absence of any evidence to the contrary, we do assume that the Phillips teleprinters were more or less competitively priced. In the letter from the Swedish Embassy in Harare to BITS, which we referred to above, it is said that the sale could not have taken place without the concessionary credit having been available. We interpret that to imply that there were competing offers of concessionary credits available to Zimbabwe, not that the Phillips telex machines needed the backing of a soft credit because they in themselves were too expensive.

7. Environmental effects

The question of environmental effects would not seem to be relevant in the case of operating teleprinters.

8. Gender

The purchase and operation of teleprinters has, in our assessment, no implication for gender issues.

9. Poverty orientation

Nor do we see the teleprinter purchase to have any logical implication w.r.t the question of poverty orientation other than in the very long run in the very general sense that anything which can contribute to "opening up" the country side should (hopefully) in the long run have some beneficial effects on the poorer groups by emancipating them into the economy.

10. Relevance/sustainability

Teleprinters installed and used by fee-paying customers certainly seem to be a *relevant* investment. If it is also economically viable, which we found it to be, and if it is properly maintained, as PTC seems to be doing, then we can also conclude that the investment will probably be *sustainable* .

11. Sweden's overall development goals

In general terms one could say that investing in teleprinters contributes to achieving the objective of *economic growth,* while not having any identifiable relation to the other goals. We can however say that it is *consistent* with the other goals of Sweden's development cooperation.

12. Procurement

We have hardly any information on how the teleprinters were procured, but are told by PTC that they looked also at other suppliers, and that the procurement process went smoothly without any problems. In BITS´ decision protocol is stated that the Phillips offer is given under international

competition, but no further information is given. Phillips Sweden informed us that it has no information at all on this project. The people who were in charge then have all left as pensioners, and the documentation was thrown out when the company rebuilt its premises some years ago.

13. Repayment of credits

The PTC was itself the contracting party to the loan agreement with the Swedish SE-banken, and it was PTC that also reaped the whole benefit of the 29 % grant element. There was thus no on-lending agreement internally within the government. PTC was itself responsible for repaying the credit to the Swedish bank. This has been done entirely according to schedule, the last installment having been paid in July 1990.

14. Project preparation

Donor. This is one of the early credits, just a few years after the start of the Swedish concessionary credit scheme. And we assume that project preparation routines were not yet in place, for the documentation regarding this credit is almost non-existent. The thickness of the total collection of documents in the BITS file is less than one half cm (!) There is no decision memo, only a protocol from the board meeting where in four lines is noted that a credit to Zimbabwe for the purchase of teleprinters has been granted.

Apart from this protocol notation, there is only half a dozen papers regarding this credit with BITS name on. And these are all short letters (from 5 to 10 lines) either informing the Embassy or somebody else about the credit decision, or a request to the Embassy and the supplier Phillips to send in a follow up report. In addition we have found two short faxes.

BITS´ method of work was to let the contracting parties do all the work while its role was limited to facilitating the deal by granting a credit. So there is of course a logic in there being very little documentation. But this case seems to be extreme. Until 1985, i e three years after the teleprinters were delivered, when both PTC and Phillips as well as the Swedish Embassy in Harare were all asked by BITS to send in a follow-up report, there was in the BITS file virtually no information whatsoever about the uses of the credit. We do not know whether this was so by design or purpose, or whether it was a mistake explainable by a big rush or by the reporting routines not yet functioning, or

perhaps whether it was due to the fact that it was simply a delivery of equipment with no investment character about it.

Recipient. The recipient of the credit, the PTC seems to have good order in its files, and were able to supply to us most of the information needed, except for cost calculations showing financial and economic rate of return. And there is nothing which would suggest that both project preparation as well as implementation on their side has not been essentially problem-free.

Contractor Our interviews have not revealed that there would have been any problems on the contractor side. The cooperation between contractor and client seems to have been smooth all through the project preparation as well as implementation phases. Also, contacts between the local Phillips agent in Harare and PTC are reported to have been very good. Phillips Sweden should, of course be criticized for not having any documentation - either written or oral - available, even if 13 years have passed since the delivery.

V UPGRADING OF ZIMBABWE'S MAIN TRANSMISSION CONTROL CENTRES

1. Background

Although we here have three different projects at three different times in two different locations, we will nevertheless treat them together as one "project" in this report. The contractor is in all three cases ABB Network Control. Projects 1 and 2 are almost identical, while project 3 is an upgrade of project 1. Moreover, we know, after having visited the power plants, that the experience with regard to both implementation and outcome were in deed very similar. All this together makes it most convenient to treat all three credits together as one project.

The first project, the so called *National Control Centre,* comprised a complete computer based control system for supervision of the country's power production and transmission grid, as well as Harares distribution network. In all, 100 substations are supervised under the system covering the entire country (except the Bulewayo area, which was to be handled in a

separate project four years later). Another 10 sub-stations were added a few years later. Previously the stations were mainly controlled and monitored locally. The smaller stations were not manned, which meant long interruptions in the power transmission in case of faults. The total investment cost of the first project was app. SEK 130 million of which decided to finance MSEK 92.

One of the main reasons why there was a need for a modern, completely computerized control system is that Zimbabwe's power system had been and was being linked to its neighboring countries South Africa, Mozambique, Zambia and Botswana through four interconnector stations. To handle a system which allows tapping many sources of power - hydro or thermal, imported or domestic - in an optimal fashion depending on the relative load factors at various times and periods, it is necessary to have an advanced computerized control system.

Zimbabwe's power system consists of two major power plants - one hydroelectric station in Kariba and one thermal (coal based) in Hwange. In addition there are the three smaller old thermal, coal-driven, plants in Harare, Bulawayo and Munyati. Total power capacity in Zimbabwe today stands at 1.8 gigawatts. The national 330kV transmission grid is connected directly to the two major power stations and to the nets for 132 kV and 88 kV. Most of the transmission system existing in Zimbabwe today has been in use since the 1950s and 60s. In addition Zimbabwe is connected to the power systems of the neighboring countries through the four interconnector stations.

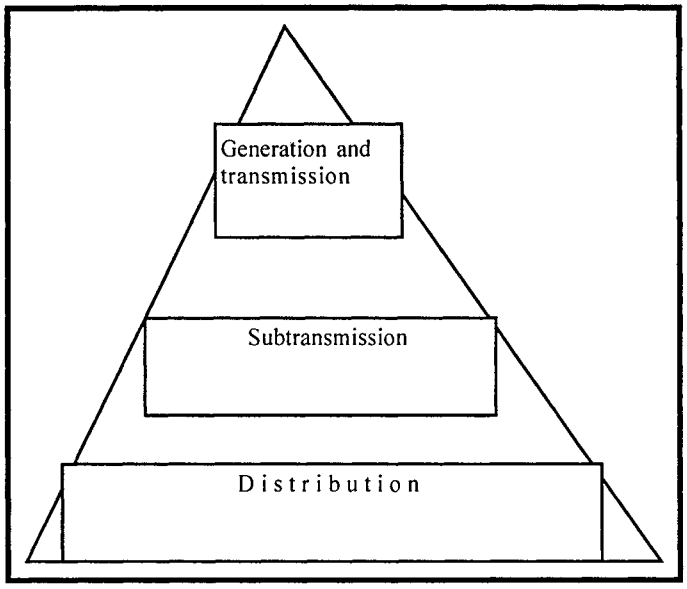
The total available capacity is shown in table 7.

Table 7 : Total power supply (September 1995)

	Active power, MW
Kariba South	350
Hwange 1	170
Harare	50
Munyati	22
Bulawayo	30
Interconnector South	332
Interconnector Zambia	261
Interconnector	0
Total	1383

In the midst of the first BITS project there was a major reorganization in Zimbabwe's power administration and *ZESA* (Zimbabwe Electricity Supply Authority) was formed. Today the logical structure of the country's control system is according to the pyramid in figure 3.

Figure 3: Logical structure of control system



Concurrently with the BITS financed projects there has been a major technical assistance involvement by the World Bank in the power sector. In 1988 a USD 224 program (of which USD 44 was financed by the WB) was approved with the general purposes of:

- improving the efficiency of reliability of power supply

- enhancing development of the power sector by reorganization, financing expatriate experts and analyzing policy and investment priorities, and

- strengthening ZESA's institutional capacity

Broadly speaking one might see the BITS financed modernization projects as components of this wider World Bank assisted program.

BITS' decision to support the project with a SEK 91,8 million credit was also seconded by SIDA, who wrote that

"electricity distribution is not one of the sectors to be prioritized by Sweden's aid....; on the other hand the supply of energy is *generally speaking* a priority sector for aid according to statements made by Swedish government representatives;.... Therefore SIDA approves that a concessionary credit be granted."

The SEK 91.8 million credit agreement for the first project was between Swedish SE-Banken and CAPCO, the forerunner of ZESA. The credit period was 10 years, with no grace period and interest rate 0 %. The grant element of this concessionary credit was reported to DAC as 31 %.

Bulawayo. When planning for the national control centre in Harare, it was originally thought to include also Bulawayo's needs. No convincing reason has been given to us exactly why this intention was not followed through. BITS in its decision document for the Bulawayo credit states that the reason was partly because of the long distance (400 km) between the two cities. This does not sound to us to be a very convincing reason. But maybe there is nothing wrong with doing the projects separately - although one could think that there would have been some economies of scale to do them both at once.

The project in Bulawayo, financed by a BITS credit of SEK 32 million, was in its component parts almost identical to what had been done in Harare four years previously. The same hardware as well as soft-ware were installed. In Bulawayo there is only one control room - identical to control room number 3 in Harare.

One difference between the projects in the two cities was that in Bulawayo ZESA found a local manufacturer to supply the wooden cabinets, desks and other furniture for the control room. These were skillfully copied after the furniture which was imported from Sweden for the Harare control room, and produced at a much lower cost than the imported furniture.

The new transmission control system planned for Bulawayo had from the start been the same as that which had been installed in Harare. After the formation of ZESA and its taking over responsibility from the Bulawayo authority, BMED, the degree of standardization was made even greater.

During the time of implementation of this project not only was the responsible authority changed on the client's side - from BMED to ZESA, but the same

happened on the contractor's side when ASEA, who had been awarded the contract, merged with its former competitor Brown Boveri to become ABB.

Upgrade 1993/94 of the computerization introduced in 1983 of the national control centre in Harare. The third credit was for the upgrading of the computerization done in Harare under the first BITS credit. The upgrade financing was decided by BITS in principle already in 1987, but the work started only in 1993. It consisted in replacing the SINDAG 5 computer hardware as well as software with a SPIDER system based on the most up to date computer technology. Also, one of the computor's printers was to be replaced.

Although the evaluation made by BITS in 1986 of the first project stated that "we estimate the life for this control system to be at least 15 years", our interviews have convinced us that, given today's extremely rapid technological advances in the computer industry, where there is today said to be only 2-3 years between "generations" of computers, there is nothing strange about having to change both hardware and software after 8 years of usage.

The main objective of the upgrade was to provide a reliable and efficient data system for monitoring and controlling Zimbabwe's power network including the lines connecting Zimbabwe to the neighboring countries.

The upgrade had been made necessary by the insufficient data processing capabilities and long response times of the by now outdated hardware and software technology used in the SINDAC 5 system installed by ASEA under the first credit 8. These shortcomings in technology had on some occasions led to a complete loss of control over the power system during some heavy disturbances which had occurred. The shortcomings were naturally also made much more serious because of the large network expansion which had taken place in the meantime. The upgrade proposal was appraised - and confirmed - in a study by Swedish consulting firm Sydkraft commissioned by BITS in August 1990.

The need to upgrade was not seen to be applicable to the Bulawayo control centre. But this was apparently not due to the fact that Bulawayos system had been installed as late as 1988. The reason was rather that it is a much smaller system and therefore could be adequately handled by the (older) SINDAC system.

The upgrade work had been defined and decided already in 1989, but a contract (with ASEA) to do the job was signed only three years later. The cause of this delay was, according to an evaluation carried out by ZESA itself, that *"ZESA was still undecided due to lack of knowledge of the importance of the Control centre"*.

Eventually ZESA acquired this insight. In the words of the evaluation: *"The importance, however became obvious due to the long power restoration times after system blackouts, which had become very frequent"*.

Another reason for the delay is reported to be that ZESA was trying to get the project funded by SADDC as a 100 % grant. This possibility however was denied by SADDC, apparently because SADDC felt that the work had already been started on the basis of a Swedish concessionary credit, and since the project involved "proprietary equipment" they felt that it should remain a Swedish responsibility.

After the contract for the upgrade was signed with ABB, another delay of 9 months passed before ZESA accepted the credit agreement. The reason for this delay is stated by the ZESA evaluation to be:

"...there was lack of commitment to the project from ZESA´s side. The reason for this could not be established".

The components of the MSEK 26,7 upgrade program were

new hardware	4
software	10.7
installation	3.2
spare parts	6.7
training	1.1

2. goal hierarchy/the logical framework

The main objectives of the three projects were:

National control centre (NCC) in Harare:

-to improve supervision and control over the country's power generation and transmission system including interconnections with other countries

The regional control centre in Bulawayo:

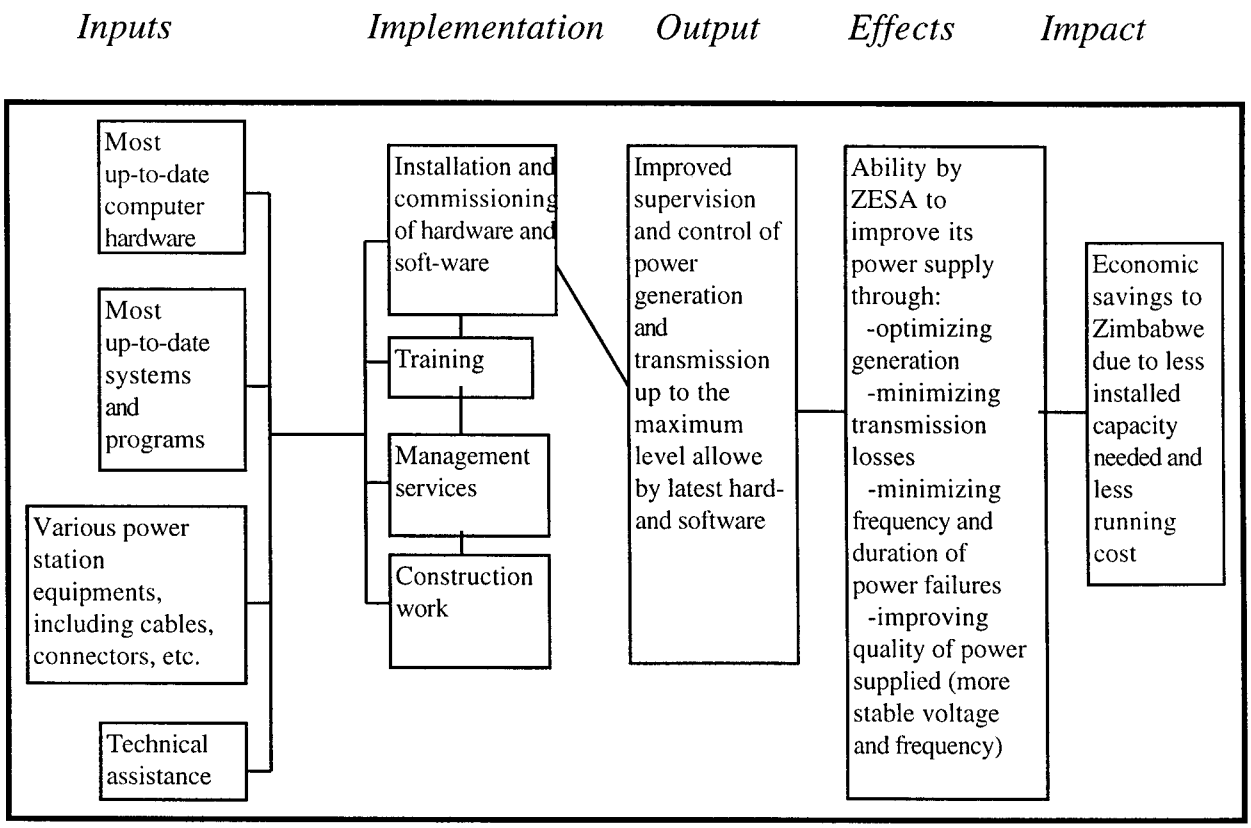
- to improve power supply in Bulawayo by optimizing production, decrease transmission losses and minimize frequency and duration of power failures

The upgrade of the NCC:

-to achieve further improvements in reliability and efficiency by upgrading to the latest available technology w.r.t. computer hardware and software

The goals of all three projects can be amalgamated into one common goal hierarchy:

Figure 4: Goal hierarchy for the National control Centre projects



Inputs:

- Most up to date computer hardware
- Most up to date systems and programs
- Various power station equipment, including cables, connectors etc.
- Technical assistance

Activities:

- installation and commissioning of hardware and software
- training
- technical assistance
- construction work

Output:

-Improved supervision and control of power generation and transmission up to the maximum level allowed by most up-to-date hard and software.

Effect:

-Ability by ZESA to improve its power supply through:

- optimizing generation
- minimizing transmission losses
- minimizing frequency and duration of power failures
- improving quality of power supplied (more stable voltage and frequency)

-Impact:

-Economic savings to Zimbabwe due to less installed capacity needed and less running cost

3. Implementation: input, activities

No evaluation has been done by BITS nor - to our knowledge - by any other party regarding the Bulawayo project. All involved parties are however of the opinion that the two projects are the same not only in their contents, but also - more importantly - largely identical in the way implementation was carried out as well as in their respective outcomes. Our visits to the project site, as well as

interviews conducted, have not led us to any insight which goes against this opinion. Therefore, we will in the following present and discuss the implementation and the outcome of the two projects together.

The likeness of the two projects - although separated by four years in time - was also apparently the reason why BITS did not think an evaluation of ASEAS´s contract proposal was needed in the Bulawayo case.

The situation, as it evolved in these projects, is that ABB was contracted (in the third project) to improve or upgrade the same work it was asked to do in the first project. This naturally raises the question whether ABB had in the first round really done the best possible job and used the best available technology. According to ZESA´s project engineer there is no doubt that ABB *had* used the best and most up-to-date technology also in the first project. It was simply so that innovations having taken place in computer hardware as well as software, and also the dramatic increase of the country's distribution net, both led to the earlier system having become outdated.

A rather thorough evaluation, commissioned by SIDA, was carried out in late 1986 of the first project. ZESA was asked by BITS to comment upon this evaluation and stated that in their opinion the report was "objective and accurate".

According to this evaluation the project had been successfully carried out within the very short period of 30 months. The supplier ASEA had fulfilled its obligations in a "proper way", and the project cooperation with the different authorities in Zimbabwe had been efficient and smooth. A well functioning system was handed over as planned in august 1985. Both the customer ZESA and the contractor seem to agree that the implementation was in deed efficient thus allowing for a very short delivery time.

However, it is pointed out that various application functions would not be possible to put into practical use for another two to three years. This was due to the fact that the time needed for adaptation of local equipment in the substations had been underestimated in the project planning. In our opinion such a mismatch in project implementation must be seen as an important deficiency, but one which in this case apparently can not be blamed on the contractor ABB.

The evaluators also point out that it would have been sufficient to build only two control rooms (one for the national grid and one for the Harare distribution net) instead of the three that were built. By saving on needed

building space as well as on fewer shift working operators one could, according to this evaluation, thereby have saved about 3-4 % of the total investment cost. If this is accurate, we must see this as an important failure of the project. No one has however suggested that the responsibility for this failure could be laid at the contractor ASEA.

The evaluation found that the system fulfills international requirement of modern control systems, and that security against unauthorized actions was very good. Some disturbances were taking place in the transmission grid, but this had nothing to do with the BITS financed project.

A point brought up by the Swedish evaluation needs to be clarified: It is stated that some functions were left out of the computer system installed, namely network analysis, load forecast and automatic production optimization. "Thus we estimate that ASEA´s contract sum could be reduced by about 6%". It is not clear to us whether such a reduction was in fact done by ASEA or not.

