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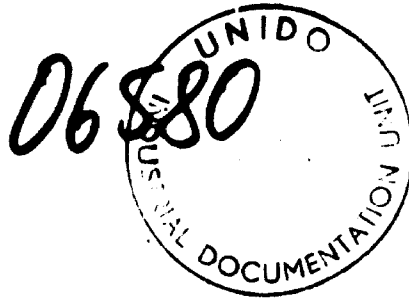
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~~DEVELOPMENT OF SMALL-SCALE INDUSTRIES~~

(DP/ZAM/69/506)

Project findings and recommendations

Terminal report prepared for

the Government of Zambia

by

George R. Deighton
(Project Manager)

on behalf of the United Nations Industrial Development Organization,
executing agency for the United Nations Development Programme

We regret that some of the pages in the microfiche copy of this report may not be up to the proper legibility standards even though the best possible copy was used for preparing the master fiche.

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Explanatory notes

Reference to "dollars" (\$) are to United States dollars.

In mid-1974 the rate of exchange of the Zambian currency unit Kwacha (K) was 0.643485 to \$US 1.00.

The following abbreviations are used in this document:

INDECO	Industrial Development Corporation of Zambia Limited
ITDG	Intermediate Technology Development Group Limited
FINDICO	Financial Development Corporation of Zambia Limited
MINDECO	Mining Development Corporation of Zambia Limited
ZIMCO	Zambia Industrial and Mining Corporation
ZSBS	Zambia Steel and Building Supplies Limited

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SUMMARY

The project has assisted the Government of the Republic of Zambia through its parastatal organization, Rucom Industries Limited, in the establishment of small-scale industries of a widely varied nature, located in rural areas throughout Zambia. In addition, the project has, by the use of international experts from various fields of specialization, provided extension services to both Rucom Industries' direct operations and those of its tenants. Machinery of a simple demonstration nature has been provided by UNIDO and commissioned by the experts. Market-information and project-identification studies have been made available to Rucom throughout the period of the project. A number of UNIDO fellowships have been awarded, and several counterpart personnel have received intensive training. A mid-term mission reviewed the project, and a second phase of operation was proposed and agreed to. Implementation began on 1 September 1974. A total contribution to the project was received from the United Nations Development Programme (UNDP) of \$US 635,759. The sum agreed for the second phase is \$869,350.

INTRODUCTION

Background of the project

The project, "Development of Small-scale Industries", was approved in June 1969 with a contribution by the United Nations Development Programme (UNDP) of \$605,700. The United Nations Industrial Development Organization (UNIDO) was appointed as the executing agency, and Rucom Industries Ltd, a Government-owned parastatal corporation, was designated as the counterpart agency. Field-work commenced in March 1970 and the project was scheduled to terminate on 15 January 1974. Owing to the agreement to enter into a second phase, this date was eventually deferred to 31 August 1974, the additional costs being covered by a temporary budget showing an additional contribution of \$30,059 from UNDP.

The project experienced certain difficulties in implementation, and the UNDP proposed, with UNIDO concurrence, that a joint UNDP/UNIDO mid-project review be undertaken. Accordingly, towards the end of September 1973, a review mission arrived and made proposals which were immediately implemented. Nevertheless, further difficulties impeded progress towards planned objectives.

Project implementation data

The project originated as a result of a joint mission of UNDP, UNIDO and the International Labour Organisation (ILO) to Zambia in October 1968. The conclusion of this mission, which the Government supported, was that a project was needed to assist in promoting the establishment of small-scale enterprises, to be managed and owned by Zambian entrepreneurs. The mission also supported the existing government policy of giving priority to enterprises in rural areas away from the "line-of-rail", that is, at a distance from the central part of the country, from the Copperbelt down through Lusaka to Livingstone. A request was accordingly submitted to UNDP, and the project was formally approved by the Governing Council of UNDP in 1969.

At that time, it was planned that UNDP assistance be channelled through two organizations concerned with the development of Zambian entrepreneurship in the rural areas. These were: Rucom Industries Ltd, charged with the setting up of small-scale rural enterprises; and Zambia Steel and Building Supplies Ltd (ZSBS), concerned with assistance to small-scale Zambian contractors.

Both companies were subsidiaries of the Industrial Development Corporation of Zambia Ltd (INDECO). The Government supported this view, and the request submitted to UNDP called for three experts for Rucom Industries Ltd and three for ZSES Ltd.

The Plan of Operation designated INDECO as counterpart organization with the understanding that INDECO would in turn delegate the day-to-day counterpart operations to the two companies concerned.

Some delay occurred in the drawing up of the Plan of Operation, and by the time the Project Manager arrived in March 1970, substantial changes had taken place whose consequences were to hinder implementation of the project. These may be summarized as follows:

(a) Because of structural changes in Steelbuild, no further need was seen for directing UNDP assistance through it, and the project operated with Rucom Industries Ltd as the sole counterpart organization;

(b) The delayed recruitment of experts and the necessity of making new decisions resulting from the structural change in the counterpart component deferred project implementation for one year;

(c) The financial provision made for fellowships was not fully utilized because suitable candidates were not supplied. The funds were transferred to expenditures for equipment, but partly owing to political difficulties which closed the border between Southern Rhodesia and Zambia, the equipment reached Zambia only after considerable delay;

(d) During the period mid-1972 to April 1973, a shortage of funds available to Rucom which caused materials to be unobtainable and travel of experts to be curtailed to a minimum, had an adverse effect on the work of the project.

