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GUIDE TO NEGOTIATIORS OF TECHNOLOGY TRANSFER IN THE AFRICAN REGION

With special focus on the agro- and agro-related sectors *

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* Mention of firm names and commercial products does not imply the endorsement of the United Nations Industrial Development Organization (UNIDO). The views expressed in this document are those of the author and do not necessarily reflect the views of the Secretariat of UNIDO. This document has not been edited.

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FOREWORD

Following the conclusions and recommendations of the Third African TIES Meeting held in Accra (Ghana) in December 1989, and through its Technology Policy, Acquisition and Negotiation Unit, UNIDO implemented a project oriented towards human resources development in the field of technology acquisition and negotiation in the African region, with a special focus on the agro- and agro-related industries.

This project was implemented under the Industrial Development Decade for Africa Programme for the biennium 1990-91. One of the activities was the preparation of guidelines and working material that address problem areas related to the acquisition of technology in the agro- and agro-related sectors in African countries.

The present Guide is one of the results of such activity. It is expected to be a valuable tool addressed to the needs of negotiators, private investors and government officials concerned with the selection, acquisition and negotiation of agro- and food industry technologies.

The Guide covers all relevant aspects of the technology transfer cycle from bidding to contracting and takes into account the particular problems of the agro- and agro-based sectors of African countries as well as the relevant issues that decision makers and negotiators are usually confronted with along the technology transfer process in the African context.

The Guide was designed to raise an awareness of the complexities and intricacies of assessing and selecting those technologies which may suit the buyer's needs and environment, and to help technology buyers achieve contractual conditions conducive to successful technology transfer operations both in what concerns project feasibility and technological self-reliance.

The Guide is supplemented by a number of annexes containing details of specialized topics related to technology assessment and contracting as well as the available UNIDO programmes and services whose purpose is assisting developing countries to achieve their development objectives through the acquisition of foreign technologies.

We expect that this work will contribute towards clarifying outstanding issues and improve professional knowledge on technology transfer operations, make UNIDO better known and encourage the use of its facilities. If it is healthy to learn from mistakes, it is certainly better to avoid costly mistakes through timely and competent advice.

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ANNEXES

CHARTS

ABBREVIATIONS

A & F. Industry	Agro- and Food Industry (agro and agro-related or based industries)
E.C.E	United Nations Economic Commission for Europe
E.E.C.	European Economic Community
F.A.O.	Food & Agriculture Organization
G.D.P.	Gross Domestic Product
G.N.P.	Gross National Product
I.D.D.A.	Industrial Development Decade for Africa
I.N.T.I.B.	Industrial and Technological Information Bank
I.R.R.	Internal Rate of Return
I.T.C.	International Trade Center
M.V.A	Manufactured Value Added
N.P.V.	Net Present Value
R.O.I	Return on Investment
T.A.S.	Technological Advisory Services
T.T.	Technology Transfer
U.N.I.D.O	United Nations Industrial Development Organization

INTRODUCTION

As far as agro- and food industries are concerned, the word "TECHNOLOGY" keeps its full original Greek meaning where "TEKHNE" relates to the "art of processing". This is particularly true in the natural products in which characteristics are evolving during the crop season, as well as during storage and later. Even as finished stabilized products , they continue to evolve more or less, loosing their flavor, color, taste, etc.

Thus, processing them relates really to an "industrial art" the objective of which is to maintain their original qualities as long as possible for the consumer's satisfaction, in spite of all these variations. That is the first, but significant, difficulty which is ignored in all other industries.

On the other hand, "LOGOS" designates the transmission of knowledge pertaining to that processing art, to the technical terms involved, and to the relevant equipment. The second main difficulty lies here because of its purely human communicational aspect.

In addition, the transfer of technology in the agro- and food industries relates to known technologies which are difficult to hide under trademarks, patent rights (there is no real "SECRET") or to keep under monopolistic market positions. At the present time, several alternatives are often available for marketing the same product.

Thus, the transfer of technology in that sector relies mainly on import of machinery and equipment with adequate documentation/information, very often with know-how or technical support, and sometime involving the licensing of patents only.

In this approach, the African entrepreneur is usually under the impression that the feasibility study - which has

demonstrated the economic viability of his project and has defined the inputs, outputs, performances, etc... and provided a general organization layout - may have also selected the technology from amongst those available, or tested its appropriateness and excellence.

In case of agro- and food industries, this cannot hold true at that stage: the feasibility study is only a frame in which more detailed information have to be collected.

Negotiation time is there to complete the economic assessments made and to determine the exact merits or weaknesses of each technological alternative, both for the process and for the equipment considered in the project study.

Viewed for agro- and food industries, the technology components are essentially a "PACKAGE" of documents, written or oral information, plans, flow-sheets, etc ... together with technical, managerial and craft skills associated with the use of processing equipment. In this sense, it is easy to conceive, but complex to deal with.

They may be supported by patents (rarely) trademarks (sometimes, on behalf of market considerations), industrial property rights (e.g. TETRAPAK conditioning system), etc... but this enhances mainly their commercial value : there is always a free, but may be more risky, alternative for its acquisition and transmission.

Thus, the African entrepreneur, as potential negotiator, must keep in mind that most technologies of interest for him in the agro- and food industry sector constitute a "very complex package" - even for a simple processing machine or a packaging line because of the large panel of solutions, in particular for small and medium size projects.

The investor should not be afraid of this apparent jungle. Such a large opening can be taken as fortunate, where a clever selection (see Chapter II) makes it always possible to issue a highly competitive bidding (see Chapter III 1 to 3) and, thereafter, the premises for negotiating a fair agreement are optimal (see Chapter III 4 to 6).

The aim of this guide is to show that this break-through is possible in the African context. By and large, the means are a matter of organization and systematic approach to the main particularities occurring in the sector of agro - & food industry, as explained in Chapter IV.

The targets are :

- to buy the technology (ies) at the best cost/quality ratio
- to select the more "appropriate" one(s)
- to get it (them) on better terms and conditions
- to enable local firms to participate
- to sign a fair contract.

At the end, particular attention is paid to the joint venture solution in Chapter V. This fits in particularly well for this type of Transfer of Technology as well as for the example of contract given in Chapter VI.

For a more elaborate treatment of the subject, the reader is referred to the selected list of documents in Annex, "bibliography" and, later, to the central piece which will be the MANUAL ON TECHNOLOGY TRANSFER NEGOTIATIONS. Its content is presented in Annex 14.

Nota Bene (WARNING)

The views and suggestions presented here may not be accepted by all foreign contractors nor endorsed by every one. Food & agro-based industries have too different detailed specifics and aspects, sometimes contradicting, for being easy to negotiate. Nevertheless, it is felt important enough to make the moral of this message understood.

CHAPTER I

Overview of agro- and agro related industries in AFRICA (1)

1. General trends and situation

In many African countries, the prospects for a healthy pace of economic growth exist in these sectors, considering the rapid growth of demand in urban areas (exceptionally 10%) and present reliance on food imports which could be substituted. Moreover, the necessity to process more agricultural production is felt urgent in order to reduce the tremendous post-harvest losses ranking from 15 - 25 % for cereals, to 40 - 50 % for fresh products, according FAO's surveys.

These losses are less than 5 %, exceptionally 10 %, in developed countries which are processing an average of 80% of their agricultural production, whereas African countries are processing only 10 %, often 2 - 5 % of it.

However, this optimistic view is overshadowed by market uncertainties, stagnant or declining G.N.P. par capital and a general very low level (200-800 $) of income. Furthermore, sustained pace of economic growth remains constrained due to the depressed world prices of raw-materials, deteriorated balance of payment, etc... These industrial sectors must also face other difficulties such as very low rates of return and absence of infrastructure, as well as the non-existence of modern key industrial firms for supporting them in many cases.

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[1]The above relates essentially to tropical and subtropical countries while northern Marocco, Algeria, Tunisia, Egypt, etc., have reached intermediate stages of development and are benefitting from better climatic conditions for their agriculture (mediterranean environment).

Measured in terms of Manufactured Value Added (M.V.A.), the industrial growth rate, in AFRICA during the 1980s, was fluctuating between - 1 % and + 5 % with doubtful upward expectation for the near future [2]. Serious economic difficulties have to be overcome for the time being. Establishing stronger linkage with agriculture and between the different agro-industrial sub-sectors, as well as improving management, maintenance or quality will not be sufficient without a favourable political and policy environment.

For the lowest G.D.P. countries (rated 8 - 10 %), agro-processing will probably remain the principal industry and therefore it must receive strong attention for each improvement, extension or new planned activity.

While food consumption is determined mainly by the continuous population increase, the domestic markets have expanded very little due to sluggish economic growth. If capacity utilization is taken as indicator, only few food plants reach 70 % or more of current activity (see Annex 3). The most common attainment is about 50 % or less. Nevertheless, food and agro related industries are likely to remain, or to become, the major manufacturing force in most Sub-Saharan countries in terms of production, value and employment generated.

By themselves, agro- and food industries are a conglomeration of rather unrelated industries dealing with very different production such as : cereals and grain milling, bakery products, sugar extraction and sweets, canned fruits and vegetables or fish, oils and fats,

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[2]UNIDO's recent survey (UNIDO/PPD 97) on 51 African countries published in the IDDA framework, provides background information, key economic characteristics, trends and rehabilitation needs for each of them. Inter alia, it shows the following MVA evolution: -8% in 1984, +4.1% in 1985, +4.5% in 1988, but this new trend remains uncertain.

poultry, meat and dairy products, coffee and tea, etc... There are only a few countries where beverage and tobacco are not dominating. In almost all cases, the food branch accounts for about 25 % of gross industrial output in M.V.A. terms.

It is also a matter of fact that the sectors where much capital investment has been made, include agriculture, food and agro-based industries as well as those manufacturing complementary inputs such as label printing, packaging products, wooden crates, etc... One striking feature is that the number of projects approved in that sector shows a decline during the last years, e.g. 30 % in Nigeria, in spite of the existence of various credit lines available therefor.

2. Specific features

First of all, agro-based industries are characterized by the **perishability** of their raw-material. As a result, quick and direct processing is required for them and the plants are close to these sources, thus located in rural areas. In contrast, food industry works on intermediate stabilized materials (dried, frozen, concentrated, sterilized ...) which allow them to be stored throughout the year and shipped from long distances to the urban areas where they are mostly established. The latter is more dependent for success upon the market. But in both cases, the single question for their activity is "what are the market requirements ?" The choice of processing technique and its technology are determined by the answer to it.

Another aspect of the agro-based industries is that their activity is determined by a number of factors such as crop yields, land available, prices paid to farmers, weather conditions, imported packaging material, etc... One of the significant handicaps of the local agro-based

industries, is the absence or paucity of **sound agricultural practice**: too often, long delays in payment for raw-material discourage farmers. On the other side, they do not always respect contracts (if they exist) with the companies when the fresh market is more attractive. Thus the supply is uncertain.

When acceptable links have been created - as for pineapple in Guinea or Ivory Coast - cultivation practice is not satisfactory, the yields decrease and growing shortage results for that agro-industry. Large mangoes and sugarcane plantations exist and their size is in accordance with that of the factories, but weak planification and management of the former again handicaps the related factories.

The second handicap comes from **insufficient maintenance facilities and training weakness**. Countries, such as Nigeria or Zimbabwe, show how important the existence of an "industrial tissue" is for agro- and food industries : a reasonably integrated network makes them more productive.

The third characteristic of these sectors is the virtual non-existence of small - and medium - sized modern plants in spite of the governments' development strategy placing strong emphasis on their expansion. Official key reasons are to solve unemployment and to strengthen agro- and food industry through diversification. Incidently, medium or large size enterprises such as sugar, oil and fat processing, would benefit from it, by valorizing locally their by-products which are, for the time being, either wasted or exported at very low price.

In the late 80's, several governments tried to boost their industry by decreasing surveillance and issuing incentives and credit facilities. But payment defaults are

remaining as well as financial collapse because, in many cases, the financial inputs need to be supplemented with technical support, which might enhance the entrepreneurial performance. Without this, they are lost and the basic problem remains.

Improvement in economic efficiency of the agro- and food industry continues to depend critically upon backward and forward linkage with both agricultural production and consumer demand before import dependence might be reduced. This needs other types of technological know-how transfer.

At the present time, medium-scale agro- and food enterprises (10-60 employees each) have the best growth rate in many countries. This size seems to be a good one for this type of industry. Therefore it is advisable to start new production with such size of plant and to duplicate it in another consumer area, rather than to extend the first one. In this scale of processing, the raw-material and finished product transport costs are increasing more steeply than the theoretical savings generated by a larger plant according to the traditional academic view. In addition, the economic efficiency of a medium-size plant is now recognized as being superior to that of a larger one, and they are more appropriate for human management and workers ability and skill.

Quite permanently , food processing plants are labour intensive : therefore training is essential at all levels. Influenced by the highly mechanized western pattern, some sectors in AFRICA such as beverage, are following that trend without real need or national economical justification. Sometimes, they change to capital-intensive solutions whose justification is weak.

Processed food still plays a minor role in Africa's exports in spite of favourable or non-tariff trade barriers, e.g. those of the EEC .

3. External difficulties

Some of these constraints are part of the global environment in which the African agro- and food industry operates. They are beyond the control of the countries themselves e.g. exchange rate fluctuation, cost of credit and technology gap militate against developing countries' interests.

Other factors affect them indirectly such as the lack of real regional markets, rapid changes in technologies or land-locked countries.

On the whole, industrial policies formulated in the 1960's were based on protecting their infant industries, and keeping them under political control which makes them now over-protected. The result has been lack of competition and low efficiency. Cost for adjustment or rehabilitation is now exacerbated and the recent reforms for liberalizing them are sticking on too short time available, too ambitious programmes, too drastic changes.

Another reason for the slow progress of agro- and food industry is on one hand the generally weak institutional structure of African countries : administrative routine, development policy and credit bank support which remains reluctant or almost non-existent. On the other hand, infrastructural shortcomings are numerous : transport network (essential for low price goods such as food), power supply, telecommunication (for quick ordering and supply) and consequently stock reduction.

In the absence of qualified manpower (technician, engineer, foreman and plant manager), the agro- and food industry tends to rely on foreign consultancy or assistance. All this has shown very expensive and foreigners have not always a sufficient understanding of local requirements and problems.

4. Local constraints

Although agro-related industries have established some successful linkages with the agricultural sector - e.g. palm oil production, fruit canning, textile and cigarette manufacturing - they face permanent shortage in domestically produced raw-material. Too often success depends on the integration of the agricultural component into one single enterprise which is not the best solution : agriculture and industry are very different businesses. The way to manage them is different and the whole is more productive if it is in different hands.

The weakness of the agricultural sector in AFRICA, is surely the major and largest problem for agro-industry for many reasons :

* low and fluctuating productivity
* crop failure due to drought e.g. 1984 and 1985
* unsuitable agricultural methods or variety of plants for industry
* lack of interest in cultivating variety appropriate for industry.

Another main obstacle is price fixing, mostly done with political background consideration such as to provide urban population with food at lowest cost or governments with substantial revenue. But a number of countries are now overhauling the price system by providing more incentives to farmers in spite of the growing unrest among urban

people. The result for the food industry is more expensive inputs and reduced output possibilities.

5. Plant level problems

First of all, agro- and food industry, like others, is lacking in interest for local investors or economic entrepreneurs. Profits can be made much faster in the trading or servicing sectors. In addition the latter require few or lower long-term investments. It is a matter of fact that food production is not perceived as an attractive business compared to trading the same items.

Secondly, the low general level of education and the absence of a long tradition of manufacturing (over two centuries in developed countries) explains very easily the lack of industrial qualifications and experience among technicians, foremen, supervisors and plant or production managers. As it takes time to built up the human resources needed to run a modern economy, this problem may only be resolved on a medium term period through several consecutive contracts.

Thirdly, a package of similar problems affecting the individual plants may be summarized as below .

* **Maintenance** is neglected, whereas it is more essential in hot climate than in western countries. Thus equipment and machinery deteriorate more quickly. On-line product losses are much higher than elsewhere, with obvious poor economic results.
* **Repair facilities** and local spare parts manufacturer are limited or of poor quality . Import of spares takes time and costs more because of air freight. Higher security stock increases working capital requirements.

* **Input supply** : for agricultural raw-materials, it ranges from 25-40 % of the production costs, and for packaging material from 15-55 %. Boxes, tins and drums may be manufactured locally (unfortunately sometimes at higher price or lower quality than imported ones) but all the other components have to be imported with consequent foreign supply burdens.
* **Technicians and skilled labour** as well as qualified foremen and supervisors are mostly in short supply . The results are more break-downs, wastage and lower product quality. Operating cost are obviously increased thereby.
* **Experienced plant and production managers** are scarce. The general performances are consequently poor. In addition, little knowledge of technical, mechanical, marketing or financial aspects is present. Thus expatriates or specialists are hired more frequently than elsewhere. Overhead costs are overloaded by this duplication.
* **Administrative interferences**, especially in public enterprises are numerous. Generally, plants are managed more in the way of a civil service than as an industrial entity.
* **Formerly, local regulations** were aimed to supply domestic markets at low price. As a result of strong controls and stipulations, the plants now have little or no flexibility. On their side, civil servants usually have insufficient understanding of industrial problems or possibilities. Thus evolution and adaptation to the world industrial environment is too slow and the competition gap tends to widen.
* **African family/ethnic/political concepts** lead not only to overstaff the enterprises and to increase operating cost, but they are often detrimental for selecting qualified labour.
* **The domestic banking system** is rather reluctant to supply industrial credits. The importance of working

capital, (over 30 % of initial capital requirement) and its fluctuation during crop periods is ignored, while it is well known that agro-based industry needs mostly one year running cost for bridging crop season with consumer on-line demand. In particular, warranting is ignored.

* **Capital structure** is inadequate and mirrors that of other industries, whereas it should be completely different : less than 70 % should be borrowed. On the other hand banking guarantees requested in AFRICA are not realistic as they duplicate western patterns which do not apply there.
* **Utilization rate** is insufficient (see Annex 3) : 57 % of the existing plants in the African ACP States have too low a rate and 21.5 % have stopped.

To these problems of a more general nature, the enterprises of the public sector (over 20 %) add a last one. Their managers and staff are more civil service minded than elsewhere. Hence, entrepreneurial thinking has vanished, with well known results, all over the world and Annex 4 figures it out tentatively.

6. Sectorial analysis

As shown in Annexes 3 and 5, some sectors or sub-sectors, as soft drinks and beer, have performed well. The milk and wood sectors are relatively healthy whereas the sugar, cereal and particularly canning, oil and fat sectors are facing bad situations. At the present time, the following assessments may be made.

* **Dairy sector** : mostly well equipped and producing well, but handicapped by a general lack of local milk. Powder milk, butter oil, sugar ... are imported on an on-going basis and not for starting the process only.

* **Soft-drink and beer sector** : large local market, strong linkage or supervision by western companies and public source of revenue are contributing to its success. Problems are up-stream (bottle, caps, plastic box production). A trend to over-equipment is starting in some countries.
* **Sugar sector** : insufficient supply of sugarcane is reported everywhere. In addition, plants were generally oversized, arguing future size-savings which have never come. Ambitious objectives have failed ; even when the environment is good, the normal level of activity is missing.
* **Oil & fat sector** : again lack of raw material is the major cause of poor results and rehabilitation/extension of tree plantations is badly needed.
* **Milling and feeding sector** : results are mostly dependent on foreign supply; inadequate purchase, imports or price policy make it weak.
* **Fruit and vegetable canning sector** : it has the worst result with over 50% of the plants staying without work; bad maintenance and lack of raw-material are the main reasons; competition with the fresh market and/or adverse climatic conditions are cutting down periodically the supply; links between agriculture and industry need improvement; the cost of the packing material, tins in particular, is too high.
* **Fish canning sector** : mainly tuna fish oriented, it is headed by western companies. Again, the raw material supply is a limiting factor: drought and the progress of the Sahara have contributed to change surface water temperature in the Guinea Gulf and fish is getting too deep to be caught. In the Indian Ocean, the monsoon stops fishing for 3 months each year.

* **Wood sector :** even active, but the export of 3/4 of the existing raw material shows the potential for creating new processing plants.

7. Present obstacles to avoid

Out of the different field-surveys made in recent years and of the regional consultation on industrial rehabilitation held at Vienna, 12-16 November 1990, focusing on the agro- and food industry (UNIDO pamphlet ID/373), the following most common causes of weak, sometimes bad performing, are stressed below.

- At project level and in addition to the difficulties described in paragraph 3 :

* Supply of raw-material not well established on a long term basis;
* Mis-matching of size and present supply or demand : no change should be accepted under supplier's argumentation or pressure to oversize a production unit;
* Western industrial pattern requested without adaptation.

- At negotiation stage

* Inadequate or wrong process selection;
* Inadequate or wrong packaging system choice;
* Incomplete contract where inland transport, training or start-up conditions are missing (over 15 % of the cases);
* Local components (building, civil work, manpower...) not ready on time;
* Infrastructure failure: power, access road, water quality;
* No programming nor preparation of the bidding process
* Weak raw material specifications;

* Weak or no checking of the general layout, organization and equipment;

- At factory working time

* Bad or no industrial cost - and quantity accounting of the production factors;
* Spare-part supply organization is weak or missing;
* Total quality control system, of increasing crucial importance, is insufficient - if it exists - or absent;

All these common past failures should be kept usefully in mind during the negotiations in order to avoid their repetition[3].

8. CONCLUSION AND PROSPECTS

Removing all these obstacles is obviously difficult, but if negotiations are well handled, without ignoring the above considerations, some or many of them may be significantly reduced or even overcome. Annex 1 summarizes the timing of an entire project and shows when to look at these obstacles individually.

The true challenge is also to identify which existing enterprise may suit the project or could be converted at lower cost to it. This **preliminary reflection task** is important : as a result the tender documents and potential technology suppliers may not be the same.

It must also be understood that rehabilitation is a very complex operation, sometimes more so than that of an entirely new production unit: it is not a simple technical or mechanical rebuilding (see Chart F). To be successful,

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[3]More general information are available in UNIDO pamphlet PPD/97, no. 1 "Regenerating African manufacturing industry: an approach."

it calls more for a well prepared plan of action before contracting, as it is shown on the chart in Annex 1, than for the establishment of a long list of equipment, machinery and needed spare parts.

Thus, the analysis of all the engineering, organizational, training and managerial aspects must be performed first: each of them may lead to a specific contract for acquiring the insufficient, or missing, know-how and skills. Thereafter, the problem is to determine how the deal may be started : as an entire package, to be separated or sub-contracted, linked to a good purchase, etc... Obtaining a clear understanding of the complete negotiation process is a must before going to work.

CHAPTER II

1. Forms and types of technology transfer transactions

As stated above, agro - and food industries are highly diversified : each sector has its own requirement and each location its particularities. Thus, technology transfer may have a infinitude of forms and types. No transaction is similar to any other, but the target is always the same as shown on Chart A : not only to purchase equipment, but to acquire and to master the production of a specific food product, which the investors wish to put on the market.

All these forms of transactions may be clustered under the following types:

a) Direct purchase of machinery, equipment and intermediate goods, which is the most evident and tangible channel in our case ;

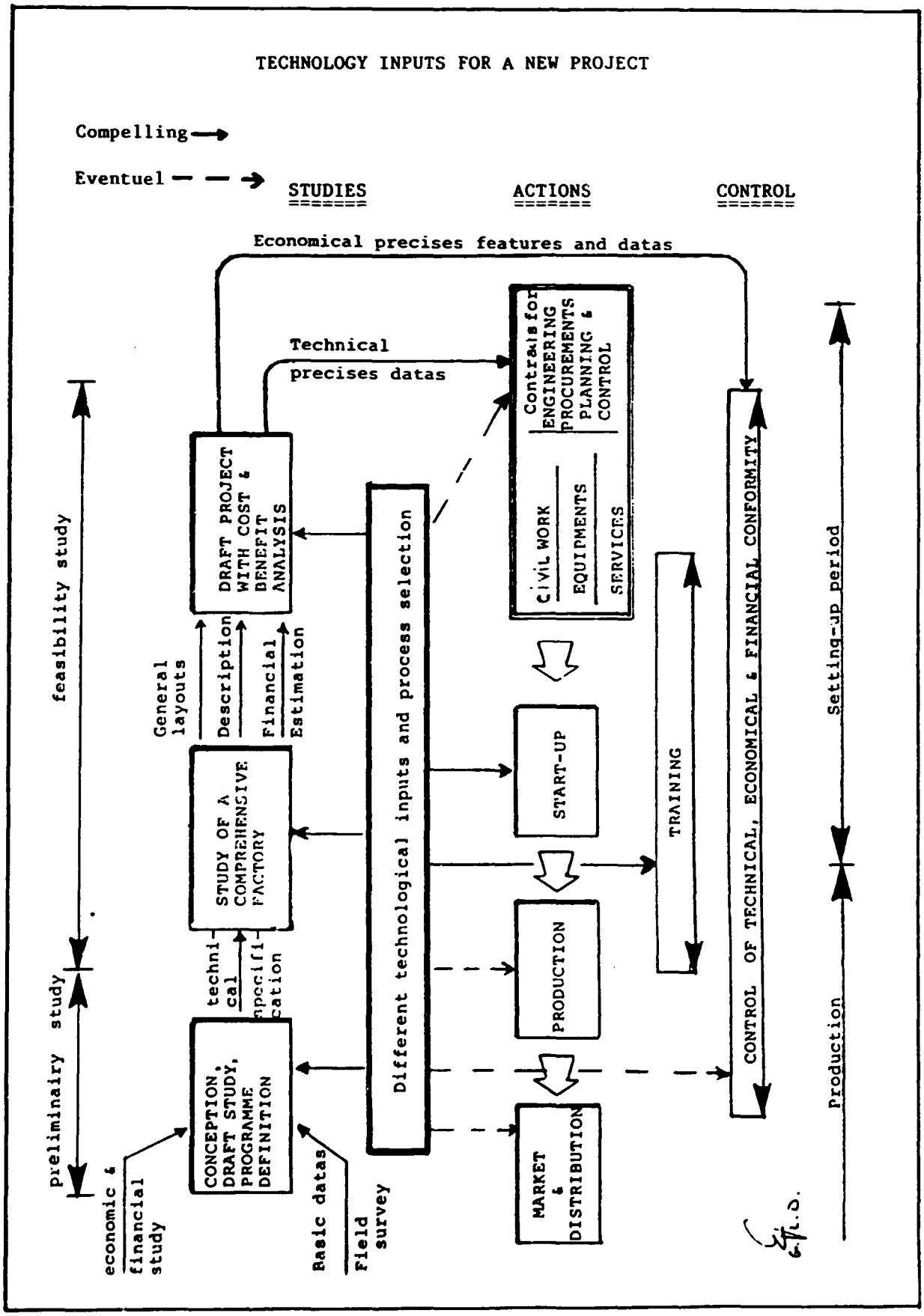
b) Supply of technical information embodied in plant diagrams, instructions and training of personnel, related to the above ;

c) Supply of foreign technical know-how or technical knowledge, needed for managing the above as part of them, or separately ;

d) Foreign assistance in design, engineering, consultancy or other technical services. Most often, this relates to rehabilitation work or implementing a feasibility study.

e) Sales of authorization to use foreign processes, licenses, trade-marks or industrial property rights (Cola drinks, beer sectors, etc.).

CHART A


TECHNOLOGY INPUTS FOR A NEW PROJECT
Compelling
Eventuel
STUDIES
ACTIONS
CONTROL
Economical precises features and datas
Technical precises datas
Contracts for ENGINEERING PROCUREMENTS PLANNING & CONTROL
CIVIL WORK
EQUIPMENTS
SERVICES
DRAFT PROJECT WITH COST & BENEFIT ANALYSIS
General layouts
Description
Financial Estimation
STUDY OF A COMPREHENSIVE FACTORY
techni cal
specifi cation
CONCEPTION, DRAFT STUDY, PROGRAMME DEFINITION
Different technological inputs and process selection
START-UP
PRODUCTION
MARKET & DISTRIBUTION
TRAINING
CONTROL OF TECHNICAL, ECONOMICAL & FINANCIAL CONFORMITY
feasibility study
preliminairy study
economic & financial study
Basic datas
Field survey
Setting-up period
Production

The aim of the negotiator should remain that, through the assimilation of a present technology on a short and mid-term basis, he will develop indigenous skills and/or his own technology in a long term. Other countries e.g. Thailand and South Korea, some without abundant resources, have demonstrated the value of this approach and they are now competing very well on western markets for many foods, not only the exotic ones.

In fact, any transfer of technology has a **dual inter-related form** :

* The **delivery of equipment** complemented by the handing over of documentation on its construction and maintenance, sometimes accompanied by comments on how to manage it.

* The **training, during a certain time needed, of people** who have to use it ; unless these people are acquainted with that equipment, able to manage it, or have enough knowledge about it, the transfer is not complete.

Under such conditions, it is obvious that the acquisitions of that know-how or knowledge is not free of cost. The price of this technical assistance (for that service) must be clearly indicated, either by inclusion in the general contract or as a specific item for additional contracting.

2. Characteristics of such transactions

* **As the agro - and food technologies are aging**, they are increasingly available in the public domain. Thus, the competition among potential suppliers is increased. This situation is of high interest for the investor who should take advantage of it. On that

point, the difficulty remains how to identify where the suppliers are (see paragraph 6).

* In reality, decisions are more influenced by the party's views on the transfer deal itself than on the quality or price of the technology items. This may be misleading.

* At the present time and very often, different processes or equipment are suitable for the elaboration of the same product. Once investigated, the difficult point is to compare, for instance, the respective excellence for preserving vegetable through canning, irradiation, freezing or drying or for producing fruit-powder through foaming, flash-drying, spray-drying, etc.

* The less sophisticated the selected technology is, the more the sources of supply are, e.g. pumps, inox piping, tanks, conveyor, handling equipment. Now, an increasing number of developing countries are able to provide some of their own technology, which should be also considered.

* Without a technological infra-structure of the same order of sophistication available to the buyer, the risk of a useless transfer may be soaring. The process and solutions discovered in a developed context, as EEC, during study tours or visits, may come out poorly adapted to the size or to the local requirements and availability of skilled labour. Thus, a more simple, readily assimilable process or organizational system should be favoured.

* Existing or slightly modified/adapted equipment may allow better technical and commercial performances

than new models or advanced technological applications.

* Agro or food processes proposed by R & D Institutes are obviously promising and useful.They may provide the most advanced technologies which offer a real commercial value.Meanwhile experience has proven that their industrial completion and finalization takes time and costs money.

* Sometimes it is worthwhile to look at second hand machinery which can solve the problem with significant savings : it must be known that an organized market exists for such items as concentrator, evaporator, cooler, insulated tank, preheater, homogenizer, spray-dryer, etc...

Among all these considerations, the major characteristic or reason for such transaction is that the buyer wants to eliminate risks and save time by taking well-established processes instead of trying to develop them on his own, when he wants to create a new workshop or plant, and feels the matter too complex for dealing with it alone.

To summarize the main feature of such deals, modern technologies are cardinal for the good industrialization of African countries, but this does not mean sophisticated ones, entailing manpower saving. In case of the agro- or food industries, the major concern is to choose the most proven and adequate technology among all those available.

3. Typical problem areas

Annex 5 provides a detailed picture of the major and most frequent problems in the field of agro- and food industry. It shows also that they differ in kind and type

of weak or bad performing with respect to the sector involved. Some are facing many problems together such as the "sugar" sector, because it is an integrated continuous production, working without stop 3 shifts of 8 hours per day, and combining several inter-dependent processes : extraction, purification, concentration, crystallization. These types of complex projects are very difficult to deal with and they need a strong preparation as described in the next paragraph.

3.1 Information needs

Already at the stage of preparing his negotiation, the investor for medium or small scale units faces a tremendous weakness in information. Mostly, his unique support is a feasibility study showing that the project is sufficiently economically viable and, based on this, bankers are willing to fund it. That framework needs to be implemented and completed by additional information.

Large companies are able to obtain much of this through their headquarter specialists or services. For smaller enterprises, developed countries offer experienced technological information systems covering the different agro-industrial sectors, as well as most often reliable consulting firms.

Unfortunately, the African economic actor does not have the same favourable technical environment : the difficulty is that these facilities, when they exist, are thinly spread over several countries or they lack essential capacities in this particular case of interest. In some countries, this technical infrastructure does not exist at all and the investor does not know :

- where to look for potential suppliers able to meet his requirement(s) and supply the adequate technology?

- who will answer all the questions in order to ensure the right production outputs, with the expected quality and at competitive conditions ?
- who will be able to assist him in a skillful selection of the right process, equipment and plant organization and will avoid to choose outdated, not flexible enough, or too innovating solutions ?
- how to get a fair evaluation of the size of the plants, the output of the production lines, the specifications of the equipment or the right clauses needed in the contract?

3.2 Right technology

Furthermore, experience shows that entrepreneurs have received a fair evaluation of the financial and legal aspects of their projects from the bankers and the national specialized institutions which have gone through the project and expressed useful considerations. On the contrary, few critical analyses are made of appropriateness of the technology to be imported. The local sources, mostly university - based, refer to technical literature, more or less industrially played-out by the fast evolution of the food and agro-based industries. Investment Boards can provide mechanical assessments, however they are restricted in this sector, where <u>biology is a pre-eminent factor</u>.

Consequently the entrepreneur has to assess the suitability of the imported technology by himself. The proving of technology in developed countries is not significant enough as the context may differ critically.

- Are my people able to absorb it ?

- What capability will support it ?
- How quick will be the supply of spare parts ?
- Could it be standardized with local items (electric motors, etc..)
- Is it suited to the existing servicing facilities ?

Thus the selection of the most appropriate technologies is one of the important problems, which is more easy to overcome in other industries such as mechanic, plastic, textile or civil work sectors.

3.3 Project transposition

As stressed several times before, there is a significant difference between the project formulated in a feasibility study, or in the banking memorandum and the project to be negotiated. Annex 5 points out that the preparation and implementation phases are two periods where only marginal or few failures have their origin, except the dairy and, to a certain extent, the canning sectors.

Many times in the dairy sector, it seemed profitable to start production based on imported milk or cream powder, aiming to switch over to local milk production when it would have developed, which has nearly always failed. This example is note-worthy : it draws the attention to similar projects where it is expected that local supply coming from the rural sector will start quickly, when the farmers, growers or cattle breeders will see that a new output really exists.

Likewise, the promised improvement of infrastructure, which has never come, must be recalled. On the contrary, wrong technical conception,

which is infrequent, must be corrected as soon as it comes out during preliminary discussions with adviser or suppliers.