Training was seen as an important element of the project. Two local technicians were trained in soft ware systems for eleven months in Västerås, and two for three months. Also, three persons were trained for four months in hard ware technology. According to our information no systematic follow up or evaluation has been done of the training program. In interviews it has however generally been described as adequate or successful.

The evaluation contracted by BITS in 1985 also found that the hardware training seems to have been adequate and that it was later continued internally within ZESA. The staff had been able to correct faults that occurred. It is also pointed out that a very extensive stock of spare parts exists. Hence faulty parts could be rapidly exchanged and then repaired afterwards.

Our own visit to the project sights confirmed the impression that everything seemed to function well. The engineers on duty seemed confident in their handling of the system, and knowledgeable about its capabilities. They could easily manage the report generation menus offered by the computer system. The physical aspect of the installations seemed to be in the best order at our unannounced visit. All the furniture installed 8 years ago was still in practically new condition.

The ZESA representative told us that during the one year warrantee period there had only been a few minor complaints, and these had been swiftly remedied by the contractor.

All the engineers of the control centres are locally hired and have all been educated at universities and institutes in Zimbabwe. Although government pay is low in comparison with the private sector, ZESA claims to have had no problems of filling the posts with competent people. We have however learnt that ZESA´s pay-scale is somewhat above that of other parastatals.

Upgrade project 1993/94. As for the implementation of the upgrade project which came fully into function in June 1994, some two months ahead of the contractual completion date, also this is reported to have been fully satisfactory.

All project phases went smoothly and on schedule. An internal evaluation undertaken by ZESA in 1995 does, however, point out that the contractor had not carried out enough work on the application functions.

The transfer from the previous SINDAC to the new SPIDER system was carefully planned so that no interruptions occurred. This was done such that each of a total of 12 (?) computer units was replaced each weekend during a three month period.

On-the-job training is by ZESA characterized as having been very satisfactory - "all training was carried out by various specialists to the requirements of ZESA..". That the training must have been successful is perhaps evidenced by the contents of the following note made by the ZESA evaluation:

"...during the month of July as the Contractor´s staff needed their customary summer holidays...., ZESA during this period successfully implemented a new station in SPIDER *without* the supplier´s assistance".

The evaluation criticizes ZESAs own actions mainly for its delay in getting the project started (This was described in the background above). It concludes that the project cost had increased due to these delays, an increase which in the evaluators opinion however could be offset by cutting down on spares. While ZESAs contribution was seen as negative before the project started, its performance is characterized as having been very good during implementation.

A very positive factor noted by the evaluation is that ZESA was able to make large savings by handling the upgrade project largely without having to engage expatriate consultants. At commissioning of the upgrade project a list of six different (fairly small) defects were noted by ZESA

4. Results: Outputs, effects

The evaluation of the first project, commissioned by BITS in 1985, concluded that after 14 months of operation the new system was functioning very well and that it was received positively on all levels within the power companies.

It had considerably improved the operations reliability. The number of interruptions and the time to repair faults has been significantly reduced. The distribution network of Harare could now be operated more efficiently with smaller losses, and construction of new parts can now be postponed, while the network could be dimensioned with smaller margins.

The evaluation also noted however that due to the relative difficulty for ZESA to recruit qualified personnel it would probably take another 2-3 years before the new system could be utilized with full efficiency.

Regarding the Bulawayo control centre no formal evaluation has been carried out, but all people interviewed have assured us that both the implementation and the outcome of that project was just like its twin project in Harare.

Also the results of the upgrade project have, according to our information, been quite satisfactory. The internal evaluation carried out by ZESA, after one year of operation with the upgraded computer technology, found that performance to date was very good, that the response time of the system had greatly improved, and that all power system disturbances which occurred after the upgrade had been handled quite satisfactorily by the newly installed SPIDER system. "On the average the objectives of the upgrade projects have been fully achieved"...After the upgrade shortcomings in the communication system no longer affects the data processing functions. The estimator network configurator and the error measurement detection were all running well". The report concludes by stating:

"On the whole, very good results have been achieved in this project...;...the centre is now based on an open system architecture and can therefore grow with the power system. Also full interface with other power systems is now possible".

A critique of the functioning of the system was contained in a report from October 1990 by the Swedish consultant Sydkraft AB International, who had been asked by BITS to appraise the proposal for the upgrade submitted by ASEA. Referring to a major systems disturbance that occurred in 1988, the

report draws the conclusion that the system had originally been faultily specified by the ZESA construction department because it had failed to consult with the operations people about "their" needs. This, the report says, was a serious mistake resulting in the transmission of a lot of unnecessary information. The report therefore concluded that for the upgrade project ZESA should review its information needs in close cooperation with the operations people and take out all unnecessary signals in order to save on computer time and database space.

5. Financial rate of return

We have no access to information showing the profitability of this project.

A lot of other cost items, apart from the ones financed by the Swedish credit, enter into this project, and it is not always clear if, and to what degree, such cost items are subsidized by the state. The relevance in calculating the financial rate of return can therefore be questioned in the case of parastatals when the degree of open and hidden subsidization of the parastatal is unclear and when it keeps changing. The financial rate of return then becomes arbitrary since it becomes simply a function of the relative degree of subsidization at a given time. The more relevant measure to look for is the economic rate of return.

ZESA is one of the parastatals which has managed to become financially profitable in the last few years, thus starting to live up to the country's Electricity Act which states that ZESA shall conduct its business on sound commercial lines. So far however ZESA does not have the right to set her own tariffs. This is still the responsibility of the Ministry, just as it is to determine ZESA's capital expenditure budget and the allowed size of ZESA's loans.

Based on general knowledge about ZESA financial position, as well as the findings related above from the project outcome, there is no reason to believe that the transmission control centres financed by BITS have not been financially profitable for ZESA.

6. Economic rate of return

No calculations of the expected or realized economic rate of return have been done for any of the three projects on the control centres. At least none have been made available to this evaluation mission.

According to the project engineer at the NCC, estimates were made of the expected decrease in power outage which would result from the projects. But this information could not be found. That would be one of the data needed to estimate the benefit side of the calculation. Another would be the savings in installed power generating capacity due to a more efficient use of already existing capacity.

In some Government reports regarding the transmission control centres project it has been pointed out that a concessionary financing of the contract is a pre-condition for the work to be done at all. It is not known to us whether this is supposed to mean that the project would not turn out profitable if it is not subsidized. Or whether it is supposed to mean that without the subsidy the contract would be awarded to a company of another country whose government was able to supply even more attractive financing.

Without any data available we are not in a position to know whether the investments in computerization of the national control centres was an economically viable project or not.

In a very general way however, based on reported experience from transmission control centres in other countries, there is no reason to doubt that a computerization carried out efficiently at competitive prices will not create enough benefits to cover its cost. We have seen no signs in these projects that Zimbabwe should be any exception to this rule. Given that this project seems to have been managed efficiently, and that ZESA´s general efficiency today is said to be rather good, we can therefore conclude that the computerization of the transmission control centres financed by BITS may well have been economically profitable for Zimbabwe. But without actual calculations we can not know this to be the case.

7. Environmental effects

It is our understanding that there are at least no direct negative environmental effects from automating the supervision and control centres of the power generation and transmission systems.

If anything, the effect in the long run can only be positive if the computerization actually helps making the system more efficient, since this will decrease the installed generating capacity needed. Especially it can minimize

the use of expensive and polluting old thermal power plants which are today kept either for peak loads or as reserve capacity.

8. Gender

There are no gender implications in these projects.

9. Poverty orientation

Zimbabwe is a dualistic society where rural development has always lagged far behind development of industry and commercial agriculture, as well as of towns in general. This means that electricity is not used to a very high degree by the poor segments in the towns, and even less by the poor people in the country-side. We can therefore conclude that no direct benefits to the poorer strata of the population can be expected from investing into new national control centres.

In a much longer run we might however reason in the following way: If the electricity generation and transmission systems can be made more efficient this will benefit the country economically and contribute to economic growth which can create new jobs for the jobless. Also if the government has a social policy aiming at benefiting the poor, the government can use the savings attained in the power generating sector for various programs directly benefiting the poor.

10. Relevance/sustainability

The evaluation carried out of the NCC program in 1986 stated that "considering the size and complexity of the power system, the level of ambition for the control system is well motivated". This assurance from sectoral experts on power should vouch for the project being *relevant.*

The evaluation further argues that "We find the administrative and technical level within ZESA and Zimbabwe high enough for the control system to be operated efficiently and maintained in a satisfactory way". Our own observations of this project agrees with this conclusion and we therefore believe the project's *sustainability* to be satisfactory.

11. Sweden's overall development goals

Of the Swedish overall development goals only the one regarding *economic growth* would seem to be directly relevant. On this score we believe that the project has in deed promoted economic growth in Zimbabwe. In principle it can also be said to have a positive effect on the countries *economic and political independence*, but this connection is not very clear.

In so far as we have stated above that the projects can be considered to benefit primarily the better off part of the population, we can also conclude that - at least in the short run - there is a (theoretical) negative effect regarding *economic and social equality.*

12. Procurement

We have no documentation showing the detailed bid evaluation. Regarding the first credit of MSEK 91.8 it is briefly stated in several documents that the competition for the contract was very keen. According to one report "seven to eight" bids were submitted. (We are curious as to why the uncertainty about the *exact* number of bids). From these a *short list* of three bids were made which were further evaluated.

According to a report from the Swedish Embassy in Harare it was essential for Sweden to offer a concessionary credit in order to bring the contract home to ASEA, for some of the competitors were also offering such subsidized credits. According to a BITS memorandum, the Embassy had also reported that 28 companies were bidding. We do not know what was the basis for that figure.

After ASEA was awarded the preliminary contract the Swedish Embassy, in a telex to BITS, reports that the French "had developed a very massive campaign to have the decision reversed". And in this situation the Embassy advises the Foreign Ministry in Stockholm to express Sweden´s gratitude to Zimbabwe's Finance Minister who was then visiting Sweden, for the awarded contract. This in the Embassy's opinion would strengthen the feeling of commitment (to the contract as awarded) on the Zimbabwean side.

That the presence of a Swedish concessionary credit was decisive for ASEA getting the contract seems to be undisputed. On the other hand there is no information suggesting that ASEA´s offer was not also the best when it came to technical solution and lowest price.

Regarding the second project, the SEK 32 million contract for the control center in Bulawayo, there was initially a proposal by a French firm which had also elaborated a technical proposal for the control centre in Bulawayo.

Since ASEA had satisfactorily carried out the NCC in Harare a few years before, the Bulawayo authorities decided to also invite a competing bid from ASEA. In an ensuing evaluation of the bids by a British consulting firm, the Government was recommended to accept ASEAs bid, on the grounds that it was technically more appropriate, with larger capacity, more reliable and also cheaper than the French bid. It was also emphasized that it was an advantage to have a common national system. This point was further reinforced by the decision taken in 1985 to create one national electricity authority, ZESA into which also BMED would be merged. This development naturally favored ASEA who had already built the system in Harare.

Regarding the upgrade project for the NCC in Harare it was, in the words of a ZESA internal evaluation report

"considered prudent to negotiate with ABB Network Control to undertake the upgrading as the SCADA/EMS system which was in use then, was proprietary to ABB. Selecting a different supplier would necessitate replacement of the complete system, which would work out to be very expensive and unwarranted"

ABB in a letter to BITS stated the same thing more simply: "No other supplier could based on our system, deliver an upgrade at a lower price than we".

The appraisal commissioned by BITS in October 1990 referred to above, came to the conclusion that ABB´s bid for the hardware of the upgrade project was 60-70 (!) % higher than the prices of the corresponding products offered by other suppliers. We have no information whether this evaluation caused ABB to trim its price, but we must assume that is what must have happened since no more was heard, and that ABB was in fact awarded the contract.

To sum up our conclusions about the procurement procedures: We lack full information about the procurement for the first project. But at least no information has surfaced suggesting that there was anything wrong about the procurement procedure used. Regarding the second and the third credits there is information available which suggests that the procurement procedure has satisfactorily complied with principles of competitve bidding.

13. Repayment of credits

According to information obtained from ZESA the credit agreement was signed directly between ZESA and the Swedish bank Gotabanken. ZESA also received the full benefit of the grant element contained in the three different credits. So there was no on-lending arrangement within Zimbabwe. The Finance Ministry guaranteed the credit, for which ZESA had to pay a fee of1 % annually on the outstanding amount.

Repayment of the credit to the creditor in Sweden has started, and has so far been paid on schedule.

In a ZESA report one can read that Gotabanken in ZESAs opinion has handled the disbursement of this credit to the full satisfaction of ZESA.

14. Project preparation

When it comes to the preparation phase of these credits, we have nothing ouside of the ordinary to report. BITS´ project preparation work in terms of the memos it produced and the various consultancy studies it commissioned, was, as always, professional and of sufficient depth to base a credit decision on. As ususal, we can however also remark that too little information was produced regarding the project´s economic profitability. But this is not a critique which should be directed to BITS without qualification, because lack of economic analysis is something which has always been typical of almost all aid agencies. And in this respect BITS does not appear to be a bigger sinner than e.g. SIDA - rather the contrary. Also, it may be noted that this type of modernization/computerization upgrade is a project type which does not lend itself easily to economic analysis. However, a lot of insight regarding a project´s economic viability can be got simply from common sense reasoning of the type we have applied above. In the absense of formal economic analysis, the donor BITS as well as ZESA should therefore at least have done some ad hoc qualitative economic analysis of the projects.

VI PRODUCTION OF EXPLOSIVES

1. Background

All through the 1980s there was a growing need for explosives in the country's mining industry which for many years has been Zimbabwe´s main foreign exchange earner - about 40 % of total exports. The prospects for future continued growth of the mining sector seem good. Recently two large new platinum mines have started operation and the mining of gold, nickel and copper is increasing.

The explosive to be produced is emulite, which is said to be a modern and efficient explosive with good characteristics w r t environment and security, both in production and in use. One of the important inputs - ammonium nitrate - is produced locally just next to the explosives plant.

A joint venture - called *Nitro Nobel of Zimbabwe*, henceforth in this report referred to as NNZ - was formed in 1986, and five different roles were subsequently defined to be played in this project by the *Swedish Nitro Nobel Company*: *Firstly,* as shareholder with 25 % of the shares. *Secondly*, as supplier of equipment, training, construction work and installation work. *Thirdly*, as responsible for the plant´s management. This is financed by BITS with a technical assistance grant outside of the concessionary credit. The management agreement has now been prolonged until 1998. *Fourthly,* as recipient of a license fee. Nitro Nobel Zimbabwe, NNZ, has to pay 6.25 % (later changed to 5 %) of sales revenue as royalty for using the Nitro Nobel brand name. *Fifthly*, as guarantor that the factory will in fact be able to produce. The guarantee time was one year and carried a substantial fine for non-compliance.

To be given the management contract was a demand posed by NNZ, in order to ensure that its investment would be "protected".

Before the project got started in 1991, Nitro Nobel of Sweden was for three years receiving a technical assistance grant from BITS to prepare the project.

Nitro Nobel Sweden's main interest in this venture has been said *not* to be the sale of equipment and services. The most important thing for the Swedish mother company was to be able to successfully set up a production facility in black Africa, and thereby be able to demonstrate that its product, *emulite, is* superior to all other products in the market. This fact was seen by BITS as the

best guarantee for the other parties involved in the joint venture, that the project would be carried out in the most effective and professional way.

The credit agreement entered into by the Swedish bank SE-banken and Nitro Nobel of Zimbabwe stipulates SEK 9.3 million over 8 years with 4 years grace and 4.25 % interest. The grant element has, using OECD´s nomenclature, been calculated at 25 %.

The new explosives factory was built on top of an exiting old plant site which the government had purchased from a South African firm. The site already had two bomb-proof shelters, which today can be used for storage of the explosives

2. Goal hierarchy/the logical framework

An important motive influencing the government´s decision to undertake this project was the political/strategic aspect. Zimbabwe was at that time a "frontier state" next to an aggressive South Africa and a civil war in Mozambique. The manufacture of explosives had a strategic significance, both in a concrete sense for what explosives may be used for, but also for psychological reasons.

The project proposal was financially sound so there was no question but to go ahead. Had it been questionable from an economic point of view it is likely that Sweden would have lent its support anyway. But then probably the role of Nitro Nobel Sweden would have been quite different.

The main objective of the project was to

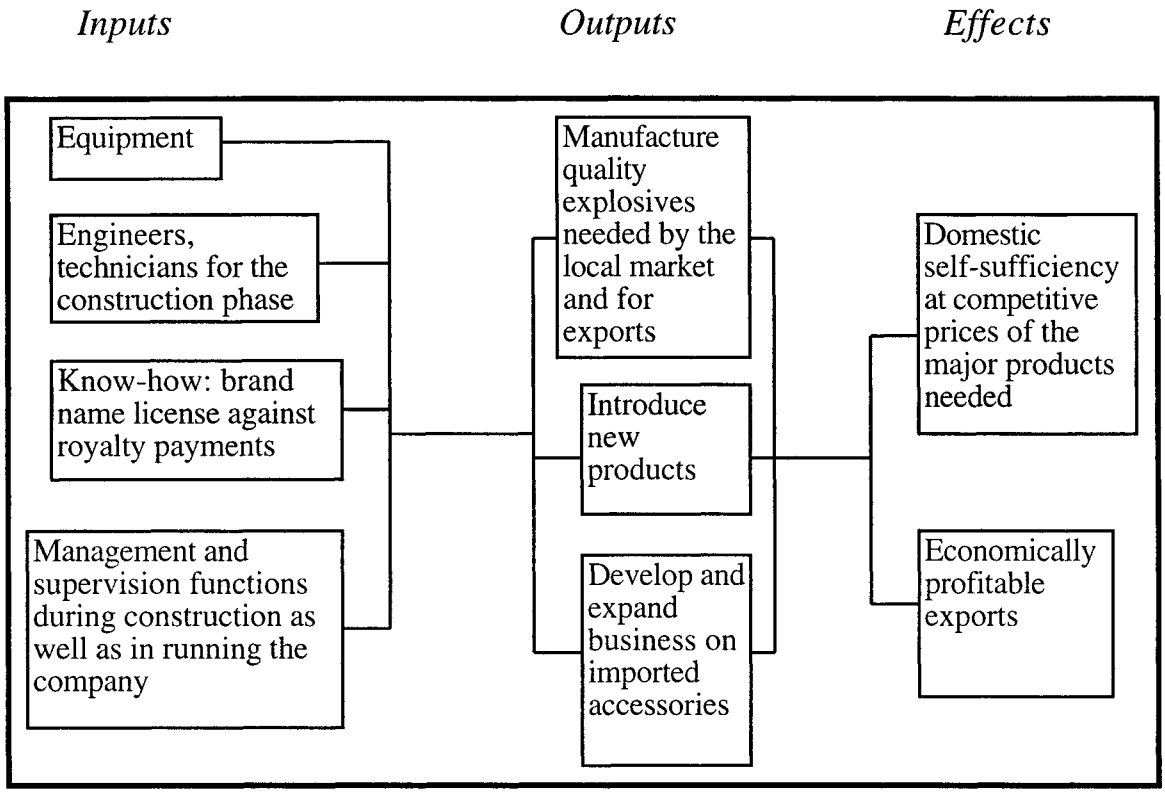
- manufacture quality explosives at least cost in order to satisfy the whole domestic market first and then export to the neighboring countries.

Side goals which can be identified are

- to increase and introduce the manufacture of those products in which NNZ has a comparative advantage,
- to keep the business on accessories which should become significantly more profitable once all duties are removed

A simple goal hierarchy of the project could look like this:

Figure 5: Goal hierarchy for the explosives project



3. *Implementation*

In the outset implementation was extremely slow, due to the fact that the taking over/purchase of the intended project site was quite complicated. BITS officers at one time seem to have been convinced that there was active sabotage from certain quarters (read:RSA interests) in order to prevent Zimbabwe from mounting its own domestic explosives production.

After the land question was settled things, however, seemed to have moved fast forward. The construction of the plant started in June 1990, and the plant came into commercial operation in March 1991. And from then on, the project seems to be an unqualified success.

