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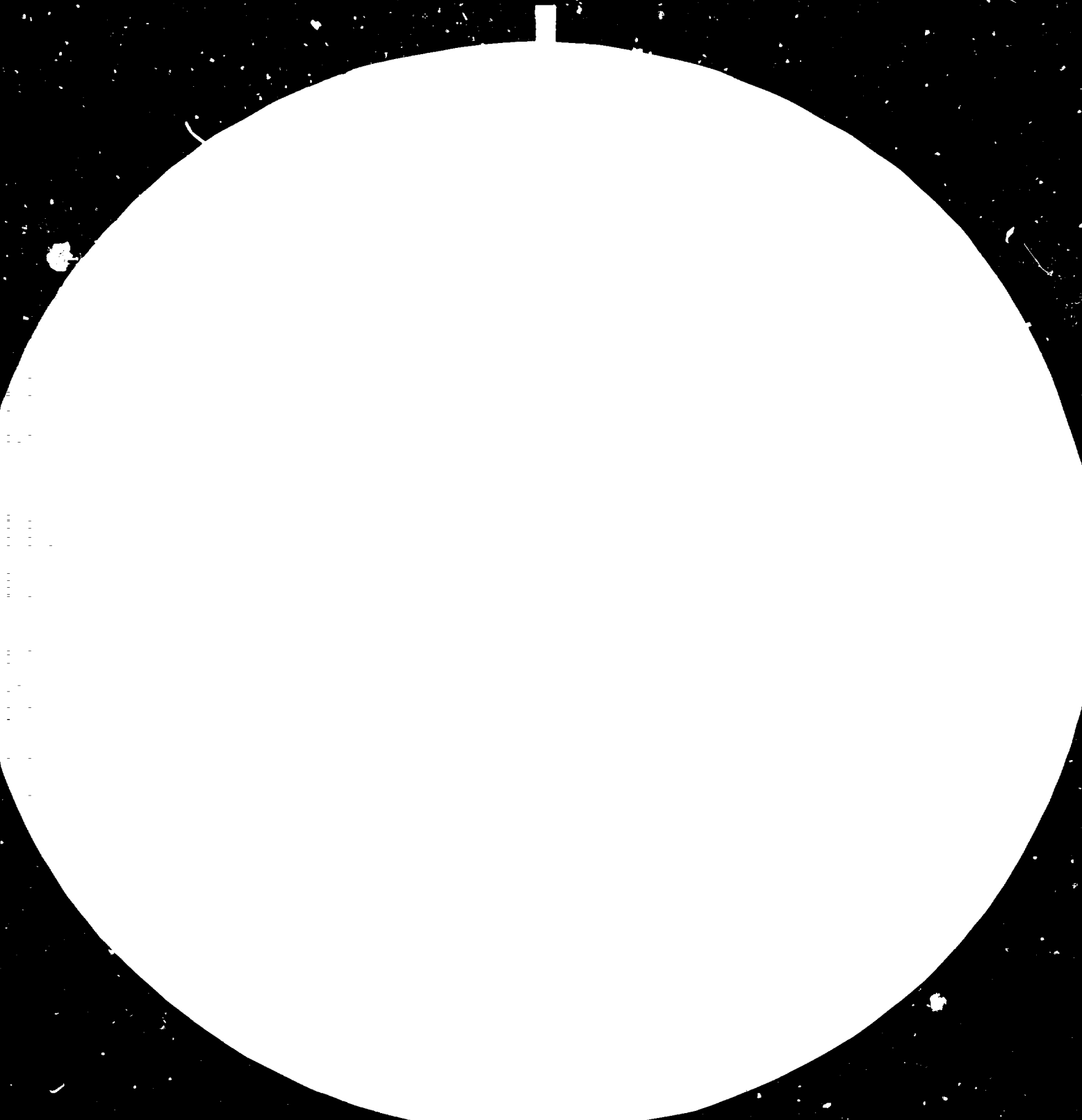