Although INDECO had been designated as the counterpart organization, this role was immediately delegated to Rucom Industries Ltd. In the original Plan of Operation the counterpart contribution to the project was clearly defined and was to be made in the form of contributions in kind and in cash.

Objectives of the project

According to the Plan of Operation, the purpose of the project was to assist the Government in the development of Zambian small-scale enterprises. In order to achieve it, the Plan identified five small-industry development activities to be undertaken in support of the programmes and responsibilities of Rucom Industries Ltd. They included:

(a) Identification of possibilities for the further development of Zambian small enterprises;

(b) Preparation of feasibility studies or special investment reports on all such projects identified as suitable for Zambian small-enterprise development;

(c) Provision of technical and managerial advisory services to Zambian entrepreneurs, establishing and managing small enterprises, set up on a tenant basis and designated to receive project assistance;

(d) Provision of technical and managerial advisory services to Zambian entrepreneurs on Kuom "mini-industrial estates" throughout Zambia, who are encountering difficulties owing to lack of training and experience;

(e) Training of a group of Zambian professionals to continue these small-scale industry development activities.

The long-range objective of the project was to satisfy the need for additional rural services and sources of productive employment in the rural areas away from the line-of-rail and thereby to give Zambians in rural areas greater participation in the economy of their country.

Socio-economic conditions at the start of project

In order to evaluate the orientation and usefulness of this project it is important to understand the socio-economic and institutional framework that existed during the period in which it was formulated and implemented.

The modern sector of the Zambian economy is comprised of the Copperbelt in central Zambia, where mining predominates but where the population is so concentrated as to provide a demand for service industries, and along the line-of-rail to Livingstone in the south where many small towns are located that serve farming settlements. In 1967 there were 585 industrial enterprises in Zambia; almost all of them were located in these two areas. The vast majority of these enterprises were owned and managed by non-Zambians, and about one half of the country's population of 4.25 million (mid-1971) lived in this sector.

The rest of the population is scattered throughout the country away from the line-of-rail, although the bulk of these Zambians live in or near provincial centres, thus leaving only a very sparse population in the strictly rural areas. In rural areas and in most of the provincial centres, the population is mainly engaged in subsistence agriculture and, to a lesser extent, in small-scale industries and services. While the gross national product per capita was relatively high (\$344 in 1971), the high standard of living found in the modern sector was not shared by Zambians who lived in the rural areas away from the line-of-rail. Also, it has been reported by a leading Zambian business columnist that more than 700,000 persons are employed by

Government, and since this figure does not include parastatal organizations, the total number of industrially productive personnel is in the minority. The elimination of these imbalances has been given the highest priority in development planning since independence was achieved in 1964.

The First National Development Plan, which ended on 31 December 1971, was intended to establish a broad social and economic infrastructure to serve as a base for measures to help bridge the gap between the standards of living of the modern and traditional sectors. Less progress than anticipated was made in bridging this gap during the first planning period, in large measure owing to the need to shift investment priorities as a result of the decision taken to eliminate dependence upon Southern Rhodesia and to achieve effective national control over the most significant modern economic sectors, especially industry, mining, commerce and finance. The Second National Development Plan (SNDP) has accordingly given priority to rural development in order to generate income for rural residents and thereby provide an incentive for such populations to remain living away from the line-of-rail. The Introduction to the SNDP, by President Kenneth Kaunda, indicates that "in order to create more jobs, more cheaply and quickly, emphasis will be placed on the expansion in rural areas of all possible industrial and agricultural activities".

In 1966, 1969 and 1970 the Government took steps to acquire controlling interests in foreign-owned industrial, mining and financial (banking and insurance) enterprises by establishing, respectively, the Industrial Development Corporation of Zambia Ltd (INDECO), the Mining Development Corporation of Zambia Ltd (MINDECO), and the Financial Development Corporation of Zambia Ltd (FINDECO). These three statutory bodies were in turn made subsidiaries of the Zambia Industrial and Mining Corporation (ZIMCO) a totally state-owned holding corporation, presided over by the President of Zambia. INDECO, which was directly answerable to the Ministry of Trade and Industry was in turn subdivided into seven subsidiary holding companies, one of which was Rucom Holdings Ltd, set up to oversee industrial activities in rural areas away from the line-of-rail. Within Rucom Holdings Ltd, one subsidiary, Rucom Industries Ltd, was established to manage and promote small Zambian enterprises.

When the project commenced full operations in 1971, Rucom Industries set up "mini-estates" or workshops in provincial towns, each containing about three small manufacturing enterprises, and provided credit and other services

to other small manufacturing and service enterprises. During 1971 Rucom employed:

Headquarters and district field staff	52
Casual labour	125
Tenants under contract (in Rucom workshops)	30
Tenant employed workers	140

Apart from the present project experts, Rucom activities in provincial towns were being assisted by eight volunteers from Denmark, two from the Federal Republic of Germany and one from the United Kingdom of Great Britain and Northern Ireland.

When the project began, Rucom was consolidating or strengthening the economic viability of ventures initiated during 1969 and 1970, in which it had invested funds for construction, equipping and rental purposes. While revenues from such ventures helped to finance its small-scale industry promotion and extension activities, they were not sufficient, and subsidies were required annually from the budget of the Ministry of Trade and Industry. However, because of the budgetary crisis within the Government that stemmed largely from a drop in copper prices during 1970 and 1971, the Government took a series of special countermeasures, including the curtailment of all subsidies. This action forced Rucom to operate in accordance with commercial principles (like other INDECO enterprises), and to limit its activities to those of a revenue-generating nature. After lengthy negotiations, the Government eventually provided a subsidy of Kwacha (K) 350,000 for 1973/1974.