Our visit there convinced us that it is very well run and well managed, and the people we talked to all seemed to "be on top of things". The best proof of that would seem to be the successful expansion of production and sales, as well as realized profits. Records show that the plant has not had any accident in over three years of operation. Contacts with the owner IDC seem to have been

cumbersome in the beginning, but are today good. IDC today does not interfere hardly at all in the plants management.

The production has functioned without problems since the beginning. As of September 1993 the plant is managed entirely by local staff. Today also most administrative functions are performed by local staff. Nevertheless, the training of local staff has been somewhat of a problem. Partly this is said to be due to difficulty of finding suitable candidates. We do not know why there is this difficulty, since Zimbabwe, at least in relation to most of its neighboring countries, seems to have many well educated people, not least engineers and technicians.

4. Results

The company's sales has grown from ZD 45 m in 1991 to ZD 125 m in June 1995. This gives an average annual growth of 35 % (!)

Since there is still keen competition from imported explosives (which are duty free) one must conclude that the successful expansion is largely due to a high quality product backed up by the internationally famous brand name Nobel. However the plant did experience some quality problems in the beginning. The routines for pre-sales quality inspection now seem to be functioning well and no inferior quality products have, according to management, ever reached the market.

No doubt the expansion in production and sales have been aided by the opening up of several new mines in the country as well as increased production from existing ones. However it must be added here that some mining operations which rely heavily on water usage, had to cut down their production during the years of severe drought. NNZ´s market share today stands at 67 %, and experts judge that it can easily grow much bigger. For some products it is as high as 85 %. Some success has also been experienced in the export markets, as exports have taken place to South Africa, Tanzania, Kenya and Uganda.

An important thing to keep in mind when judging the project´s performance w r t efficient production is that only 21.5 % of the sales revenue today come from NNZ´s own manufacture of explosives. Fully 62.1 % (!) of total sales today comes from reselling the accessories which NNZ imports from South Africa.

The situation today, according NNZ staff, is that NNZ can easily sell everything it produces. The effective bottleneck in production has been identified as the process of packing the emulite into its plastic bag containers. This is today done by hand at a rate of 100 per minute. NNZ has now purchased an automatic machine for about ZD 3.3 m from the USA which can do the same job three times faster. The plant manager told us that the new packing machine would allow the plant to increase its sales of this product with up to 50 or even 100 %. When it comes to supply of raw materials there seems to be no risk of bottlenecks appearing. The main raw material, which is ammonium nitrate, is brought from a plant adjacent to the NNZ plant.

5. Financial rate of return

NNZ´s record of profitability is impressive. For 6 consecutive years, i.e. from the start, it has shown a net profit after taxes. And for the past 5 years it has also paid out dividends. In spite of twice yearly dividend payments, most profits have been retained which has resulted in shareholders´ equity to go up from ZD 7.1 million in 1991 to ZD 29.66 million in 1996.

The amount of dividends paid per share was ZD 0.4 in 1992, ZD 0.8 in 1993, ZD 1.6 in 1994 and ZD 2.84 in 1995. The total fixed assets, as valued by Coopers and Lybrand, are today ZD 20 million, and the company's return on employed capital today stands at 40 %.

With this impressive earnings record there is no wonder that NNZ is said to be one of only four - out of a total of about 60 companies owned by IDC - which the IDC wants to keep. Apart from being a good profit-earner there is also the political/security motive of explosives production being controlled by the state.

The government´s holding company IDC (which also has NNZ´s Swedish Director on its executive committee) does not interfere in NNZ´s management, and the relations between the two are today said to be good. IDC is itself in the unenviable position to have somebody else - namely the Ministry of Industry controlling and "breathing down its neck." IDC´s officers say that the IDC has always tried to operate very commercially, but being a parastatal "of course, from time to time we have some problems with the government".

IDC pays its taxes to the state and, as far as can be judged, are today not receiving any subsidies. Even so it has managed to turn a ZD 23 million loss in 1993 into a ZD 35 million profit in 1994.

Zimbabwe´s government does not mind if Swedfund, when it - in line with its policy - decides to divest itself of its holdings, sells its shares to Nitro Nobel of Sweden. In any case, according to NNZ´s statutes, the other shareholders have a first hand buy option.

Even though the sales record, as well as the profit generating capacity of NNZ, have so far been excellent a few potential problems ahead need to be pointed out.

The first one is the very heavy reliance on the re-export (without generating hardly any value added in Zimbabwe) of accessories from South Africa, which account for fully 62 % of the company's sales. This is a potential risk in so far that other importers may some day be able to cut into this market.

The other one is potentially more serious. NNZ today has what looks like an oligopolistic marketing agreement with South Africas large explosives producer AECI. This agreement, to put it simply, stipulates that AECI cannot export certain brands of explosives to Zimbabwe, and in return Zimbabwe is not allowed to export any of its explosives to South Africa. While government officials today maintain that this protection for NNZ from competition from RSA is essential for NNZ´s chances to expand, it seems to us that this is a blessing which might turn into a curse later on when NNZ has stabilized its operation. For the South African market is by far the most important, many times bigger than all the neighboring countries , including Zimbabwe, together.

Another lesser concern, expressed by NNZ management is its vulnerability from a falling exchange rate, because NNZ imports a very large share of its inputs. So far however, even as the Zimbabwe dollar has been falling steadily against the USD over the past five years, this has not jeopardized NNZ´s position. Also, the NNZ management is lobbying the government to remove the import duties which are currently levied on its inputs. They claim, with some justification, that this means unjust competition for their explosives production since competing explosives may be imported ready made *without* any import duty.

6. Economic rate of return

Since NNZ today operates in essentially a free market situation, i.e. it both buys its inputs and sells its output at an unregulated market price, and since it pays its taxes and receives no subsidy from the government, we must conclude that the very positive financial rate of return of this project should also translate into a positive *economic* rate of return.

Of all the seven projects evaluated in this report this is in fact the only one where we are able to deduce from general information about the economy, as well as from company or project data, that there should be a clear economic viability of the project. Ironically enough, this is also the only project where we have available a thorough and comprehensive cost benefit economic analysis. Ironic in the sense that this is what we would really have wished to have in some of the other projects where the economic viability was and still is very questionable. In this particular case we can deduce the economic viability from a general reasoning, without really needing the analytic study.

The study we refer to, made in 1992 and covering the years 1990 through 2000, is a mixed ex ante and ex post analysis. It calculates net present values for the ten year period for three different sets of prices:

- domestic market border prices
- efficiency prices taking account of opportunity costs and of market imperfections, and
- social prices which are weighted with respect to assumed preferences regarding distributional effects.

All the present values of the investment are found to be highly positive:

at market prices	ZD 160 million
at efficiency prices	ZD 128 million, and
at social prices	ZD 127 million.

The reason why the net present value is smaller at social prices than at efficiency prices is that the project - being import dependent as it is - creates very few additional jobs.

The study also makes a sensitivity analysis subjecting the assumed figures to three different scenarios: a pessimistic one, a middle one and an optimistic one.

At *market prices* the Net present value is found to be between ZD 195m and ZD 140 m, at *efficiency prices* between ZD 312m and ZD 71 m, and finally at *social prices* between ZD 212 m and ZD 70 million.

In summary, the economic profitability of the explosives manufacturing plant financed by BITS has a net present value of between ZD 70 million in the most pessimistic scenario and ZD 312 million in the most optimistic one. In calculating these values some external effects, not easily quantifiable in money terms, have been excluded from the analysis. When these are taken account of the economic profitability would be even higher.

The results of this mixed ex ante /ex post analysis made in 1992 is much more positive than a calculation done by Swedfund in 1986, which nevertheless showed an internal rate of return of 14 % after taxes.

Comparing the situation in 1992 with the one today we must conclude that the profitability today is better than what could be estimated in 1992. This is due to the fact that NNZ´s revenues and profits proved to be higher than foreseen in 1992, while at the same time other essential parameters of the economy- such as the exchange rate, import duties etc. - have remained largely in the some order of magnitude.

7. Environmental effects

The question of environmental effects was not given any major weight in deciding to go ahead with the project. For understandable reasons, for this is not a major polluter, neither in an absolute or relative sense.

Possible negative environmental effects have in this project been minimized by installing septic tanks which houses all solid waste. Burning of other wastes is done only once a week in order to minimize air pollution.

8. Gender

The project does not employ any women labour, but according to our information, the mines using NNZ´s explosives do. So if the production of domestic explosives does in any way promote and expand the exploitation of Zimbabwe´s mines, then we can also say that the explosives project may have a small and indirect beneficial effect on women employment.

9. Poverty orientation

This project has no direct effect w.r.t. poverty reduction. In an indirect way however we may apply the corresponding reasoning as for women labor: If mining activity in the country is stimulated by explosives being manufactured domestically, then more people from poorer strata of the population and their families would likely benefit from increased employment in the mining sector.

10. Relevance/sustainability

There is no doubt whatsoever that this project is highly *relevant*. It also has big potential of being *sustainable* , however with a few uncertainties, namely:

(1) the very large share of NNZ´s revenues (68 %) which today comes from reselling accessories produced in South Africa. This share must be decreased so as to diminish the risk of being out-competed by other potential importers in the future.

(2) the fact that NNZ is today - by its own marketing arrangement with competing producers in South Africa - excluded from export to the South African market, which is by far the biggest in Africa. In a few years from now NNZ might find that it needs to grow in order to stay competitive, and then this restricting marketing arrangement with South Africa may prove to become an important obstacle to reaching profitability.

11. Sweden's overall development goals

Both the *economic growth* objective, as well as the *economic and political independence* objective have clearly been served by this project, while it has no effect w.r.t. *democracy* and *equality*.

12. Procurement

There was no tendering procedure in this case, neither formally or in practice. This was a negotiated joint venture deal.

13. Repayment of credits

The repayment of credit to Sweden has so far been done on schedule

14. Project preparation

The project preparation phase of this project was extremely drawn out. Over three years passed from the time that Nitro-Nobel Sweden and Swedfund had a completely planned and financed project which was presented to Zimbabwe, until the authorities made their final decision. This was surprising to many people involved, at least on the Swedish side. At several points along the way there was confusion as to what was really holding things up. Such concern was expressed by Swedfund, when everything seemed to be ready but thing did not move forward any way. In fact, some people in BITS and in Swedfund believed that the project was being sabotaged from South Africa, both for political and economic reasons.

Apart from the fact that this is the only one of the seven projects which is clearly profitable both from a financial and an economic point of view, it also stands out as being very well prepared and studied and clearer in its effects and organization.

To some degree this may have been due to Swedfund being involved. with its more business -like attitude to development projects.

Also SIDA became involved in the sense that it was asked by BITS to pass its judgment on the feasibility and desirability of this project. Surprisingly this is the only case where this was done. BITS being a small organization with shared development goals with SIDA, one would have thought it to be in BITS´s interests to avail itself of the possibility to consult Sida more often. But that apparently did not happen. If it did, it did not leave any evidence in form documents in the files.

SIDA´s opinion of the proposed project was wholly positive. It pointed out, among other things that domestic production of explosives would greatly enhance the safe expansion of mining industry in Zimbabwe, and that the proposed joint venture would be very important in promoting the interests of foreign business firms to invest in Zimbabwe.

SIDA also endorsed the project for having positive effects on aspects such as savings of foreign exchange, employment creation, promoting import substitution and transfer of knowledge.

VII MODERNIZATION OF ROLLING MILL STEEL PLANT

1. Background

The decision by BITS in June 1987 to finance the computerization of the bar rod rolling mill of the country´s only steel works, ZISCO, was based on the fact that the existing equipment, delivered from Italy in 1972, was very run down and needed urgent and complete replacement. If these items had not been replaced, electrical breakdowns and the time required to repair would have increased rapidly. The replacement was also necessary for a further, projected, modernization of the rolling mill.

The main objective of the project has been stated to be to increase Zimbabwe´s self sufficiency in steel production. From various documents it is clear that this objective has both an economic and a political/strategic aspect. ZISCO, with its at the time 8000 employees, is one of the country's largest employers, and the employment/social motive has also been mentioned - at least implicitly.

The ZISCO plant was at the time (and, to our knowledge, still is) the only integrated iron and steel works in black Africa (except RSA). It is situated 220 km southwest of Harare. About 40 % of its production is for exports, mainly to its neighboring countries. Simultaneously with the BITS financing, UNIDO was supporting the project through technical assistance on grant basis.

The contract with the contractor ABB was signed by ZISCO on behalf of UNIDO and the Ministry of Industry in 1987.

2. The goal hierarchy

The contents of the goal hierarchy are as follows:

Inputs/activities:

- Revamp all the electrical equipment for the main and auxiliary drives by installation and commissioning of a new series of thyristor converters, tach generators and couplings.
- Installation of a complex, overriding automation system for the bar rod mill
- provide training

Outputs/ production goals:

- Improve production efficiency, minimize breakdowns and repairs
- improve product quality
- improve safety

Effects:

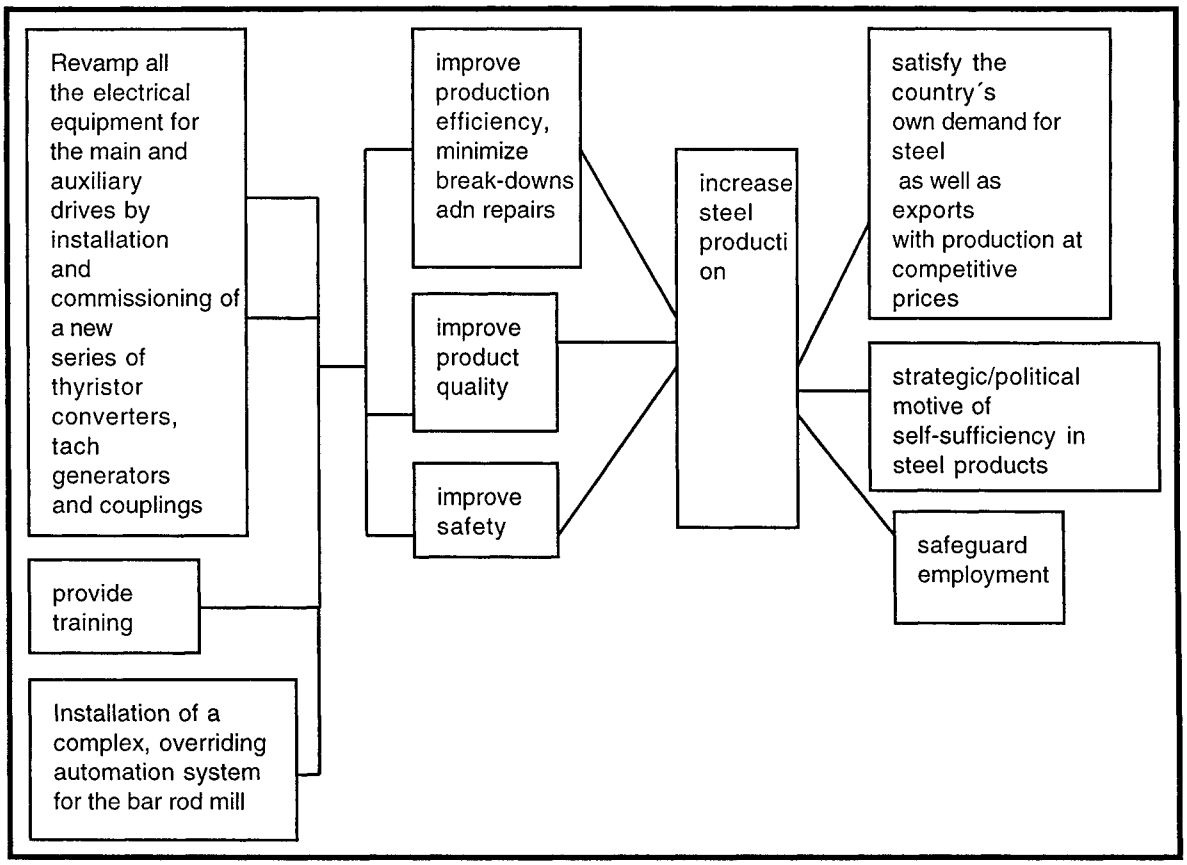
- Increase steel production

Main objectives:

- Satisfy the country's own demand for steel as well as exports with economically profitable production
- Strategic/political motive of self-sufficiency in steel products
- Safeguard employment

The objectives of the project in a logical framework format could be presented like this

Figure 6: Goal hierarchy of the rolling mill modernization project



3. Implementation

Regarding both the implementation and the outputs of this project, we have access to a very detailed and technically exhaustive evaluation report produced by UNIDO in October 1991. According to this report, there is no doubt whatsoever that the project was carried out successfully and on time. This is also the opinion arrived at by an inspection team from BITS visiting the plant in 1989. This team found that the the contractor ABB´s cooperation with the ZISCO staff had gone smoothly, and that all activities were carried out according to the planned schedule.

This view is entirely endorsed by the plant manager at our visit to the plant.

The UNIDO report states that

"the bar rod mill computerization and introduction of the new series of thyristor drives has been successfully implemented. All main objectives.. .. have been fully achieved. The civil engineering works have been completed. The new thyristor converters for the main drives (17 pieces) and auxiliary drives (13 pieces) have been installed, commissioned and put into normal mill operation. Commissioning of computerized control system is completed. The mill from the exit of heating furnace down to cooling bed and boilers is (now) fully controlled by computer".

4. Results

After one full year of operation, the following results have been achieved:

- total production has gone up by 6,5 %
- yield has gone up by O,85 %
- electrical stoppages have decreased by 27 %

5. Financial profitability

According to the UNIDO report the improved equipment could in July 1991 be calculated to have caused a net profit per year of USD 0.94 million. Since the investment figure was USD 2.8 million this implies a rentability of 33 % . In addition to this the UNIDO report claims that there are further potential profits to be realized by exploiting the new equipment in a more optimal way.

The UNIDO report does not reveal the methods of computing net profit so we can not tell how good the performance actually is.

In the original UNIDO appraisal documentation for the project, the expected sources of the annual profit were given as:

decrease in labour and material costs	SEK 2.7 million
decreased restitution time after stoppages	SEK 1.0 million
decreased time of electrical stoppages	SEK 0.3 million
total	SEK 4.0 million or about USD 0.62 million

In a different calculation, not named but referred to in an appraisal of the modernization proposal commissioned by BITS in 1987, i. e. before the project took place, the expected annual profit was given as:

Savings due to decreased breakdowns and losses	SEK 4.0 million
Savings due to increased price because of better quality steel	SEK 2.0 million
Total	SEK 6.0 million

The difference between the two calculations would seem to lie in the inclusion of higher quality end product in the latter. However, none of them include higher output, which is nevertheless assumed to take place. So from this point of view these calculations might seem to be on the conservative side. We do not know how these calculations were arrived at, but we can safely assume that there are at least a few important cost items which were not included. These are:

-the cost of the technical assistance provided by UNIDO, which is worth upwards of USD 0.6 per year

-the grant element of the concessionary BITS credit which should be deducted , and

-several tax exemptions regarding both import tariffs and other levies.

These exemptions enjoyed by ZISCO do not influence ZISCOs financial profitability, which likely remains positive for this project, only the economic

profitability. But it shows how arbitrary calculations of financial rate of return are for state companies, since the outcome can largely be a function of how many exemptions and other privileges the project has managed to negotiate from the government.

The issue of exempting ZISCO from various taxes for this project became an issue in the way the formal set-up of the cooperation between UNIDO, ZISCO and the contractor was arranged. UNIDO had suggested one legal format, but that had to be scrapped because it would jeopardize ZISCO´s tax exempt status.

It should be noted here that since the beginning of the decade there have been large improvements in the running of state owned companies in the sense that most subsidies have been taken away. ZISCO has for instance, according to our information, paid the full (unsubsidized) cost for its consumption of electricity, water, coal and transport on the national railways since 1991. But it still enjoys investment privileges which private firms do not have. In any case, ZISCO has shown constant losses for the past six years.

ZISCO is today 89 % state owned, but this is not really by governments choosing. What happened is that the government, after having poured in a lot of resources from the budget in order to keep ZISCO from bankruptcy, decided to convert its subsidized loans to equity. Thereby the government´s share of ownership went up from about 50 to 89%.

