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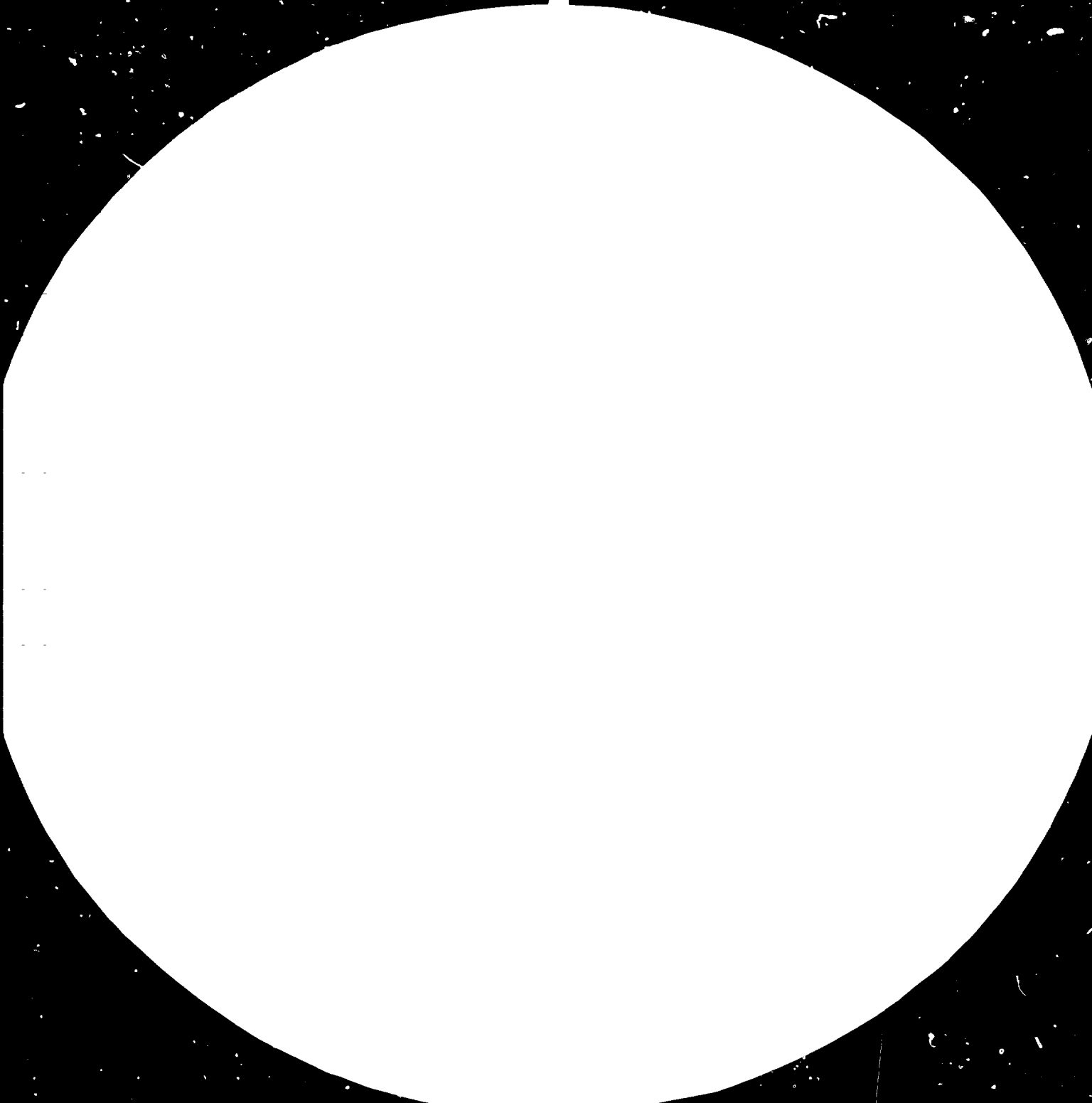
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Expert Group Meeting for Exchange of
Experiences on Technology Services
Delivery System (TSDS)

Manila, Philippines, 2-6 November 1981

DRAFT REPORT *. (Meeting on a technology
services delivery system).

