THE DEVELOPMENT OF SMALL-SCALE FOOD PROCESSING ENTERPRISES

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ABSTRACT

The development of small-scale food processing enterprises creates employment opportunities and generates income particularly for poor people in rural areas. This paper describes the advantages and benefits of small-scale food processing and the challenges facing small entrepreneurs, enterprise development agencies and Governments. The challenges range from markets and business skills, consumer perceptions, the social and political climate, access to information and access to credit. The paper then describes the approach and activities of Intermediate Technology in helping to overcome these challenges and develop small-scale food processing enterprises. The activities assist the entrepreneur to make informed decisions and achieve quality, profit and sustainability. The principal activities are: training, publications, technical enquiries, technology development and technology transfer.

Key words: *Small-scale food enterprices, employment, income generation, quality, profit, sustainability.*

INTRODUCTION

The development of small-scale food processing enterprises creates employment opportunities and generates income. Small-scale food processing is a viable option for poor people in developing countries. It requires low capital investment and technologies which can be easily understood and transferred. At small-scale the diverse range of high quality food products which can be made enables small entrepreneurs to take advantage of market opportunities. However there is a lot of competition both nationally and internationally from all sizes of enterprises. For a small-scale food processing enterprise to be successful and for this sector to continue to make a valuable contribution to economic growth and development there are three essential factors that are all equally important: Quality, Profit and Sustainability. In this paper I shall describe the context and challenges facing small-scale food processing enterprises and describe what Intermediate Technology is doing to help meet these challenges and help develop this sector. In essence I shall describe how to achieve quality, profit and sustainability.

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THE ADVANTAGES AND BENEFITS OF SMALL-SCALE FOOD PROCESSING

Sustainable small-scale food processing responds to local needs, builds on local knowledge and skills and uses local resources. Small-scale food processing equipment is adaptable. It can be owned locally, managed locally and repaired and maintained locally. Small-scale food processing can also increase the choice of food products available to the consumer.

Small-scale food processing operations have a low capital investment requirement typically between One Hundred and Five Thousand Pounds, use local raw materials, involve technologies that can be easily understood and transferred and make small quantities at a profit.

By combining well established principles and appropriate equipment with good standards of quality and hygiene, small enterprises are able to make products of high, marketable quality.

Typically small enterprises can make a wide range of products using techniques such as drying, pickling, smoking and salting. Other technologies suitable for small-scale food industries include oil extraction, baking, fermentation and the production of juices, jams and snackfoods.

The benefits of small-scale food processing include:

- the potential for adding value to basic agricultural produce and access to wider markets for agricultural produce
- improving the small entrepreneurs' income
- improved use and control of local resources and skills
- helping to create employment for poor people particularly in rural areas.

ENTERPRISE DEVELOPMENT AND FOOD PROCESSING: THE GLOBAL SCENE

The economic system which has had the greatest impact on the global economy is the market economy. In a market economy there are two contrasting scenarios. On the one hand there is unlimited choice for the consumer who can afford it. On the other hand, for the farmer who supplies the agricultural produce, there is dependence on the demands of the market. There are also two contrasting physical effects. One is that small-scale enterprise development can provide alternative opportunities to agricultural production. The other is that multi-national corporations have expanded and have better access to markets, media and credit than the small entrepreneur. Furthermore they can influence manufacturing practices and standards which do not necesssarily benefit the food industry as a whole but only the larger companies who can afford to implement the required changes.

The other picture in the scene which requires greater examination is food technology itself. Rapid advances in all aspects of modern food processing have created a technology gap in which the specific needs of developing countries have been overlooked. Northern industrialised technologies are not usually appropriate to the requirements of small-scale producers where the need is for low cost technologies which can be operated and maintained locally. There are unfortunately too many examples where modern industrialised plants have been installed only to become redundant after a short time because the local infrastructure could not support them. A typical scenario is that the modern food processing operation is never able to run at anywhere near its production capacity and therefore can never be viable. An example of this is the construction of a modern fruit and vegetable processing factory in Ecuador. At maximum production capacity, this factory would dominate all other processing activities in the region. yet, despite the presence of foreign consultants and five years supply of spare parts for the machinery, the factory has still to start production. Now local farmers are using the factory to clean their vegetables prior to distribution throughout Ecuador. However this particular business still has to continue to compete with the local distributors and the advantages and benefits of selling to the factory continue to be hotly debated amongst the farmers groups.