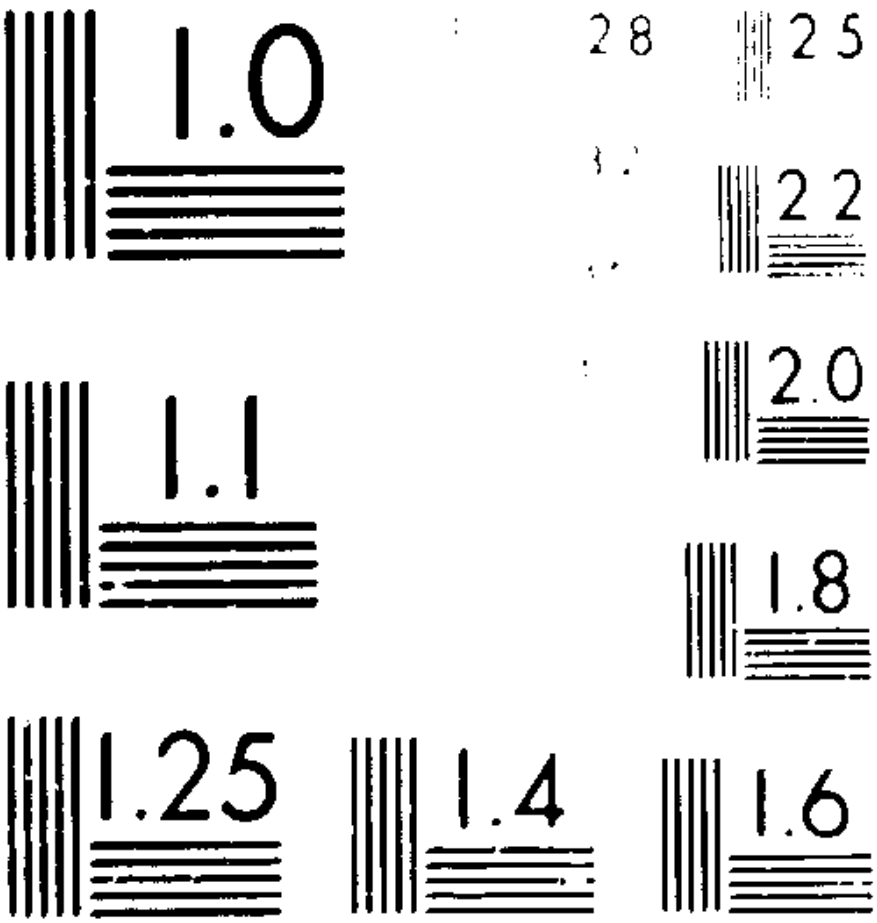
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TIES NEWSLETTER

TECHNOLOGICAL INFORMATION EXCHANGE SYSTEM

Issue Number 17 — September 1982

12045

Dear Reader,

I am pleased to inform you that the Seventh Meeting of Heads of Technology Transfer Registries will take place in New Delhi from 7 to 10 December 1982. The Government of India has kindly agreed to host the meeting.

This year the meeting will address itself to three main issues, namely the annual TIES review, strengthening of negotiating capabilities of developing countries and the impact of technology transfer legislation on technology flows.

In particular it will review the revised TIES Coding Manual, which is based on the recommendations of the TIES meeting held last year in Manila, and includes coding instructions for the TIES information exchange system on license and service agreements.

With respect to the issue of strengthening the negotiating capabilities of developing countries, the meeting will address itself to three items: payment evaluation of technology transfer contracts, joint venture evaluation and computer software contract evaluation.

In this connection we have published an article in this issue of the Newsletter on evaluation procedures for financial compensation to licensors. The UNIDO method described in the article will be the basis for one of the discussions on this subject in New Delhi. Also included in this edition is an article on the mechanism of "software" production development in developing countries.

G.S. Gouri
Director
Division for Industrial Studies

UNIDO activities

Technological Co-operation among Developing Countries

The Programme of Action adopted by the High Level Conference on ECDC held at Caracas in May 1981 had identified certain key areas for making concentrated co-operative efforts in order to utilize to the maximum extent the existing, as well as potential complementarities among developing countries for their individual and collective benefit. The areas identified relate to collection and dissemination of information on technological capabilities of developing countries, technological flow, advanced technologies, negotiating capacities and institutional infrastructure, including networking.

In this issue of the Newsletter, we are including conclusions reached in the recent New Delhi meeting relating to information collection and exchange, networking of institutions and technology flow. Subsequent issues will include items on creating and strengthening consultancy and engineering services, commercialization of technology, enhancing negotiating power and advanced technologies.

Pursuant to the relevant recommendations of the Caracas Conference, a meeting of Heads of Science and Technology Agencies of Developing Countries was held in New Delhi in May 1982 with a view to ensuring and enhancing implementation of the relevant measures proposed in the Caracas Programme of Action. The New Delhi meeting also examined further action to be taken by the Group of 77 in regard to technology development and technological co-operation.

The New Delhi meeting identified national focal points to provide for a specific framework for concrete co-operative arrangements among developing countries backed by requisite financial allocations by member states specifically for ECDC activities. In order to ensure concrete follow-up action on the deliberations of the meeting, it also identified specific S+T areas and set up action committees to suggest concrete programmes of co-operation. The priority areas identified for launching co-operative programmes include energy development, health care and nutrition, agriculture, industrial technology, technology for rural development, modern technology, resource engineering, communication systems, chemicals and fertilizers, transportation, low cost housing, etc. These are essentially the areas which are of major concern to developing countries in their efforts to secure improved quality of life for their people.

For facilitating technology flow among developing countries various critical and potentially fruitful areas of co-operative endeavour were highlighted by the meeting. These include consultancy and engineering services, pilot and demonstration plants, proto-types etc. The need to avoid triangular transfer of technology whereby a developing country technology is commercialized in a developed country before it is transferred to another developing country was also stressed.

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The meeting also desired that the information available on technological capacities of developing countries should be compiled through a simplified proforma and continuously updated. In order to strengthen negotiating power of developing countries vis-a-vis developed countries and technology suppliers, it advocated the establishment of national registers of foreign collaborations to help in drawing lessons from the experiences of other developing countries in respect of the acquisition of foreign technology.

