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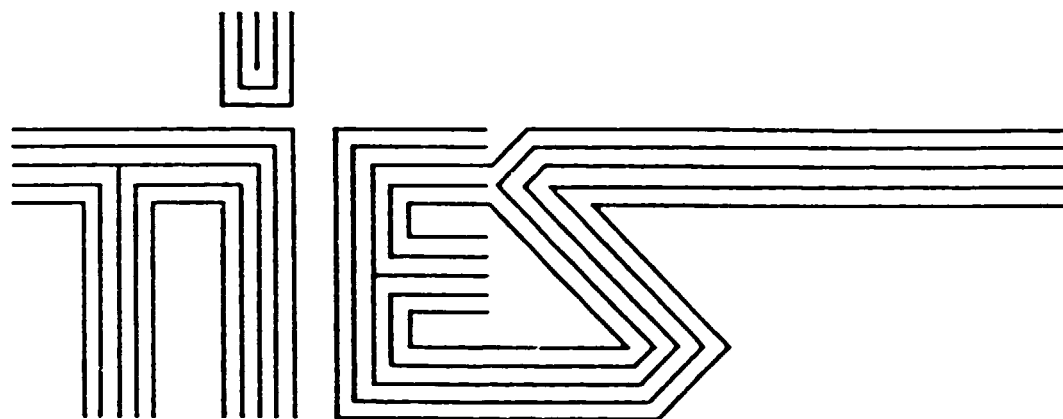
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NEWSLETTER

Technological
Information
Exchange
System

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Compiled by the Industrial Technology Promotion Division, Department for Industrial Promotion, Consultations and Technology, UNIDO, P.O. Box 300, A-1400 Vienna, Austria.

Dear Reader,

In this issue of the *TIES Newsletter* we publish excerpts from the UNIDO Medium-Term Plan for 1990 – 1995. We specifically focus on two priority areas and thrusts of UNIDO's programmes, which are directly addressed by the TPAN Unit. These are human resources development and development and transfer of technology. Through these we hope to be able to convey UNIDO's perception of the challenges it is faced with in these fields and its corresponding responses in terms of strategies and programmes for the five-year period up to 1995.

The Technology Programme of UNIDO has, over the years, given special attention to the development of human resources in the field of technology acquisition and negotiation. In this respect, we are guided by the expressed need of developing countries to build up their capacity to upgrade the knowledge and skills of entrepreneurs and officials involved in technology transfer transactions. Many workshops and seminars organized in different environments and addressed to different target groups have given us a leading experience in this field. An important element in this process has been the preparation of the *Manual on Technology Transfer Negotiations*, which proposes a methodology of teaching and training for negotiators, as well as the core substance of such teaching.

On the other hand, the network of co-operation we have established through TIES continues to play a visible role as a modality of co-operation that can assist developing countries in strengthening their domestic technological capabilities and in facilitating access to technology sources. In keeping with this, the *TIES Newsletter* continues to fulfill a role as a vehicle to keep our readers informed of technology and investment related developments in the international arena. In this issue, we bring you articles of interest pertaining to Colombia, Ghana and Malaysia. We also take this opportunity to convey some basic concepts of technology transfer in very readable form, together with sample agreements. We have no doubt that negotiators will find these documents helpful.

We continue to invite your contributions, be they articles, opinions, analyses of trends, or studies on technology flows in your countries, or just simply news on recent rules, regulations or procedures relating to technology and investment activities. At the same time, we would like to thank all those who have shared with us their valuable time, their ideas and information, which have served to enrich the content and substance of this newsletter.

Technology Policy, Acquisition and Negotiation Unit
Industrial Technology Promotion Division

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UNIDO News

EXCERPTS FROM UNIDO'S MEDIUM-TERM PLAN FOR 1990-1995

1. Human resource development

THE CHALLENGE

Resolution 1987/81 adopted by the United Nations Economic and Social Council aimed at reviving awareness of the fact that people are both the objective of and essential means to development. Similarly, in the context of preparing a new International Development Strategy for the Fourth Development Decade (1990s), human resource development is emerging as a priority theme, with its broad connotation for the "human dimensions" of development. From the point of view of UNIDO, this calls for attention not only to the issues of education and training systems, but also to a whole range of basic strategic issues of industrialization. These include an appropriate blending of less advanced and newly emerging advanced technologies, and the whole complex of inter-sectoral linkages. Careful consideration should be given to all those basic strategic issues in upgrading education and training systems and adjusting them to evolving employment opportunities. Human resource development must be seen as both a precondition for and a consequence of industrial development. Particularly important in this context is that the developing countries face growing challenges as a result of rapid advances in technology, changes in markets and market access, international price structures and other trends and policy factors that affect international comparative advantage.

The developing countries need to adopt a systematic approach to tackling the grave shortcomings that occur at different levels. They also need to adjust and upgrade continuously their industrial production structures and accommodate the shifting operational requirements of their industries. An overall human resource development strategy, industry-specific human resource development policies, institutional training systems and enterprise-level training are required. Training of trainers and industrial managers is of paramount importance. Aggressive human resource development schemes within industry itself are required in order to combat the all too frequent mismatch between the demand for and availability of skills. This, in turn, calls for an appropriate, fiscal and institutional support policy. Furthermore, institutional training must link education and training with technological research and development, as well as consultancy and extension services.

THE RESPONSE

The primary objective of the human resource development programme of UNIDO is to assist developing countries in building up coherent and sustainable systems for upgrading local technological skills and managerial and entrepreneurial capabilities and integrating them into the industrial development process, in accordance with the national development strategies and priority plans of those countries. This broad objective is addressed through the

various programme instruments or combinations of instruments which are designed to tackle the requirements of specific countries and regions so that UNIDO can act most effectively as a catalyst and stimulator of action and change. The relevant target groups include: (a) policy-makers at the national planning level; (b) public programme managers and industrial and professional associations; (c) technical and financial institutions; and (d) international technical co-operation agencies and institutions.

In general, emphasis will be on linking human resource development and the development and transfer of technology. The direct training services provided by UNIDO in various specialized fields will be oriented primarily towards those participants from developing countries who are, or will be, in a position to train many others in their home countries. Particular weight will be attached to the development of new institutional training programmes or "centres-of-excellence" programmes at national, sub-regional and regional levels in various specialized fields. UNIDO-sponsored policy-oriented seminars and problem-oriented training workshops will continue to focus on such fields of critical importance as repair and maintenance, quality assurance and control, investment project preparation, appraisal and promotion, enterprise and factory management, contract negotiation, and small industry extension services, as well as energy conservation and substitution, industrial safety and environmental protection.

Steps will be taken to ensure that human resource development is a major feature of all UNIDO activities. Emphasis will be placed on research for policy formulation and implementation purposes. This research will focus, among others, on ways and means of stimulating the dynamic evolution of the links between education, R&D, training and industry at national and regional levels. Co-operation in long-term institution-building projects will incorporate, wherever desirable, a policy research component so as to ensure maximum feedback to national human resource development policies and the design of training systems. Greater efforts will be made to ensure that every technical co-operation project has a maximum impact on the host country in terms of human resource development. Similarly, the industrial promotion activities of UNIDO, as well as its information services will give due attention to their training effects. They will identify, test and demonstrate effective approaches and mechanisms that developing country Governments can choose when developing and implementing their own promotional policy instruments for industrial and technological development.

The thrust of the UNIDO response along the lines described above led to the elaboration of a comprehensive policy framework for UNIDO operations in the domain of development and transfer of technology and development of human resources (document GC.3/8 and IDB.5/37). The framework was prepared in accordance with resolution GC.2/Res.4 adopted by the General Conference at its second session and decision IDB.4/Dec.21 adopted by the General Conference at its fourth session. At its fifth session, the Board took note with appreciation of this policy framework and requested the Director-General to inten-

sify co-operation with other competent organizations in the United Nations on the basis of the policy framework.

2. Development and transfer of technology

THE CHALLENGE

Recent trends in the flow of technology to developing countries offer no solace when viewed in terms of such main proxies as direct foreign investment, imports of capital goods and official technical assistance. Major reasons for these adverse trends may be found in the international economic situation in general and in the debt burden of several developing countries. The difficulties associated with these trends are compounded by the increasing protectionism in the form of strategic technology agreements and informal cartels among technology leaders. Enhanced technology acquisition and negotiation capabilities are thus indispensable to achieving the technology mix needed by developing countries. Moreover, in contrast to the trends of the sixties and seventies, the new scenario for the coming decade includes continued intensive competition in a shrinking market, looser linkage between technological innovations and investment decisions, and constant change in the process of innovation itself. All this is markedly different from the trend towards specialization and marginal innovations at the individual plant level that featured in earlier decades. Furthermore, organizational structures and management techniques within and between production units are changing as industrial production systems become increasingly globalized.

This new situation poses a challenge to developing countries, compelling them to adopt new strategies and policies for survival and development. There must be more endogenously driven technological development efforts. It is no longer sufficient merely to master an imported technology. Experimental learning and innovation become essential ingredients in the technological development process in order to seize the opportunities and reap the benefits offered by the pervasive and flexible features of new technologies. Accelerated obsolescence of skills calls for an ever more serious and firmer commitment to the development of human resources. The earlier preoccupation with simply acquiring or transplanting technology must be replaced by schemes and organizational and management innovations at the domestic level that facilitate and propagate experimental learning and development. Similarly, emphasis must be placed on developing appropriate financial mechanisms to support technological co-operation among enterprises, especially for pre-competitive research.

