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TECHNOLOGY and

INVESTMENT

ENHANCEMENT

STRATEGY

TIES

NEWSLETTER

1994 Issue No. 50

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Technology Trends Meeting

Through its Technology Acquisition programme, UNIDO organized an experts meeting on Technology Transfer Trends on 11–14 October 1993 at UNIDO Headquarters in Vienna. The three-day meeting served as a forum to analyze the features and current worldwide trends on technology transfer and development and their implications on the access and flows of technology to developing countries.

Four major presentations by internationally well-known experts and researchers on the topics of globalization of technology; the current scenario of the international technology transfer and their policy implications; and the re-emergence of foreign direct investments as a channel for international technology transfer provided the key elements for the deliberations of the meeting. The country presentations, on the other hand, provided information on how countries are actually responding to developments in the technology transfer arena, through policies and institutional approaches.

How developing countries in particular could catch-up and participate in a globalized economy and how UNIDO, in cooperation with other international organizations, could actively assist in this process were discussed at length in the meeting. Key issues for developing countries were identified as follows: issues of developing a dual approach for harnessing technology from external sources and developing and adapting technologies indigenously; the need for a more efficient process of selecting, acquiring, negotiating and assimilating transferred technologies in order to meet the new competitive challenges emerging from the globalization of the world economy and the liberalization of developing countries' economies; adequate integration of technology transfer and investment policies; simultaneous access to technology and markets; and maximizing technological benefits from both formal and informal channels of technology transfer.

The participants were high-level government officials from Brazil, People's Republic of China, Indonesia, Republic of Korea, Nigeria, Pakistan and Singapore; private sector representatives from Egypt, experts from the Institute of New Technologies of the United Nations University, the University of Limburg, the Science Policy Research Unit of the University of Sussex, the University of Buenos Aires and the Starnberger Institut; and representatives from the FAST Programme of the Commission of European Communities, the International Trade Centre, the Centre for the Promotion of Imports from Developing Countries of The Netherlands and UNIDO officers and staff.

The papers presented at the Meeting will be published in subsequent issues of the *TIES Newsletter*.

5th African-TIES Highlights

A meeting of government officials representing technology transfer and development agencies from fourteen (14) African countries was convened by UNIDO jointly with the African Regional Centre (ARCT) on 23–25 September 1993 in Rabat, Morocco. The meeting, the fifth of its kind, reviewed and assessed the African-TIES programme, its achievements and outputs and discussed possible future directions taking into account emerging trends and developments in the international technology market and its implications, particularly for the African region.

The meeting noted the significant change in the complexion of institutions involved with technology transfer and acquisition, specifically the shift to a "user-friendly" approach oriented towards promotional and advisory services compared with the previous regulatory approach.

At the same time, the increasing privatization of knowledge, the globalization of technology and the world economy, the growing technological protectionism on the part of developed countries, the emergence of new technologies and the rise of strategic alliances primarily among developed country firms, represent threats of dimishing access to technologies by developing countries as well as of increasing costs.

These developments make more imperative the need to have a clear technology transfer and development policy that will facilitate access to and mastery of technologies, create an environment conducive to technology absorption and innovation, and promote a more efficient process of selecting, acquiring, negotiating and assimilating transferred technologies.

Institutional responses continue to be required such as in the form of capacity building and advisory assistance. Special attention to the needs of the small and medium enterprises (SMEs) is called for as well as systematic links between and among the various components of the technology system,

R&D, enterprise, university and technology transfer agencies. The value of networking particularly for exchange and sharing of information and experiences on the policy, institutional and practical aspects of technology transfer and development was reaffirmed.

Such responses will require support and assistance from UNIDO and ARCT which were requested to further intensify their efforts at facilitating access to technologies and building national capacities in technology acquisition and negotiation.

Countries participating in the meeting consisted of Cameroon, Egypt, Ethiopia, Ghana, Kenya, Mauritius, Morocco, Nigeria, Senegal, Sudan, Tanzania, Tunisia, Togo and Uganda, although the programme has reached other countries in the region, such as Benin, Cape Verde, Congo, Guinea and Zimbabwe.

TECHMART India '93 a Success

UNIDO, the National Small Industries Corporation (NSIC) of India in collaboration with the India Trade Promotion Organization (ITPO) and the Ministry of Industry organized Techmart India '93 for Small and Medium Enterprises (SMEs) in New Delhi on 14–23 November 1993. The Honorable Prime Minister of India, Shri P. V. Narasimha Rao, inaugurated the event which was held at the newly constructed Hall of Technology in Pragati Maidan, New Delhi.

Four hundred and fifty three participants from all over India displayed their technologies and products illustrating their latest technological advances in the areas of energy conservation and renewable energy, waste material utilization, office automation, innovative technologies in electronics, software development, appropriate technologies for rural development, among others. From the international sector, 54 enterprises from 34 countries both developing and developed countries were represented. Among the participants were multinational firms such as Samsung Corporation, Korea, and Taipei World Trade Centre, Taiwan. In addition, business delegations from Sri Lanka, Malawi, Tanzania, Russia and Pakistan were also in attendance.

A total number of 47 Memoranda of Understanding (MOUs) indicating preliminary agreement to pursue further collaboration were signed. These represents a total amount of the confirmed business approximating 3,000 million Rupees (US$ 100 million). Five joint ventures were confirmed in the areas of consumer durables (such as microwave ovens), food processing and light engineering products.

Techmart is a meeting place for technology developers, owners and buyers to explore possible business opportunities. It provides a setting for the conclusion of practical business arrangements focusing on technologies. Its uniqueness lies in the fact that Techmart is the only event that enables entrepreneurs to identify required technologies before deciding to attend. To facilitate the process of matching technologies with needs, UNIDO compiles and publishes a technology compendium that describes thousands of technologies currently available for transfer to developing countries.

For Techmart India '93, a technology compendium containing 1,715 technology offers and requests from 700 enterprises all over the world was prepared to facilitate and stimulate contacts between those interested in buying technology and those offering it.

As a complementary feature, four seminars were organized in the areas of technology transfer and negotiation; packaging technology for export; food processing and agro-based technologies; and technologies for ODS phaseout in air conditioning, refrigeration and aerosols. Prominent policy makers, industrial specialists, representatives from R&D organizations and UNIDO experts presided over these seminars and about 1,000 participants from various R&D organizations, industry, private enterprises and public sector units participated. Individual discussions were arranged after the seminars with industry experts.

UNIDO-LES Meet on Manual

The UNIDO-LES Committee formed to review and make final recommendations concerning the Manual on Technology Transfer Negotiations met for the last time in Vienna on 11-13 December 1993. In between the first meeting in June and the December meeting, the ten committee members, each an expert in his own right, were engaged in assignments ranging from a complete rewrite to upgrading, to minor revisions of allotted modules of the Manual. The December meeting was held to integrate and consolidate the work of the various experts currently available for transfer to developing countries.

In its final form, the Manual will have three components: the Core Knowledge Set comprising 22 modules that cover the range of issues one comes across in the technology transfer process; the Practitioner's Set, which is a collection of standard and normative documents that can be utilized for actual technology transfer transactions; and the Trainer's Set, meant primarily for trainers of negotiators or experts, which consist of information on didactic considerations, instructions for trainers, case study and videotapes.

The Manual represents the nuts and bolts of UNIDO's educational programme on technology transfer negotiations. It contains sound professional knowledge useful for government institutions and officials dealing with technology acquisition and negotiation; entrepreneurs, project promoters and professionals who handle negotiations for the acquisition of technology; and instructors of institutions that offer courses on technology transfer. It is expected that the Manual will be available in its final printed form in 1994.

BOT Guidelines out soon

The experts preparing the Guidelines for the Development, Negotiation and Contracting of BOT Projects met in Vienna for the second and final time on 6–10 December 1993. With this meeting which reviewed the draft manuscript for final revision and editing, the BOT Guidelines may be expected to be out within the next six months.

The Guidelines will have the following chapters:

1. Introduction to the BOT concept and strategy
2. Development phases of BOT arrangements
3. Economic and political viability
4. Financial aspects and engineering
5. Risk allocation
6. Government role and support
7. Selection of sponsors
8. Transfer of technology and capability building
9. Operation and maintenance
10. Transfer of ownership
11. Structuring and drafting of the contract package
12. Standard project agreement

The Guidelines will contain a standard project or concession agreement together with the supplementary contracts and sample clauses.

The preparation of these Guidelines was embarked upon by UNIDO in line with its mandate of assisting developing countries in their access to technology and to alternative forms of technology business. BOT has recently emerged as a viable scheme for implementing large industrial and infrastructural projects where financial requirements are high.

VIET NAM TECHMART '94

Since 1986 when Viet Nam began an ambitious reform programme, the country has been making a steady transition from a centrally planned economy to a market-based system. The main elements of this reform include opening the economy to foreign investment and technology and encouraging the development of the private sector; the equitable distribution of wealth and income; and rural reforms.

UNIDO, in cooperation with Viet-Nam's Ministry for Science, Technology and Environment (the National Centre of Science and Technology Information and Documentation), is organizing VIET NAM TECHMART in Hanoi from 1 to 4 November 1994.