3.4 Supplier/recipient relationship

Due to experience in selling his equipment or know-how, it is a matter of fact that the supplier has conceived a certain content and format for his contract form. In the course of time, he has included clauses to protect himself from any failure he came against or knew, whereas the buyer has no or poor experience in the matter. Even enhanced with the assistance of his lawyer or some national board, he remains at a disadvantage to the seller in most instances : this comes from the complexity of any agro - or food-processing unit.

In this field, the lack of specific local capability for pin-pointed questions is generally one of the major difficulties to overcome.

Suppliers have a good experience of developed countries where they are performing the major part of their sales. The good results they can show there, make them underscore more or less the local difficulties, considering that it belongs to the buyer to solve them, if they do not disappear with time.

In the case of joint venture, the partner masters well his process(es) but there are very few companies where all practical details have been carefully registered : operational guides or individual job-descriptions are so scarce that the transmission of know-how or knowledge remains superficial at ground level. This is unacceptable in the food industry where

process description must be even more precise than that for a good cook.

Foreign suppliers or partners are mostly reluctant to provide long training as it costs money and disturbs their own production.. It must be kept in mind that it took decades to reach the present skill level in developed countries. To forecast during negotiation, to achieve it within few weeks or months remains fallacious.

On-the-job training remains one of the most efficient ways of transferring technology, but language constitutes a permanent barrier, not only for foreign languages but also because of the vocabulary used by trainers : the same word has not always the same meaning between trainer and trainees. Some technical words are even not, or poorly, understood by the trainee. Thus, the training foreseen in the contract is too often limited to educated upper staff.

But, for agro- and food industry, a significant part of the know-how is at the level of, and lies in the hands of floor level operators, and thus it remains ignored. This basic difficulty can only be overcome by a well co-ordinated long term training programme, carefully formulated during the contracting phase.

On his side, the African investor always underscores training in general and mostly ignores it. He trends to trust technique to be able to work by itself, neglecting all the human factors and the side-components, of which maintenance and quality control are the major ones.

The problem of capital- versus labour-intensive technologies should normally not arise due to the abundance of local labour and the scarcity of capital. Nevertheless, the seller tries to promote the most mechanized solutions in order to increase his turn-over, knowing that the buyer will be reluctant to resist because of his desire to come up to western style in one step.

In general, the relationship between the two partners ends after the assembling of the equipment or after plant reception, which is completely insufficient for a satisfactory transfer of technology in these industries : further steps are needed and have be foreseen in the frame or as a follow-up of the main contract of technology transfer as shown in Chart A.

3.5 Raw material

The fact that fruits, vegetables or fish are abundant in the country, and grow well, is generally a too superficial feeling reflecting insufficient assessment, when the discussion in depth with the supplier takes place. The negotiator must be aware that modern food industry equipment and technology work well only with more and more precise and narrow specifications for the raw-material, especially if production is to be exported.

The supply must not only be available in quantity and well organized, but it must also be of on-going sound quality and of the variety suited to processing. For fruits and vegetables, experience has shown bad results when starting running-tests due to too dispersed and/or too remote plantations or production areas.

Excessively a long transportation on bad roads may alter the raw produce and, at delivery, it may be rejected by the equipment supplier, who considers that his production line is not designed for over 10% discarded fruits or vegetable (which is the norm). Thus the contract conditions are not met.

Other projects have failed because nobody thought of checking before hand whether taste and color may change during the process, and the final product no longer be in accordance with that which the consumer used to buy. Again, the supplier cannot be blamed, but the factory may have experienced difficult times before agronomists adapted or developed the right or adequate variety of raw-material.

In many countries, insulated or refrigerated trucks are usually scarce : preliminary agreement with transporters are non-existent and, when the time comes to start the plant, it appears that the reception-tests cannot be carried out because of shortage or lack of these transportation means.

3.6 Market aspects

How can the **small size of home markets** in many technology recipient countries be supplied by equipment shown in the developed countries and designed for mass-production in a highly mechanized context, sometime including automation ?

Fortunately in this respect, agro- and food industry has the particularity to offer equipment ranging from individually operated, through to semi-automatic or highly mechanized machinery for any sectors, e.g. dairy processing starts with farm level size units of 3,000 l/day up to large industrial

plants of over 800,000 l/day, with all intermediate capacities. Bottling lines exist from semi-automatic of 600 to 120,000 unit/hour and sugar-cane from 10,000 to over 0,4 million T/year.

In contrast to other industries, the production cost per unit is almost the same, independent of capacity, **when well organized** : the size factor is virtually non-existent and very often small units are more productive than bigger ones. The point is to find out where small capacity equipment is manufactured and to organize it very well.

The second difficulty is to overcome the distortion in terms of **consumption pattern**. Formerly, the easiest food projects were import-substitution oriented, but now there remains little scope for new ones of this type. Again others were basic food oriented (sugar, oil and fat) but at this time over-capacities are existing in many countries.

So, fully local-adapted productions and staple food are the logical trends for new projects, even technology transfer should not be detrimental to the traditional equilibrium. Equipment and procedures are available for processing them, but their adaptation to meet local taste and cooking requirement are mostly forgotten. Again the supplier cannot be blamed for this, if it has not been discussed with him.

Thirdly, **innovations in packaging** machines, materials, containers and closures are being introduced continuously. Although the feasibility study may have worked out a good solution and suggested alternatives, time will have elapsed before project acceptance. Therefore, the negotiation period should give a new opportunity for implementing this

matter and improving the basic solution during technical talks.

Fourthly, the consumers, even those with very low income, request high quality for his food. Shelf-life also depends on the initial quality of the production. By ignoring these two last factors, some companies have lost business through consumer dissatisfaction and in addition sometimes have had to face lawsuits or regulatory penalties.

3.7 Production problems

Therefore intermediate agro-products or food must be 100 % safe. Protecting them from contamination (micro-organisms, insects, etc...) is a complex matter depending on :

- design of the equipment itself (aseptic filling,...)
- regulation system (for pasteurizing, canning, ...)
- clean environment (packaging inter alia)
- information and training of labour force.

Agro-industrial processes cannot tolerate human error and carelessness: for instance a faulty seam permits micro-organisms to spoil the sterilized food and the whole production is wasted for that reason.

More often, quality fluctuation in grade, smell, colour or taste are considered as evidence of insufficient reliability by the buyer and the order cancelled consequently by the importers. But such types of failure may result from the equipment having been ordered with insufficient or inadequate specifications.

However this is not to say that small-scale units, mostly manually processed, cannot produce safe and good products. In both cases, it is a matter of care taken when contracting.

Annex 5 also shows clearly that the primary problems may come from plant departments supporting the production itself, mainly maintenance and administrative organization which are often dealt too superficially when contracting, production being considered as the major item to be screened. In fact, weak or bad maintenance will stop production more quickly than bad processing. Untimely spare supply will have the same result.

3.8 Pollution

Waste treatment or disposal accounts for a significant amount, about 20% of the input for cereal, up to 50 % for fruit-processing. It cannot be ignored when setting up any agro-based industry ; for the investor, this means additional running costs and/or investment. The new trend is to tackle and solve this question more effectively, and not only in the richest countries.

All over the world, priority is being given to cleaner and more healthy technology and it is a matter of fact that, when choosing a process, some are less polluting than others. In some cases, limited changes in the process may yield much cleaner by-products or wastes, which may be valorized, when reprocessed by other sectors such as feeding.

In general, accumulation of waste near the plant site cannot be accepted, not only because of bad odour and health risk, but also because it creates an

insanitary situation for the plant and consequently for its production.

This new industrial requirement must now be taken into account. Sometime, it may help to make the difference between two competitors (see annex 15). On this matter, objective information may be collected from EEC data bases for cleaner technology. They are coming from many institutes or organizations involved in that matter, e.g. the British Leather Confederation or CAIRS for cleaner skins treatment.

4. Early stage negotiation & contract preparation

The express purpose of calling upon these many area problems is not only to draw attention to their existence, but, much more positively, to make buyers aware of them, to help solve them and to prepare solutions before starting the negotiation and contracting phases. The focal point is the efficient accomplishment of two objectives : first, to establish a plant within the time foreseen and the forecasted budget ; second, to produce the projected goods meeting the standards previously established and the market expectation or its requirements.

4.1 Information implementation

As stressed previously, frequent failures are due to insufficient care for information and this situation leads not only to false selection of equipment/technology or to wrong partner/supplier, but also to badly imprecise and incompletely conceived contracts. In this rather complex problem, the African entrepreneurs should be conscious continuously that he is "looking for the optimum solution, which is to identify and to select the best available equipment/technology best suited to his project." But

this apparent burden saves money and much time because:

- it indicates what has been done and what the results were ;
- it avoids the repetition of previous errors or bad effects ;
- it stresses the main problems to be taken into account and others to be solved in similar cases;
- it gives a picture of what others have successfully achieved.

Consequently, he takes some advanced guarantee of starting his plant with the financial benefits and concrete results which he is seeking. Furthermore, he is assured to start at least at the same competitive level as the still existing similar plants and sometimes with possible economical and/or quality advantage.

Therefore, when up-dated or precise technical and technological information are not available on the spot, several foreign services may provide them such as :

- UNIDO advisory services (see Annex 9 and 13)
- TIES and INTIB networks (see Annex 7)
- Agro and Food Institutes or Colleges
- Specific sectorial producer union or organizations (national or international): see Annex 6
- FAO for agricultural questions or matters.

Sometimes, also commercial attaches', embassy commercial departments or economic cooperation organizations may agree to contribute to such a search for technical information, but they are normally more

able to assist in finding food-processing equipment or in providing list of potential suppliers, for the reason that they are essentially in charge of promoting business relations.

Before embarking on tendering or bidding, and if they are not already in the feasibility study, the most frequent and main features to dig into may be :

- a comprehensive review of available technologies or processes able to yield the projected product(s), and conditions for obtaining it (them),
- alternative sources of supply,
- general information on the equipment needed or related to the above,
- identification of the most appropriate potential suppliers or licensors,
- industrial property, protection or trademark involved,
- more detailed information about the technology/process selected thereafter,
- essential and fundamental specifications concerning the raw-materials and finished products.

Reference to them comes up when drafting the contract but they are also needed to assess the process or equipment suitability during the discussions.

Strengthen by these first investigations and strongly documented, the entrepreneur is thereafter in position to complete his personal information depending on the nature of his deal : creation of new product(s), rehabilitation of an existing factory, or construction of a new plant. He can only start then

looking for complementary practical knowledge and mindful in lightenments by consulting industrial and commercial sources of agro -and food-technology owners such as :

- equipment suppliers or manufacturers;
- technical bureau (acting often as subsidiary of manufacturing firms);
- consulting or engineering firms specialized in the agro - food sector;
- specialized industrial fairs, if they take place at that time (see Annex 16).

Experience shows that few entrepreneurs in developing countries have been or are willing to initiate such a preliminary undertaking. The volume of information and its subject area vary, and should always be in accordance with the size and cost of the project. It may be suggested also to delegate this task of collecting it to his technical staff, and to consider this search as very good extra-training and recycling opportunity for them.

4.2 Consultancy services

Through a promising market analysis and/or feasibility study, the entrepreneur could check for himself the economic viability of his project and he holds a good technical framework. But during the negotiation, he will have to appreciate and arbitrate between variations of the same process or between several processes competing with each other for manufacturing the same product.

When creating a subsidiary, large companies have their own experts or specialists able to advise them

on an on-going basis about the best technical choice or selection of equipment.

The less favorably endowed African entrepreneur is mostly short of this expertise in his own staff or local advisory services. How to gain access to information regarding essentially the processes, linked with the adequate equipment, is one of the major questions he has to face. Some technical advise or assistance can be provided by several UNIDO services as described in Annex 7, 8 and 9. Unfortunately, their geographical remoteness and consequent delay in replying is a handicap when quick and frequent answers are needed during the transaction process.

Therefore, the usual alternative is to rely on consulting firms or on a free lance specialist, expert or consultant (the latter are less expensive) who will assist in selecting the process(es), establish the performance specifications as well as advise on the most suitable organization (and sometimes the location) of the new plant or of the projected production line(s), machine, workshop, inside or as additions to the existing one(s). Such a search includes the determination of alternative process possibilities as well as potential suppliers.

The use of a consultant has the following advantages :

* His specific pin-pointed knowledge helps to enlarge the basic assumptions of the project, which is generally drafted by a generalist.
* The preparation time is reduced by quick selection of processes or choice of equipment completed by a realistic start-up programme.

* Up-dated information on R&D are immediately available through him, without random search.
* His past experience contributes to specify the needed adaptation.
* He is able to support the entrepreneur and to advise him as to what as the true among the divergent, sometimes contradictory arguments of the suppliers.
* In the case of a rehabilitation, he is in the position of an independent observer who has a more accurate view on waste, operating weakness or inefficiency which every body used to accept as normal.
* He remains free to concentrate his mind only on technological and technical points whereas the entrepreneur has to co-ordinate and supervise the whole negotiation or to deal with urgent matters on a day to day basis.
* His impartial opinion and objective evaluation allows him to act as possible mediator between the two parties during the contracting phase, but also later when failures or difficulties are arising.
* The experience which he has gained on similar projects, enables him to avoid common mistakes.
* Bankers have more trust in a project backed by a senior expert.
* He may also be responsible for controlling equipment before shipping .

Some experienced senior advisors or consultants are able to solve problems relating also to quality control, standardization, grading and packing or agricultural rehabilitation.

Independent experts are rather common in the agro- and food industry. The major difficulty is to

identify the right skilled specialist or expert needed for the case and to resolve the following questions.

- Where to find him ?
- Which one to use ?
- What to ask him to do ?
- What kind of contract to choose ?
- When to involve a consultant in preliminary discussion?
- How to engage him ?

At least, ten years real industrial practice as plant superintendent, production or plant manager should be requested from him to be sure he has been made well aware of human factors, production failures and daily organizational problems. The logical complements to this first requisite, should be several experiences in assembling production lines or plants and or rehabilitation work in developing countries. A model form for hiring individual experts is given in annex 10.

Instead of this ideal one man profile, consulting firms can field a panel or team of several consultants able to perform the same multi-facet service; this solution, obviously more expensive, is more easy to set up.

For both consulting firms and individual specialists, good ways to identify and find the right one, could be by contacting :

- Commercial attaches in developed country embassies,
- Expert consultant professional associations: see annex 11,
- Food-industry professional associations :

see annex 6,

- Consulting engineers firms' associations : see annex 12,
- U.N. and EEC technical assistance systems.

For the latter, UNIDO, in liaison with FAO when an agricultural supply is foreseen, offers some facilities in this field through their local Country Directors (UCD) formerly designated Senior Industrial Development Field Adviser (SIDFA). Annex 13 gives some specifics for them.

Strengthened by all these possibilities to collect advise or to receive objective conclusions and technical analysis, the entrepreneur remains - and must remain - the ultimate decision maker, particularly on the main problems, which are:

- the most appropriate technology,
- an adequate training programme,
- a convenient maintenance and timely spare-parts supply,
- an efficient plant management,
- the suitable size of the factory in respect of market size.

4.3 In-house project team

Meanwhile, the recruitment of a foreign expert should not be started before performing a comprehensive inventory of the in-house skills among the existing staff, namely technical and production officers. Only the complementary knowledge and experience should be hired.

The setting up of a work-team during the pre-negotiation period is highly recommended. On one hand, at the present time, few people have so large

experience and skills to deal alone with agro-industrial projects, peculiarly due to the complexity stressed in paragraph I.4, I.5 and I.7. On the other hand, it is an exceptional worthwhile training opportunity for the future technical and managing staff to be associated in the negotiation discussions, each in his specific field of interest.

In addition, it confers a psychological advantage to the negotiator, who is no longer alone vis-a-vis the foreign suppliers or their technico-commercial teams. In the case of a new company, this implies that the main responsible persons, who will be in charge of the plant in future, have been recruited previously, which offers them a chance to start team-work in a smooth manner.

4.4 Training framework

Whatever may be the advanced feasibility study or outside assistance provided, either free of charge by international organizations, like UNIDO, or by bilateral aid (often linked with the obligation to purchase the major part of the equipment from the donor country), or as described above, the investor should always have before hand the following elements prior to entering pre-negotiation :

a) an evaluation of the overall technical assistance to foresee during and after the project : type, duration, level, man/month expatriate input...
b) an estimate of the whole basic staff needed to be recruited for the production phase : engineer, superintendent, production officer, supervisor, technician and skilled labour.
c) a proposition or recommendation for a comprehensive training programme in accordance

with the different selected processes and productions : on-the-job, study tour, fellowship, ...

All these elements will come up during the negotiation period and if they have not been well and clearly put down at the start, they will be either forgotten or dealt with superficially. They are also useful to refer to, when comparing several supplier propositions or when drafting the exact and realistic financial requirement before contracting.

At a later stage, they have to be written down and included in the contract - as suggested in Chapter VI - as Annex III A and III B for instance, as shown in the example of "model form".

4.5 Market flexibility

The market assessments made in the feasibility study are normally based on a selection of some actual needs, well identified among the consumers, and therefore, limited to the existing ones. Establishing the project on past and present statistic figures is the only means of demonstrating that it is economically credible and realistic. But it is also well known that the products considered in the project will have life and death. Even their evolution in developed countries is now very fast because of people's high income, and very strong competition, it cannot be ignored, for instance, that western food manufacturers believe, within a decade, half of the processed foods on sales, will be new ones and that 1/3 of current products will be obsolete or will have disappeared.

Therefore, the project team should develop at least some prospective views on what the future market requirements could be in the country within their sectorial activity. By keeping these in mind during negotiation, they may be able to determine who among the different suppliers is offering the plant, the production line or the machinery flexible enough to meet these eventual demands.

Export is an other expectation in any food project. On the one hand, the market seems always unlimited and with high potential income compared to the domestic one. On the other hand, its quality level and specific requirements are mostly underscored. Therefore it is recommended to have a **dual approach** during the negotiation period :

Firstly, to discuss the technical aspects and adequacy of the present project vis-à-vis the domestic or regional market needs, imperatives which should remain the primary and sound foundation for it ;

Secondly, to appraise the necessary technical improvements, or additional spares needed later for export, if they will fit in, and to check how much they cost.

In the field of food export, experience shows that 1 to 3 years are generally required to reach a satisfactory operational level of the processing line or plant, to become internationally competitive. Thus, the specific investment or spares needed may be postponed for that period but they should be included as an option for a future contract or as addendum to the main agreement and be foreseen from the very beginning.

For the reasons outlined in Chapter I, the prospects for agro-industrial projects to be negotiated are similar to light industry ones. The potential suppliers are, first of all, machinery and equipment manufacturers acquainted with the mechanical aspects of the goods to be ordered. Thus, they mostly pay little or no attention to the general plant organization and building layouts, and it may emerge that the latter are too expensive either in running or in investment cost. Even consulting firms, which have better-informed views on it, have limited ideas for the domestic possibilities to develop alternative productions or quick duplication of some of projected machinery.

Consequently, it pertains to the African investor and his team to initiate and prepare a preliminary check list of all these matters in order to elaborate them during future discussions, to have technical long term possibilities or adaptation at lower cost for production or construction facilities and auxiliaries. These considerations may be included later in an annex of the main agreement, or as clauses of the present contract, if not forecast in medium-term contracts.

5. Topical outlines

Based on the usual feasibility study and the financial compendium, sometimes implemented through opportunity studies on raw-materials, for instance, the preparation of a technology transfer transaction, consist of :

* **setting-up human means** which will support and strengthen the investor's action, mainly through :
  - an in-house technical team and
  - a competent foreign adviser ;

* **preparation of the preliminary negotiations by :**
  - completing and reviewing the information on the selected technology and its variations or alternative solutions, as well as on the technology owners ;
  - deep and critical analyses of foreign production conditions and their adaptation to the local environment ;
  - wise selection among processes and equipment requested in the tender document ;
  - checking the specifics and appropriateness of the locally grown raw-produce to be processed ;
  - drafting a comprehensive and accurate training framework ;
  - enlarging views on the domestic (or regional) market potential and possible exports, as well as on packaging alternatives, without forgetting the final objective(s) among all these different topics.

* **putting-up a financial plan** allowing for quick evaluation of the impact of different solutions, modifications, financial arrangements, currency change, etc...on the whole project (investment and production together).

It must be emphasized that transfer of simple production of food or entire processes, inside developed countries themselves, always requires some adaptation to the markets and consumers, as well as organizational changes imposed by environment and infrastructure. All the more reason in developing countries to think about such changes, as the gap is wider and therefore more critical.

In this respect, UNIDO has created a software package called Computer Model for Feasibility Analysis

and Reporting (COMFAR) which may be useful, as it needs limited computing knowledge and runs on IBM compatible PC hardware. More details are given in Annex 15.

CHAPTER III

From bidding to contracting

How to select the technology ?
(and where to look for potential suppliers ?)

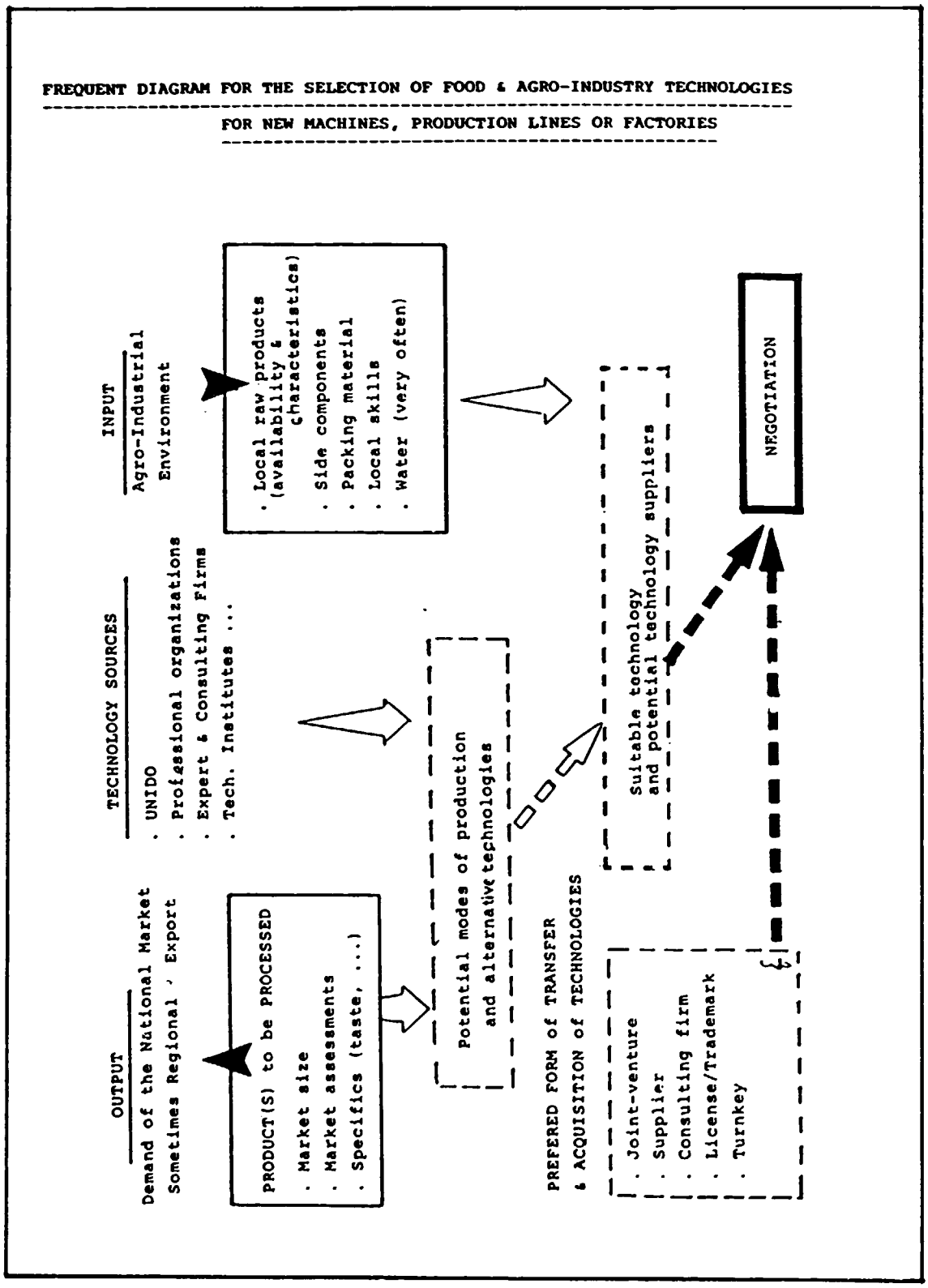
It has been mentioned that "the right technology should be selected", that "the most advanced technology is seldom the best solution" for developing countries because of several reasons (expensive to buy, skills available, market size, locally grown raw material), that "the optimum solution should be searched" and that for agro- and food industry "the transfer of technology is a rather complex question" which needs "a great package of information" as illustrated on **Chart B.**

Practice shows that entrepreneurs willing to initiate a food industrial unit often have no other idea or picture than the existing project document description and recollections of some visits paid to other plants. Notwithstanding with this fact, there is no "standard rule" for selecting the most suitable technology nor the right trust worthy supplier or licenser. The following **suggestions may be of help** in combination with the know-how information sources described previously and the assumption that the entrepreneur has made sure his supply of raw material.

1.1 Focal targets

The choice of machinery and process for the food industry should emerge from the incessant two basic questions "Which gives the largest flexibility when starting from the present project ?" and "Which future food may also be covered by the projected process(es) and types of production?"

CHART B


FREQUENT DIAGRAM FOR THE SELECTION OF FOOD & AGRO-INDUSTRY TECHNOLOGIES
FOR NEW MACHINES, PRODUCTION LINES OR FACTORIES
INPUT
Agro-Industrial Environment
. Local raw products (availability & characteristics)
. Side components
. Packing material
. Local skills
. Water (very often)
TECHNOLOGY SOURCES
. UNIDO
. Professional organizations
. Expert & Consulting Firms
. Tech. Institutes ...
OUTPUT
Demand of the National Market
Sometimes Regional / Export
PRODUCT(S) to be PROCESSED
. Market size
. Market assessments
. Specifics (taste, ...)
Potential modes of production and alternative technologies
Suitable technology and potential technology suppliers
PREFERED FORM of TRANSFER & ACQUISITION of TECHNOLOGIES
. Joint-venture
. Supplier
. Consulting firm
. License/Trademark
. Turnkey
NEGOTIATION

1.2 Agro- and food technical market factors

At the present time, the international market for this types of equipment and process is a very competitive and open one. The point is to select the most economical and successful among all the existing technology sources in the world, as EEC countries, USA, INDIA, SWITZERLAND, SWEDEN, etc.... Proximity of the technology owner, his reputation, his past experience in similar cases and his financial status (through domestic banker's reference) are parameters to take into account for setting up a picture of potential technologies and prepare an advanced short-list of suppliers.

1.3 Informal and random approach

Agro- and food plants are spread all over the world. To observe as they work, is a helpful approach to the project. **On-site visits** are imperative and more profitable than visiting the supplier's or manufacturer's workshop. As much as possible, similar size-unit should be selected and preferred to the big, always beautiful, plants which the technology owner favours to show in order to impress the potential buyer.

By interviewing their plant managers and technical staff supervisors, and asking why they have not selected other processes or **competing equipment** is another way to build up a rather fair and objective appraisal of the advantages and disadvantages of each technology.

Furthermore, through going to see other factories using different equipment, processes and located in various **infrastructural backgrounds**, the entrepreneur

becomes aware of the features which he should take into account for his own case. The most important and useful features to investigate are :

- peculiarities in the plant design,
- critical equipment,
- durability of equipment,
- annual cost of the spare part requirement,
- amount and qualification level of personal needed for routine production, cleaning, maintenance and quality control,
- organization of quality control itself and its main critical aspects,
- auxiliaries, cleaning, safety and handling equipment.

1.4 Case of tied relationships

Sometimes, the technology or equipment supply is "tied" to a financing source, or the African entrepreneur has developed earlier trustful relationship with one or more suppliers and he is not willing to contact others. Using personal contacts with these selected companies and people can be extremely advisable for preliminary discussion for clarifying the requirements and goals of the purchase in order to save time and unnecessary desk work. For large projects, however, exploratory investigation with the assistance of an expert is an assured mean for keeping an independent view before starting preliminaries and negotiation.

In both cases, it remains worthwhile for the purchaser to still visit other competing supplier realizations, in order to gather many remarks and questions which will appeared useful during the final negotiation process. These will contribute to

improvement of the characteristics of the equipment ordered or to investigation of the process.

1.5 Potential suppliers

To contact potential manufacturers, licensors or engineering firms is an unavoidable step in the technology selection process. Its risk is to become more or less bound or trapped by these first contacts or cooperation. Therefore, it is advisable to check the most relevant questions raised below, at least from two or three different sources :

- where is the supplier's technology/equipment currently in use ?
- can industrial users be contacted and be interviewed ?
- whom should be called up ?
- is automation relevant for the foreseen size?
- what key features determine the capacity ?
- how easy are cleaning, maintenance, quality control ?
- what about special skills ?
- long or short training ?
- what about by-products and wastes ?
- which are the usual trouble-shooting events?
- what flexibility or adaptation may be expected for other products?
- what is the supplier's experience in developing countries ?
- what contribution could be made by local sub-contracting ?

After these **free-spoken investigations**, some specific arrangements should be undertaken, even at the buyer's own cost, for paying visits to the most

promising factories, where the technology or equipment are operating. To see on the spot and discuss in depth the matters listed in paragraph 3 remains essential for checking the arguments of the potential suppliers or process owners.

It is always a good method to think at the largest competition, whenever possible. This objective can generally be achieved - in addition to the other means suggested or given previously - in one or more of the following ways :

- advertisement in specialized trade journal/newspaper with wide circulation ;
- desk research using in particular the KOMPASS directory for ECC, or THOMAS register for USA;
- inquiring of commercial representatives of exporting countries well known for their agro- and food equipment manufacturers such as Italy, France, Germany, Sweden, Switzerland... and the U.S.A. Far east countries such as India, Japan, should also be think at if not considered too remote in the meaning of easy transport connection later.
- see also paragraph 2.3.b

1.6 Level of mechanization

Concerning food and agro-industrial equipment, there are many examples of factories, not only in developing countries, where the technology selected and applied does not use the most advanced machinery available. In many sectors, production lines assembled for 5, 10 years and more, are working in developed countries, and they are still giving very good

economic results. Basically simple but modern machines can be chosen with the advantage of being cheaper in addition to their easier facility for use by local inexperienced workers. This is significant, especially in rural areas, which have had no previous industrial experience. Furthermore, it meets the recommendations of the African Regional Consultation held in November 1990 to pay attention to labour-intensive technology in the local context.

In other cases, such as packing, sorting or sizing, simple devices, small work-aids or polyvalent fittings, manual clipping tool or other items, are more suitable and efficient when the raw-material inputs or the finished product outputs are changing too often in size and kind or are in limited amount (100 up to 1500 kg/hour or less than 200-300 units/hour). On the contrary, mechanization is recommended for one, two or three shifts of mass-production machines or processing lines. Owning to this consideration, space for installing them later may be foreseen in the project layout, if there is any expectation to reach such an output on the domestic market in a future time.

In addition, it must be borne in mind, that very rational and productive food-units seen in industrialized countries have been shaped and designed in accordance with their specific environment and that they are only apparently identical. Bottling or packing machines manufactured in the USA, Germany, Italy or France, for instance, have similar production data but they may differ deeply in their conception and construction resulting from the national talents of their originators (same as for vehicles in the field of transportation).

Furthermore, mechanization means highly skilled technicians, various support services, expensive labor force and the proximity for suppliers for repair or replacement of broken parts. With some exceptions, it turns out in Africa that it is not the most appropriate solution, machines standing too often useless some time later. They are to compare with less sophisticated and cheaper alternatives, with easier maintenance, or accepting poor handling.

In the meantime, the trend is still towards more sophisticated machinery and, in particular, to include electronic devices or components in many machines or for inter-connecting them, by reason that agro- and food productions pertain mostly to continuous processing diagrams. This difficulty may be overcome by selecting, in preference, engines and machines equipped with **modular devices** or parts, particularly electric or electronic spares. Modular items are entities easy to replace as a whole by an other, rather than to try to repair it locally, where the needed expertise is weak or missing. The "module" (or "fitting") is sent back to its manufacturer for exchange or reparation and so on. This is a type of adequateness to require during the negotiation, owing to the fact that each machine has to be manufactured after being ordered with that modification, adjustment or specification.

In that way, the replacement of foreign words or instruction - for operating the machines and engines switches - by pictures or other expressive "signs" may also be requested in order to make them more meaningful or easy to understand by local inexperienced labour.

Likewise several processes, such as drying, freezing, batch system, are based on cyclical or repetitive work with only different time periods depending on the product. Western medium skilled labour know them by experience and have gained this knowledge with the time, months or years. Consequently there was no need in that countries to equip these standard and small scale dryers, freezers and other machines coming up now, with such "modules" or "signs".

On the contrary, in Africa, it is most advisable to investigate with the manufacturer how to integrate such items in his equipment, or how to simplify it, in order to avoid later a too long training, mechanical troubles and irregular or insufficient product quality.

As stated in the introduction, some of the constraints in the field of agro- and food industry, are coming from the difficulty of transferring part of the technology knowledge existing at floor level among skilled workers. By memorizing job-introductions or process programmes in micro-processor networks, it is now easy to overcome such training problems and time consuming handicaps.

This logic (or suggestion) often conflicts with the supplier's opinion, when he wishes to perform the largest financial deal with little burden for each project. The target for the African investor is to have the most appropriate, rational and economical organization and not to purchase standard or nice equipment because in use elsewhere . When selecting technologies and the related equipment, his primary goals should remain imperatively :

- to avoid too expensive solutions,
- to choose in line with the local labour qualification level,
- to size the equipment with the real market potential.

The above considerations should contribute to reaching the final issue which is a profit making enterprise: the target is not to purchase technology or equipment, but to buy the means to produce and sell food or agro-products resulting from them.

1.7 Sustaining inquiry

All the above facts or parameters not only influence the technical success of a project, but contribute to the final financing viability of the company. Other opportunities exist for the African entrepreneur to form his opinion and to enlarge the above main or basic technology information he needs for :

* a perfect formulation of his tender (or bid)
* judging what is correct
* the selection of the most adequate solution(s) among the offers
* critical decisions during his negotiations between the two or three best suppliers,
* the proper evaluation of the terms and clauses of the contract.