Information Collection and Exchange

Apart from the fact, that due to certain historical reasons, enterprises in developing countries continue to display a marked predisposition in favour of technologies from highly industrialized countries even in respect of relatively unsophisticated production processes for which appropriate technologies are readily available within the developing countries, the chief reason for their persistent northward tilt is, without doubt, the lack of knowledge about what other developing countries have to offer and lack of confidence in the technical feasibility and commercial viability of developing country technologies. It is, therefore, necessary to take concrete measures to create a keen awareness of the engineering and technological capabilities existing in developing countries and to generate necessary confidence in the technologies developed by them.

As a first step in this direction it is necessary to systematically compile and maintain inventories of significant technological capabilities developed by different developing countries. The information will need to be collected on different aspects of technological capabilities viz. information on technologies already developed and successfully commercialized, information on technological and engineering expertise available, information on research and development facilities (both in the private and public sector) and information on research in progress or planned, information on consultancy and engineering services, etc. This would be a major exercise involving considerable organized effort.

The information sought, collected, compiled and disseminated would be of practical value only if it is relevant to the needs of developing countries and relates to the particular sectors/areas which are of priority concern. Annex II of the report gives the subjectwise order of priority drawn up by the meeting of Heads of Science and Technology Agencies of developing countries in May 1982. Since technologies are developed not only by research and development laboratories but also by in-house research and development facilities existing within production enterprises, both in the private and in the public sector, information on technologies developed by such 'captive' facilities will also need to be compiled.

A suitable mechanism and procedure is therefore required to be developed for systematic identification and use of such technological capabilities and expertise. Three steps would be involved in such an exercise:

(i) Designing a standard format or questionnaire for collection of information;

(ii) Screening of the information to evaluate its authenticity, relevance and utility;

(iii) Disseminating the information through appropriate channels to the end users.

UNIDO has devised a standard format for information collection of information collected through the questionnaire. The quality of responses received from different research and development institutions and productions enterprises as regards their technological capabilities and expertise is, however, bound to be uneven. The agency designated as the focal point will have to carefully evaluate the responses to the questionnaire before the information is considered suitable for inclusion in the inventory. The focal point will also have to assume the responsibility for continuously updating the information through a system of periodic reviews and monitoring. The focal point may be requested to associate the local UNDP Resident Representative or the Senior Industrial Development Field Adviser with the evaluation process and assist in the task of screening the responses.

On the basis of the information so obtained, sectoral technology directories are to be compiled - each directory covering a priority area of common interest to developing countries.

Apart from the sector - specific information collected and compiled in the form of sectoral directories, user-specific information will need to be collected and repackaged to serve particular user needs. Such information packages should cover the following aspects in respect of selected industries/projects:

- Availability and nature of alternative technologies;

- Commercial and other terms for acquisition of alternative technologies;

- Type of technical assistance in the form of training of manpower etc. available, as part of the technology transfer arrangement;

- Magnitude of investments, raw material inputs and related information that may be needed for a project of a particular scale and involving particular technology;

- Sources of capital goods and equipment as well as technical services.

This type of information could be more usefully provided in the form of concise technology profiles on selected industrial projects.

Some of the specific items on which information would need to be compiled are indicated below:

(i) Information on alternative technologies and techniques, including coal gasification processes, which might replace coking coal by other fuels in iron and steel manufacture;

(ii) Information on alternative processes, plant and equipment for constructing fertilizer plants;

(iii) Industry-wise information on contracting terms and conditions;

(iv) Information on institutions and enterprises engaged in design and manufacture of fertilizer plants, agricultural machinery, mini steel plants etc.;

(v) Information on technological developments and technical and commercial aspects of solar energy utilization as well as information regarding solar energy equipment manufacturers;

(vi) Information on consultancy and engineering capabilities in different industrial sectors.

Apart from information on technologies developed and technological alternatives available in developing countries, there is need to compile information on expertise and skills in the form of highly qualified technical and engineering experts available in the developing countries. This information will be required to be collected and arranged according to areas of specialization in particular sectors or disciplines which are of priority interest to developing countries. This is by no means an easy task as the quality of information emanating from different sources and different countries is bound to vary considerably just as the technical competence and engineering skills available in different countries are of differing degrees of sophistication. Hence the need for an effective machinery for systematic identification and screening of the information received and a mechanism for its storage, updating and dissemination.

Networking of Institutions

Networking, to be really effective needs to be promoted in respect of specific goal-oriented projects. It would, for instance, be highly useful to establish networking among selected institutions in developing countries which have achieved a certain degree of excellence in specified areas of research and development such as utilization of solar energy, gasification of coal, production of basic drugs and vaccines, development and production of high protein crops, exploration and exploitation of resources of the sea, such as hydrocarbons and minerals.

Another key area in which networking could be usefully promoted is among design, consultancy and engineering organizations specialized in selected production sectors such as fertilizers, steel, machine tools, power generation, cement, petrochemicals, synthetic fibres, etc.

Yet anotner area in which developing countries could co-operate more actively is in the formulation and execution of research and development programmes and projects which are of common concern to several developing countries, but for which they individually have neither the resources nor the capacity. It has to be remembered that no single country, much less a developing country, can on its own afford to cover the entire spectrum of technology.