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ABBREVIATIONS

ASEAN	Association of South East Nations
BSMI	Bureau of Small and Medium Industries
ESCAP	Economic and Social Commission for Asia and the Pacific
MITI	Ministry of International Trade and Industry
SBAC	Small Business Advisory Centre
SMI	Small and Medium Industries
TRI	Technology Resource Institution
TSDS	Technological Services Delivery System

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I. CONCLUSIONS AND RECOMMENDATIONS

The following are the conclusions and recommendations adopted during the last session of the Expert Group Meeting for Exchange of Experiences on Technology Services Delivery System (TSDS).

1. The meeting noted the positive contribution that had been made to Small and Medium Industries (SMI) development in the Philippines and recommended that developing countries consider the feasibility of adopting a Technological Services Delivery System (TSDS) to solve the problem of technology transfer from the Technology Resource Institutions (TRIs) to the SMIs. In implementing a TSDS, each country would, of course, have to consider and take into account its particular needs and characteristics so as to evolve the most effective system for its purposes. The TSDS essentially should be a national or regional programme. UNIDO or other international organizations should provide appropriate assistance to countries in establishing TSDS.

2. The meeting noted that there were several factors which would have to be taken into account if an effective system were to be implemented. These included the following:

- (a) The need for a total package approach which not only dealt with the technological requirements of SMIs but also covered other requirements such as finance, management, training;
- (b) The need for a national co-ordinating body and an effective network of industrial extension service units;
- (c) The need for use of industry associations which would enable the TRIs to reach more effectively a larger number of SMIs than would be possible otherwise;
- (d) The R and D of TRIs should be oriented to problem-solving and applied engineering development;

- (e) The monitoring and evaluation of results should be based on a simple cost-benefit analysis so that the work of the various elements in the TSDS can comply with and be seen to be in accordance with the declared goals and objectives;
- (f) The strengthening of TRI delivery capabilities should include networking TRIs nationally and internationally to complement technology delivery capacities and expand industry sector coverage;
- (g) The TSDS needed to publicize its activities and accomplishments partly to inform potential users but, more importantly, to attract the additional funding required to scale up the TSDS operations in order to meet the needs of the SMEs within the framework of national development objectives.

3. The meeting felt that the TSDS project might also be feasible when applied on a subregional or regional level. This would include the co-operation of the TRIs of individual countries with those of neighbouring countries, followed by the gradual emergence of the other links forming the TSDS.

4. The meeting recognized the value of the voluntary contribution of the Government of Japan to UNIDO which had enabled the pilot TSDS to be implemented in the Philippines. The meeting strongly recommended that additional funds be sought from bi- and multilateral financial sources for assisting implementation of the existing TSDS programme and any new TSDS projects in other developing countries. It was suggested further that UNIDO play an active role in this respect.

5. By institutionalizing TSDS, the effective channelling of government assistance to SMEs through TSDS was increased as well as the likelihood of procuring sufficient funding.

6. In establishing TSDS, governments should choose as the focal point an organization which was already involved and committed to the TSDS concept.

7. The services offered by R and D organizations are utilized to a greater extent than those of other organizations. R and D organizations have a built-in capacity to handle TSDS concept whereby they could enlarge the scope of their functions to include technological services.

8. Where appropriate, investment promotion aspects should be linked with the TSDS in order to improve the flow of transfer of technology. The TSDS should play a catalytic role in the further diffusion of technology to the domestic manufacturing sector.

9. It was suggested that the meeting had demonstrated the value of co-operation and exchange of experience. It was therefore recommended that similar meetings be organized to allow participants to report on progress made, or on problems encountered, in the implementation of TSDS programmes in their countries or regions. The participants recommended that the next meeting be held in Thailand.