I. ACTIVITIES AND FINDINGS

A. Advice on small-scale industrial planning procedures

Basic planning policy

The Government, since independence was achieved in 1974, has carried out a policy aimed at industrial development in the shortest possible time. The main responsibility for implementation of government policy in the field of industrial development has been entrusted to INDECO. This corporation, while wholly owned by the Government, functions as an independent corporation with its own Board of Directors. Since 1965 INDECO has become the channel for state investment in industry, and lately it has been charged with the task of organizing and managing state investment in different enterprises, either through wholly owned subsidiaries or as companies on a joint venture basis with overseas investors. Rucom Industries Ltd, a subsidiary of INDECO, although incorporated in 1961, was reorganized in its present form in 1968 (a) to set up and manage mini-industrial estates (called by INDECO "Nursery Industrial Estates) in Lusaka and in selected provincial towns; and (b) to organize and operate sets of small enterprises of various kinds. Plans were developed in late 1968 for Rucom to be the main instrument of INDECO in the promotion of Zambian small enterprises.

Although some possibilities for indigenous Zambian entrepreneurship had been identified by INDECO at various stages since 1966, a survey of the situation in 1968 revealed very few Zambian entrepreneurs. Practically all of the enterprises and industries of the country, including those operating on a small scale, were owned and managed by non-Zambians. It was also apparent that practically all economic development in Zambia had been in the area of the Copperbelt and along the line-of-rail. At that time almost all other areas of Zambia remained in a depressed state of underdevelopment, lacking the essential services needed to raise the economic level of the rural inhabitants. Practically no progress had been made, even in the smallest and most rudimentary industries in these areas. This situation was one of the main themes of the speech of the President of the Republic in April 1968 when he announced a programme of economic reforms and the intention of the Zambian Government to take decisive steps to alter the situation.

Following the economic reforms of April 1968, the Government entrusted the two subsidiary companies of INDECO, ZSBS Ltd (later renamed Steelbuild) and Rucom Industries Ltd, with the tasks of assisting the development of Zambian construction contractors and small-scale service and manufacturing enterprises. In the case of Rucom, assistance was to be extended by means of viability studies, provision of workshops or other premises, and limited financial assistance given in the form of provision of simple equipment on nominal repayment terms. Accommodation was to be supplied at sub-economic rentals and Rucom staff would carry out extension services. This assistance would be financed by way of subsidies paid to Rucom from Government sources.

Proposed methods

The project was established to assist Rucom to carry through the necessary promotional and organizational measures for implementing these tasks. Direct assistance was to be offered Zambians who operated, or who intended to operate, as independent entrepreneurs in the woodworking, mechanical, metalworking and various service fields, both in Lusaka and in selected rural provincial towns. With the assistance of the UNIDO experts, Rucom was to provide technical and managerial assistance to Zambian small-scale entrepreneurs in the fields mentioned. In technical matters, guidance would be provided in all aspects, such as choice of machinery and its installation, operation and maintenance, working methods, organization of work and control of labour and materials. In addition, assistance would be given on simple accounting and costing and marketing procedures.

This help would be available to Zambian small-scale entrepreneurs who sought the assistance of Rucom, and in particular to the various small enterprises set up on the mini-industrial estates to be established by Rucom. Rucom would also undertake special measures in the development of various sets of small enterprises in certain rural towns that had already made a beginning in establishing bakeries, food processing plants, woodworking, sheet-metalworking, maintenance and repair shops, simple mechanical workshops and certain service enterprises.

In general, the measures were designed to overcome the lack of Zambian entrepreneurs with the necessary technical and financial resources by creating suitable arrangements to set up the enterprises and lease them to Zambians, while making provision for managerial and technical assistance in the initial period.

Financial assistance would be provided either directly, in the form of credits from subsidiaries, through the UNFPA Loans Department, or through a leasing arrangement. The technical staff of Rucom were to be consulted on all requests for loans, and they were expected to advise on the feasibility of the projects for which the funds were being requested and guide the applicant in the best use of the credit.

B. Implementation

Directly generated investment

By the end of the project a number of small-scale enterprises had been established as a direct result of studies carried out by UNDP/UNIDO personnel. These consisted of a brick-field at Kasama, a pallet and box factory at Chati, an experimental gameskin processing operation at Lusaka, an egg-tray manufacturing plant at Luanshya, a coffee processing operation at Kasama, and woodworking and metalworking prototype workshops. In addition, the experts were instrumental in initiating direct metalworking operations at Choma and Mansa, and direct woodworking operations at Mansa and Solwezi. About to be implemented in the second phase are a school and institutional furniture manufacturing plant at Solwezi, a lime-extraction and kiln-burning operation at Solwezi, a second brick-field at Solwezi, a beeswax candlemaking unit at Solwezi, an agricultural repair and maintenance workshop at Mumbwa, and the gameskin processing plant at Lusaka. A second egg-tray manufacturing plant will be based in the vicinity of Lusaka to serve the southern part of the country. The total investment represented by these ventures is in excess of \$1.5 million. The total value, in terms of job opportunities, will be nearly 300. The increased flow of cash in rural areas will be considerable.