Techmart is a business forum where the rights to manufacture and upgrade existing products and processes can be bought and sold through direct contacts between suppliers from developed and developing countries, with special emphasis on the needs of small and medium-scale industries. At VIET NAM TECHMART technologies will be displayed by means of sample products, drawings, process flow diagrams, photographs and product catalogues. The following industrial sectors will be represented:

- Food processing, including food preservation
- Light industry (plastics and textiles)
- The electronics industry (microcomputers, electronic equipment and household electrical appliances)
- Chemicals and pharmaceuticals
- Advanced materials

The business opportunities available at VIET NAM TECHMART will be of interest to individuals and organizations, such as:

- Manufacturers, buyers and sellers of technology
- Manufacturers' associations, trade associations, chambers of commerce
- Investors
- Development banks and agencies
- Technical universities and research institutes

Companies, organizations and individuals looking for technologies or offering partnership for cooperation can register their participation in VIET NAM TECHMART. The programme will include Technology displays; pre-arranged business meetings, Plant visits, technology information, negotiation and acquisition seminar; seminar on technology legislation in Viet Nam; advisory services on technology negotiations and sectoral seminars.

More information about VIET NAM TECHMART may be obtained from the Technology Service, Investment and Technology Promotion Division, UNIDO, P.O. Box 300, Vienna International Centre, A-1400 Vienna, Austria. Tel.: 0043 (1) 21131 Ext. 3693; Fax: 0043 (1) 232156 or 2307584; Telex: 135612 unoa; E-mail: EARN:5568568@UNIDO1.BITNET.

Technology Acquisition in China

(Presented by Mr. Jiang Qian Liang, Section Chief of Science and Technology Department, Ministry of Foreign Trade and Economic Cooperaion of PROC at Experts Meeting on Technology Transfer Trends, 11–14 October 1993, UNIDO Vienna)

I. Background of China's Technology Import and Export during 1949 - June 1993

1. Definition of Technology Transfer

Technology transfer means: assignment or licensing of industrial property rights; licensing of know-how; technical services; co-production and co-design which contain any one of such contents as assignment or licensing of industrial property rights, licensing of know-how or technical services; importing complete set of equipment, production line and key equipment that contain any one of such contents as assignment or licensing of industrial property rights, Licensing of know-how or technical services.

2. An Overview of Technology Imports and Exports : 1949 –June 1993

	Item	Contact value (billion US$)
Imports	5,981	60.0
Exports	1,484	6.4

II. Policies on Technology Import and Export

1. Actively developing technology trade with other countries in the world on the basis of equality and mutual benefit; protecting the foreign partner's intellectual property rights and interests in accordance with international practice;
2. Developing technology import and export by various and flexible methods;
3. Emphasizing the integrating of advantage and appropriateness of imported technology;
4. Giving special support in funds and capital to technology import and export;
5. Giving tax preference to the import of advanced know-how, processes and management technology.

III. Administration on Technology Import and Export

1. Planning administration by the State Planning Commission (SPC) on examining and approving a feasibility study report on a technology flows project;
2. Contract administration by the Ministry of Foreign Trade and Economic Cooperation (MOFTEC) on examining and approving technology import and export contracts.

Contract value (US$):	Over 5 million	Less than 5 million
Contract approval by:	MOFTEC	Local MOFTEC

IV. Legislation concerning Technology Import and Export

Many laws and regulations concerning technology trade have been promulgated since the 1980s:

- Patent Law 1985
- Trademark Law 1984
- Foreign Economic Law 1985
- Copyright Law 1990
- Regulations on Protection of Computer Software 1991
- Regulations on Administration of Technology Import Contracts of the People's Republic of China and its detailed Rules 1985
- Anti-unfair Competition Law 1993

In addition, China signed a Sino-US Memorandum of Understanding (MOU) on protection of intellectual property rights in January 1992.

Technology Acquisition in Kenya

Policy and Institutional Framework

(Presented by Mr. Jasper Mani, Chief Science Secretary of National Council for Science and Technology of Kenya at 5th African-TIES Meeting, 23– 25 September 1993, Rabat, Morocco)

1. Introduction

Kenya intends to adopt industrialization increasingly as the prime mover of social and economic development. This is reflected in several policy documents including, Sessional Paper No. 10 of 1965, various Five Year Development Plans, especially the current 6th Five Year Development Plan; and Sessional Paper No. 1 of 1986 on Economic Management for Renewed Growth.

Industrialization for sustainable development depends on the effective application of scientific knowledge and skills for the commercial production of goods and services. Industrial technology is highly commercialized, protected and exploited by the few who develop it. This is done through practices that are unfamiliar to most developing countries like Kenya. In such countries, sustainable industrialization can be achieved only when a critical mass of indigenous capacity to absorb, develop and utilized technology is attained.

2. Policy

Kenya does not have an explicit policy for the acquisition and transfer of technology. The *status-quo* is that there are no clear terms of reference, roles and functions of existing institutions involved in one way or the other with technology transfer and development. Some of these institutions include ministries responsible for Research, Technical Training and Technology, Commerce and Industry, Education, Public Works and Land Reclamation.

Lack of a clear cut policy on technology acquisition and transfer became a major concern for the National Council for Science and Technology in 1989. The question posed is why, for example, Kenya had not achieved much scientific and technological capability in the thirty (30) years of political independence. Other issues related to whether or not there was an over emphasis on research and development at the expense of institutional infrastructure for transfer, acquisition, commercialization and utilization of technology. After observing that the infrastructure for integration of scientific and technological research results in the overall socio-economic development plan is weak, the Council set itself to explore ways of developing a mechanism to facilitate this integration. The first step was to form a consortium of experts to look at the whole question of industrial technology policy and a regulatory environment for development. A report has been compiled with the objective of examining existing policies, strategies and institutional arrangements. This should lead to defining ways in which the infrastructure could be utilized more effectively in technology transfer. Furthermore, the diagnosis is expected to lead to a more effective mechanism for the transfer of foreign technology and involvement of Kenyan entrepreneurs in joint ventures on fair terms. Although this report is still a matter for more critical analysis and finalization in wider fora, the recommendations are aimed at stimulating Kenyan capabilities, including research and development institutions, financial institutions and regulatory machinery to develop new technologies and adapt available ones for development needs.

3. Incentives for Investment, Acquisition and Transfer of Technology

The Government blue-print outlines the priority areas in its investment policies, which are in themselves pointers to the type of technologies required for development or acquisition. These areas are outlined as follows:

a. Job Creation: Priority is given to investments which create jobs. Labour intensive industries such as textiles, component assembly and data processing are highly encouraged.

b. Utilization of Domestic Raw Materials: Investments that use domestic raw materials are encouraged. High priority is accorded to local resource based activities such as agro-processing, mining and leather production.

c. Foreign Exchange: Foreign exchange earning industries such as export oriented activities.

d. Training and Technology Transfer: Priority is given to activities that involve the introduction of new skills and technologies.

e. Rural Development: Investments that have a high potential of contributing to food security are encouraged. These include irrigation, new crops, or technologies to improve farm output.

In order to encourage transfer and acquisition of technology, Kenya offers a wide range of investment incentives. To facilitate such investment, the Kenya Government has set up both institutional and enabling infrastructure. It is pertinent to indicate two key Kenyan institutions charged with support and advice on conditions and facilities for private investment. These are the Investment Promotion Centre (IPC) and the Capital Issues Committee (CIC).

Briefly, the functions of IPC are:

i. Contact point for both locals and foreigners who wish to invest in Kenya; it supplies information required for investment.

ii. Providing guidelines on technology transfer and acquisition for use in Kenya. However, it has not developed a policy framework on the issue of technology transfer and acquisition.

CIC, on the other hand, approves all term agreements involving payments of foreign exchange. It also reviews applications of technology payment above KShs. 500,00.00, including fees for technical services, license fees and royalties.

After having highlighted the above issues, it is now important to enumerate the enabling environment created by the Kenya Government. This environment consists of the following incentives:

a. Investment Allowance: Investors located in Nairobi and Mombasa enjoy 35 per cent investment allowance on plant, machinery and buildings. Those in rural areas enjoy 85 per cent, while manufacturers under bond enjoy 100 per cent investment allowance.

b.Capital Allowances/Depreciation: In addition to investment allowances, depreciation before Tax Liability is allowed as follows:

- Building 2.5 per cent
- Plant and Machinery 12.5 per cent
- Computer and Office Equipment 30 per cent
- Vehicles Trucks and Tractors 25 to 37.5 per cent

Additional depreciation may be permitted for continuous process plants.

c. Exemption from Customs Duties and Value Added Tax: To give support to small-scale industries located in rural areas, imported plant and machinery up to a maximum of CIF of KShs. 40 million is exempted from customs duties and VAT.

d. Export Compensation: Export compensation is offered equivalent to 20 per cent of FOB value of exports on manufactured goods whose local value added exceeds 30 per cent.

e. Duty Exemption Scheme: Goods imported for use in manufacture of products for export will be granted duty remission.

f. Manufacturing Under Bond: The manufacturing under bond, which duty free concessions are allowed on plant machinery, components and raw materials to manufacturers producing exclusively for exports. These producers also enjoy priority allocation of import licenses and other approvals. The facilities are found in Kenya's major towns such as Nairobi and Mombasa.

g. Export Processing Zones (EPZs): EPZs have been established. The private zone located in Nairobi is operational. The two public zones located in Mombasa and Athi River are expected to be operational soon. The incentives in the EPZs include:

- Duty and tax free access to imported inputs;
- First ten-year tax holiday and only 25 per cent in the next ten years;
- No withholding tax during the first ten years for non-residents.

Additionally:

- Kenya is a member of the Multilateral Investment Guarantee Agency (MIGA) and the International Centre for the Settlement of Disputes (ICSID).
- Individuals investing in Kenya have access to the Overseas Private Insurance Corporation (OPIC) in regard to non-commercial risks.
- Short and medium term funds are available from a well developed financial system. Apart from the Central Bank, 28 commercial banks, over 40 non-banking financial institutions, 6 development financial institutions, 47 insurance companies and over 900 savings and credit society operate in Kenya.