One prescription for economic success was the import substitution model based on the production of consumer non-durables produced by light industries up to the stage where they become internationally competitive. However, in order to succeed, the management of industrial and technological change in accordance with that prescription should be supplemented by a long-term, aggressive technology policy based on insight into the development sequences of technological capability and its integration with industrial development. This, in turn, demands that full attention be given to the capital goods sector, the development of which calls for a stepwise approach leading ul-

timately to the mastery of complex technologies. Technological dynamism, derived from the successful integration of industrial and technological development, must be based on the capital goods manufacturing sector as the agent of change: it requires the creation of a basic technological infrastructure to serve that sector.

THE RESPONSE

The primary objectives of the UNIDO programme for development and transfer of technology are:

- (i) to increase the awareness of the developing countries to the implications of emerging technological changes;
- (ii) to facilitate their access to technology sources, and to assist them in strengthening their domestic technological capabilities so as to translate new opportunities into action programmes and optimize the exploitation of existing industrial capacities; and
- (iii) to promote broader participation of the developing countries in international technological development.

The United Nations Conference on Science and Technology for Development held at Vienna in 1979 laid out a broad framework which provided a basis for the technology-related activities of UNIDO over the past decade. However, that framework served more as a system for classifying activities than identifying areas of priority for UNIDO.

A new programme (outlined in document IDB.3/26) was approved by the General Conference in its resolution GC.2/Res.4, while the Special Advisory Group at its meeting in April 1989 urged that certain elements of that programme should be more sharply focused. The thematic emphasis lies on the integration of industrial and technological development for which several different instruments or modalities of co-operation are necessary. These are:

- (i) research and studies on technology, focused on three main areas – (a) the impact of new technologies on socio-economic development, (b) the trends, options and co-operation potentials in specific industrial sectors, and (c) cross-sectoral policies and learning strategies for technological development;
- (ii) technical co-operation in creating and strengthening basic technical infrastructure for industrial development with particular regard to repair and maintenance, quality assurance and control, product and process engineering, R&D, and related extension services within a clearly structured national policy framework, including measures specifically designed for small- and medium-scale industry development;
- (iii) promotional activities, consisting of ad hoc advisory services, awareness workshops and project development activities for technological co-operation at national, regional and interregional levels, as well as in the context of enterprise-to-enterprise co-operation;
- (iv) advisory services through TIES on technology negotiation and acquisition, supplemented by intensified dialogue between technology suppliers and recipients and periodic studies on international technology markets; and
- (v) technological information services, primarily through the INTIB network.

For co-operation at the national level, particular emphasis will be placed on establishing linkages between Governments, universities and industry for research,

development and applications engineering, with due attention to training, financing and related public support policies, as well as on the problems associated with the industrial utilization of locally available materials. In the context of technology promotion, careful attention will be paid to the questions of:

- (a) examining the appropriateness of technology not only from the standpoint of economics, but also in terms of its social, environmental and energy conserving impact;
- (b) ensuring maximum impact on the building up of local technological capabilities; and
- (c) improving mechanisms for joint problem oriented research and co-operation among developing countries, as well as between developed and developing countries.

THE AFRICAN TIES PROGRAMME

The year 1990 saw a strengthening of the TIES Programme in Africa, with the formulation and implementation of a definite work programme of African-TIES activities involving the up-grading of institutional capabilities, regional co-operation and human resources development in the field of technology acquisition and negotiation.

Following the conclusions and recommendations of the Third African TIES Meeting held in Accra (Ghana) in December 1989, through its Technology Policy, Acquisition and Negotiation Unit, UNIDO prepared a project entitled African TIES: integrated assistance to African countries and human resources development in the field of technology acquisition and negotiation with a focus on the agro and agro-related sectors. This project was subsequently approved under the IDDA Programme and implementation started in July 1990.

Among the highlights of this work programme are:

- Activities leading to the building up and/or strengthening of national core teams of potential trainers of technology transfer negotiators. The ultimate aim of the programme is to institutionalize training capabilities in the field of technology acquisition and negotiation in the region. Workshops on technology transfer negotiations will be held utilizing national counterpart institutions and national experts with the view to imparting a teaching methodology as well as the substance of a course on technology transfer negotiations.
- A regional information exchange among countries in the region that involves the sharing of expertise and skills in technology acquisition and negotiation.
- A training component, whereby staff exchanges between African TIES institutions will inform officers of the approaches taken by neighbouring countries on various technology issues. Specific areas of interest are technology evaluation, contract negotiation, monitoring and information management.
- Preparation of guidelines and working materials on issues of acquisitions and negotiation of technology with a special focus on the agro and agro-related sectors. The materials will be in the form of model contracts and case studies that will be disseminated

to government and private sector utilizers for their use and guidance.

The TIES system has been extremely useful in assisting developing countries in substantially improving their conditions of technology acquisition, and in conjunction with the African Regional Centre for Technology (ARCT), UNIDO has been promoting TIES activities in the African region.

The first African TIES meeting, which was essentially to sound out the situation, was held in Dakar (Senegal) in October 1985 as a first step towards creating a co-operative network among institutions responsible for technology acquisition and regulation in Africa. The second meeting two years later, also in Dakar, was more concrete in terms of conclusions and recommendations on information exchange and training activities, and it served to introduce CORIS (the Computerized Registry Information System) for use by interested countries. As a result, CORIS was installed in Nigeria and Ghana, where it is now operational, and in Ethiopia and Tunisia, where it is at the demonstration stage. In addition, workshops on technology negotiation and technology policy have been held in Ghana, Nigeria, Tunisia, Ethiopia, Madagascar, Mali and Tanzania.

African TIES is emerging as an approach to an issue that confronts many developing countries, which in their struggle to industrialize, have to rely heavily on technology imports, particularly from developing countries. It is foreseen that through regional co-operation the process of addressing the range of issues from policy formulation to acquisition, evaluation, negotiation and implementation of technology transfer transactions, may develop with a more focussed approach and in a manner best suited to the prevailing regional conditions.

The third African TIES meeting, held in Accra (Ghana) in December 1989, emphasized the value of African TIES as an instrument to increase awareness of issues of technology acquisition and negotiation for countries in the region. A programme of work comprising the following key elements was agreed upon:

- Assistance to new members in developing legislation and setting up a registry. This will be a joint collaboration between UNIDO, the ARCT and some of the older, established registries.
- Exchange of information on technology contracts and experience with individual technology suppliers, taking issues of confidentiality into account.
- Exchange of information on local technologies for export and local suppliers able to carry out international contracts.
- Upon request, UNIDO will install CORIS software in national technology transfer offices.
- Develop negotiating capabilities through seminars, workshops and study tours so that African-TIES members may undertake and promote training activities for negotiators in their own countries and conduct their own training courses with the involvement of local institutions and partners. UNIDO's *Manual on Technology Transfer Negotiations*, which is under preparation, could be a valuable tool for these training courses.

The recommendations of the third meeting provided the

basis for drawing up the African TIES project, which was implemented in July of last year, and will be reviewed at the next meeting at the end of 1991.

SECOND CONSULTATION ON THE WOOD AND WOOD PRODUCTS INDUSTRY

UNIDO's System of Consultations serves as a forum for developed and developing countries to make contacts and discuss their industrialization efforts. Participants in the Consultations include representatives of industry, government, labour and consumer groups. The System facilitates negotiations among interested parties, on request, either during or after the meetings.

Benefits deriving from this activity include the identification of obstacles to industrial development in developing countries, the monitoring of trends in world industry so as to identify measures to increase the industrial output of developing countries, and the search for new forms of international co-operation in North-South and South-South relations.

Since its inception in 1975, Consultations have been held on the following topics: Agricultural machinery, building materials, capital goods, electronics, fertilizers, fisheries, food-processing, industrial financing, iron and steel, leather and leather products, non-ferrous metals, petrochemicals, pharmaceuticals, small- and medium-scale enterprises, training of industrial manpower, vegetable oils and fats, and wood and wood products.

The Second Consultation on the wood and wood products industry, which was organized by the United Nations Centre for Human Settlements (HABITAT) and UNIDO, was held in Vienna (Austria) from 21 to 25 January 1991 and was attended by 75 participants from 39 countries and 10 international and other organizations. The meeting addressed the following issues:

- Measures to strengthen an environmentally sound and sustainable supply of timber resources;
- Greater utilization, on a sustainable basis, of wood including commercially less-accepted species and plantation species as a source of indigenous building material in housing and construction; and
- Prerequisites for the integrated development of the secondary wood-processing industry.

Bearing in mind the interests of the majority of our readers, we would like to highlight the recommendations on the last issue as follows:

- (a) For some countries that have little or no industrialization, international organizations such as UNIDO and the Food and Agricultural Organization of the United Nations (FAO), should encourage the development of integrated industrialization programmes in the wood sector.
- (b) UNIDO should promote international North-South and South-South co-operation between research and development centres. This co-operation could consist of an exchange or loan of research equipment, exchange of technical or commercial information, exchange of researchers and/or trainers, subcontracting, etc.
- (c) Governments should ensure that imported technologies are environmentally sound.

(d) Based on already existing experience, international organizations should promote and encourage the establishment of productivity centres with the functions described above, and should set up pilot units with a wide dissemination of their results.

(e) Governments should include commercially less-accepted species (CLAS) in forest inventories, disseminate existing technical documentation on the subject more widely and have it included in technical documents (standards, specifications, etc.).

(f) Governments and international organizations should attach greater importance to the training of trainers, specialists and managers.

(g) International organizations, in their respective fields, should establish and keep up-to-date files providing full information on existing training programmes (organization, nature, duration, cost, etc.). Likewise, these organizations should also compile and regularly update a file giving main details of audio-visual resources available in the field (title, duration, etc.).