Today the government is eager to privatize ZISCO, but at the moment is reported to have no buyers. The government wants to keep a substantial share of the ownership, for it believes there is an economic potential in the future. But there is of course also the social security motive. Even though the staff has been trimmed down from about 8000 to about 4000 employees today, ZISCO is still one of the country´s biggest employers.

With its daily coal consumption of 3000 tons, which is transported on the national railways, ZISCO also becomes the single biggest revenue maker for the national railway company, NRZ. It is also among the country´s ten biggest consumers of electricity.

ZISCO is seen as an essential part and a creator of synergy effects in the Midland industrial region with its other big producers of power, water and transports. In addition, ZISCO enjoys national importance as the country´s sole supplier of the construction industry and the agricultural industry with bar rods and other essential inputs.

6. Economic rate of return

As we have implied above the real focus of interest when deciding to support the investment activities of a parastatal should be on the economic viability and not on the financial one, since the latter can arbitrarily be changed by government´s decisions.

ZISCO has a solid reputation as an inefficient colossus draining the treasury. It has for many years notoriously been unable to attract and keep competent managers. One case in point is the very able engineer who was the main person implementing the ABB modernization program. He left and is now a much higher paid engineer with ABB. But the pay is reportedly not why he left.

We have not seen any major study analyzing the economic viability of ZISCO. However there are signs that there could in deed be an *economic potential* for steel making in Zimbabwe.

This is suggested in a recent study carried out by British Steel consultants on behalf of ZISCOs management and financed by ODA. (*"Diagnostic report for the Zimbabwe Iron and Steel Company"* - British Steel Consultants, July 10, 1995)

During our visit to the ZISCO plant we were shown a few pages of this report, which has some very promising figures. Using a so called "through cost" method which ensures that production is always costed at the current performance and price levels, but excluding financial costs, the British study could compare Zimbabwe's production cost at the various stages of refined product with those of other world producers. The result can be seen in the three tables.

Table 8 shows, by comparing import CIF prices, that all ZISCO products, except for the light mill sections, are "comfortably" under the imported competition. To be noted however is that South Africa´s export prices have not been included in this table.

Table 8: product cost comparison: selling prices, USD per ton

Product	ZISCO	Domestic selling	Import
medium mill section:	342-373	329-425	403
Light mill sections: angles, flats	398-404	391-397	403
Bar rod mill: rebar, round,	295-304	322-371	372-403

The import alternative prices are West Europe export prices, f.o.b. Antwerp. An estimated USD 100 per tonne has been added to cover freight and handling to Zimbabwe.

ZISCO´s financial charges have not been included in the cost calculations. These are estimated as USD 138 per ton.

Table 9 shows that, measured against Central European and South African producers, ZISCO has a competitive advantage up to hot metal production, but not for instance in the production of the bar and rod mill

Table 9: Product cost comparison: Producer costs, USD per tonne

Product	ZISCO	Central Europe	South Africa
coke	59	76	80
Hot metal	108	109	110
Liquid steel	143-161	129-138	166
concast,ingot	172-205	145-160	192
rolled bloom	244	178	
rolled billet	280	187	
Medium mill	346-373	224	
Light mill section:	398-404	229	
Bar rod mill	304	207	

Coke,Hot metal, liquid steel and concast/ingot are all calculated exclusive of social and non-operating overhead costs.

Finally, table 10 shows that only the producers of Central Europe have a lower liquid steel cost. This then indicates that ZISCO has a potential to be cost

competitive at the finished product stage if process routes beyond steel-making are optimized.

Table 10: Cost comparisons: various international cost

	Coke	Hot	Liquid
ZISCO	59	108	161
Central Europe	76	109	138
South Africa	80	110	166
USA	108	145	203
Japan	112	145	202
UK	117	152	209
Brazil	124	148	192

ZISCO´s figures are shown exclusive of social and non-operating overheads

There is at present a dialogue going on between ZISCO management and British experts on what export production strategy should be recommended based on the study results.

The British consultants are advocating that ZISCO should for the time being concentrate exclusively on the export of the rolling mill products and to this end invest in marketing efforts. ZISCO should, in their opinion, try to export about 300,000 tons annually for the next 4 to 5 years and only then try to expand in volume and in product composition.

ZISCO´s wish is to raise capability of exporting also other products in the short run. A deciding factor of that stance is that a lot of money has already been invested in refurbishing a sinter plant. This was done by ABB and completed in early 1994, however not as part of the BITS financed credit. But since then the sinter plant has never been put in operation because of the shut down of the corresponding blast furnace (number 4). This blast furnace was already contracted for refurbishment, but the work could not get started, reportedly because the IMF´s ceiling on government borrowing prevented the treasury from issuing a guarantee for a credit to ZISCO.

The freshly renovated sinter plant not being put to use for two years has been an on-going scandal in Zimbabwe´s industry. If the encouraging results shown

by the British Steel study are confirmed and proven realistic, it becomes so much more important for the government to speedily go ahead with the relining of the blast furnace. According to a newspaper article on April 18 1996, there is currently an offer by a Chinese consortium - the same one that carried out the relining of blast furnace no 3 a few years ago - to carry out as well as to finance up to 60 % of the work.

7. Environmental effects

Surprisingly, not one word is said about possible environmental effects in the BITS decision document, nor for that matter, as far as we can judge, in any other BITS document. Our interviews and visits to the plant have not given us any concrete information regarding environmental effects. The plant manager did however tell us that a ZD 30 million equipment which will control emission discharges is just about to be commissioned.

Although we must assume that this big iron and steel maker is a major polluter of the environment, we can conclude that the effect of the BITS financed modernization certainly cannot have made it any worse. And we will have to content ourselves with that. But it is surprising that BITS did not investigate possible environmental effects closer.

Even more surprising does it seem that the very detailed and technically exhaustive 100-page UNIDO report does not even mention the word environment.

8. Gender

The question of gender was obviously not an important aspect in this project. From what we can see it is not even mentioned - neither in BITS´ nor in any of the other documents.

The plant today employs very few women - exclusively as lower level technicians/artisans. On our question whether the use of women labor could expand in any of the labor categories the manager mentioned the category of technicians. But according to him, and also others interviewed, Zimbabwean women today would hardly be attracted by employment opportunities in a steel plant. We did not have time to pursue the matter further, but we see no real

reason why women labor could not be possible also in steel plants *if* there were a strong political will to employ women.

According to our information there are today a lot of women labor in the coal mines. If that is the case, one might conclude that the BITS financed project has indirectly benefited women by - in the long run, if steel production expands - increasing the use of coal even though the use of coal per ton steel produced is supposed to diminish.

12. Procurement

An international competitive bidding procedure was carried out and five bids were handed in - from ASEA (later ABB), CEDA (Italy), Centrosap of Poland, AEG and Siemens .

There is nothing in available documentation or from our interviews which suggests that there were any deficiencies in the tender procedure, the bid evaluation or the awarding of the contract.

The engineers of the plant told us that ZISCO did not base its choice on the soft credit being offered by Sweden. ASEA was essentially chosen because its price was lower.

ZISCO had actually preferred AEG on purely technical grounds, but settled for ASEA´s proposal as it was considerably lower in price. One of the engineers reported to us rumors to the effect that ASEA had actually by mistake, due to some calculation error, offered a price which was too low. We have no information to confirm this rumour.

13. Repayment of credit

The loan agreement was signed between ZISCO steel and the Swedish Gotabanken on January 1988 for the amount of USD 2.2 million. Repayment is scheduled to 8 years at an annual interest rate of 2 %. In its reporting to OECD, BITS has stated that the grant element is 25 %. Repayment has been on schedule.

14. Project preparation

The time and effort put in by BITS to prepare this project is not up to the standards of some of the other projects. This is perhaps reflected by the volume of documents produced, which in this project is much smaller than in the other more recent credits. Above we have pointed out that some important aspects e.g. environment and gender, were not even mentioned in the decision documents.

One excuse could of course be that BITS decided to rely on UNIDO doing all the preparatory analyses, since UNIDO was involved with its technical assistance in the same project. But if this was the case then such analytical documents produced by UNIDO should be referred to in the BITS decision memo, and also presumably found in the BITS archives. But they are not.

In the UNIDO project brief it is stated that "the project will be subject to periodic review in accordance with the policies and procedures established by UNDP." No result in terms of reports etc. of such periodic evaluation has however been found by this mission.

VIII BUILDING OF UNDERGROUND FUEL STORAGE CAVERNS

1. Background

Against an estimated increase of Zimbabwe's fuel consumption it was projected that the existing storage would in the year 2010 only cover only 1 1/2 months of consumption. This was considered too low given the risk which was at that time associated with transportation from Beira through war-torn Mozambique. This was the direct motive behind this project.

In the first phase of the project the contractor Skanska was among other things asked to evaluate a proposal made by the US firm Santa Fe to build concrete cisterns which would be covered by earth. Instead Skanska came out recommending to store the fuel in underground caverns, excavated into the rock. NOCZIM was persuaded by Skanskas arguments that rock caverns would

not only be safer from sabotage, and safer from a technological viewpoint, but also cheaper and possible to build in a shorter time. A contract was signed with Skanska in May 1990, and an application was made for BITS financing.

Underground versus aboveground storage. Before the project got underway there was a prolonged debate on what *type* of storage to build. This debate is noteworthy because it shows that established and renowned experts can come to diametrically opposite solutions. The two "opponents" of the debate were the World Bank and Skanska. The question was whether above ground steel tanks (AST) or underground rock caverns (URC) were to be preferred.

The Bank in a study dated January 1992 ("ESMAP"- mission) argued forcefully that the above-ground alternative was better than the underground rock caverns in almost every respect.

But Skanska had apparently very well founded counter arguments on every point. In a letter to BITS dated March 19, 1992, Skanska pointed out that:

-AST does not have lower cost. Different studies have confirmed that URCs are less expensive at volumes over a certain size, and much less expensive at volumes over 300.000 m3, which was the case here.

- AST and URC do not have the same security. All users of both AST and URC confirm that the security in URC is much higher. Products stored in them can for instance not take fire. There is less risk of lightning damages. It can withstand artillery attacks and even bombs etc. An URC is of course also much easier to guard against sabotage.

- Evaporation losses for URCs are not higher. On the contrary. Losses in ASTs are in fact 55 % higher (!)

- There is no risk of water seeping into the fuel in the URC alternative. The technology with different pressures prevents that from happening. In Scandinavia jet fuel has been stored in URCs for many years without ever experiencing any problem.

- An AST alternative of 360.000 m3 would be so large that it would require an immense water disposal system, at a cost 2-3 times higher than for an URC.

- URCs have no risk of open air leakages from pipe joints and valves.

- Environmental hazards are much less with URCs than ASTs. During 50 years that URCs have been used in Sweden, no single case of water contamination has been reported. ASTs have on the other hand experienced such problems.

- Flexibility in terms of being able to change stored products etc. is no less with URC than with ASTs.

- Regarding capital costs URCs are superior to ASTs at volumes above 50.000 m3

- regarding operating costs the superiority of URCs over ASTs is not 50 % as stated by the WB but 100 %.

The outcome of this battle between experts seems to have been that Skanska carried the day - and very convincingly. At least the files do not show any more having been said in this discussion from either side after this "rebuttal" from Skanska.

This does not seem surprising, since Skanskas arguments appear convincing. In fact it is hard to understand how the Bank, which is usually very well informed, could err so blatantly. Even though "the right side" won, and "all´s well that ends well" one still wonders today why there was no more word said in a debate on such fundamental issues, where two different, internationally renowned, experts found themselves in postions diametrically opposed to each other. The Bank could for instance have come out to defend its position, or explain it, or simply say it was wrong. But nothing of this apparently happened, and we are a bit curious as to why.

Optimal size. Another question where the Bank differed not only with Skanska, but also with most other actors, e.g. NOCZIM and BITS, is whether it was really necessary to build such a large volume storage space, or if it could have been sufficient for the country with something much smaller.

This question is one which is also relevant today and will be further discussed below under economic rate of return.

The Bank argued that - based on its outlook on the geopolitical as well as economic situation - a two to three month stock would be sufficient, given that fuel carrier ships arrive at Beira normally several times per month.

This volume, according to the Bank, could be accommodated in existing storage available in Zimbabwe. Anything above two months of stocks would be considered as "strategic storage" which could only be justified if there is a strong possibility of severe supply disruptions for extended periods for international, regional, and national reasons. Given the peaceful situation in 1992, the Bank makes the point that all other countries including South Africa were now *reducing* their strategic fuel stocks.

So, since the Bank did not see any urgency to build additional storage space because the capacity at the time (1992) already exceeded two months of consumption, it suggested that any need for extra storage capacity should be satisfied by building on to the existing steel tanks at existing terminals. In our opinion this point brought up by the Bank is very relevant and it will be further discussed below, where the wisdom to build such a big storage space is questioned.

An additional problem for NOCZIM is that it is today probably not possible to fill up the tanks even if it wanted to, because pipe-line capacity from Beira is not enough. Simultaneously with the decision to build the storage tanks, plans were made how to increase the capacity of the pipeline carrying the fuel from the ships in Beira to the storage tanks in Harare. However, the upgrading work of the pipelines, of which NOCZIM has control over only a minor portion - the rest being controlled by foreign private companies - , did not start as planned. This today means that Zimbabwe must pay large amounts in demurrage fees for ships that cannot unload their oil in Beira.

Before the final contract was signed between the contractor and NOCZIM, BITS contracted a consultant to evaluate the preliminary contract signed by the parties. This evaluation advocated that only one storage facility and not two should be built, and also suggested a number of technical modifications. The consultant also expressed the opinion that Skanskas price was on the high side concerning some of the contract items.

Also, this evaluation found that the tendering procedure had not been carried out according to conventional rules of competition and sound business principles. The critique regarding the tender procedure seems to be the factor which prompted BITS to recommend that the contract be renegotiated. In fact

BITS posed such a renegotiation as a condition for its further involvment. The question about how the contractor was procured is discussed below.

Based on the evaluation, BITS thus asked the parties to renegotiate the contract with the suggestions expressed by the consultants in mind, before BITS would consider financing. The renegotiation took place and resulted in a decision to build only one storage facility, as well as a number of other technical changes. These changes decreased the total construction cost by some 35 % and also meant a shorter construction time. Also, Skanskas advance payment was decreased and its guarantee obligation was increased. At that time - on BITS insistence/suggestion NOCZIM also decided to contract the Norwegian firm Interconsult to act as supervisor and controller of Skanskas implementation on behalf of NOCZIM.

2. Goal hierarchy/the logical framework

It is clear that, alongside with the economic motives, also the strategic/political and security motives must have played a very large role in opting for such a large storage space as 700,000 m2. Perhaps even more than it appears in available documents. This is also born out in a memorandum written by the Swedish Embassy in September 1990, lending strong support for the project.

Today when the geopolitical situation has dramatically changed for the better, the official position of the Government as well as of NOCZIM is that the economic motive of being able to buy large quantities of oil on the spot market in Rotterdam when prices are low and then stockpile it, is still valid. Whether the potential profit for NOCZIM of winning on the spot market will prove enough to justify the large investment cost will be discussed below.

Some officers of NOCZIM do concede that "if we had known then with certainty that the political and security situation would change permanently, then we could have settled for half the capacity." But in 1992, when the situation can already be seen to have changed dramatically with the release of Nelson Mandela, the planning of the project had already reached an advanced stage, although no construction work had actually started. However, a preliminary contract had been signed already in 1989, but this was later renegotiated. Some of the orders had already been placed by the contractor.

Even though the geo-political scene had changed already before the project actually started, it must have been difficult for recipient and donor alike at the

time to rely on the change as being permanent, after having lived for decades in a totally different, i.e. a very threatening geopolitical situation.

What is however surprising is that all of the actors involved (except notably for the World Bank) actually seem to believe in the economic motive per se of building a large storage capacity. As is argued under section 6 below, the economic motive was, in our opinion very weak then and it is very weak today. In summary then we can conclude that there were both strategic/security and economic motives governing the decision for the project.

The project´s goal hierarchy regarding the BITS-financed parts could be described as follows:

Preparation stage (First credit):

Inputs/Activities

- Assess/analyze the pre-feasibility study made by Santa Fe suggesting "conventional" above ground storages
- Carry out geological investigations
- Design and calculate cost of a new alternative construction method, namely underground rock caverns
- Explore possibilities to procure subcontractors for construction work as well for supply of equipment by local firms
- Explore potential financing for the project

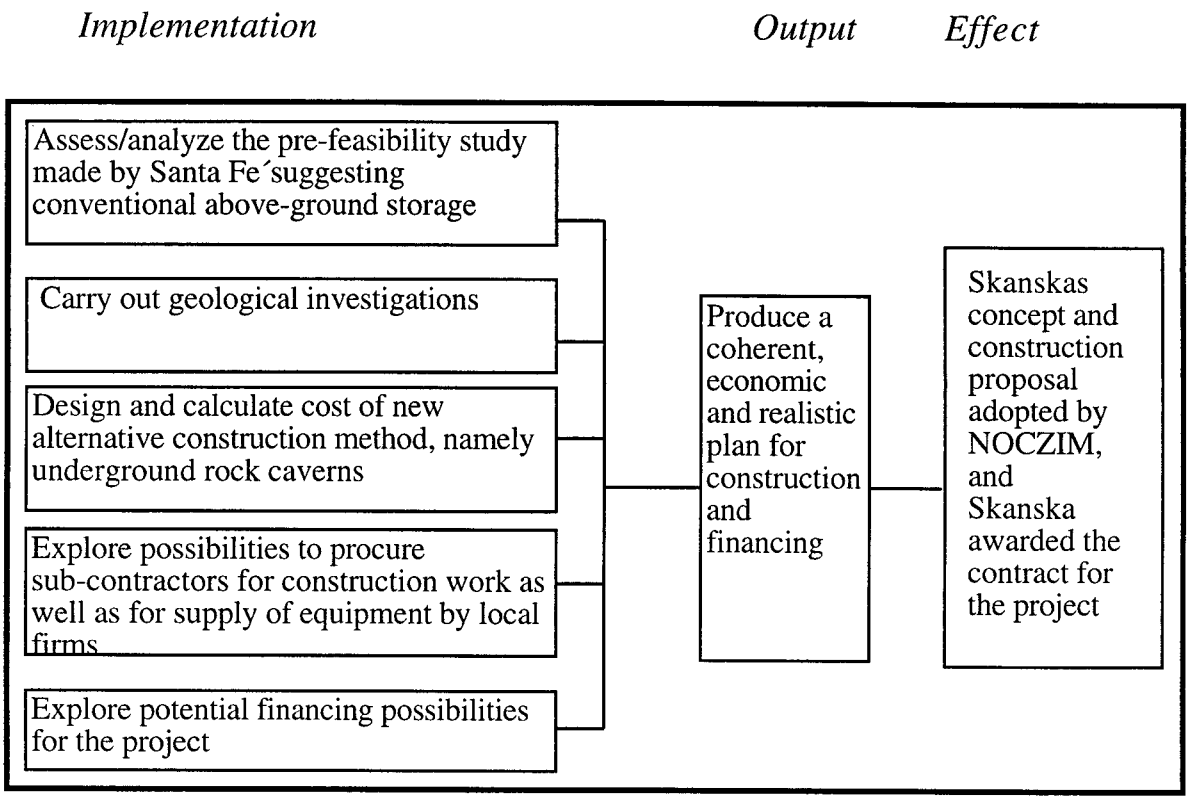
Output:

- Produce a coherent, economic and realistic building and financial plan

Effect:

- Skanskas concept and construction proposal adopted by NOCZIM, and Skanska awarded the contract for the project

Figure 6: Goal hierarchy for preparatory stage of fuel storage projects



The construction project:

Inputs

- Provide management for the entire construction work
- Provide on-the job training
- Provide financing

Activities and implementation:

- Excavation, construction activities, management etc.