In addition to these ventures, the UNIDO team has advised on the installation and operation of a wide variety of projects implemented at different stages by Rucom. These included bakeries, dry-cleaners, quarrying and blockmaking, tea processing, vegetable and fruit-growing schemes, hardware marketing, garage operations and cannery operations. Studies for marketing purposes were produced by the consultants on almost every facet of Rucom interests.

The consultants carried out a continuous extension service to Rucom tenants, in some cases with considerable success, resulting in at least three

cases where tenants have either moved into their own larger workshops or are about to do so. The metalworking expert was particularly successful with metalworking tenants, introducing marketable prototypes and improved methods of production. In one instance the metalworking tenant was able to generate an average monthly turnover of \$8,000 operating from a Rucom workshop. In every case the experts were able to assist tenants in finding markets and identifying products suitable for manufacture in their workshops.

Introduction of investment by government directive

From time to time Rucom has been faced with the problem of having, by Government directive, either to take over existing enterprises or start new ones. The first example of this was the Mwinilunga cannery, which was established to provide an outlet for the pineapple growers of that area. Previously, road communications to it had been poor and at times impassable, leading to wholesale spoilage of pineapple crops and to a drop in used acreage over the years. To encourage growers, the Government decided to erect the cannery, and Rucom was given the task of processing and marketing the product. Unfortunately, the economics of the project had not been studied in advance, and the initial capital investment, while low, was quite overshadowed by the plant's continual losses. A special committee set up in 1972 to study operations concluded that the product mix was at fault and that other fruits and vegetables should be canned to permit plant operation outside of the normal pineapple season.

Tomatoes were selected for this purpose and, in conjunction with an adjacent vegetable-growing scheme conducted by the Ministry of Rural Development, a programme was launched. It was found, however, that with the varieties of tomato available, the harvesting seasons for pineapples and tomatoes overlapped, and the markets for fresh fruit were too remote to be used for disposal of the surplus fruit.

Some other vegetables, among them peas and beans, were also canned but were not available in sufficient quantities to make any real contribution to solving the problem. The net result has been that almost all of the products of the cannery have been sold at uneconomic prices to compete with imports, and the operations have resulted in substantial annual losses to Rucom.

The UNIDO experts were not involved with the cannery operations in any way in the years 1970-1973, but in early 1974 the market research expert was

asked to examine the market for cannery products in order to realize a better price structure and a more efficient product mix. His report indicated that, while certain steps could be taken to improve the situation, the cannery is not viable. Since it cannot be abandoned, however, the only solution would be to introduce other food-processing operations in more promising locations and subsidize Mwinilunga from their profits. Investigations made by the project show a sound basis for such a venture but only in connexion with a major growing scheme that would involve about 7,000 to 10,000 acres of good irrigated land. Such land is readily available in the Kabwe region, which lies along the line-of-rail between the Copperbelt and Lusaka, the two largest markets. The Irish Sugar Corporation has been engaged by INDECO to study this problem; its final report is in the hands of the Government.

In 1974 Rucom was directed to take over a number of petrol filling-stations and repair facilities, mainly located in situations where a licence to carry on trading had been refused to the incumbent. This directive was also made with no prior study and certainly without due consideration being given to the availability of staff within Rucom to handle the additional burden. The net result has been to withdraw Rucom personnel even further away from strictly rural development and to overburden Rucom management. The economic outcome of this venture remains uncertain, but indications are that profitability will be lost in the additional overhead costs to Rucom. In no case was the UNIDO team involved other than in an advisory capacity of very brief duration.

If Rucom is directed into other ventures by the Government as circumstances dictate, it will be difficult for the organization to concentrate on those rural activities already in existence and to provide the attention necessary for success.

Introduction of investment requirements for import substitution

Since the closure of the border between Zambia and Southern Rhodesia in January 1973, the importation of goods into Zambia has necessarily been restricted. Both the additional costs in foreign currency and the limited capacity of existing transportation systems have forced the Government to exercise strict control over imports. The aim of the Government has therefore been to direct Zambian industry, wherever feasible, to embark upon a programme of import substitution. This policy has already affected the project in the

case of pallet and box making and in coffee processing. In both cases the materials were available within Zambia, but the principal source of supply before the border closure was from abroad, and marketing the domestic products would have been more difficult in the face of foreign competition. Other examples of import substitution effected by the experts have been water pumps, saw benches and food containers. Investment for this purpose will be high in the future and will, to a certain extent, bring about changes in priorities and possibly changes from the original objectives.

C. Identification of investment opportunities

Small-scale industry investment opportunities

On 7 May 1970 an agreement between the project and the Economics Department of the University of Zambia provided for a study to be made by the economics team on prospects for industry in the Western, Northern and Luapula provinces. It was hoped that the study would help to identify certain small-scale ventures which could be undertaken by Rucom. A number of specific types of industry were selected for special attention, and it was agreed that other types which began to look viable as the work proceeded, would be added to the list. Although the report of the team was received with some mixed feelings, and opinions were expressed that the work would have been better carried by experts and counterparts, it is a fact that many of the enterprises identified have been subsequently implemented, albeit with varying degrees of success. Several individual proposals contained in the report were taken up by Rucom at the time and to a certain extent the study provided some basis for the early work of the project.