It is certain that the whole work and search can be commissioned - in fact sub-contracted - to an expert or consulting firm. In any case, the value of the information collected for this new activity will be much lower than the cost of future failures and wasted production. Sub-contracting will be a time

saving solution for an investor. On the contrary, it may be considered as an expensive solution for an entrepreneur who will also loose an opportunity to master or improve his future plant management.

Obviously the information to collect should be limited to that needed for the project at enterprise level. This is particularly true when visiting industrial specialized fairs, a tentative list of which is given in Annex 16. They give a useful glance on existing or new equipment, for comparing them and for establishing personal contacts. In addition, it gives a possibility to assess the present "state of the art" and its future trends. Unfortunately very specific fairs are organized only every one or two years.

Person-to-person contact is another way of collecting independent opinions about food technology, such as meeting leading people in companies of the same sector or manufacturing similar (not competing) products, as well as engineers or scientists working in applied food research or by interviewing leading retired experts or engineers of such plants. They are less bound by "secrets", can provide many facts of common interest, and they are more free to express their large experience on confidential matters.

Nevertheless, these different means of selection and collecting information, which are suggested, will never replace the most complete document e.g. the set of offers with quotation and full detailed description coming from the potential suppliers. But it must be recalled that such type of offer requires much time from the bidder. To put it down involves a cost - sometimes 0.5 - 2 % of the estimated value of the project - which he is reluctant to assume without the

real promise of a contract. As a result, superficial or incomplete requests of a potential purchaser may receive a poor or no answer.

2. BID OR TENDER PROCESS[1]

2.1 The procedure

Public administrations, as well as big companies, have large procurement services with well trained officers. They have developed specific procedures for different kinds of purchase, ranging from the single machinery to complete workshop or plant. Unfortunately, this organization and experience is lacking for entrepreneurs of medium or small size projects.

Basically, the procedure includes the following **standard steps or time sequences** shown on chart C :

a) Define as precisely as possible the limits of the project and the needs that are to be met.

b) Prepare detailed bid documents such as :
   * specifications, standards, operating and other relevant parameters,
   * project description,
   * instruction to bidders (tender notice),
   * bid proposal forms (for easier comparison later),

c) Identify potential suppliers through desk research :

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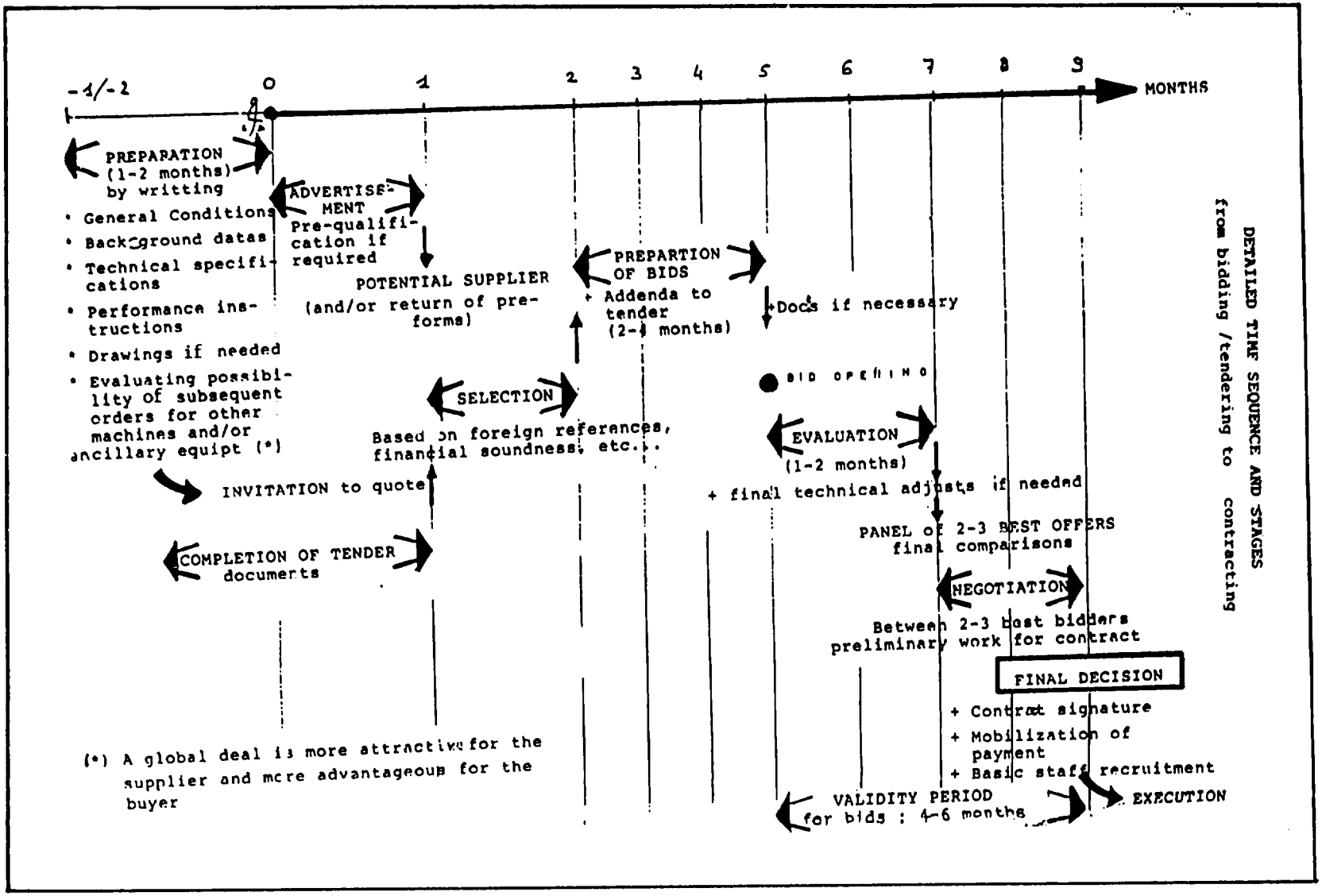
[1]The word "bidding" means that all offers are examined at an open sitting, whereas "tendering" means "in camera", without the presence of the tenders.

CHART C


DETAILED TIME SEQUENCE AND STAGES
from bidding /tendering to contracting
-1/-2
0
1
2
3
4
5
6
7
8
9
MONTHS
PREPARATION (1-2 months) by writting
• General Conditions
• Background datas
• Technical specifications
• Performance instructions
• Drawings if needed
• Evaluating possibility of subsequent orders for other machines and/or ancillary equipt (*)
ADVERTISEMENT Pre-qualification if required
POTENTIAL SUPPLIER (and/or return of preforms)
INVITATION to quote
COMPLETION OF TENDER documents
SELECTION
Based on foreign references, financial soundness, etc...
PREPARTION OF BIDS
+ Addenda to tender (2-4 months)
+ Docs if necessary
BID OPENING
EVALUATION (1-2 months)
+ final technical adjusts if needed
PANEL of 2-3 BEST OFFERS final comparisons
NEGOTIATION
Between 2-3 best bidders preliminary work for contract
FINAL DECISION
+ Contract signature
+ Mobilization of payment
+ Basic staff recruitment
EXECUTION
VALIDITY PERIOD for bids : 4-6 months
(*) A global deal is more attractive for the supplier and more advantageous for the buyer

* short-list the more reliable ones,
* establish evaluation criteria,

d) Invitation to quote :
* mailing to the above short-list,
* general advertisement,
* appropriate media abroad,

e) Submission of suppliers' offers :
* bid reception,
* bid opening,

f) Evaluation of the offers through :
* comparison table with or without rating,
* commercial analysis : price, cost, payment terms,
* technical analyses : fitness, deviation, extra advantages...,
* other specific considerations such as process and mechanical guarantees and tied penalties.

g) Selection of the 2 - 4 best offers for further negotiation based on:
* confidentiality of commercial quotation not disclosed to others;
* adjustment of commercial proposals to make them comparable;
* price quotation in one single currency;
* consistency with the feasibility study.

It is to be noted that this procedure is the most usual for medium or large tenders involving expensive procurement of technology linked with equipment. For smaller ones, the procedure is simpler and sometimes limited to the comparison of offers asked to several well known suppliers.

If it has not been performed earlier during this last time sequence, it is also wise to inquire, to bankers particularly, about the financial soundness, managerial competence, etc... of the selected panel of potential contractors. Final discussions for discount or other side-advantages are also taking place at that time, before notification of the winner and looser.

The bidding procedure comes to an end. Finalization of the agreement and preparation of the contract is the next step.

2.2 Dual bid process

In case of international bids for complete processing lines or plants, it is now very common in food and agro-industry to ask for two separate sealed envelopes, at the same time. One is the usual commercial bid, which describes the fixed investment and the technology costs for the technology package. The second highlights the peculiarities and proficiency factors of the proposed technology/equipment.

To allow for an easier response and comparison just after opening, it is advisable to let technical people prepare a form or questionnaire. The latter is dispatched to the bidders with the official commercial offer to bid. This dual process provides to the decision-makers separate points of view, one for the purely economic and financial aspects, the other accounting all the qualitative components such as technical proficiency, use of local resources and in compliance with environment considerations. The second is evaluated according the ranking or point system method described in the next paragraph.

A variation of the above, is to call for the technical bid first, and to ask for quotation only when all technical aspects have been settled.

2.3 Pre-selection procedure

When tenders are invited through advertisements or other forms as detailed previously in paragraph 1.5 the competition is very large and open. The procedure can be made more selective in order to reduce time and cost needed to perform a large search and advertisement. The African entrepreneurs may also select the tenderers either through their previous contacts or after a pre-qualification procedure, in which eligible firms will be invited to provide evidence of their ability to perform the desired services and works.

To that end, the invitation to pre-quality for tender consists of advertising the bidding opportunity in well-known technical magazines of wide international circulation or to transmit to local representatives of countries where potential suppliers may exist. This notice should contain a brief on the project and request :

* contractor's identification,
* experience and past performance in similar cases,
* capabilities with respect to personnel, equipment, plant, training and maintenance,
* financial status.

A set of questionnaires covering the above areas of information required, is usually prepared in order to ensure uniformity of presentation and easy

selection. Thus the advertisement is shorter and the set sent to all those that wish to be considered for pre-qualification.

Only such supplier or process owner, that meet the specified criteria, thereafter will receive the tender document for competitive bidding.

2.4 Additional considerations

a) The establishment of evaluation criteria, of technical parameters and questionnaire needs a man of great ability and wide experience in the specifics of the project. Determining the limits, practical standards, acceptable parameters for the equipment, and at the same time to let the door open to several competitive processes is not an easy task. Therefore, it is suggested to hire an adviser who knows very well the technical sector under consideration and the related key data. Without this support, the investor may not be able to take the appropriate decisions and will probably be contracted with disappointingly high costs.

b) The global tendering system has several advantages : it ensures maximum supplier comparison (hence competition) ; it is free from favouring ; it eliminates unfair practices. But it remains limited to important projects (over 10 M $). On the one hand, it costs money to reach many potential bidders and to be sure that it has reached the best one among them. The channels for reaching them are :

- specialized service agencies
- COMPAS and THOMAS investigation

- personal research
- visits to similar producers abroad.

On the other hand, the potential supplier is reluctant to provide full detailed answer to such tender, as it also costs much money to prepare an offer with low potential chance for contracting.

c) For **very complex items** (several processes operating in line or in combination with various packaging of finished products, different technical options), the negotiations may be delegated to a reliable consulting firm, responsible for conducting them with the reliable bidders.

d) When the investor is not in a position to define all the terms of the technical specifications and/or parameters of the project - because of in-house technical weakness or lack of too expensive engineering expertise from abroad - the solution may be to start with a **pre-bid consultation** among a selection of competent suppliers.

Through different project discussions with the prospective suppliers, the entrepreneur will have a better perception of the alternative ways in which he can meet his target(s) in the light of what is technically feasible or more appropriate and economical to do.

e) Because of the various possible requirements in food industry, **experience shows that** the buyer should develop and **use his own terms** and **conditions** for contracting instead of leaving the initiative to the supplier.

f) For practical reasons, in particular to ensure a certain uniformity of presentation, it is always advisable to set up **bid proposal forms**. Although there is no single standard form for contract, Chapter VI shows a sample of price break-down for illustrative purposes. Elaborated for a standard food industry case, it may also be used to check that all needed components have been foreseen. The proposed **work completion schedule** should be added and is a set form. Amended or adapted, Annex 1 may be used for this.

g) The **delivery period** may also be of high importance for agro-based factories : by completing the plant just after the crop season, one full year's activity is lost.

h) The problem of drafting clear, **precise and neutral specifications** is a very real one. It is not only a formal necessity however. All food projects are based on quality and quantity performance, which render it necessary to be able to compare the same final services and/or products with different technical proposals or alternation.

3. Evaluation of the offers

A transfer of technology is not a simple purchase of a license or equipment with the related know-how for managing it, an agreement for using a trademark, or technical assistance. Indeed, writing a contract is only the reference point of departure for a medium or long term deal and cooperation between two parties, sometimes partners, for a satisfactory - successful is preferable - transfer of goods associated with more or less knowledge.

After opening the offers, three factors are interfering for a fair and objective evaluation. There are:

* the price provided by the quotation, obviously an objective value,
* the technical appropriateness of the technology, criteria which is not easy to access objectively, due to the complexity of these industries,
* the largely subjective matter of the reliability of the bidder.

Each offer conforms to the essential requirements of the notices and tender documentation with some deviations, mostly acceptable. The objective is now to select the one, which is the most advantageous, in spite of the fact that bids received are never similar in all respects which increases the difficulty of analyzing the above three factors.

Owing to this complicated situation, evaluation criteria have to be established and sometimes they are stated at the outset in the tender document. In some cases the additional need for criteria is discovered after the opening of the offers. Since the purpose of a tender competition is to select the winner on the basis of a very objective and impartial analysis, the formulation of evaluation criteria should be done at the very beginning. This would render the whole process more transparent and avoid the pressure of time or of the influence of supplier's offer during the evaluation work.

3.1 Price factor

The lowest submitted price does not necessarily correspond to the most advantageous offer. It must be adjusted by taking into account the impact of features such as completion time, future operating costs,

guaranteed yields and efficiency, ground surface needed, schedule of payment, price escalation clauses, etc... All these sub-factors can be expressed or translated, as far as possible, into monetary terms so that the comparison between the different offers remains fully objective.

In the evaluation of bids for the future project, some may be linked to special financing arrangements such as supplier's credit, loans, concessional financing from development aid organizations, etc ... These are important considerations. In particular, their impact on repayment or the project cash-flow cannot be ignored. Likewise, they must be taken into account when comparing the different offers.

3.2 Technical factors

When it comes to assessment of technology or process in terms of performance, risk, appropriateness or quality, which enter into the project, several methods exist to transform such factors into figures which helps to "weight" them. Henceforth, it should be said that the ratios or "weight" are either theoretical or conventional : in this matter , there is a limit to objectivity, even though it has a "scientific look".

Some methods exist for the evaluation of a technology in terms of risk and appropriateness such as R.O.I., N.P.V., I.R.R., etc... They are mostly used for, and apply to large projects. Unfortunately, they are poorly appropriate for food or agro-industry where the outcome of others factors are also determinant.

Therefore, it is suggested to perform the evaluation and comparison of processes and technology

by means of the usual main parameters, which are the fixed investment cost, cashflow, operating cost, and to make a standard economic cost-benefit analysis.

Some manuals provide ready-for-use schedules and tables for calculating the present value for a project without (or with) outside financing sources[2]. But using the COMFAR computerized software (see Annex 15) is preferable as it provides very fast results. It needs no special computing knowledge, gives in addition graphical representations and also allows various simulations and variation within a few hours work.

Due to the interference of subjective factors, and because of the increasing sophistication of the food-production, there should also be an evaluation of such elements as :

- present flexibility
- future polyvalence
- appropriateness
- environmental logistics involved
- easy maintenance.

Other methods may be used to solve this question. Ranking the offers on the basis of these parameters is the simplest and fastest method. But this only provides an indicative ranking, because parameters of different importance have received the same value. By weighing the parameters and evaluating each offer from excellence to scarcity of each input, it becomes possible to have a more useful and clearer picture. A comparison of these two methods is given in Annex 18.

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[2] Inter alia, Manual for the Preparation of Industrial Feasibility Study", ID206, last issue February 1988.

A more satisfactory answer may be provided for the food industry by an alternative method, the "quality point" system. For this, it is necessary to:

- establish the list of key useful, or of prime-importance, parameters,
- estimate the relative number of points to be allocated to each parameter,
- screen each offer in detail and to quote each parameter,
- sum up and rank the offers.

This method is illustrated in Annex 19.

This last method requires often in-depth knowledge of the food-sector under consideration and should preferably be performed by a senior consultant or the project technical adviser.

In the absence of such expertise, the most promising offer is taken as reference case with the inconvenience sometimes to have to overrate (in quality points) a better proposition. Thus, some supplier offers may be credited with a higher total than that considered as good reference. This shows that the general first evaluation is not always the best and has to be revised. It should also be born in mind that all these methods are carried out with a relative empiric-method.

3.3 Supplier's reliability factors

For high value contracts, it is common to consider and to analyze the capacity of the bidder to perform the contract, his previous results in turnkey projects for instance, the "follow-on" or costs for

operation and maintenance which are particularly significant in the agro- & food industry. This also applies to lower value contracts, but with much more limited investigations.

Bankers use checklists of questions to raise and information to request, and some books give them too, for an evaluation of a person or company with which commitments are foreseen. As an alternative to these kind of questionnaires, it is suggested, in the field of agro-industrial deals, to proceed by direct approach, asking about :

- domestic and foreign references and experience,
- past experience in that technology,
- after-sale services,
- list of projects implemented in developing countries,
- commercial representation in the nearest country,
- access to third parties using the proposed technology.

In addition, the purchaser's banker may indirectly supplement these inquires by more confidential ones, on such matters as financial soundness and status, reputation, working capital and general trustworthiness of the potential suppliers.

When investors or entrepreneurs wish to evaluate these elements, more precisely both methods - the ranking and the quality point system - are convenient tools (including the financial criteria). Nevertheless, in both methods, the final ranking or quality point total, only provides a comparative picture in the investigated field or a relative

position. They should not be taken as mandatory results, but rather as providing a picture of the relative position of each bidder in the present competition.

3.4 Full evaluation system

All these different methods mentioned above for evaluating technology, process, or even supplier's reliability, have their limits, but their objectivity is fairly acceptable. Using them contributes to improve the difficult and complex process of selection in an industry where the investment cost is not always the major component : very often the annual operating costs are higher than the capital investment and quality failure may be very costly as well. They are of common use for large projects, but should be simplified for smaller ones.

Sometimes, it happens that the two factors "cost of investment" and "technical production cost" are very close to each other for several tenderers. Seeing that, it becomes essential to include the "weight" of the non quantifiable or subjective factors of "reliability" or other servicing capacity of the suppliers as well as the easy maintenance or production flexibility. A blended formula is always possible.

The over-riding difficulty is to establish a mixed system, integrating the objective figures with the subjective facts mentioned above. Experience has shown that the "quality point" system may provide a satisfactory answer in the case of agro- and food industry. It consists of a variation of the basic method, in which parameters of price and cost are "weighted", as well as "reliability" and "technology

appropriateness". Annex 19/B gives an example of this type.

3.5 **Comments**

* The different systems suggested for a more objective evaluation must always be used with caution : essentially they provide only relative assessments.

* These methods clearly show the relative differences of some "quality points" between the potential suppliers : they lead to a more objective decision, but they also contribute to prepare significantly the points to raise, to discuss and to elucidate during the negotiation with each bidder.

* Sometimes, they may be used as an efficient tool for cutting down supplier's protests or outside pressures.

* For the decision-maker, the quality point system will provide not only an up-dated check list of the various aspects of the project, but it will remind him permanently the "weight" to give for them during the negotiations.

* Evaluation provides a second opportunity to define more accurately the "package" to be asked in the contract.

4. Structure of contracts

Whatever the agro-industrial equipment or modalities of the assistance to be provided may be, all contracts have a standard structure, very often based on the UN Sales

Convention[3]. First of all a contract consists of a set of **general conditions** :

* aim and provisions
* obligations of the seller (delivery, associated documents, conformity,...)
* obligations of the buyer (payment,...)
* provision common to both parties (anticipatory breach, damage, exemption,...)
* passing of risk
* settlement of disputes

These are supplemented by a checklist of usual common matters such as :

* price, currency and possible fluctuation,
* payment (advances, damage in case of delay, security, ...)
* transport, insurance, delivery terms,
* erection or installation work,
* inspection and test,
* contract guarantees,
* seller's warrant to repair or replace defective parts,
* additional services (training, maintenance, ...)

The usefulness of this general framework is limited by two considerations. First, it must be **adapted** to the circumstances. A contract covering the delivery of a single machine may entitle the buyer to terminate it because of some delay, whereas the same kind of decision might not be reasonable if the contract deals with the erection of a factory. Secondly, these conditions are only standard references and parties are not obliged to keep them all.

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[3]The UN Sales Convention can be acquired from ITC, Geneva.

But the focal point and the reason for writing a contract are its main and specific issues, such as :

* the description and list of the equipments, (if it extends over 2 -3 pages, it is wise to put it into an annex);
* the checklist of the documentation supporting the above;
* the full description of the technology, if needed;
* the modalities of transferring the know-how, training or technical assistance;
* the license to use a technology and the extent of the authorization;
* the improvements on both sides and how to transfer them.

These issues and specifics will be developed according the complexity of the technology transfer operations, the size of the deal or the technical needs of the purchaser. The contract for the procurement of the same bottling-line for a western country will be far different from that for an African one.

The procurement of consultancy and assistance services for installation and commissioning of equipment involves special contractual provisions and guarantees (durability, result, performance).

The United Nations Economic Commission for Europe (ECE) has established general conditions for such types of contract with optional uses, which may also be considered as guide : they are a rather fair compromise between sellers' and buyers' interests which were equally represented at the time (during 1950s) they were drafted. Two examples are reproduced in annex . They can be used as reference matter or as starting point for the negotiations

rather than included as "standard contract" elements for agro- or food industry agreements.

Some countries have tried to elaborate one general frame, but no definite official structure exist for technology transfer contracts for agro- and food industry. Each lawyer has also his own text. Technology suppliers usually prepare their own versions, designed to protect their own interests as much as possible. The number of pages may also not be significant : for the same technology transfer, the text may be 2 or 3 times longer in the U.S.A. than in the U.K.

Meanwhile, based on the above sources and amended by our experience, a model form is developed in Chapter VI. It has been elaborated for the most usual and frequent cases and employs standard boiler plate clauses. Specifics are :

- identification of the two parties,
- aim and background of the contract,
- definition : know-how, license, joint-venture, turnkey operation,
- obligations of the donor/licensor and the licensee/buyer,
- payment schedule
- arbitration

Most of the technical transfers need civil work and to be housed in buildings or extension of existing ones. Printed forms of contract for works and civil engineering construction may be obtained from several international organizations; these are listed in Annex 20.

Favoured by institutions like the World Bank, these forms usually apply to large contracts of international size, while for more minor contracts, the standard followed is very often the one of the supplier, which for the

reasons explained in Chapter II.3.4 and here above, may not be suitable to the buyer's interests.

Because of that, the private investor is strongly advised to prepare his own draft contract before starting negotiations. It is always possible to improve it later by comparing its text with that of the supplier.

5. Types and recommended forms

5.1 Sales of equipment

As noted earlier, agro- and food industry technologies are very often in the public domain and the most sensitive point concerning transfer of technology in this field is **how to associate knowledge** relating to the equipment with that of managing the entire process(es). The sale of the machinery is likely to be regarded as having no particularity compared to any usual equipment procurement. It may therefore follow the general conditions established in the 1950's by the U.N. Commission, called ECE series 188, for the "Supply and Erection of Plants and Machinery". These may be considered as starting points for negotiation.

This remark also applies to the newly-revised conditions for "Electrical and Mechanical Work" or "Erection on the Site" published by FIDIC (referred to as FIDIC-EMW), as well as for civil work, owing to the fact that the setting-up any food-production line, or plant, generally involves these auxiliaries.

5.2 Technical assistance

This type of contract is either merged with the previous one as a complement to, or implementation of,

the transfer of knowledge needed to start-up, to manage and to maintain the industrial component purchased by the investor. A growing trend is to formulate it as a self sufficient objective, mainly for rehabilitation topics. For the latter, it should enclose:

- for food product development or quality control: specifications, quality, methodology, process technics...,
- for plant rehabilitation : the main objectives to be reached, training programme, new flow-sheets, diagrams, technical documentation and manual or training,
- for project supervision : checking of the above as well as of calculations, drawings, test-run, ... till commissioning ;

This framework is supplemented by the usual checklist of common matters, namely:

- number of man/days or month to be provided by the team (or by the expert);
- background per specialist showing their skills and fitness.

Various problems to overcome have been described in Chapter I and II. These elements are recollected in Chart D, where the different types of contracts are analyzed in addition. This chart also points out:

- the limits of each type of contract;
- the leading elements for each type;
- the same type of contract can include several elements
- the boundary between each type is rather loose.

CHART D

COMPARISON . DIFFERENT TYPES OF TECHNOLOGY TRANSFER

in the case of Food and Agro-based industries

Type of transaction / Elements	Knowhow	Technical Assistance	License & patent trademark	Training	Engineering services	TURNKEY	Joint venture
1. Technical acticity/problem							
. Raw Product Specification	x	xx			x	x	x
Production methods/improvment	xx	xx	x	x	xx	x	x
. Plant layout, design specific	x				xxx	x	x
. Equipment & machinery			xx (a)		xx	x	x
. Research & development	xx		x				x
2. Organization matters							
Production planning system		xx		x	x	x	x
Quality control system	xx	xx		x	x	x	x
Industrial property			xx (a)			x	xx
Training of manpower		xx		xx	x	x	x
Management system	x	xx			x	x	x
Maintenance		xx		x	x	x	
3. Sales activities							
Purchasing information	x	x					x
Consumer taste evaluation	x	x					x
Market information	x	x					x
Finished Product development	x	x					
Market trends	x	x					x
Brand identity			x				x
Advertising/sales promotion		x					x
Domestic marketing		x		x			x
Export marketing		xx		x			x
4. Investment							
Erection supervision					xx	x	x
Commissioning & start-up		x			xx		x
Advisory services		x			xxx		x
Fixed assets							x
Working capital							x
Other forms of investment						x	x

(a) linked with equipment

x possible
xx frequent
xxx leading

5.3 License, patent and trademark

A very imposing literature exists on this subject. Meanwhile, as stated before, most of the food or agro-processes are old, well-know techniques and are in the public domain as far as production is concerned. It is the contrary for the equipment manufacturers. Several companies are known for their monopolistic position covered by exclusive licenses - mainly in the packaging sector - such as for sealing machines, for carton-pack filling machine or for peach destoning or pear peeling machines. The alternative exists of renting their equipment.

License or trademark contracts have essentially legal aspects requiring a lawyer to draft them and to supervise clauses such as :

- exclusivity and sub-license,
- territory wherein the license/trademark is granted,
- counterfeit or forgery,
- guarantee against third parties or claims,
- fees or royalties calculation.

In the soft-drink and beer sector, trademarks such as PEPSI and COCA-COLA, ORANGINA, SEVEN-UP, STELLA, and others have chosen to sell their products under license agreements. The advantages are shared by both parties.

* the licensor has few or no industrial investments. He avoids most of the local burden. He collects royalties or fees against his world-wide promotional advertisements.
* the licensee has an easy opening of a large market which may contribute to support the

promotion of his own complementary product such as fruit-juices. His overheads and transport costs are split between them. Product quality is supervised by foreign inspection and therefore is performed at top level and is easier to maintain.

When this agreement includes technical assistance, the whole plant benefits from on-going advice and instruction of high level experienced licensor's staff. But to keep this exchange as fair as possible, the African entrepreneur should reserve his rights for bottling other types of drinks which do not compete with the licensor's one(s), for instance domestic taste or genuine drinks.

In other cases, the licensing contract is limited to main technical objectives such as on-going quality control and sometimes production or management assistance. These types of contracts are passed by entrepreneurs who wish to make the consumer more confident on the safety of food or drink by mentioning "produce under quality control of EVIAN, VITTEL, NESTLE, etc... Incidentally, he has also the assurance to remain on international level, to be advised for technical on-going improvements and to benefit from technical assistance when needed.

5.4 Engineering services

This type of contract stands sometimes close to assistance contracts, when comparing them in chart D. Therefore, the former may include some similar items. Its modalities may vary according to the issues or objectives which are foreseen such as :

* specifications, design and drawings for a new plant,

* rehabilitation of an old one,
* tendering for these works and/or their supervision,
* procurement of equipment, its commissioning and/or inspection before shipment,
* personnel recruitment,
* layout or supervision for civil work, building, process, plant organization,
* co-ordination of large projects,
* training, maintenance or quality programmes.

Under this arrangement, the engineering or consulting contractor deals with conception, foreign tendering, training and supervision tasks, while the entrepreneur keeps domestic contracts, local and not specialized tasks under his control, as well as the entire leadership of the project. Equipment purchase may be dealt independently by the entrepreneur, if he is experienced or has some good connection in this field.

Under these circumstances, some technical assistance or know-how services may also be needed and added into the contract. Therefore, a table of contents, coming in addition to the usual contract characteristics, is advisable and is useful as checklist to refer to. The other main features of such contracts are listed below.

- Its duration is of relatively short term.
- Few know-how items or conception matters may apply for confidentiality clauses.
- Time deadline must be given.
- Responsibilities must be clearly divided and specified, e.g.:

Engineering firm provides	Entrepreneur provides
* project management	* local facilities
* process technology	* construction
* training	* civil work
* operational management	* marketing
* test-run supervision	* local contract
* start-up	* some design
	* commissioning

On the one hand, this type of contract has **several advantages** for the African investor. Local suppliers can be associated for civil work, building and utilities (power, steam, water) through personal list selection and local contracts with a better understanding. Main project equipment can be purchased through regional or international tenders. The in-house project team is likely to be strongly motivated and will know the factory in all its details, which is particularly useful when operational failures are coming up later.

On the other hand, some difficulties have to be overcome which can spotlight positive risks. The final responsibility is on the African investor's shoulders: he must take charge of the project implementation and assure the performance results of the finished plant. Too much expected savings, unforeseen expenses and uncertainty about many costs may lead to a higher final total cost, which are then incompletely covered by the forecasted resources. Co-ordination problems are frequent in such cases. They cost time and money and may come in addition to the previous financial difficulties.

For all these reasons, many medium, even small scale projects have been dealt under the "TURNKEY"

system. Taking into account all these arguments, this type of contract is favoured for limited packages. Nevertheless, all attempts to establish a rule or a standard form of "engineering services" contract have failed on this matter, as far as the agro- and food-industry is concerned because of its too various requirements.

5.5 "TURNKEY" contracts

This term covers the integrated range of services and machinery required for an entire project : design, process, supply of equipment and materials, assembling and installation, including putting them into operation. The responsibility belongs solely to the supplier.

The concept is that, on his side, the national investor orders a complete plant, capable of meeting his need on the basis of the characteristics stated in his project and, on the other side, that the technology supplier will deliver it ready to start production. The major advantage is that the supplier undertakes to co-ordinate all the inputs needed to erect and outfit the plant. Thus the investor does not have to deal with different suppliers, and possible conflicts between them.

This model has been quite frequently used in agro- or food-industrial projects in Africa, for which a certain type of integrated know-how is required e.g. combination of pre-treatment, processing, stabilization of the agricultural raw-products associated with filling or packing and (cold)-storing techniques. The know-how extends to the general organization of the whole production flow-sheet and

the design of adequate civil work buildings and utilities around.

As a result, many different approaches exist and thus various types of turnkey contracts. In order to frame the subject, two of them are described with their advantages and limits, e.g.

- genuine turnkey or lump sum contract, in Annex 21,
- semi-turnkey contract, in Annex 22.

In these circumstances, it is difficult to suggest a set of conditions which would suit both of them universally. Meanwhile, Chapter VI provides a fairly complete contract example of the first type.

When the deal is complex, the investor should think at a technical expertise needed to supervise the contractor's performance and to assess the time for interim payments which corresponds to the exact work performance or installation stages. This function should preferably be delegated to a reliable food-expert or engineer, acting under a separate contract with the investor, as described and explained previously, associated or not with specialized firm as Llyods, Veritas, ...

In spite of all these advantages, it must be recognized in the light of experience that few of these types of contracts have been positively successful in AFRICA. The concept is basically valid For example, in a survey carried out in GUINEA, all the 32 plants checked out, were reported to be well organized and technically right, but none had achieved the expected performances for several reasons : insufficient feasibility study, poor management,

political hindrance, lack of financial resources. At N' SELE in ZAIRE, the integrated food complex was set up by Chinese, French and Israelis contractors. None of them failed but the different production units stopped very soon after start-up of the plant for the same mixed reasons.

These examples are cited solely to stress the importance of the follow-up required after setting up a plant or a production line, and thus the need to include it in the aim of the contract and its framework as well as in the project negotiation planning.

6. Sample clauses

Each procurement has its specifics and only most frequent, usual and major considerations are listed here for preliminary discussions before contracting. Each agro- or food sector has its peculiarities. More general matters such as liquidated damages, losses and settlement of disputes are inside the general conditions.

a) Management aspect

Too often the African investor has the feeling that several or separated contracts will be more profitable by crossing out the 5 or 10% of fees asked by the engineering bureau or the main contractor. This may be true in some particular cases, when several items, without direct connection are to be purchased or to allow maximum competition or to give local suppliers a chance to compete with larger foreign companies. Otherwise, when items are inter-connected, on-line or of continuous process, the best is to leave the main contractor, (or contracting agency), with full responsibility for co-ordinating the entire project, ordering sub-contracts, transport and

delivery of the various components. The latter endorses then the responsibility to demonstrate that the entire procurement is working well in terms of quantity and quality of the food product.

b) **Complaints**

Manufacturers are very reluctant to receive complaints a long time after delivery because of the difficulty to determine their origin and responsibility. Therefore notice of complaint must be given by the entrepreneur or plant manager in the shortest possible delay, and the way to do it, must also be discussed and agreed upon in order to avoid lengthy and costly disputes. An example of this is given in Chapter VI. An additional clause for "reasonable excuse" for some omission or late discovery may also be negotiated.

c) **Sub-contract**

Due to the diversity of components needed in the agro- and food industry, in absence of provisions to the contrary, the supplier (for medium or large deals), is implicitly authorized to enter into sub-contracts for the performance of special services or the purchase of all the items he does not manufacture, such as utilities, handling equipment, conveyors, etc...They are normally covered by the main contract and it is in the purchaser's interest to have only one person responsible for the whole work in case of default or late delivery. In our view, the best system is that the supplier's duty is to execute and/or supervise the whole work(s) and be fully responsible for it.

d) **Equipment**

Most of the equipments delivered to Africa are coming from overseas countries and they require long

inland transportation when the recipient country is landlocked. Often, part or all of these services, relating to the purchase of technology, are absent or excluded from the contract. Therefore the African entrepreneur should check that the following components are really included in the bid quotation :

- equipment packaging
- freight, up to the site
- insurance and risk of loss or damage
- customs and duty
- banking charges and interest in case of letter of credit
- eventual storage.

e) **Price index**

Annex 1 has illustrated the time needed for the completion of an entire food factory which is usually over two years. Considering the African context, 2 - 3 years are an average time period between negotiation and commissioning because of long distance, delay in taking decision, etc... Even though inflation is rather low (2 - 5 %) at the present time in most of the developed countries for capital equipment, the supplier may ask for a price revision clause or price indexation. Since he may take advantage of his position and ignorance of the buyer about the best index, it is suggested that indexation be based on the national government indices of the supplier's home country. Examples for the main developed countries are given in Annex 17.