Output:

- An underground storage space of a total volume of 360.000 m3 consisting of the following underground rock caverns: 2 for diesel oil, 2 for petrol and 2 for jet fuel.
- Above ground pumping and other facilities

Intermediate objective:

- Functioning storage caverns filled to desired levels

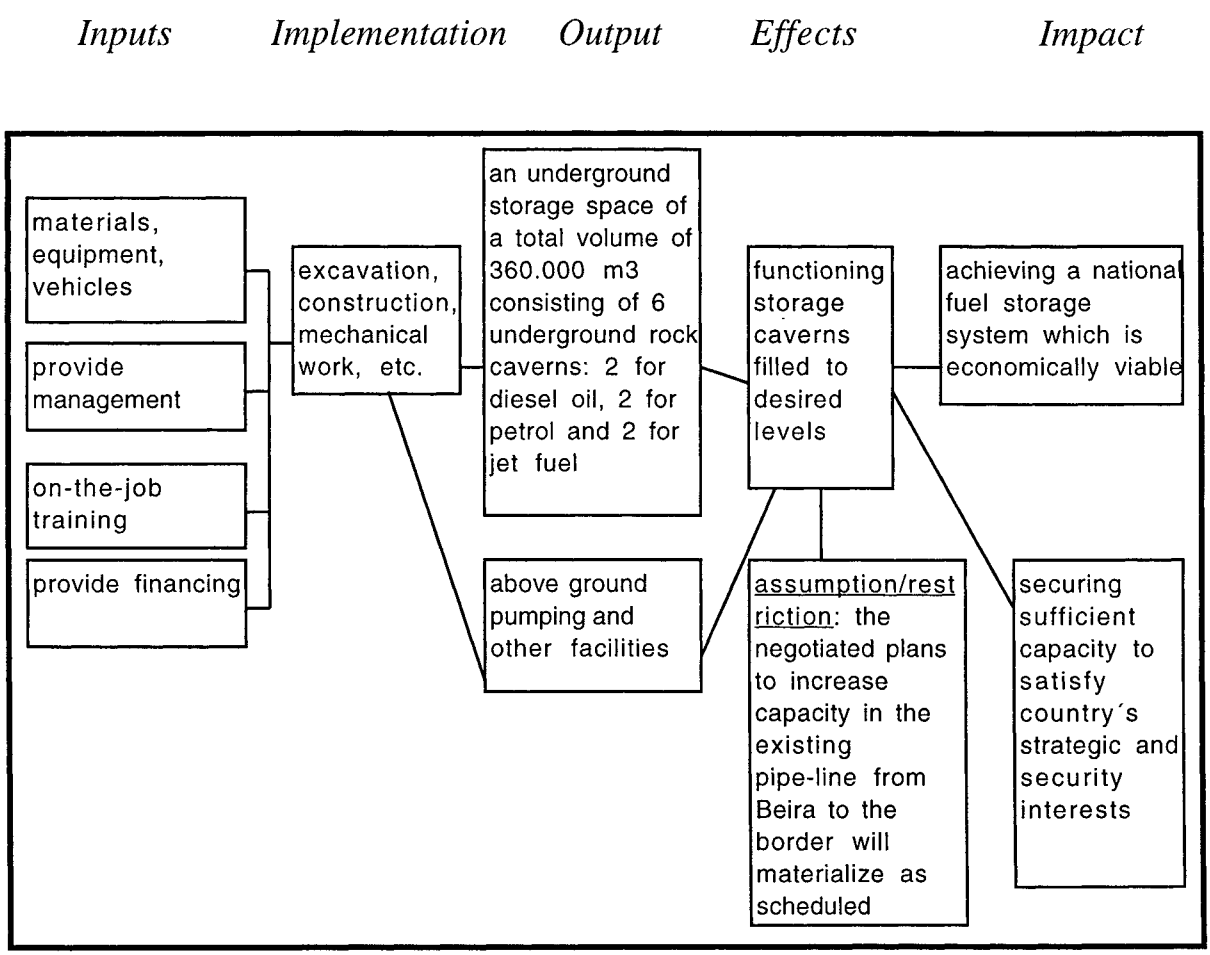
assumption/restriction:

- The negotiated plans to increase capacity in the existing pipe-line from Beira to the border will materialize.

Effects/Impact:

- Achieving a national fuel storage and handling system which will be:
  - Economically profitable for the country
  - "safe" and of sufficient capacity to satisfy the country's strategic and security interests

Figure 7: Goal hierarchy for construction of fuel storage project



The **total cost** of the project including Skanskas Norwegian subcontractor and local Zimbabwean firms, is as follows:

Preparatory studies:	MSEK 9.
The investment project:	
Civil works: Total	MSEK 261, 2
of which Swedish portion	MSEK 187,0
of which ZD-portion	ZD 30,6 million
Mechanical and electric works:Total	MNOK 88,0
of which Norwegian portion	MNOK 74,8
and ZD portion	ZD 10,3 million
Above ground civil works:	ZD ZD 3,0
Above ground structural works:	ZD 3,6 million

The figures are from the accounting firm Scott,Wilson, Kirkpatrick, November 1995

3. *Implementation*

The project was completed and officially handed over by the contractor to NOCZIM on 23rd February 1996, which means that it will be under contractor´s warrantee until January 1997. All available evidence gathered through various reports and through the interviews we have conducted suggests that the implementation work by Skanska has been very successful. The most negative statement we have heard is "implementation was not perfect, but at the end of the day we have a good plant". From what can be seen by visual inspection of the plant everything seems impressively well designed and well functioning. Everything seems to be in place and everyone seems to know exactly what he (it is always a he) is doing.

NOCZIM has asked its controller, Norwegian Interconsult, to write a final report covering the implementation, construction, quality, design etc. This is a major report which is scheduled to take 500 man-hours to produce, and is planned to be completed in late 1996.

There was a small delay in completion date which is assumed to be due to a variation order issued by NOCZIM because of a change in location. But in an auditor´s report dated October 1995 it is stated that "not all the extension of time being experienced is attributable to the Variation Order works."

4. Results

The output of the project is that there are in place today six underground rock caverns plus service and control and other rooms and facilities. Before the official handing over date in February 1996 the installations were amply and thoroughly tested with completely satisfactory results. The storage facility is today accepted by all parties to be well built, of high quality, completely functional and well operating.

Today, after three months of official use, the volumes filled compared to available capacity of the various caverns are as shown in table 11:

Table 11: Contents of the caverns on April 11, 1996, thousand cubic metres

Caverns:	cubic metres	ullage	Total capaci-ty	% filled
1. jet fuel	0,9	36,8	37,7	
2. jet fuel	0,53	31,8	32,3	
3. diesel	1,3	103,9	105,2	
4. diesel	9,0	95,7	104,7	
5. petrol	6,9	33,8	40,8	
6. petrol	.52	40,4	40,9	
Total	19,3		361,6	5,3

Overall the caverns are today filled only up to 5,3 % of available capacity.

There are two obvious reasons why the caverns could hardly be very full today, namely that only three months have passed since commissioning, and that fuel prices are today very high so its not a good time to stock up. Gasoil today sells for USD 202 compared to USD 140 a year ago, petrol for USD 238 compared to 157, crude oil for USD 22-25 per barrel compared to USD 16 a year ago and finally jet fuel for USD 198 compared to USD 150.

But when NOCZIM states those two factors as the main reasons for low utilization of the caverns, this is misleading. Because those two factors only explain the short run situation. The important reason why these caverns will likely remain utilized at very low levels of capacity for years to come is the

one already mentioned above, namely that the caverns are so big that there their full use would probably be uneconomical.

Today, as was mentioned above, the caverns could not be utilized fully even if one wanted to do so, because the pipeline capacity from Beira is simply not enough. The faltering part of the pipe-line is the 188 km stretch from Beira to Feruca, close to the border (owned and operated by the British/South African Company LONHRO), while the portion on Zimbabwean soil, the 205 km owned and operated by the Zimbabwean government, is rated at a capacity high enough not to make it a potential bottleneck in filling the fuel storage tanks.

5. Financial rate of return

As was noted above, one motive for opting for a large rather than a smaller storage space, was that a large space will allow NOCZIM to "play the spot market", i.e. buy large quantities of fuel when it is cheap and stockpile it for times when it is expensive.

NOCZIM today hopes to use the large storage capacity to its advantage by re-exporting oil to Malawi, Zambia and Botswana. Such export has already taken place, and Zimbabwe is then competing with South Africa´s traditional role as supplier of fuel to these countries.

Another hope (possibly in contradiction with the one above) nurtured by NOCZIM is that South Africa itself - which has plenty of refinery capacity - might become interested in *renting* storage space from Zimbabwe to service its exports to the African countries. Such fuel would then, just like Zimbabwe's own fuel, be shipped in from Durban through Beira using the same pipeline whose capacity today can not even satisfy Zimbabwe's own needs.

In addition there are two other uses for the storage mentioned by NOCZIM.

It could be used by South Africa on a rental basis for its import of refined oil from outside, which could then come in directly to Beira. And, it could be used to store refined oil which Zimbabwe might in the future decide to buy from South Africa. Such fuel would also be shipped in through Beira.

We have no detailed knowledge about the marketing plans and other considerations of the various actors to be able to judge the realism of such

plans actually materializing in the near future. But we think that skepticism is called for.

On the general proposition of "playing the spot market " in Rotterdam which NOCZIM obviously places so much hope in, we are even more skeptical. Not being experts in oil trade we would assume that predicting price movement in the spot market should be just as difficult as predicting the ups and downs of the stock market. If that is so, one wonders what basis NOCZIM has for its optimism. Anybody - expert and amateur alike - knows that this is a tricky business. Why would NOCZIM be more successful than anyone else? Concretely speaking: suppose NOCZIM buys a large volume of fuel when the price is supposed to be low, how does one know that this low price level does not remain low for a very long time, or even that the price falls even further? In both cases NOCZIM would have lost out. And in any case the price margins would have to be substantial to cover the cost of capital tied up in the stored fuel. If one counts that the alternative or opportunity cost of capital in a less developed country as Zimbabwe is often considered to be in the order of magnitude of 20 % and upwards, NOCZIM would have to reap a profit from its market speculation of at least that percentage to justify the capital tied up.

So the motive of having a large storage capacity in order to allow profits to be made on price movements to us seems uncertain at best, but probably quite unrealistic. Also the donor agency BITS, at least to a certain degree, shared NOCZIM´s view that "playing the spot market would allow NOCZIM to operate the fuel storage with profitability. At least this hope of NOCZIM is not questioned or even discussed in the BITS decision memorandum.

Judging from NOCZIM´s historical performance w r t procurement we have no cause for optimism. A World Bank study (*"Petroleum product supply and Distribution in Sub-Saharan Africa"*) which analyzed NOCZIM, arrived at the conclusion that NOCZIM´s procurement practices had cost Zimbabwe about USD 35 million in excess cost in 1991. The Bank therefore advocated that NOCZIM´s procurement practices and procedures should be revised, and that one should encourage competing sources of supply rather than maintaining NOCZIM´s monopoly.

NOCZIM´s monopoly position. That there would be important efficiency gains to the economy from a break-up of NOCZIM´s import monopoly has been argued forcefully in several studies. In the Bank study it is suggested that the real losers in today's system are the fuel consumers, for even the

international oil companies seem to be happy with things as they are, for the current system is very profitable to them.

"First, they sell the product to NOCZIM at high prices - and in foreign exchange, so that profit repatriation is not an issue. Second, they distribute the product in a risk free market with guaranteed mark-ups. The only downside they face is if mark-ups do not keep pace with cost increases, something which probably does not happen in the long run. They therefore have little incentive to disrupt the current arrangement.."

NOCZIM is currently in the process of checking if the original calculation showing a positive internal rate of return of the fuel storage investment still holds true. We were told that no report has been carried out analyzing the economic implications of the various marketing assumptions referred to above. But also such a report will be made by NOCZIM later this year. With respect to the original calculation of the project´s expected profitability made by Skanska in 1991, no post completion audit has yet been made, mainly because - the project having been just completed- not all cost items are in yet. However, in NOCZIM´s opinion as expressed to us by its financial manager, such an audit will probably confirm the calculation made by Skanska.

In BITS decision memorandum dated December 1990, the financial internal rate of return calculated by Skanska for the project is quoted as 26 %.

However, in a "revised analysis" sent by Skanska to BITS on January 23rd, 1991 the internal rate of return is given as 15,67 %.

The Skanska analysis does not incorporate qualitative benefits to the country such as being assured of a regular and safe supply of oil, or the possibility of acquiring and stock-piling large volumes of oil when prices are low. These factors, if they were included, Skanska claims would make the analysis more positive. We think that this is not at all sure when it comes to the latter effect. It could just as well turn out to be negative, if you are unlucky instead of lucky in the spot market operations. We have the impression, but we are not sure, that the Skanska analysis does not make provisions for shadow pricing and other economic considerations. It is therefore essentially a financial analysis and not an economic analysis, although this does not seem to be stated explicitly anywhere.

From the data lists available to us we are not able to see the methodology used in this calculation, nor the implied effects of the assumptions made. In the text

we are however told that the IRR evaluation takes account of all costs including capital costs for oil products in the storage. The depreciation period for the caverns is 50 years and for the pipe work 25 years. We are also told that the load factor in the storage is assumed to be 50%.

The credit agreement is between NOCZIM and the Swedish Bank, and NOCZIM receives the full benefit of the 25 % grant element contained in the credit. It only has to pay a 1 % fee on an annual basis on the outstanding amount for the guarantee issued by the central Bank of Zimbabwe.

NOCZIM is a privately chartered company but 100 % owned by the government. It is not receiving any subsidy from the government, but it is responsible for holding and managing the fuel price equalization fund (which is a government task rather than a commercial operational task) and in this way NOCZIM *is getting subsidized.*

NOCZIM thus collects and controls significant public revenues in the form of the strategic storage and price stabilization levies, that do not seem to be subject to the same accounting controls as other revenue sources. These levies raise over USD 200 million annually, and the World Bank feels that "both should pass to the Treasury, and the associated expenditure should be subjected to budgetary evaluation of priorities." The World Bank in its study also makes note of the fact that NOCZIM "also oversees a large investment program (the strategic storage reserve) that has significant non-commercial elements that should be subject to the same scrutiny as other public investments".

NOCZIM has a monopoly on oil importation, but the oil is distributed to the consumers by four foreign owned oil companies, BP/Shell, Caltex, Mobil and Total.

In conclusion we must state that on the basis of available evidence and the time allotted to this evaluation we are not in a position to ascertain whether there is financial profitability in this investment for NOCZIM.

Also, there is the uncertainty, already referred to above, of calculating financial rate of return forprojects in state companies when one has no certainty of if, and by how much the company in question is being (hiddenly or indirectly) subsidized by the state.

6. Economic rate of return

In BITS decision memorandum it is stated that

"an economic analysis is difficult to make because the profitability in this type of storage facility depends on a number of uncertain factors - future oil prices, bargaining position etc.".

This is a surprising, and of course erroneous, statement for the uncertainty pertaining to various economic factors is precisely *the reason why* an economic analysis, including sensitivity analysis, should be made. Given the understanding of the nature of economic analysis which BITS has shown in other projects - and for that matter in other documents of this same project - we prefer to think however that this sentence in the decision memorandum is just an oversight on part of BITS.

In any case, no economic analysis was made by BITS or in its behalf which we must here conclude was an important mistake. Especially since BITS did not share the views expressed by the World Bank study that a storage facility of that magnitude would be uneconomic for Zimbabwe.

We are not in a position to judge whether an economic analysis would show the investment to be profitable or not. We tend to be skeptical and suspect that it may prove to be negative. But the point we are making is that NOCZIM and/or BITS should have carried out an economic analysis before going ahead with the decision. Having said that we must however remind ourselves of the fact that the motives for the project also included the security/strategic aspects, so the decision to invest could thus of course be justified on security grounds rather than economic ones. But *if* this *was* the case we would still insist that a proper Cost Benefit analysis should have been made. This would have given the country's decision makers a picture of how large would be the cost - or the profit - to the economy of satisfying this strategic/political decision regarding the country's fuel storage.

The Bank´s study on the feasibility for Zimbabwe of different alternatives for fuel storage was criticized above for its apparently erroneous defense of above ground steel tanks, when the underground rock caverns turned out to be superior both in function and economy. It is this same Bank report which - as was also referred to above - came to the conclusion that it would not be economical for Zimbabwe to construct a large volume storage facility.

We therefore find ourselves in the awkward position of discrediting the Bank´s analysis in one aspect while wanting to lean on the same report for support regarding another aspect. The concrete problem is this: In comparing the estimated cost of a large volume underground storage facility with a much smaller and gradually built above ground storage tanks, the Bank uses those cost estimates which, as was shown above, were erroneous for various technological reasons. We therefore do not think we can trust the Banks figures. But we do trust its logical arguments about the unnecessary cost to the economy of maintaining a very large buffer stock. And we do, of course, believe in our own arguments of the great difficulty of playing the spot market in Rotterdam for cheap procurement of large quantities of fuel. So, we must proceed with caution. We are led to accept the Bank´s reasoning, but not its figures.

And since there is no other economic analysis that has been done of the viability for Zimbabwe of the fuel storage, we are in the position of not being able to conclude whether the project is or is not viable in economic terms. We can only cite the arguments which to us sound credible and indicate the direction of our thinking.

The World Bank in its report gives the following arguments against investing in a big volume storage facility:

> "While it may be prudent to make provisions for two to three months of stocks, this probably can be accommodated with storage capacity already existing in Zimbabwe. Anything beyond this level would be considered strategic storage capacity which is justified only if there were to be a strong probability of severe and extended supply interruptions, producing substantial costs in their wake. However for Zimbabwe, there will always be alternative (though higher cost) sources of supply to the normal Beira route. These resources might not meet normal demand, but combined with well scheduled demand reductions they should be able to greatly extend the period until stocks were run down to crisis levels."

If it is considered that two months of supply is sufficient for normal operating contingencies, then the cost of the additional 4 months of supply must be considered an outlay that produces no return unless a severe disruption occurs.

To conclude this discussion on the economic viability of the fuel storage project, we can summarize our position thus:

Based on the reasoning presented above we *think* that there *may* be a substantial risk that the fuel storage project will not show economic profitability for Zimbabwe. We can not know for sure because there is no economic analysis of sufficient reliability.

If the main motive for building the storage can be said to have been political/strategic rather that economic it is of course acceptable even if there is no economic profitability. But then this should have been stated explicitly. Since there was no such statement we conclude that the motives for building the large capacity storage space were mixed - both economic and political.

We believe that a comprehensive if not thorough, economic analysis should have been carried out before the investment was decided. This was so much more called for since the storage had already been seriously questioned by the World Bank. Also, because the political situation in Southern Africa was already starting to change before the project was actually started, this should have prompted decision makers to once again question earlier estimates of needed reserve storage.

A very important reservation to our critique must be noted. This has to do with the marginal cost of building a larger rather than smaller storage space. According to NOCZIM and Skanska, above a certain minimum volume, such marginal cost is very small. If this is true then of course the economic risk one runs by building over capacity becomes so much smaller. And it would then make our skepticism against too large a storage space less important.

7. Environmental effects

A special consultancy study was commissioned by BITS to investigate the environmental effects from the fuel storage construction. In the opinion of those consultants there are only marginal ill effects on the environment caused by this project. Because the ground water pressure is higher than that of the stored fuels, fuel can not leak out into the ground water. Only the ground water can leak into the fuel tanks. Therefore there is no risk of ground water contamination.

The consultants point out that the landscape will only be affected by a few necessary above-ground installations. However, they are then forgetting that the location of the storage caverns is in the middle of an area belonging to the protected "balancing rocks" park. This is an area of huge rocks balancing on

top of each other, a phenomenon created by thousand year old soil erosion, and it is today a Zimbabwe national heritage. Although the physical intrusion in the landscape has apparently in deed been minimal, the fact remains that *this part* of the balancing rocks park has, because of the fuel storage project, changed character from a natural park to a well kept industrial site.

The consultants further point out that during the construction phase there will inevitably be a measure of both noise and air pollution. When the storage facility is in operation fuel smell will spread as fuel transporting trucks are filled. Also, one cannot rule out the risk of oil spills on the ground during filling operations.