CHALLENGES FOR THE SMALL ENTREPRENEUR, ENTERPRISE DEVELOPMENT AGENCIES AND GOVERNMENTS

The market economy and the advances in food technology offer great opportunities for the food industry. However there are a number of challenges for the small-scale sector of this industry which, if not tackled can limit the success not only of the enterprises themselves but also the success and purpose of enterprise development agencies and the consequential benefits to the economy and society. The first step in tackling any challenge is to be able to define it.

1. Markets and Business Skills

With any business, large or small, viability depends on there being a market for the goods which are produced. This may sound like an obvious statement but it is surprising how often businesses are established without this prerequisite. Thus, for example, the starting point for a food processing enterprise should not be that there is a glut of tomatoes... therefore we can make tomato sauce. The starting point should be that there is a demand for tomato sauce; where can I buy the tomatoes? Marketing is also affected by the social and political climate, described below, and the competition both from national and international companies.

The other essential prerequisite is the desire to run a small business, whatever the reasons that produce that desire. If that desire is lacking then it is unlikely that the business will be a success. The roles of an enterprise development agency in this process are to emphasise that 'ownership' and responsibility for the enterprise rest with the entrepreneur and to encourage more potential entrepreneurs to 'come forward' as opposed to identifying people thought to be suitable.

2. CONSUMER PERCEPTIONS

Related to the market is of course the perceptions of the consumer towards small-scale food processing businesses. These perceptions can be categorised into two general areas:

a. **Food Safety**

Food safety is the responsibility of all food businesses - large or small. However it is the small businesses who have to work harder to convince the consumer that their food products are just as safe as those produced by large businesses. This task should, in theory, be aided by the fact that the great majority of small-scale food processes have an extremely low risk of causing food poisoning. Surveys carried out in Indonesia, Nepal and India have shown that, for example, the microbiological count in street foods are not a serious problem. (Battcock 1993).

This does not mean of course that there is nothing to be done with regard to food safety: there are cases of food adulteration and food poisoning which can be traced back to small businesses. Thus food processing enterprise development programmes must also include training in quality control techniques to ensure that the entrepreneur knows how to control the process to maximise food safety.

b. **Packaging**

Another key consumer perception that can be a constraint to the success of a small business is the appearance of the product on the shelf and how that relates to the quality of the food inside the package. It is a fact that there are only limited options regarding choice of packaging for a small business. The creative and innovative instincts of the entrepreneur are most clearly called upon here to attract the consumer to buy his or her product.

3. SOCIAL AND POLITICAL CLIMATE

The social and political climate has a critical role in the development of the small-scale business sector and most of the above mentioned constraints can be related in some way to the social and political climate. In fact it can be said to influence all aspects of small-scale food processing enterprise development. For the purposes of this paper I have categorised it into three main areas:

a) **Government Policy**

The following areas are most obviously related to the policy decisions of Governments and can constrain small-scale enterprises: Quality standards, subsidies and import policy.

QUALITY STANDARDS

Quality management costs money and the increasing legal requirements for more detailed quality management systems mean greater costs. Small businesses are thus at a disadvantage because they can least afford to implement the full requirement of the quality management standards. Already there are examples in Europe where the livelihoods of small companies could be threatened by the Standards Regulations BSS750 and ISO9000.

Another issue is the legal requirement of quality standard certificates for different food products. Often this is an extremely expensive procedure which includes paying for lengthy and detailed food analysis as well as the administrative fees. This puts the small business at a disadvantage. An example is the requirement for a quality standard certificate from the Sri Lanka Standards Institution for jams, cordials and fruit drinks (Ariyabandhu 1993). At small-scale these products, which have an extremely low risk of causing food poisoning, can be made at very high quality. Certainly it is always an advantage to the business if it can show compliance to legal requirements. However a less expensive alternative is required which is applicable to all industries. In this way, in terms of quality assurance, small enterprises can be judged by the consumer as an equal to larger enterprises. Furthermore a less expensive quality assurance system applicable to all industries will avoid any negative perceptions attributed to a two-tier system.

SUBSIDIES

A clear indication of support for the development of the small-scale sector can be best demonstrated by the provision of subsidies. For example business parks which are tax free zones and include low rent buildings should also be made available to the local small industries.