In certain areas joint research and development could be taken up usefully by selected developing country research and development institutions, through appropriate tie up arrangements. The following institutional arrangements will be necessary in order to undertake joint research programmes:

i. Setting up of an Intergovernmental Science and Technology Committee;

ii. Identification of a selected number of research projects in which a number of developing countries are interested;

iii. Designating certain institutions in developing countries to act as the lead institutions for executing/co-ordinating particular research projects;

iv. Arrangement for joint funding of the research projects by interested parties as per a mutually agreed formula;

v. Pooling and sharing the research findings.

Technology Flow

For facilitating and improving technology flow among developing countries various measures are necessary. In the first place there is a need to launch a confidence building exercise by making developing countries aware of successful transfers of technologies that have already taken place between some developing countries and others. Preparation of a portfolio of case studies analyzing the experiences of the recipient countries in the successful acquisition and absorption of technologies from other developing countries and the manner in which they have contributed to enhancing their technological capabilities and industrial development would be a useful exercise. The study should also include cases of unsuccessful technology transfers with a view to clearly identifying the key factors which contribute to success or failure.

* * * * *

Evaluation Procedures for Financial Compensation to Licensors

Introduction

Offices which deal with the evaluation of large numbers of technology transfer agreements such as technology transfer registries and development financing institutions, often face the difficult task of assessing whether the agreed upon royalty represents a fair payment.

In this article the principles behind the method developed by UNIDO for technology payment evaluation to be used by such offices is described in some detail. The first part is devoted to the evaluation principles previously published in the Development and Transfer of Technology Series No.12, while the second part deals with some recently developed refinements of the UNIDO evaluation method.

Traditionally, permissable royalty rates have been established without the use of an objective or analytical 'yard stick', and based principally on experience. UNIDO has through extensive study, designed a method which attempts to bridge this apparent gap in proper contract evaluation management. The concept is based on the fact that royalty can be regarded as an expression which measures

the distribution of a profit attributed to the introduction of technology between the licensor (LOR) and the licensee (LEE). This concept has been treated extensively in the Development and Transfer of Technology Series No.12 - Guidelines for Evaluation of Transfer of Technology Agreements, ID.233. However, its essential form is recapitulated hereunder.

Assuming that the amount paid to the licensor by a licensee is a function of the sales volume, and that the amount of royalty paid to the licensor is the profit of the licensor which it receives by licensing the technology to the licensee, then the following expression can be introduced:

$$\text{Royalty on Sales } (R_s) = \frac{\text{Profit of Licensor } (P_{lcr})}{\text{Net sales value (NSV)}} \qquad \text{Eqn I}$$

or

$$R_s = \frac{P_{lor}}{\text{Profit of LEE } (P_{lee})} \times \frac{\text{Profit of LEE } (P_{lee})}{\text{NSV}} \qquad \text{Eqn II}$$

or

$$R_s = \text{LSEP} \times P_{lee}OS \qquad \text{Eqn III a}$$

where LSEP = Licensor's share Enterprise's profit

or $P_{lee}OS$ = Licensees profit on sales

or

$$P_{lee}OS = \frac{R_s}{\text{LSEP}} \qquad \text{Eqn III b}$$

For example, if we know that in the cement industry profit sales ($P_{lee}OS$) is about 16 per cent and a licensor of cement technology was to apply a royalty of 4 per cent on sales (R_s) then LSEP - $\frac{4}{16}$ = 25 per cent.

If however, in the steel industry, profit on sales was about 8 per cent, then at a 4 per cent royalty LSEP would be 50 per cent. Because of the poorer profitability of the steel industry the licensor gets a much higher share of the profit.

The usefulness of this method is that a registry can calculate LSEP for any royalty demanded by the licensor without any particular assistance from the licensee.

There are however, certain disadvantages to the method:

(a) It is only approximate, since we can only apply available information on an industry as a whole and not for a specific contract;

(b) Profit is loosely defined. The 'profit' for the cement industry may not carry the same 'profit' definition as for the steel industry;

(c) For a new industry ($P_{lee}OS$) will not be available;

(d) No provision is made for the variation of profits with time. Profit ($P_{lee}OS$) for some undefined year has to be used. Aggregation of profits over several years is not possible;

(e) The licensee has no obligation to supply information.

Recent Refinements

Where a registry is in a position to obtain forecasts on abolute levels of sales and profits, a more powerful analytical tool becomes applicable. The easiest way to describe this tool is to appreciate the following simple illustrative construction of a firm's profit.

Example:	Cash flow	Contract Period					Post Contract
	Year 0	1	2	3	4	5	6
Net sales value (NSV)		100	100	100	100	100	100
Cost of goods sold + SGA excluding royalty		46	46	46	46	46	46
Royalty		4	4	4	4	4	Nil
Total cost of sales		50	50	50	50	50	46
Net profit before		50	50	50	50	50	54
Tax (NPBT)							

The following definitions will be used in the context of the above example.

Net sales = Gross sales - returns + allowances

Cost of goods sold = cost of manufacturing which include:

1. direct labour

2. direct material

3. other costs (overhead expenses, interests, etc.)