When the market expands quickly, or the new food is successful, the African entrepreneur is compelled to place additional orders for identical or similar machinery, major spare parts or module/fitting exchange. At that time, he will take advantage of the

price index clause which avoids higher price increase than officially acceptable.

f) **Test-runs and commissioning**

This matter is of very high importance in the food industry. Therefore it is described in paragraph 2.02 Chapter VI and completed with many operational details in its Annex II. Considering the particular nature of agricultural products or food, it is advisable to stipulate that all acceptance test runs should be carried out within a period of one month following the date of completion of the plant or the start of the crop season of each fruit or vegetable. For food processing, the time period may be shorter, depending on the complexity of the production unit.

6.1 Technological descriptions

Responsible staff of western agro- and food production plants are operating machines, processing or packaging lines, and all other components with standard in-house procedures for start, stop, run, maintain and repair. These operating information must be displayed by written form in management guides, technical manuals or pamphlets. They should cover the following items :

1 Specifications for good processing, quality and maintenance, all designed to maintain optimum operating conditions and to obtain top quality products ;

2 A laboratory testing handbook including quality control procedures for raw-materials, processing control, processed products, sampling methods, etc... ;

3 Machine maintenance schedules, spare parts inventory and machine layouts or description

providing all the references needed for ordering replacements for items which break down, or for purchasing spare parts to be replaced, as well as manufacturers references, codes and addresses.

4 All diagrams, layouts, drawings or schema needed in case of failure, extension or improvement of the distribution networks (water, power, compressed air, waste, cooling system, etc...) as well as of buildings and civil works.

5 Guidelines and instructions for cleaning and preparatory work before starting the processing lines as well as alarms and safety systems.

6 Mechanical books and operating manuals for the main items.

7 Job description and/or job profile (sometimes).

This checklist relates to a turnkey plant. It has to be adjusted or adapted to every case and made shorter consequently, but must remain included in the basic agreement as a specific item or as an annex with an index of all these documents.

6.2 Amount of documentation

Experience has shown, and not only in Africa, that the above technical documents, management instructions or some drawing are kept rather "secret" by the staff who receive them. They consider them as "deposit" for their own safeguard or as source of authority or power. This natural behaviour and psychological obstacle is easy to overcome by spreading widely these information at all level.

When this question comes up during the negotiation, the needs for this technical material must be evaluated for every processing and mechanized position, at all levels in kind and quantity. Later,

the quantified checklist must be imperatively in the contract and considered as one of the aspects of technology transfer. The salesman may consider this as an "abnormal" request or "waste of paper" and that "he is not used to provide so many items". Whatever may be the arguments, the African context remains and it is even worthwhile to agree for extra charge. In all circumstances, they will be lower than the cost of dysfunctioning later, because foremen and technicians will be able to perform well their task, which is essential for the quality of food.

6.3 Delivery time

An acceptable delivery date must be ensured, particularly for agro-based production. Harvest period(s) is (are) the critical period(s) which have to be taken into account. Too early delivery is disadvantageous because of the financial useless interest paid during that period. Too late, it cuts down the benefits expected from the first year's activity. Therefore, a provision must be carefully formulated in the contract for a guaranteed delivery date and payment of financial compensation for late start-up.

6.4 Confidentiality

The word exists but is only very exceptionally significant in food and agro-industry. In the rubber processing or plastic bottle production, there are some secrets about the composition of the mix, but this is no more true for a plastic packaging unit for instance. In other instances, the "secret" consist of a premix of raw-products delivered at a price including the fees (e.g. cola drinks, plastic bottle, ...)

Tannery, bakery, instant-food or soup are sectors where innovation is dominating ... Whether or not the technology patentable, it has a value. The practice and prior legal step is to enter them into a letter of intent or confidentiality, whereby the purchaser will keep confidential all the information or data to which he will have access during the negotiation. This enables the purchaser to evaluate whether the price asked is justified and whether he is interested in buying it or not.

This means also that this confidentiality will be kept by the buyer's personnel having access to the confidential information. The information, and all copies which have been made of it, will be returned to the supplier or destroyed if no contract is concluded.

6.5 Technical specifications and performances

The contract must contain a precise and definitive description, of the characteristics and performances requested for the project. In the case of agro- and food industry it is a most important item to work out. It is common and advisable to distinguish :

* technical specifications relating to the equipment, from
* technical performances relating more to the processes and the outputs.

Detailed manufacturing performances and specifications are likely to be available in the bidder's offers in terms of general capacity, speed, output, input, water and power consumption, etc.., but it is the duty of the buyer to check omissions for his specific needs. On his side, the African entrepreneur must provide usual data relating to water composition,

electricity supply, local climate etc... during the negotiation.

In the meantime, these information must also be the basis for negotiating all the missing parameters as for instance :

- suitability in relation to the raw-products and waste ratio,
- features concerning the transport of local raw-products,
  (containers, loading and unloading, warehousing or stacking)
- water recycling ratio and environment problems,
- flexibility and multi-purpose possibilities,
- familiarity of the supplier with respect to the plant design and general layout.

Many other more specific questions, data, or performances have to be clarified and settled. Annexes I and II of the aide-memoire of the specimen contract, in Chapter VI, give an overview on this matter but the listing is not exhaustive.

6.6 Raw materials

When the project is based on local resources or raw materials (agro-based industry), the buyer has to establish their characteristics before starting negotiations. Composition, variety, amount available, size, etc... must have been carefully collected from agronomists or agricultural institutes or other reliable sources. If their particulars have not been well established or are missing from the contract, technological problems, weak performance or inadequacy may arise and create dissatisfaction, even disputes.

For fruits and vegetables, it is strongly advised to ask for pilot-tests in each variety.

Indeed, processed finished product have seldom the same taste, color, hardness ... as they had when fresh. Western food-industries, for instance, processes variety of peaches pears, green peas, potatoes, etc... specially grown for them. The types are different to those of the fresh market. Pasta, bread or cake are produced from distinct varieties of wheat. One mango juice project collapsed because after concentration, the "wonderful good taste" of the exported fresh mango was completely different when its juice (after concentration) was reconstituted .

Annex 23 gives a indicative list for a pilot- and analysis-laboratories, if the supplier does not accept to perform such tests.

6.7 Civil work and buildings

Concerning plant infrastructure, food and agro-based industry do not required expensive and heavy construction : one ground-level floor, modular type building permits suitable lay-out and work-flow. Therefore, construction can be dealt by local architects, who have the advantage of knowing :

- local building regulations,
- local construction costs and reliable companies,
- site information, climatic conditions and suitability of the location,
- information on the services (electricity, water, access roads).

Meanwhile, it is advised that the supplier should be requested to keep the responsibility for drawing general lay-outs, as well as detailed construction plans. At least, plans of similar industrial buildings may give some guidance to the entrepreneur but, in any case, the overall supervision of the supplier (or partner) must be required in order to avoid later disputes and to have his assistance when choosing from various local offers. Such a procedure is of common use.

6.8 Innovation

During the negotiation, the supplier (or licensor) acts as he is the first user or creator of the technology and thoroughly acquainted with it. It is difficult to foresee future innovation or improvements to it. Nevertheless, because things are evolving rapidly in the food industry, it is advantageous for the entrepreneur to ask for a clause with obligation to communicate innovation to him or at least the basis for their negotiation. When he intends to use the licensor's technology for producing domestic market food, he is entitled to, and should ask for, compensation for his own future developments or innovations concerning his genuine African products.

7. Negotiation main point

The focal point of all the matters described above, is to set the basis for a fair and good contract document, not for itself, but for the establishment, within the time and budget specified, of a factory whose performance will meet its production objective.

For this purpose, it is important to keep a clear picture of the various phases and stages of the negotiation process, the objective of each, and the task to be completed and decisions to be taken during each period. The project must be considered this way, and Chart C gives the matrix for it.

Each stage has its own particular characteristics. On the basis of the maximum available knowledge of the technology (ies) and the entire project itself, and by using the exhaustive competence of the project-team, it becomes quite easy to carry them out and to finalize an acceptable, realistic and fair contract document.

After that, the planning and completion of the next critical steps - construction, start-up and production - are sufficiently improved, precise and comprehensive to reach the objective, which is to market a successful food or agro-processed product.

CHAPTER IV

Important issues of negotiation

After methodical initiation of the selection process between all the potential (or pre-selected) suppliers (or partners), and its implementation through large negotiation between the two or three best ones, the bidding phase takes an end with the following main issues.

* Differences in process or engineering have been appraised and the choice of the right partner or supplier is made. Based on all the parameters, well "weighted", previously taken into account, the final decision can be published.
* Guidelines for the actions to be undertaken have been prepared. They have now to be written down and recorded in legal form.
* The different types of contract have been discussed and compared, and the most appropriate form is elaborated and brought into being.
* Economical aspects have been cleared, e.g., the ultimate price after discount on quotation, payment, terms and operating costs are better known at the present time.
* Basic agreement should have been reached on organization, co-ordination and planning wished for the implementation of the project.
* Last specifications have been laid down with reference to official standard.

Some additional benefits should also be emphasized. Factually, the relationship between the new partner, or supplier, and the buyer are evolving during the negotiation period. Through their technical, economical and financial discussion, they know each other better and may have generated intellectual links, human understanding and trust. These are of great value for

drafting the contract document before the authorized persons sign it, but also later, during the entire implementation process.

Under the same premises, the aim of the contract, which is a very important legal matter, becomes easier to formulate. It must be known that, when the relation between the parties deteriorates to the point where they have recourse to the court, the international trend of the latter is to consider primarily the aim of the deal in preference to isolated or general guarantee clauses - in assessing the case.

1. Contract drafting

It is on the purchaser's interest to prepare his own draft before starting discussing the contract document because the supplier, or engineering firm, has always his own ready version adapted to the case. Putting down an advanced draft is a must. Again it involves a team-work, requiring the contribution of legal and technical expertise, since the contract involves dual aspects:

* It registers a commercial legal transaction as guide for action to be undertaken, but also for settlement of disputes.
* It describes the transfer of technology with all details and limits.

Because the most expensive components are technical ones, its formulation must be :

- easy to read and understand by anybody,
- concise with precise technical words (1),
- provide a clear explanation of the technology or innovation when needed,

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1I.T.C. Geneva has published a "glossary of import management terms" and "Thesaurus of international trade language". Both include agro- and good terminology terms with some useful definitions.

- summarize all the components and annexes,
- be oriented to successful achievement rather than to litigation.

At the same time, it should be analyzed and assessed what has to be contradictory controlled or tested - how, when and where - such as plans and layouts, equipment before packing and shipment, test-runs and commissioning. These features are to be linked with the payment schedule and are itemized and developed in the "example of contract" which is set in Chapter VI.

The first paragraph of this contract example is designated by "AIM OF THE CONTRACT". Its importance must be recalled as it provides not only a summary of the negotiation but also its "spirit" and the "willing" of both parties to co-operate successfully in the future. The presence of this paragraph, which introduces the usual and specific juridical clauses, shows explicitly that the co-operation, started through the contract, will continue after its completion and legal deadline. Consequently, this description is considered primarily by the court in case of litigation.

In addition, the contract is usually signed, on one hand by the investor or entrepreneur (for the buyer), and, on the other hand, by the General Manager or sales department manager (for the supplier), but the implementation of the former usually performed by other persons. Many disputes originate from that situation and it is important for them to keep in mind this reference point.

2. Fees and payment

It must be known that until recent years, the majority of agro-based and food companies in the industrialized countries have rarely thought of licensing their know-how

or quality label. The situation is slowly changing and companies are now more aware of the value of their skills. Weak protection of the property rights and doubtful arbitration in Africa lead them to be very reluctant to make such genuine license agreements in that area. Meanwhile a sample questionnaire is given in Annex 23 for future prospect.

African R & D research institutes have developed numerous licenses for the production of specific African food products. Some of them have proven their economical and technical viability and the process originality developed by them (see paragraph 7). Unfortunately, they are still staying as pilot plant and very few licenses have been commercialized. An example of questionnaire is in Annex 24 for evaluation of patent agreements, patent clauses or similar agreements.

On the contrary, most of the equipment needed for food industry is well protected by licenses, which the manufacturers are sometimes willing to contract such as for evaporators, for sundryer or for grinder, but this type of industrial activity is lacking in AFRICA.

For the time being, several process licenses of potential interest to African investors - such as essential oil extraction, citrus fruit in-line juice production, enzymatic fermentation, deterpenation or biological treatments - have not been the subject of contract. They may have been considered too sophisticated, requesting too high a raw material input, or yielding products for too uncertain international markets.

Only one single area can be illustrated with successful licensing agreements i.e. patented trademarks. Their transfer is made under very strict conditions.

* The trademark is patented in both countries, of the holder and of the buyer.
* The exclusivity is generally granted for the buyer's country only.
* The license is given to use the adequate technology.
* The holder has the obligation to fulfill specifications required for a satisfactory production.

Therefore, most of these contracts are linked to other types of contract such as marketing assistance, technical cooperation, maintenance and quality control. Trade mark licensing is particularly suitable for mass-production or large markets e.g. soft drinks (Cola-type, fruit juices or fruit-based products) beer, ice-cream, yoghurt, etc...

For license fees or prices, the usual practice in the food industry is to base them on a royalty type system. It always relates to the quantity produced or, sometimes, sold. Once-for-all payments or single "lump-sum" payment is only of exceptional use for some know-how license agreements.

The most common form of payment in use is based on easy to account and to control production parameters. Such as bottles for drinks, tons, daily capacity or working hours recorded on a sealed computer. The quantity is converted after into monetary terms at a fixed rate. The advantage for the entrepreneur is that the fees are paid from income already received as food products are mostly sold cash at factory gate in Africa. Additionally, this system includes instantly inflation, which is rated very high in some countries, as well as it gives freedom to the entrepreneur in pricing the products on the local market.

An alternative form consists of including the fee

value directly in singular supplies such as the "specific mix" needed for Cola-type drinks or the printed caps for any bottled liquid. So, there is no direct cash payment for technology and this is a way of overcoming governmental restrictions, tax and banking problems which exist in some countries in relation with the approval of transfer of technology agreements.

When special devices or equipment are needed for production or if the licensor wishes to be safeguarded against an insufficient dynamism of the licensee to promote his product, an annual minimum fee or lump-sum may be fixed in the contract as bottom payment and additional proportional fees are paid only when they exceed the lump-sum.

The average rate of fee payment in use for agro-industry is customarily computed on production cost, sometimes against net sales or profit. Its average value is about 2 - 3% of the previous items and it may range from 0.5 up to 4 % when the products need strong advertising support provided by the licensor.

As food quality is a significant factor, the fees for trade mark may be added to those of technical assistance, maintenance and quality control assistance, when it is not included or dealt separately in an annex of the main contract.

Many regulatory institutions of developing countries are not very favorable concerning the acceptance of trademark agreements because they have the following consequences:

a) The national licensee will be promoting the licensor's trade name and, if the contract terminates, the licensor will have all the market advantages on his

side;

b) In addition to the above, the use of trade mark usually involves the payment of a royalty for an indefinite duration, which represents an additional financial burden to the licensee.

When the contract is mainly for large supply of equipment, common practice is to split the total cost and to start payments along the contracting period, knowing that the supplier needs to finance production of the equipment. A reasonable payment plan is usual and might be scheduled as below :

*	advance on signature	5%
*	payment upon approval of general layouts of equipment and buildings	5%
*	payment upon completion of factory test (or against shipping documents)	40%
*	payment upon delivery on the site (or after assembling)	30%
*	Payment after satisfactory test run(s)	15%
*	payment at the expiry of guarantee period	5%

For building and civil works, the payments are pro rata the works executed, sometimes taking account of the materials brought to the site.

Leasing or renting are two other approaches used in agro-industry for specialized machines, such as peach-destoner pear- and apple-peeler, tinbox-sealer, carton-pack filler etc. Such an opportunity should not be ignored as it avoids capital investment and maintenance is included in the cost of rent. Only the working time or crop season is taken into account.

3. Mutual obligations

At first reading, the clause is mostly overlooked and believed non-essential and conventional. Consequently, insufficient attention is generally paid to it. Nevertheless it is important to think it out and to formulate it very carefully for three goals :

* It is a opportunity to check that all the responsibilities needed for the contract implementation have been well taken into account.
* It must be clear who is responsible for each of these items and who is doing what.
* It is a means to inform all individuals concerned with the project of that official sharing, in case they had not participated in the negotiation.

In this manner, disputes about mutual rights and obligations are prevented or quelled in their infancy. It is also of importance that both parties clearly specify the terms and conditions of the technology transfer within its different aspects.

Some provisions are common to both parties, as anticipatory breach for external reasons, damages, exemption, effect of avoidance and preservation of the equipment. The usual scope for the seller, or technology owner, is :

* to supply all the support required to transfer the technology,
* to deliver the equipment, machinery, and other goods,
* to hand over the related and necessary document for managing them,
* to assure their conformity with the description

and specifications given in the offer and completed in the contract,

* to remedy for breach of contract by him,
* to guarantee processes and/or equipment.

In addition to the timely delivery of equipment and related documentation, the most frequent and specific obligations in the case of agro- and food industry consist in:

* the training of buyer's personnel (see paragraph 5 below)
* technical assistance (see paragraph 5.3 of Chap. III)
* supervision of maintenance (see paragraph 6 below)
* sometimes R & D inputs (in case of license).

Assistance in start-up of the machinery and production line(s) or entire plant is normally included in the purchase price. For a turnkey operation or an entire plant, this assistance is enlarged through the provision of test-runs and performance evaluation during 1 or 2 full working days. Such procedures are described in Annex II paragraph 4 of the "Example of contract" in Chapter VI. Extensive training or long term assistance is generally dealt separately.

On the contrary, the usual obligations of the buyer, or licensee, are more limited and mainly focussing on :

* the payment of the price,
* taking delivery in good condition,
* remedying any breach of contract by him,
* applying the technology or process as prescribed by the manufacturer,
* timely claiming if some failure is detected.

In the case of license of trademark, the obligation to respect the specifications and the quality of the marketed products are imperative. But this shall also prevail for a non-licensee, if he wishes to compete successfully against similar imports or competing companies.

Good book-keeping is also an obligation, if fees have been based on profit or on net invoice sales value. In all cases, the accounting staff must be very reliable, as the license owner is normally entitled to control the books.

Exchange of information and improvement, may be of interest in the field of fast evolving techniques (as packaging) or processes (as soup or ready foods).

4. Guarantee ([2])

Plant level problems and the sectorial analysis, described in the first chapter and summarized in Annex 5, have stressed the difficulties encountered in the past, and, it is hoped therefore that most of them have been considered and solved during the negotiation. Experience has shown, and Annex 5 gives evidence of it, that few disputes or litigations are initiated by local, foreign or sub-contractors, because the legal terms used for the contracts or sub-contracts have been supervised almost by competent lawyers and the conditions make sure in legal terms.

On the contrary, numerous and major failures are stated after production has started. It is a matter of fact that the African investor or entrepreneur has a tremendous expectation from the contract itself and considers it as a shelter, rather than to see it only as a tool for project implementation and as a reference document. Consequently,

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[2]or Warranty

when the first incidents or failures occur after delivery, he has the feeling that some guarantees were too poor, insufficient or missing in the contract.

The right approach to these clauses is to keep in mind the unique target of the present transaction, i.e. to buy and have a successful technology transfer with all its components and to make profit from it, rather than to formulate a perfect guarantee of hypothetical compensation through expensive lawsuit and court litigation. It must also be said that no supplier can reasonably secure the economical success of a project. Better guarantees are obtainable by other means and should be sought through :

* permanent reference to the aim of the contract,
* precise screening of the draft document by the whole project team,
* clear definition and criteria of the procurement,
* reminding that equipment, civil work and building are commissioned separately with specific guarantees,
* checking working conditions in terms of capacity, yield, in and output, labour, lay-out, flowsheet, etc...
* reasonable ranging stipulation for the above figures.

Buyers should not forget an alternative approach, which is to raise the questions: "what may be wrong?" or "what unforeseen failure may happened". Thus, the easiest way for selecting the guarantees to be taken, is to review the potential clashing matters. Conflicting situations may have different origins, among those the following are rather common to every sector of food industry.

Technology risk

The two major risks to remember consist of technology inappropriateness to the local environment and excess of sophistication and automatization, whereas few occur through purely technical aspects or performances. Technology-associated risk lies quite exclusively in local raw products quality, their procurement or untested deficiency. Moreover, this latency remains limited compared to an improper market evaluation or a wrong appraisal of product impacts on the consumer (size, price, packing, ...), too short shelf live due to the climatic conditions or hostility from the informal sector against an industrial new competing product.

Mis-conception

Losses resulting from faulty design or wrong conception are scarce, but in all cases, the supplier must be bound to remedy those defects within a specified period of time. As this type of default takes more time to occur and to become evident, a different and longer time period should be requested than that for equipment.

Meanwhile it is in the interest of both parties to investigate carefully and deeply technology risk and possible mis-conception, rather than to foresee some strong and outright penalty. After contracting, the submission of the different lay-outs, design and plans provides a last opportunity to the project team for checking it and, if really needed, to make amendments accordingly. The procedure for this is described in the example of contract, paragraph 2.b and 2.d in Chapter VI.

Faulty or broken spares

The example of contract given in Chapter VI, contains some particularities and details on conditions the supplier should repair or replace the faulty or broken spares, and the sharing of costs in connection with the action to be undertaken. It is always possible to refer to the ECE general conditions in this matter. They spell out the usual obligations of both parties. Most sets of conditions provide that the supplier will undertake the fastest remedy to defects or failures for which he is responsible. Meanwhile, for African countries, it is advisable to specify "air delivery at supplier's cost". As agro- and food industry are working mostly with on-line processes, special provisions have to be set up for items able to stop the whole production line.

Obviously, this guarantee clause does not cover difficulties arising from damage or injury due to negligent or bad handling by the buyer's personnel. The underlying point of potential conflict is there. Thus, before starting conflicting, it is wise to investigate carefully each incident or failure and to explore them from two viewpoints :

* evidence, that the entrepreneur's labour is not responsible;
* proof, that it is a purely mechanical or conceptual incident.

Production capacity

Annex I of Chapter VI provides a sample description of the most usual equipment integrated in food processing and suggestions about the various specifics which requires quantification of capacity.

Machinery and process performances

Annex II of Chapter VI gives a specimen and picture for these items. As guarantees are also linked to "experienced labour", it has to be checked that the training programme holds together with the suppliers requirements in that matter and is consistent with the project objective(s).

In general, the financial structure of agro- or food production units shows that capital investment compared to production costs is more or less one year's normal industrial activity worth. This ratio should be evaluated when the technical performances are not fully achieved as foreseen in the contract and be considered in discussing the insufficiencies. It is always in the interest of both parties to analyzing friendly together the cause(s) (preferably with the assistance of an expert or consultant), discuss jointly what can be done and to settle the case through quick and reasonable measures before seeking litigation. A factory staying without activity costs always much more money.

Raw materials

Due to their origin, tremendous variations exist among agricultural products and even husbandry products. For that reason, the characteristics of the inputs, including packaging materials, must be very carefully investigated and checked as well. Food process or machinery yield are increasingly influenced by factors such as :

* ripeness
* taste
* acidity (pH)
* dry soluble substance (D.S.S)

* color	* total dry matter (T.D.M.)
* variety	* refractive index (R.I.)
* species	* oil or fat content
* size	* protein content, etc...

Basically, no reference to "usual standard" should be accepted for AFRICA without the formal proof that it is really true. For instance, recently a mango-peeler, well known all over the world, was considered as unable to work in a certain African country. After investigation, it emerged that local people used to collect mango before complete ripeness, contrarily to others and the process was only designed for complete ripen fruits. To let them ripen before treatment, was an unforeseen burden.

Depending on the variety, papaya must be either processed by crushing or boiling method. The process for mango juice extraction has to be different depending on the terpene content of its peel. If all these particularities have not been well recorded or checked with the supplier or process owner, no guarantee exists for future success. Some recommendations for these questions are given in paragraph 7.

Finished product

The same applies to food, by-products or finished products processed by that industry. The taste or the cooking conditions may be different from what consumers are accustomed in traditionally home made products. For such or similar reasons, characteristics of the former must have been screened and fixed previously. Sometimes, it needs a special study, but the process owner and the supplier may help to complete them during the negotiation period. Knowing

that, such precisions must be included in the contract annex.

Documentation

Due to its general impact for a good transfer of knowledge, a special assessment, depending of the supply, may be asked securing that all documents provided are sufficient for managing the plant and its labour force. A checklist is provided in Annex II.3 of Chapter VI.

Guarantee duration

For food-processing plants, a guarantee covering one year after delivery of the equipment or commissioning of the plant, is usual. Detailed starting conditions are described in 2.7 and Annex II of the example of contract in Chapter VI. The one year guarantee period seems to be reasonable, when it relates to equipment working quite permanently. Such period is too short in case of agro-industry which is only active during crop season(s). In that condition, it is doubtful that all the defaults will have been detected in these few months and reference to the time of delivery is then rather irrelevant. In that case, it should be requested to express duration in terms of working months. However, a period of 3 years may be a maximum the supplier will agree on.

Penalty

The usual rates in the case of agro and food-industry are :

a - **for late delivery** : 0.2 - 1 % per month of the purchase value with a limit at 3 %, sometimes 5 %, before

litigation

b - **for production performance** : the target is rated
100% for each item or production line
0.2 - 0.5 for each % less with a limit below 5 %

c - **for mechanical failure** : when it has not been repaired as foreseen in the contract, the penalty depends on several factors and may stay between the total value of the machine, or item, and a limited % of its value.

d - **total penalty** : generally it is below the addition of the three first items e.g. 5 - 10 %

When a claim relates to indirect consequences, such as lost of raw material, which could not be timely processed, or an entire crop lost because of late achievement, only the court is able to appraise and judge the damages and compensation.

5. Training

Prevailing opportunities

Throughout this guide, training has been called to mind as one of the major channels for transferring technology in the agro- and food industries. The success of any new small or large scale project - even more when dealing with rehabilitation work - is connected with the importance given to that item during the contracting phase.

Particularities

* Learning processing food production by making mistakes is a too expensive way because of raw material and finished product costs involved.
* The African food industry has to react permanently against competition coming from imports and the informal sector, as well as to take into account the

new demands of consumers.

* Technological changes are frequent, which means more or less permanent need for training.
* The skills required in these industries are mainly a combination of manual dexterity, visual feed-back, observation and empirical planning. Their accumulation and practice gives the "experience". This needs much time.
* Training, which includes know-how and show-how is a package difficult to handle as it is completely immaterial, while the associated documentation and equipment, are perfectly well perceived.

Types

Training for the food industry relates to different aspects such as :

* maintenance and repair,
* process and general management,
* quality control linked with R & D,
* environmental conservation,
* energy standpoint,
* pure technology transfer (i.e. for new products),
* accounting of stock, production, yields, personnel and how to control them,
* procurement and production planning, job organization and supervision,
* commercial management.

Only a **step-wise approach** will ultimately lead to the mastery of the production line(s) or of a complex plant particularly in case of rehabilitation. The target is to upgrade local technical skills as well as managerial capabilities among assistant, supervisor and even foremen staff.

From this general planning, the first step must be framed with the supplier and included in the technology

purchase contract, but the follow-up should also be laid down for further agreement or outside contract(s).

Components

The way to success depends on different factors, such as :

* elaboration of a well-timed comprehensive training programme,
* evaluation of the technical capacity of staff members and their ability to absorb the knowledge properly and develop necessary skill,
* selection of potential trainees from amongst the above staff and skilled labour,
* checking of trainer's qualification and teaching capacity on past experience,
* estimation of the budget size to be allocated,
* contractual obligation for periodical trainees' evaluation and trainers' comments (weekly or every fortnight).

It is recommended that the African entrepreneur, in spite of the natural reluctance of the supplier, involves him deeply in trainees' selection for three reasons :

a) The supplier is better able to appraise the technical level needed as he knows the needed background and knowledge for his equipment.
b) Later, he cannot argue that the right people where not provided for training.
c) Local ethnic or political pressures are avoided.

The supplier should also be asked to select employees among the on-the-job technical assistance or support staff with a view to have them obtain and maintain later the level of competence and experience required for a satisfactory production, in line with the objectives established in that contract.

Objectives

The major gaps to be filled in the African food industry are of the following kinds :

* to build up a real intermediate technical capacity, which is badly missing all over the world, but particularly in Africa, where medium level experienced technicians are scarce.
* to strengthen, at other levels, the existing capacity through well co-ordinated refresher courses or fellowship in the same or similar production abroad, preferably in other African countries.
* to provide opportunities for younger graduates to complete their theoretical knowledge with practical experience through specific fellowships in agro- or food plants.
* to reinforce or to adapt experience gained in other light industries by existing active staff, which is less expensive and quicker than to train graduates without previous industrial background.

The target is not to handle training nearly as well as developed countries do, but on the adequate manner local staff needs it. Time is seldom a real constraint in AFRICA, while at least 6 months are needed for delivering a single machine and 2 - 3 years for setting up a plant or a new production line. Only the competence to be achieved at lowest cost for the case is important.

<u>When and where</u>

Again, in spite of supplier's reluctance, the largest involvement the local staff must be asked during the setting-up and assembling of equipment, as well as during the execution of all civil work and other relevant infrastructure components or utilities, such as power,

steam and water networks.

As soon as the project implementation starts on the site, African staff must be associated. This means early recruitment of engineer, technician and supervisor in order:

- to learn much in contact with supplier's expatriates,
- to be acquainted with assembling the equipment,
- to feel familiar with it when starting production,
- to memorize many useful features in case of future troubles,
- to know how to read plans, diagrams, etc..., their use and meaning,
- to raise many questions.

This informal training given during the erection period is mostly free. The supplier may agree to pay some wages for direct labour contribution. Later, this advanced training will be useful for maintenance, management of side components or production trouble. Therefore, it is essential and worthwhile to include such a clause in the general agreement, or contract, and to define the conditions and limits.

Similarly, in relation to rehabilitation or for the periodical annual shut down period (when checking the whole equipment), this clause becomes a must. It contributes to improvement of the general technical knowledge among the specialized worker, permanent weak point in African factories and a cause of many dysfunctionings. In both cases, on site and practical training must be favored.

The start-up period gives a second, but different opportunity for good training. It is essentially production

oriented and is charged to the entrepreneur. For the latter reason, it is often limited in time and confined to upper-staff, whereas floor-level and workshop staff needs training as well, because their inexperience is responsible for the most expensive product losses and failures in the factory at that time.

Experience shows that savings on training are serious errors. For any food plant, the training budget of production matters should be sized by comparing it with the cost of production trouble, machinery break-downs and product losses which may occur. Thus, the training clause must be either included in the contract with all its details in a special annex as a sample is given in Chapter VI (Annex III) and Chapter IV, or dealt with in a separate contract connected with the main one, when the supplier is not able to provide these facilities.

A third and different opportunity for training exists in agro-industry at every production start to a crop season and in the food industry during routine shut-down periods for entire equipment maintenance and review. Both cases are usually dealt through specific contracts. At the same time (and only then) some study tours or fellowship are worthwhile to similar foreign plants and are advisable, because staff is then in a better position to understand particularities of each process and to raise questions about their own troubles or difficulties. Even this third phase should be reflected in the "aim" of the contract, which is "good quality and safe and efficient food production" and therefore, be considered as a follow-up to the initial purchase of technology.

Performance level

Depending on the nature of the technology transfer and its impact on the company organization, a comprehensive

training programme can involve and must be split between :

- sometimes the general manager,
- engineer(s) and production manager, (know-how oriented),
- supervisors and foreman (foremen) (show-how oriented),
- technicians and specialized staff mainly for maintenance and control.

Shop floor-level operators are to be involved in these programmes for start-up or in case of rehabilitation, because the transmission of know-how in the food industry is a whole. It is unfortunate that this essential rule in that industry has been too often forgotten. Continuous good quality and scrupulous cleanliness should be on-going concern of individual labourers. All year long, safe production and consumer's satisfaction depend mainly on them. In addition to the usual training programmes, to be formulated and included in the contract with all the above precisions, four additional items may be requested :

a) **a shop floor control system** (even it cannot be worked out immediately by the accounting people) to start making workers feel responsible for quality,
b) **translation into the ethnic language(s)** of the written instructions for all itemized equipment. Floor level labour have to work under foreign trainers' supervision, in order to let them check that the translation has been well done. This extremely valuable exercise is still a must in several far-east countries;
c) **quality control system** (description and organization) for raw material, during processing, and for finished product;
d) **micro-processing memorized programme(s)**, when it appears that the itemized knowledge will take too much

time to be absorbed at floor level or in too difficult to teach.

Although the need to avoid too sophisticated equipment has been stressed, in this case the most modern technique is now able to overcome the difficult transmission of know-how at shop level by using micro-processors or computerized memory at relative low cost. These four additional means contribute to a good understanding of modern production spirit among the workers and give leading staff a precise knowledge of the basic work which they often lack.

Financial aspect

In spite of its cost, training is a crucial component in the transfer of any food technique. Well conceived and implemented, it generates savings. For instance, by involving the expatriates needed for the assembly and setting up of the equipment in the training process it only costs the additional time they spend for that purpose and no extra high travel cost. Several local people may be taught or benefit from their experience at the same time, whereas sending local staff for training abroad, at an early stage, gives them a limited experience since it takes place in a too sophisticated and different context. Some exceptions for the mechanical technician are obvious but limited.