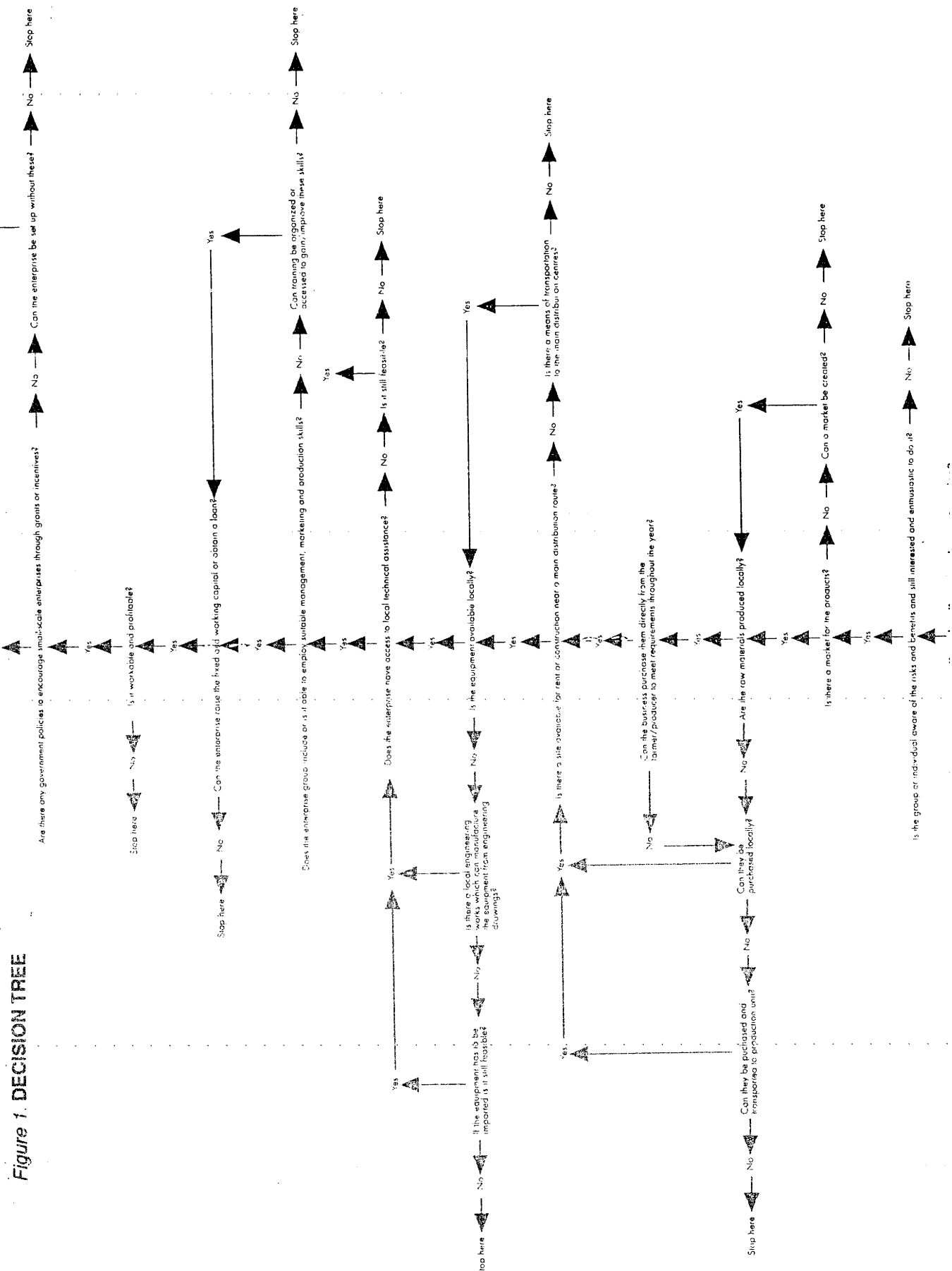


Figure 1. **DECISION TREE**

DECENTRALISATION

Any policy to centralise the food industry clearly limits the opportunities for economic growth in the rural areas. This is discussed later with regard to oil processing in Zimbabwe.