SGA = Sales and General Administrative Expenses

In the above example, royalty is paid at 4 per cent on net sales value over a five-year period and no extension of the license agreement is foreseen. It can be observed from the cash flow sheet that the licensor's share of the enterprises profit (LSEP) in any of the first five years is:

$$LSEP = \frac{4}{54}$$

Where '54' is the sum of the royalty paid to the licensor and the enterprise profit, from the cash flowsheet, it can be observed that in year 6, '54' represents the enterprise profit after the period of royalty obligation is over. The above calculation can be derived in the following way:

$$LSEP = \frac{\text{Royalty payment to LOR}}{\text{NPBT + Royalty payment to LOR}} = \frac{R}{NPBT + R}$$

$$= \frac{1}{1 + \frac{NPBT}{R}} = \frac{1}{1 + TTF} \qquad \text{Eqn IV}$$

Where NPBT = net profit before tax
R = payment to licensor
TTF = technology turnover factor.

The ratio NPBT/R can be considered a potent indicator of the multiplier effect of a royalty payment. One could name this ratio the 'technology turnover factor' (TTF) on the basis that it measures the effective use of the technology by the licensor: the profit 'turnover' for every payment of royalty to the licensee.

In our example the TTF would be $50/_4 = 12.5$.

Net Present Value

In assessing a royalty contract which would in effect be over a given period of time, the concepts derived alone would have to be evaluated for each year. However, a value of, say, LESP for each year would not provide a comprehensive view of the viability of the contract since it would consist of as many figures as there are years in the period under consideration and they could all be different. Therefore a single figure, the net present value (NPV) is used. This encompasses all years and gives their cumulative present value, taking the opportunity cost of capital (interest) into consideration. The concept of NPV in its simplest form is basically saying that $100 which will be earned a year from now is worth only $91 today because at 10 per cent interest $91 today would bring $100 a year from now. In assessing the cash flow of a number of years over a given period, each year's receipts and disbursements are discounted to present values, using the relevant interest rates.

The advantages of this method are:

(a) The analysis is specific to the client (licensee) and his expectation of profit;

(b) Profit is very clearly defined. It is a profit that is always reported in a company's balance sheet;

(c) The profit definition removes anomalies of tax treatment between industries in a country and between countries;

(d) As will be illustrated below, it is possible to 'consolidate' the profits of various years (of the royalty-bearing period) which may involve profit variations, including negative profit;

(e) No data on sales value is required;

(f) Because of clarity of definitions, computerization of data and calculations is possible.

The disadvantages of the method are:

(a) Client's projections of profits must be relied upon;

(b) The registry must be in a position to compel disclosure of PBT data.

Conclusion

In conclusion it can be said that the UNIDO developed evaluation method is centred around the concepts of LSEP and TTF. The values to be calculated for each contract can be compared with statistical averages of previously approved contracts in the same sector. This, therefore, will be the foundation of a new evaluation procedure for financial compensation to licensors.

* * * * *

On the Mechanism of Software Production Development in the Developing Countries

The use of computers, whether as general purpose information processing systems or as micro components in specific product and systems applications, is growing at a tremendous rate in both developed and developing countries. Likewise, the capacity to produce computer software is also growing - by about 18 per cent yearly on a world scale - which is not sufficient to meet the growing demand since new software applications are developing at more than double this rate.

In considering this technology in relation to its application to developing countries and their benefit from it, it is recommended that the developing countries do not attempt to reproduce the path already trodden by the developed countries in this field for a number of reasons, explained as follows: the patchwork-like pattern of existing software is far from optimal, given the current (and expected future) state(s) of application

requirements and hardware. Furthermore, there are software and firmware requirements special only to developing countries' applications and therefore for their purposes. Particular emphasis ought to be given to the development of software that will help minimize the need for acquiring expensive new hardware - especially in view of the constant technological change and variation of this commodity.

Observation of the data processing market in developing countries has revealed several remarkable points which, to some extent, are also valid for the industrialized countries:

- There are few software companies or other so-called third party (consulting) companies working successfully in the market;
- Hardware manufacturers and distributors are mainly active in the data processing market;
- Hardware is oversold and there is little appreciation of software and system (hard-ware + software) thinking;
- Complete problem solutions tend to be imported into companies through hardware manufacturers and distributors in standard software packages;
- Normally standard software packages do not totally fulfill user requirements;
- As a consequence the organization has to be adapted to data processing instead of vice versa;
- The tendency is for highly educated people to leave the industrial and university fields and join hardware sellers;
- There is no confidence in establishing third party companies (software houses, consultancy companies) because of the belief that software development is too difficult.

It should be realized that nowadays software production is a manufacturing, rather than a service, activity. At the same time, software production is extremely labour intensive and in developed economies the cost of software production is as high as 80 per cent of the average cost of the computer-based application. Thus, some developing countries have a substantial advantage in the software production field since, having properly qualified manpower available, they can produce software at approximately one fifth of the cost compared to the cost of production in developed countries. From this it can be surmised that software production in developing countries may be highly competitive.

The above given considerations relate not to all developing countries, but only to those where a certain level of programming education already exists, i.e. where there are universities, polytechnics or any other equivalent schools offering some education in programming. This permits training in software production from above the zero level.

In comparing software production with other modern technology products that could be manufactured in developing countries, the low investment level needed for software production gives this field a substantial advantage. The technological equipment for the production of a software house consists mainly of a computer system or systems which, in many cases, may be rented from the supplier with the cost of rental even being offset from the software product sales income.