It is also worthwhile to get the supplier more involved in proving that the production unit works well within local constraints. Some deficiencies may be highlighted and the training programme re-oriented, if needed. The picture in Annex 25 B, shows the aim of that negotiation, under the following conditions :

- The price is given by daily rate or lump sum systems.

- The total cost should be asked and calculated separately.
- A proper evaluation of the training results must imperatively be foreseen.
- There should be a penalty for unsuccessful training, according to its extent, and additional training should be provided at the supplier's expense.

Contract structure

All these factors need attention and fair discussion before reaching an agreement. The last step is to determine how training should be contracted.

* As a part of the main contract, if the training component is limited to setting up and start up (essentially for machinery);
* Separately, if it involves a rather important budget and a large programme (turnkey contract with follow-up);
* Split into one part included in the technology acquisition contract till the start up and the other part dealt as separate, annually renewable, pure training contract, or combined with maintenance.

But always, one should think that after machine delivery or plant reception, the entrepreneur will loose the supplier's personnel support and stay alone, in full command of the new equipment and with full responsibility for its management.

The success of his acquisition will depend on how well his staff and labour, as well as himself, have absorbed and are mastering that technology import, but also, on how well the contract was negotiated and implemented.

6. Maintenance and spare parts

Because agro-industry needs to be located close to its sources of raw material, the processing plants or units are often in remote rural areas, far from any industrial zone or estate. After starting, maintenance and supply of spare parts grow up as a daily burden and they range rapidly among the major difficulties to run the factory.

In addition, most of the spare part storekeepers are confident in the initial allotment received with the new equipment. As a rule, suppliers recommend a stock level of two years. Thus, the storekeepers rely on it without ordering or requesting any repletion in due time, so that plants stop sometime later, after the last item has been dispatched and used. As it is rather difficult to fight against such a natural behaviour in AFRICA, it is suggested to overcome this difficulty through the following means.

Instead of accepting an initial high provision of spare parts, when contracting, it is advised to forecast that stock at lower, but normal, level in accordance with the time needed for repletion. So, the clerk in charge of the stock, starts training on how to order the spare parts at early stage of production, when activity is far from the full capacity. If he fails, it will be easier to overcome the incident rather than one or two years later, when the plant is working at high or full capacity.

In addition, with lower spare parts stock significant savings can be generated regarding initial investment costs. Meanwhile, in order to be reliable, such system must be well organized and the assistance needed in this regard should be reflected in the basic contract.

1 - Codification of all spare parts shall be specifically requested among the documentation supporting the

equipment purchase,

2 - A provisional maintenance planning shall be asked from the supplier to enable the plant to order in due time the needed spares,

3 - With the supplier's assistance, the best channel for quick supply has to be identified, e.g. D.H.L., CHRONOPOST, ...

This type of organization is currently used all over the world for car spares and local companies, specialized in that activity, exist in every African country. There will always be one willing to extend its activity to industry if:

* the basic codified documentation can be handed over and,
* the supplier has agreed to enter such a system.

Clauses dealing with maintenance and supply of spare parts can be included in the main contract dealing with the transfer of technology and equipment, but a growing trend is to deal with these aspects as a self sufficient objective, mainly when rehabilitation topics are involved. It takes then the frame of a technical assistance contract and it may contain :

* description of the precise conditions of technical assistance provided for maintenance;
* description of its organization and supply of spares;
* list and ad hoc qualification of technician/specialist to be provided;
* number of man/months or man/days per year;
* timing of the provisional maintenance;
* eventual training programme;

* specification of the buyer's personnel to be trained;
* competence aimed to be achieved;
* daily rate per specialist, travel, side expenses, etc ...

CHAPTER V

Prevailing opportunities

1. Joint-venture

1.1 Advantages

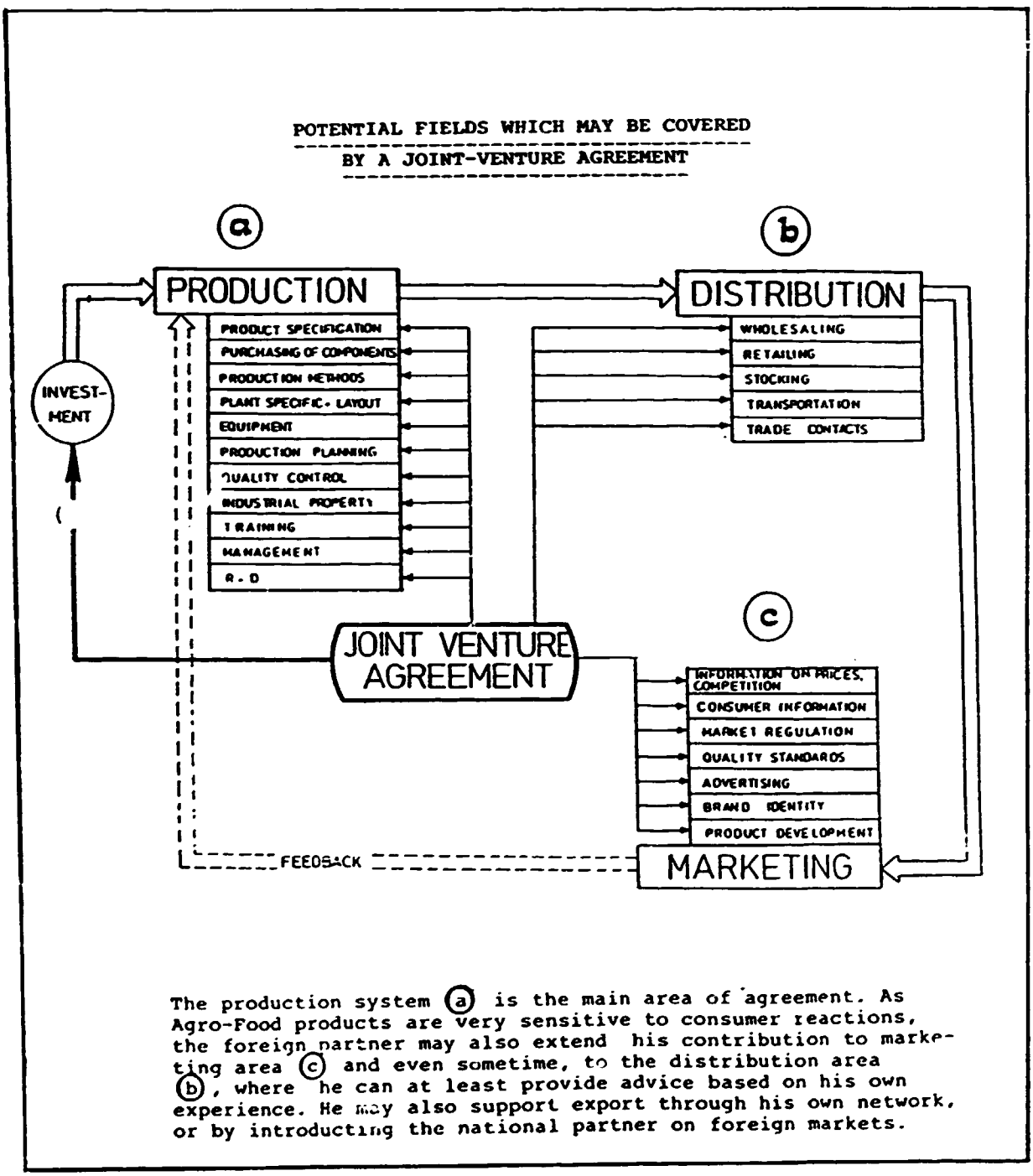
With or without equity participation, this type of agreement has been considered as the most advanced solution for transferring technology in the agro- and food sectors, due to its advantages compared to other alternatives, e.g. :

* It provides some investment resources.
* It develops a closer relationship and greater confidence.
* The technical assistance is permanent.
* It may provide a supporting channel for the supply of spare parts or other inputs to be purchased in foreign countries.
* Management advice can be asked at any time.
* On-the-job training is made easier in or out of the country.
* Common interest contributes to easier conciliation.
* Each partner preserves his own identity.

Other potential aspects, which might be covered by this system, are illustrated in Chart E.

Thus, joint-ventures are particularly suited to promote agro- and food technology transfers among developing countries. Through the sharing of profits and risks, as well as of capital, all the partners are directly interested in the viability of the undertaking, and the close co-operation, implicit in such ventures, leads to a fruitful exchange of up-to-date technology and know-how.

CHART E



The production system (a) is the main area of agreement. As Agro-Food products are very sensitive to consumer reactions, the foreign partner may also extend his contribution to marketing area (c) and even sometime, to the distribution area (b), where he can at least provide advice based on his own experience. He may also support export through his own network, or by introducting the national partner on foreign markets.

In addition to the upgrading of production and of the management methods, advantages may be extended to export market penetration or product diversification for the African entrepreneur and generate additional returns, valorization for his know-how, or extension of his distribution network for the foreign partner.

1.2 Traditional information sources

The first step is to search and select the right partner, which can be performed through the following traditional sources:

* Chambers of Commerce and Industry

  They act as relay between their foreign counterparts and potential firms, registered as looking for joint-venture or assimilated contracts.

* Commercial representatives of developed countries'

  Embassy and/or Economic attachés France, for example, has over 200 Economic expansion specialists working in 130 countries under the central supervision of the DREE (Direction des Relations Economiques Extérieures;) or SWEEDFUND of Sweden, which has a similar action to C.I.D. (see Annex 8 and IPAC).

* International and multinational organizations :
  - UNIDO through its field representatives (see Annex 13), its INTIB system and IPAC (see Annex 8)
  - CID, for EEC, with financial means channeled through local representation of ADF/FED, together with technical assistance for selection, adaptation, erection supervision, start-up and training (see Annex 26).

In their field of competence, they may be able to:

- supply lists of existing Companies looking for co-operation.
- start search of potential firms.
- advise on contract formulation, specific to foreign law.
- contribute or support financing sources and insurance.
- manage contacts between prospective future partners.
- inform on the partner reputation and standing.
- supply some technical assistance through the channel of co-operation organizations.

1.3 Basic steps

For the time being, it is useful during the negotiation to differentiate the technology transfer arrangements from the problems of financial participation. Thus, only the former is explained for which the following steps have to be performed by the African entrepreneurs :

* formulation of the project idea and needs,
* search for and identification of a partner,
* negotiation and definition of the type(s) of contract with its appropriate clauses,
* implementation and amendments later on.

This supposes that, before entering deeper negotiation, the potential partners have clarified all their objectives in a pre-negotiation phase and have reached a mutual good understanding. The extent of participation is usually varied, as well as the content of the contract, but it remains essential to

ascertain that both, short and long term objectives are appropriate, attainable and realistic.

1.4 Forms of joint-venture

a) **Equity participation** is the more typical form and it may have two aspects : either by participation in the equity capital of the African company, or the creation of a new company, generally where the production takes place.

b) **Contractual arrangements** are made when the two partners wish to transfer technology through medium- or long-term commitments. The contractual arrangements may include supply of equipment, know-how, technical assistance, as well as licensing or marketing.

1.5 Structure

A chart in Annex 27 shows the different inputs and their origin to a joint-venture agreement.

1.6 Leadership

The operational responsibility depends primarily on the technical knowledge, production experience and financial power of both partners. However, the domestic partner knows more about the local conditions of agriculture, local customs, market, law and politics. For these reasons, it seems wise to split the different aspects of this type of association under the general joint-venture umbrella. It is particularly advised to request the foreign partner to separate production know-how agreement and the equipment purchase contract(s) in a way that makes clear his responsibility and authority for dealing with these matters and also provides transparency on

how to account his inputs in the foreseen association. Furthermore, the contract should open the possibility of the local partner to remain free to make arrangements with outside companies in fields where the foreign partner is lacking competence (e.g. market study or R & D investigations) or when his inputs are not provided at competitive prices.

Again, accurate preliminary investigation must be undertaken. The African partner should ensure that the agreement will be sufficiently flexible and be able to adjust to changes in the local and regional markets, as well as to the supply of raw material.

Moreover, the exchange of technical know-how and services, and the financial requirements are two different matters. It is recommended to think of, and to deal with, them as well separate items.

1.7 Prospects

Nevertheless, it must be recognized that this form of co-operation has not always well materialized, mainly because of local financial constraints. Generally the promoter's contribution (equity capital) was insufficient and did not reach the bottom line of 25 - 33 % (of the total investment cost) which is considered acceptable in such activity.

In addition, African commercial and investment banks request guarantees (used in developed countries) from the local borrower which are not well adapted to the local context. On their side, few African entrepreneurs were really aware of, or trained for, industrial management.

For these many reasons, the trend is now to deal "product in hand" rather than only "turnkey plant". It is recognized that the basic problem is not to turn the key, but to "drive" the plant.

2. Rehabilitation work

This process is a mixture of the various items interacting in a food plant such as management, equipment, planning, organization, technology, human resources, maintenance, product quality and finance.

This matter has been deeply investigated during the Expert Group Meeting on Industrial Rehabilitation and Restructuring with focus on agro- and food industry in October 1989 in Vienna. The survey performed previously by CNSIE for EEC is still valid and provides some specific figures which are in Annexes 3 & 5. They show the considerable work which has to be undertaken : the average regional rate for utilization was estimated then below 40% in Africa.

2.1 Review of existing constraints

It was also stated that financing of rehabilitation was cheaper than setting up a new plant and considered easier to obtain. Thus, remembering the major fundamental causes of that situation may indicate the efforts which have to be made during the negotiation.

* The weakness of management and technological skills is stressed at first.
* The inability to adapt to the increasing sophistication of technology as well as technological errors or inadequacies are also frequent.

* The linkage with agriculture is too weak and therefore a severe handicap for agro-industry.
* The methods for financing food companies and the limitations of their own resources are two other stumbling blocks.

2.2 Realistic approach

The flow Chart F gives a picture of the complexity of a rehabilitation operation, but it also clearly shows that a well planned four-step approach makes it easier.

a) A general appraisal of the enterprise situation, as well as the collection of basic data must be performed at first, as in any project, and the objectives well defined.

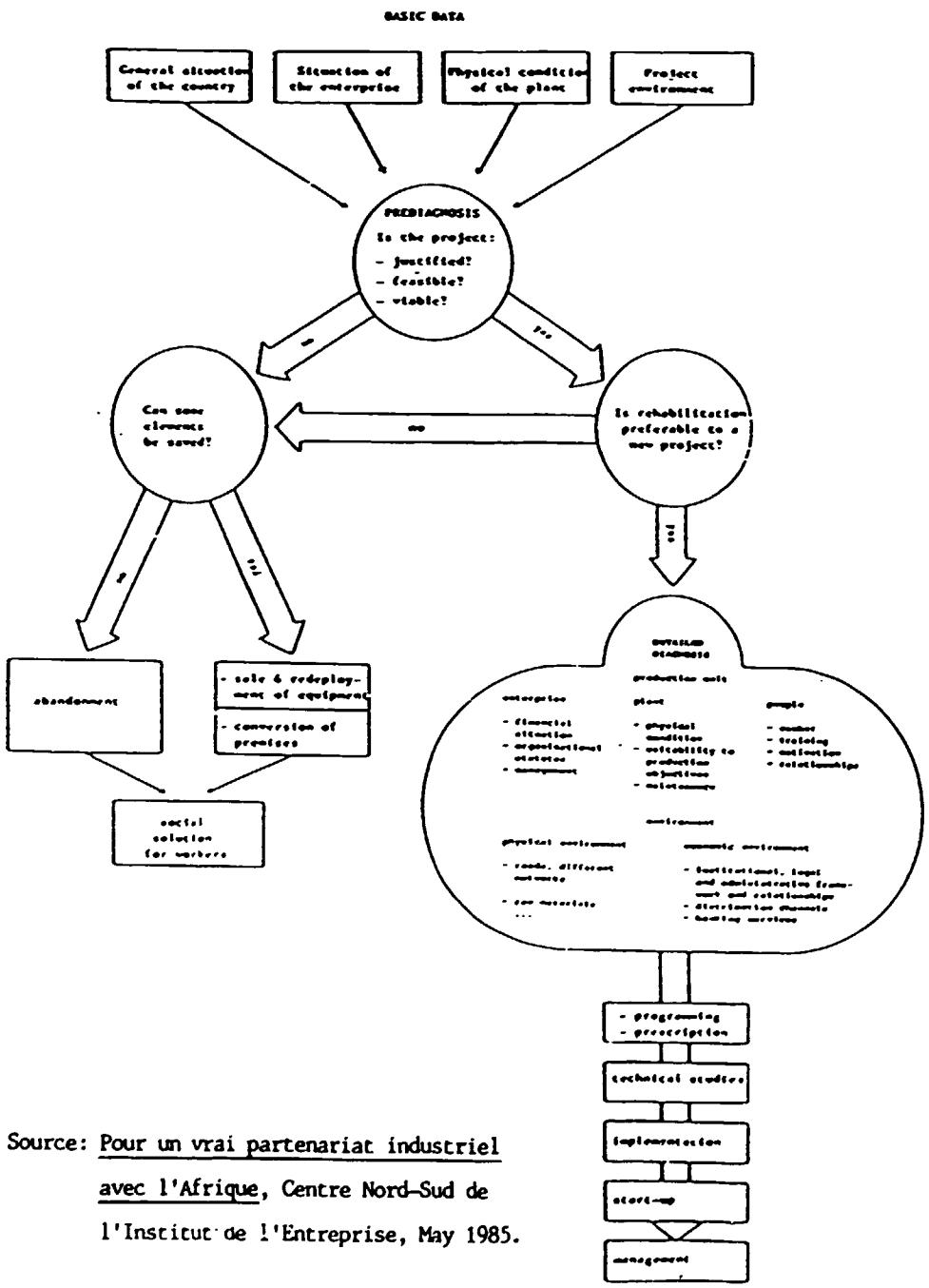
b) Preliminary discussion with 2 or 3 selected potential contractors or partners have to be subsequently started, in order to frame the project work and its financial estimate. The same may be achieved through competition between consulting firms specialized in rehabilitation work. Sometimes, it is worthwhile to compare their views with the opinion of new plant suppliers.

c) When the detailed diagnosis has been completed, the entrepreneur knows the various aspects which must be take into account when negotiating his contract(s) for rehabilitation.

d) The issue is a package of specific contracts for:

CHART F

FLOW CHART FOR REHABILITATION OPERATION



Source: Pour un vrai partenariat industriel avec l'Afrique, Centre Nord-Sud de l'Institut de l'Entreprise, May 1985.

* technical procurement, including further implementation.
* start-up, maintenance, periodical check-up assistance.
* training and management programmes.

2.3 Diagnosis

More than in all other projects, the aim of the future contract must be oriented to the future and reflect market trends, as well as the potentiality for introduction of new products compatible with the improved production means after up-grading of labour skill and equipment. In this regard, the selection of a highly experienced expert or consulting firm is another crucial element needed for the successful issue.

Because of its mixed components, the formulation of a rehabilitation programme - which is not an easy task - should include :

* a checklist of the weak points of the factory,
* a plan of action with the detailed activities to be undertaken,
* a time schedule,
* criteria for performance appraisal,
* internal and external constraints.

Such in-depth diagnosis is usually performed by senior experts or multi-disciplinary teams, either free when provided by national or international co-operation organizations, or by contracting under the form described in the previous chapter paragraph 5.5. Their task is not restricted to the formulation of an objective appraisal of the plant and the means to change the situation. Their audit must check the

entire company including administration, financial aspects or down-stream and up-stream constraints.

Several issues are expected from that diagnosis.

* It will be a reference point for appraising the future performances.
* It provides to the entrepreneur an objective status of his company.
* It gives an estimate of the total cost for the rehabilitation.
* It is a draft for the final contract.
* It prepares the way for new negotiations.

2.4 Contracting phase

Two approaches are possible for contracting. One is to assign and entrust the same engineering or consulting firm to implement the plan of action, which avoids any complaints such as for incomplete or bad formulation or too ambitious objectives. The other is to start a bidding procedure and to negotiate, as has been previously explained. This depends of the size and type of rehabilitation to be performed and the amount of equipment to be purchased after the choice of appropriate technology, the scale required, and the level of sophistication have been made which are recommended in the plan of action. But all these contracts have in common the following ideas :

* Training of personnel must be foreseen at all levels as it has been described in detail previously.
* Top and middle managers must become responsible for the implementation of the programme in order to be self-reliant afterwards.
* Technical investment are generally limited.

* The action plan must be coherent, systematic and overall well coordinated.
* Regular checking of the results is imperative through progress reports on each objective.

Changing behaviour and motivation, as well as improving maintenance and product quality, takes a long time in the food industry and the contract should therefore be negotiated on a medium term basis with a possibility of yearly reformulation, if necessary.

CHAPTER VI

Example of Contract

Introduction

The example of contract given below has been elaborated, in the first instance, for explanatory purposes and should be viewed as a complement to the content of the previous chapters. At the same time, it serves to show how an international model form, as ECE 188 A, can be adapted to the agro- and food industry in the particular complex case of a turnkey contract.

Secondly, it has been felt that this example would demonstrate that a large project can be put down in legal terms and remain intelligible, not only for the project team, who participate in its elaboration, but also for other staff of the enterprise, who will be in charge of its implementation, or will have to face its follow-up, after production has started.

In addition to these general thoughts, it provides tangible samples related to the specific clauses described previously , such as how to establish and to formulate industrial and product specifications, inspection and control methods, training or mechanical guarantees, supply of spare parts and maintenance for agro- and food industry.

The structure of the supplier's duty for executing the project and making him fully responsible for that work, may also be analyzed as well as the description of the "aim" of the contract. It should be remembered that, in case of litigation, the trend is to consider this part of the contract as the overall binding clause. Before such extreme decision, intermediate steps and means exist for settling the matter of dispute such as :

- to renegotiate the contract,
- to ask for a technical expertise,
- to think at conciliation procedure,
- to try arbitration, which offers a competent and quiet frame.

As it may be, many formulations are possible. They depend less on the contractors than on the contract content, such as the nature of machinery or line to be purchased, the local resources available (raw and packing material, labour, infrastructure), the intended production and the coordination the contractors wish for the project.

The international context for food industry is in favour of splitting the main project components between the different best suppliers when possible, while "tied" export credit support gives an opposite obligation to group them under one single "umbrella" by integrating its different aspects, including local sub-contracts as shown in this example.

As a final remark, negotiators should keep in mind that no sample or model contract can be applied to a real case without substantial redrafting to take into account the specific circumstances related to the negotiation and the interests of the parties. There is wide consensus among practitioners that, although sample or model contracts are useful tools to facilitate drafting, each contract is unique and irreproducible.

EXAMPLE OF CONTRACT

MODEL Form for usual Technology Transfer
in the field of Food & Agro-based Industries
for machinery, production/packing line or processing plant.

CONTRACT

BETWEEN

"Foreign Co" hereafter (said) the Contractor "F"

AND

"National Co" hereafter (said) the Contractor "NAT"

FOR

THE TURNKEY SETTING UP OF A (xx) T/H PROCESSING PLANT
IN (DEV. COUNTRY)

WHEREAS

(A) The Buyer "NAT" wishes to enter in an agreement with Contractor "F" to supply all the requisite machinery, equipment, components and tools together with the spare parts, materials, engineering drawings and technical specifications as well as the training services and certain technical supervision personnel, required for the setting up, installation, testing, commissioning and initial operation of the Plant at an area, designated (xx), hereafter known as the "Plant Site", and ;

(B) The Contractor "F" declares that he possesses the required technical knowledge, personnel and facilities for the required purpose and that he is ready, willing and able to supply all such machinery, equipment, components, tools, spare parts, materials, engineering drawings and technical

specifications as well as all the training services and technical supervision personnel necessary to establish the Plant.

(C) The Buyer "Nat" and the Contractor "F" have had ... (The historical background of the negotiation and the long term prospects relating to the agreement are described in that paragraph as well as the motives of their future collaboration.

The Buyer "NAT" and the Contractor "F" hereby agree as follows :

1. **Aim of the Contract**

The aim and purpose of the Contract is to design and construct the necessary infrastructure and buildings at the Plant Site and to supply, assemble and install the necessary equipment and machinery as well as to train and assist personnel so that the Plant will be able to process fruits/vegetable/meat/... in accordance with technical specifications and standards of performance **set out in this Contract as Annex I** : "The Technical Specifications of the Plant" and **as Annex II**; "The Standards of Performance of the Plant".

2. **Responsibilities of Contractor "F"**

2.1 **Time Schedule and Procedures for Contract Performance**

(a) Within (x) days of the enforcement of this Contract, "F" shall provide "NAT" with (y) sets of designs, drawings, specifications, bill of quantities, documents and time schedule required for the preparation of the **Plant Site and the construction of the Plant buildings and infra-structures**, which shall include designs, drawings and specifications necessary for ground levelling, soil preparation, foundation work and road, water, sewage and electrical networks and

essential for the Plant Site, Plant Buildings, Plant Structures and Infrastructure.

The above designs, drawings, specifications and other documents shall be provided in such a manner as to facilitate their use as a basis for obtaining bids from local firms.

Upon approval of "N", the above designs, drawings, specifications and documentation shall be incorporated in this Contract as Annex III A : "Design and Specifications for Civil Work, Buildings and Infrastructure for the Plant and Plant Site".

(b) Within (...) days of the receipt of the designs, drawings, specifications and other documents referred to in paragraph (a) above, "N" shall provide the Contractor "F" with its approval or comments. In the event that "N" submits comments to the Contractor "F" and, if necessary, the Contractor "F" and "N" shall meet in (xxx) within (...) days following receipt of "N" 's comments, in order to reach an agreement for their finalization and their appropriate incorporation into the Contract as A nex III A.

(c) Within (...) days of the coming into force of this Contract, the Contractor "F" shall provide "N" with (x) sets of designs, drawings and specifications and a time schedule for the delivery of the individual items of machinery and equipment, their assembly, their installation and the operation of the Plant, as well as relevant information concerning the time required from ordering to shipment and delivery to the project site.

In additional, the Contractor "F" shall provide all necessary **explanations, descriptions and flow charts** in connection with the operation of the Plant.

(d) Within (x) days of the receipt of the designs, drawings and specifications referred to in paragraph (c) above, "NAT" shall also provide the Contractor "F" with its approval or comments.

After reaching agreement on the relevant designs, drawings or documents and for their finalization, they shall be incorporated into the Contract as **Annex III B** : "Design and Specifications of the Plant Machinery and Equipment and their Plant Assembly".

(e) On the basis of the agreed designs, drawings and documents in Annex III A , "N", in agreement with "F", shall immediately prepare the **tender documents** to be sent to the local firms as agreed to between them.

"N", in agreement with the Contractor "F" shall select the local firms and such sub-contracts shall be subject to approval by "F" (or signed by "F").

The Contractor "F" shall **supervise** and be responsible for the proper performance and execution of such contracts with the assistance of "N". All **payments to the sub-contractors** shall be subject to the control and approval of both parties.

f) Upon approval of the designs, drawings and documents incorporated into the Contract as Annex III B , "F" shall immediately execute all other

aspects of this Contract with respect to the supply of the equipment, machinery and materials necessary for satisfactory performance of the Contract.

In the same time, he shall submit a "Time Schedule and Work Performance of Contractor "F"'s Personnel at the Plant Site". This shall become Annex IV A of the Contract.

The Contractor "F" shall, upon approval of Annex III B as referred to above, also submit a "Time Schedule and Programme for Training and Quotation of Local Personnel at the Project Site and Abroad", which shall become Annex IV B of the Contract.

(g) The Contractor "F" shall provide "N" with progress reports on the execution of the Contract in a manner and at regular periods of time to be agreed upon between "N" and the Contractor "F".

2.2 **Testing of Machinery and Equipment before Shipment**

(a) It is expressely agreed in the contract, that "NAT" is entitled, or his designate representative(s), to be present at tests carried out or arranged by the Contractor "F", as well as to perform inspection and checking at the place of manufacturing of the equipment.

(b) The Contractor "F" shall notify "N" of the progress of the manufacturing of the equipment so that such inspections or tests can be carried out as may be required in order to insure that the materials and/or services are in conformity with the requirements of this Contract.

(c) "N" shall notify to the Contractor "F" any objection which he may have in respect of any equipment which has been inspected (and/or tested). He has the right to reject any such equipment which is not in accordance with the relevant specifications. In this event, the contractor "F" shall repair or replace the defective equipment at his own cost and expense.

2.3 **Certification of Machinery and Equipment**

(a) All machinery, equipment and materials shall be accompanied by a certificate of origin and certified as factory new.

(b) The Contractor "F" shall ensure that all machinery, equipment and materials meet the standards and regulations of E.E.C., in particular with respect to security in general and electric, steam, sewage, water, compressed air networks as well as civil works and buildings.

2.4 **Elements needed for Plant Commissioning and Operation**

(a) **Commissioning Spares**

The Contractor "F" shall supply with the Plant machinery, equipment and materials, a quantity of spares sufficient for the initial commissioning of the Plant.

(b) **Normal Wear and Maintenance Spares**

(1) "F" shall supply with the Plant machinery, equipment and materials, a quantity of normal wear and maintenance spare parts

sufficient for the first (or two) year(s) of Plant operation.

(2) Before shipment of the machinery, equipment and materials, "F" shall submit descriptions and catalogues for spare parts manufactured either by himself or other manufacturers. In order to facilitate future orders, the Contractor "F" shall provide appropriate reference numbers or code numbers for each spare part.

(3) "F" also undertakes that spare parts, if required, shall continue to be available to the Plant operator during the life of the Plant at reasonable terms and prices.

(c) **Consumables**

"F" shall inform "NAT" of the specifications, including equivalent brand names, and quantities of all consumables materials, such as lubricants, flushing oils, hydraulic fluids and chemicals which, based on his experience, are required as initial filling during the no-load tests, commissioning and performance tests and for normal yearly operation.
This information shall be provided so as to enable the Plant Operators timely procurement of these materials.

2.5 **Packing, Shipping and Insurance of the Goods**

(a) The Contractors "F" shall pack and mark the goods before shipment in accordance with the highest standards of the trade and arrange shipment as set out below.

(b) "F" shall prepare and furnish to "NAT", two (2) weeks before shipment, a shipping schedule showing the breakdown of the Goods into various consignments with approximate weights and dimensions and the respective dates upon which such consignments shall be ready for dispatch from the point of manufacture.

This schedule shall take into consideration the logical sequence required for the plant construction.

(c) "F" shall insure the Goods during their shipment to the Plant site and thereafter until the packing crates are opened in the presence of "NAT" and "F" 's representatives, against all risks of loss or damage from any cause other than inherent deterioration or defect.

Such insurance shall be with a reputable acceptable insurance company and shall be in the name of "F" and "N" in their respective rights and interests.

(d) "F" shall, in respect of each shipment of the goods, submit shipping documents, namely :

i) Clean on-board ocean bill of lading and/or other waybill(s) or transport document(s) ;
ii) insurance policy ;
iii) certificate of origin ;
iv) commercial invoice ;
v) packing list.

(x) sets of the shipping documents (including one original set) shall be submitted to "NAT", at least (x) days (or weeks) before the

arrival of the goods at the point of entry into the project area.

(e) "F" shall be responsible for costs, fees and charges in respect of the export and transit of the goods, but not for customs duties, taxes or license fees in the project area, which are the responsibility of "NAT".

"F" shall also obtain, at his own risk and expense, any export license or other Governmental authorization necessary for the export of the goods.

(f) Storage of the goods on arrival at the Plant Site is the responsibility of "F".

(g) Loss or Damage in Shipment or Storage. In the event of loss or damage to any of the goods during the periods of shipment or storage, the Contractor "F" will promptly replace or repair such goods, by whatever means of transport or personnel services which seems the most suitable and reasonable in the circumstance.

The delay which may occur from such loss or damage shall noy exceed (...) days.

2.6 Visit to Plant Site

The Contractor "F" shall visit the Plant site and ascertain all conditions and information pertaining to his work. No claim on the part of "F" arising from the non-fulfillment of the above shall be entertained. "F" shall also be deemed to have ascertained national standards and regulations, which may affect his design and schedule.

2.7 **Contractor's Personnel for Construction, Testing and Commissoning of the Plant and Local Training**

(a) Through the personnel to be provided by him, "F" shall remain responsible for assembling the machinery and equipment, for the construction of the Plant in general and also for the commissioning and performance testing as well as the initial operation of the Plant for (xx) months after its start-up, as specified in Annex II.

(b) Such personnel shall be sufficiently qualified and experienced. "F" shall furnish "NAT" with particulars of their qualifications and experience within one month of the date of their departure.

(c) The personnel shall arrive in the Project Area at the appropriate time or times for the assembly and construction work in accordance with the time schedule.

(d) **Local Training**

During their stay at the Plant site, "F" 's personnel shall also provide on-the-job training for local personnel in the assembling, maintenance and operation of the Plant.

The programme for this local training shall be as agreed between "F" and "NAT" as set out in Annex IV B.

(e) **Pre-Commissioning (No-load) Tests and Quantity check**

The Contractor "F" shall be responsible for the pre-commissioning testing (without load) of each item of the machinery and equipment after its installation. Such testing shall be done after reasonable prior notice to "NAT" and such representative as may have been designated by him for this purpose as specified in Annex II.1, 2 and 3.

(f) **Readiness for Performance Tests**

Upon completion of the Plant construction and of the no-load tests, "F" shall notify "NAT" of the Plant readiness for start-up and of the dates for commencing the performance tests in order to establish the Plant guaranteed performance in accordance with the procedure given in Annex II.4

2.8 **Performance Tests**

The conformity of the Plant and products shall be established by performance tests and trials conducted under the supervision and control of "F" by operating the Plant in accordance with the procedures and specifications set out in Annex I and Annex II of the Contract .

2.9 **Performance Guarantee**

The Contractor "F" guarantees that the same performances and results will be provided by the Plant installed and commissioned by him, in accordance with the specifications, instructions, operating manuals and other recommendations furnished by him as provided in Annex I (Technical Specifications) and Annex II (Standards of Performance).

2.10 Failure to achieve Performance Guarantee Remedial / Measures / Compensation

(a) If the performance warranted under Annex II is not reached as foreseen, then (unless the failure is due to factors outside the responsibility of the Contractor "F"), "F" shall at his own cost and expense, correct, modify or change any faulty engineering performed by him and shall, either by repair or replacement, correct, modify or change any faulty machinery and equipment supplied by him to the extent necessary for reaching the required standards of performance guaranteed by "F".

(b) After execution of these corrections, modifications, changes, repairs and/or replacements, which shall be carried out without delay, a new set of performance tests shall be performed in conformity with the agreement of the parties as foreseen under Clause 2.08.