IMPORT POLICY

High taxes and tariffs on the importation of certain raw materials and low taxes on the import of finished goods can be a disadvantage to the small business if those imported raw materials are required to manufacture a product which is imported at a low tariff. This makes it more difficult for the small business to compete.

b) Access to Information

Information is a very broad area and includes not only specific technical information but information on business, marketing, credit and training programmes. A lack of good quality information in any one of these areas impairs the ability of the small entrepreneur to compete in the marketplace. Information is also the area where small enterprise development organisations can take a more leading role and achieve early results. Nevertheless, Government policy can certainly influence the information resources available to the small entrepreneur.

c) Access to Credit

As serious a constraint as a car with an empty fuel tank, credit is often the biggest obstacle to the small entrepreneur before he or she can get the business off the ground and despite the many years of enterprise development programmes, the number of successful credit schemes for small enterprises are very few. Some notable examples are The Grameen Bank in Bangladesh and the Rural Enterprise Development Service (REDS) in Sri Lanka. It therefore seems that, still, small enterprises are seen as a bad risk. Certainly in any evaluation of enterprise development one has to look at the complete picture. In that respect credit is just one of many factors which constrain small enterprise development but it is a factor which is clearly dependent on many social and political aspects. Thus alleviation of the constraints across all the policy areas described above may improve the opportunities for small entrepreneurs to obtain credit. If there is more wide ranging support for small enterprises then the risks and challenges faced by them will be more comparable to those faced by large enterprises and so credit organisations can be more confident about loaning their money.

The decision tree in Figure 1 illustrates the process of analysing the feasibility of any business venture. Many of the factors which challenge a small business are described in a logical manner and their relative importance to the success of a business is indicated. In other words the easier it is for a small business to climb the decision tree the more likely it is that the enterprise will be successful.

HOW INTERMEDIATE TECHNOLOGY IS HELPING TO DEVELOP SMALL-SCALE FOOD PROCESSING ENTERPRISES

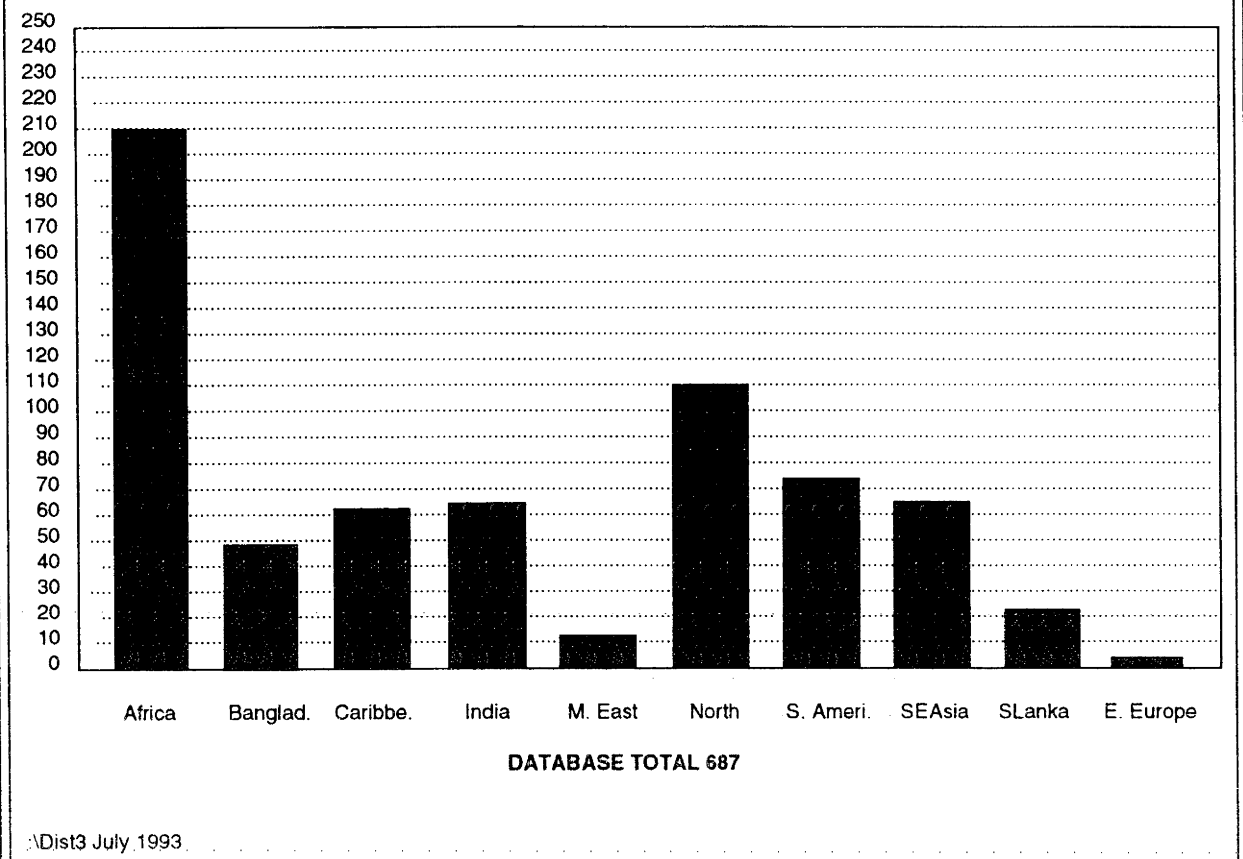
The mission of Intermediate Technology is to enable poor people in Africa, Asia and Latin America to develop and use productive technologies and methods which give them greater control over their own lives and which contribute to the development of their communities. One of ITDG's most important principles is that 'Users must be Choosers'. In other words Intermediate Technology aims to provide technology choices from which the intended beneficiaries must decide what is appropriate to their needs. In this respect, enterprise development is no different. Enterprise must be a choice and the specific activity of that enterprise must also be the choice of the entrepreneur.