8. Gender

No gender effect was either planned or foreseen in this project. Nor has our analysis led us to see any possible gender implications associated with this project.

9. Poverty orientation

Poverty orientation has not been a consideration in this project. Nor has our analysis led us to see any such implication.

10. Relevance/sustainability

The question of relevance and sustainability is closely related with the question of the project´s economic profitability. If the project proves to be a profitable proposition for the national economy of Zimbabwe, we can safely assume that the government will take the proper decisions regarding management and maintenance so as to guarantee its sustainability.

In this project we have questioned its economic viability on grounds of the facility being too large. To the extent that this questionable profitability proves to be the case, we can then also expect the project having difficulty of sustaining itself. This is especially true for an economy which is increasingly becoming market based, as opposed to the previous planning based economy, which proved to be insensitive not only to the financial criteria but also to economic profitability considerations.

11. Sweden's overall development goals

Of the four original overall objectives of Sweden's development cooperation with less developed countries it is clearly two - and only those two - that stand out as having been relevant in this project. They are *economic growth* and *economic and political independence.*

As for observed attainment of these goals it is obvious that the independence goal is served when a large rather than a smaller storage facility is built. However the *economic growth* objective will only be attained if the project is economically profitable for the country. As we have expressed doubts about that economic profitability, we must also conclude that the goal of economic growth may not have been served by this project.

The goals of *economic and social equality* and *democratic development* were not considered when the project came about, nor has this evaluation been able to establish any such relevance in this project.

12. Procurement

The tendering procedure and awarding of contract in this project became quite complicated and at times controversial. After various delays and some unorthodox initiatives, the end result nevertheless seems to be that NOCZIM *did* get the best contractor and good value for its money. This is a conclusion arrived at by an independent consultant retained by BITS specifically to evaluate the bidding procedure in this project. It is also a conclusion which we can share having seen all the documentation.

At the root of the complications seems to have been the fact that BITS at the time of its decision regarding the SEK 9 million credit for phase I - the preparatory studies - of the project, made a (vague) statement to the effect that it was also willing and ready to finance the investment part of the project. In BITS´ interpretation such an expression of future willingness to finance was a necessary condition for Skanska to be awarded the contract for the first phase. Otherwise the contract would have gone to a French competitor whose government allegedly had guaranteed financing covering also phase II.

What happened was something like this We here follow closely the account given by the above mentioned consultant:

Skanska won the bidding on its competence and its financial solidity, as well as being able to offer the best financing package. However, the contract price was quite high. One competitor, Norwegian Interrconsult, had a 10 % lower price, but was not chosen inter alia for not being able to offer a secure financing package.

"NOCZIM´s ties to Skanska who had carried out the project´s phase I, were such that it would not have been easy to disrupt the process by arranging a new round of tenders. For in the sense of Skanska´s contract with NOCZIM for the first phase, the second phase was an integrated part of an already negotiated contract".

So NOCZIM did not really have a choice. BITS had not (at least not in the eyes of the independent consultant evaluating the bidding procedure) defined its financing of the first phase as being just a separate study, and not part of a continuing investment project. Therefore, Skanska had already been nominated by NOCZIM as being responsible also for the investment phase of the project.

Both NOCZIM and the Ministry of Finance were of the opinion that it was neither necessary nor possible to have a new round of tenders as this would lead to serious delays in the project and leave NOCZIM without guarantees against cost increases. If BITS had at that time insisted on a new round of tendering, this would likely have led to a freezing of the whole project. In the opinion of the recipient country the country's procurement rules had already been fulfilled by the tender carried out for phase I.

But from a formal point of view the situation at the time was that not only had formal rules of competitive bidding *not* been followed, but the actual result of the procurement process was that no commercially sound result had been achieved.

BITS in this situation had two options at its disposal - refuse to finance the second phase, or try to modify the existing contract to ensure that it was by outsiders seen to be for all practical purposes competitive. BITS choose the second option and did succeed, as was noted above, to coach the contracting parties through renewed negotiations which lead to a number of modifications.

Some of these modifications have in BITS documents been portrayed as concessions by Skanska. But Skanska´s position is that the lowering of the contract sum which took place was simply dependent on physical decreases of

the construction plans, and not due to any lowering of Skanska´s price. Be that as it may, the important fact is that not only the two contracting parties were satisfied with the new contract, but also apparently all other outside concerned parties.

If the renewed negotiations had not been successful, BITS, according to its own binding rules of competitive bidding, would have been forced to refuse finance. This would naturally have led to great losses both for Skanska and NOCZIM who had both already invested a lot of time, effort and money in the project. According to a report by the Swedish Embassy this would also seriously have damaged Sweden's and Zimbabwe's (economic) relations.

In the discussion that has surrounded and followed this complicated procurement no one seems to have suggested that there was a way for BITS to act differently so as to avoid the subsequent complications. The theoretically simplest way would of course have been to let another consultancy firm carry out the study phase of the project. But this in practice would not have been realistic since the technological knowledge in the field of underground construction lies with the construction companies and not with the consulting firms.

When it comes to the fact that Skanska in this project has acted both as "Engineer" and as "Contractor" this in itself can, however, not be seen as anything strange in a project of turn-key character, for the contractor then has to assume responsibility both for construction, building and functioning of the system.

Without very specialized expertise in the international techniques of construction contracting it is really not possible for this evaluation to judge exactly which procedure on part of the financier BITS would have been optimal, both satisfying practicality and formal rules. Our overall impression after assessing available material is that probably BITS was not "on top of" all aspects from the start, i e. that it could have acted somewhat more professionally in the outset. On the other hand, one cannot help being impressed with the way BITS took charge of the situation and brought it to an end result which seems to have satisfied all concerned parties.

13. Repayment of credits

NOCZIM itself has signed the loan agreement with Swedish Nordbanken, and there is consequently no on-lending agreement between the government and NOCZIM. The Central Bank and Ministry of Finance have issued a guarantee for the loan for which NOCZIM pays a fee of 1 % per annum on the outstanding balance. The payment of the guarantee fee has been made according to schedule.

As for the repayment of the credit to the bank in Sweden this has also gone according to schedule. The project was commissioned in January this year and the first payment of USD 1.7 million was made on February 29 and the next one will be due in august of 1996.

14. Project preparation

Even though project preparation, partly due to the difficulties surrounding the tendering, dragged on for four years and contained its fair share of disagreements and discussions, it is not possible to say that BITS handling of the case lacked in efficiency and professionalism. Like in most other projects, BITS seems to have approached the financing task with great seriousness and thoroughness. As usual it made use of several outside consultants to guide it along in various stages. At one time, one consultancy firm was contracted to pass (second) opinion on something another firm had just been contracted to do. Some of the consultancy assignments were quite substantial.

In acknowledging that BITS handling of the project preparation generally seems to have been according to good standards, we do not necessarily subscribe to BITS own claim (which is made in the decision document) that its intervention in order to renegotiate the preliminary contract is what led to substantial improvements for the client NOCZIM. As was mentioned above the price decreases agreed to at the time of renegotiations in Skanska´s view were entirely dependent on physical decrease in the scope of the project, and not to any pressure from BITS to lower its price.

A general feature of all the BITS projects evaluated here is that there is very little information available in BITS archives from the time *after* BITS has made its decision to finance. The fuel storage project would seem to be an extreme example of this phenomenon. From the time when the construction works were started in early 1992 until the present day, only one document - a

brief letter from NOCZIM to BITS - is contained in the files. This seems to us to be unsatisfactory, even though we recognize that the role for a donor like BITS to play was different from that of e.g. SIDA. According to BITS´mode of operation the project is the responsibility of the contractor and the client, while in traditional development projects like those of SIDA the donor agency in practice, though perhaps not always in theory, is expected to remain an active partner all through the project life.

In its decision document, BITS states as its intention to nominate a special monitoring group to carry out an on-going monitoring of the project. The archives give no trace of such a group having been in operation.

Contractor. Even though Skanska found itself playing the lead role in a situation where formal rules of international competitive bidding had been set aside, there is nothing in the documentation suggesting that the contractor Skanska has failed to adhere to proper norms of behavior. According to the written and oral information available to this evaluation Skanska did no less no more than defending its own proper business interests as one could have expected any contractor to do.

In the BITS decision document it is stated that the contractor Skanska will be required to provide BITS with regular reports on how the contract sum is used to procure Swedish goods and services. We have not been able to see any such reports in the archives.

Recipient. According to the agreement NOCZIM is obliged to provide BITS with half-yearly reports concerning project implementation. As far as we can see no such reports have been sent by NOCZIM. At least there are none available in BITS archives.

Also NOCZIM was to present a special plan to BITS on how the procurement of fuel and its distribution, as well the running of the storage facility would be organized. Neither this obligation seems to have been met by NOCZIM.

Other actors. As in virtually all of the BITS credits an important roll was played by the Swedish Embassy in Harare. This role consisted not only in assisting BITS in various ways, but also to provide its assessment regarding business conditions in general and the BITS financed projects in particular.

Although we do not in any way wish to discredit the general value of the Embassy's various interventions, it nevertheless needs to be pointed out that the Embassy in this particular project placed itself in a position which today - with the benefit of hindsight - seems not to have been a constructive one.

Probably somewhat impatient after nearly four years of project preparation the Embassy strongly advocated against the new proposal to build only one storage instead of as originally planned two. From what can be ascertained from the documentation the motive of the Embassy was that it thought it would be embarrassing for Zimbabwe's government to have to recall an earlier cabinet decision to build two storage facilities. But the Embassy's telex to BITS also contains economic arguments in favor of the two storage alternatives even though -as can be seen from other documentation- it had at that time already been clearly established that it was the one storage facility which was the most realistic and the most economic one. Looking at this intervention today - again obviously, with the benefit of hindsight - one cannot escape the impression that the Embassy here argued against better judgment in its apparent concern "not to rock the boat". The telex to BITS even warns of a possible deterioration in the climate of the Swedish-Zimbabwe economic relations if the Swedish side insists on a radical change of the project. From the perspective of today this stands out as an overreaction when the proposed change was in effect a very legitimate attempt to give Zimbabwe a better and less expensive solution to its fuel storage problems.

Another surprising statement in this telex is this:

"Even if in the long run the original motives for a Swedish engagement in this project may be eliminated - namely an increased dependence on South Africa - we still find it to be most urgent to assist Zimbabwe in building increased storage capacity for fuel."

It is not clear to us why, in the eyes of the embassy, the urgency of the project is so great if the embassy seems to think that the changing political situation might in fact eliminate the main motive for building a storage capacity at all.

IX REFURBISHMENT OF THREE OLD THERMAL POWER PLANTS

1. Background

The decision to undertake refurbishment of the three old thermal power plants - *Harare I, Harare II and Munyati* - was taken as the country was going into a prolonged period of severe drought, and the inclination, as stated by ZESA today, was to "go for safety in securing the country's electricity needs". Nevertheless, it was the economic motive which was the one directly motivating the plan to refurbish. To refurbish old existing coal plants was considered to be the cheapest and fastest way to increase available capacity of power generation. The intention was to use the refurbished capacity to satisfy peak load demand and to serve as reserve capacity. Each power station is connected onto the system in accordance with its economic order of merit (relative cost of production). The Harare power station being the furthest station from its coal source, has a higher relative production cost and is thus connected last.

According to estimated consumption needs of electricity the old thermals were needed during the two years that it would take before major amounts of power could be imported through the interlink stations being built to receive power from Cabora Bassa in Mozambique and from Matimba in South Africa.

Initially, also the old thermal station in Bulawayo was to be included, but because of the severe water shortage in the Bulawayo area it was dropped from the program in order to save the scarce available water for consumption purposes instead of having to use the very large volumes needed to cool the power plant.

The coal driven power stations in Harare and in Munyati were commissioned between 1946 and 1958 and their 35 year old Metropolitan Vickers turbines had not been refurbished since. Apart from renovating the turbines and alternators and relining the boilers the refurbishment work included important elements of training, but - as it turned out - not enough training. To optimize the investment cost only turbines with a capacity of 20 MW or higher were included in the refurbishment program

2. *Goal hierarchy/logical framework*

The motives behind this project, as in the case of several of the other BITS credits to Zimbabwe, was a mixture of economic and political/security motives. The *main objectives* were to:

- increase the availability of the plants, and
- increase the operating efficiency

The *goal hierarchy* of the project looks like this:

Inputs/activities:
- Overhaul of turbines and alternators
- Training and transfer of knowledge

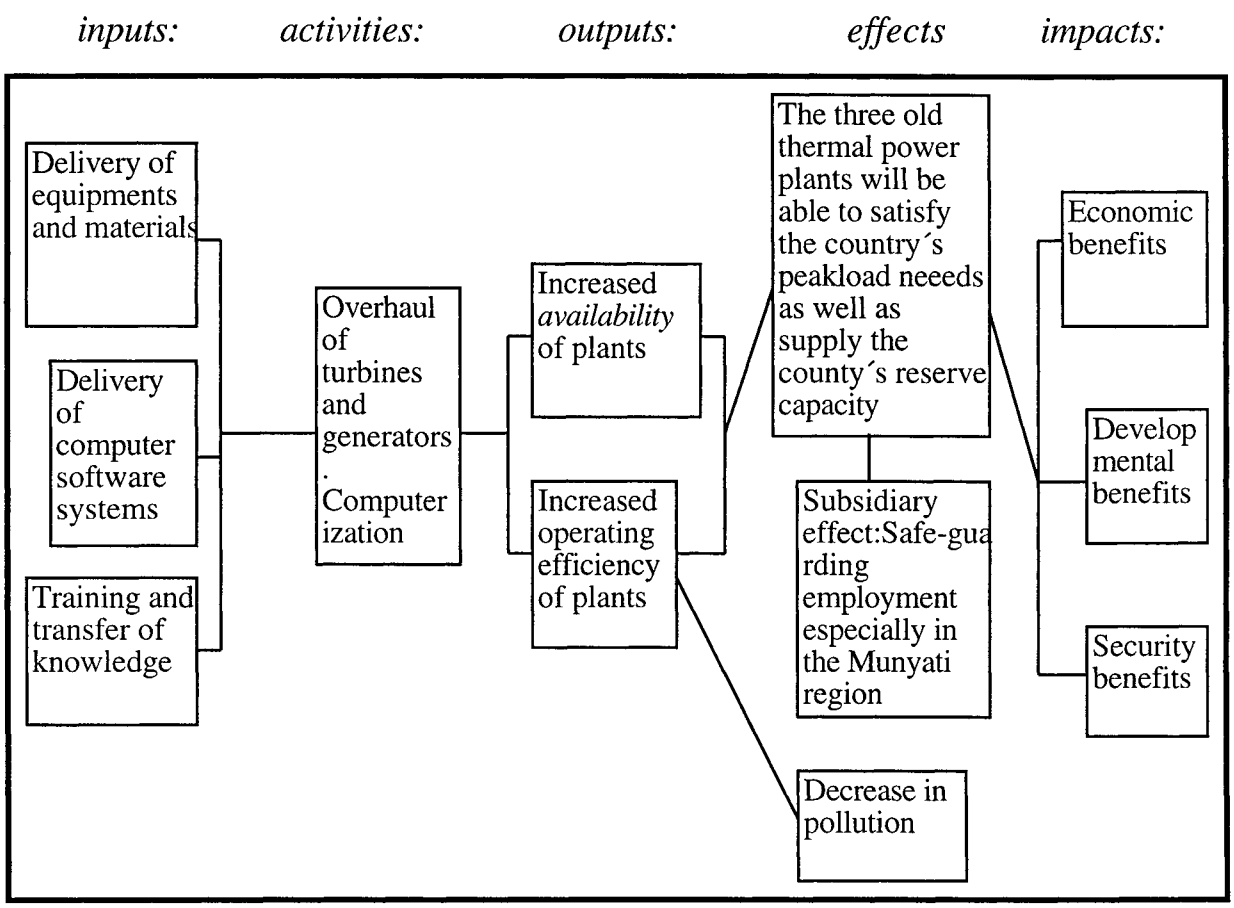
Output:
- Increase availability of plant
- Increase operating efficiency (=less coal consumption, less break-downs of plant)

Effects:
- The three old thermal power stations will be able to satisfy peakload needs and serve as reserve capacity
- Extension of the power plants´useful life by 15-20 years
- Decrease in pollution

Subsidiary effect:
- safeguarding employment especially in the Munyati region

Impact
- Economic benefits
- Developmental benefits
- Security benefits

Figure 8: Goal hierarchy of the refurbishment of the old thermal power plants



In addition there is the consulting firm **Swedepower's task of supervising** the refurbishment program on behalf of ZESA. This assignment, consisting of 78,5 man-months at a cost of appr. SEK 12 million, was financed in part by a SEK 6,9 million BITS technical assistance grant.

Inputs:

- Perform feasibility studies
- Preliminary design of tender documentation
- Tender evaluation
- Assistance during tender negotiations
- Supervision/monitoring during implementation
- Inspection after commissioning
- etc.

Expected Output:

- Provision of analysis and advice on a timely basis so as to lead to successful procurement of a contractor and successful carrying out of project.

3. Implementation

The implementation of the refurbishment program was smooth and generally successful. Only small delays were experienced in the work.

The last phase of ABB´s refurbishment work was a very stormy period in ZESA´s existence. According to newspaper articles there was at times "full warfare" going on between some ministers on the one hand and the ZESA board on the other. The object of the disagreements seems to have been more general than only the refurbishment program. But this program was perhaps the most important.

Although nothing has been substantiated, the project continues to be the object of frequent campaigns in the press. The last time was in March 1996 when allegations were made by the labor union that the refurbishment work had been a failure, and that the plants were in fact having more problems after the refurbishment work than before. In the documentation made available to us there is nothing which can substantiate the union´s claim. In our assessment the ZESA management has satisfactorily answered all allegations brought forward.

Another factor which is said to have had negative effects until as late as the middle of the 1980s is that the white staff hastily left ZESA, and the running of the plants in at the time inexperienced black hands. Then the efficiency of the power plants fell drastically. Today the situation is said to be normal. ZESA is now seen as running the power system including the power plants efficiently and professionally.

4. Results

All parties involved seem to be agreed that the result of the refurbishment project has been successful. Opinions by ZESA officers range from "refurbishment exercise was a total success" to "the work of ABB was not very good, not very bad. It was reasonable."

The availability of the turbines is almost 100 % of plan, while the boilers (relined by ABB´s sub-contractor Babcock Ltd) still need to be improved. While there were many breakdowns before the refurbishment such are said to be almost non-existent today.

ZESAs responsible officer says that "..plants have improved dramatically their result because of the refurbishment". But adds that "there are always some problems". One such problem is said to be the training component, specially in the boiler plant. According to ZESA, a lot of training that was originally planned to be included in the program was dropped "to satisfy the World Bank who was pressuring to cut down total investment cost".

In ZESAs opinion it is the insufficient training component which can directly explain the (not very many) operational mistakes that have been made. The training which *was* included was to take care of the new imported equipment, but there was not enough to service existing ones with running maintenance. The lack of training is, for instance, said to explain the overheating which has occurred on a few occasions recently in the boilers because low quality coal was used, and because of bad operating procedure.

As a result of the refurbishment there is today 40 MW of available capacity in Munyati and 50 MW together for Harare II and III. The reason the entire projected capacity of 80 MW is not available in Harare is a malfunction in one of the alternators connected to the turbines. The cause of this malfunction, according to ZESA, is a fault made by an earlier contractor. ABB has now been contracted to repair this alternator on a separate contract, outside of the BITS financed project. In May 1996 it is planned that the remaining 30 MW in Harare can be commissioned.

One of the Munyati turbines experienced slight vibrations after refurbishment, but after ABBs consultant advised them to use oil with a different viscosity, all vibrations stopped. In the 12 month guarantee time only a few minor questions were raised by ZESA. The time table was adhered to perfectly regarding the turbines, but not the alternators. This, however, was not ABB´s fault since a variation order had been issued by ZESA. The one year guarantee period is still running on four of the boilers (Babcocks part), while that of the turbines has now expired.