4. The Role of Multinational Corporations

Finally, the role of Multinational Corporations (MNCs) in transfer of technology in Kenya cannot be overlooked. When MNCs began operations in Kenya, there was indiscriminate transfer of technologies into Kenya. This approach proved expensive in economic terms. There was, therefore, need to readjust the terms and conditions of operations by MNCs to facilitate increased participation of indigenous firms and citizens. Although the overall result expected was to enhance the process of technology acquisition, it is however difficult to assess the impact of MNCs. This is due to the many and varied technological agreements underlying the technology transfer processes. So far, these agreements fall under two major categories, viz.

1. Operation with equity involvement; and
2. Operation with non-equity involvement

After a careful study of MNCs, it was recommended that meaningful technological transformation by MNCs should include the following:

- Increased MNC equity shares to workers
- Involving end users of technology in identifying, developing and adapting new technologies
- Introducing cost-effective technologies at grassroots levels
- Strong linkage among MNCs, local enterprises and small scale enterprises for production of spares
- 5. Future direction and conclusion

It has already been stated that Kenya does not have a clear cut policy on technology transfer and acquisition. It is also important to point out that socio-economic development in Kenya and other developing countries has to be science and technology driven. Economic aid through loans has already proved a burden through debt accumulation and servicing. This situation calls for a deliberate change towards adoption of a development approach, which will have minimal dependence. In this context, Kenya, through the National Council for Science and Technology, is in the process of rallying both human and financial resources to develop an "Industrial Technology Policy". No doubt the African-TIES will become a major resource. It is also expected that UNIDO will play a key role in facilitating the formulation of the policy.

Technology Acquisition in Mauritius

Policy and Institutional Framework

(Presented by Mrs. M. Aumeer, Acting Principal Industrial Development Officer, Ministry of Industry and Industrial Technology of Mauritius at the 5th African-TIES Meeting, 23–25 September 1993, Rabat, Morocco)

1. Industrial Experience

Mauritius is a small island state with limited natural resources. It is highly dependent on external trade. Twenty years earlier the country had little industrial experience, except in sugar processing. Soon the country was to start experiencing serious balance of payments (BOP) difficulties and a rising rate of unemployment. In a move to create employment and improve its BOP, the Government adopted an industrial diversification policy aimed at import substitution. Considerable fiscal protection was to be provided in order to sustain these industries.

Thriving in an highly protected market, these industries could not achieve economies of scale nor felt the need to upgrade technology. This was to be further aggravated by the smallness of the domestic market. Hence, the type of industrial development encouraged did not give the required results either in the form of substantial employment creation, improvement of BOP or development of technology.

Studies carried out indicated the need for a change in strategy towards export-oriented industrialization. Since the early 1930's, therefore, the Government is following an export led strategy that has created quasi full employment in less than a decade and led to BOP surpluses. The new strategy combined inter-preferential market access to the EEC, which helped the economy to experience rapid growth during the past decade. It grew at an average rate of 6 per cent per annum, more than doubling its per capita income to US$ 2,410 in 1991. The manufacturing sector accounted fc · 39 per cent of formal employment and is also the largest sector of the economy in terms of value-added and exports. The growth was, however, based on the rapid expansion of labour intensive garment manufacturing for export mainly in low value added, low skill garments.

The country is now in a situation where due to rising labour costs unmatched by productivity and value added shortage of labour and, on the international front, the emergence of many low cost labour surplus industrializing competitors and of a new class of more exacting customers, it is losing initial comparative advantage. In addition, preferential market access conditions can no longer be taken for granted. In the area of capital accumulation and productivity, although there is still some scope through automation and mechanization, prospects are limited. Besides, these conditions have made foreign investment into the country less attractive. The new challenges now facing Mauritius indicate the need to upgrade existing operations, adopt labour-saving technologies and diversify exports into high value added activities.

Mauritius is conscious that in order to meet these challenges now facing, it will require the building up of competence in new skills and more and more complex technologies as well as keep pace with international trends in technology.

2. Technological Capability and Institutional Support

Technology capability refers to the ability to assess, select, use, assimilate, adapt, improve and develop technologies that are appropriate to changing circumstances. Such capability is embodied in human resources and institutions.

Until recently, the development of such capability in Mauritius was left almost entirely to the private sector whereby the interplay of market forces and the need to adopt labour saving techniques have urged firms to move to mechanization and automation. Foreign direct investment, which presently controls 45 per cent of the export processing zone, played a significant role in the transfer, acquisition and development of technology. This consisted not only of capital of production technology, but more importantly of linkage and network capabilities such as sourcing and marketing expertise, management and technical skills, product design, international standards and quality control. However, such transfer is limited to a few firms, many of them foreign firms of the "foot-loose" category. Automation and use of higher technology among locally used firms have also been carried by a few big companies. Besides, R&D activities generally carried out by such firms relate to minor adjustments to equipment and innovations in production engineering.

Thus, unlike the sugar sector where Mauritius has achieved world class know-how and R&D capability, the first phase or our industrial diversification has involved simple skills and technologies. Designs and technical advice are generally provided by overseas parent companies or by foreign customers and principals. A number of the older local garment manufacturers were able to increase productivity in activities amenable to mechanization by purchasing capital intensive equipment for which

basic operating know-how, training and maintenance are available from equipment vendors. Until recently, technology issues in the manufacturing sector therefore played a relatively minor role.

The Government has so far played the role of a facilitator creating the right environment and providing the necessary infrastructure. Thus, the Mauritius Standards Bureau is providing testing, calibration and quality control. The Mauritius Export Development and Investment Authority on its part carries out exports and investment promotion. The Small and Medium Industries Development Organization provides advisory services to such firms. The Export Processing Zone Development Authority has been set up to advise firms (presently it is concentrating on the textile industries) on the use of labour-saving operations. The Industrial and Vocational Training Board is providing training for existing industries.

At the present economic situation of the country when the manufacturing sector is finding it difficult to maintain its growth momentum and competitiveness is threatened by cut-throat competition on the global market, a need is felt for Government intervention to nurture technology acquisition and diffusion so as to enable the country to maintain its international competitiveness and move to higher technology sectors, and thereby higher value added products. This *de-facto* implies the building-up of human resources. In this context, it is important to note that the comparatively low percentage of science students and engineering graduates may act as a serious constraint.

3. Technology Policy

Because Mauritius is a small, open economy, highly dependent on external trade, international competitiveness is the overriding factor in the determination of economic growth and welfare. The last two decades have been marked by rapid technological change. Recent advances in process and information technology are reshaping competition on global markets, offering unprecedented opportunities for economies that can successfully adopt and master technology. Experience reveals that there are strong linkages between technology, the trade regime and international competitiveness. Typical examples are the Asian newly industrialized economies where industrial development was the result of the interplay between technological capability and incentives, which influence the use of such capability, stimulate its growth and renewal.

However, given the new challenges facing the country there is a need to gear technology capability into the desired direction. In this context, the achievement of stability and high rates of capital accumulation are necessary conditions. At the sectoral level, the Government is adopting a selective intervention policy and providing support systems, which will facilitate the drive towards higher technology. The Government will therefore continue to play the enabling role of a central facilitator by providing the necessary back-up and institutional support, but the focus will henceforth be on a selective approach in order to gear technological development. Technology policy will thus aim at upgrading the level of technology, acquire know-how in high technology sectors, develop appropriate skills and attract more foreign investment. A study is currently under way to examine all aspects relating to the transfer and acquisition of technology. With the current technological strategy the institutions in place are being encouraged to play a more effective role. Thus, the exports and investments promotion agency will gear its efforts to selected sectors and the training institution to new sectors. In addition, the EPZ Development Authority has recently signed an agreement for collaboration with an industrial research institution in South Africa.

Other new institutions and mechanisms have also been set up to foster technology acquisition and development. These include:

1. The Mauritius Research Council is to foster, coordinate and guide research in all areas of interest to the country. It will, thus, also advise the government on matters related to research and encourage its commercial utilization;
2. The Industrial Council is to advise on the appropriate incentive framework for the accelerated modernization and expansion of the industrial sector, promotion of foreign direct investment and transfer of technology, capital intensive industrialization, development of environmentally friendly industries, technological modernization and advancement and human resources development; and
3. A venture capital fund is to encourage innovation and development of technology.

4. Legal Aspect

A new industrial expansion has recently come into force, which aims at consolidating and rationalizing existing laws relating to industry and which at the same time provides for the encouragement of industries that will promote and enhance technological development and use new high technology or create support industries. Foreign direct investment is expected to play a vital role in this strategy.

With regard to the protection of industrial property, the Trade Marks Act provides for protection of trade marks and the Patents Act for the protection of inventions. However, there is as yet no specific legislation for the protection of industrial designs, but this shortcoming is being addressed.

Technology Acquisition in Singapore

Policy and Institutional Framework

(Excerpts from the paper presented by Mr. Sai Fan Leong, Manager of International Affairs, Singapore Institute of Standards and Industrial Research at the Experts Meeting on Technology Transfer Trends, 11-14 October 1993, UNIDO, Vienna)

1. Introduction

The rapid transformation of Singapore's economy was fuelled by the acquisition, development and application of technology. Industrial technology springs from two main sources – firstly, foreign direct investment by multinational corporations (MNCs) and secondly, commercialization of R&D from research institutes and tertiary institutes.