Intermediate Technology, a charity established in 1965, now has offices in seven countries including the UK office. Our main technology areas are Food Processing (e.g - Oil extraction in Zimbabwe); Agriculture (e.g - irrigation in Peru); Livestock (e.g - Vets in Kenya); Fisheries (e.g - boat building in India); Energy (e.g - Micro-Hydro, Nepal, e.g - stoves, Sri Lanka); Housing (e.g - Quincha Mejorada, Peru); Textiles (e.g - Dyeing Training Course, Bangladesh); Manufacturing (e.g - blacksmiths, Zimbabwe); and Mining (e.g - Shamva, Zimbabwe).

The choice of technologies and methods begins with information. An informed decision demands an understanding of the needs to be served, the options available and the techniques, skills and resources required for a technology to be adopted successfully.

The food processing programmes of ITDG undertake the following activities to assist the small-

Figure 2. **FOOD CHAIN DATABASE COUNTRIES OF CONTRIBUTION**



scale entrepreneur make informed decisions.

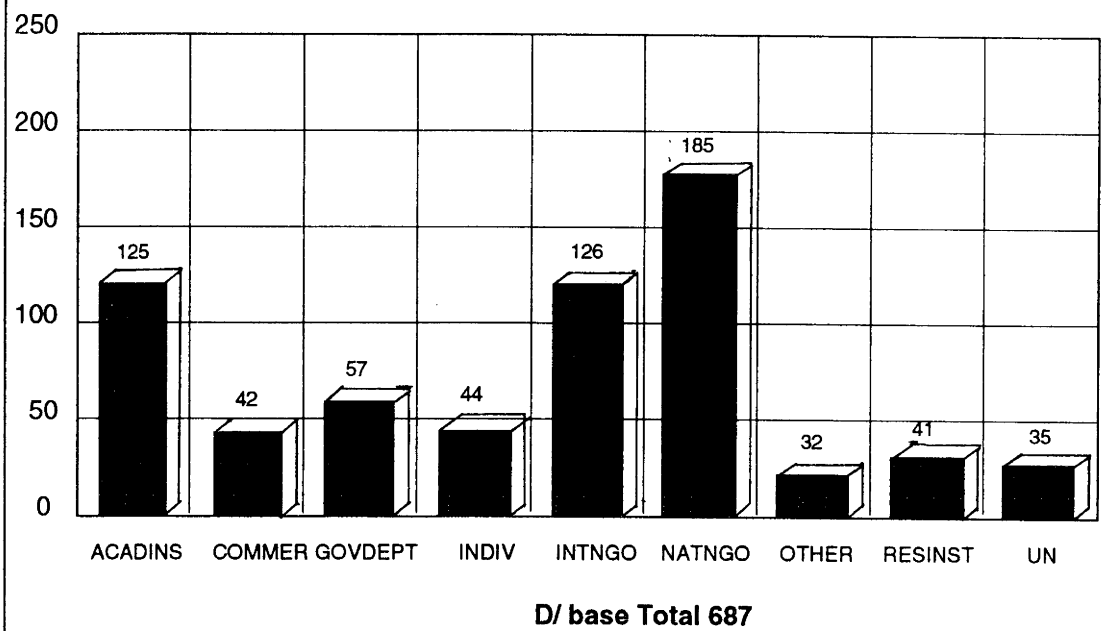
TRAINING

Training is a very effective way of providing skills and knowledge and is by far the most important activity in all the countries where IT is working in Food Processing. The principal objective is to train trainers from a wide range of development organisations. The courses are not solely limited to technical training but are designed to cover the other important such as marketing, enterprise development, and book- keeping. After the training the trainers continue to transfer this information by training those interested in establishing a small business. The training courses in Bangladesh and Sri Lanka have created 370 businesses and 950 jobs. Sri Lanka has been running these kinds of training courses for the longest period of time and now, is preparing for a Regional Training course in July this year. An interesting coincidence is that one of the participants comes from Lae. Training courses are also now in operation in Bangladesh and Peru.