The Munyati plant reports a particularly successful example of on-the-job training. After the ABB staff had left the plant, the group of technicians that had been assisting ABB in its generator renovation work, undertook on their own to carry out the same renovation work on another of the broken down turbines. This work is now finished and is reported to have been very successful. By using local subcontractors to repair the rotor and procuring spare parts on the local market they managed to do the job in about seven months as compared to ABB´s four months. The extra time needed the manager ascribes to the slow local procurement procedures used by ZESA. In the process they accidentally found unused ball bearings which had been left in the store since the 1950s when the plant was built. The cost of this generator renovation has been calculated to have cost only 40% of ABB´s cost - 5,6 ZD million instead of ZD 14 million.

The Munyati plant has officially been assigned as reserve capacity but has in spite of this been running at its full capacity during the last half year.

5. Financial rate of return

A lot of attention was devoted by BITS to assessing the financial rate of return of the refurbishment work. Judging from the amount of documentation in the files on this aspect, BITS was very concerned that ZESA would not be able to carry out the refurbishment program showing a positive financial rate of return.

In our opinion this concern was somewhat misplaced, because ZESA being a parastatal subsidized (today mostly through hidden, indirect ways) by the state, the financial rate of return is an unsafe criterion of real profitability. For ZESA´s ability to undertake the refurbishment showing a financial profit is of course a function of the level of subsidies it receives from the state. So the financial profitability of the investment can be changed at will by the government through decisions such as

- who (ZESA or the Treasury) is to receive the benefit of the 35-% grant element contained in the Swedish credit
- what tariff exemption will it receive on imported investment goods
- what tax exemption will it enjoy regarding sales and other taxes

The crucial decision making criterion should in this case be the *economic* rate of return.

A lot of activity was developed also on the government side in order to be able to show a positive financial rate of return for ZESA to undertake the refurbishment program. It hovered very much around whether the project would be declared as having a "national status" which would render it exempt from sales taxes and import duties. Without such exemptions ZESAs original calculations showed that there was no way the financial rate of return could become positive. However, this was not enough . In order to attain profitability ZESA must also be allowed to receive for itself the entire grant element of the BITS credit, which amounted to some 35 %.

The final outcome of these exercises was - to make a long story short - that ZESA *did* receive all it asked for. And the project could be declared financially sound. From the documents one can also learn that the World Banks officer responsible for electricity generation (R.Broadfield) also gave support to this solution.

It is not difficult to understand why ZESA thought this was important. However it is more difficult to understand why the donor BITS took so much interest in this question. In one of the Swedish consultancy reports it is even suggested that BITS should lay the main emphasis in its decision on the financial calculations and not the economic ones.

ZESA is today officially self sufficient financially and does - apart from the important exemptions we just mentioned above - not (officially) receive any subsidies from the state. According to ZESAs financial manager the losses incurred in 1990, 1991 and 1992 were not covered by the treasury, but " charged against accumulated reserves".

For 1993 and 1994 ZESA shows a profit. Its latest financial report (1995) says that

" overall financial performance was good with operating profit increasing by 55 % ..... and net surplus after financial charges and providing for replacement of assets increasing by 131 % from ZD 36 million to ZD 85 million".

The different power stations are not profit and loss centres in themselves, only cost centres. In other words they have no revenues, only costs.

ZESA´s incomes from its tariffs today are not enough to cover its long run needs. In other words they are not enough to cover future investment needs.

Therefore the Government, has after negotiations with the World Bank, agreed to let ZESA base its tariffs on its long run marginal cost. This new system will be introduced fully by the year 2000. Today there is no consumer category whose tariffs fully cover long run marginal cost of electricity production. On the other hand, there are only two electricity consumers in the country whose tariffs are subsidized. They are the two government owned manufacturers SABLE and ZIMALLOY. Among the countrys 11 biggest electricity consumers, who together account for 30 % of the countrs total consumption, are four state companies among them ZISCO.

ZESA is supposed to be changed int o public joint stock company, and has been placed in the same category as e g NOCZIM which means it will be made a private company but the government plans to retain 100 % of the shares in its possession.

6. Economic rate of return

Also the *economic rate of return* was in this project has by the parties involved been given - justifiably - much attention. At least three different analyses were carried out by various actors, and a large number of memos as well as consultancy reports were written on how to interpret the results of those economic analyses.

Unfortunately, however, the situation today, in spite of all the efforts devoted to assessing the economic viability of the refurbishment program, is that we still do not have a clear answer regarding the projects economic viability.

One would have wished that the principal actors in the debate about the proper economic rate of return, namely ZESA, the Danish Government´s aid agency DANIDA, the World Bank and BITS, could have sat down at one table and - based on the various non-compatible analyses which had been carried out - agreed on a common analytical format so that one could judge the relative impact of the different assumptions made by the different studies.

ZESA today claims that it was always confident that the refurbishment work is economically profitable. This is born out by some of their documents, and this conviction has not changed, as it now intends to carry out refurbishment of also the old thermal plant in Bulawayo.

The main study forming the basis for ZESA´s - and BITS´ - respective decisions to go ahead with the refurbishment program is the one carried out in the spring of 1988 by Swedpower as commissioned by ZESA. This study was updated in October 1990, apparently in order to provide counter arguments to a feasibility study done by Danida in July 1990, whose findings were entirely opposite to those of Swedpower.

Subsequently, frequent references are made to a World Bank/ESMAP study from autumn 1990, but we have not been able to see the calculations of this

study. Since the World Bank study in the ensuing debate over the actual economic profitability of the program, came out on the side of ZESA and Swedpower, we conclude that it basically shared the assumptions made by the Swedpower analysis.

Comparing a situation with and without the refurbishment program, **Swedpower´s analysis** arrives at a net present value of the expected benefits of the refurbishment program of USD 245 million. This expected benefit figure is then to be compared with total expected cost, which in 1990 figures is assumed to be ZD 197 or 197/2,27 USD= USD 73 million. Swedpower´s basic methodology is as follows:

1. Calculate the expected outage of electricity over the period 1990 through 2002 if the refurbishment is undertaken

2. Subtract this from the corresponding expected outage if the refurbishment program is not undertaken.

3. Multiply the difference with an estimated cost of electricity outage.

4. The product is the expected net economic benefit for the country of undertaking the refurbishment program as opposed to doing nothing

The Danida study. A totally different result was arrived at in a study carried out by Danida. The Danida study does the following:

1. It calculates the economic unit cost per kWh by adding the cost of investment and the operating cost, whereby a shadow rate of exchange of 4.99 ZD per USD is assumed for imported equipment, and a conversion factor of 1.15 is applied to local financial costs in order to allow for subsidies and indirect taxes. The result is an expected unit cost of ZD 0.60 per kwh if one assumes that the power plants after refurbishment are able to produce at maximum, and above ZD 3.0 per kWh if minimum energy production is assumed.

2. It calculates the expected total economic benefit of each Kwh by adding together weighted expected values of

a) economic outage (which is the opportunity cost of not undertaking the refurbishment work). The value applied by Danida is USD 0.25 per kwh, i.e. one tenth of the value used by Swedepower.

b) strategic energy, which is the amount of energy which could be supplied in emergency situations, where the three old thermal power plants would be cut off from outside supplies.

The estimated level of economic benefit arrived at is ZD 0.60 per kwh.

3. Comparing points 1. and 2. above, Danida then finds that - taking account only of quantifiable costs and benefits - only at the extreme assumption of the refurbished plants attaining maximum output, could the

refurbishment program show break-even of costs and benefits. So at reasonable levels of output there would be an economic loss.

4. Next the Danida study goes on to consider non-quantifiable costs and benefits such as reductions in transmission losses, retained employment of labour and positive effects of on-the-job training. Without discussing these factors further the study concludes that their magnitude is relatively modest in comparison with the quantifiable costs and benefits, and therefore do not change the conclusion above.

5. Finally, the Danida study goes through the exercise of *weighting* the expected benefits of the program with respect to Danidas preferences to favour certain target groups with its aid. Finding in general that electricity consumption in present day Zimbabwe is at least in a direct sense, heavily skewed in favor of the better-off segments of the population, the weighting results in an even lower estimated benefit per kwh - between ZD 0.10 and ZD 0.20 per kwh.

Based on the above results the Danida study recommends ZESA to abstain from refurbishment work and instead carry out the most necessary repairs and maintenance in order to allow the plants to operate as reserve capacity up until the mid 1990s.

Danida found that the net influence on power generation of the old thermal power plants is minimal, and that necessary load sheddings could be done through cutting off some consumers and by decreasing the frequency during the remaining years until imported power from Cabora Bassa can become available in the 1995/96.

The World Bank has criticized Danida´s analyses stating that "The Danida decision (not to finance the project) was based partly on the fact that the project would not directly benefit the poor...". This statement is in our opinion misleading, because the Danida study arrived at an expected negative net benefit of the program even *before* it went on to perform weighting to accommodate Danidas objectives with respect to the desired target group. In other words Danida ruled the investment out irrespective of its relative effects on different target groups.

Differences between Swedpower´s and Danidas analyses. The Swedpower´s and Danida´s respective studies use different approaches and methodologies to arrive at their respective results. So to compare the impact of the various assumptions made in the two studies one would first have to streamline the calculations into a common format. However, looking simply at the different assumptions made, it becomes readily apparent that these in themselves can actually explain the different outcomes arrived at.

Firstly, the most important difference lies in the ***assumed cost of outage.*** This cost should be a measure of the actual economic "damage" in terms of lost production and consumption benefits resulting from producers and consumers being without electricity. According to economic theory this cost of outage is related to the degree of sophistication or industrialization/mechanization of the economy. According to Swedpower the World Bank has for a country of Zimbabwe's level of development recommended that a value of USD 2 per kwh be used, and according to other sources a normal value for agricultural less developed economies would be around USD 0.25 per kWh.

An often referred to - very crude - standard is that the cost of outage can be calculated as between 25 and 50 times the value of the tariff for one KWh. In the case of Zimbabwe in 1990 this would come to between (25 x ZD 0.05=) ZD 1.25 and (50 x ZD 0.05=) ZD 2.5, or in USD 0.55 to 1,1, if the official exchange rate is used, but - more correctly - USD 0.25 - 0.5 if the shadow rate of exchange of 4.99 is used.

We do not know the economic reasoning behind the reported World Bank recommendation of USD 2.0 per kWh as the proper economic cost of outage for a country like Zimbabwe, but in our view the values applied by Swedpower are unreasonably high.

There are two circumstances which speak in favour of that the value assigned to economic outage in Zimbabwe should be rather low:

a: in a country like Zimbabwe which still has a large number of loss-making big government operated parastatals among the biggest consumers of electricity, one would expect that a standstill due to electricity shortage would not altogether lead to economic losses. In fact, if the value added (at economic prices) is negative, which has often been the case in the past, then a shut-down of the plant would actually be an economic benefit to the country and not a loss.

b: also, in times of load-shedding, one will always try to distribute the burdens such that those industries and consumers who at the particular time in question stand to loose the least, will be asked to abstain from a larger part of their normal consumption than others. In fact this practice has been put into system in Zimbabwe such that some industrial users have voluntarily negotiated cheap tariffs in exchange for ZESA being allowed to cut off their load in case of supply constraints. We can then conclude that these consumers do not place a value on the use of electricity which is much higher than its financial cost, which at the time was ZD 0.05 or USD 0.01.

So, for these companies one would then possibly be justified in imputing an economic cost of outage as low as USD 0.01 instead of the standard figure of USD 2.0 used overall by Swedpower.

We do not have access to documentation regarding the proper value of the economic cost of outage, so it is hard to take a stand on whose assumptions are

the correct ones, those of Swedpower or those of Danida. But the very large variations in the magnitudes of the assumptions are such that one must question ZESA´s, and perhaps BITS´ failure to further pursue the economic calculations before a final decision was taken.

If we were to re-do the calculations made by Swedepower using for economic outage the value assumed by Danida, we would get an undiscounted total value of the benefit for the years 1990 through 2002 of about

(257,205 - 84529) x 0.25 = USD 43 million instead of the USD 345 million arrived at by Swedpower.

Secondly, there is the important difference in assumed rate of exchange. While Danida uses a shadow rate of ZD 4.99 per USD, Swedpower uses the official rate of 2.27. This difference alone is enough to turn the conclusions upside down.

Thirdly, Swedpower uses 5 % as discount factor to arrive at present value. In its report Swedpower points out that a relatively high discount rate will not only reduce the present value of a project, but also punish projects with most of their investment cost in the early years. Since the discount rate chosen by Swedpower is arguably relatively low, it is surprising that it does not also present a calculation using a higher discount rate. This was in deed done in their 1988 study, but, from what can be seen, not in the revised study of October 1990. At least no such calculation was presented up front.

Fourthly, in its 1988 report Swedpower assumes for the years 1993 through 2011 the following projected available capacities after refurbishment in the respective power plants:

Munyati	93 MW
Harare II	37 MW
Harare III	56 MW

This should then be compared to the following capacities reported for the present day by ZESA in a press release dated 28 March 1996:

Munyati	40 MW
Harare II plus III	50 MW (+ 30 MW to be commissioned in May 1996)

Actually 80 MW of turbine capacity have been brought to availability through the BITS project, but 30 MW of those are not available today because the corresponding alternator (which is refurbished outside of the BITS project) is not yet ready. But it is expected to be commissioned in May this year. So, if we anticipate that, we can conclude that the total availability of capacity created by the BITS-financed work is 40+80 MW=120 MW.

Since the refurbishment program financed by BITS deals only with those generators which were not operational before the refurbishment, we can conclude that the increase in available capacity after the project is entirely due to the project being undertaken.

Total project cost today stands at USD 29 million, so we can conclude that the average investment cost per kw has been

USD 29/ 120 = USD 241 per kw

ZESA in its memo date 28 March 1996 gives a figure of USD 235 per kw. The original calculation made by Swedpower (which also included Bulawayo power plant) was

ZD 132 million/ 305 MW= ZD 433 per kw

which is between USD 86 and USD 190 depending on which exchange rate is applied.

If we include the boiler refurbishment in our calculations the results will be worse, because the refurbishment of the boilers have not been as successful as that of the turbines.

Imported power. A question which should be addressed when discussing the economic viability of generating electrical power is the possibility to increase the reliance on imported electric power if imported power turns out to be cheaper than producing your own. In principle that option should be kept open when doing a cost benefit calculation. But in some cases there may be limitations imposed in this respect by policy or security decisions or by binding international agreements. In the case of electricity consumption Zimbabwe has for security as well as economic reasons entered into a pool agreement with its neighbors South Africa, Mozambique, Zambia and Botswana which requires Zimbabwe to keep a reserve capacity amounting to at least 15 % of the its total consumption needs. Moreover, the rules are such that if one country fails to maintain its stated capacity it will have to reimburse the other countries for keeping this capacity in its place.

This means that the requirement of at least 15 % domestic reserve capacity cannot be substituted for imports even if imports turned out to be cheaper than the countries own production. This is thus a limitation in the cost benefit calculation which must be accepted. According to a press release issued by ZESA on March 28 1996, the country is presently avoiding to pay the premium for operating a reserve to the neighboring countries. Another such limitation is a political/strategic decision that the long term objective shall be to generate domestically at least 100 % of demand.

An argument in favor of the refurbishment program which is put forward in a report by Swedpower is that without the program the old thermal plants would soon have to be closed, which would result in loss of job opportunities for its 1000 employees. This employment effect is, however, not included in the cost benefit analysis. If it were, it would show that it would cost the economy many millions to save these jobs, and that job creation would be more economic in other alternative uses.

Concluding remarks. To sum up the above points, we may conclude that based on evidence available to us, our impression is that the expected economic profitability of undertaking the refurbishment program as projected by Swedpower may be based on overoptimistic assumptions regarding crucial parameters.

Whether this is in effect so we can not know with any certainty because we do not have access to all relevant reports and required data, nor has the limited time alotted to this evaluation permitted us to systematically read and analyze the reports which have been made available to us. Nor can we conclude that the analysis carried out by Swedpower is wrong.

What we *can* however state is that the economic justification for undertaking this project, as it is presented in the many incompatible and even conflicting reports and memos contained in the Sida archives, is sufficiently unclear so as to have warranted a final comprehensive evaluation report before the decision to go ahead with the project was taken. Such a comprehensive report should, as was suggested above, have placed the various different calculations in a common format, agreed on a realistic range of values for the assumptions listed above, and performed a sensitivity analysis covering reasonable values of the assumed parameters.

In the ex post situation today, after the project has been completed, a comprehensive report is of course not less desirable. If one is made it is important that it clearly distinguishes how a computed economic rate of return varies with different levels of actually attained available capacity and load factor and how it depends on various assumed values w.r.t. the economic cost of outage and the exchange rate.

Note. After having written the above we were given a two page summary of an apparently unpublished study carried out by the World Bank in October 1992. This study has not been commented in any of the documents leading up to BITS decision to finance in December of 1992. Nor was it mentioned during our interviews in Zimbabwe. In some BITS documents were, however, quoted the report´s projected net present value of the *decrease in unserved*

energy resulting from the refurbishment project. This value is in this report calculated to be USD 455 for the years 1994 through 1997. The figure is surprising given that Swedpower - with its, in our opinion, optimistic assumptions - arrived at a figure of only USD 245 for the entire period 1990 through 2002. If we recalculate Swedpowers figures for only the years 1994 through 1997, we get that the expected difference in outage comparing a situation with and without the refurbishment would come to about 128.932 GWH. Applying the cost per kwh of outage assumed by Swedpower we get a total value of USD 257 million.

We find then that the Bank estimates the difference in the number of GWh unserved energy for the four years to be 582, compared to only 128 arrived at by Swedpower. About four times as much! So, even if the bank now deviates from its supposed recommendation of using a value of USD 2 per kwh of outage, and in stead chooses a value of only USD 1, it still arrives at an expected benefit for the four years which is more than twice as high as the already optimistic figure arrived at by Swedpower.

Not having access to this world Bank study, we can not judge its realism.

The only point we can make is to reiterate what was said above, namely that the whole question of economic viability should have been dealt with in a comprehensive way so as to eliminate the confusion and the conflicting opinions regarding the projects economic viability. In a situation where internationally renowned energy experts can arrive at seemingly diametrically opposed results, it would have been in the best interests of both the donor and the recipient to present clearly on what grounds decisions were made.

7. Environmental effects

In its decision memo BITS flatly states that there are environmental ill effects but not of a character to prevent the project from being carried out.

Because of the bad condition of the boilers, the plant is today run with a very large use of coal per delivered kwh. This leads not only to high cost but also to large emissions of smoke. According to available data these emissions are within international norms regarding NOX, but much above concerning sulphur and particles.

BITS points out that the emissions will increase after refurbishment since the plant will operate more, but says that ".. the emissions could be accepted because of the relatively short remaining period of operation of these plants".

Regarding environmental issues our interviews with ZESA officers and visits to all the plants did not reveal any new information in addition to what is already in BITS files, except that the pollution measuring kit which BITS sent as a gift to all three plants is used regularly in the Harare plant, but not at all in Munyati. This failure was due to some parts missing.

Another information of more anecdotal character is the following: When visiting the main operations room of the National Control Center in Harare, one of its staff confided to us that smoke from the chimneys of the Harare power plant, which is just across the street, used to jam the hard disk drive of the centre´s main computers. Now, as part of the BITS financed Control Center upgrade, the center has received new computers whose chassis are said to be much tighter, not letting any pollution through. In stead however, now, the manager says, the smoke from the power plant keeps clogging up the National Control Centre´s air conditioners.

8. Gender effects

No gender effect was intended in this project, nor has our evaluation been able to identify any such effect.

9. Poverty orientation

Alleviation of poverty was not a consideration - at least not explicitly - when investing in this project. As for the outcome of the project in terms of poverty alleviation we can apply a reasoning in very general terms along the following lines. In the short run an increased capacity and reliability of the country´s electric supply can be expected to benefit the existing customers which excludes some of the poorer segments of the people. In the long run one may of course argue that it will also benefit poorer strata of the population. First because the project may increase chances of new power lines being drawn also to remote (and poor) villages hitherto without electricity. Secondly, in an indirect way because a general increase of economic activity which may be the result of increased electric supply would in the long run also benefit poorer groups.