(h) The international organizations concerned should encourage production of audio-visual teaching materials, particularly videos, and ensure their distribution both to training organizations and enterprises.

(i) National standards institutes, jointly with other interested parties (industry, consumers, ministries, etc.), should attach greater priority to the development of standards for their wood products, bearing in mind the possibilities and constraints of local industries. The development of such standards would thus make it possible to introduce quality labels, which would not only facilitate greater utilization of wood in construction, but also local and international transactions.

(j) The United Nations Conference on Trade and Development (UNCTAD) should encourage industrialists in the wood sector to actively participate in the work of the "Shippers' Councils" created as a result of the recommendations of that organization.

(k) UNIDO should step up dissemination of information from its data base on investment conditions in various countries.

(l) UNIDO should study the possibilities of establishing mutual guarantee funds with international financial agencies in order to facilitate the financing of small- and medium-sized enterprises and make credits available for the launching of pilot projects.

(m) UNIDO should intensify the development of partnership programmes and support any promotional campaign to encourage foreign investment.

(n) Governments should promote a legislative and industrial environment favourable to investments.

UNIDO TECHNOLOGY DAYS IN THE USSR

The UNIDO Technology Days in the USSR took place from 12 to 14 March 1991 in Moscow, and was organized in co-operation with the Association of Machine-Building Technologists of the USSR (ATM).

The purpose of the Technology Days was to expose

industrialists and enterprise managers from the USSR and eastern European countries to UNIDO's overall services and activities, including the issues of technology transfer, acquisition of technology from abroad and export of locally developed technologies, as well as to familiarize them with contracting practices with the market economy environment.

The Technology Days were coupled with a workshop dealing with the following topics:

- Technology transfer and development: channels for technology transfer; characteristics of the technology market.
- Technology transfer contracts (Part I): the meaning of the contract as a legal entity; structure of the contracts and different contractual forms.
- Technology transfer contracts (Part II): analysis of the contractual clauses and conditions; principles of contract drafting.
- International practices and legal issues on technology transfer: implications of the anti trust regulations and rules of competition.
- Practical considerations in the technology transfer process: guarantees; the law of the contract; litigations and settlement of disputes.

The workshop was attended by approximately 200 participants, including observers from some eastern European countries. The Technology Days in general, and the workshop in particular, proved to be of great interest to the participants, who had very little information on UNIDO's activities and lacked exposure to the prevailing practices and trends of the international technology markets that they wished to enter.

There were many explicit indications of interest in repeating similar programmes in other cities of the Soviet Union, and the Moscow Machine Tool University expressed an interest in setting up a high-level course on technology transfer with UNIDO's assistance.

Another matter of general interest and concern relates to technology exports, because there are enormous technological capabilities in the Soviet Union and a strong need for (a) the identification of foreign partners who could assist in modernizing such technologies, adapt the products to consumer needs and compete in international markets and (b) the identification of licensees, particularly in developing countries, for those technologies available in the Soviet Union that are of potential interest and appropriateness for many developing countries.

REGISTRY NEWS

NIGERIAN REGISTRY OFFICIALS ON STUDY VISIT TO ASIA AND LATIN AMERICA

Officers of the National Office of Industrial Property (NOIP) of Nigeria went on a study visit to the technology transfer offices of Argentina, Brazil, Malaysia and the Philippines in March 1991.

This study tour forms part of the training programme component of a large-scale project for the strengthening

of the technology transfer office in Nigeria. As has been the direction of similar offices in other developing countries, NOIP is gearing itself to become a service-oriented organization with strong co-ordinative linkages with the Nigerian private sector and national R&D institutions. Through this project, it is expected that NOIP will be able to build its operational, organizational and substantive capability to perform technology advisory, monitoring and development services.

The study tour is meant to expose NOIP officers to the approaches and operational procedures of technology transfer officers in their countries in the performance of the above services. Another area of interest to NOIP officers concerns the operational aspects of information systems existing in these offices. CORIS is known to be functioning well, as it also is in the Malaysian and Philippine registries, albeit at an upgraded level.

TECHNOLOGY IMPORTS INTO ARGENTINA

The National Institute of Industrial Technology (INTI), the TIES counterpart in Argentina, has recently published its 1989 report.

This report gives a very comprehensive and complete picture of the legal and institutional framework related to technology imports, including abundant statistical information and graphic presentations on the transfer of technology agreements registered by INTI and the characteristics of technology flows into the country.

The following has been extracted from the report:

"The basic legal instrument regulating transfer of technology agreements in Argentina is Law 22.426 of 1 April 1981. According to this law, only those agreements involving equity-related parties, with the supplier holding more than 49 per cent of the recipient's capital, are subject to prior evaluation by INTI. When parties are independent or the supplier owns less than 49 per cent of the recipient's capital, the contract is submitted to INTI for registration and statistical purposes only.

According to INTI's estimates, during the period 1984-1989 Argentinian enterprises disbursed the amount of US\$ 1,818 million for the acquisition of foreign technology. For 1989, the amount estimated by INTI was US\$ 272 million, while the Central Bank of Argentina estimates an amount of US\$ 361 for the same year.

The number of requests for the registration of transfer of technology agreements evolved from 445 per year in 1984, to 314 per year in 1989, representing a decline of about 30 per cent.

The royalties established in the agreements between parent companies and subsidiaries have an average value (weighed against the amounts of remittances) of 3.19 per cent of the sales for the period August 1977 to March 1981; 4.0 per cent of the sales for the period April 1981 to December 1983 and 2.52 per cent of the sales for the period 1984-1989. The royalties range from 0.5 per cent for petroleum refining to 5 per cent for pharmaceutical and computer products.

The royalties established in agreements concluded between independent companies have an average value

(weighed against the amounts of remittances) of 4.03 per cent of the sales. Only 7.5 per cent of the contracts establish royalties above 5 per cent of the sales. With the enforcement of Law 22.426 the average royalty increased from 3.75 per cent of the sales to 4.75 per cent (for the period 1981 to 1983), and then decreased to 4.17 per cent (for the period 1984 to 1989).

When comparing the percentage of the total technology payments for the two most important industrial sectors during the periods 1977 to 1983 and 1984 to 1989, we notice increases in the following industrial sectors: automobiles, garments, cosmetics, household products, radios and televisions; the most important decrease being in the basic chemical industries; the relative importance of the pharmaceutical sector remained practically unchanged with 5 per cent of the total payments for transfer of technology.

80.7 per cent of the payments made in 1989 by private companies corresponds to the licensing of know-how and industrial property rights, while for public enterprises this percentage is reduced to 14.1 per cent. In both cases, the remaining amounts correspond to the supply of engineering services and equivalent transactions."

TECHNOLOGY ACQUISITION

GHANA

Institutional arrangements and experience in the acquisition of foreign technology,
by G.K. Frempong, Technology Transfer Centre
(CSIR), Accra, Ghana

1. Introduction

The disparities in the economic development between developing and developed countries have sensitized the former to do something about their economic system.

Developing countries have realised that the solutions to their abysmal economic situation is through industrialisation and have therefore sought proven foreign technologies to catalyse their industrialization process.

The realisation has not been without cost, as the developing countries are incessantly incarcerated by external constraints. Most of the technologies developed in the industrialised nations have had little positive effect on ameliorating the problems besieging developing countries.

Besides, technology – although subject to transactions – is not produced for sale, but represents an essential instrument of dominance and competition for its owners. Consequently, the producers of technology usually aim at ensuring an optimal flow of income and the effect is that transfer occurs within maximum precautions so that technology monopoly is affected as little as possible.

In view of this, technology flow from the industrialised to industrialising countries takes the form of direct foreign investment, either between multinational companies and local subsidiaries or joint ventures. In the joint ventures, the foreign partner keeps an eagle eye on the operations of the local company.

In Ghana, the picture is not much different to that described above. Soon after independence, the country embarked on a massive industrialization drive aimed at import substitution. The Government established a lot of public enterprises alongside other subsidiaries of transnational companies such as Unilever, United African Company, Paterson Zochonis and other joint venture enterprises involving Ghanaians and foreign individuals.

The present Government of the Provisional National Defence Council (PNDC) gives every encouragement to the industrial sector and as a result foreign technologies are being sought to improve the performances of local enterprises. In some cases new projects are established using improved technologies to harness the country's natural resources.

This article looks at the various institutions that have been set up in order to regulate, co-ordinate and monitor the acquisition of foreign technology and access the performances of these institutions.

2. Definition of technology

Technology has been defined differently, depending upon their orientation and perspectives. Engineers would see technology by the nature of the physical and chemical transformation involved or the equipment required. Economists will identify technologies by production factors and outputs. Further, entrepreneurs will perceive technology as being dynamic, with the ultimate objectives being the supply of products according to the dictates of market demands and in competitive conditions. These views on technology can be summed up and defined as the systematic knowledge for the application of a process or for the rendering of a service, including any associated managerial and marketing technologies.

In Ghana, a technology transfer agreement, as defined by Section 41 of PNDC Law No. 116 (Investment Code) is "any agreement relating to an enterprise involving:

- the assignment, sale and use of foreign patents, trademarks or other industrial property rights;
- the supply of foreign technical know-how or technological knowledge;
- foreign technical assistance, design and engineering, consultancy and other technical services in whatever form they may be supplied;

provided however that an agreement shall not be regarded as a technology transfer agreement for the purposes of this Code if its duration does not exceed a period of eighteen months."

Technology is distinct from scientific knowledge, which usually flows freely without significant constraints, whereas technological knowledge is a commodity that is traded on the world market under vigorous protection. It can take various forms: as tangible products such as capital goods, patents, unpatented know-how, expertise and skills.