The one, but substantial, obstacle for software production in developing countries, is the market for the products, as

- the local market is usually limited, resulting from the limited scope of computer applications in developing countries, and cannot create the broad demand for full-scale production;
- the export market, mostly in developed countries, is difficult to enter without a proper marketing and product dissemination network. Besides, the users in developed countries have, in many cases, an unfounded prejudice concerning the quality of software offered from developing countries.

Observation mainly of the micro computer market shows the possibility of introducing microcomputer application systems in developing countries in an inexpensive way. These systems can support - in a distributed manner - industry, commerce, public administration, banking and insurance companies in the management of masses of data (text processing, database systems, information systems, statistical computation), control of processes (manufacturing, quality control, optimization procedures) and governmental and industry planning (model building, simulation, optimization). Standardized microcomputer operating systems and programming languages will ease the penetration of microcomputer application systems into the market.

In order to reach the appropriate software supply in developing countries several objectives should be met. These are as follows:

1. To establish self-supporting software production in developing countries;

2. To train local staff in advanced programming technology;

3. To create a basis for the development of local utilization of computers to solve optimization problems, inter alia, of small and medium-sized industry as well as other applications; and

4. To promote the export of software from developing countries.

These objectives can be reached by the creation of multi-function software centres.

The centres should be able to provide a variety of viable, sustainable and high quality services. Apart from the software production the centres should be capable of providing training, consultancy, a wide spectrum of software services and even hardware product development. Such a centre could also be usefully linked to an organization producing special purpose, custom-made micro-electronic components.

Mechanism proposed

In order to effectively establish a centre it is proposed to combine its activity initially with a carefully chosen, respectable software house from a developed country, as a co-operative pair. The developed country software house will:

- Help to organize and conduct the proper training for its staff;
- Help to recognize local needs with special attention to optimization problems for small and medium-scale local industry;
- Suggest the type of software to be produced for domestic needs and for export.
- Advise and consult in the process of software production.

Programme

In order to achieve these objectives, the work programme being performed by the UN Agency should be composed of the following elements:

1. Selection of software houses in developed countries ready to perform the task according to the above suggestions;

2. Selection of developing countries with the professional environment suitable to start the multi-function software centre activity;

3. Prepare general conditions for co-operative agreement;

4. Prepare guidelines of the organization and management of the software house;

5. Prepare guidelines of selected methods of optimization at the basic level that would be easy to adapt to the developing countries' professional and administrative environment;

6. Start the activity supervised by the UN Agency, and organize annual meetings to discuss the progress of the centre's activity and exchange experience.

Finally, it should be added that there is absolutely no reason to assume that export markets for developing country software will, in the long run, come primarily from the North. On the contrary, software would become a significant arena for South-South trade and co-operation.

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Joint UNIDO/LES Meeting in Vienna

On UNIDO's initiative, a joint meeting with the Licensing Executives Society (LES) was held in Vienna on 22 June 1982. The meeting, which was opened by the Deputy Executive Director of UNIDO, Mr. F. Carré, was attended by about 30 LES delegates led by Mr. B. Pam, the current president of LES International. The developing countries were represented by Dr. Isabel Roque Oliveira of the Foreign Investment Institute of Portugal, Dr. Wahby Wahba of the Foreign Investment Authority of Egypt, Dr. S.L. Kapur of the Department of Industrial Development of India and Dr. Cesar Primo of the Ministry for Industry and Energy of Spain. Discussions centered around four papers presented by the aforementioned and covered their countries' experience and problems in obtaining foreign technology. The following are the titles of the papers, which may be obtained upon request from UNIDO's Technology Group (address on front page of TIES Newsletter):

1. Policy procedures and problems regarding imports of technology by Portugal (Conference Room paper No.1 of 6.6.1982);

2. Overview of selected problems of technology transfer to developing countries (Conference Room paper No.2 of 11.6.1982);

3. Acquisition of foreign technology in Egypt - a new approach (Conference Room paper No.3 of 13.6.1982);

4. Policy procedures and problems regarding imports of technology in India (Conference Room paper No.4 of 21.6.1982).

As a result of this fruitful meeting, LES asked whether a similar meeting could be held between LES and technology registries of Latin American countries, under UNIDO auspices. It is hoped that this meeting will take place during the first week of March 1983 at Caracas, Venezuela.

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Nigerian Technology Registry

We have recently received information from Mr. Fred J. Okono, Director of the Technology Transfer Registry of Nigeria (presently functioning as part of the Ministry of Science and Technology), that his office will begin its operations soon.

The Minister of Science and Technology, Dr. Wahab Dosunmu, together with Mr. Fred Okono will embark on a study tour in early November to the following organizations and countries: UNIDO in Vienna, the Ministry of Industry and Energy in Madrid, the Foreign Investment Institute in Lisbon. INPI in Rio de Janeiro and finally the Foreign Investment and Technology Transfer Registry in Mexico City. UNIDO wishes to express its gratitude to the above institutions who have agreed to receive this important Nigerian mission.