(c) If any failure of the agreed conditions foreseen under Clause 2.09 to meet the stipulations of Annex II cannot be rectified by remedial measures and eliminated in further tests within the periods of (...) days/month, an extension of time may be agreed as needed, or "NAT" may hold the Contractor "F" in default under Clause 5.07.

2.11 Mechanical Guarantee

The Contractor "F" guarantees that the machinery, equipment components, tools supplied by him or his sub-contractor(s) and/or supplies under this Contract,

shall be new and free from defect in workmanship, materials and design.

Within a period of (24) months from the date of the Certificate of achievement, "F" shall repair or replace at his own expense and as soon as practical, any of the machinery, equipment or tool which proves to be defective as mentioned above.

Damage caused by improper operation, contrary to the Contractor "F" 's instructions, or by negligence or lack of proper maintenance on the part of the Plant Operator shall not be covered by this guarantee.

2.12 **Patents Rights**

(a) The Contractor "F" declares that no protective rights of third parties which might be infringed by the construction or operation of the Plant.

Should, contrary to "F" 's expectation, claims be raised against "NAT", "F" shall hold harmless "NAT" and the Plant Operator shall indemnify them to the full claims.

This obligation of the Contractor "F" shall continue to be in full force and effect up to the expiration of such protective rights.

"NAT" shall give "F" due notice in writing of any charge of infringement brought against him.

2.13 **Services provided by the Contractor "F"**

Except as otherwise stipulated in this Contract,

the Contractor "F" shall provide all the facilities and services required by his personnel for the execution of this Contract.

Expenses of every kind incurred in connection with such personnel, shall be solely for the account of "F". Such expenses shall include, but not be limited to, the cost of wages, housing, food, travel, medical attention and personnel insurance.

2.14 Contractor "F" 's General Responsibility

In addition to the machinery, equipment, components, tools, spare parts and materials and the complete engineering and technical services, including equipment and engineering drawings and the technical personnel required as described in this Contract and its Annexes, the Contractor "F" shall supply such other equipment and spare parts and provide such other engineering and technical services and personnel which, while **not specifically provided for here under, are implied by generally accepted professional standards**.

2.15 Standards of Work

The Contractor "F" shall exercise all reasonable skill, care and diligence in the performance of the work here under and shall carry out all his responsibilities in accordance with generally accepted professional standards.

2.16 Training Abroad

The training of the Plant Operator personnel abroad as provided under Annex IV B. The training programme shall :

(a) be arranged and paid by the Contractor "F", who shall also meet the cost of their board and their lodging and local transport in the country of training as well as their international air tickets from the Project Area and return ;

(b) be in such functions relative to the Plant as the Parties shall agree in writing.

2.17 **Reports**

The Contractor "F" shall submit to "NAT", the following reports, in English (or French, Spanish, ...) language.

(a) **Progress Reports with Invoices**

(b) **Training Reports**, on-the-job and abroad; as in annex IV B

(c) **Commissioning Reports** required under clause 2.09, not later than 3 (or 4) weeks thereafter together with the certified results of the running test(s).

(d) **Final Report** covering the work performed at the Plant Site (and abroad, if any) after the Plant commissioning. It shall be submitted after the expire of the period of mechanical guarantee and due fulfillment of "F" 's obligations under the guarantee.

3. **Assistance to be provided by "NAT"**

"NAT will do its almost efforts to arrange for the following :

3.1 **Approvals and Permissions**

All approvals, authorization, visas, work permits, import licenses and other clearances which

are required in the Project Area for the fulfillment of this Contract, and exemption from all taxes and final duties in the Project Aera in respect of local rules.

3.2 **Customs Clearance**

The clearance of each shipment of the goods through Customs at the port of arrival in the Project Area, and the payment or exemption of customs duties and charges in respect thereof.

3.3 **Responsibilities of "NAT"**

The Contractor "F" has entered into this Contract on the basis of "NAT"'s undertaking to assist him in requesting bids and quotations, and for the selection of firms to undertake sub-contract work for local civil works and construction as more specifically set out in clause 2.01 above.

4. **Contract Price and Conditions of Payment**

4.1 Currency = foreign or local, exchange rate, restrictions when they exist.

4.2 In full compensation, for the satisfactory performance of this Contract, the Contractor "F"shall receive total payments not to exceed (000,00 $) U.S. Dollars. Such payments shall be made in accordance with the following schedule and modalities.

4.3 Payment

(a) **Upon signature** of this Contract by both parties and subject to the receipt by "NAT" of "F"'s proforma invoice in triplicate, a payment on account of (000,00 $) U.S. Dollars.

(b) Subject to the satisfactory performance of the time schedule and the receipt by "NAT" of "F" 's proforma invoice in triplicate a payment on account of (000,00 $) U.S. Dollars as of 199x.

(c) ... etc ...

(d) Upon Satisfactory completion of the contract, including the provent performance of the plant as provided under clause 2.08 and receipt of the Commissioning report, a final payment for all services and supplies provided by "F", an amount of (000,00 $) U.S. Dollars.

5. **General Provisions**

5.1 **Entry into effect** : This contract shall become effective upon signature by both parties.

5.2 **General Conditions** :

5.3 **Notices** : Any notice shall be given in writing.

5.4 **Default by the Contractor "F"**

In case the Contractor "F" fails to fulfill his obligations and responsibilities under this Contract, and provided "F" has not remedied such failure(s) in due time. "NAT" may, as its sole option, and without prejudice to its right, to withhold payment(s).

When "F" is thus in default, "NAT" may, by written notice to"F", terminate the Contract as a whole or such part (or parts) relative to "F" 's default.

Upon such notice, "NAT" shall have the right to seek

completion, at "F"'s expense, of that part (or those parts) of the Contract relative to "F" 's default.

In this case, "F" shall be solely responsible for any reasonable costs of completion, including such costs which are incurred by "NAT" over and above the originally agreed Contract provision stipulated here in.

5.5 **Settlement of disputes**

(a) If the Contractor "F" considers any work requested by "NAT" to be outside the requirements of this Contract or considers any ruling by "NAT" to be unfair or contradicting the stipulations of this Contract, he shall upon such work being requested, or such ruling being made, ask "NAT" for a written instruction or decision without delay.

(b) Unless otherwise agreed, the Contract shall be governed by the law of the Vendor's country.

(c) Any dispute arising out of, or in connection with the Contract, shall be finally settled by arbritration without recourse to the Courts. The procedure shall be such as may be agreed between the parties.

5.6 **Contract Amendment**

No modification of, or change in, this Contract, or waiver of any of its provisions, or additional contractual relationship with the Contractor "F" shall be valid unless approved in the form of a written amendment to this Contract, signed by "F" and "NAT".

5.7 **Notices**

All notices which are foreseen by this Contract or which may affect the rights or obligations of either party to this Contract, shall be given in writting and delivered by registered mail, telex, fax or in person to the addresses given below:

(i) To the contractor "NAT, PO.BOX ..."

(ii) To the contractor "F" PO.BOX ..."

5.8 **Cases of Reliefs**

5.9 **Limitation of damage**

5.10 **Language(s)** in which the documentation shall be drawn up

IN WITNESS WHEREOF, the parties hereto have executed this Contract.

Signature F	Signature NAT
by	by

AIDE MEMOIRE OF THE ANNEXES

Some of the following Annexes are to be completed after signature of the contract and incorporated as an eventual part of it. The relevant clauses of the Contract are cited after each Annex listed.

Annex I	The Technical Specifications of the Plant
Annex II	The Standards of Performance of the Plant
Annex IIIA	Designs and Specifications for Civil Work, Buildings and infrastruture for the Plant and Plant Site (to be Completed according clause 2.01.a and b)
Annex IIIB	Designs and Specifications of the Plant Machinery and Equipment and the Plant Assembly (to be Completed according 2.01.c and d)
Annex IVA	Time Schedule and Work Programme of Contractor "F"'s Personnel at the Plant Site (to be Completed according 2.01.f)
Annex IVB	Time Schedule and Programme for Training and Orientation of Local Personnel at the Project Site and Abroad (to be Completed according 2.01.f)
Annex V	Indicative Itemized Costs of Turnkey Forfeit Priced Contract
Annex VI	2 years mechanical guarantee

ANNEX I

THE TECHNICAL SPECIFICATIONS OF THE PLANT (EXAMPLE)

MAIN OBJECTIVES

The processing lines will **simultaneously produce:**

a) pure natural 1st quality of ...,with natural and pure colour, mostly grade (x).

b) Concentrated of ... at (xx) Brix meeting the usual international trade standards.

c) A great flexibility is requested and must be demonstrated when several crops are overlapping.

d) In **inter-season**, packing of these products (or others) will take place as well as (and/or) treatment of ... at a later stage.

The following **options**, quoted by the contractor "F", will be considered at a later stage. For all these cases adequate space and design shall be foreseen specifically now.

RAW MATERIAL

They are stated to have the average characteristics as shown below and splitted as follows : ...

...

...

Variation in these percentages may be + (...) %.

Fruits, vegetables ... contain at least (...)% dry extract. These raw materials are foreseen to be delivered in bulk (or boxes) by truck (or pick up in the fields) ; pallet boxes may

also be foreseen at a later stage and adequate space and bridging possibilities should be integrated into the present design.

WORKING TIME

1, 2 or 3 shifts of 8 hours daily ; (or) the plant must be designed and guaranteed able to process on 2 (or 3) shifts, by continuous work, up to (x) weeks of 6 days during the glut season.

CAPACITY

Although the processing capacity is basically designated at (...) T/hour, the specific capacity of these lines should be taken in to account.

- reception of raw products 00 T/h
- unloading of raw products 00 T/h
- feeding the preparation line 00 T/h
- feeding the extraction line 00 T/h
- treatment line 00 liter/h
- concentration line with kg evaporated water/h capacity
- Aseptic filling line 000 kg/h
- by-products recovery line 000 kg/h
- waste evacuation line 00 T/h
- water supply 00 m3/h
- electric power plant 000 KW

These figures are **average values** and shall not be considered as maximum. They are foreseen for each item depending on its condition of work as far as conveyor, filter, grader, etc... are concerned.

PROCESSING EQUIPMENT

Only specifics and/or particularities are given. They are either confirming the standard and general description still

existing in the contractor's offer, or coming in addition to them.

* Weigh bridge : load 30 T
  precision 10 kg
  electronic device, reading screen
  micrometric adjustment of transmission ratios
  security device
  tickets printing device for records

* Product washing : water recycling with filtering system,
  detergent dosing device,
  chlorine addition system.

* Sizer for (x) sizes with return belt for excess fruit with automatic belt cleaning
  system and discharge chute for over or under sizes of fruit (or vegetable).

* Juice preparation unit :
  In order to allow the production and filling of juicy or pulpy drinks, nectars, soft drinks made from natural fruit juices or from concentrates of fruits. It shall include at least a sugar dissolution unit with automatic dosing group, water softener, plate heat exchanger and homogenizer inside a closed space for hygenic purpose.

* Filling unit :* type : Cans, bottle, carton PACK, ...
  * sizes :
  * product :
  * CIP for the filling network :
  * cooling system :

* Solid waste removal : Double silo, allowing to discharge normal truck loading (20 T) alternatively.

* Fire fighting : in line with European common practice and

security regulations or standards.

* Sanitation : Particular care shall be given for mosquito/insect destruction, inter alia with fixed nets on outside windows, insect - captors above the processing lines, easy to clean surfaces, etc...

* Steam block :
  - production 000 kg/h
  - pressure
  - rated capacity 000 Kcal/h
  - conventional thermal efficiency (...) %
  - safety accessories according to current regulations
  - fully automatic heavy oil and/or gasoil burners
  - preheating system if heavy oil
  - automatic water softener
  - oil storage capacity for (...) full working days.

* Steam and condensated water network : according to the current international regulations.

* Water shall be split into 2 (or 3) networks,
  - one for drinkable water for offices, laboratory, juice preparation, etc,
  - another with specially treated water suitable for processing requirements after extra chlorination (> 50 ppm) and anti-encrustation.
  - sometimes a separate fire flighting networks.

* Liquid waste evacuation shall be split into separate networks:
  - Sceptic system for personnel use
  - Waste water suitable for irrigation
  - dirty or fermentescible sewage with treatment station/decantation pounds/storage tanks, etc...

* Coldstore: at ('x) to (y) degrees centigrade ;

size 00 m2 at ground level with 0.0 m height.
A drawing must show its good internal organization with security and space control as well as space for forklift trucks to manoeuvre, etc...

* **Civil work & Infrastructure**

1) **Top Soil** must be removed from all working areas (buildings, roads, parking areas, etc...)

2) **Embankments** : Only suitable material from excavation shall be used for embankment.

3) **Drainage Channels** : Rain water must be collected and conveyed by gravity through concrete covered or open channels to a collection basin or drained to adjacent fields, separately from waste water.

4) **Roads and Parking Areas** must have improved sub-base material, 25 cm base- coarse and 2 x 5 cm layers of asphalt and hardened surface will be carried out where the working conditions are strong: loading and unloading area, forklift traffic zone, ...

5) **Sewage** from toilet and showers should be conveyed through P.V.C. pipes and manholes to an aseptic tank located outside the processing building(s) and at a good distance from the wells.

6) The Contractor "F" shall provide **detailed drawings** of construction, size and location of all underground utilities lines such as waste water from the plant cables, pipes, etc...

* **Buildings**

1) **Foundation of Main Building:** The soil bearing capacity

should be investigated at different levels to determine the depth, size and kind of foundation to be installed to support the super-structure.

2) The design of super-structure of the buildings should conform with sound engineering practices and should be in accordance with the relevant international standards specifications.

The steel frame work and steel covering panels should be designed according to :

a) Basic wind speed : ... km/hour;
b) Roof load : ... kg/m2.

3) Separate closed Warehouse for consumables, sugar, packing material bags, etc... with capacity based on several months stock

4) Open shelves for drums boxes, etc...

5) Handling equipment
- electric forklift with battery and charger as well as additional spare battery
- load capacity 1000 kg at 0,0m
- elevation height 0,0 m
- load protection grid.
- electric transpallet
- manual transpallet
- plastic boxes, box-pallets, pallets, etc. for raw product collection.

ANNEX II

1. QUANTITY CHECK

As soon as each line, or unit, is assembled with the equipment and when the Contractor "F" considers that it is possible, a written notification thereof is given to the buyer "NAT". Within 7 (or 10) days following its reception, the quantity check will be started, line by line (or by entity) according to their technical specifications and description given by the Contractor "F".

The corresponding quantity checking report will be drawn-up by the Contractor "F" and will be signed by him and the buyer.

If "NAT" fails to send a representative to participate in the checking as mentioned above, the Contractor "F" will proceed with the checking on its own, but shall send one copy of the checking report to "NAT". In the second case, the contents of the report shall not be disputed.

2. NO-LOAD TEST

With prior written notice, as said before, "NAT" shall be informed of the start of no-load test(s) for each line or entity, in order to be able to appoint a representative.

1 or 2 weeks after reception of this notification, no-load test(s) shall be started and performed according to the normal technical procedure for this type of operation.

Quantity check and no-load test(s) are suggested to be done at the same time and the later notification condition should apply.

3. NECESSARY INFORMATION AND DOCUMENTATION

After satisfactory quantity check and no-load tests on the different lines and entities of the factory, the Contractor "F" shall notify "NAT" in writing 1 or 2 weeks in advance that the plant is ready for acceptance test runs. However two months prior to these tests, the Contractor "F" will have prepared and handed over through "NAT" to the local responsible staff, management guide manuals and written instructions covering standards and system of procedure for operating machines, lines and all other equipment (start, stop, run, maintain and repair).

These informations shall cover the following :

3.1. Specifications for good processing, quality and maintenance, all designed to maintain optimum operating conditions and to obtain top quality products ;

3.2 A laboratory testing hand book including quality control procedures for raw materials, processing control, processed products, sampling methods, etc...;

3.3 Machine maintenance schedules, spare parts inventory, machine layouts or descriptions showing all the references needed for ordering items, which break down, or for purchasing spare parts to be replaced as well as manufacturers references, codes and addresses.

3.4 All diagrams, lay-outs or drawings needed in case of failure, extension or improvement of the distribution networks (water, power, compressed air, waste, cooling system, etc...) as well as of buildings and civil work.

3.5 Guidelines and instructions for cleaning and preparatory work before starting the processing lines as well as alarms and safety systems.

3.6 Mechanical books and operating manuals for the main items.

3.7 Index of all documents.

4. PERFORMANCE TEST

One set of performance tests shall be conducted for each raw material and indicative forecast periods shall be given for them.

For each product, separate production tests shall be conducted at the level forecasted in annex 1, but one final run must also show that the whole plant works normally when fed at 00 tt/h. This control of the processing data will cover a period of 1 or 2 production days, starting from the moment the plant produces the first satisfactory end products.

Usually "N" supplies, at its own expense, the power, lubricants, water, fuel, raw products, packaging and all material to be used during the performance test runs even for adjustments and possible repetition of tests.

He also supplies, at his own expense, the required skilled and unskilled labour to be employed under the supervision of the Contractor "F" for these tests.
He benefits from free training during that time.

The Contractor "F" provides sufficient notice to "NAT" of the above requirements

If during test runs, any piece of equipment is stated

defective or fails, the Contractor "F" will have to come up with a suitable solution within the shortest possible time. In this event, "N" is entitled to ask for another test run, if the prior test has not been successfully completed.

If any portion of the plant fails to pass the test and/or does not meet the expected performance(s), it has to be repeated within a reasonable time upon the same terms and conditions, unless otherwise agreed.

Partial test run(s) shall be performed during a period of seven (7) hours during which full capacity must be obtained at least during four (4) hours. The average performance will be calculated for one shift by deducting the time needed for starting and cleaning, but including all stops which are not relevant to inadequate, raw materials.

Should the operational tests be interrupted due to failure of raw material or damage caused by "NAT", the Contractor may refund the losses for additional travel and lodging expenses suffered by him.

If a performance test cannot be carried out because of lack of materials or its non conformity with standards given in annex I, "NAT" and the Contractor "F" will consult together to reach an agreement as to how to carry out the test in question.

Upon the satisfactory completion of each acceptance test run, a certificate entitled "Acceptance of the processing line(s) ... for ... "will be drawn-up by the Contractor "F" and signed by both parties. The period of mechanical guarantee for the corresponding line(s) will then start.

The date of delivery of the last test certificate is normally defined as the date of commissioning the factory.

5. GUARANTEED PERFORMANCES

The Contractor "F" shall guarantee the following (for instance) :

- A basic processing capacity of ...t/h of raw material as specified in Annex I.
- First Grade product with extraction yield over 00.0 %, subject to the supply of sound raw material with less than 10 % of discarded raw product.
- Net water consumption shall be 00 m3 / working hour.
- Filling and packing capacities of 0,000 units/h.
- Finished product shall meet the following commercial standards concerning such parameters as density, refratometer ratio, Brix, rotation power, humidity, salt contain, ashes, etc...
- Absence of ferments (Yeast, Mould, Aerobic or Anaerobic germ,...) shall be demonstrated as well as good taste and colour being preserved.
- These quality controls shall be made by suitable methods of sampling and analysis as provided by international recognized organizations such as :

FAO	Codex Alimentarius Commission in Italy
IFJU	in Switzerland
AOAC	in U.S.A.

- The different components of the factory shall allow work in accordance with the Recommended International Code of Hygienic Practice for fruits and vegetable daisy and meat or fish products (Ref n° CAC/RCP 2-1969) and the General Principles of Food Hygienic (Ref CAC/RCP 1 - 1969 Rev. 1).

- Standards taken into consideration will be those of the International Organization (I.S.O), 3 rue Varembe, 1211 Geneva, Switzerland.

ANNEX III

A) Design, drawing, bill of quantities, specifications documents and time schedule shall be required for :

- the preparation of the site and civil work
- the construction of the buildings
- general infra-structure.

B) Design, drawings, specification, time schedule for delivery, installation layout, flow shart and description of machinery and equipment, as well as how assembling shall also be asked for.

ANNEX IV

A) Time schedule and work programme of Contractor "F" 's personnel at the project site.

B) Time schedule and training programme of national personnel abroad and at the project site for :

- top staff
- technical staff and foremen
- specialized labour

ANNEX V

INDICATIVE ITEMIZED COSTS OF A FORFEIT PRICED CONTRACT

When the contract is of large extent, it is wise to have a basic breackdown to refere to, whithin the agreed forfeit price. In case of political disturbance or force majeur, the settlement of the situation is then easier and simplified.

MODEL FORM

Civil work	000 $
Workshop (maintenance)	000 $
Industrial buildings	000 $
Laboratory (quality control)	000 $
Office housing	000 $
Coldstore & warehouse	000 $
Staff housing	000 $
Handling equipment	000 $
Sub-total	00,000 $
Office furniture	000 $
Spare parts	000 $
Silo + Production	000 $
Sub-total	**00,000 $**
Raw production treatment	000 $
Extraction line	000 $
Transport	000 $
Sterilization unit	000 $
Insurance	000 $
Filling/packing line	000 $
Expatriate expenditure	000 $
By product treatment	000 $
Training cost	000 $
Waste removal unit	000 $
Setting-up	000 $
Sub-total	**00,000 $**

Starting cost	000 $
Sub-total	00.000 $
Steam unit	000 $
Electric network	000 $
Water network	000 $
Compressed air network	000 $
Cooling unit	000 $
Sub-total	00,000 $
GRAND TOTAL	0,000,000 $

ANNEX VI

2 YEARS MECHANICAL GUARANTEE

1. In the event of failure of any of the items of machinery or equipment, as well as any of the parts of it, as a result of defects in the material workmanship or installation, the Contractor "F" undertakes to replace the same without delay.

2. Where repairs to the defective machinery and equipment are possible and in the overall interest of the Factory, the Buyer shall not refuse permission for such repairs to be carried out by the Contractor "F", provided that, after the repair of the defective part or parts, the mechanical performance of the said machinery and equipment will be preserved.

3. The above mentioned responsibility is limited to the mechanical defects, which appear during the period known as "the mechanical guarantee period" as specified in Article 2.11 .

4. In order to exercise its rights, the buyer must notify the Contractor "F" by registered letter with acknowledged receipt? and without delay? of the defects which appear and give the Contractor "F" facilities for inspecting them and repairing them at the Contractor's expense.

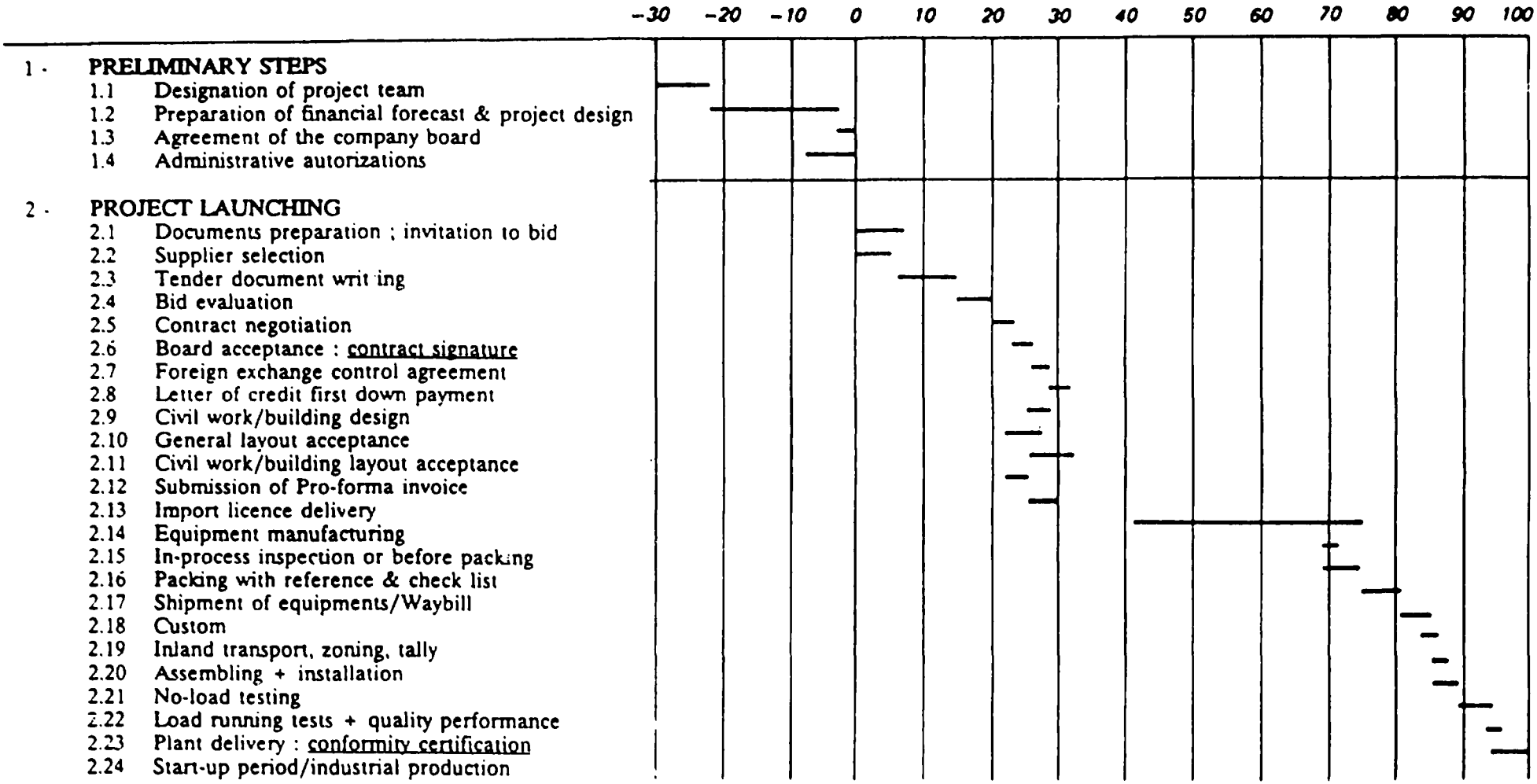
5. The defective parts replaced in compliance with the terms of this Article will be handed over to the Contractor "F".

6. If the Contractor "F" refuses to fulfill its obligations pursuant to this Article or fails to act immediately after notification, as referred to in paragraph 4 above, the buyer may carry out by itself, or through others, the necessary work at "F" 's expense and risk, provided that the work is carried out correctly.

7. The responsibility of the "F" does not extend to the defects resulting from of products used by the buyer or from modifications made to the equipment or operation or maintenance repairs which do not comply with the instructions given by the "F".

8. The guarantee does not cover normal wear and tear or damage coming from electro-mechanical, atmospheric or "force majeure".

ANNEXES



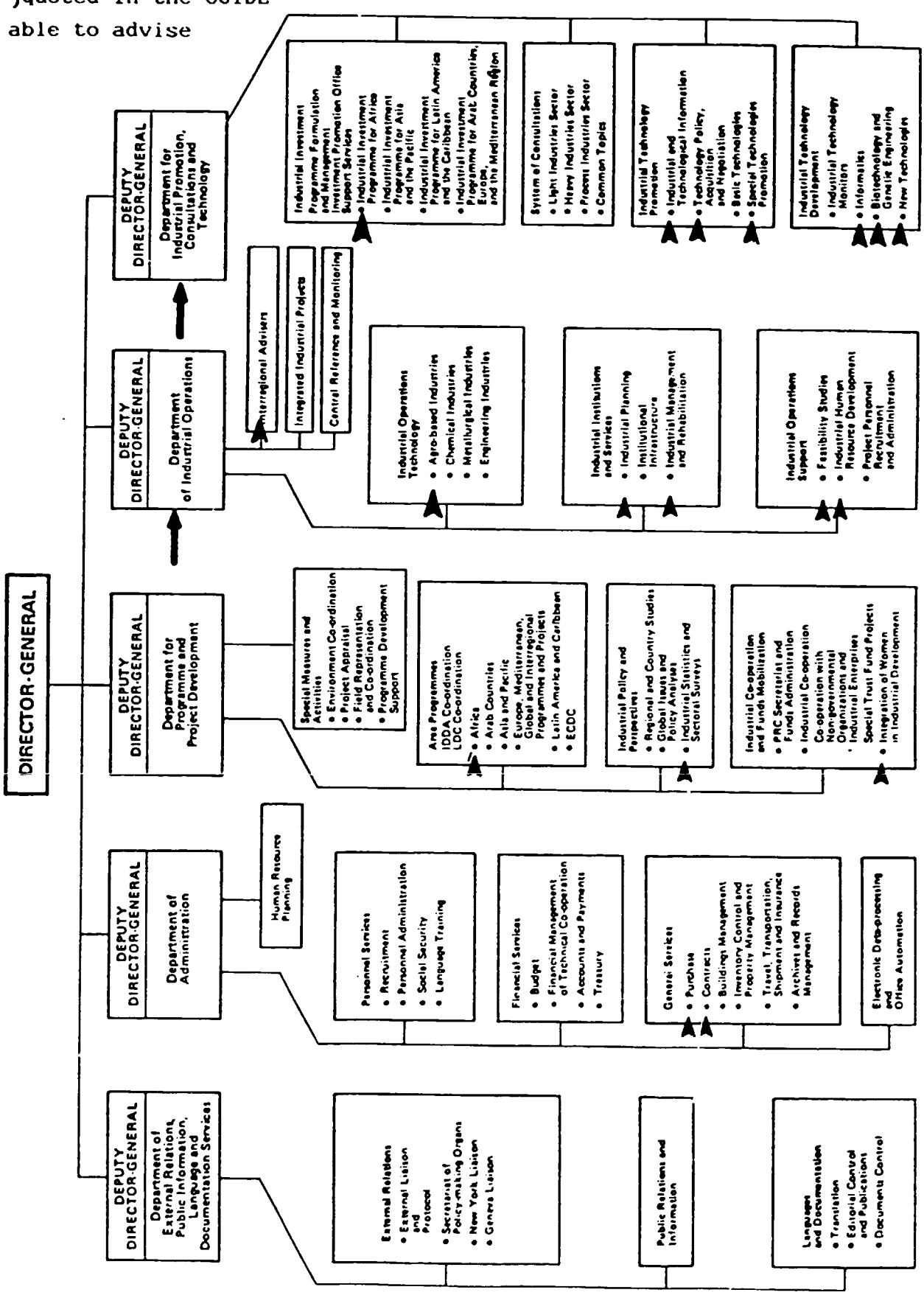
TIMING FOR AN ENTIRE PROJECT

Annex 2

UNIDO ORGANIZATION CHART

as at 1 December 1990

→ quoted in the GUIDE
➤ or able to advise



Annex 3

Average Capacity Utilization in african Agro - & Food Industries

Survey based on a pannel of factories recorded in African ACP states

Section	Number of plants	Activity level		
		Acceptable	Insufficient	stopped
Sugar	32	5	19	8
Oil & Fats	48	1	31	16
Cereals	33	4	26	3
Canning (fish, fruit & vegetable)	33	5	16	12
Beer & Soft drinks	43	25	14	4
Dairy product	15	7	5	3
Textile	47	2	33	12
Wood	33	12	18	3
TOTAL	284	61	162	61
%	100%	21.5%	57%	21.5%

Acceptable does not mean blooming entreprises ; they may reach that level of activity through public subsidies or foreign aid.

Insufficient may relates to viable , well equiped production units facing various restrictions or too limited markets.

Stopped because without work or needing a rehabilitation

Note : no developed country is using its industrial sector at 100 % : failures exist also.

Source : EEC by G. EGNELL : Partenariat industriel avec l'Afrique

Annex 4

Influence of ownership in Agro Industry

Survey based on a panel of factories recorded in African ACP states
The conclusion to be drawn from this figures are only indicative

Investigated Sectors	Production capacity : Utilization					
	Acceptable (over 70 %)		Insufficient (about 50 %)		Stopped or closed	
	A	B	A	B	A	B
Fruit & vegetable	0	2	-	9	?	?
Canning	0	3	-	7	-	-
Fish canning	2	1	2	7	1	2
Sugar	0	1	14	10	1	3
Oil & Fat	1	22	1	9	0	0
Beer & Soft drinks	1	2	4	21	2	3
TOTAL	4	31	21	63	4	8
Refering to A	14 %		72 %		14 %	
Refering to B	30,4 %		62 %		7,6 %	

A = state owned unit 29
B = private owned unit 102

131

Source : EEC by Gérard EGNELL = Partenariat industriel avec l'Afrique

Annex 5

Sectorial diagnosis of failure

It may be interest to look at difficulties encountered in the past or remaining in each agro-industrial sector. They may contribute to stress the relative importance of the various insuccessfull factors or failure and consequently the care to be payed at during the negotiations period.

	Sugar	Oil + Fats	Milling + Feeds	Canning	Beer + Soft d.	Dairy	Wood
Project preparation phase							
. Not economically viable	⊕		○	○		●	
. Bad location		○		○		○	
. Wrong technical conception	⊕		○	○	○	⊕	○
Project implementation phase							
. Foreign contractor failure	○	○	○				
. Local subcontractor failure	○					○	
. Too low infrastructure	⊕	○	○	○	⊕	○	○
Production phase							
. Maintenance	●	●	⊕	●	○	⊕	●
. Marketing	⊕	○	⊕	○	○	○	●
. Administration or financing	⊕	●	●	○	⊕	⊕	○
. Raw material	⊕	⊕	⊕	●			

Some sectors, such as Sugar are facing many problems : their case is complex and more difficult to deal than "bottling" or "dairy". The importance of maintenance is again obvious : strong selection of equipment easy to maintain is vital.

○ Marginal and/or less frequent cause

⊕ Importante and/or frequent cause

● Primary and/or generally stated in that sector.