Gameskin processing

In May 1973 a gameskin processing expert was added to the project with a first responsibility to prepare a feasibility study which would, it was hoped, lead to the establishment of a gameskin processing operation. During 1971 a tanning expert from the project had studied the potential of tanning operations, but it had been decided that the venture, if carried out on a proper scale, was far too large for Rucom. Eventually the Bath Shoe Company, in Canada, took up this enterprise, and operations will commence on a large scale in early 1975.

For technical reasons it is not feasible to process fur skins in a hide tannery, and the Government therefore pressed for the gameskin operation. Such information as was supplied on raw material availability when the expert arrived was based upon physical counts of game in one or two selected areas of the Luangwa Valley game management area, and it was quickly discovered that much field-work would have to be carried out before he could estimate with any accuracy the numbers of skins available by species. Since this work had to be done before mid-October when the rains commenced, and because of a language difficulty, the expert required a great deal of assistance from other members of the project. It was particularly unfortunate that no counterpart was provided at this stage. The field-work was nevertheless completed in time and, by the end of 1973, collated. The report was submitted to Rucom in early 1974 and eventually approved for implementation in August 1974. During this period, the expert carried out experimental processing in his bathroom and at times in the UNIDO office kitchen, using chemicals obtained free as samples from suppliers, and old plastic buckets as containers and soaking tanks. Many well-processed skins were produced in this manner, and at last the venture began to receive appropriate attention from the Government.

The study resulted in a highly practical guide to gameskin processing. Its technical findings have been confirmed by corresponding documents obtained from commercial gameskin operations in Botswana and Kenya. However, the economic sections of the study depend on the accurate prediction of product mix which, if incorrect, will have a major effect upon the profitability. The optimistic figures shown in the study on the availability of skins such as zebra, lion and leopard were borne out; experience in the early stages of operation of the venture has shown that a sufficient number of these higher-priced skins was available. Whether the supply can be maintained at the level required in the pilot plant operation is still to be confirmed. It should also be borne in mind that game conservation measures already in force will be improved, and species such as the lion and the leopard will eventually be completely protected. This would have a detrimental effect upon the profitability of the plant, which now produces trophy skins, as it would have to be converted to the production of less costly articles. This is the case in both Kenya and Botswana where, although trophy skins are still produced, the main items of manufacture are bags, wallets, belts and shoes made from the cheaper,

more common skins. The study should therefore be accepted with some reservations as to the economic statistics. Rucom has now set up a price structure based upon some revisions and safeguards applied to the study.

Pallet and box making

The first woodworking expert posted to the project set up a small vegetable-box manufacturing operation in one of the workshops located in Lusaka, and for a time these boxes were produced in some quantity. However, the wood supplies in the area were in demand by many users, and great difficulty was sometimes experienced in keeping the venture running. The second woodworking expert erected prototype woodworking shops at the same location, while seeking a solution to the timber supply problem. Eventually a recommendation was made that both operations be moved to Chati, the site of a pine and eucalyptus forest planted in 1964. Forest Products Ltd, a government-owned company, had commenced cutting eucalyptus in 1972 and was planning a sawmill operation to be set up at Chati. A study was produced, showing that an operation could be established to make pallets and boxes from eucalyptus, which was not expected to be in short supply. With certain price agreements obtained from Forest Products Ltd, the enterprise could be made viable. The expert's report showed a nominal annual profitability of K 10,000 on each of the two operations. However, it was clear that this forecast relied fully on the availability of raw materials and took no account of possible shortages.

Unfortunately, shortages were encountered, not of timber but of nails, strapping and staples. Therefore, in the period following the departure of the second woodworking expert and prior to the arrival of the third one, shut downs of operations were experienced, particularly in the box-making project. Although requisitions were made correctly, orders were not placed with suppliers early enough by Rucom to ensure timely deliveries. In the case of orders for staples to be delivered from Europe, it was found that previous consignments had been lost in Dar es Salaam and could not be traced. These difficulties led to periods of non-productivity which had an adverse effect upon the profitability of the project.

In spite of these problems, the production rates calculated in the expert's study were exceeded by nearly 50 per cent, so that there was a steady generation of funds. Had the sales department of Rucom kept pace with national demand for these products, the plant could have been in the happy

situation of having a full order-book for at least 18 months ahead. Tribute must be paid to the expert responsible for implementation of this venture, despite the difficulties he faced both from lack of an adequate counterpart and delays on delivery of equipment. The training of completely unskilled labour to the levels of efficiency required must be accounted one of the outstanding achievements of the project.

Much more could be done at Chati in the area of pallet and box making, but a more serious approach will be needed from Rucom on sales and the provision of the requisite hardware. As it is, the Chati operation supplies pallets and boxes which were previously imported.

Brickmaking

An expert in brickmaking posted to the project in 1971 proposed a rural brickmaking operation at Kasama to produce some 2 million bricks per year. He advised that machinery already existing in Zambia in a relatively unused condition should be purchased by Rucom for this purpose, representing considerable savings in costs and time. Rucom agreed to purchase this equipment for installation at Kasama, where a suitable clay deposit had been located but, owing to financial stringencies, had to withdraw from the agreement. Subsequently, Rucom decided to proceed with the venture but, in an attempt to save money, overlooked the expert's recommendations. Some second-hand equipment was acquired, but whereas the expert had specified, for example, a main-drive motor of 75 to 100 horsepower, the plant was supplied with only a much-used old truck motor of no more than 30 horsepower. By early 1973 the labour force at the brick-field was almost double the number recommended in the original study, but because of the departure from specifications laid down by the expert, the plant was still producing no more than a very few bricks, and even these were substandard. Financial losses were high.