3. Importance of Technology

Technology has now been identified as being very fundamental to economic growth and development. The myth surrounding the trilogy of land, labour and capital as the factors of production have been demystified. Its impor-

tance as an intellectual property has assumed the new dimension of being an object of trade in itself. As a factor of production, technology contributed substantially towards the steady growth in the per capita income of the United States of America in the 1950s.

Technology has been the propelling force behind the rapid economic development of countries such as Japan, South Korea, Thailand and Singapore. These countries without abundant natural resources have made major economic strides through the assimilation of imported technology and the effective development of their own indigenous technology.

At present these countries have been leading in the export of technology to both developed and developing countries.

4. Mode of technology acquisition

Basically, technology can be acquired through two forms. These are directly (outright purchase) and indirectly (through licensing).

Licensing for the use of technology takes various forms, and these are:

- Licensing the use of patents, trade marks, models and other industrial property rights.
- Licensing and transmission of technical know-how and trade secrets.
- Supply of technical information embodied in plant diagrams, instructions and training of personnel.
- Provision of engineering and services for the management and operation of business enterprises.

5. Channels for the acquisition of foreign technology

In Ghana there are differences in the policies, procedures and institutions involved in the acquisition of foreign technology by both private and public enterprises. Ghanaian private enterprises acquire technology mainly through direct purchase of machinery, equipment and intermediate goods.

Other channels for the acquisition of technology could be summarised as follows:

- Public enterprises
- Foreign direct investment
- Sectoral:
 - (a) Minerals Commission
 - (b) National Energy Board
- International financial institutions (lines of credit)
- Foreign aid (multilateral and bilateral)
- Bulk procurement (procurement agencies and training enterprises). This includes the Ghana National Procurement Agency, Ghana Supply Commission and the other national and transnational trading enterprises such as the Ghana National Trading Corporation, United African Company, Compagnie Française de l'Afrique Occidentale (CFAO), Société Commerciale Occidentale de l'Afrique (SCOA), United Trading Company, etc.

6. Institutional arrangements

Ghana, like any other developing country, has recognised the increasing complexities in the acquisition of foreign

technology to accelerate the economic development of the country.

Consequently, five institutions have been established to regulate, promote and co-ordinate the inflow of technology to the critical sectors of the economy. These are the Ghana Investments Centre, National Energy Board, Minerals Commission, Public Agreement Board and the Environmental Protection Council.

Ghana Investments Centre (GIC)

The present Ghana Investments Centre was established by PNDC Law No. 116 (Investment Code, 1985). The main functions of GIC, as prescribed under the Code, are:

- To collect, analyse and disseminate investment opportunities in the country and also to identify projects and invite prospective investors for implementation;
- To grant approvals for the establishment of enterprises;
- To approve and keep record of all technology transfer agreements in relation to investments under the Code; and
- To monitor and ensure compliance with the terms and conditions of which approvals were granted.

Although since its inception the GIC has made efforts to achieve major strides in the performance of its functions, much still needs to be done in the area of monitoring projects approved for establishment and to ensure compliance with conditions agreed upon before approval was given.

The Monitoring Department of the Centre should therefore be strengthened to enable it to operate effectively. Experience has shown that monitoring the progress of the absorption of foreign technology by local licensees provides an effective mechanism to enhance improvement of the technological level of local industry.

In order to enable the Centre to review and approve contracts, a technical committee was established to perform the task of screening and evaluating technology transfer agreements. No mechanism exists for the pre-view of these agreements and consequently the committee has the uphill task of reviewing these agreements clause by clause, which retards the progress of the committee. This situation has been occasioned by lack of manpower and logistic support to undertake this function.

National Energy Board

The National Energy Board (NEB) was established in 1985 to advise the Ministry of Fuel and Power, and the Government, on overall national energy policy planning, leading to the rational development and use of Ghana's energy resources.

The functions of the Board as set out in PNDC Laws 42 and 62 are:

- To formulate overall policy on energy for consideration and approval by the Government;
- To assess the country's energy resources and monitor the operations of public bodies responsible for energy development and utilization in Ghana;
- To ensure a firm basis of comprehensive data and information on national energy resources for decision making; and
- To receive and assess public agreements relating to energy matters.

The National Energy Board, according to a recent study by the Technology Transfer Centre (Technology Policy Study, UNDP/TTC Report No. 7), normally previews consultancy services for undesirable clauses and technical conformity. It then submits its recommendations to the Public Agreements Board.

The staff involved in contract evaluations are inadequate. Two staff member with legal and engineering backgrounds are entrusted with this responsibility.

Minerals Commission

The Minerals Commission (MC) was set up in 1984 and operates under PNDC L.153. It has the following functions, prescribed in Section 35 of PNDC L.42:

- Formulation of national policy on the exploration and exploitation of mineral resources, with special reference to establishing national priorities;
- Monitoring the operations of all bodies or establishments concerning minerals;
- To receive and assess all public agreements relating to minerals; and
- To secure a firm basis of comprehensive data collection on national mineral resources and the technologies exploration and exploitation for national decision making.

The Minerals Commission has several sections that deal not only with the economic soundness of the project, but also the legal and technical aspects. It also has an effective monitoring department that continuously assesses the type of technology employed vis-à-vis environmental considerations.

Public Agreement Board (PAB)

The Public Agreements Board, which existed before the present Government assumed power, was retained by Section 42 of PNDC L.42. Some of the functions of the Board include the following:

- Reviewing all public agreements and recommending procedures for all Government agencies or organs, public corporations and other public bodies, in relation to the negotiation and conclusion of public agreements.
- To establish substantive criteria to govern all Government agencies or organs, public corporations and other bodies in the negotiation and conclusion of public agreements.

The membership of the Board is drawn from public institutions having relevance to the work of the Board. It is worth stating that the Board's secretariat is inadequately staffed and members work on a part-time basis, unlike the other institutions. The inadequate staffing of the secretariat does not augur well for the Board's activities, since its work does not end after the evaluation of contracts. A mechanism should exist for the monitoring of these agreements to ensure compliance with the agreed conditions sedulously. This calls for the strengthening of the secretariat to make it more operational.

These four institutions, which have the responsibility of screening and evaluating technology transfer agreements, have developed their own sets of operational guidelines.

There is the need for the harmonisation of these guidelines to avoid ambiguities and cumbersome procedures to be followed by prospective investors, both local and foreign.

Environmental Protection Council

The Environmental Protection Council was established by NRC D.239 in 1974. The Council is charged with the responsibility of dealing with problems concerning the environment to balance the needs of economic development and protecting the country's natural resources.

Until 1989, no environmental considerations were given to the acquisition of foreign technology. The present government policy indicates that all bodies and institutions granting approval to investment projects should request an environmental clearance certificate from the Environmental Protection Council.

As a result, these regulating institutions have to submit copies of project proposals to the Environmental Protection Council for study and advice before the project can be approved.

7. Technology flow to Ghana

Technology flows into Ghana have assumed a global outlook. Technologies have been acquired from every part of the world. Table 1 shows the value of investment projects with foreign participation approved for establishment by the Ghana Investment Centre from 1986 to 1988.

Table 1: Projects approved by the GIC (1986-1988, in US\$ millions) (Foreign equity contributions classified by continent)

Continent	1986	1987	1988
Africa	2.7	14.8	2.6
Asia	22.1	8.7	7.4
Europe	6.8	16.2	15.6
Latin America	-	0.1	0.1
North America	1.8	2.9	1.9
Total	33.4	42.7	27.6

(Source: Derived from GIC statistics)

Throughout the three-year period, the Centre attracted new investments totalling US\$ 103.7 million. Prominent continents from which investments were attracted were Europe (US\$ 38.0 million) and Asia (US\$ 38.2 million), with the least from Latin America (US\$ 0.2 million).

Ownership structure

Ghanaian participation in the investment projects approved over the three-year period have been encouraging.

Table 2: Ownership structure of projects approved for establishment by GIC (1986-1988)

Type of ownership	1985	1987	1988
100% Ghanaian private	50	32	36
100% State	2	-	-
100% Foreign	1	4	-
Joint foreign/private Ghanaian	36	48	37
Joint State/foreign private	2	-	1
Joint State/Ghanaian private	1	-	-
Joint State/foreign/private	1	-	-

(Source: GIC statistics)

From Table 2, a total of 118 projects have wholly Ghanaian ownership. Joint ventures between private

Ghanaians and private foreign firms attracted 121 projects. The State's low participation buttresses the Government's policy of encouraging private participation in the current economic recovery programme.

Capital structure

The dominant sectors where much capital investment has been made include manufacturing and agriculture, and to a lesser extent, tourism. A total amount of US\$ 254.5 million and US\$ 140.8 million have been invested in the manufacturing and agricultural sectors respectively for the three years 1986 to 1988.

One striking feature is that the number of investment projects approved for establishment in the manufacturing sector showed a decline. In 1986, a total of 64 projects were approved, whereas 57 were approved for 1987 and 54 for 1988. In spite of the decline in 1987, the year recorded the highest capital investment in agriculture and manufacturing.

The industrial sector, the vehicle of economic development, continues to attract foreign investments. However, it trails behind the wood sector in the number of investments. Although the wood sector has the potential of being an alternative source of foreign revenue in the face of the continuous fall in cocoa prices, care should be taken not to sacrifice environmental considerations on the altar of foreign revenue.

The sector has attracted large amounts of foreign exchange into the country, but the gradual disappearance of the rain forest in the Amazon Basin in Brazil due to over exploitation of its resources should be a pointer to us to take measures to prevent the occurrence of a similar situation in Ghana.