10. Relevance/sustainability

While few would question the relevance in the short run of upgrading old thermal power stations, since it is assumed to be the cheapest way to increase available capacity, the project´s sustainability must however be put in question. Firstly, it was questioned above whether it was an economically viable proposition for the country´s economy to plow in large investments in old run down coal plants which might be doomed anyway. If we thus question that the refurbishment of the power stations is economically profitable, then we are automatically questioning its sustainability. Because these old plant will also henceforth in the future from time to time be in need of additional refurbishments and if their economic viability is not clear this might become like "throwing good money after bad".

Another aspect is the environmental aspect - which must be seen as sensitive at least for the two power plants which are in Harare. First there is of course the actual emission of pollutants from these two plants located just a few hundred metres from the capital´s business centre. Since the two plants in Harare are supposed to be serving mainly as reserve capacity for peak loads, it is sometimes argued that the actual emissions will be minimal. But there is also the psychological aspect - namely huge chimneys spitting out dark smoke in the heart of the nation´s capital - which may have an importance. So also from an environmental viewpoint the project´s sustainability may be put at least somewhat in question.

11. Sweden´s overall development goals

Of the overall objectives of Sweden´s development cooperation it is clearly the *economic growth* and the *economic and political independence* which were considered in this project. Meanwhile the environmental goal can be said to have served as a restriction in the sense that the plants theoretically should be operated so as to create the least possible environmental damage. In actual practice not much attention was given to the environmental aspect. The decision to go ahead with the project was purely based on the perceived need to refurbish needed power capacity.

As for attainment of the economic growth objective this is in the long run tantamount of achieving economic profitability. In other words, if the project does not show economic profitability it can by definition not lead to economic growth in the long run, although it could conceivably do so in the short run.

As for attaining the economic and political independence goal we must conclude that increasing ones own domestic power generating capacity must - all other things being equal - always add to the country's independence. This is so even with the existence of modern interlink transmission stations whereby power can easily (i.e. automatically) be purchased and transmitted from other countries.

When it come to the goals of furthering *democratic development* and *economic and social equality*, we do not see any direct links with a project whose aim is to increase the country´s power generating capacity. (Although one author - *Lenin* - in his writings has claimed that electrification is one of the fundaments for democratization.)

12 Procurement

An open general tendering procedure was used. 27 companies paid the fee to receive the tender documents, but only two (!) - ABB/Babcock and NEI Peebles LTD England - actually sent in a bid. The evaluation of the tenders was carried out on ZESAs behalf by its consultant Swedpower.

BITS, on its part, contracted an independent consult to assess the entire tendering procedure including the awarding of the contract. This consultant was satisfied that everything had been in order. He reported that

" the tender documents are well in line with international standards, and the recommendations and motives given in the bid evaluation report by Swedpower are acceptable. One might think that only two bids - of which one quite deviating from the specifications given in the tendering documents - is a very weak bases for a decision. Both of the tenders handed in are, however, serious and have been prepared during a long time by the two tenderers. They have visited the plants and have had detailed discussions with ZESA about the project..... In summary, we think the tender procedure is acceptable."

Our own interviews with respect to the tendering procedure has not lead to any information which would contradict the quoted statement, and we therefore accept it as valid.

The reason why only two bids were handed in has by knowledgeable experts been explained by the fact that refurbishment programs of the type in question are very hard to assess. Often one is forced to replace more parts than was foreseen, which may lead to complicated negotiating and financing situations. That would lead to losses by the contractor, and could therefore have scared other bidders off.

On the government side there was an acute disagreement whether one should invite fresh tenders since only two had been submitted. Some felt that the tender period of only two months was too short a period and that ZESA might have missed some potentially good offers. In a report dated March 1992 it is implied that this disagreement might have had deeper reason than just discontent with the length of the tendering period. It says:

" It would appear that there is some conflict between the ZESA management, the ZESA board and for that matter the Ministry itself over the whole project in general, and in respect of the award of the contract in particular...".

But this conflict, if there was one, was soon solved.

13. Repayment of credit

As was noted when discussing the financial rate of return above, the government allowed ZESA to enter the credit agreement with Nordbanken directly. This was in order to allow ZESA to reap the entire benefit of the 35 % grant element contained in the BITS credit. The Ministry of Finance has guaranteed the ZESA loan, and for this ZESA has to pay 0.25 % annual fee on the outstanding amount to the Treasury. There is no internal on-lending arrangement within Zimbabwe regarding this credit. The guarantee period after commissioning has not yet expired so the repayment has not yet started.

In its other BITS credit - the National Control Centre - ZESA has already started the repayment, and it has so far been regular.

14. Project preparation

Even though we have criticized the sometimes confusing documentation regarding the projects economic viability, our overall impression of BITS´ project preparation work is positive. All through the more than three years which passed before the project actually got off the ground, BITS persistently and actively followed all the developments. On many occasions it contracted its own expert consultants to monitor and scrutinize the proposals forwarded by the contractor ABB.

In face of unclarity BITS would not be pressured into hasty decisions. One case in point ís that even as late as January of 1991, BITS in a letter to the Ministry of finance said that it

".. is not in a position to consider financing of the rehabilitation of old thermals and act as lead financier of the project. *In our opinion the costs and viability of the project are uncertain* (our italics added) and the necessary steps in safe-guarding an appropriate implementation of the project has to be further clarified..."

A fundamental requirement expressed by BITS was also that an internationally reputable firm should be contracted by ZESA not only to help in preparing the tender documents and evaluate incoming bids, but also to monitor and control the entire implementation of the project. The cost of retaining this international consultant (which is Swedpower) was also partly covered by BITS in the form of a technical assistance grant.

We have gone through all the documentation (in all about six full ring-binders) available in the Sida archives, and have not been able to discover any mistakes of any consequence. The memos written by BITS responsible project officers are generally at least well on par with decision memoranda by other SIDA departments. The final decision memorandum to the Board is very informative and well balanced in spelling out negative as well as positive elements.

Also the frequent allegations of corruption, fraud and politicizing that have at various times been leveled at ZESA as well as the contractor in the Zimbabwean press, have been handled with seriousness and professionalism. None of the allegations seem to have had any foundation.

The exception that confirms the rule could then perhaps be seen to be the failure to clearly state the case of economic viability referred to above. But even on this score most of BITS handling was up to high standards. By using various outside consultants, BITS actively scrutinized the various economic analyses put forward, but as we have explained above failed to sum up the "the

final truth" before deciding to finance the credit. The reason why this happened is not at all difficult to understand. The pressure to arrive at a decision after three years of preparation must have been great. According to some calculations the economy of Zimbabwe stood to loose very big amount of money for every day that the project was delayed. When the World Bank in the autumn of 1992 wrote a letter to BITS urging them to go ahead with the proposed project, it is easy to understand that the pressure to arrive at a immediate credit decision became too great. In that situation - according to what can be read out from documents available in the archives - BITS was apparently not in a position to follow up on the several reservations regarding the economic calculations presented which had been expressed to BITS by its own consultants. Most of the independent consultants that were repeatedly used by BITS as advisors at various stages of the project preparation, at one time or another expressed doubts about some of the assumptions underlying Swedpowers calculation of the economic profitability. Even as late as in August of 1991 one of these consultant reports stated that "...there are at present no reliable reports on the economic viability of the project."

Other actors. Part of the reason for the long preparation time of this project has been said to be the World Bank wavering in its determination to support the refurbishment program. Our interpretation of the events does not support this contention. The reason why the World Bank at one time withdrew its support and delayed any decision to go forward was that new information had come up after a major study had been done on the electricity sector in Zimbabwe. In such circumstances it is the right decision to wait until further options have been analyzed even if this means that the project is delayed.

The contractor. From what we have been able to discover the contractor at all times acted professionally in defending its interests. When asked ABB was generally able to provide clear answers to the required topics, and its cooperation with BITS have by the latter´s officers been described as constructive and positive.

Nor have any negative opinions surfaced in the many interviews we have conducted with people in Zimbabwe.

ZESA has not complied with its contractual obligation to send in a project report to BITS six months after the termination of the project. Swedpower has been asked by ZESA to produce a final report for the projects.

X SUMMARY OF CONCLUSIONS

Our findings in the preceding chapters can be condensed into conclusions as in the following table. For each of the 7 investment projects we assign a performance rating regarding each of the 12 aspects evaluated, where degree of goal achievement is measured on a scale 0 to 3, such that

3	=	very high degree of goal achievement, and
2	=	good goal achievement
1	=	some goal achivement
0	=	no goal achievement
-	=	goal attainment could not be ascertained for lack of data
n.a	=	the aspect in question is for various reasons not considered relevant in this project

This summary rating of the projects is presented here without any claim of being scientific or undisputable. All the facts and arguments regarding our assessment of the various aspects are presented in the texts above. The rating is merely a way of giving a "bird´s eye view" of the general performance of the different projects.

An important note to make here is that "goal achievement" here does not necessary refer to the goals as formulated by BITS, at least not the ones that were formulated explicitly. As was explained above in chapter II on methodology, most of the aspects assessed in this evaluation were not mentioned in BITS documents as being goals of the projects in question.

Nevertheless as the projects are now evaluated it is obvious that all parties concerned are interested to know what were the actual outcomes with respect to the usual criteria that are included in an ex post evaluation. This interest is there whether or not the particular aspect was or was not mentioned as a goal by BITS. In the chapters above we have tried to point out whether the aspect to be assessed was or was not mentioned by BITS as being a goal (or a restriction) for the project

Table: 12 Summary of conclusions

Aspect	Trucks	Tele-c printers	Control centres	explo- sives	steel pro- duc- tion	fuel sto- rage	power plants	Total	# of pro- jects scored	average
Implementation	3	3	2	3	3	3	3	20	7	2,9
Results	3	3	2	3	3	3	2	19	7	2,7
Financial	2	3	2	3	2	-	2	14	6	2,3
Economic	(1)	3	2	3	1	1	1	12	7	1,7
Environment	2	n.a	n.a.	3	1	3	1	10	5	2
Gender	2	n.a.	n.a.	1	1	n.a.	n.a	4	3	1,3
Poverty	2	n.a.	n.a.	n.a.	-	n.a	n.a.	2	1	2
Relevance/Sustai- nability	3	3	3	1	-	1	n.a.	11	5	2,2
Sweden´s overall development goals	3	1	2	2	1	2	1	12	7	1,7
Procurement	2	2	2	n.a.	3	2	3	14	6	2,3
Repayment	3	3	3	3	3	3	3	21	7	3
Project preparation	2	2	2	3	3	3	3	18	7	2,6
Total score	28	23	20	25	21	21	19	147	68	26,7
Number of aspects counted	12	9	9	10	10	9	9	12	12	12
Average	2,3	2,6	2,2	2,5	2,1	2,3	2,1	12,5	5,7	2,2

ANNEX 1

Acknowledgements

We wish to thank all the persons listed in annex 2 for receiving us for interviews on a very short notice, and for vists to plant sites - sometime with no notice at all. They all gave generously of their time and patiently answered a never ending stream of questions.

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Frederick Burman and Åsa Lindström of Sida were very helpful and forthcoming in facilitating access to the BITS files as well as in other logistics. Marianne Hiort af Ornäs assisted with the computer programs. Frederick Burman gave detailed and very valuable comment to a draft of this report, which have been integrated into this final version.

To all these persons we are grateful.

ANNEX 2

Persons interviewed

Trucks

Grimmel, John	TANDEM/SCANIA, Sales Manager
Vervey, M.	TANDEM/SCANIA, Executive Director
Gollbo, Kjell	SCANIA
Mutiswa, Abel	RMS

Teleprinters

Westley, Mr	PTC

NCC

Masawi, Francis	ZESA, Transmission Manager
Hozheri, C	ZESA, Financial Manager
Rugoyi, Edward	ZESA, Computer applications Engineer
Pilling, John	ABB, Area Manager
Semilia, Vittorio	ABB, Regional President

Explosives

Nilsson, Ola	Nitro-Nobel Zimbabwe, General Manager
Jakchira, Peter	Nitro-Nobel Zimb., Manager operations
Chimukoko, P	Nitro-Nobel Zimb. Maintenance Foreman
Madhara, Mr	IDC

ZISCO steel mill

Masanga, Dr. G.G.	ZISCO, Acting Chief Executive
Chininga, J	Ministry of Industry and Commerce
Shamu, Charles S.	ABB, General Manager
Chiremba, H	ABB, Service Engineer

Fuel storage

Chekeche, M Mrs	NOCZIM, Financial controller
Madzimure, Patience	NOCZIM, Company Engineer
Machoba, Jeffrey	NOCZIM, Mechanical Engineer
Sakupwanya, Michael	NOCZIM, Maintenance technician
Mildenborn, Per-Håkan	SKANSKA, Marketing Manager
Tenman, Lennart	SKANSKA Zimbabwe
Backlund, Lotta	SKANSKA Zimbabwe

Old thermals

Nhavira, Sam T	ZESA, Generation Director
Dube, James C.	ZESA, Generation Services Manager
Mukonoweshuro, S.M.	ZESA, Harare Station Manager
Dingani, Max M.	ZESA, Munyati Station Manager

Others

Liljesson, Lars	Sida, Chief Finance Section
Horm, Peeter	Sida, Former Chief BITS Credit Section
Hindersson, Leif	Sida, Former Area Manager BITS Credits
Ronnås, Lars	Swedish Embassy
Larsson, Karl-Anders	Swedish Embassy

Sida Evaluations - 1995/96

95/1 Educação Ambiental em Moçambique. Kajsa Pehrsson
Department for Democracy and Social Development

95/2 Agitators, Incubators, Advisers - What Roles for the EPUs? Joel Samoff
Department for Research Cooperation

95/3 Swedish African Museum Programme (SAMP). Leo Kenny, Beata Kasale
Department for Democracy and Social Development

95/4 Evaluation of the Establishing of the Bank of Namibia 1990-1995. Jon A. Solheim, Peter Winai
Department for Democracy and Social Development

96/1 The Beira-Gothenburg Twinning Programme. Arne Heileman, Lennart Peck
The report is also available in Portuguese
Department for Democracy and Social Development

96/2 Debt Management. (Kenya) Kari Nars
Department for Democracy and Social Development

96/3 Telecommunications - A Swedish Contribution to Development. Lars Rylander, Ulf Rundin et al
Department for Infrastructure and Economic Cooperation

96/4 Biotechnology Project: Applied Biocatalysis. Karl Schügerl
Department for Research Cooperation

96/5 Democratic Development and Human Rights in Ethiopia. Christian Åhlund
Department for East and West Africa

96/6 Estruturação do Sistema Nacional de Gestão de Recursos Humanos. Júlio Nabais, Eva-Marie Skogsberg, Louise Helling
Department for Democracy and Social Development

96/7 Avaliação do Apoio Sueco ao Sector da Educação na Guiné Bissau 1992-1996. Marcella Ballara, Sinesio Bacchetto, Ahmed Dawelbeit, Julieta M Barbosa, Börje Wallberg
Department for Democracy and Social Development

96/8 Konvertering av rysk militärindustri. Maria Lindqvist, Göran Reitberger, Börje Svensson
Department for Central and Eastern Europe

96/9 Building Research Capacity in Ethiopia. E W Thulstrup, M Fekadu, A Negewo
Department for Research Cooperation

96/10 Rural village water supply programme - Botswana. Jan Valdelin, David Browne, Elsie Alexander, Kristina Boman, Marie Grönvall, Imelda Molokomme, Gunnar Settergren
Department for Natural Resources and the Environment

96/11 UNICEF's programme for water and sanitation in central America - Facing new challenges and opportunities. Jan Valdelin, Charlotta Adelstål, Ron Sawyer, Rosa Núnes, Xiomara del Torres, Daniel Gubler
Department for Natural Resources and the Environment

96/12 Cooperative Environment Programme - Asian Institute of Technology/Sida, 1993-1996. Thomas Malmqvist, Börje Wallberg
Department for Democracy and Social Development

96/13 Forest Sector Development Programme - Lithuania-Sweden. Mårten Bendz
Department for Central and Eastern Europe

96/14 Twinning Progammes With Local Authorities in Poland, Estonia, Latvia and Lithuania.
Håkan Falk, Börje Wallberg
Department for Central and Eastern Europe

96/15 Swedish Support to the Forestry Sector in Latvia. Kurt Boström
Department for Central and Eastern Europe

96/16 Swedish Support to Botswana Railways. Brian Green, Peter Law
Department for Infrastructure and Economic Cooperation

96/17 Cooperation between the Swedish County Administration Boards and the Baltic Countries. Lennart C G Almqvist
Department for Central and Eastern Europe

96/18 Swedish - Malaysian Research Cooperation on Tropical Rain Forest Management. T C Whitmore
Department for Research Cooperation, SAREC

96/19 Sida/SAREC Supported Collaborative Programme for Biomedical Research Training in Central America. Alberto Nieto
Department for Research Cooperation, SAREC

96/20 The Swedish Fisheries Programme in Guinea Bissau, 1977-1995. Tom Alberts, Christer Alexanderson
Department for Natural Resources and the Environment

96/21 The Electricity Sector in Mozambique, Support to the Sector By Norway and Sweden. Bo Andreasson, Steinar Grongstad, Vidkunn Hveding, Ralph Kårhammar
Department for Infrastructure and Economic Cooperation

96/22 Svenskt stöd till Vänortssamarbete med Polen, Estland, Lettland och Littauen. Håkan Falk, Börje Wallberg
Department for Central and Eastern Europe

96/23 Water Supply System in Dodota - Ethiopia. Bror Olsson, Judith Narrowe, Negatu Asfaw, Eneye Tefera, Amsalu Negussie
Department for Natural Resources and the Environment

96/24 Cadastral and Mapping Support to the Land Reform Programme in Estonia. Ian Brook
Department for Central and Eastern Europe

96/25 National Soil and Water Conservation Programme - Kenya. Mary Tiffen, Raymond Purcell, Francis Gichuki, Charles Gachene, John Gatheru
Department for Natural Resources and the Environment

96/26 Soil and Water Conservation Research Project at Kari, Muguga - Kenya. Kamugisha, JR, Semu, E
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96/27 Sida Support to the Education Sector in Ethiopia 1992-1995. Jan Valdelin, Michael Wort, Ingrid Christensson, Gudrun Cederblad
Department for Democracy and Social Development

96/28 Strategic Business Alliances in Costa Rica. Mats Helander
Department for Infrastructure and Economic Cooperation

96/29 Support to the Land Reform in Lithuania. Ian Brook, Christer Ragnar
Department for Central and Eastern Europe

96/30 Support to the Land Reform in Latvia. Ian Brook, Christer Ragnar
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96/31 Support to the Road Sector in Estonia. Anders Markstedt
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96/32 Support to the Road Sector in Latvia. Anders Markstedt
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96/33 Support to the Road Sector in Lithuania. Anders Markstedt
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96/34 Support to the Maritime Sector in Latvia. Nils Bruzelius
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96/35 Sida/SAREC's Marine Science Programs. Jan Rudengren, Per Brinck, Brian Davy
Department for Research Cooperation, SAREC

96/36 Support to the Development of Civil Aviation Administration in the Baltic States. Johan Svenningsson
Department for Central and Eastern Europe

96/37 The Opening of the two Road Sectors in Angola. C H Eriksson, G Möller
Department for Infrastructure and Economic Cooperation

96/38 Statistikproduktion i Nordvästra Ryssland. Lennart Grenstedt
Department for Central and Eastern Europe

96/39 Sri Lankan - Swedish Research Cooperation. Nimal Sanderatne, Jan S. Nilsson
Department for Research Cooperation, SAREC

96/40 Curriculum Development in Ethiopia, A Consultancy Study for the Ministry of Education in Ethiopia and for Sida. Mikael Palme, Wiggo Kilborn, Christopher Stroud, Oleg Popov
Department for Democracy and Social Development

96/41 Sida Support to Environmental Public Awareness and Training Projects through The Panos Institute, Gemini News Service and Television Trust for the Environment. Leo Kenny, Alice Petren
Department for Democracy and Social Development

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