In early 1973, in order to correct the faults at Kasama, Rucom requested the return of the first expert. He stated in a preliminary report that new equipment, especially the power unit, would have to be obtained before the brick-field could operate with any degree of efficiency. Enquiry revealed that the equipment originally recommended was still available, and this was acquired. Within the expert's second term of duty, the brick-field was operating in a viable manner but at a capitalized cost to Rucom of more than double the original estimate and an additional \$30,000 to UNIDO for expert time.

A major factor contributing to the probable success of the Kasama brick-field is the proposal of INDECO to purchase all medium-quality brick produced there for the national market. If the recommendations of the study with regard to firing are followed by Rucom, most of the bricks produced in Kasama will have a ready market. A second brick-field has been proposed for Solwezi, and the expert has again proposed the purchase of good equipment that is lying idle and that is available at a very attractive price.

Egg-tray manufacturing

For several months towards the end of 1972, the possibility of manufacturing papier-mâché trays for both meat and eggs was the subject of study. There was at the time a shortage of these items, since imports were being cut. Sources of raw materials were identified and markets established, but capital costs for equipment were high. Eventually, the London-based Intermediate Technology Development Group Ltd (ITDG) was found to operate a cheap and simple plant capable of producing sufficient egg-trays to penetrate either of the two major markets in Zambia, that is, the Copperbelt or the Lusaka areas. It was learned that a plant was to be installed in Lusaka by private enterprise, so the Copperbelt was chosen for the location of the Rucom venture.

After considerable delay, the plant was delivered in a damaged state and required repair. Finally, it was commissioned at Luanahya, and after the initial minor problems were overcome, functioned satisfactorily. After a few weeks of operation, the results were found to be below expectations. Production figures were not as high as indicated by the manufacturer, owing to inadequate drying facilities. These will, however, be improved. The price of the trays had to be raised slightly, since the cost of obtaining raw materials was higher than anticipated, and because the supplier decided to charge for the waste paper used. Nevertheless, the plant is working well, and the study was accurate in predicting viability.

D. Co-ordination with other UNIDO experts' activities

Market research activities

The market research expert has, from the time of his arrival in Zambia, been valuable to the project as a whole and to Rucom. He has made a systemized evaluation of market potential for every small industry, whether already operated by Rucom or being considered for implementation. In most instances the evaluation has proved to be highly accurate, with regard to both demand and pricing. Rucom quickly came to rely on the project for this information and, over the last eighteen months, no venture, no matter how small, has been approved without a full study. This represents a substantial contribution of the project, and has ensured that future Rucom ventures will have the possibility of being profitable.

While the functions of market research and project evaluation were focused on new ventures, in addition the expert was increasingly involved in sales activities, particularly during the period of the fellowship awarded to Rucom's sales manager. Here again, the provision of counterpart of the staff would have been an advantage, as delays would have been prevented in studies being made of important aspects of Rucom's existing ventures, such as the cannery, hardware distribution and block-making. Consequently, financial losses continued to accumulate. The mid-term review clearly showed this point to be important and urged the provision of counterparts personnel, but this was not done. At the same time, the mission recommended the provision of further international assistance to the expert and, now that the agreement has been signed, it is to be hoped that this support will be forthcoming.

The two functions of market research and project evaluation form the basis of all experts' work and such constitute the most important contribution the project can make. The co-ordination of these activities has at all times been the responsibility of, and must remain with, the senior technical adviser.

Extension services to metalworking and woodworking activities

Throughout most of the period of the first phase of the project, both metalworking and woodworking experts provided extension services to Rucom tenants, and more recently to direct Rucom ventures. In the case of tenants, these services, owing to financial crises, were severely restricted on two occasions: first, for a period covering the second half of 1972 and up to

April 1973; and second, for a period of almost four months in 1974. Altogether, almost one year of the project life went by with little or no assistance being given to tenants by experts.

Prior to the mid-term mission, all work of this nature was programmed by the Project Manager in conjunction with the counterpart organization and the experts. After the mission the work was programmed by the counterpart organization and less time was allocated to tenants, practically the whole effort being expended on direct operations. Undoubtedly, from Rucom's point of view this was of greater benefit, and of particular importance because of the higher capital involvement. The insistence by the Government that Rucom become profitable made it imperative to direct maximum efforts in this direction. However, the tenants lost a great deal of much-needed assistance. In general, the co-ordination of field-work of experts by Rucom worked well and, provided that tenants will once again be helped, as in the early days of the project, should continue on these lines.

Plastics activities

In April 1972 a plastics expert was posted to the project for the purpose of introducing the building, maintenance and repair of fibreglass fishing boats in certain pre-selected rural areas. Upon his arrival, the expert surveyed the existing industry and found that five commercial companies were carrying out this work, all of them located on the line-of-rail, and that all of them were experiencing difficulties caused by a surplus of boats. The loan arrangements that had previously been available to fishermen for the purchase of boats had lapsed, owing to the Government's financial difficulties. Raw materials, such as glass cloth and resin were almost unobtainable. The Government's own experimental workshop at Chilanga was likewise almost at a standstill. The expert demonstrated to Rucom that boatbuilding alone was not therefore feasible, but that the incorporation of the manufacture of water tanks, small building components and the like could make the necessary difference to the venture. This change would mean that the operation would certainly have to be based in Lusaka. Rucom agreed to set up a workshop there, and equipment was requested from UNIDO for the purpose of constructing prototypes. This equipment arrived in January 1973 coincident with the border closure, and for a period of almost nine months it was impossible to obtain raw materials. In the meantime the expert, in conjunction with the Project Manager, involved himself with a project of the Food and Agriculture Organization of the United Nations (FAO) to produce a fishing boat of better design than the one that was then usual. Arrangements were made to manufacture the new boats for FAO, first

of all for evaluation purposes and then in quantities for the market. In October 1973, however, INDECO instructed Rucom industries not to become involved in plastics, and the venture was therefore abandoned.