For environmental considerations, there is the need to restrict investments in the wood sector. The emphasis should be on other sectors, especially capital goods. The capital goods sector has more prospects for this country, since it is the vehicle of industrialization and therefore the development of this sector into a technological complexity should be the Government's priority.

It is gratifying to note that the Government has realised this danger. At the recent International Investment Promotion Conference held in Accra (Ghana) from 26 to 28 February 1990, the Government enunciated special areas of emphasis for investment. These are agro-processing and fresh fruit production, fish production and processing and furniture manufacturing.

Mining sector

With the Economic Recovery Programme currently being pursued by the Government, the mining sector has been identified as one of the key sectors for investment. From 1985 to 1988 a total of 59 projects have been approved to commence prospecting and mining of gold, diamonds, bauxite and manganese, while five others are awaiting approval.

Gold ore is mined by three companies, namely Ashanti Goldfields Corporation, State Mining Corporation and Southern Cross Ltd. There are five companies yet to start production and these are Canadian Bogosu Resources, Teberebie Goldfields Ltd., Ghana Libya Mining Company, Sherford Resources and Ghana-Australia Goldfields (GAG).

The following minerals are mined respectively by Ghana

Bauxite Company, Ghana Consolidated Diamonds and Ghana Naitonal Manganese Company: bauxite, diamonds and manganese.

Ownership structure

The State plays a dominant role in the mining of Ghana's mineral resources. There are three State mining companies, namely: the State Gold Mining Corporation, Ghana Consolidated Diamonds and Ghana National Manganese Corporation. There are 46 prospecting companies that are solely owned by private Ghanaian citizens and 18 owned by foreign private investors.

In other joint ventures, the Government owns 55 per cent of the shares of the Ashanti Goldfields Corporation, Ghana Bauxite Company and Southern Cross Mining Limited (SCML). Further minority shares of 10 per cent are owned in four other mining companies.

8. Technology payments

Modern and proven technologies are cardinal to the rapid industrial development of the country. All forms of technology have been acquired through agreements to enhance production processes.

For the period 1986-88 the Bank of Ghana paid about US\$ 4.5 million as payments for technical services agreements that selected companies had entered into with foreign companies.

In terms of royalties for the use of trade marks, patents and know-how, the country paid an amount of US\$ 162,276 in March 1989. Payments in respect of management agreements resulted in the payment of approximately US\$ 1 million and US\$ 0.2 million in 1988 and 1989 (January-May) respectively. It is worth noting that four companies contributed to the payment of US\$ 1 million in 1988. Out of this amount, one company paid US\$ 955,769, representing 96 per cent of the total payment for the year.

The rate at which this company is siphoning out foreign currency needs commenting on. The management agreement forms part of the parent agreement Ghana entered into with the company. The product of this company is restricted to the local market and is in effect a non-foreign exchange earner. The situation is ripe for the review of this agreement and others which continue to be a drain on resources.

Management agreements have been considered as the dominant mode of management skill acquisition. However, this cannot be true in Ghana, which is said to abound in personnel with high-level management, who could effectively man the country's industrial set up.

Besides, the country has two institutions, namely the Management Development and Productivity Institute (MDPI) and the Ghana Institute of Management and Public Administration (GIMPA) to augment the activities of the three universities in providing a continuous flow of manpower of high calibre to manage the local companies, both public and private.

Therefore, the issue of management agreements has outlived its usefulness, since adequate institutional arrangements have been put into place for the provision of management skills.

To provide the forum for a continuous interaction between management and also to expose them to modern

management techniques, the Government should strengthen the capacity of the Management Development and Productivity Institute (MDPI) and the Government Institute for Management and Public Administration (GIMPA).

This will enable them to be abreast of modern management trends and consequently provide continuous and well co-ordinated refresher courses on management to ensure a continuous build-up of managerial capability within the country.

9. Lapses in the implementation of laws and regulations

The definition of a technology transfer agreement, as provided by PNDC L.116 (Investment Code) excludes a host of transactions which should have passed through the Ghana Investments Centre for screening and evaluation. The Code considers agreements that have a duration of over 18 months as eligible for registration, screening and evaluation.

This definition, according to Dr. V.R.S. Arni (UNIDO Mission Report TTC/CSIR of November 1989) exhibits provisions similar to the definition provided by many developing countries' registries. The only exceptional feature he pointed out was the time duration, and therefore called for its review. This recommendation emphasized an earlier one made in the Technology Policy Study Report (TTC/UNDP Report No. 7). Although the Government may have cogent reasons for the time duration, there is nonetheless a need for review.

The present economic arrangements can facilitate a technology transfer agreement to be effected within the 18-month period. For example, a private entrepreneur can directly purchase equipment from a foreign source, enter into a technical agreement for its installation and the training of his staff in operating and maintaining such equipment. This arrangement can be executed within the 18-month period.

This situation has given the private entrepreneurs the leeway of acquiring technology at whatever conditions, terms of negotiation and price of acquisition.

The only check, according to an UNCTAD Mission Report (UNCTAD/TT/86), is a technical supervision at the port of embarkation of the exporter. This supervision is done by the Société Générale de Surveillance (SGS), which has a service agreement with the Central Bank to ascertain the quality and quantity aspects of machinery and equipment imported into the country.

The inadequacy of the definition is inimical to the national aspirations of protecting Ghanaian entrepreneurs from unfair exploitation by foreigners in the acquisition of proven technologies.

The law establishing the Public Agreements Board tasked it to review public agreements entered into by public organizations and all government agencies.

Experience has shown that the Board interests itself with the financial and legal considerations of such agreements. No critical analysis is made of the appropriateness of the technology to be imported. In most cases such contracts are negotiated between the interested parties before submission to the Board for approval. This restricts the authority of the Board.

The PNDC L.116 makes provision for the assessment of

the suitability of imported technology. Presently, no such mechanism exists, either at GIC or at any of the regulating institutions. The situation is further aggravated by the fact that no technology policy has been enunciated to provide the framework for the acquisition of technology. Consequently, these regulating institutions have been rendered impotent in ensuring that only proven technologies, which Ghana has the capacity and capability to support and absorb, are imported.

The proliferation of these technologies render the country religiously tied to the apron strings of the suppliers for spare parts and servicing. Presently, the Central Systems and Development Unit of the Ministry of Finance and Economic Planning is collating views to enable the formulation of a policy on the acquisition of computers. This is a clear indication of the Government's realization of the dangers of unguarded acquisition of foreign technologies. The aim is to standardize computers to ensure proper maintenance and servicing facilities throughout the country.

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BASIC CONCEPTS OF THE TRANSFER OF TECHNOLOGY

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The definition of technology

The term "technology" can be defined as "to know how to do something", a concept that has a very wide technical application.

There is technology in handicrafts, in administrative work, in accountancy, in computer work and also, of course, in industrial work.

The usual meaning however, is technical and in most cases concerns the various fields of industry.

The support of technology

Technology has two forms essentially, which almost always go together:

- Practical know-how acquired by technicians through experience in manufacturing, manipulating equipment, preparing chemical products, etc., which can in some cases even be an art,
- Theoretical know-how contained in drawings, procedures, specifications, manuals, etc.

The transfer of technology

The transfer of technology will therefore take a dual form, the two forms being complementary:

- The handing over of the documentation containing the technology, accompanied by comments, lectures, etc.;
- The direct training of people who need to acquire it during the time required to assure the actual transfer of the knowledge.

The transfer of technology will be governed by contracts that will have various forms, as will be explained hereunder.

The protection of technology

The major share of technology, even that of a highly specialized nature, is in the public domain and consequently freely available.

This does not mean, however, that the acquisition of such knowledge is free of cost.

There will be a price, to the extent that services are required to be rendered to the holders either in the form of technical assistance or the preparation and supply of documentation.

In some cases, the holder of the technology will have developed a know-how he considers pertinent to his own knowledge as it results from research and endeavours aimed at improving the yield of his installations or the quality of his products, etc.

In such instances he will consider such know-how as his property, valued as such and worth more than the value of the direct services rendered to transfer it.

The difficulty for the purchaser of such know-how will be to appreciate *a priori* the value of the know-how and whether the price requested is justified.

The problem will be increased by the fact that because of the lack of legal protection, since the know-how is not patented, the holder will not be willing to disclose the technology before a contract of sale is concluded.

The practice is to then enter into an agreement of confidentiality, whereby the prospective purchaser will undertake to keep confidential all the data to which he will have access during the negotiations.

The holder will then disclose certain data to enable the prospective purchaser to appreciate the improvements resulting from the use of the know-how and thus to decide whether the price asked is therefore justified. The know-how can be protected when it fulfils the legal conditions to obtain a patent.

These conditions differ according to the legislation but were already unified by various international conventions concluded during the 19th century.

The conditions for patenting know-how are basically as follows:

- it must concern a new product,

- or a new means of obtaining an already existing product,
- or it can be a new application for means already known,
- or a combination of means already known.

The patent can be for an invention as such, for an improvement or an imported patent.

The patent of improvement requires the agreement of the original patent holder for the invention; this patent depends on the main patent for its validity.

When the holder of a foreign patent requires a patent in the country where he introduces his request, it is then a patent of importation.

The legal protection, which begins at the date of deposit of the request, is limited in time: 20 years in many countries, seven years in the USA.

Two procedures are followed for patent delivery:

1. The procedure without preliminary examination

The patent is then granted subject to the contestation of any third party who can demonstrate that either it held the know-how before the date of deposit, or that the know-how was at that date in the public domain.

2. The procedure with preliminary examination

This gives the patent more legal security and consequently more value, but involves a higher cost, possibly spent in vain as many patents are never exploited.

The patent is null and void when there is anteriority, i.e.