II. INTRODUCTION

A. BACKGROUND INFORMATION

It is a recognized fact that small and medium industries have an important role to play in the industrial development of developing as well as developed countries. A common problem, however, which small and medium industries face is the lack of a systematic provision of technical and technological services and information which could meet the needs of and improve the productivity of this group of manufacturers. The developing countries usually have a number of technical servicing institutes in the country, but they are often not in a position to discharge their function of "servicing the industries", particularly small and medium ones in rural areas, because of the lack of an interactive mechanism. This fact was pointed out also in the Joint UNDP/UNIDO Evaluation of Industrial Research and Services Institutes (IRSI), ^{1/} which states:

"Small-scale industries are not being adequately served, due in part to the general inability of small industry to pay capacities of a single IRSI. Such services are usually technically possible but there is little economic or institutional payoff to the IRSI and small-scale industry problems are frequently not challenging to highly trained researchers. Technical extension services can solve the latter aspects but governments may need to develop a mechanism to provide low-cost loans or grants to small-scale industry which will encourage these to request such services and provide alternative supply sources, e.g., productivity centers, industrial estates, consulting firms, etc."

This concern was the basis for formulating the TSDS project the principle aim of which is to establish a mechanism to link the TRIs with the SMIs, particularly in the rural areas, in order to

^{1/} Joint UNDP/UNIDO Evaluation of Industrial Research and Service Institutes (Staff Study)(UNIDO/EX.79), p. 56.

provide systematically, on a continuous basis, advisory services, information and training, based upon the available knowledge and capabilities of the TPIs which respond to the identified needs and requirements of the SMIs.

The UNIDO project "Strengthening and Modernization of the Technological Performance of Medium and Small-Scale Industries in Selected Countries of the ESCAP Region" (TF/RAS/77/004) developed the Technology Services Delivery System (TSDS) on a pilot basis in the Philippines during 1978 and 1979. This project was funded by UNIDO through a Japanese Voluntary Contribution for an ASEAN regional project. In March 1978, the Government of the Philippines through the Commission on Small and Medium Industries (CSMI) of the Ministry of Trade and Industry started implementing the TSDS project in co-operation with UNIDO, ESCAP and the UNDP office in Manila. The results of these activities were positively evaluated by the Ministry of Trade and Industry which since 1980 had begun allocating funds from the national budget to support the TSDS programme.

To enable other developing countries to benefit from the TSDS experience in the Philippines and exchange views on similar systems used and eventually to initiate or improve corresponding activities in their own countries, it was decided that UNIDO, in co-operation with the Ministry of Trade and Industry of the Philippines through the Bureau of Small and Medium Industries (BSMI), should organize an expert group meeting in Manila from 2-6 November 1981.

B. OBJECTIVES OF THE MEETING

The objectives of this expert group meeting were as follows:

- (a) To discuss and learn from the existing TSDS as illustrated by the Philippine experience;
- (b) To discuss possible improvements of the System, taking into account the experiences of similar programmes in other countries;
- (c) To ascertain how TSDS could work in other developing countries and tailor it to local conditions;

- (d) To exchange views on how to operate TSDS on a sub-regional or regional level for a group of countries.

In order to achieve these objectives, the work programme of the expert group meeting was composed of four major countries:

- (i) To review the experiences of TSDS through presentations by UNIDO and the Philippine authorities, i.e. the BSMI ^{2/} of the Ministry of Trade and Industry, participating TRIs, Small Business Advisory Centres (SBACs), and SMIs;
- (ii) To review the experience of TSDS or similar activities (extension services for small industries) in other developing countries through presentations by the participants. To discuss possibilities of applying TSDS at a subregional or regional level;
- (iii) To undertake study visits to the various TSDS elements in the Philippines, such as SBACs, TRIs;
- (iv) To formulate a general framework for applying TSDS in the countries represented by the participants.

C. ORGANIZATION OF THE MEETING

The meeting was attended by 45 participants, 35 of whom represented eight developing countries. The host country was represented by the BSMI Ministry of Trade and Industry, seven TRIs, four regional SBACs, and SMIs. The donor agency, the Ministry of International Trade and Industry (MITI) of Japan, was also represented. A full list of participants is given in Annex I.

The work programme of the meeting, including a study tour to the TRIs and other related institutions, is listed in the Agenda (see Annex II).

^{2/} Formerly known as Commission on Small and Medium Industries.

The participants were given a set of documents on the Philippine experience of TSDS and a set of country papers. A complete list of documents is given in Annex III.

At the official opening of the seminar, participants were welcomed by Mr. Quintin G. Tan Director of the Ministry of Trade and Industry, the Philippines. On behalf of UNDP, the Senior Industrial Development Field Adviser, Mr. I. Pluhar, expressed the hope that the TSDS experience could be transferred to other developing countries and pointed out some problems related to finance and balances which would arise when the system was applied on a regional or subregional level.