Singapore's economic openness has since the 1960s encouraged an influx of investment by foreign companies into Singapore. Singapore has been dubbed the "Island of 1,000 MNCs", with the companies transferring technology, notably in consumer electronics, semiconductors, disk drives, computer/peripherals, pharmaceuticals, petroleum products and chemicals/paints.

2. Quantum Leap in Economic Growth

Foreign MNCS have been encouraged to invest in Singapore and effectively transfer technology as the Government realized that this was the fastest route to technology development. The MNCs created employment and provided capital rapidly as well as giving ready access to technology and international markets.

3. Technology Transfer and R&D

MNCs in Singapore have taken root, expanded operations and transferred technology successfully. An increasing number of them have set up R&D centres in Singapore. Examples are Nixdorf's Software R&D Centre and General Motors' Engineering Centre to design automotive electronic parts. Substantial R&D investments are also made in Singapore by Motorola for communication equipment, by Philips for consumer electronics and by Glaxo for pharmaceuticals.

4. Spin-off Companies

Technology flow from the MNCs' head offices provide local professionals with the opportunity to learn and absorb new skills. Local professionals have benefitted from the technology flow and some have been able to start their own companies using the technology acquired. Some examples include:

- Singatronics (biomedical electronics)
- Excel (information technology)
- Material Handling Equipment (material handling/automation)
- Gul Technologies (PCB manufacturing)
- Amtek Engineering (precision engineering)

5. Reasons for MNCs Investing in Singapore

Singapore's good investment climate attracts MNCs. The Government provides fiscal incentives and emphasizes its good infrastructure, political stability and social harmony. Singapore has ready availability of skilled engineering resources and management resources. MNCs are also attracted by Singapore's image of being able to consistently supply quality goods and services. The country's strategic location with respect to Asia/Pacific markets and its commercial/trading background are additional reasons for MNCs investing in Singapore.

6. Open Economic Policy

Singapore's economic openness to investment by MNCs manifests itself in pro-active investment promotion abroad and generous tax incentives for pioneer industries and grants for R&D work. Industrial leaders, from both MNCs and local companies are in constant dialogue with the Government in the national planning process.

Singapore does not impose regulations relating to technology transfer as this could be counter-productive and negatively influence the amount of transfer of foreign technology. As encouragement to MNCs, we do not impose requirements on local participation in foreign direct investments. In addition, we do not restrict foreign remittances and have minimal trade tariffs.

7. S&T Manpower

MNCs that invest in Singapore have confidence in the readily available pool of S&T manpower there. The Singapore Government makes a concerted effort to develop the nation's manpower for the purpose of channelling it to industrialization.

As the Government has always recognized the importance of high quality technical manpower to economic development, the education system is geared towards producing people with relevant technical skills for industries. Singapore's output of graduate engineers per capita, from the two universities is one of the highest in the world. As middle-level technical support is crucial in the manufacturing industry, the Government has also built up a pool of technicians by stressing on polytechnic education. There are currently four polytechnics offering such training.

The cream of the country's students are awarded scholarships in engineering both locally and overseas. The National Science & Technology Board (NSTB) has committed grants totalling US$ 93 million over the 5-year period 1991-1995 to build up R&D manpower through industrial fellowships, postgraduate scholarships and research assistantships.

8. Infrastructure

MNCs are also attracted by the excellent infrastructure in Singapore.

Manufacturing in Singapore is made all the more attractive in view of the excellent physical infrastructure. The modern telecommunications network allows easy communication by telephone or facsimile on a global basis. Exporting to the rest of the world is boosted by an efficient airport, seaport, airline and shipping facilities and road transport system. Water and energy resources are easily available. Industrial estates have been specially designed and built for manufacturing.

The physical facilities are complemented by a sophisticated finance and banking system, which has made Singapore an international financial centre. Foreign professionals are also attracted to Singapore by the availability of social amenities such as health care, schooling and recreation.

Singapore has a good intellectual property system and strong enforcement policies. A tough new Copyright Act was introduced in 1987, which extends protection to works of technological innovation such as computer software. A new Patent Act, which enables the applicant to file directly in Singapore, will be introduced shortly.

9. Indigenous R&D by Research Institutes and Tertiary Institutes

R&D INSTITUTES

During the 1970s and 1980s, Singapore developed R&D institutes that have the trained manpower and equipment facilities to serve as receptacles for technology acquisition, development and transfer to industry. These institutes, which carry out indigenous R&D of an applied nature, provide the resources of manpower, skills, technology, knowledge, and products and processes for the private sector.

The major R&D Institutes include:

Singapore Institute of Standards & Industrial Research (SISIR) SISIR is a self-financed institute with the dual role of serving as Singapore's national standards authority and as the leading technology resource centre in Singapore, focusing on industrial R&D, the commercial application of technology and the transfer of technology. It has multidisciplinary expertise in materials technology, product and process technology and electronics and computer applications.

Information Technology Institute (ITI) As the applied R&D arm of the National Computer Board, ITI's research activities are market-driven and focused on creating useful innovations using emerging information technology. It collaborates with other organizations in developing useful IT innovations and holds product licensing agreements with IT companies, which are commercializing the results of collaborative R&D.

Institute of Systems Science (ISS) The goal of ISS's R&D programme is the advancement of state-of-the-art information technologies that will eventually replace existing ones. Research tends to be long-term in nature with importance laid on industrial collaboration.

GINTIC Institute of Manufacturing Technology The institute's R&D activities are aimed at upgrading Singapore's manufacturing capabilities. Its activities are industry-oriented in the form of collaborative R&D, consultancy, system integration, software development and postgraduate training programmes. In addition, both industry-sponsored R&D projects and in-house research projects in anticipation of industry trends are also carried out.

Institute of Molecular & Cell Biology (IMCB) IMCB is a predominately basic research institute, which has established a viable base of strategic research in health care and cell regulation. It has a strong pre- and post-doctoral training programme.

Magnetics Technology Centre (MTC) MTC focuses on R&D in technologies related to magnetics and supports the data storage systems, consumer electronics and miniature power supplies industries. Partners of the MTC in R&D include the major disk and tape drive companies and their equipment and instruments suppliers.

Institute of Microelectronics (IME) IME conducts strategic applied research in collaboration with the microelectronics industry in Singapore and the region. Its areas of work include microelectronics systems, failure analysis/reliability and VLSI circuit design/testing and silicon process technology.

TERTIARY INSTITUTES

The National University of Singapore (NUS) and the Nanyang Technological University provide the base of academic R&D resources. Specifically, they:

- Provide a steady source of highly-trained scientists and engineers for the research institutes and industry;
- Conduct high-end basic research; and
- Collaborate with industry in joint projects, consultancy and in-house courses.

The Singapore Polytechnic, Ngee Ann Polytechnic, Temasek Polytechnic, Nanyang Polytechnic, French-Singapore Institute, German-Singapore Institute and Japan-Singapore Institute of Software Technology provide application-oriented training. They:

- Ensure an adequate supply of trained technicians;
- Provide basic technical services to industry, such as testing and measurement services; and
- Provide some design and development capabilities.

NATIONAL SCIENCE & TECHNOLOGY BOARD (NSTB)

NSTB was set up in January 1991 to promote R&D and technology development at the national level. Its mission is "to develop Singapore into a centre of excellence in selected fields of science and technology so as to enhance our national competitiveness in the industrial and services sectors".

National Technology Plan

NSTB, in its innovation-driven strategy, drew up the National Technology Plan in 1991, which commits US$ 1.4 billion over five years to develop and promote S&T.

The Plan targets to increase Singapore's total national expenditure on R&D from 1.0 per cent of GDP in 1990 to 2.0 per cent of GDP in 1995. It also aims to increase the number of research scientists and engineers (RSEs) from 28 RSEs per 10,000 workforce in 1990 to 40 RSEs per 10,000 workforce in 1995.

The most recent R&D survey shows that Singapore is well on its way to-

wards achieving these targets, as in 1991 the total national expenditure was 1.1 per cent of GDP while there were 34 RSEs per 10,000 work force.

The Plan also sets out to develop strong interlinkages between the research community and private companies, which would benefit from the fruits of such R&D work. One avenue for doing so is through development of the Technology Corridor and other physical infrastructure. The commercialization of R&D is also facilitated by ensuring that research institutes work closely with industry in joint projects with a commercial angle.

Key Technolcgies

The National Technology Plan has identified nine key technology areas, and steps have been taken to enhance Singapore's capabilities in these areas:

- Information technology
- Microelectronics
- Electronic systems
- Manufacturing technology
- Materials technology
- Energy, water, environment, and resources
- Biotechnology
- Food and agrotechnology
- Medical sciences

NSTB's Promotional Role

NSTB promotes R&D in Singapore in the following ways:

Strengthening the infrastructure required for technology development by:

- Developing the Science Park as the focal point of the Technology Corridor;
- Creating a conducive environment for interaction between the R&D community of the manufacturing sector and the tertiary institutes;
- Encouraging a mix of R&D organizations, from tertiary institutes to multinationals and local manufacturing companies, to cultivate synergy between these organizations.

Creating financial incentives to encourage local companies and multinationals to undertake R&D:

- The Research & Development Assistance Scheme (RDAS) provides cash grants to R&D projects arising from industry, or those involving joint collaboration between industry, universities and research institutes;
- NSTB funds all the national research institutes and centres as well as some MNC's local R&D centres;
- NSTB has set aside US$ 93 million for R&D manpower development schemes.