- when there was a previous exploitation of the invention by a third party;
- when the invention is described in literature previously published;
- when a patent already exists.

To be patented, the invention must be liable for industrial or commercial exploitation. Ideas, philosophical theories or systems are not patentable.

The patent can be requested either by the inventor himself or by his heirs or assignees.

US legislation requires the inventor himself to make the request, but the plurality of owners is accepted.

The request is composed of a technical description of the invention and, as indicated above, may be subject to a preliminary examination.

When a patent is granted, the holder can either exploit it himself or sell it or grant a licence, total or partial, exclusive or not exclusive to exploit it.

In the case of a licence, the holder must guarantee the peaceful exploitation of the patent to the licensee, and when the patent is later declared null and void, the licensee is entitled to claim compensation for any damage incurred.

Contracts

Whatever the nature of the technology, the extent of its transfer and the modalities of the assistance given to the process owner, all contracts will necessarily contain the following main issues:

- the description of the technology and a list of the documentation supporting it;
- the modalities of the transfer, including technical assistance;
- the licence to use the technology and extent of the authorization;
- the price to be paid by the purchaser: lump sum with

- terms of payment, royalties, etc.;
- the guarantee given by the process owner enabling the purchaser to verify that the technology acquired has indeed been transferred;
- the improvements on either side and the agreement upon their transfer;
- the general clauses.

These issues will be more or less developed in the contracts according to the complexity of the technical knowledge transferred and the competence of the purchaser who, when a specialist, may just need the documentation to apply and develop it himself.

Various types of contracts

Secrecy undertaking

The first document liable to be signed by the purchaser is the secrecy agreement or the secrecy undertaking, which is requested as a prior legal step to be taken by the purchaser in order to gain access to the technology, to an extent that is sufficient to appreciate whether or not he would have an interest in buying it.

The secrecy agreement will mainly commit the future purchaser to keep confidential all information to which he will have access in the pre-contractual stage while examining the technology to be acquired.

This confidentiality will oblige the purchaser to ensure that the personnel having access to the technology will use the information only to ascertain the appropriateness of the technology and will not disclose it to third parties or use it for any other purpose.

At the end of the pre-contractual phase, and in the event that the prospective purchaser decides not to buy the technology, then all information given will have to be returned to the technology owner and any copies taken destroyed.

Should this commitment not be respected, the process owner will have recourse to legal action, from the mere compensation for the prejudice incurred through to a complaint of forgery if the technology is patented, as well as action on the grounds of unfair competition.

Technical assistance agreement

If the technology is in the public domain and the agreement aims only at transferring certain knowledge to the buyer, then the agreement will have to consider the following main issues:

- the specification of the technology to be transferred and mainly the documentation containing it, such as drawings, calculations, flow-sheets, diagrams, technical specifications, manuals, etc.;
- the description of the technical assistance given: i.e., list of technicians with a precise description of their technical background, to ensure that the training will be given by competent personnel and not by technicians especially contracted;
- the number of man/days per speciality;
- the place where the training will be given, workshops of the process owner for applying the technology, installations of the buyer where the acquired technology will be applied;
- the specifications of the buyer's personnel to be trained

- selection/competence/aims to be achieved;
- the price, which in such a case will mainly be based on daily rates per specialist and a possible lump sum for training at the process owner's workshops;
- the usual general know-how.

Transfer of the know-how

The words "know-how" can refer to any technology but are more often used when the holder wishes to keep his technology confidential, believing that his knowledge has a value as such, since it is the result of research and study, and could consequently be commercialized.

In this event, clauses will be added to those already considered in the technical assistance agreement.

Such clauses would mainly concern:

- the confidentiality of the disclosure of know-how, and therefore the undertaking of the buyer to keep it confidential and ensure that the steps required are taken;
- the limitation of the right to use the know-how in one or more factories, for one or more products, etc.;
- performance guarantees given by the holder to the buyer, which evaluate the technology transferred (such technology would enable the buyer to achieve quantities/qualities/yield he would not have obtained without this know-how);
- a price specifically for the know-how, in addition to the price of the technical assistance, either expressed in a lump sum or in royalties based on the production or, occasionally, based on both concepts;
- a clause regarding the exchange of improvements.

Licensing contract

The highest level in the transfer of technology is the licensing contract.

The technical knowledge is patented both in the country of the holder as well as that of the buyer.

To all the issues considered in the above three categories of contract should be added the legal granting of the licence to use the patent within the territory, for the purposes and under the conditions that must be specified.

Additional issues to be considered in such contracts will therefore also be:

- the licence to use the technology;
- the purposes of the licence;
- the exclusivity or not of the licence granted;
- the territory wherein the licence is granted;
- the obligation of the buyer to inform the holder of any counterfeit or forgery;
- the guarantee of the holder to defend the buyer against any action by third parties in counterfeiting or any claim for indemnity;
- the obligation for the holder to fulfil all duties required to keep the patent effective and to protect the licensee to whom he must secure a peaceful use of the licence.

Contractual modalities

The modalities of contracts will vary according to the parties thereto and the circumstances.

A table of contents can, however, be useful as a checklist

in the case of technology with technical assistance to be purchased.

Description of the technology, its support and its purpose

It is important to specify the documentation containing the technology, as mentioned above, and to describe its legal status.

When the technology is patented, the patent must be identified and described, the countries where it is valid, the duration of the validity, as well as all other legal particulars, must be clearly specified.

Exclusivity

This clause states whether or not the licence is exclusive and details the limits and duration of any exclusivity.

Territory

This concerns the territory wherein the licence gives the licensee the right to exploit the patent.

Place

The place or places where the technology will be applied may be specified.

Specification of the products

The products deriving from the technology, their quality, the quantity authorized, the markets allowed and the markets possibly forbidden, are all set out in this clause.

Most favoured client clause

This clause entitles the licensee to enjoy the most favourable conditions negotiated later with other licensees.

Sub-licence

The sub-licence grants the right to sub-licence to others.

Obligations of the process owner

The process owner must supply all the support required to transfer the technology.

It is important therefore, that both parties clearly specify the terms and conditions of supply so that the buyer can check that all information due is delivered and the holder will know the exact scope of his obligations.

This will include not only the documentation but also the technical assistance, at both the owner's and the buyer's installations.

Confidentiality

This clause establishes the confidentiality of the transfer of the know-how, ensuring that the information will not be given to third parties. It also established the duration of the secrecy obligation and the measures to be taken in the event of disclosure.

Obligations of the buyer

The obligations of the buyer are mainly to pay the price according to the terms agreed.

However, the buyer is also obliged to apply the technology and exploit the process. This obligation shall be effective particularly in the case of royalties where a minimum production per year may be stipulated.

Exchange of information

This refers to the exchange of information and improvements, as well as the preference granted in the case of improvement for the obtaining thereof under conditions specified or to be agreed.

Performance guarantees

The performance guarantees and the testing procedure for checking them, the terms and the price therefor, will not substantially differ from those for the know-how.

Delivery times

Delivery times for the documentation, the period guaranteed for the technical assistance and the possible penalties for non-compliance therewith are set out under this clause.

Guarantee against claims deriving from the licence

The holder must guarantee that he will apply the licence and that in the case of claims from third parties he shall take all legal steps required to keep the buyer free from obligations.

Duration of the agreement

The transfer of technology agreements should establish the duration of the contractual obligations. In case of patent licensing, the duration of the agreement may coincide with the validity of the patent. For know-how licensing there is no definite rule concerning the duration; it largely depends on the value of the know-how.

Hardship

This clause allows either of the parties to request a revision of the agreement in the event of substantial modification of the terms thereof, due to an unforeseen event that, had it been known previously to either of the parties, the agreement would not have been concluded, at least not in its present form.

Force majeure

Force majeure clauses are designed to exonerate the parties from the contractual obligations in case of events that are beyond the parties' control, for example unexpected political events, natural disasters, etc.

Termination

This gives the right for one party to terminate the contract if the other party is in default in complying with his obliga-

tions, and on being so notified still does not comply within the time specified.

Applicable law – the settlement of disputes

The interpretation of a contract and the scope of the contractual obligations depends on the law governing the contract. The parties should bear this in mind when deciding on the applicable law.

General clauses

Such items as notifications, languages, etc. can be covered under these clauses.

International conventions

The concept of intellectual property was acknowledged by law immediately after the French Revolution and progressively other countries replaced the patent letters delivered by the sovereign of a state by laws which organised the request for protection, its delivery and the duration of effectiveness.

The necessity for improving this protection by organizing it at the international level soon became apparent and the result was the "Union de Berne pour la protection de la propriété industrielle" in 1883. This convention was thereafter improved and enlarged.

After the second World War (1939-1945) and in the light of the various alliances set up between countries such as the European Economic Community, as well as the access of former colonies after independence, many initiatives were taken. Essentially, these are the Patent Co-operation Treaty, the European Patent Convention and the EEC Patent Convention of Luxembourg.

The Patent Co-operation Treaty (PCT)

The States signing this convention in 1978 formed a union, which is linked to the Union of Paris (1883) and is administered by the World Intellectual Property Organization (WIPO) in Geneva.

The Treaty provides international protection enabling the inventor, or the person requesting a patent, to obtain it by introducing the corresponding application to the appropriate national entity. The request, made on a form published by WIPO, must indicate that it is made in accordance with the procedure set up by the PCT.

A procedure is then applied that involves international research.

The result of an international request for which a date of international deposit has been granted is that the procedure has the same effect on each country designated by the applicant, such procedure having been introduced in each country.