The expert attempted to achieve results in other ways, for example, by proposing interregional co-operation on the distribution of raw materials and products on a preferential duty basis, the development of resin manufacturing facilities, and the establishment of national standards, together with a test laboratory, etc. For a variety of reasons, it was not possible to realize any of these projects, although the test laboratory was, and still is, acceptable, provided a reasonable programme of training, together with test equipment, can be provided by UNIDO. The plastics expert doubled as project manager.

E. Other activities, scheduled and unscheduled

Mumbwa agricultural maintenance and repair workshop

Together with three other rural towns, Mumbwa was selected by Rucom as a site for a new workshop designed to house two or three operations such as metalwork or woodwork. All four of the workshops were included in the 1974/75 budget of Rucom. Early in 1974 the project received a visit from representatives of ITDG, who were visiting Zambia to discuss a second phase for this local agricultural machinery project. The Ministry of Rural Development had suggested that this organization take some of the graduates from the technical trade centres and, by providing instruction of a practical nature in a workshop, equip them to start small satellite operations of their own. As a result of further discussions, the project recommended a joint venture to be controlled by Rucom and based at Mumbwa, the centre of a very active agricultural community. The draft agreement that was worked out provided that Rucom would provide the workshop and management, together with raw materials for commercial purposes; the Ministry of Rural Development would provide a hostel for the trainees, staff housing, and some contribution to raw materials for training purposes; ITDG would provide two engineers for a period of three years as instructors; UNIDO would provide equipment to an anticipated value of \$5,000, which would come from the project budget for metalworking equipment. The whole operation would be controlled by a committee under the chairmanship of the General Manager of Rucom. The venture would primarily repair and maintain agricultural machinery but would also manufacture simple implements.

In July 1974, ITDG communicated their decision to the Ministry of Rural Development that they were only concerned with the manufacture of implements and could not be associated with a maintenance and repair operation. This situation is still awaiting clarification. The Resident Representative of UNDP has expressed interest in treating this as a separate project.

Game warden training programme

There are two main groups of game wardens in Zambia: those of the Department of Wild Life and those of the Tsetse Control Department. In both departments it was considered desirable for a training course to be set up to teach the wardens how to treat and dry gamekins so that they could be subsequently processed to the best condition. The Department of Wild Life accordingly engaged an expert from Kenya to set up the course and arranged that groups of about 25 wardens should receive two weeks of training. The first group were to act as instructors for subsequent groups and would therefore receive more intensive training. A week or so before the course was to start, the Department discovered that an expert in this field was on the project team and a revision of schedule was made to include the UNIDO expert in the programme. The expert compiled a complete guide for the trainees and spent two weeks with them. The results of this training have already been apparent in the improvement of the quality of skins produced by the trainees as they have returned to their field stations. It is intended that by the end of 1975 some 750 wardens will have passed through this course of training.

Steelbuild (LENCO) production problems

At the request of INDECO, the metalworking expert was loaned to their Group Technical Planning Division to assist in solving production problems at the Steelbuild subsidiary, LENCO. This company constituted one of the two light engineering units of Steelbuild and was producing a range of items from window- and door-frames, through steel furniture, to over-the-road tankers. The company operated under a management agreement with the Italian partners in the venture. Much of the work carried out by the expert was of a confidential nature, and no reports other than of a general nature were forthcoming on his activities. At the end of the six-month period spent by the expert with INDECO, complete satisfaction was expressed by its Managing Director on the results. In addition, Rucom benefited greatly from the association by way of surplus machinery and offcuts at scrap prices.

General

All experts were involved at various times in unscheduled activities ranging from service on national committees to lecturing at various training courses. At all times, the entire team was willingly available to assist Zambia in any way possible, and some of the contributions made by individual experts were quite outstanding. A considerable effort was made to assist visiting missions, experts on special assignments and fellows on tour. Much time was spent evaluating projects outside the terms of the agreement, and in some cases this work was invaluable in the setting up of proposals for new programmes of assistance, for example the intravenous fluid plant. This contributed greatly to the enhanced status of the project.

II. RECOMMENDATIONS

Since the mid-term review mission made full recommendations for the continued programme of assistance, which now forms the basis of the documentation for ZAM/74/005, there is little more that can be said on the subject. Implementation of phase two with the minimum of further delay is of the utmost importance, and to this end certainly the air-freighting of gameskin processing equipment is essential. The recruitment of experts for the project is being delayed by Government insistence on interviewing candidates. Such is the history of the project that it is advisable that a further headquarters mid-term mission take place in late 1975, at which time the ventures identified by the last mission for specific assistance should be well under way, and any problems will have emerged. Finally, if a third phase is to be considered, due regard should be given to changing the form of assistance to an Operational Assistance (OPAS) agreement.