PUBLICATIONS

ITDG publishes a broad range of books and journals about appropriate technology and development. The Food Processing Programme contributes to this method of providing information in the form of technology directories such as 'Tools For Food Processing'; technical booklets such as 'Making Safe Food: A guide to safe food handling'; technical briefs such as 'How to make Fruit Juices'; and our in-house journal 'Food Chain' which promotes south-south information exchange and is now read by more than 7,000 people across 95 countries. (Figs 2-3). The most effective way to share the information is to inform those who will inform others. For that reason the majority of the

Figure 3. **FOOD CHAIN STATISTICS**
Subscriber type



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publications are directed to field workers. All the Food Processing Programmes develop their own publications. Hence also available are technical booklets and technical briefs in Bangla, Sinhala, Tamil and Spanish. A pilot version of 'Food Chain' in Spanish is now being also evaluated in Peru.

TECHNICAL ENQUIRIES

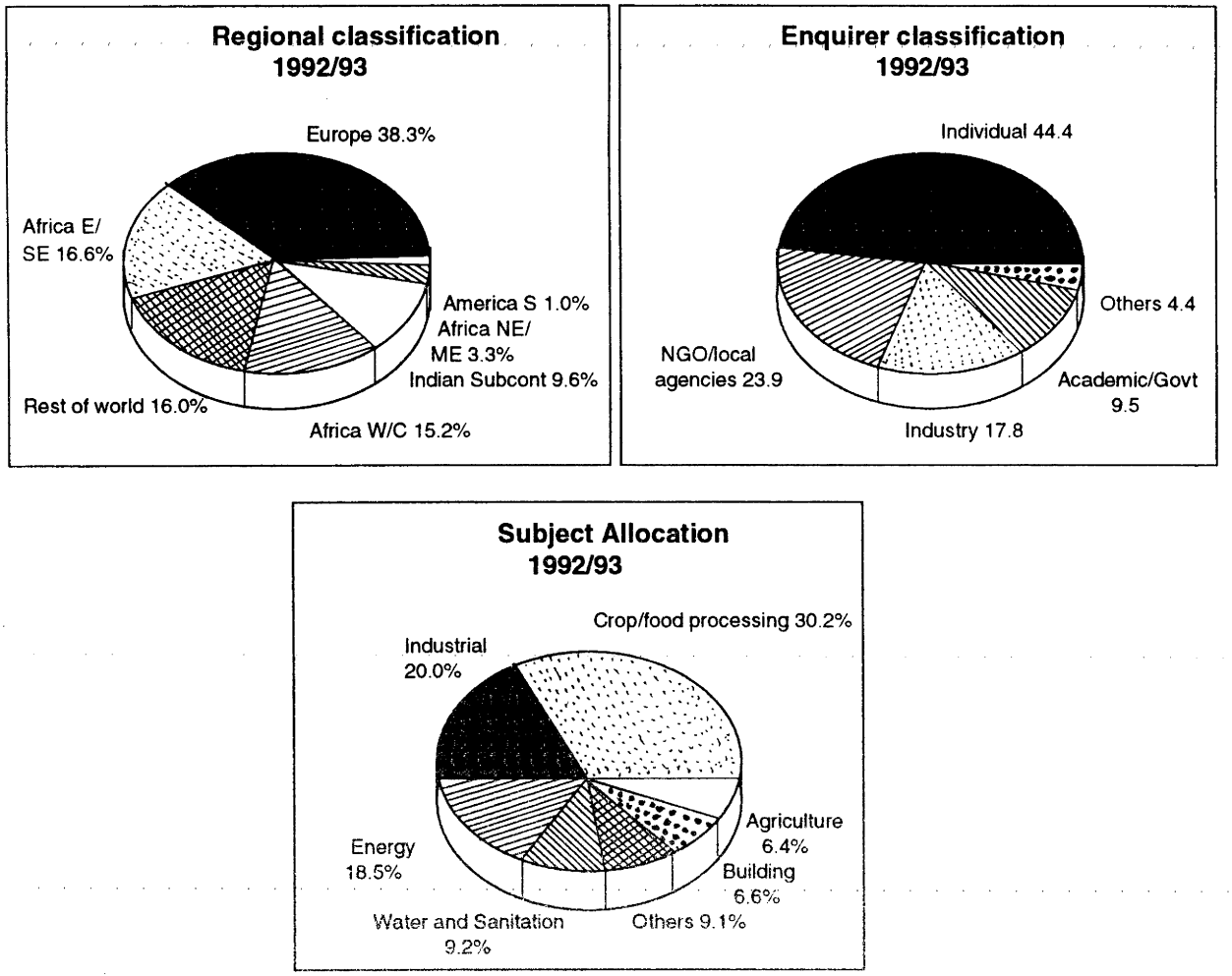
The Technical Enquiry Unit responds to a very wide range of technical enquiries from around the world. However the most common enquiry is on food processing. Of the 1500 enquiries received per year, approximately 30% request information on food processing and 26% were received from NGOs and other development organisations and 45% from individuals. For its resources the TEU can draw upon 30,000 technical articles, databases and networks. The TEU is part of a European network which broadens the range of specialist knowledge available to an enquirer and is actively building south networks to be able to refer enquirers to sources of information in their country or region. One of the advantages here is that IT already has a network with the other IT offices, a few of whom now wish to develop their own enquiry services. (Figure 4: TEU pie charts).