Many countries have adhered to this treaty, namely: Australia, Austria, Barbados, Belgium, Brazil, Bulgaria(1), Burkina Faso, Cameroon, Central African Republic, Chad, Congo, Denmark(2), Finland(1), France, (including overseas territories), Gabon, Federal Republic of Germany, Hungary, Italy, Japan(1), Democratic Republic of Korea, Republic of Korea(2), Lichtenstein, Luxembourg, Madagascar(1), Malawi, Mali, Mauritania, Monaco, Netherlands (including Netherlands Antilles

and Aruba)(1), Norway (2), Romania(1 and 3), Senegal, Sri Lanka, Sudan, Sweden(3), Switzerland(2), Togo, USSR(2 and 3), United Kingdom (including Hong Kong) and the USA(2 and 3).

(Notes: (1) with reservations; (2) not bound by the provisions of Chapter 2 of the PCT; (3) with statement).

The European Patent Convention (EPC)

The aim of the EPC is to make the protection of inventions in the contracting States easier, cheaper and more reliable by creating a single European procedure for the granting of patents on the basis of a uniform body of substantive patent law.

A European patent confers on its proprietor, in each contracting State for which it is granted, the same rights as would be conferred by a national patent granted in that State. If the subject matter of the European patent is a process, the protection conferred by the patent extends to the products directly obtained by that process. Any infringement of a European patent is dealt with by the national law.

Published European patent applications provide provisional protection, which cannot be less than that conferred by a contracting State for a published national application and which must at least include the right to reasonable compensation in the event of infringement.

The term of the European Patent is 20 years as from the date of filing of application.

The EPC constitutes a special agreement within the meaning of the Paris Convention for the protection of industrial property.

This means, in particular, that the provisions of the Paris Convention on claiming priority and the principle whereby foreign applicants are treated as nationals, apply also in the European procedure and to European patent applications.

The EPC is also a regional patent treaty within the meaning of Article 45 of the Patent Co-operation Treaty. European patents can be granted on the basis of an international application filed in accordance with the Patent Co-operation Treaty (PCT). The European Patent Office (EPO), which is located in Munich (FRG), will act as a receiving office, designated office and elected office and as an International Searching and Preliminary Examining Authority under the PCT.

Finally, the EPC forms the basis for the Convention for the European Patent for the Common Market, signed on 15 December 1975. The Convention provides for a uniform effect of European patents in the member countries of the European Community.

The EC patent

The Convention, concluded in Luxembourg on 15 December 1975, created a patent system valid in all member countries of the EC.

The aim of this Convention is to unify the legislation on patents in order that the rights would be protected by similar rules in all member countries.

The application is made in the competent office of each country, but the requests are centralized in the office at The Hague (Netherlands), which is a part of the EPC)

mentioned above.

Main bibliography:

Van Bunnin, Louis; Droits intellectuels (Universite Catholique de Louvain, Belgium).

Deleuze, J.M.; Le contrat de transfer de processus technologique, know-how. Masson, Paris, France, 1976. (Re-edited since that date).

Gruszow, Larissa and Remiche, Bernard; La protection des inventions. Larcier. Brussels, Belgium, 1978.

European Patent Office, Munich (FRG). Guide to Applicants.

SECRECY AGREEMENT

The Editor of the *Newsletter* felt that some readers may find the following sample of a secrecy agreement useful, especially in view of its relevance to the foregoing article.

Secrecy agreement

This day of199., BY AND BETWEEN

A:

and

B:

WITNESSETH

Whereas A has developed and owns technical data and know-how in the field of oil extraction and distillation from aromatic plants;

Whereas B is a multinational company which is, in particular, specialized in the production of oil and other by-products deriving from the distillation of oil from aromatic plants;

Whereas B is interested in the technical knowledge held by A and is willing to collaborate with A in order to develop this technical knowledge and produce products deriving therefrom;

Whereas A is willing to collaborate with B, that such collaboration will be the subject of a detailed agreement to be entered into after a more detailed examination of the knowledge held by each of the parties;

NOW THEREFORE, IN CONSEQUENCE OF THESE PREMISES, IT IS HEREBY AGREED AS FOLLOW:

ARTICLE 1 – SECRECY

The parties reciprocally undertake to keep all technical knowledge they will exchange during this stage of preliminary work strictly confidential.

They will extend this obligation to all members of their staff, internal and external collaborators and sub-contractors, and will take care that the information covered by the present agreement will only be disclosed to the extent necessary for the work to be carried out.

To the extent copies of documents have to be made and circulated, the parties will organize such circulation and set up rules which will prohibit further copying and handing over of the documents to persons not concerned and that any such documents and their copies will be restored after use for return to the owning party or for destruction. At any moment during this collaboration, each of the parties will be entitled to check that the above regulations

of confidentiality are applied and that the persons concerned abide by them.

ARTICLE 2 – VALIDITY

The present agreement will be effective when signed by both parties for the entire period of the preliminary work concerned and until it is either replaced by a collaboration agreement or, should no further collaboration be achieved, until the documents handed over are restored and their copies destroyed.

ARTICLE 3 – LIMITS TO CONFIDENTIALITY

The above regulations and undertakings of confidentiality will not apply

- in case the information disclosed is in the public domain
- in case the information disclosed falls in the public domain during the validity of the present agreement
- in case the information becomes held by the party concerned through other means than by the present agreement and provided it is lawfully obtained by the said party.

In witness whereof the parties have signed the present agreement on the day and year stated hereabove, in two original copies in the English language, each party receiving one of the original copies,

.....AB

MALAYSIA

Ministry of Trade and Industry

Model service agreement between a Malaysian company and a foreign company

THIS AGREEMENT made and entered into this.....day of 19....., by and between....., a corporation organized and existing under and by virtue of the laws of..... and having its principal office of business at.....(hereinafter referred to as **FOREIGN COMPANY**) AND....., a corporation organized and existing under and by the virtue of the laws of Malaysia and having its principal office of business at Kuala Lumpur, Malaysia, (hereinafter referred to as the **MALAYSIAN COMPANY**).

WITNESSETH:

In consideration of the promises and the mutual covenants hereinafter contained and each party executing this agreement with intention of being legally bound thereto, the parties hereby agree as follows:

ARTICLE 1 – DEFINITIONS

(a) The term "PERIOD OF STAY" in this Agreement shall mean a period from the day, the respective Engineer of Technician arrives in Malaysia to the day his period of service expires or is terminated in accordance with the laws of Malaysia.

(b) The term "ENGINEER" as used in this Agreement shall mean the FOREIGN COMPANY's "qualified Engineer or Technologist" who has had college/university/technical education and with adequate experience.

(c) The term "TECHNICIAN" as used in this Agreement shall mean the FOREIGN COMPANY's Technician or Foreman who does not come into the category of "ENGINEER".

ARTICLE 2 – PREVIOUS NOTICE

The MALAYSIAN COMPANY shall request the FOREIGN COMPANY for despatch of ENGINEER/TECHNICIAN stating number, time of despatch, respective duties and other necessary and pertinent informations at least days prior to date of despatch.

On receipt of such informations the FOREIGN COMPANY shall make proper selection of ENGINEER/TECHNICIAN and despatch him or them on the designated date mutually agreed upon between the FOREIGN COMPANY and the MALAYSIAN COMPANY.

ARTICLE 3 – PERIOD OF SERVICE

The period of service of each ENGINEER/TECHNICIAN shall be mutually agreed upon between the FOREIGN COMPANY and the MALAYSIAN COMPANY before his or their departure to MALAYSIA. In the first instance it is envisaged that the initial period of service would be for month/months subject to review by both parties.

Each ENGINEER/TECHNICIAN shall return to the FOREIGN COMPANY immediately upon termination of his or their service period. The period shall be shortened by mutual agreement between the FOREIGN COMPANY and the MALAYSIAN COMPANY.

Provided however, in case of emergencies such as may endanger the life or lives of ENGINEER/TECHNICIAN and/or when it is impossible to pursue his/their duties, ENGINEER/TECHNICIAN shall be allowed to return to (country) immediately.

ARTICLE 4 – AIR TRAVEL

The MALAYSIAN COMPANY on its account shall send to the FOREIGN COMPANY a return economy class air ticket from the Capital City of the FOREIGN COMPANY to the final destination in Malaysia, at least days prior to each ENGINEER's/TECHNICIAN's departure. The MALAYSIAN COMPANY shall attach a miscellaneous Charge Order for reasonable expenses relating to the personal baggages of despatched ENGINEER/TECHNICIAN per one way from the Capital City of the FOREIGN COMPANY to the final destination in Malaysia for the above mentioned return air ticket.

ARTICLE 5 – SALARY

(a) The MALAYSIAN COMPANY shall pay each ENGINEER/TECHNICIAN the following predetermined salary in cash monthly.

ENGINEER: Malaysian currency equivalent to.....

TECHNICIAN: Malaysian currency equivalent to.....

(b) The MALAYSIAN COMPANY shall pay to each ENGINEER/TECHNICIAN on the day he arrives in Malaysia and hereafter at a certain fixed day in the beginning of each month the salary for the corresponding month as specified in (a) of this article.

ARTICLE 6 – REMITTANCE

In case ENGINEER/TECHNICIAN wish to remit a part of their salaries to the FOREIGN COUNTRY in.....currency, the MALAYSIAN COMPANY shall make every possible effort to take all the necessary procedures for remittance from the Government of Malaysia and other statutory bodies concerned.

ARTICLE 7 – TRAVELLING EXPENSES

The MALAYSIAN COMPANY shall pay to ENGINEER/TECHNICIAN the following travelling expenses, boarding and lodging expenses when they travel inside or outside Malaysia while performing the duties for the MALAYSIAN COMPANY.