Technology Corridor – Location

The hub of indigenous R&D activity in Singapore is within the Technology Corridor, located in the South-Western region of the island in an area that runs from Nanyang Technological University in Jurong to the Science Park at Kent Ridge. It has an attractive environment that attracts and retains R&D talent because of its physical attributes and because it fosters innovation through interaction amongst the research community and the private sector.

A Rich Mix

The Technology Corridor has a concentration of tertiary educational institutes, research institutes, high-tech business activities, housing, social and recreational amenities and good communications access to other parts of the island.

The rich mix comprises:

National Promotion and Funding Agencies, namely the National Science and Technology Board (NSTB) and the National Computer Board (NCB);

Tertiary Institutions, such as the National University of Singapore (NUS), Nanyang Technological University (NTU), Ngee Ann Polytechnic and Singapore Polytechnic.

Research Institutes. All the national research institutes are located here. They are: the Singapore Institute of Standards and Industrial Research (SISIR), Institute of Systems Science (ISS), Information Technology Institute (ITI), Institute of Molecular & Cell Biology (IMCB), Institute of Microelectronics (IME), GINTIC Institute of Manufacturing Technology and the Magnetics Technology Centre (MTC).

Technical Training Institutes, such as the French Singapore Institute and the German Singapore Institute.

Singapore Science Park. The Singapore Science Park is a key infrastructure establishment within the Technology Corridor. Being in close proximity to the National University of Singapore, it facilitates interlinkages between university researchers and the companies in the Park. Promotional government agencies such as NSTB and NCB are also located here. Common amenities such as recreation, eating places, medical services, banking facilities and child-care services are provided.

Since being set up in 1983, the 30-hectar Phase I site has attracted some 100 organizations. Prompted by this early success, development of a 20-hectar Phase II site was initiated in 1991.

Benefits of the Technology Corridor

The Technology Corridor has displayed several clear benefits in nurturing S&T in Singapore and in facilitating interlinkages between the research community and private enterprises.

The Corridor is a one-stop district for R&D and related support services such as technical information, testing and certification and manufacturing support.

The Corridor facilitates physical interaction and formal, as well as informal, exchange of information within a dedicated geographical enclave.

The mix of various segments of the business community, such as industrialists and financiers means that closer interaction between researchers/scientists and those who may contribute creative ideas and/or have the ability to exploit the commercial potential of new products and technologies is fostered.

Good communications facilities including computer networking is more easily provided within the community and with other research communities worldwide.

A more comfortable and pleasant living community equipped with the necessary recreational and family support facilities can be provided. Because of a more homogeneous community, it is easier to develop specific facilities in response to their social needs and preferences.

Mechanisms for Technology Transfer

Indigenous technology is transferred from R&D institutes to the private sector via the following mechanisms (with examples cited from R&D work at SISIR):

Collaborative R&D

SISIR and the company pool together their complementary expertise and for furtherance of the R&D project, e.g.

- Multicoating of ophthalmic lenses, with Polycore
- Metal injection moulding, with Advanced Material Technology

Licensing

The company pays royalties to license-in technology developed by SISIR. Licensor and licensee maintain a long-term relationship, enabling the licensee to benefit from upgrades, e.g.

- Algae resistant paint, with Nippon Paint
- Equipment monitoring system, with SGS-Thomson Microelectronics

Joint Ventures

Joint ventures shorten the learning curve in technology absorption and allow access to markets already captured by the partner. Examples of joint ventures with SISIR's subsidiary company, Novo Technology Development, are in:

- Waste Management, with Technochem
- Convenience Food, with International Cuisine

Contract R&D

Contract R&D is provided, ranging from R&D consultancy and technical studies to prototype development and the fabrication of fully-engineered equipment. Examples include:

- Electric Toothbrush, for Oraltech
- Electric Golf Caddy, for Karro

Consultancy

Consultancy is provided to upgrade or introduce new products or manufacturing processes and to impart technological skills to staff, e.g.

CFC Recovery and Recycling
Process Automation

10. Conclusion

In conclusion, Singapore has felt the imperative need to harness technology from outside the country as well as develop and adapt it indigenously. It is through skill-based and technology-intensive manufacturing and services that Singapore intends to become a developed country by the end of the decade.

Technology Acquisition in Uganda

Policy and Institutional Framework

Presented by Mr. Z.L.M. Nyiira, Executive Secretary of the Uganda National Council for Science and Technology at the 5th African TIES Meeting, Rabat, Morocco, 23-25 September 1993)

1. Introduction

The salient features of this report include the special emphasis by Uganda's leadership on technology as the major means to rapid economic growth, a discussion of emerging structures and policies that facilitate acquisition, evaluation and assimilation of crucial technologies, observations on the emerging trends in fabrication, copy technology and innovations and the status of the private sector in the adoption of technologies for production of goods and services.

Africa's current major debate is about harnessing the potentials of science and technology for national economic and social development. The relationship between science and technology and production, and the transformation of science into the forces of economic growth remained minor factors of consideration throughout the 1960s due to the prosperity that existed as a result of high commodity prices and inflow of foreign finance. African countries were contented with imports. Acquisition and utilization of technology for local manufacture of goods and services were peripheral considerations. Many countries are waking up to realize that in an economic environment where export commodities are not only few but also fetch low prices, depending on imported goods is expensive and unsuitable. Further, the contribution that science and technology can make in social and economic development is self demonstrative from examples of the newly industrialized countries and infant technology-based economies with impressive positive economic growth rates, such as Hong Kong in Asia and Mauritius in Africa.

Arising from the felt need for application of science and technology in the development of national economies, African countries adopted strategies in the Lagos Plan of Action (1980–2000) that would ensure the integration of science and technology in the national development processes. Today, more than a decade after the pronouncement of the Plan, doubts still exist about the commitment of Africa's leadership to achieving the objectives of that Plan, and the effectiveness of the policies and structures established for the purpose of achieving science-driven technology-based economic growth.

In Uganda, visions have changed as they have differed over time. The differences have been more in the level of government commitment and the will to adopt and support internal technology-based national development, than in the recognition of science and technology as important elements essential for socio-economic development. At independence in 1962, Uganda had an elaborate setup of R&D institutions and research linkages in key sectors of her economy. In 1970, by Cabinet decision, a National Research Council was created to guide research priorities and coordinate R&D efforts in the country. Twenty years later, the mandate, structure and functions of the Council were

expanded to accommodate the increased and urgent need for integrating science and technology into the national development process. Hence, a new organization, the Uganda National Council for Science and Technology, was created to advise Government and coordinate the formulation of an explicit national policy on all fields of science and technology; promotion and development of S&T and their integration in national development, and coordination of all scientific and technological activities geared to national needs and sustained economic development. This challenge to the new Council and the various government and non-government institutions in Uganda, and the manner with which it is undertaken, are crucial to the national impact of science and technology.

This brief report touches on the status of the technology policy within the context of the overall national science and technology policy and on the institutional, structural and administrative framework hatched to facilitate technology promotion and development.

2. Technology Policy

Uganda is committed to creating an independent integrated and self-sustaining economy. Thus, the existing technology policy, though still implicit in form, is geared towards achieving this objective. The various sectors have comprehensive statements expressing intentions, principles, methods and resources to be adopted in organizing and using the technological potential under their charge for the purpose of achieving the same national objective. In this regard, technology is perceived in the broad sense of being a system of local or imported knowledge, skills and experiences and their organization and utilization to produce essential commodities (goods and services).

At the sectoral level, Uganda has both explicit and implicit technology policies. The Uganda National Council for Science and Technology, an apex body government established in 1990 to advise itself on all scientific and technological matters, has developed a national technology policy guideline within the overall science and technology policy framework. This guideline, now in a very advanced stage, will guide, promote and regulate technological activities for national development. It will embody priority considerations in the field of technology and technology innovation to meet national objectives, the means to acquire essential technologies, and the resource requirements.

The intention in Uganda is to have a strong, clear institutional framework that will be able to discharge effectively the responsibility of technology policy management. Thus, while the overall management of the national science and technology policy is a statutory function of the Uganda National Council for Science and Technology, and while the Council is responsible for providing guidance and direction to sectoral organs and institutions in matters concerning science and technology, the implementation of the policy will remain the concern of the sectoral institutions; the concerned ministries. Implied in this is the need for effective linkages and information exchange between institutions for technology policy management and implementation.

3. Institutional Framework

In Uganda, the institutional framework for technology application is built on operationalization scenarios meant to resonate the technology-based development plan with the overall national development plan. The framework should, on one hand, develop towards full capacity for identification, access, acquisition, dissemination and assimilation of appropriate technologies, and on the other hand develop a capacity for technology utilization and sustainance. The latter element implies evaluation, syndication and commercialization of acquired technologies.

Whereas, therefore, government institutions are charged with the responsibility of setting up structures and mechanisms for facilitating transfer and installation of the technologies, the private sector in Uganda has emerged to be an effective mechanism of promoting innovative skills and copy technologies. It is as a consequence of this that many small and medium scale enterprises are now engaged in fabrication and foundry technology.

There has developed much interest among technology applicators in acquiring technology and fabricating similar or imitation products locally. Services institutions and heavy industries depend on maintenance and production technologies. They need constant provision of spare parts even for old obsolete models of industrial machinery. Some of the spare parts can no longer be obtained through direct procurement. Such institutions have developed elaborate skills in fabrication, metallurgy and instrumentation technology.