TECHNOLOGY DEVELOPMENT

As stated at the beginning of this paper, sustainable small-scale food processing responds to local needs, builds on local knowledge and skills and uses local resources. It therefore follows that appropriate technology development should follow the same principles.

Most of the food processing programmes of ITDG are involved in technology development. In Peru a recently completed UNIFEM project mainly concerned the development of a wide range of appropriate food processing technologies and their adoption by women's groups. Food Processing Centres were established in the three distinct geographical zones of the country (Andes, Amazon and Coast) and in collaboration with womens groups

Figure 4. **Analysis of Technical Enquiries***



* 493 enquiries were received from individuals, of who 290 enquired from European locations. Of specified developing country application.

from local organisations, small-scale technologies for wine, vinegar, milling, drying, sweets and snacks were developed. The womens groups then had the opportunity to run small businesses from these centres until such time as they were ready to set up their business outside the centre, independent of ITDG and the collaborating NGOs.

In Sri Lanka, the food processing programme is continuing the development of the Tray Dryer - a mechanical drying system originally developed in St. Vincent and then transferred by ITDG to Peru where it has been successfully implemented (see below). The programme in Sri Lanka found that this version of the tray dryer was not suitable for rural enterprises in their country. This dryer which originally required a fuel such as diesel or gas and a source of electricity to power the fan, has now been developed to use waste rice husk and sawdust and needs no electricity. Although the drying capacities are lower, another viable opiton has been developed which broadens the choice for the small entrepreneur.

In Zimbabwe, more appropriate milling techniques are being developed. In Bangladesh and Zimbabwe the programme staff are developing small-scale honey processing.

TECHNOLOGY TRANSFER

Technology transfer involves taking a technology from one person, country or region and introducing it to another. One of the most important features of sustainable technology transfer is that, like sustainable technology development, the technology should meet the needs of the new users and should be adaptable to the local conditions.

Two examples of technology transfer that ITDG has had involvement are in oil processing and drying.

OIL PROCESSING

In Zimbabwe, an oil processing technology has been transferred from India. The oil expeller, marketed under the name of Tinytech is an off-the-shell oil expeller with pre-heating and oil filtering units attached.

The edible oil market in Zimbabwe is controlled by four large companies. Oilseeds such as groundnut and sunflower are transported from the rural areas to the urban areas where they are processed into oil. In the rural areas the supply of edible oil is erratic and when available is often sold at inflated prices.

The Tinytech technology provides the opportunity for decentralised oil processing. Such an activity generates employment and income in the rural areas and ensure more reliable and cheaper supplies of cooking oil.