Source : EEC by Gérard EGNELL : Partenariat industriel avec l'Afrique

Annex 6

INTERNATIONAL PROFESSIONAL ORGANIZATIONS

related to the Agro & Food Industry

(Sample list for EEC countries)

Essential oils sector

. SNIAA : Synsicat National des industries Aromatiques Alimentaires, 89 rue du Faubourg Saint-Honoré, 75370 PARIS cédex 08, Tel. 42.65.09.65 (France)

. Association des Ingénieurs et Techniciens de la Parfumerie, Hôtel Beausoleil, O6130 GRASSE (France)

Oil & Fats sector

. Fédération de l'Industrie de l'Huilerie de la C.E.E., 83 rue de la Loi, 87 1040 BRUXELLES, Tel. 230.31.25 (Belgium)

. Association des Industries Margarinières des Pays de la C.E.E., 83 rue de la Loi, 87 1040 BRUXELLES, Tel. 513.54.40 (Belgium)

. Association du Négoce des Huiles et Graisses Animales et Végétales et Dérivé, de la Communauté Européenne, Westersingel 43, ROTTERDAM, Tel. 113.115 (Netherland)

Milling, grits & Pasta sector

. Groupement des Associations Meunières des Pays de la C.E.E., 19 rue de l'Orme, BRUXELLES, Tel. (32)2.734.12.40 (Belgium)

Rice Sector

. Industrie de l'Amidon de Blé de la C.E.E., BONN (FRG))

. Commission Internationale du Riz (F.A.O. Office), ROME (Italie)

. Comité de Liaison des Amidonneries de Riz de la C.E.E., BRUXELLES (Belgium)

. Groupement des Associations des Maizeries des Pays de la C.E.E, "Euro-Maiziers", 75 PARIS (France)

Bread, Biscuits & Dietetic sector

. Association des Industries de Produits Sucrés de la C.E.E., 55 rue de la Loi, BRUXELLES (Belgium)

Sugar & Alcohol sector

. Union Européenne des Alcools, 182 avenue de Tervueren, 1.150 BRUXELLES, Tel. (02) 771.01.30 (Belgium)

. Comité Européen des Fabricants de Sucre, 45 avenue Montaigne, 75008 PARIS (France)

Dairy sector

. Fédération internationale de Laiterie, 41 square Vergote, 104O BRUXELLES Tel. 19 (32) 2.733.98.88 (Belgium)

. Association de l'Industrie Laitière de la Communauté Européenne, 140 Bd Haussmann, 75008 PARIS, Tel. 45.62.12.51 (France)

. Association des Fabricants de Lait de conserve des pays de la CEE (ASFALEC), 140 Bd Haussmann, 75008 PARIS, Tel. 45.62.15.43 (France)

Ice cream sector

. Association des Industries Alimentaires des Glaces et Crèmes Glacées de la C.E.E., 64 rue Caumartin, 75009 PARIS, Tel. 48.74.72.28 (France)

Canning sector

. Comité International Permanent de la Conserve, 44 rue d'Alésia, 75014 PARIS (France)

. Organisation Européenne des Industries des Conserves de Légumes, 172 avenue de Cortenbergh, B.6, B.1040 BRUXELLES, Tel.02.735.81.70 (Belgium)

Wine & Liquor sector

. Fédération Internationale des Industries des Vins (FIVS), 103 Boulevard Haussmann 75008 PARIS, Tel. 42.66.24.84 (France)

. Office International de la Vigne et du Vin, 11 rue Roquepine, 75008 PARIS Tél. 42.86.0416 (France)

Juice & Solf drink sector

. Association des Industries des Cidres et Vins de fruits de la CEE (AICV), 172 avenue de Cortenberols, B 1040 BRUXELLES, Tel. 27.35.81.70 (Belgium)

Beer sector

. Communauté de Travail des Brasseurs du Marché Commun (C.B.M.C.)2 avenue Van Beclaere, B N° 2, 1170 BRUXELLES, Tel. 19 (32) 2672.23.92 (Belgium)

Goldstor & related sector

. Institut International du Froid, 177 Bd Malesherbes, 75017 PARIS, Tel. 42.27.32.35 (France)

. Association Européenne des Exploitations Frigorifiques, 172 av. de Cortenbergh, 1040 BRUXELLES (Belgium)

Sweets & Chocolate sector

. Association des Industries Chocolaterie, Confiserie de la CEE à BRUXELLES, Tel. 19.322.539.18.00 (Belgium)

Vinegar, Sauces & Condiments sector

. Comité des Industries des Mayonnaises et Sauces Condimentaires de la CEE (C.I.M.S.C.E.E.), 1782 av. d'. Cortenbergh, 1040 BRUXELLES , Tel. 735.81.70 (Belgium)

. Association de l'Industrie des Fruits et Légumes au Vinaigre, en Saumure, à l'Huile et des Produits Similaires de la CEE, 2300 AD BP 177, LEIDEN, Pays-Bas Tel.071.176.214 (Netherland)

Coffee & Tea sector

. Association Européenne des Décaféineurs, 12 rue du Quatre Septembre, 75002 PARIS Tel. 47.42.90.04 (FRance)

. Association des Fabricants de Café Soluble de la C.E.E., 225 rue de Birmingham, BRUXELLES (Belgium)

Soups sector

. Association de l'Industrie des Bouillons et Potages de la C.E.E, Routerstrasse 151, D.5300 BONN, (F.R.G.) Tel. 19.49.228.21.20.17 (EEC Representation)

. Association International de l'Industrie des Bouillons et Potages, Routerstrasse 151, D.5300 BONN, (F.R.G.) Tel. 19.49.228.21.20.17 (International representation)

International Co-Operation

. Comité Général des Coopératives Agricoles, section Aliments du Bétail, 23-25 rue de la Science, B 1040 BRUXELLES, Tel. 19 (2) 02.230.39.45 (Belgium)

INTIB services

The following is a summary of the information services and products offered by UNIDO's Industrial and Technological Information Bank (INTIB).

INTIB's place in UNIDO

INTIB co-ordinates UNIDO's industrial and technological information activities. It aims to help developing countries make well founded technological decisions.

INTIB's functions are responsive, in that it answers inquiries through its Industrial Inquiry Service (IIS). It is also charged with the active dissemination of information through its Network System of focal points and nodes, and its publications. The Network enables INTIB to strengthen the systems through which information flows to and from developing countries.

Through these modes of operation, INTIB serves as an interface between users and the wealth of information stored in the data bases of UNIDO itself and the UN system as a whole, and in other systems. INTIB also encourages the establishment of data bases in developing countries.

The Industrial Inquiry Service

The Industrial Inquiry Service (IIS) receives an annual average of about 1,500 inquiries, either directly, from industrialists, government policy makers and others, or via other parts of the UN system. In addition, a growing number of queries is routed via INTIB's network of Regional and National Focal Points. Most requests still arrive by telex, mail or telephone, but the Network System has introduced new possibilities for electronic data transmission.

Unlike most international services, IIS supplies concrete, practical information, packaged in response to specific needs Apart from in-house data on UNIDO's 20 priority sectors and others, the Industrial Inquiry Service can tap the resources of 300 network correspondents and on-line data bases.

The INTIB network

INTIB is the hub of a system of Regional and National Focal Points, and "nodes". The National Focal Points (NFPs) pass inquiries to INTIB, but can also provide their own answers, tailored to local conditions. An important task of NFPs is that of packaging information in appropriate form, both for local users and to feed into the central INTIB data bases. In addition, NFPs will increasingly promote INTIB services among end-users, and provide them with advice and support.

There are now over 50 NFPs, and new centres are added every year. The NFPs are linked to nodes, which are specialized sources of information, such as chambers of commerce, industrial associations or R&D institutions.

So far, there are three Regional Focal Points (RFP): the African Regional Centre for Technology (ARCT), for Africa; the Asia & Pacific Centre for Transfer of Technology (ACPTT), for Asia; and the International Centre for Scientific and Technological Information (ICSTI), for Europe. The RFPs serve to maintain communications with INTIB, build up data bases and strengthen national information infrastructures within their regions.

The INTIB Network System aims to make the most of new information technologies. One facet of this activity is the provision of standardized hardware and software, to enable efficient exchanges of information between INTIB and the components of the network to take place. Missions, workshops and seminars are organized to assist NFPs in using new technology.

UNIDO's memory

The various data bases on which INTIB draws can be described as UNIDO's institutional memory. The following summary gives an idea of the wealth of information available:

•INDIS: The Industrial Information System (INDIS), developed and maintained by INTIB, contains abstracts and other data on more than 17,000 items of UNIDO documentation.

•TSDB: The Technology Supply Data Base, also developed and maintained by INTIB, contains information on technology offers and requests, and joint venture opportunities.

•TIES: The Technological Information Exchange System (TIES) handles information abstracted from techology transfer agreements concluded by countries participating in the system.

•INPRIS: The Investment Promotion Information System (INPRIS) consists of data files concerning: projects; investors; enterprises; development banks; institutional information sources; companies interested in redeployment; and country investment profiles.

•UNIDO Statistical Data Base: The central reference point for statistics on the manufacturing sectors of 80 countries.

•External data bases: The joint UNIDO/IAEA library in Vienna has access to a number of bibliographic and directory-type data bases. In addition, INTIB has joint programs and cooperation agreements with a number of international organizations.

•Specialized data bases: Specialised data bases on petrochemicals and pharmaceuticals are being established in cooperation with the System of Consultations.

Publications

Besides INTIB Net, INTIB publishes sectoral directories of technological and related research institutions and regularly updated guides to information sources covering over 40 subject areas.

The Industrial Development Abstracts are also available quarterly in printed form.

Other publications providing specialist industrial information and advice for entrepeneurs and policy makers comprise: sectoral dossiers; technological information packages; guidelines on information policy; technology information profiles and technical memoranda. Δ

INTIB's own unique information resources

INTIB maintains data bases with information including:

- Technology offers and requests, and joint venture offers
- Industrial development: abstracts of reports, studies, etc, and directories of R&D centres and other information sources
- Technology transfer agreements
- Industrial energy saving
- Joint investment projects and finance institutions
- Clean technology
- Industrial statistics (80 countries)
- Materials technology
- Food science and technology

INTIB
Industrial and Technological Information Bank

Facilitates access to industrial and technological information

INTIB (Industrial and Technological Information Bank) coordinates the activities of the industrial and technological information sector of UNIDO (United Nations Industrial Development Organization). Its aim is to facilitate access by companies of developing countries to the information which they require. Furthermore, INTIB encourages the creation or the reinforcement of industrial information systems in developing countries.

The question-and-answers service

The Vienna office of INTIB edits several specialized publications and offers a question-and-answers service, accessible through different communication channels. This service depends mainly on UNIDO's own internal information bank and on international information banks according to requirements.

The Focal Points Network

To increase its information role, INTIB has set up a Focal Points Network spread through 61 countries. These Focal Points channel questions to INTIB but can also supply their own answers directly which can be better adapted to concrete situations in the field.

INTIB's Information Bank

INTIB's Information Bank is composed of all of UNIDO's internal information banks. These information banks are factual or bibliographical. For example, they are used, in the management of the question-and-answers service as well as for finding information linked to industrial development.

What will it cost you?

Wherever possible, *INTIB* services are free of charge (see grid below). However, where extensive research, packaging or copying are involved, modest charges limited to the actual costs incurred are made. Approach your *INTIB* national focal point for local currency rates.

P: payable services
F: free services
PF: payable or free services

Type of query											
Raw materials	F	F	PF	P	P	P	F	F	PF		
Manufacturing processes	F	F	PF	P	P	P	F	F	PF		
Machinery	F	F	PF	P	P	P	F	F	PF		
Equipment	F	F	PF	P	P	P	F	F	PF		
Manufactured products	F	F	PF	P	P	P	F	F	PF		
Technologies	F	F	PF	P	P	P	F	F	PF		
Engineering, methods and services	F	F		P	P	P	F	F	PF		
Quality, standards and maintenance	F	F		P	P	P	F	F	PF		
[illegible]											
[illegible]	PF										
[illegible]	PF										
[illegible]	PF										

Type of reply

- Lists of companies or organizations
- Lists of experts
- Lists of transferable technologies
- State of the art, publications
- Customized research
- Commercial literature
- Bibliographies
- Proposal and estimate for research, study
- Company matching
- Schedule
- Detailed programme

What to do

INTIB directly:

Industrial Inquiry Service,
INTIB.UNIDO

Tel 21131
Telex 135612
Fax 2307584

PO Box 300
A-1400 Vienna
Austria

Annex 8

I . P . A . C .

New openings for industrial partnership

New opportunities for industrial companies around the world to work together are offered by a UNIDO's Industrial Partnership and Co-operation for Development (IPAC) scheme.

Funded by a $400,000 special-purpose contribution from the Federal Republic of Germany, IPAC offers publicly owned and private companies in developing states a chance to co-operate with partners in industrialized countries.

For instance, IPAC has brought an Indian and an Austrian manufacturer of measuring instruments into contact. The Austrians have advised the Indian partners on a licensing agreement and are training two Indian engineers. Later, the Austrian company will be sending three experts to UNIDO, again with part-financing from UNIDO.

The scheme aims to provide access to expertise, technology transfers, training, finance, and marketing and management skills. Not only large firms, but also small- and medium-sized enterprises are intended to benefit.

IPAC makes provision for: short-term consultancies, diagnostic missions and technical assistance activities; training, including industrial fellowships and study tours; and emergency equipment and spares.

An important object of the scheme is to provide short-term technical advisory services in areas such as maintenance, rehabilitation, modernization, expansion and diversification, using retired executives made available by non-governmental organizations.

To date, UNIDO has received well over 100 requests for partnerships under the IPAC scheme, which became operational early last year. About 30 have already been implemented.

Under one project, IPAC has arranged for a Zimbabwean economist to be trained in West Germany, in consumer protection and environmental issues. Another example is the sending of a brewery expert to Nepal.

The process of matching partners begins when a request is made. The request forms enable preferences regarding countries and companies to be stated.

In addition, UNIDO obtains information from contacts with companies and industrial associations in industrialized countries, from 21 organizations that offer the services of retired executives, and from its own Investment Promotion Offices.

The companies in developed countries that agree to co-operate are aware that they, too, can benefit from the scheme, by gaining knowledge of foreign markets, useful contacts in developing countries and awareness of investment and joint venture opportunities.

UNIDO's role in the project is that of an impartial and dependable intermediary, free of profit motives or other commercial pressures. In addition, those using the scheme can obtain professional, logistic and administrative support from the Organization's headquarters and field network.

IPAC is one of a number of innovative activities taking place under the aegis of UNIDO's Industrial Co-operation and Mobilization of Financial Resources Division, which promotes flows of technological, financial and management resources from developed to developing countries, especially at enterprise level.

Use of trust funds and special funds, originating with governments and enterprises, enables finance to be given to private companies.

IPAC's role is essentially one of facilitating contacts, and the scheme does not set out to cover the full costs of a project. Partners are expected to carry part of the expenses, and third parties, such as banks, UN or other development organizations, are often approached for funding.

In general, those seeking this form of co-operation should be prepared to pay at least the expenses incurred in local currency, such as board, lodging and local transport. For their part, collaborating enterprises or organizations are asked to provide qualified staff or services at favourable conditions.

Requests to participate in IPAC should be directed to UNIDO directly or via a UNDP/UNIDO office. In response, UNIDO will seek co-operation with enterprises or organizations in other countries and take care of the implementation and recruitment aspects of the proposed project.

Inquiries should be sent to:

Head, Industrial Co-operation Branch, Industrial Co-operation and Funds Mobilization Division, Department for Programme and Project Development, UNIDO, P.O. Box 300, A-1400 Vienna, Austria.

Tel. 21131/ ext. 4760. Telex 135612 UNO A. Fax: 232156. Cable: UNIDO Vienna.

INTERVIEW

Annex 9

Agro-based industries branch (Brief)
Department of Industrial Operations

In cooperation with other services (see Annex 2) such as Insdustrial statistics, purchase and contract, factory establishment and management, industrial and technological information, investment promotion or integration of women in industry, this branch deals with :

- Sectorial studies and development center
- Food and agro-based products processing
- Rehabilitation work
- Waste treatment question
- Definition of animal feeds
- Pilot production demonstration
- Training programme

Its field covers essentially fruits and vegetable, animal and leather products, textile and wood, fish, sugar, cereals and dairy products, in various kinds of work as recent projects may show it e.g. :

gari pilot production
coconut cheese
carit & castor oil
castor oil destoxification and protein extraction
bread production rehabilitation
fruit juices and wine advices and production
rice bran oil extract
additives for food
coconut small scale capacity processing
sorghum for beer and malt
fish, fruit and vegetable, cereal, etc,...drying

(Footnote : to be checked/improved and completed by agro/service)

THE ASSOCIATION OF CONSULTING ENGINEERS (LONDRES)
FORMULE D'ACCORD «B»
ET BARÈME DES HONORAIRES[1]

MÉMORANDUM D'ACCORD

CONCLU ENTRE UN CLIENT ET UN INGÉNIEUR-CONSEIL POUR L'ÉTABLISSEMENT DE PLANS ET LA SUPERVISION DE TRAVAUX DANS LES DOMAINES DU GÉNIE CIVIL, DE LA MÉCANIQUE ET DE L'ÉLECTRICITÉ

MÉMORANDUM D'ACCORD conclu le jour du mois de ..... 19 ....

ENTRE ..... (ci-après dénommé le «Client»)

d'une part, et .....

(ci-après dénommé l'«Ingénieur-conseil»), d'autre part.

CONSIDÉRANT que le Client a examiné et approuvé les propositions générales qui lui ont été soumises par l'Ingénieur-conseil dans un rapport daté du ....., et/ou qu'il a l'intention .....

et qu'il a demandé à l'Ingénieur-conseil de lui fournir des services professionnels en vue de .....

IL A ÉTÉ CONVENU ENTRE LES PARTIES CE QUI SUIT :

1. Le Client accepte de recourir aux services de l'Ingénieur-conseil, conformément aux Conditions d'engagement énoncées dans l'annexe jointe au présent Mémorandum d'accord, et l'Ingénieur-conseil accepte de fournir ses services professionnels sous réserve et en conformité desdites Conditions.
2. Le présent Mémorandum d'accord et lesdites Conditions d'engagement constitueront, dans leur ensemble, l'accord conclu entre le Client et l'Ingénieur-conseil.
3. L'organisme dont il est question dans la Clause 4 des Conditions d'engagement sera .....
4. La rémunération des services fournis en vertu de la Clause 6 des Conditions d'engagement s'effectuera conformément à la Clause 10.1*, 10.2*, 10.3* desdites Conditions.

[1] The Association of Consulting Engineers, *Conditions of Engagement*, Londres, décembre 1970.

* Biffer ce qui ne convient pas.

5. Dans lesdites Conditions d'engagement :
   a) La somme forfaitaire dont il est question dans la Clause 10.2 sera de ..... (£)*
   b) Le coefficient multiplicateur dont il est question dans la Clause 10.3.1 a sera .....
   c) L'honoraire dont il est question dans la Clause 10.3.1 b) sera (£)*
   d) Le(s) taux dont il est question dans la Clause 11.2 a) sera(seront) le(s) suivant(s) : .....
6. Les versements partiels dont il est question dans la Clause 20.1 a) seront effectués à des intervalles d'un mois/de trois mois*, à compter de l'entrée en vigueur de la Désignation de l'Ingénieur-conseil et leur répartition proportionnelle, dont il est également question dans ladite Clause, sera la suivante :

   Etablissement des plans (stade I) ..... %
   Etablissement des plans (stade II) ..... %
   Stade de la construction ..... %

7. La somme payable en vertu de la Clause 20.1 b) des Conditions d'engagement sera payée sous forme de versements mensuels/trimestriels* égaux.
8. Les services supplémentaires à fournir conformément à la Clause 7.2 f) des Conditions d'engagement seront les suivants : .....

EN FOI DE QUOI les parties ont signé le présent MÉMORANDUM D'ACCORD la date indiquée ci-dessus.

En présence de : ..... Le Client : .....

En présence de : ..... L'Ingénieur-conseil : .....

* Biffer ce qui ne convient pas.

Annex 11

EXPERT AND CONSULTANT PROFESSIONAL ASSOCIATIONS (*)

INTERNATIONAL FEDERATIONS

1. International Confederation of Associations of Experts and Consultants : ICAEC
(Confédération internationale des Associations d'experts et de conseils : CIDADEC)
Corso Vittorio Emanuele, 30, MILAN, (Italie)

2. International Federation of Consulting Engineers : FCE
(Fédération internationale des ingénieurs-conseils : FIDIC)
Jan van Nassaustraat 91, LA HAYE (Netherland)

Associated with E.F.M.C.A. :

France

Association française des conseillers de direction (AFCD)
57, rue de Babylone PARIS VIIè

Italy

Associazione fra Società e Srudi Consulenza Organizzativa
(ASSCO) Via Santo Spirito, 14 MILAN

Netherland

Orde van Organisatie-Adviseurs (O.O.A.)
Driekoningenstraat 4, AMSTERDAM C

Germany

Bund Deutscher Unternehmensberater (B.D.U.)
Friedlebenstrasse 4, FRANKFURT/MAIN

(*) Indicative list for information only

United Kingdom

Management Consultants Association (M.C.A.)

23/24 Cromwell Place, LONDON S.W.7

Associated with FIDIC :

Belgium

Chambre des ingénieurs-conseils de Belgique (C.I.C.B)

Secrétariat général : 26 avenue du Duc-Jean, BRUXELLES

Tél. 27.42.44

United States of America

Consulting Engineers Council

1155-15 th Street, N.W., WHASINGTON D.C. 20005 Tel. 296-1780

France

Chambre des ingénieurs-conseils de France (C.I.C.F.)

30 Bd du Montparnasse PARIS XVè Tél. 47-83-26-21

Netherland

Orde van Nederlandse Raadgevende Ingénieurs (O.N.R.I.)

Laan van Meerdervoort 343, THE HAGUE Tel.638179

Germany

Verein Beratendeer Ingenieure e. V. (V.B.I.)

Berufsverband der freischaffenden unabhangigen Ingenieure

Krelelerwege 48, ESSEN-STEELE , Tel. 50191

United Kingdom

The Association of Consulting Engineers (Incorparated) (A.C.E.)

Abbey House, Victoria Street, LONDON S.W.1 Tel. ABBEY 6557

Suisse

Association suisse des ingénieurs-conseils (A.S.I.C.)

Univbersitatstrasse 105, ZURICH 8006, Tel. 26 01 16

Annex 12

CONSULTING AND ENGINEERING FIRMS (*)

1. International Organization

Conference of Representatives from the Engineering Societies of Western Europe and the United States of America (E.U.S.E.C.)
Secrétariat : Prinz-Georg-Strasse 77, DUSSELDORF 10 (GERMANY)

2. National association

France

Chambre syndicale des bureaux d'études techniques de France
9 rue du Mont-Thabor, PARIS Ier

India

All India Management Association Press Bhavan
SE, Rani Jhansi Road, NEW DELHI

Italy

Associazione Italiana Consultenti in Organizzazione
Via Vassalli Eandi 17, TURIN

Germany

Verband Unabhangig Berantender Ingenieurfirmen
Argelanderstrasse 59, BONN

* Indicative list for information only

Suisse

Association of Swiss Consulting Engineering Firms
Seefeldstrasse 9, CH 8008, ZURICH

United Kingdom

Association of Consulting Scientists
Park House, Hawthorne Road, BROMLEY, KENT

British Overseas Engineering Services Bureau
737-240 Abbey House, Victoria Street, LONDON S.W.1

United States of America

Association of Consulting Management Engineers
347 Madison Avenue, NEWYORK, N.Y. 10017

Society of Professional Management Consultants
207 East 37th Street, NEW YORK, N.Y. 10016

3. International Union of Independent Laboratories
(Union internationale des laboratoires indépendants)
Coolhaven 32, ROTTERDAM, (Netherland)

United States of America

American Council of Independent Laboratories, Inc.
TWA Building, 1026-17th Street N.W., WASHINGTON D.C.

Senior Industrial Development Field Advisers
(S.I.D.F.A.)
UNIDO's Country Directors

Among their official duties they are competent in the case of agro and food industry deals for providing inter alia :

- Advice on the different UNIDO's services to be consulted
- Transmission of technical engineeries or information demand
- Assistance in formulating training/study tour programme
- Support for technology transfer transaction
- Suggestion on partnership.

For additional information please contact the above field representations in Africa (other exist in Arab States, Latin America, Asia and Pacific).

AFRICA

Cameroon:
. . .
UNDP
P.O. Box 836, Yaounde
221704

Côte d'Ivoire:
Mr. H. Olivier
UNDP
P.O. Box 1747, Abidjan 01
331-341

Ethiopia:
Mr. P. Manoranian
UNDP
P.O. Box 5580, Addis Ababa
518075, 517021, 517205

Kenya:
. . .
UNDP
P.O. Box 30218
Nairobi
28-776/7
28-278/9

Madagascar:
Mr. F. D'Adesky
UNDP
P.O. Box 1348, Antananarivo
219-07

Mozambique:
. . .
UNDP
P.O. Box 4595, Maputo
490-334/7/8

Nigeria:
Ms. M. H. Mathey-Boo
UNDP
P.O. Box 2075, Lagos
603730

Senegal:
Mr. M. Konaré
UNDP
P.O. Box 154, Dakar
212876, 233244

Sierra Leone:
Mr. M. Kamali
UNDP
P.O. Box 1011, Freetown
25390

Togo:
Mr. K. Venkatachellum
UNDP
P.O. Box 911, Lomé
212022

United Republic of Tanzania:
Mr. A. Krasiakov
UNDP
P.O. Box 9182, Dar-es-Salaam
27411/27415

Zaire:
Mr. J. Hebga
UNDP
P.O. Box 7248, Kinshasa
30400

Zambia:
Mr. E. Taylor
UNDP
P.O. Box 31966, Lusaka
218633

Zimbabwe:
Mr. K. R. Sinha
UNDP
P.O. Box 4775, Harare
792681/7

Annex 14

MANUAL ON TECHNOLOGY TRANSFER NEGOTIATIONS

Indicative table of content

COMFAR SOFTWARE

Will the project pay?

It pays to use COMFAR

The expected return determines whether an investment is worth going ahead with. How profitable will it be, and when will it start paying off? These questions are particularly crucial for developing countries with limited resources for industrialization. A software package from UNIDO helps provide the answers.

The Computer Model for Feasibility Analysis and Reporting (COMFAR) is a valuable aid to preparing and selecting sound investment projects in a standardized form. It enables users to simulate the short- and long-term financial and economic evolution of investments such as new plants.

COMFAR offers:

- A Financial System, mainly for financial evaluation of pre-investment studies;
- An Economic Cost-Benefit Analysis (ECBA) System, for assessment of a project's impact on the national economy as a whole; and
- A Graphics (GRAFIX) System for graphical representation of the results obtained from the above two.

With cost and sales data entered by the user, COMFAR produces a series of tables, summarizing the economic and financial evolution of a project over time. These show cashflows, projected balance sheets and net income statement, production costs, net working capital requirements, and so on.

COMFAR distinguishes between cash flows in domestic and foreign currencies, and provides for changes in exchange rates.

The package offers a number of standard functions to compute net working capital requirements, debt servicing, annual depreciation of fixed capital, and taxation. Direct costing and analysis in current prices is also possible.

No specialist computing knowledge is needed to operate COMFAR, but a one-week introductory workshop is recommended, especially for users who may need to brush up their knowledge of accounting, cashflow and investment analysis.

The ECBA module allows the user to introduce shadow prices and compute economic rates of return, foreign exchange effects, value added and the structure of value added.

UNIDO Manual

Based on the UNIDO Manual for the Preparation of Industrial Feasibility Studies and Manual for the Evaluation of Industrial Projects, COMFAR was developed entirely by UNIDO's Feasibility Studies Branch. The package, which was launched in 1983, is maintained and continuously updated to meet the needs of a large and growing user group.

The model has already been installed in over 100 countries and there are almost 450 licensees. It is employed for project preparation, appraisal, evaluation or training.

Users include national and regional development finance institutions, ministries and development planning institutions, leading manufacturing and consulting companies, universities and UNDP offices throughout the world.

Latest release

Last year saw the latest release – the COMFAR 2.1 version. This is available in Arabic, Chinese, English, French, German, Spanish, Polish and Russian. Hebrew and Italian versions are being prepared.

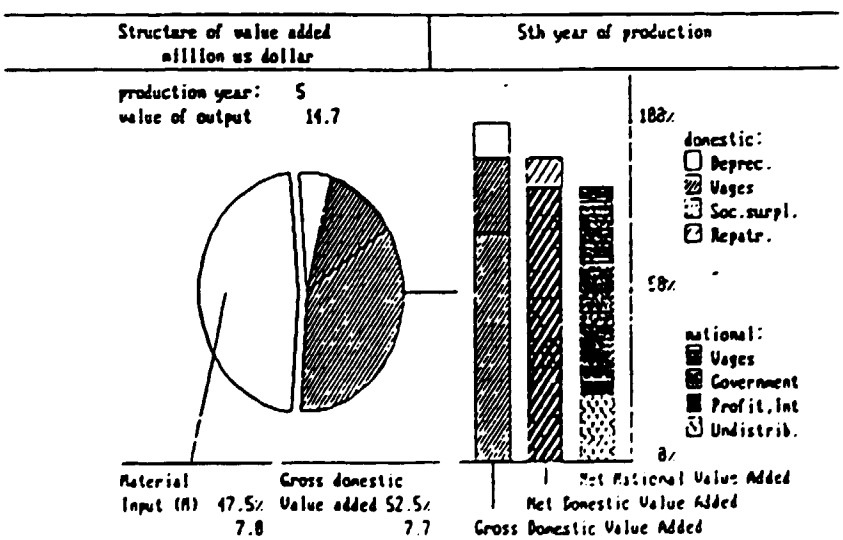
COMFAR runs on IBM-compatible PC-XT/AT computers with fixed disks (10 MB), and a graphic card is required for the GRAFIX program.

The complete package in one language is available for $3,200, reduced to $1,900 for government institutions in developing countries, and free of license charges to government institutions in Least Developed Countries. The fee for COMFAR minus the ECBA system is $2,600 ($1,600 for state institutions).

A demonstration version, available in English or French, costs $100. The language expansion set comes at a price of $1,600 (reduced fee $1,000) for dialogue and report language.

For further information, contact:

Feasibility Studies Branch, Department of Industrial Operations, UNIDO, Vienna International Centre, P.O. Box 300, A-1400 Vienna, Austria. Δ



Annex 16

AGRO - & FOND INDUSTRY FAIR

(Tentative list of INTERNATIONAL events)

Date	Location	Subject	Title and information service
February	Paris France	Cheese	**Salon européen du fromage** Comité des expositions de Paris - 35 Quai Alphonse le Gallo, BP. 317 Boulogne cédex
June	Istanbul Turquey	General	**Pro-Pak Turkey 91 - Expansion in food processing & packaging industries fuels increased import of foreign technology** Overseas exhibition services LTD - 11 Manchester Square London, W1M 5AB UK
February	Paris Nord France	Bread & Pastry	**Europain 91 Salon mondial de la boulangerie et de la patisserie** Brigitte Namour Communication - 15 av. de Ségur 75007 PARIS
February	Paris Nord France	Ice-cream	**Interglaces 92 - Salon international de la glace et de la crème glacée** Comité des expositions de Paris - 55 quai Alphonse le Gallo, BP. 317, 92107 Boulogne
March	Paris Nord France	Animal Feed	**Sitepal - Salon international des technologies équipements et produits pour les pulvérulents destinés à l'alimentation animale et aux industries agricoles et agro-alimentaires** SEPAIC 42 rue du Louvre, BP.551, 75027 PARIS
March	Birmingham U.K.	Fresh product	**International fresh produce fair 1992** Kate Cromton - Blenheim Marlborough - Bleinheim House - 4 Devonhurst Place, Heathfield Terrace London W4 4JD
March	Birmingham U.K.	Chilled	**International chilled food fair and chilled food services 1992** Dickon Galloway - Blenheim Marlborough - Blenheim house - 4 Devonhurst Place, Heathfield Terrace Lon,don W4 4JD
April	The Hague Holland	Nutrition	**Second european conference on food and nutrition policy** Flora de Vrijer - c/o TNO Nutrition & Food research P.O. Box 390 - 3700 AJ ZEIST

June	Paris-Nord	Drinks	**SIAL Boissons 92** SIAL Boissons,39 rue de la Bienfaisance 75008 Paris
September	Tokyo Japan		**Tokyo Pack'92 - 14è Salon Tokyo** M. Hajime Furuya - Japan Packaging institute international information centre - JPI/03
October	Sydney Australia		**The ASI/FMI Supermarket Show** FMI - 1750 K Street N.W. Washington DC
November	Ultrecht Holland	General	**MACHEVO 92 - Génie alimentaire et équipements de production** M. W Staal - FRN Tel. +31 30 955 277 Fax 42 36 20 60
November	Paris Nord France	Packing	**Emballage 02 - 30è Salon de l'emballage** Emballage 92 - 17 rue d'Uzès 75002 Paris
October	Lyon France	Packing handling	**Europack Euromanut 91 - Exposition européenne de l'emballage et de la manutention** AB3C - Annie Blin, 29 rue Fd Poissonnières 75009 Paris
October	Paris France	Meat	**MATIC 92 - Salon international des matériels et techniques pour l'industrie et le commerce des produits carnes** SEPAIC - 42 rue du Louvre 75027 Paris Cédex
November	Kohln FRG	Hygiène	**IWR Cologne 1991 - International maintenance & cleaning fair** Kolne Messe - Messeplatz 1 Postfach 210760 D-500 Koln 21
November	Paris France	Agro byproduct	**Symposium international "Valorisation industrielle non alimentaire des productions de grande culture"** CIIA - 14/16 rue Claude Bernard 75005 Paris
December	Nyons France	Aromatic herbs	**3è Rencontre techniques et économiques plantes aromatiques et médicinales** CFPPA - 26110 Nyons (M. Verlet)

ANNEX 17

National statistical indeces

Statistic Departments of Countries

manufacturing agro-industrial equipment

France	- INSEE (Institut National de la Statistique et des Etudes Economiques) published by Imprimerie Nationale, 27 rue de la Convention, 75015 Paris, France.
Federal Republic of Germany	- Statistisches Bundesamt, Wiesbaden, published by W. Kohlhammer GmbH, Stuttgart, W. Germany.
India	- Indian Trade Journal, prepared by the Government of India Directorate General of Commercial Intelligence and Statistics and published by the Government of India Book Department, 8 Kiran Sankar Roy Rd, Calcutta 1.
Italy	- ANIMA (Assoc. Naz. Ind. Mecc. Varia), published by Tipografia Abbiati, Via Padova 5, 020123 Milan, Italy.
Netherlands	- Bulletin on material and labour price indices published by Central Bureau of Statistics, Prinses Beatrixlaan 428, Postbus 959, Voorburg 2270 AZ.
Japan	- Statistics on Japanese Industries, prepared by the Research and Statistics Department, Minister's Secretariat, Ministry of International Trade and Industry and published by Tsusho-Sangyo Chosakai (Research Institute of International Trade and Industry), 6-15-1, Ginza, Chuo-ku, Tokyo, Japan.
Sweden	- Statistical Yearbook, Statistiska Centralbyrån, Karlavägen 100, S-115 26 Stockholm, Sweden.
United Kingdom	- Trade and Industry, published by the Department of Trade and Industry.
United States	- Inter American Statistical Institute, 1725 1st Street N.W., Washington D.C. 20006.
	- Survey of Current Business, published by the US Department of Commerce, Bureau of Economic Analysis, Washington D.C. 20230.
	- Wholesale prices published by the US Department of Labor.