The Uganda Manufacturers Association is a strong institution in the management of technology-related information. The Association's role is significantly felt in promotion of industrial technology. Together, with the Uganda National Council for Science and Technology and the ministry responsible for industrial and industrial development policy, it should be possible to determine national technology requirements, and effectively advise the government on technology acquisition. In this regard, the Uganda Small Scale Industries Association is gradually emerging as a central institution in the promotion and development of technologies appropriate for small scale enterprises.

It is in consideration of acquisition, evaluation and dissemination of assessment and transfer that the Uganda National Council for Science and Technology set up within its structure the Technology Promotion and Development Programme. The programme has developed an articulate vision on technology evaluation and demonstration activities and the logistics of rationalizing foreign technology for local adaptation. The Council established its first rural technology evaluation and demonstration centre early this year. Its initial concerns will be agro-industrial technology and rural energy technology systems.

The Department of Technology in the Ministry of Commerce, Industry and Cooperatives is engaged on activities aimed at strengthening endogenous technology capacity while the

Ministry of Agriculture, Animal Industries and Fisheries has increased its effort to ensure the extension and application of agrotechnologies. The Ministries of Natural Resources, Housing, Works and Urban Development, Transport and Communication and Health have institutional arrangements meant to manage sectoral policies and the implementation of activities for the promotion of technologies in the energy, mineral and mining, environment, communication and medical sectors. The management of technology information advice to the government on technological information and management of intellectual property rights, are statutory mandates of the Council in consultation with the Ministries of Justice and Commerce, Industry and Cooperative. As for S&T information management, the Uganda National Council for Science and Technology is the national reference centre.

4. Administrative Framework

Technology policy is a component of the national development plan. Consequently, the overall administration of the policy is a concern of the Ministry of Finance and Economic Planning in its capacity as the institution responsible for coordinating sectoral activities. The existence and expansion of R&D institutions led to fragmentation and in some cases duplication of their activities. It became necessary to establish a machinery for coordination of and provision of advice on research priorities to R&D institutions and to regulate their activities by focusing them on national needs. These are administrative responsibilities passed on to the Uganda National Council for Science and Technology. Through its Specialized Technical Committees, the Council is able to review technical issues, and advise government on all policy matters relevant to specific technological activities in the country, and in particular, the financing of technological activities, technological training programmes, documentation of technological information, essential projects for the promotion of technological development, application of results of scientific and technological activities, and measures to be taken to effect cooperation for technology-based development.

Both the Council and Department of Technology in the Ministry of Commerce, Industry and Cooperatives have instituted Science and Technology Policy Dialogues. The purposes of these fora are to ensure maximum harmony among government institutions towards the promotion and application of science and technology but more so technology since it is this component that appears to have visible impact on development systems and society.

The cross-sectoral dimension of the Uganda National Council for Science and Technology, deliberately created by the government to be so, elevated the Council as an interministerial body, grouping together ministries, institutions and organizations responsible for technology application and the transformation of results of scientific research into desirable technologies.

The general weakness in the present S&T administrative framework is that technological development efforts are too fragmented and not effectively supervised. Scientific and Technological Development Projects are supervised and controlled by their parent organizations and executed by these organizations independently in isolation of each other.

The Uganda National Council for Science and Technology has a statutory mandate to advise and regulate technological flow. The institution is not, however, able to discharge this function because of strategic reasons including inadequate financial and human resource capacity. Despite these constraints, it has already developed a Strategic Plan which spells out necessary strategies and logistics to be undertaken if Uganda is to take full advantage of the global technology for her immediate development needs

5. Conclusion

Although technological considerations have been implicitly considered in national development plans, they have not been spelt out definitively for planned action. The present national science and technology policy framework formulated by the Uganda National Council for Science and Technology provides the government with a broad and flexible guideline on the overall direction to be taken in order to assess, acquire, evaluate and assimilate strategic technologies for national development. Explicit sectoral technology policies interpreted from national plans exist and are used in the implementation of sectoral activities. There still exists a need, however, for strengthening the central coordinating capacity to ensure effective and coordinated technological development effort.

The institutional framework for technological development currently embodies government departments, agencies and parastatal institutions, universities and institutions of higher learning, the private sector, non-governmental organizations and international development agencies. By far, effective technology acquisition and transfer appears to take place through efforts by the private sector and NGOs. The linkage between technology-generating institutions and technology utilization sectors is quite weak. The capacity of national institutions to commercialize technological information is very much in infancy.

The technological administrative framework needs strengthening. Whereas, the statutory functions of institutions with stakes in the promotion and development of essential technologies are clear, efforts to promote technological development are frequently misdirected. It is for this reason that a lot of thought must be put into streamlining the management of science and technology with emphasis on enhancing linkages among institutions responsible for the operationalization of technology.

TECHNOLOGY OFFERS

Extracts from Techmart Catalogue

(We are reprinting hereunder some extracts from the Techmart Catalogue prepared by UNIDO for Techmart India '93. These extracts are essentially offers of technology available for possible collaboration agreement.)

COMPLETE SOLAR (PHOTOVOLTAIC) POWERED HOSPITAL SYSTEM System includes. vaccine refrigeration and ice making systems as required by World Health Organization. Expanded programme on immunisation, blood banking, operating theatre lighting, centrifuge facilities, boom lighting and portable lighting systems. Also, **SOLAR POWERED VACCINE REFRIGERATOR/BLOOD BANK** One hundred litres storage plus 50 litres ice making capacity. Very low environmental impact **Details:**

Mr. Paul Allen
Director
Dulas Engineering
The Old School
Eglwysfach
Machynlleth
Powys SY20 8SX, UK

Tel: +44 (654) 781332
Fax: +44 (654) 781390

***Status:** Commercialized*
***Offer:** Training; designs, formulations and technical assistance; manufacture under licence*
***Source:** Limited company*

PHOTOVOLTAIC TECHNOLOGY The proposal envisages transfer of technology for the manufacture of photovoltaic cells and modules using 100 mm single crystalline silicon wafers as starting material. The project will be handles on a turnkey basis and includes documentation, training personnel and assistance in setting up the facility. The documentation consists of processing/manufacturing information of PV cells and modules, testing information for evaluation of the product and the necessary material specifications with purchase details. **Details:**

Mr. P. K. Guhathakurta
General Manager
B.H.E.L.
Asiad Village Complex
Siri Fort
New Delhi 110 049
India

Tel: 6442031
Tlx: 031 71380

***Status:** Commercialization*
***Offer:** Turnkey operation; manufacture under licence*
***Source:** Limited company*

WATER/SEWERAGE FILTRATION A lightweight ceramic material which can be moulded into very large and complex shapes has been developed. It allows liquids through while keeping virtually all solids and particulates back. The components are inexpensive. Work needs doing to improve repeatability and reproducibility. Other interesting uses have been identified. **Details:**

Mr. Eamon Bermingham
Blen Technology Ltd.
Pennington House
55 Hoghton Street
Southport PR9 OPG, UK

Tel: +44(704) 544014

***Status:** Commercialized*
***Offer:** Manufacture under licence; patent for sale; joint venture offer*
***Source:** Limited company*

WATER TREATMENT PLANT Turnkey supply of water treatment plant, complex, type C1 to C6, representing throughput capacity in litre per second. Approved for treatment of waste waters from high lead glass carving. Simple semi-automated, low space requirements. Pb concentration in purified water in the range 0.2-0.8 ppb. **Details:**

Dr. P. Zdenek
Technology Officer
Akra Ltd.
Hviezdoslavova 29
62700 Brno
Czech Republic
Tel: (425) 537496
Fax: (425) 538372

***Status:** Commercialized*
***Offer:** Turnkey operation*
***Source:** Limited company*

BAR CODE Optically detectable portion storing first information sequence; invisible magneto-optic portion storing more detailed information. Optical section does not indicate position of magneto-optic portion; quantity of information stored greatly increased; data can be updated and concealed. For security / identification: credit cards / storage of fingerprints. **Details:**

Dr. S. Anderson
Assistant Director
Keele University
Research Development and
Business Affairs
Staffordshire
ST5 5BG
UK
Tel: (0782) 583371
Fax: (0782) 713127

***Status:** Laboratory model*
***Offer:** Manufacture under licence*
***Source:** Educational institution*

PATENTED DIGITAL THERMOMETER that provides the temperature on a screen with a synthetic voice. This product is unique in the world and has already been commercialized with success in Spain. It was initially developed for the blind but is now being commercialized for general use. It has been developed with the latest technologies, is easy to use and is 100 per cent reliable.

its price allows it to compete successfully with other products in the market. **Details:**

Mr. Jaume Angerri
ICT
Via Laietana 39
4 rt/5e
08003 Barcelona
Spain
Tel: 010 343 319 88 11
Fax: 010 343 310 35 35

***Status:** Commercialized*
***Offer:** Manufacture under licence/Joint venture offer*
***Source:** Independent research organization*

PRODUCTION OF HIGH-TECHNOLOGICAL ANTENNAS WITH OPTIMAL TREATED SURFACES Operating (AOTS) in any wave range (from decimetric to submillimetric), conformal impedans reflector antennas (CIRA) for satellite TV broadcasting, as well as devices for creation of pin type plasma antennas (PTPA) to communicate with a flying vehicle surrounded by a layer of radiopaque plasma. **Details:**

Mr. V. Ivanov
Director General
Accord Innovations
Rusakovskaj str. 22-331
107014 Moscow
Russia
Tel: 1585210, 1581292
Fax: 7 095 257 1248

***Status:** Commercialized*
***Offer:** Manufacture under licence; joint venture offer; training; designs, formulations and technical assistance*
***Source:** Limited company, independent research organisation*