In 1988 the first Tinytech oil expeller was imported to Zimbabwe for pilot testing in collaboration with a local development organisation. On the basis of successful results a processing plant was set up in Murombedzi. Now a further four mills are in the process of being set up.

The Tinytech mill, with ancillary equipment, costs approximately three thousand pounds and can process up to 207 tonnes per year (90 kg/hr) of sunflower and 250 tonnes per year (108 kg/hr) of groundnut. One of the by-products of the process is seed cake which can be incorporated into animal feeds. The programme in Zimbabwe produced a business prospectus on the Tinytech Oil Expeller which describes in detail the oil processing situation and opportunities for decentralisation with this expeller.

DRYING

As mentioned above one of the food processing programmes most successful technology transfers is the tray dryer technology which is now undergoing technology development in Sri Lanka.

The tray dryer was originally developed in St. Vincent in response to the demand for drying sorrel which is made in to a very popular traditional drink. The tray dryer enabled the sorrel to be dried without significant loss of colour (a key quality indicator) and without going mouldy. It was then stored so it would be available to make sorrel when the fresh sorrel was not available. From St. Vincent the tray dryer was transferred to Guatemala where it underwent further modifications at a farmers cooperative who were making dried culinary herbs. From Guatemala, the technology has now been transferred to Peru, Ecuador, Colombia and Cuba, Lesotho and Bangladesh, India and Sri Lanka. In Peru alone there are 40 dryers known to be in operation. They are mainly used for drying herbal teas. It is estimated that there are now more than fifty dryers in ten countries and with two

to three people employed **directly** as a result of each dryer and up to eight other people per dryer involved in downstream and upstream activities. Hence, in total, approximately 300 jobs have been created.
In nearly all the countries where the tray dryer has been transferred some modifications have taken place to suit local requirements. The most interesting developments to date have taken place in Sri Lanka where an alternative heating system has been developed. One of the key requirements for successful technology transfer is that the technology can be adaptable to suit local conditions. (Jones 1993)

There are two basic types of tray dryer: batch and semi-continuous version is more popular. Costs of equipment range from approximately eight hundred pounds for the small semi-continuous dryer mainly constructed from wood to four thousand pounds for the large semi-continuous dryer which has more ironwork. (These costs may vary depending on the costs of labour and local raw materials). The heater unit is the most expensive component of the dryer and this accounts for the development of the biomass heater in Sri Lanka. However, in Peru a local engineering workshop is now manufacturing its own diesel heater. The drying capacity of the large semi-continuous dryer for parsley is approximately 120 kgs fresh parsley per day; approximately 80 kgs per day for the batch dryer.

CONCLUSION

Small-scale food processing is a viable option for enterprise development. Technologies that can be understood, require low investment and can make a diverse range of food products are attractive to the potential entrepreneur and have a broad range of benefits to the local community. However for small-scale food processing enterprises to be successful and for this sector to make a valuable contribution to economic growth and development the three key factors: quality; profit and sustainability must be achieved.

The quality of food products not only ensures that food is safe but also that consumers will want to purchase that product again. It concerns the food itself, the harvesting and later processing operations, packaging, distribution and retail right up to the point where the food is consumed. Training courses provide an unparalled opportunity to stress the importance of food quality and inform the participants on the ways and means of achieving consistently high quality foods. The consumer perception to foods produced at small-scale is largely governed by the social and political climate. Where this is unfavourable, the promotion of small enterprises in a positive light should be encouraged to help to change consumer attitudes. This type of promotion even occurs in Rugby (where I live). Small shops and businesses in Rugby are promoting the BEAR campaign - Buy Everything At Rugby.

All enterprises, whatever their size, need to make a profit. Other basic facts about profit are that you need a market for your product and you need technology options to help you choose what you can make and how you make it. Information is the key to helping the entrepreneur make decisions. Training assists the entrepreneur in assessing market potential, devising market strategies and calculating profit.
High quality and profit are perhaps the less difficult to achieve of the three factors which determine success. Sustainability, on the other hand, although dependent on quality and profit, is also more dependent on complex issues such as the nature of the technology - is it appropriate? - and on the social and political climate - the attitudes towards small-scale enterprises and the regulations governing their establishment and management. An approach to support small enterprises which responds to local needs, builds on local knowledge and uses local resources will help achieve sustainability. However until issues such as credit, subsidies and attitudes (which tend to support larger, more modern food processing industries) are more favourable towards small-scale enterprises then sustainability will remain the most difficult challenge facing the small entrepreneur.

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