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Registry news

Active TIES Participation of the Ethiopian Centre of Technology planned

After the TIES meeting held in Manila last year, and which was attended by Mr. Shiferaw Jammo, General Manager of the Ethiopian Centre of Technology, progress has been made towards the active participation of Ethiopia in the TIES system of exchange of information. The Centre is part of the Ethiopian Development Project Study Agency (DPSA).

The Development Project Study Agency is an autonomous Government institution which reports to the Supreme Planning Council. The Executive Committee of the Supreme Planning Council is comprised of the Head of State and the main ministers handling economic affairs. Apart from the DPSA, the Central Statistical Office and the Ethiopian Mapping Agency also report to the Supreme Planning Council.

The DPSA is responsible for the appraisal of all projects considered for approval by the Supreme Planning Council, and for all matters related to the choice of technology for these projects. For organizational convenience, these two interrelated responsibilities have been separated through the establishment of the Ethiopian Centre for Technology (ECT) within the DPSA. The DPSA's economic evaluation unit prepares a project evaluation study which may draw upon the resources of the ECT and submits their comments to the Supreme Planning Council. Once the Council has approved the project, the concerned ministries prepare detailed technical studies and initiate negotiations with foreign suppliers of equipment and/or technology. The Centre is expected to assist in these negotiations in an advisory capacity only, as clearly defined in the administrative order of January 1982, which reads:

"a) After the completion of the technical study of projects, all Government agencies should invite the Development Projects Study Agency (DPSA) to participate in the selection, evaluation, unpackaging, negotiations, transactions and contractual arrangements for the purchase and/or transfer of technology.

b) On the basis of the evaluation results, all Government agencies and organizations should submit projects that have already been approved by the Government and the contracts concluded by them to the DPSA for registration. Likewise as regards projects, they should submit all relevant information, documents, etc. when requested by DPSA."

Workplan

The Centre which is assisted in its task by several UNCTAD experts, has embarked upon various activities during 1982. An outline of the planned activities include such activities as the registration of project contracts, agreements and arrangements for the transfer of technology, sectoral surveys in the pharmaceutical industry, the food processing industry, capital goods, electronics and light electricals, the participation in the preparation of a science and technology 10-year indicative plan, the setting up of an information and documentation service and providing the facility for building up an engineering and design consultancy capacity. These activities are at present being carried out by a staff of five engineers, economists and lawyers.

TIES Participation

The nature of the activities of the Centre, it was pointed out, would greatly benefit from TIES membership. Before actively participating in TIES, the Centre decided to embark on the design of a general information system to support the techno-economic studies of the Development Projects Study Agency and the activities of the Ethiopian Centre of Technology. Consideration is being given to a number of interrelated elements and subsystems. Among these will be the National Registry of Technology Transfer Contracts. The establishment of such a register will call for the building up of a coherent body of data which at present is scattered around the country.

After the establishment of such an information system, which would have access to all technology transfer contracts negotiated by the Ethiopian Government, or for that matter the private sector, the necessary infrastructure has been created for an active and mutually beneficial TIES participation.

* * * * *

Recent legislation

Mexico's Guidelines for Technology Transfer

With the Law for the Registration and Control of Technology and the Use and Exploitation of Trademarks and Patents which came into force in January this year, Mexico has acquired a useful tool for smoothing the contours of the previous law dating from 1973. Almost simultaneously the National System for Technology Development and Assessment was set up, whose purpose is to control the selection of technology for industrial projects through analyzing development plans, indicating priority areas and identifying areas where imports may be reduced or substituted. Procedural details are still being worked out and it is not expected that the System will be functional before 1983. Under the new technology transfer law, the Ministry of Patrimony and Industrial Promotion (Sepafin) will continue to have the strongest voice in policy decisions, acceptance or rejection of contracts and application of sanctions. It will, however, consult other Government agencies such as Conacyt, as well as universities, private and public enterprises.

The list of technology transfer contracts requiring registration has been enlarged to include consulting services, copyrights, computer programmes and in-bond industries. The inclusion of the latter may seem contradictory since these already operate under an established and special set of conditions which exclude them from the regulations governing technology transfer in the rest of the country. However, Sepafin officials stress that their registration will be more or less pro forma and will not countermand or interfere with the existing legal and operational structures of in-bond industries.

Another addition to the law, as already detailed in TIES Newsletter No. 15 of May 1982, is the application of stiff penalties for wilfully presenting false information on registration applications. More far-reaching, though less specific, are the clauses enhancing Sepafin's right to accept, reject or condition the registration of technology transfer contracts. The new powers granted to the Ministry are closely related to the country's develop-