Annex 18

RANKING AND WEIGHTING SYSTEM

(Method for technical or reliability evaluation)

RANKING SYSTEM

Parameters	suppliers				
	A	B	C	D	E
Appropriateness	3	2	5	4	1
Easy maintenance	5	3	3	4	1
Flexibility	3	4	2	1	5
Total	11	9	9	9	7
Ranking	5		identical		1

WEIGHTING SYSTEM

Weight of the parameters	
Appropriatness	45 %
Easy maintenance	35 %
Flexibility	20 %

By using the same data of the above "Ranking System" the result, with the weighted parameters, will be more precise :

Parameters	suppliers				
	A	B	C	D	E
Appropriatness (x 0.45)	0,27	0,18	0,45	0,36	0,09
Easy maintenance (x 0.35)	0,35	0,21	0,14	0,28	0,07
Flexibility (x 0,20)	0,12	0,16	0,08	0,04	0,20
Total	0,74	0,55	O,67	0,68	0,36
Ranking	5	2	3	4	1

Annex 19.a

QUALITY POINT SYSTEM

A : Method for the evaluation of multiple qualitative factors

Simple system

Supplier

		A	B	C	D	
Technology aspects (points allocated are 10)						
Respect of the specification	3					
Appropriatness	5					
Flexibility	2		(b)			
Technical aspects (a) (points allocated are 15)						
Skill required - technician-high level (or number of qualified persons)	4					
Easy maintenance	3					
Quality control system	5					
Cleaning network	2					
Production aspects (a) (points allocated are 10)						
Technical assistance	4					
Training programme	4					
R & D assistance	2					
Reliability of the supplier (points allocated are 10)						
Experience in developing countries	4					
Access to technology user	3					
Finacial soundness	3					
Total	45 (c)					
Ranking						

(a) The part of some quantified components such as annual maintenance, training and production costs are taken into account separately. They are computerized by standard costing methods calculated for a normal operating level, considered as commercialy acceptable for the project after few years.

(b) The points are allocated in the limits given for each item and according the subjective differences stated between the bidders.

(c) it may be as well 100 if the method is used separately.

Annex 19.b

B : for dual comparison with money quantified factors
(Quality items combined with cost items)

- Investment : points allocated are 30 for instance

  The lowest offer M is credited 30, the other suppliers A, B, C,... are credited according the following calculation.

$$\frac{\text{Investment cost of supplier M}}{\text{Investment cost of supplier A}} \times 30 = Ai$$

- Production cost : points allocated are 25 for instance

  The same type of calculation is made with the lowest production cost for the whole plant (or for the projected product). This means production cost of supplier N is lowest = 25. Thus the other bidders will be quoted:

$$\frac{\text{Production cost of supplier N}}{\text{Production cost of supplier A}} \times 25 = Ap$$

- Quality factors : figures are taken from the previous calculation

SUM UP

		Suppliers						
	Rate	A	B	C	D	M	N	
Investment	30	Ai	Bi	Ci	Di	30	Ni	
Production cost	25	Ap	Bp	Cp	Dp	Mp	25	
Quality factors	45	Aq	Bq	Cq	Dq	Mq	Nq	
Grand total	100							
Final Ranking								

Annex 20

LIST of ORGANISATION providing PRINTS of

CONDITIONS OF CONTRACT
(INTERNATIONAL)
FOR
WORKS OF
CIVIL ENGINEERING CONSTRUCTION

WITH FORMS OF TENDER AND AGREEMENT

Prints may be obtained from

FÉDÉRATION INTERNATIONALE DES INGÉNIEURS-CONSEILS
The Executive Secretary,
new address: P.O. Box 17334 2502 CH The Hague Netherlands

or

FÉDÉRATION INTERNATIONALE EUROPÉENNE DE LA CONSTRUCTION
The General Secretary,
9 Rue La Perouse, 75116 Paris, France.

or

INTERNATIONAL FEDERATION OF ASIAN AND WESTERN PACIFIC CONTRACTORS' ASSOCIATIONS
The Executive Director,
PCA Building, Rodrigues Avenue, Bario Ugong, Pasig, Rizal, Philippines.

or

LA FEDERACION INTERAMERICANA DE LA INDUSTRIA DE LA CONSTRUCCION
La Secretaria General,
Calles Aquilino de la Guardia y 52, Apt. 6793, Panama 5, Panama.

or

THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA
The Executive Director,
1957 E Street NW,
Washington DC 20006, U.S.A.

Note of Agreement regarding Conditions of Contract (International) for Works of Civil Engineering Construction

The terms of the Third Edition of the Conditions of Contract (International) for Works of Civil Engineering Construction, prepared by the Fédération Internationale des Ingénieurs-Conseils (F.I.D.I.C.) and the Fédération Internationale Européenne de la Construction (F.I.E.C.) are approved by those organisations, and also by the Associated General Contractors of America (A.G.C.A.), the Inter-American Federation for the Construction Industry (F.I.I.C.) and the International Federation of Asian and Western Pacific Contractors' Associations (I.F.A.W.P.C.A.), and are recommended by them for general use for the purposes of contracts for the construction of such works where tenders are invited on an international basis. It is further agreed that:

(i) Without the derogating from the provisions of Clause 5 (1) of the said Conditions as to the designation in any contract of any specified language as the "Ruling Language" for the purposes of such contract the version in English of the said Conditions shall be considered as the official and authentic text thereof for the purposes of translation thereof into any other language.

(ii) Official translations from English of the said Conditions shall be prepared into French, German and Spanish and into such other languages as F.I.D.I.C. and F.I.E.C. may from time to time jointly agree.

CONDITIONS OF CONTRACT
(INTERNATIONAL)
FOR WORKS OF
CIVIL ENGINEERING CONSTRUCTION

EXPLANATORY MEMORANDUM

In the preparation of the Conditions it was recognised that while there were numerous Clauses which would be universally applicable there were some Clauses which must necessarily vary to take account of the circumstances and locality of the Works. The Clauses of universal application have been grouped together and are referred to as Part I—General Conditions. They have been printed in a form which will facilitate inclusion (without further reproduction) in the contract documents normally prepared.

The General Conditions are linked with the Conditions of Particular Application, referred to as Part II, by the consecutive numbering of the Clauses, so that Parts I and II together comprise the conditions governing the rights and obligations of the parties.

The Clauses in Part II must be specially drafted to suit each particular Contract and to assist those entrusted with their preparation Notes intended as an aide-memoire in relation to the matters which should be covered by the variable Clauses have for convenience been included in the document. These Notes should be detached from the document when inviting tenders.

There is also included under Part III the Conditions of Particular Application to Dredging and Reclamation Work.

It is recommended that Bills of Quantities should be supplied in duplicate to Contractors by Employers when inviting tenders. Only one copy of the Bills of Quantities should be returned with the tender; the Contractor should be permitted to purchase further copies.

Genuine turnkey contract

(or "LUMP SUM" contract)

SOURCE: I.T.C. Geneva

Purchaser turns the key	Contractor delivers
	- Project management - Process technology - Design - Construction - Supply of equipment - Erection - Training - Commissioning and perhaps - Operational management ("product-in-hand") - Marketing

For this type of relationship, the parties may structure their contract according to the above-mentioned UNIDO model for lump sum contracts* Characteristic of this model is its proximity to sales contracts: the contractor sells a complete plant to the purchaser for a lump sum. In view of the broad range of goods and services to be provided by the contractor, however, it is quite common in this case that the contractor enters into a number of sub-contracting arrangements for various elements of the plant.

Turnkey contractual arrangements of this form have taken place in most developing countries, particularly in the early stages of a country's industrialization, when domestic technological service capabilities are limited and it is important to ensure that the overall responsibility for setting up and commissioning an industrial plant is entrusted to a transnational manufacturing or engineering enterprise with experience in the particular field. While this arrangement may result in efficient project implementation and commissioning of industrial plants, problems and difficulties may be faced in the post-commissioning stage of plant operations, particularly in developing countries if the purchaser is unable to mobilize adequate knowledge and experience in plant operations.

As a direct result of difficulties that have been encountered at the plant operation stage, a major variation in the structure of turnkey contracts has taken place in some developing countries where it has been sought to entrust the turnkey contractor with additional responsibilities, in some cases to the point where the contractor undertakes to ensure that the product of the plant is available in the form and to the extent defined in the turnkey contract. Such a product-in-hand concept is a significant variation of the turnkey contract concept and is intended to ensure that the turnkey contractor must see to it that teething problems in the operational period are overcome.

In recognition of the problems that follow with genuine turnkey contracting - mainly in the form of high cost and slow transfer of technology - intermediate solutions have been sought which retain the advantage of having one main responsible contractor.

* UNIDO model form of Turnkey Lump Sum Contract for the construction of a fertilizer plant (UNIDO PC.25 9 dec. 1931)

Semi-turnkey contract

SOURCE: I.T.C. Geneva

	Contractor A delivers Construction
Purchaser provides Project Management and obtains necessary assistance in	**Contractor** B - Equipment lot B Sub-project management and turn-key delivery
	Contractor C - Equipment lot C Sub-project management and turnkey delivery
Operation Marketing	

The Swedish Association of Mechanical Industries has sponsored a set of international general conditions suited to semi-turnkey deliveries, ABA 78.* These conditions acquired their basic characteristics from the ECE general conditions for supply and erection of plant and machinery. The novel features of ABA 78 lie in their elaborate provisions regarding such "turnkey" aspects as testing (both at the manufacturing and the commissioning stages), defects in the plant and termination of contract. UNIDO has also prepared a model contract for semi-turnkey situations, but this model so far exists only in draft form.

(f) Factors to be considered in choosing turnkey variety

The genuine turnkey approach has many advantages. It:

- enables the purchaser to set up modern processing plants without foreign equity involvement;
- places the responsibility for overall performance of the ready plant on one contractor;
- favours purchase of the whole plant for a lump sum price;
- facilitates rapid project implementation, particularly since it enables design and construction to proceed step-wise in an integrated manner;
- can be extended to include "product-in-hand", meaning that the purchaser is not only equipped to produce the desired output but is also staffed and trained to do so.

Against these advantages, the risks and dangers of turnkey contracting lie in:

- high cost for lump sum price (including contractor's risk margin);
- insufficient involvement of purchaser to allow him to appreciate fully and to learn the technology embodied in the plant;
- difficulty in making maximum use of local sub-contractors and local materials;
- lack of competition since only a few firms can respond to financial, technical and managerial requirements; also competitors offer "unique" plant, thus rendering meaningful comparisons difficult.

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* General Conditions (International) for the Supply of Plants, ABA 78 Intl., available from Sveriges Mekanförbund, Box 5506, S-114 85 Stockholm, Sweden.

CHECK-LIST FOR SCREENING KNOW-HOW AGREEMENTS OR KNOW-HOW CLAUSES IN OTHER AGREEMENTS

	Yes	No
1. Is know-how a key acquisition through the licence agreement? To be a key acquisition, a large payment for it must be involved and substantial part of the know-how maintained in secrecy. If "no", review only starred questions.		
*2. Does the know-how agreement include services such as engineering or technical services, or are they separately contracted for?		
3. Does know-how support a patent licence?		
*4. Is know-how defined as constituting, in part or whole, secret information?		
*5. Is there then an acceptable secrecy clause in the agreement?		
6. Does the licensee want the following rights in market territories (for each market territory):		
Right to make product?		
Right of use of process?		
Right to sell product?		
Right to sublicense know-how?		
Exclusivity to make?		
use?		
sell?		
7. Are there special features to know-how (seen from licensee's viewpoint) such as:		
Savings in investment over competitive technology?		
Significantly lower costs of production over competing technology?		
Product has a price advantage over those of other local producers?		
Savings on a critical resource (raw material, power, foreign exchange, labour)?		
8. Can know-how be described as:		
Extending practically across the total plant?		
Confined to a few critical areas?		
9. Does the agreement define		
Product?		
Process?		
Capacity?		
Starting materials?		
10. Is know-how fully defined?		
*11. Has the licensee received the prior disclosure of know-how? If "no", is there a know-how description clause?		
Not applicable		
Not significant		
12. Has know-how been defined in the agreement as:		
Know-how in the licensor's possession as of date of agreement?		
Know-how in licensor's possession of a specified date or event (i.e., plant start-up)?		
Know-how in the licensor's current possession together with process improvements that will come into his possession over the life of the agreement?		
When will know-how be disclosed to the licensee?		
13. Will know-how comprise:		
Written information?		
Overseas training of personnel?		
On-site training of personnel?		
Organizational advice?		
Combinations of above?		
Specify:		
14. Is know-how transmittal defined?		
15. Has the licensor placed any restraints on the licensee in respect of the following, and are they reasonable considering fees, markets etc.?		
Licensor can make —— use —— sell —— licensed product in the licensee's territory (domestic and export)? The right is exclusive —— non-exclusive ——		
(a) Field of use		
(b) Marketing territories (including export)		
(c) Site of manufacture		
(d) Volume of production		
(e) Process improvements		
Outflow ————		
Inflow ————		
(f) Product quality		
(g) Right-of-use of know-how after lapse of agreement		
(h) Compulsory purchases of engineering or materials from the licensor		

Source: UNIDO DTT Series - No. 12 (ID/233)

Yes No

16. Is duration of agreement defined

From commencement of agreement?

From a fixed date?

From commencement of production? (Would it be production at full capacity?)

Is agreement period sufficient for absorption of technology?

*17. Is the secrecy period longer than the agreement period?

If so, is it acceptable?

18. After lapse of the agreement can the licensee use the know-how for higher production? At new sites etc.?

*19. Is remuneration to the licensor clearly defined?

Performance of know-how

20. Does the licensor provide guarantees/warranties in respect of process (or product) performance?

21. Is the licensor financially liable for defective performance?

22. Is there a specification of performance in the agreement?

23. Mark W or G when a warranty or guarantee is given for each of the specifications listed below.

Volume of production per year/shift

Yield of product/productivity/ material efficiencies

Purity of product/product specifications

Consumption of utilies

Catalyst life/die life/refractory life

Mechanical warranties

Pollution and other statutory regulations

24. Are a design conference and test procedures conference defined in the agreement?
Not applicable _____

25. Are remedies available to the licensee for faults and deficiencies defined in the know-how agreement?

26. For measuring performance, is parameter criticality defined by the licensee?

Yes No

Discharge of liabilities

27 *(a)* Has the licensor reserved to himself options in discharge of liability for defective performance?

(b) Does the contract establish at what point and/or stage the licensor becomes liable for discharge of liabilities?

(c) Does the licensee have the option of accepting damages or requiring the licensor to commit himself to correct the process?

**(d)* Does the contract provide that if the process or product cannot be corrected within the limits of the licensor's liability the licensor will correct the defect at the licensee's cost?

*28. Are there specific provisions for settling technical matters by arbitration?

*29. If the know-how is unsupported by patent licences, does the licensor indemnify the licensee if the know-how infringes on patents of third parties?

Know-how services

30 *(a)* Does the licensor agree to train the licensee's:

Plant operators?
Salesmen?
Managers?

(b) Will training be at:

Licensor's site?
Licensee's site?
Both?

Will the training include maintenance?

(c) Does the licensor agree to provide his personnel at the licensee's site to effect know-how transfer?

(d) If "yes", does the licensee have the option of approving the qualifications and experience of the licensor's personnel?

(e) Will the licensor provide the following services:

Plant operation manuals?
Plant maintenance manuals?
Proprietary materials?
During term of agreement? Beyond term?
Quality control standards?
Product testing facilities at licensee's site?
Plant start-up services?
Marketing support?
Product literature?
Customer technical service?

Is the fee for these services included in the know-how fee?

Source: UNIDO DTT Series - No. 12 (ID/233)

	Yes	No
31. Does the agreement contemplate expansion of the licensee's facilities? Are adequate provisions made for access to further services from the licensor and payments therefor?		

Process improvements

32. Is there a clause defining process improvements and corresponding right-of-use clause?		
33. Does the licensee have access to the licensor's improvements? If "yes", how is "access" defined?		
34. Will the licensee only obtain improvements that have been commercialized by the licensor? ("No" may mean that all improvements will be disclosed.)		
Will patented improvements be available to the licensee?		
Is there a disclosure fee for improvements?		
35. Are there provisions for reciprocal flow of information and right-of-use from licensee to licensor?		
36. Will improvements flow in both directions throughout the life of the contract?		
37. Will the licensee's personnel be trained to use the process improvements?		
Where?		
38. Who will bear the training costs?		

Source: UNIDO DTT Series - No. 12 (ID/233)

CHECK-LIST FOR SCREENING PATENT AGREEMENTS OR PATENT CLAUSES IN OTHER AGREEMENTS

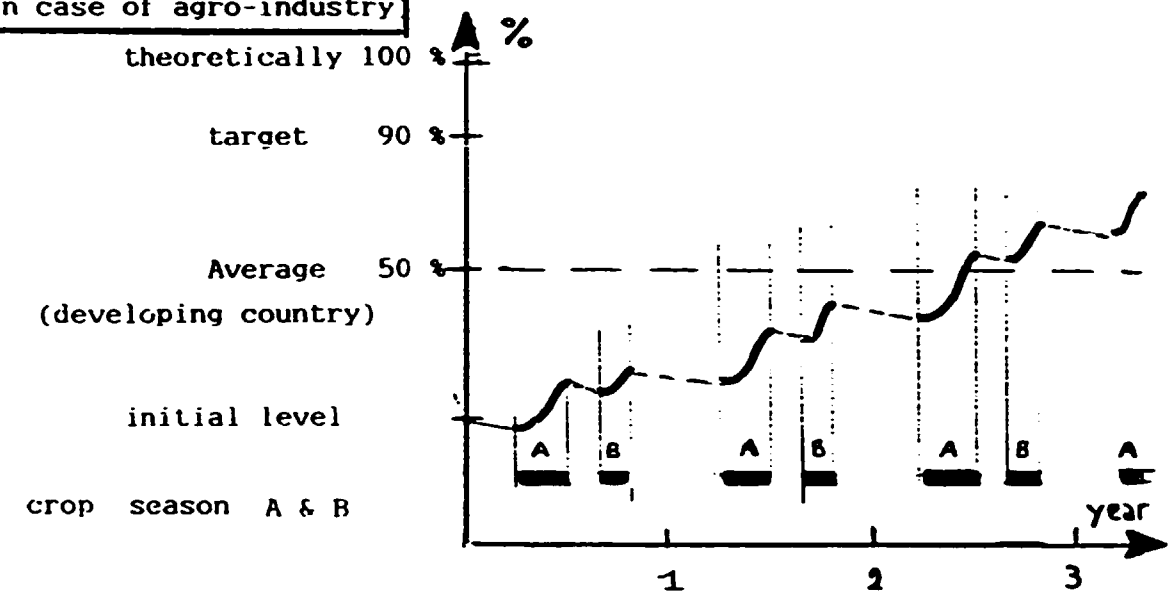
	Yes	No
1. Is the patent licence a separate document? or Are there patent-related clauses in the agreement?		
2. Does the patent licence support know-how,—i.e., is it essential for use of know-how?		
3. Is the patent licence expressly sought by the licensee?		
4. Are several patents covered in the patent licence? Are they listed?		
5. Have the patents been issued in the licensee's market territories? Domestic Export		
6. Is there a "most important" or "basic" patent?		
7. Does the patent have a sufficiently long unexpired life?		
8. Do(es) the patent(s) relate to and define: (One or more elements may be involved) Product Process or technique Design or model Formula Other Specify:		
9. Is there a patent-related fee or royalty?		
10. Has the licensee had access to the published patents?		
11. Has the licensee negotiated rights of (grant of): Make Use (as applicable) Sell in domestic territory?		
12. Are there similar rights for export territories?		
13. Would the licensee be the sole patent licensee in domestic (national) territory?		
14. Can the licensed product (or product produced through the licensed process) be imported by a party other than the licensee?		
15. Does the licensor represent that licensed patents are not infringing on third-party patents? ("No" would be inadmissible)		
16. Is the licensee indemnified against third-party claims of patent infringement? ("No" would be inadmissible)		
17. Who has the responsibility for detecting infringement of the licensed patent? Licensor _____ Licensee _____ Both _____		
18. Who will bear the costs of litigation in the event that the licensor's patents are infringed? Licensor _____ Licensee _____ Both _____		
19. Is the licensor's overall financial liability in the patent agreement specifically covered?		
20. Can the licensee operate the process, make and sell the product, after the lapse of the agreement but before the lapse of the patent?		
21. Is the licensee obligated to purchase Patented ____ Unpatented ____ products or components from licensor?		
22. Is the licensor obligated to keep all licensed patents in force?		
23. Is a most-favoured-licensee clause incorporated in the agreement?		
24. Are any of the following restraints present, and if so, accepted by the licensee? Site of production Volume of production Pricing of products Sublicensing rights Marketing area Product mix (field of use) Compulsory use of the licensor's personnel		
25. Will the licensee have rights to future patents of the licensor in field of use (particularly, patents on improvements)?		
26. Are provisions for cancelling the patent licence (if any) acceptable to the licensee?		
27. Is the duration of the agreement defined?		
28. Is the governing law of the contract (which is not a subcontract) that of the licensee's country? ("No" would generally be inadmissible)		

Source: UNIDO DTT Series - No. 12 (ID/233)

Self-reliance & Training

1. BUILDING UP of LOCAL STAFF COMPETENCE

in case of agro-industry



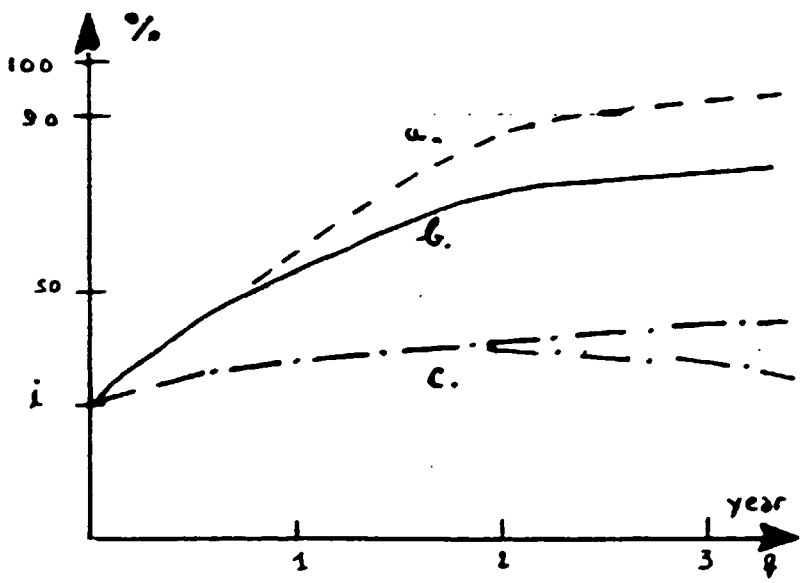
2. EVOLUTION of LOCAL STAFF COMPETENCE

in case of food industry

a) with periodic technical & management assistance

b) only periodic technical assistance

c) without any assistance



* Training is a crucial component for technical transfer of technology.
* Building up and improving competence and self-reliance takes time.

1. BUILDING UP of LOCAL STAFF COMPETENCE

A. informal training during setting up the plant

B. mechanical training abroad

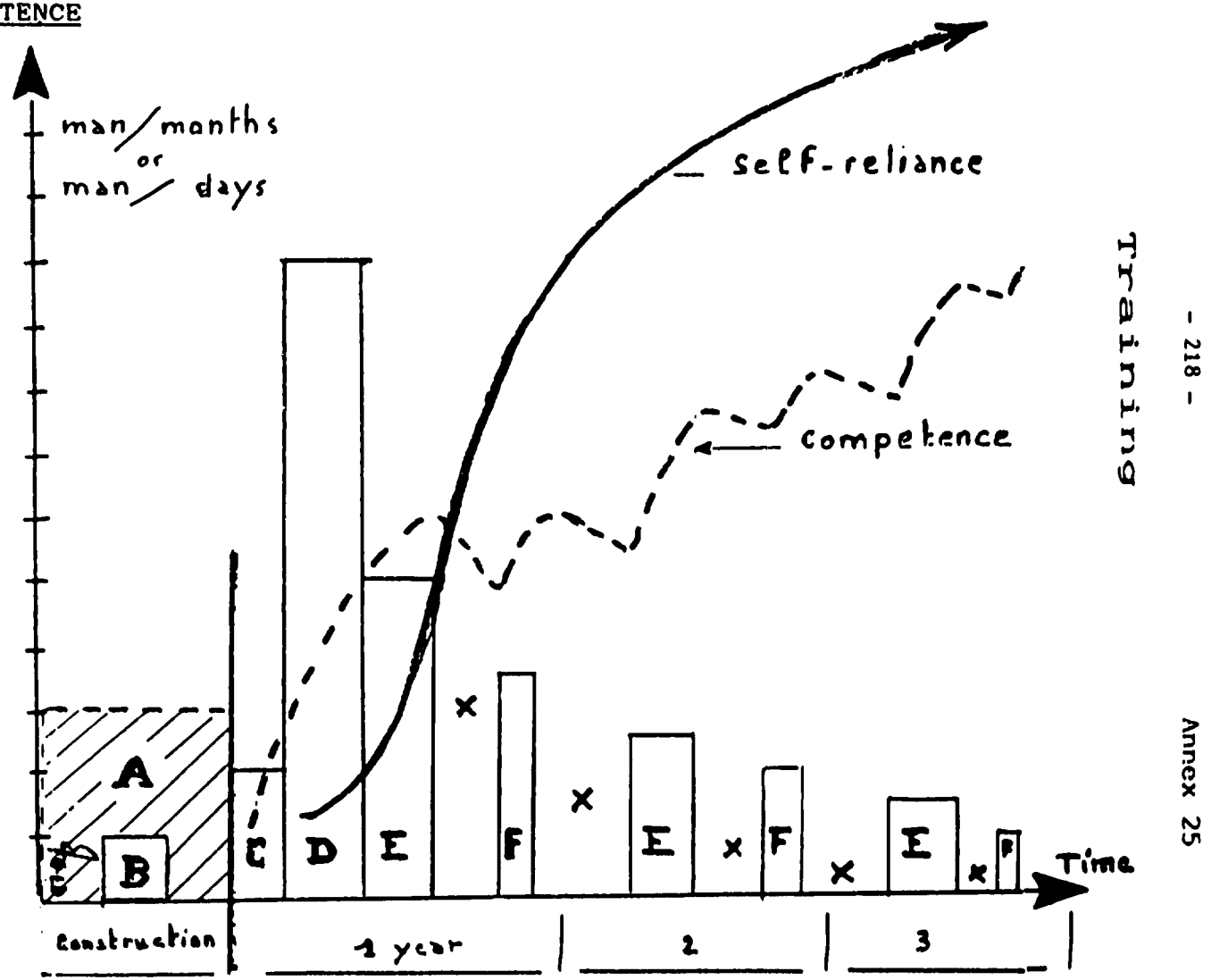
C. running tests

D. production start

E. follow up assistance
   - mechanical
   - quality control
   - management

F. complementary training

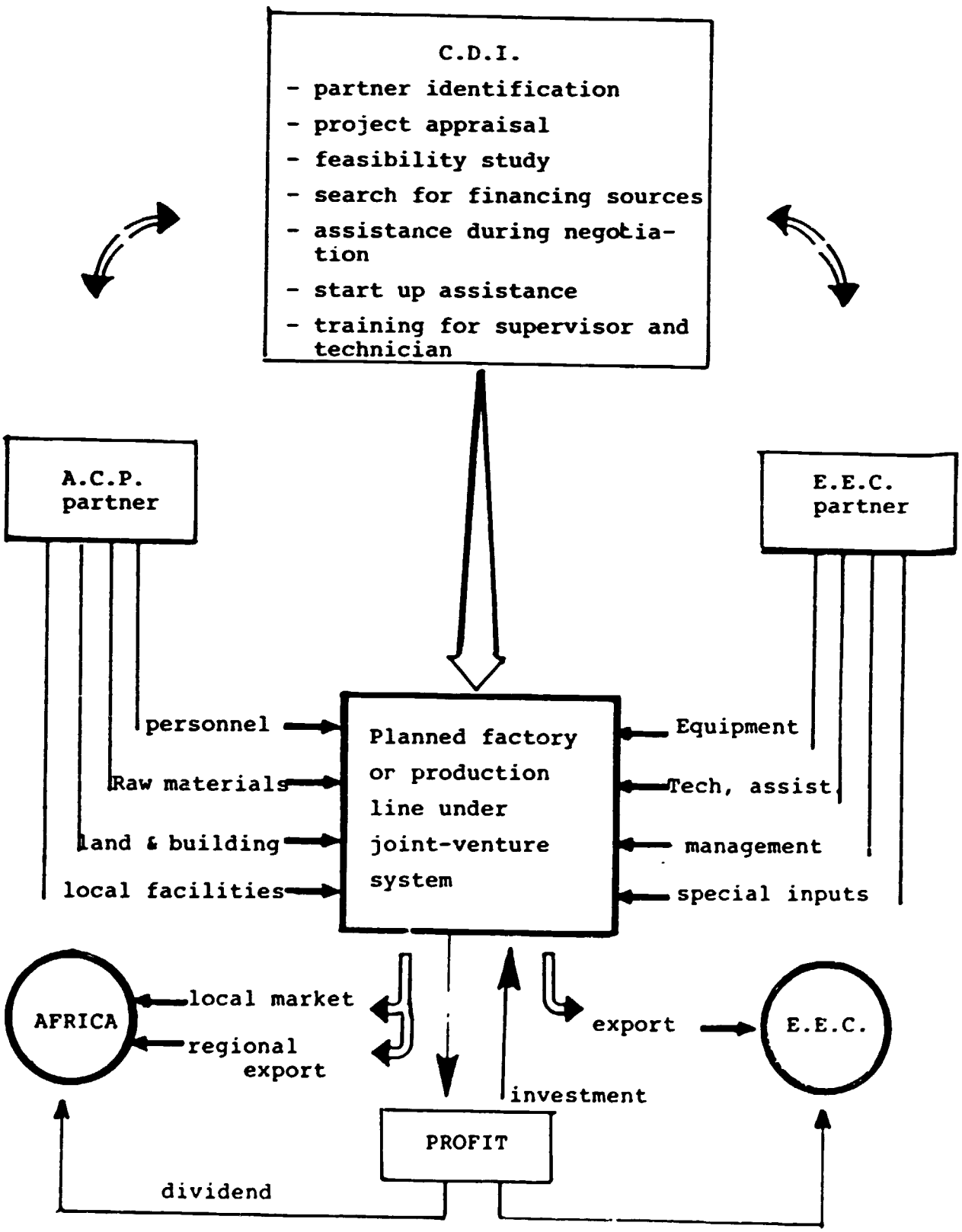
X. highlight of weak points



Annex 26

STRUCTURE OF CONTRIBUTION PROVIDED BY ICD/CDI
INDUSTRIAL DEVELOPMENT CENTRE
AT BRUSSELS FOR EEC COUNTRIES

in case of a joint-venture project



Annex 27

Structure of a JOINT-VENTURE

Participants / Inputs needed	Promoting agency	National partner	Foreign partner	Local bank	Foreign bank	host country
Feasibility study			X			
Land		X				
Building/civil engineering		X				
Manpower		X	Expertise			
Equipment			X			
Technology			X			
Management			X			
Market(s)		Domestic	Exports		Exp. credit & insurence	
Incentives						X
Incorporation of joint company		X				X
Loan financing for:						
- feasibility study	X					
- imported equipment					X	
- domestic fixed investment				X		
- working capital				X	X	
Equity		60%	40%			
Benefits		Dividends	Dividends	Interest	Interest	For. exch. ings

Source: ITC (Assesment of export project)

- BIBLIOGRAPHY -

UNIDO MONOGRAPHS on appropriate industrial technology :

These booklets describe various food industry main features as well as the storage requirements for their products.

HOW TO START MANUFACTURING INDUSTRIES

Ref

Quick (3-6 page) reviews providing basic data, processes, lay-out, caracteristics and description of cases but equipment costing is obsolete + Technological and Investiment perspectives.

HOW TO START AGRO-FOOD INDUSTRY

Ref oct. 1990

Updated informations in-line with the above reviews

Regenerating African Manufacturing Industry : An approach

Ref PPD 97 n° 1 nov. 1988

. ..lation of a systematic top-down approach for in depth rehabilitation studies, .. id means to restore industry and general policy

Regenerating Africa.' Manufacturing Industry : Countries briefs

Ref PPD 97 n° 2 nov. 1988

Detailed diagnostic study showing requirements and prospects for rehabilitation of industry in 51 selected countries ; trends, needs and problems ; major findings.

Development of Human Resources in Transfer of Technology

doct GC 3/8 and I D B 5/37

Compendium of sample transfer of Technology contracts

Ref IPCT 82 by Ruth Fitz Gerald 1989

Sample of contracts for various industries with details of clauses ; indexes by subjects & industry type ; glossery of terms.

Guide to industrial purchasing

Ref ID/82 UNIDO

Procedures check list for single equipment purchase. On this matter consult also

International Federation of Purchasing, 1 rue Aux Laines, BRUSSELS, Belgium

- Industry in SSA

  by S. Lall 1987

  World Bank Reference book in this matter

- The constraints on Industrial - Cooperation between firms

  EEC Commission fev 1985

- Barriers to Industrial Cooperation between firms

  EEC and AGP countries

  EEC Commission 1986

ITC Publications and related materials

- Compendium of Contracts on import procurements

  (Vol. III Plant & Equipment) Geneva 1989

  5 samples of general conditions are provided page 36-75

For new projects or rehabilitation work, materials may be provided by the following hand books below :

- Organization, Presentation and Evaluation of Training 1985
- Manual on Wooden Packaging 1986
- Financial Rehabilitation of Export Enterprises 1987
- Manual on Packaging Fresh Fruits and Vegetables 1988
- Training Needs Analysis for Enterprises 1989
- Thesaurus of International Trade Terms 1985
- Guidelines on Materials Management for imports 1982
- Role of Packaging in the Distribution System 1983
- Shipping Guidelines for Importers 1984
- Bid Evaluation in Import Procurement 1985
- Stock Management 1985
- Maintenance in Import Management 1989

ITC publications are available from the International Trade Centre UNCTAD/GATT, Palais des Nations, 1211 Geneva 10, Switzerland