ARTICLE 8 – FACILITIES

The MALAYSIAN COMPANY shall provide the ENGINEER/TECHNICIAN with similar conveniences and facilities in and out of the Works to those made available to its other Malaysian employees doing similar work.

ARTICLE 9 – INTERNAL TRAVELLING

The MALAYSIAN COMPANY shall provide appropriate transport at the disposal of ENGINEER/TECHNICIAN for office-work.

ARTICLE 10 – OFFICE SPACE

The MALAYSIAN COMPANY shall provide ENGINEER/TECHNICIAN with suitable office space for his or their use in the compound of the MALAYSIAN COMPANY'S plant.

ARTICLE 11 – WORKING DAYS AND HOURS

The ENGINEER/TECHNICIAN shall work the same normal hours as the Malaysian counterparts.

ARTICLE 12 – GUARANTEE OF STATUS

The ENGINEER/TECHNICIAN shall obey the MALAYSIAN COMPANY'S instructions for performance of his or their duties and he or they shall not unreasonably refuse to enter into the MALAYSIAN COMPANY'S plant or shall not be interfered in performing duties or shall not suffer from deduction of compensations or any other disadvantages in performing duties or in daily lives against their will except when the performance of duties seems impossible because of serious illness or injuries.

ARTICLE 13 – MEDICAL TREATMENT

All fees and expenses for the supply of medicine and medical treatment for any ENGINEER/TECHNICIAN who may have contracted any disease or sustained any injury during his stay in Malaysia shall be borne by the MALAYSIAN COMPANY

ARTICLE 14 – INSURANCE

The FOREIGN COMPANY shall take out, for each ENGINEER/TECHNICIAN, a life and accident insurance policy, paying the necessary insurance premium, for the amount of US\$..... or equivalent in Malaysian Ringgit in FOREIGN COMPANY's favour with a first-class insurance company in Malaysia. This insurance shall cover the period from an ENGINEER'S/TECHNICIAN'S departure from(country) to his return to it.

ARTICLE 15 – TERM OF AGREEMENT

This agreement shall take effect after the approval of the Ministry of Trade and Industry, Malaysia and continue to be valid for.....years subject to review by both parties and subject to approval of the Ministry of Trade and Industry, Malaysia.

ARTICLE 16 – TERMINATION OF AGREEMENT

Either party may terminate this Agreement by giving to the other party written notice of intention to terminate at leastin advance of the expiration date of the then current term.

ARTICLE 17 – ARBITRATION

Any controversy or claim arising out of or relating to this Agreement or the breach thereto which cannot be settled by mutual agreement shall be settled by arbitration in Malaysia, upon request by either party, in accordance with either the Malaysian Arbitration Act 1952 (Rev. 1972) or Asian-African Legal Consultative Committee (AALCC) Regional Centre for Arbitration Kuala Lumpur in accordance with United Nations Commission on International Trade Law (UNCITRAL) Arbitration Rules as modified by the Centre. The decision of the arbitration shall be final and binding upon the parties hereto.

ARTICLE 18 – GOVERNING LAW

This Agreement shall be construed and governed in accordance with the laws of Malaysia.

ARTICLE 19 – FORCE MAJEURE

(a) If the performance of this Agreement is interfered with for any length of time, by act of God, war, civil commotion, riots, rebellion, revolution, epidemics and other similar occurrences which are beyond the control of either party, neither party will be held responsible for non-performance of this Agreement for such length of time.

(b) In case either party fails to fulfil its obligation hereunder due to the Force Majeure specified in (a) of this

Article, such party shall notify the other party in writing of its intention without any undue delay and then in case the latter requires the certificate to prove the said Force Majeure issued by third party, which shall be public and/or official organisation, the former shall forthwith forward the said certificate to the latter.

ARTICLE 20 – NOTICES

All notices required or authorised to be given hereunder shall be in writing and shall be directed to the addresses set forth below or to such other address as either of the parties may, from time to time, designate by notice in writing to the other. All notices so addressed if sent by registered airmail, shall be deemed to have been received on the fourteen (14) days next after the date on which such notices were posted.....

IN WITNESS THEREOF, the parties hereto have caused this Agreement to be executed, by their representatives as of the day and year first above written.

For the FOREIGN COMPANY

For the MALAYSIAN COMPANY

LEGISLATION

COLOMBIA

License agreements Simplified Governmental Approval

The Royalties Committee is the Colombian authority responsible for approving agreements on transfer of technology, use of trade marks and patents, intellectual property, management and exploitation of software.

On 18 May 1990, the Committee issued Resolution No. 9, whereby the automatic approval of the mentioned agreements for a five-year period was ensured, provided the following requirements are met:

1. For agreements on transfer of technology and use of trade marks and patents, the total amount of stipulated royalties will be less than 4 per cent of the net sales of the product subject matter of the contract.

- For agreements on hotel management, the total amount of stipulated royalties shall be less than 20 per cent of the net profit.
- For agreements on distribution of software, the total amount of stipulated royalties must not exceed 40 per cent of the cost of the licence.

2. The contract must include, at least, clauses on the following aspects:

- (a) Identification of the type of technology;
- (b) Cost of each one of the items included in the contract;
- (c) Period of validity of the contract;
- (d) Form of payment;
- (e) Application of Colombian legislation;
- (f) Conditions of the transfer of technology for these contracts.

3. The contract should not include any of the clauses restricting the practice of commerce contained in Articles 20 and 24 of Decision 220 of the Cartagena Agreement.

4. The recipient company must be qualified as "national" (if at least 80 per cent of its capital belongs to local investors) or as "mixed" (if between 51 and 80 per cent of its capital belongs to local investors).

The approval and registration of the mentioned agreements will be obtained with the mere verification by the Technical Secretary of the Royalties Committee of the due completion of the above mentioned requirements. The approval is to be granted 15 days after the petition has been filed.

The Resolution under comment was issued within the frame of the so-called "economic openness" and is part of the group of measures adopted in order to develop a much more open economic policy as to the importation of capital, products and services. (Source: Cavalier Abogados, Colombia, Infoplex on Intellectual Property No. 1, May 1990)

RECENT PUBLICATIONS

IPCT.78(SPEC.) UNIDO guide for industrial investment and project identification and promotion in the electronics sector in developing countries.

IPCT.112 Abstracts of UNIDO documents on biotechnology and genetic engineering, 1981-1989.

IPCT.115 Directory of French sources of industrial and technological information (in French and English).

IPCT.119(SPEC.) Pollution prevention and integrated environmental management: Guidelines for legislation.

IPCT.135(SPEC.) Technology Trends Series No. 14. Biotechnology policies and programmes in developing countries: Survey and analysis.

PPD.167 Foreign direct investment flows to developing countries: Recent trends, major determinants and policy implications.

PI/107 Guide to training opportunities for industrial development (19th issue).

ID/WG.509/3(SPEC.) Global developments in the machine tools industry: Impacts on users and producers in developing countries

ID/WG.506/3 Issue paper No.3. Prerequisites for the integrated development of the secondary wood-processing industry.

ID/WG.499/2 Issue paper No.1. Measures for the state of the manufacturing industries with emphasis on the food-processing subsector in Africa (in French).

ID/WG.499/3 Issue paper No.2. National policies and support action for industrial restructuring for the long-term profitability of the food-processing industry in Africa. International co-operation and financing for industrial restructuring in Africa.

INTIBNET

Readers may be interested in the *INTIBNET*, a quarterly publication of UNIDO's Industrial and Technological Information Bank. This newsletter features news on the INTIB information network of national and regional focal points and nodes, papers of relevance to industry and technology, including databanks, products and services, information on UNIDO projects of relevance to technology, information on UNIDO's Environment Programme, as well as technology related activities. Sample issues may be had on request by writing to the Industrial and Technological Information Bank, Industrial Information Section, Industrial Technology Promotion Division, Department for Industrial Promotion, Consultations and Technology, UNIDO, P.O.Box 300, A-1400 Vienna, Austria.

LES NOUVELLES

As in previous issues of the *TIES Newsletter*, we take pleasure in reproducing the table of contents of the most recent issue of *les Nouvelles*, the journal of the Licensing Executives Society.

les Nouvelles, Volume XXVI, No.1 of March 1991

Venezuela awakens Licensing Law, by Victor Bentata

Vocabulary of ADR Procedures by, Tom Arnold

Making strategic partnerships work, by Richard L. Casey

Identifying know-how under EEC Regulations, by Placido Scaglione

View from US Technology Administration, by Robert M. White

US university licensors and Canada tax, by Sheldon Burshtein and Patricia Rubin

Capturing value from innovation, by David J. Teece

Implications for technology transfer in Poland, by Robin Wesselschmidt

Trademark licensing in China, by Lian Yunze

Successful government-industry consortium, by Robert F. Muir

EEC Report

Request for TIES Newsletter

If you would like to receive issues of the *TIES Newsletter* in the future, please complete the form below and return to:

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
TIES Newsletter; Code 525
Editor - Room: D-1951
P.O. Box 300
A-1400 Vienna, Austria

	Type or print clearly (one letter per box) and leave a space between each word																			
NAME (underline family name)																				
TITLE OR POSITION																				
ORGANIZATION																				
STREET AND No. (or P.O. Box)																				
CITY AND STATE OR PROVINCE																				
COUNTRY																				

The *TIES Newsletter* is primarily devoted to issues of technology transfer policies and negotiation, including related developments in the international context as well as updates of activities in this area. In the space below our subscribers and readers are invited to provide:

(a) A brief indication of their current professional activities and the relevance of the *TIES Newsletter* to these; and

(b) Comments on the information given in the *TIES Newsletter* and the way it is presented, so as to allow for improvement of future issues.