Annex I

INTERNATIONAL PROJECT PERSONNEL

<u>Name</u>	<u>Nationality</u>	<u>Post title</u>	<u>Arrival</u>	<u>Departure</u>
K. Levison	Israel	Project Manager	Mar. 1970	Dec. 1972
J. A. McManus	United Kingdom	Metalworking Expert	Sept. 1971	June 1974
H.G.F. Weeresinghe	Sri Lanka	Industrial Market Research Expert	Mar. 1972	Sept. 1975
G. R. Deighton	United Kingdom	Plastics Expert, Project Manager, Senior Technical Adviser	Apr. 1972 Jan. 1973 Sept. 1974	Oct. 1974
V. Gonzaless	Paraguay	Gameskins Expert	Apr. 1973	Nov. 1975
J. Reid	United Kingdom	Brickmaking Expert	Aug. 1973	Aug. 1974
H. Ringquist	Sweden	Associate Expert in Woodworking	Nov. 1973	Nov. 1975
F. Cavadini	Italy	Woodworking Expert	June 1974	Dec. 1975
D. H. Kimberling	United States	Metalworking and Mechanical Expert	Dec. 1974	Dec. 1975
S. Davis	United Kingdom	Geological Engineer	Dec. 1974	Feb. 1975

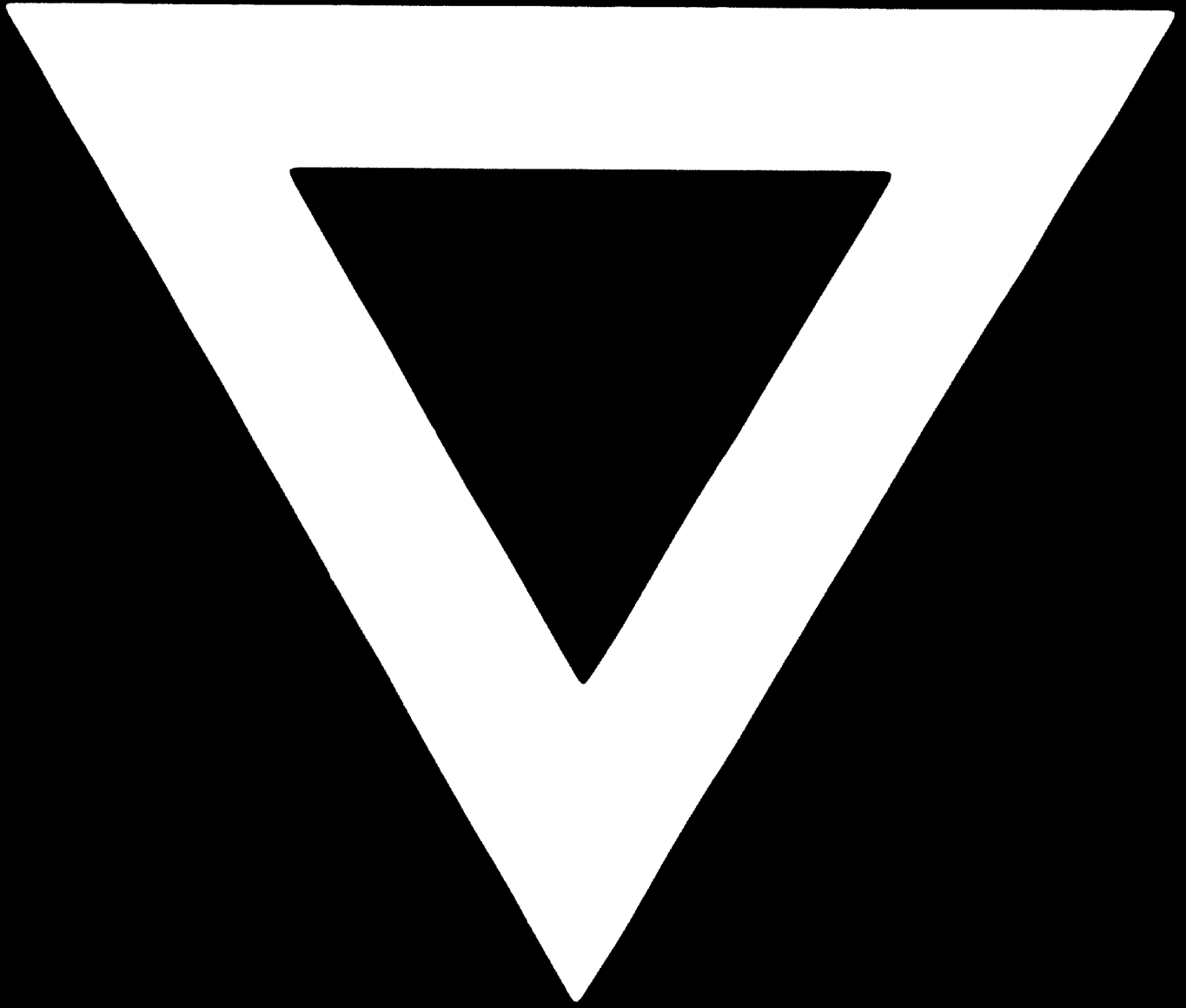
ANNEX II

FELLOWSHIPS GRANTED

Three fellowships at the Oslo (Norway) School of Business Administration were granted for the period 30 September 1973 to 31 March 1974. The fellows and the subjects they studied were as follows:

L. Mwaba	Purchasing and supplies
S. V. Moonswe	Production management, Marketing
W. S. Mwala	Marketing, Sales management.





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