DIGITAL MULTIPLEX EQUIPMENT (THIRD ORDER) The digital system hierarchy of many countries is based on a 2048 kbps system complying with CCITT recommendations, employing Pulse Code Modulation (PCM) and Time Division Multiplexing (TDM) Digital Multiplex hierarchy consists of Primary PCM Mux (34368 kbps) Eqpts. Four DM-34 terminals are housed in a standard slim rack. **Details:**

Dr. V. K. Koshy
General Manager (Intl Marketing)
Bharat Electronics Ltd
Trade Centre
116/2 Race Course Road
Bangalore 560 001
India
Tel: 269897, 263117
Fax: 812 265657, 268410
Tlx: 845 2477 BE IN

***Status:** Commercialized*
***Offer:** Manufacture under licence; turnkey operation*
***Source:** Limited company*

POLYCOIR is a wood substitute, it is a polymer impregnating process followed by compression moulding. Ready to use parts for modular construction of door shutters, panelling, chair shells, instrument panel covers, automotive interior, trim parts, etc. Can be made from polycoir impregnating process followed by compression moulding. The major unit operations consist of impregnation of coir felt with phenolic resin. **Details:**

Director
Regional Research Laboratory
Industrial Estate PO
Trivandrum
Kerala 695 019
India
Tlx: 0884 232

***Status:** Commercialized*
***Offer:** Turnkey operation; designs, formulations and technical assistance*
***Source:** Organisation*

IBM COMPATIBLE COMPUTER SYSTEMS BASED ON 80386 AND 80486 We can assist in setting up a unit for assembly of IBM compatible computer systems based on 80386 and 80486, that will entail the setting up of a factory, provision of test equipment and training of manpower. Initial training will be conducted in India. Additional manpower can be trained in that country. **Details:**

Lt. Col. K.N. Chadha
Managing Director
Computer Vision
H- 32 Sector 9
Noida 201 301
India
Tel: 8529568
Fax: 91-11-89-26025

***Status:** Commercialized*
***Offer:** Joint venture offer; training*
***Source:** Private individual*

COMPUTER CHIP STACKING SYSTEM (CHIPRACK) A unique system for stacking large silicon chips one on top of another. This technique has been used to produce a tiny personal computer (PC) system in the form of a small stack 2 inches x 2 inches x 2 inches. This PC system can be embedded into a wide range of products including instrumentation, point of sale terminals, vending machines, environmental monitoring systems etc. European market for embedded PC's is currently $1 billion. **Details:**

Mr. Mike Anstey
Chiprack Electronic Systems Ltd.
University of Luton
The Research Centre
24 Crawley Green Road
Luton LU1 3LF
UK
Tel: +44 582 456843
Fax: +44 582 459787

***Status:** Available*
***Offer:** Manufacture under licence; joint venture offer*
***Source:** Limited company*

People's Republic of China: Regulations on Technology Imports

(Promulgated by the State Council on 24 May 1985)

Article 1. These Regulations are formulated with a view to further expanding foreign economic and technical cooperation, upgrading the scientific and technical level of the country and promoting the national economic growth.

Article 2. Importation of technology referred to in these Regulations means acquisition of technology through trade or economic and technical cooperation by any corporation, enterprise, organization or individual within the territory of the People's Republic of China (hereinafter referred to as the recipient) from any corporation, enterprise, organization, or individual outside the territory of the People's Republic of China (hereinafter referred to as the supplier), including:

1. Assignment or licensing of patent or other industrial property rights;

2. Know-how provided in the forms of drawings, technical data, technical specifications, etc., such as production processes, formulae, product designs, quality control and management skills;

3. Technical services.

Article 3. The technology to be imported must be advanced and appropriate and shall at least conform to one of the following requirements:

1. Capable of developing and producing new products;

2. Capable of improving quality and performance of products, reducing production cost and lowering consumption of energy or raw materials;

3. Favourable to maximum utilization of local resources;

4. Capable of expanding product export and increasing earnings of foreign currencies;

5. Favourable to environmental protection;

6. Favourable to production safety;

7. Favourable to improvement of management;

8. Contributing to advancement of scientific and technical level.

Article 4. The recipient and the supplier shall conclude in written form a technology import contract (hereinafter referred to as contract). An application for approval of the contract shall be submitted by the recipient, within thirty days from the date of conclusion, to the Ministry of Foreign Economic Relations and Trade of the People's Republic of China or any other agency authorized by the Ministry (hereinafter referred to as the approving authority). The approving authority shall approve or reject the contract within sixty days from the date of receipt. Contracts approved shall come into effect on the date of approval. Contracts on which the approving authority does not make a decision within the specified period of time shall be regarded as approved and shall come into effect automatically.

Article 5. The conclusion of technology import contracts must conform to the relevant provisions of the Foreign Economic Contract Law and other laws of the People's Republic of China.

Both parties must specify in the contract the following items:

1. Contents, scope and essential description of the technology provided, and a list of patents and trademarks if they are involved;

2. Technical targets to be reached and time limit and measures for accomplishing the targets;

3. Remuneration, composition of remuneration and form of payment

Article 6. The supplier shall ensure that it is the rightful owner of the technology provided and that the technology provided is complete, correct, effective and capable of accomplishing the technical targets specified in the contract.

Article 7. The recipient shall undertake the obligation to keep confidential, in accordance with the scope and duration agreed upon by both parties, the technical secrets contained in the technology provided by the supplier, which has not been made public.

Article 8. The duration of the contract shall conform to the time needed by the recipient to assimilate the technology provided and, unless specially approved by the approving authority, shall not exceed ten years.

Article 9. The supplier shall not oblige the recipient to accept requirements which are unreasonably restrictive. Unless specially approved by the approving authority, a contract shall not include any of the following restrictive provisions:

1. Requiring the recipient to accept additional conditions which are not related to the technology to be imported, such as requiring the recipient to purchase unnecessary technology, technical services, raw materials, equipment and products;

2. Restricting the freedom of choice of the recipient to obtain raw materials, parts and components or equipment from other sources;

3. Restricting the development and improvement by the recipient over the imported technology;

4. Restricting the acquisition by the recipient of similar or competing technology from other sources;

5. Non-reciprocal terms of exchange by both parties of improvements over the imported technology.

6. Restricting the quantity, variety and sales price of products to be manufactured by the recipient with the imported technology;

7. Unreasonably restricting the sales channels and export markets of the recipient

8. Forbidding us : by the recipient of the imported technology after expiration of the contract;

9. Requiring the recipient to pay for or to undertake obligations for patents which are unused or no longer effective.

Article 10. In applying for approval of contracts, applicants shall submit the following documents:

1. Written application for approval of the contract;

2. Copy of the contract concluded by both parties and its Chinese translation;

3. Documents evidencing the legal status of the contracting parties.

Article 11. Application and approval of any revision and renewal of contract shall be made in accordance with the provisions stipulated in **Article 4** and **Article 10** of these Regulations.

Article 12. The authority to interpret these Regulations and to formulate detailed rules for implementing these Regulations resides in the Ministry of Foreign Economic Relations and Trade.

Article 13. These Regulations shall enter into force on the date of promulgation.

Detailed Rules for the Implementation of Regulations on Technology Imports of the People's Republic of China

(Approved by the State Council on 20 December 1987; Promulgated by the Ministry of Foreign Economic Relations and Trade on 20 January 1988)

Article 1. The Detailed Rules are formulated in accordance with the provisions of **Article 12** of the Regulations on Administration of Technology Import Contracts of the People's Republic of China (hereinafter referred to as the "Regulations").

Article 2. Regardless of country or region of the supplier, source of funds and ways of payment of the recipient, technology import contracts hereunder listed concluded between the recipient and the supplier as specified in **Article 2** of the Regulations shall apply for examination and approval from the competent authority in accordance with the Regulations and the Detailed Rules.

1. *Contracts for assignment or licensing of industrial property rights*: Contracts for assignment or licensing of industrial property rights refer to those for assignment or licensing of rights relating to invention patents, new utility model patents, exterior design patents as well as trademarks excluding those merely for assignment of rights of trademarks.

2. *Contracts for licensing of know-how*:Contracts for licensing of know-how refer to those for provision or impartment of technical knowledge for manufacturing a product or applying a technology as well as for products designs, technological processes, formulae, quality control and management, which is neither publicized nor under legal protection of industrial property rights.

3. *Contracts for technical services*: Contracts for technical services refer to those for providing services or consultations to the recipient by the supplier with his technology for achieving a specific goal, including those for feasibility study or engineering design undertaken by the supplier upon the entrustment of the recipient or by the recipient in cooperation with the supplier, those for providing technical services by foreign geological exploration or engineering teams that are employed and those for providing services or consultations by the supplier upon entrustment of the recipient for technical transformation of enterprise, improvement of production technology or product design and quality control as well as enterprise management (excluding those for employing aliens in China's enterprises).

4. *Contracts for co-production and co-design*, which contain any one of such contents as assignment or licensing of industrial property rights, licensing of know-how or technical services.

5. *Contracts for importing complete sets of equipment, production line and key equipment*, which contain any one of such contents as assignment or licensing of industrial property rights, licensing of know-how or technical services.

6. *Other technology import contracts*, which need the fulfillment of the procedure for examination and approval in the view of the competent authority.

Article 3. To import technology, companies, enterprises, institutions or individuals with no right to do technology import business with abroad shall, with a letter of commission, entrust those companies and enterprises with such rights to conclude technology import contracts.