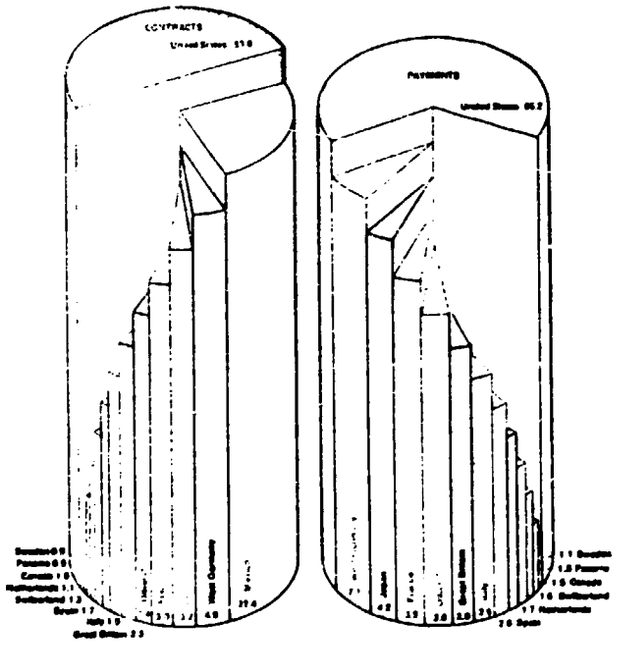
ment goals at increasing self-sufficiency through careful selection of available technologies - according to one source, up to 1979 almost 80 per cent of Mexico's imported technology was obsolete or nearly obsolete. Now a clause has been inserted requiring the seller to guarantee the quality and results of the acquired technology. The buyer is also no longer required to maintain secrecy beyond the limits of the contract or of other applicable regulations such as patent laws. The agreement must also specify that the supplier assumes responsibility for any infringement of the industrial property rights of third parties.

Contracts are limited to a maximum of 10 years, with exceptions only for provable long-term technological transfer packages or ongoing projects. The legislation does not set maximum royalty levels, leaving both parties free to negotiate. Registration applications will be carefully judged and some will be accepted conditionally. If local technology is available, the application will be refused. In fact, local technology already plays a significant role in Mexico's technology transfer stage. In 1981 it accounted for 2,200 registered contracts, representing 22 per cent of the total number of contracts. When the price seems excessive, comparative estimates will be sought from other suppliers. Preference will continue to be given to priority areas such as capital goods and agriculture. Sellers will be asked to furnish their latest technology to stimulate exports and substitute imports. They will be requested to co-operate with Mexico's development goals by setting up research centres and training programmes.

The figures involved in technology transfer to Mexico are quite astonishing - from 1975 to December 1981 Mexico paid out $2.24 billion for foreign technology, with about 65 per cent of the total going to US suppliers. However, with competitive technologies flooding the market, the US share is decreasing while Japan and Western Europe is increasing. In 1981 foreign technology payments were $735 million and this is likely to increase by approximately 15 per cent annually. At a recently held symposium in Mexico it was stated that 47.75 per cent of imported technology to Mexico were for activities that were of no priority to the country's development, but were rather geared towards private investment, and that the large share of US technology imports showed a technological dependency. Mexican scientists and technologists were urged to develop their own activities apart from the national productive apparatus.

TECHNOLOGY TRANSFER CONTRACTS AND PAYMENTS (BY COUNTRIES)

Preliminary Figures for 1981
(Millions of dollars)



*Includes 29 countries

Source: Ministry of Patrimony and Industrial Promotion (Sepafin)
Foreign Investment and Technology Transfer Department

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Recent publications

Guidelines on the UNIDO Model Form of Cost Reimburseable Contract for the Construction of a Fertilizer Plant (UNIDO/PC.41.)

Solidarity Ministerial Meeting for Co-operation in the Industrial Development of the Kingdom of Lesotho. Maseru, Lesotho, 7-11 June 1982. Report (UNIDO/PC.43.)

Première consultation sur le financement industriel. Madrid, Espagne, 18-22 octobre 1982. Document d'information : L'influence des nouvelles politiques macroéconomiques des pays industriels sur les perspectives du développement (UNIDO/PC.44.)

First Consultation on Industrial Financing. Madrid, Spain, 18-22 October 1982. Information Paper: An Anatomy of the "Country Risk" Concept in the Context of External Debt of Developing Countries (UNIDO/PC.45.)

Primera consulta sobre financiación industrial. Madrid, España, 18-22 octubre 1982. Documento de información: El sistema financiero internacional; Límites y perspectivas (UNIDO/PC.46.)

First Consultation on Industrial Financing. Madrid, Spain, 18-22 October 1982. Information Paper: Financial Requirements for Manufacturing Investment in Developing Countries to the Year 2000. (UNIDO/PC.47.)

First Consultation on Industrial Financing. Madrid, Spain, 18-22 October 1982. Information Paper: Appropriate Non-Concessional Industrial Financing for Developing Countries (UNIDO/PC.48)

Information Paper: Technological Information Exchange System (TIES) (UNIDO/IS.185/Rev.1.)

Technical Information Exchange Network (TIEN). Pilot Operation (UNIDO/IS.298/Rev.1.)

Sectoral Study on Technology Imports in the Pharmaceutical Sector of the Andean Subregion (UNIDO/IS.320)

The UNIDO World Industry Co-operation Model; Interactive User's Operation Manual (UNIDO/IS.323)

La potentiel du développement industriel à partir des ressources naturelles dans les pays les moins avancés. No. 4 Mali (UNIDO/IS.324)

UNIDO's Industrial and Technological Information Bank (INTIB) and National Industrial Information and Advisory Services with a Problem Identification and Information Extension Function as an Interrelated System of Services to Industry in Developing Countries (UNIDO/IS.325)

The Role of the Private Sector in Industrial and Technological Co-operation in Asean Studies on Regional Co-operation in the Field of Industry (UNIDO/IS.329)

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