Article 4. Technology import contracts concluded by Chinese-foreign equity joint ventures, Chinese-foreign co-operative ventures and wholly foreign-owned enterprises (hereafter referred to as "foreign investment enterprises") established in the territory of the People's Republic of China for technology acquired from suppliers shall comply with the procedure of examination and approval in accordance with the provisions of the Detailed Rules.

If the foreign investor in the foreign investment enterprise uses industrial

property rights or know-how as his equity share, this will be dealt with in accordance with the relevant laws and regulations of the State for foreign investment enterprises.

Article 5. The competent authorities for examining and approving technology import contracts are the Ministry of Foreign Economic Relations and Trade (hereinafter referred to as MFERT) and its authorized departments, commissions, bureaux of foreign economic relations and trade and other administrative organs of provinces, autonomous regions, municipalities directly under jurisdiction of the central government, coastal open cities, special economic zones and cities under provinces with separate economic plans (hereinafter referred to as the "authorized examining and approving authorities").

Article 6. Technology import contracts are examined and approved at different levels in accordance with the following stipulations:

1. Technology import contracts for projects with feasibility study reports approved by the ministries/commissions of and departments under the State Council are to be examined and approved by MFERT.

2. Technology import contracts for projects with feasibility study reports approved by people's governments or their authorized responsible organs of provinces, autonomous regions, municipalities, coastal open cities, special economic zones and cities under provinces with separate economic plans are to be examined and approved by the authorized examining and approving authorities of the same levels. If the technology import contracts are concluded by other transregional companies through entrustment, they may be examined and approved by the authorized examining and approving authorities of the spot where the entrustees are located with the consent of the entrusters' local authorized examining and approving authorities. After approval, the on-the-spot authorized examining and approving authorities shall send a copy of the Approval Certificate to the local authorized examining and approving authorities for record. Nevertheless, technology import contracts concluded by companies located in Beijing pursuant to transregional entrustment (excluding these directly under Beijing municipality) are to be examined and approved by MFERT.

3. Technology import contracts concluded by foreign investment enterprises for acquiring technology from supoliers shall be examined and approved by MFERT if the foreign investment enterprises were established with the approval of ministries' commissions of and departments under the State Council, or be examined and approved by MFERT-authorized organs if the enterprises were not so established.

Article 7. Technology import contracts shall specify in terms of the following items:

1. Name of contract;

2. Contents, scope and requirements of the goal-directed technology imported;

3. Criteria, time-limits and measures for quality rectification of the imported technology and liabilities for risks;

4. Obligations of keeping-confidential for imported technology, ownership and sharing of the technology improvements;

5. Price or payment in total and breakdown and terms of payment;

6. Calculations for compensation in case of violation;

7. Means of settlement for disputes;

8. Interpretation of terms and phrases.

Annex and data relations to implementation of the contract may constitute an integral part of the technology import contract in accordance with the agreement of the contracting parties.

Article 8. With respect to technology import contracts involving assignment or licensing of patent or trademark rights obtained in China, relevant patent numbers or patent application numbers, trademark registration numbers together with trademark design shall be expressly specified. Contracts for assignment of patent rights shall be recorded with the Trademark Office in accordance with provisions of the "Trademark Law of the People's Republic of China".

Article 9. The supplier shall ensure that the technology or data documents provided are complete, accurate, effective and capable of reaching the technology goal specified in the contract. The time-limits for the delivery of technology documents shall correspond with the engineering programme of the recipient.

Article 10. If the recipient requires the supplier to provide raw materials, spare parts or equipment for the imported technology, the price shall not be higher than that of the like product on the international market.

Article 11. The supplier shall ensure that he is the legal owner of the technology provided or that he has the right to assign or license the technology. If the recipient, in producing or selling products with the assigned or licensed technology, is accused of infringement by a third party, the supplier shall respond to the lawsuit. If the infringement charge by the third party is proved, all economic losses the recipient may suffer shall be compensated for by the supplier.

Article 12. Within the term of validity of the contract, the ownership of the improved technology including the right to apply for patents belongs to the party that has made the improvements. Where the recipient provides the improved technology to the supplier, the terms shall be the same as those when the supplier provides the improved technology to the recipient.

Article 13. The recipient shall undertake the obligations to keep confidential know-how and relevant information provided or imparted by the supplier in accordance with limits and duration as agreed in the contract. The duration of keeping-confidential shall not generally exceed the term of validity of the contract. If special circumstances demand that the duration shall exceed the term of the contract, it shall be expressly specified in the contract, and reasons shall be made when applying for examination and approval.

Within the duration in which the recipient undertakes the obligation to keep confidential, if the technology is publicized not owing to the recipient, obligations to keep confidential undertaken by the recipient shall be immediately terminated. If it is specified in the contract that the supplier provides its developed and improved technology

to the recipient within the term of validity of the contract, the recipient may continue to undertake the obligations of keeping-confidential after expiration of the contract. In that case, the duration for keeping-confidential shall begin from the date when the supplier provides the technology but not exceed the duration specified in the original contract.

Article 14. No provisions of restrictions on exportation of products manufactured by the recipient with the imported technology may be included in the contract without the approval of the competent authority. However, either of the following cases shall be excepted:

1. In countries and regions where exclusive license contracts have been concluded by the supplier;

2. In countries and regions where sole agent contracts have been concluded by the supplier.

Article 15. No provision of prohibitions to be imposed on the recipient to continue using the imported technology after expiration of the contract may be included in the contract without approval of the competent authority. Where the contract has expired but the duration of the patent relating to the imported technology has not expired, the relevant stipulations of the "Patent Law of the People's Republic of China" shall govern.

Article 16. The supplier shall pay taxes in accordance with the provisions of the Tax Law of the People's Republic of China.

Article 17. The recipient or companies, enterprises acting as its agents who have concluded the technology import contracts shall, in accordance with the provisions of **Article 6** of the Detailed Rules, submit to the competent authority within thirty days from the date when the contract is concluded the following official documents:

1. Application for approval. The contents of the application shall include the name of the contract, country of the supplier and name of the firm, the contents and scope of the goal-directed technology imported, the approving organ and approved number of the feasibility study report of the project, etc.;

2. Copy of the contract (enclosing a Chinese version if it is in a foreign language);

3. Copy of documents evidencing the legal status of the contracting parties;

4. Approved feasibility study report and arrangement of the fund needed.

To facilitate the examination and approval, the recipient or companies, enterprises acting as its agents may ask for comments or request for preexamination from the competent authority on the main contents or certain clauses of the contract either before or during negotiations.

Article 18. In case the technology import contracts and other documents submitted to the competent authority in accordance with the provisions of **Article 17** of the Detailed Rules include any one of the following contents, the competent authority shall require amendments within a prescribed time-limit, and approval shall not be granted in case of failure to make amendments:

1. That it is against the current laws and legislation of the State and is harmful to public interests of the society;

2. That it is harmful to national sovereignty;

3. That the contents of the contract are inconsistent with the approved feasibility study report of the project;

4. That the basic clauses and contents of the contract are imperfect;

5. That the contract contains no definite and rational stipulation concerning the responsibilities and solutions to possibly-occurred disputes over property rights due to the assigned or licensed technology or other disputes that may occur in the course of implementation of the contract;

6. That the contract contains no rational stipulation on the technical level and economic efficiency which the assigned or licensed technology should attain including quality warranty for the products manufactured with the said technology;

7. That the price or ways of payment for the imported technology are unreasonable;

8. That the stipulations on rights, responsibilities and obligations of the contracting parties are unclear, unequal or irrational;

9. That the contract contains preferential tax commitment without the consent from the Chinese tax authority.

Article 19. The competent authority shall decide whether or not to approve the contract within 60 days from the date when the application is received. If the competent authority requires amendments in accordance with the provisions of **Article 18**, the duration of examination and approval shall be counted from the date when the amended contract or text is received.

If the competent authority makes no response within the specified time, the contract shall be deemed to have been approved.

Article 20. The contract shall come into force on the date of approval and the competent authority shall issue a unified Approval Certificate for a Technology Import Contract printed and numbered by MFERT.

Article 21. If the term of validity of the technology import contract exceeds the period of ten years stipulated in **Article 8** or includes the restrictive provisions outlined in **Article 9** of the Regulations, the recipient shall submit the application with detailed explanations to the competent authority when going through the procedure for examination and approval in accordance with the stipulations of the Detailed Rules.

Article 22. Amendments to the provisions relating to the goal-directed technology content, price, term and keeping confidential time limits of an approved technology import contract shall be made by consultations between contracting parties upon a written consent of the original competent authority for examination and approval. If amendments are inconsistent with the approved content of goal-directed technology or exceed the approved amount of foreign exchange, the procedure for reexamination and reapproval shall be gone through in accordance with the provisions of **Article 4** and **Article 11** of the Regulations and **Article 6** of the Detailed Rules.

Article 23. The examining and approving organs other than MFERT shall submit copies of Approval Certificate for a Technology Import Contract and other relevant documents to MFERT for record within 10 days from the date the technology import contract is approved.

Article 24. In the course of the implementation of the contract, the Approval Certificate for a Technology Import Contract or its copy must be presented to the organs concerned in accordance with the relevant stipulations for purposes of bank guarantee, letter of credit, payment, exchange settlement, customs declaration and tax payment, etc. In case of failure of presentation, refusals may be made by the banks, customs and tax authorities.

Article 25. The authority to interpret and revise the Detailed Rules resides in MFERT.

Article 26. The Detailed Rules shall enter into force on the date of promulgation. The Procedure for Examination and Approval of Technology Import Contracts promulgated on 18 September 1985 by MFERT shall cease to be in force simultaneously.