Mr. Tomosaburo Yano of MITI Japan complimented UNIDO and the Philippine authorities for the successful implementation of the TSDS pilot project and confirmed Japan's continued commitment to the development of small and medium industries in developing countries especially in the ASEAN region.

The Head of the Development and Transfer of Technology Branch, Mr. W.H. Tanaka, welcomed the participants on behalf of UNIDO and thanked the hosts for arranging the meeting in Manila so that the benefits of the TSDS experience in the Philippines could be shared, discussed and disseminated most effectively. He stressed UNIDO's continued commitment to provide assistance in the establishment of similar systems in other developing countries suitably adapted to each country's specific needs. Mr. H.G.R. Reddy gave a welcome address on behalf of ESCAP.

The seminar was officially opened by Mr. Jose P. Leviste, Jr., Deputy Minister of Trade and Industry, the Philippines, who stressed the importance and relevance of TSDS as an institutional tool in the overall development of small and medium industries. He point out that technology transfer on its own could not solve the problems of SMIs unless it was accompanied by the development of all other positive factors affecting their progress. The Minister ended his remarks by expressing the hope that in attempting to overcome these difficulties, all international agencies, through a co-ordinated effort, would reflect the interdependent nature of their work in the true spirit of Cancun.

At the plenary session the participants elected the following officers:

Chairman - Mr. Q.C. Tan, Director, BSMI, Philippines
Co-Chairman - W.H. Tanaka, UNIDO
Rapporteur - Mr. R.E. Bandera, BSMI (Philippines)
Assisted by: - Mrs. S. Toetti (Indonesia)
Mr. W.J. Dziecielewski, UNIDO consultant

The meeting also adopted the agenda for the seminar as set out in Annex II.

III. TECHNOLOGY SERVICES DELIVERY SYSTEM (TSDS) CONCEPT

Part I

1. Rationale

Small and Medium Industries (SMIs) play an important role in industrial production activities, both in the developed as well as developing countries. Whereas large industries already have built into their systems the capability and capacity to look after matters related to development, acquisition and application of new technologies, machinery and equipment, as well as other matters such as management, finance, information for maintaining and improving their performance, SMIs usually lack, for obvious reasons, the possibility to look after such matters on their own. Recognizing this situation, a considerable amount of attention is given by developing country governments to supporting the activities of SMIs such as the establishment of SMI Boards. These entities are expected to provide the necessary advice and assistance.

These supporting activities, however, quite often do not have the expected impact due to various reasons such as lack of suitable knowledge and experience to provide the expertise, and the lack of a system or mechanism to mobilize the available domestic expertise for the benefit of the SMIs.

In most developing countries, a certain amount of experience exists within the borders of the country at various institutes, universities and laboratories attached to public and private enterprises. Various forms of financial support in terms of loans and incentives are also legalized under SMI promotion laws and regulations.

2. Objectives

The purpose of this project is to create a Technology Services Delivery System (TSDS) oriented to the needs of the SMIs, particularly in the rural areas.

The objectives of the TSDS are:

- (a) To improve the technological performance of small and medium industries;
- (b) To identify the needs of SMIs chiefly in the rural areas, as well as the available capabilities and capacities existing within the country which could contribute to solving the identified needs;
- (c) To organize a systematic mechanism of a continuous nature which would enable the SMIs to draw easily upon the capabilities available.

Part II

Project description

The project should be implemented in two or three phases depending upon the situation in a given country. This approach is most important since one of the major preconditions of success will be whether or not the project activities will be closely integrated with and tailored to the national plans and programmes for SMI development.

(a) Phase one - network building

- (i) Survey of technological problems of SMIs and their need for services;
- (ii) Survey of roles of the corresponding Technological Resource Institutes (TRIs) and the services they could provide.

The two surveys will help define the scope of the service system and the way in which it could be developed later to enable the required technological services of the TRIs to be utilized effectively by SMIs, particularly in remote and distant production sites. Accordingly, appropriate institutions which could serve as TRIs should be identified and arrangements made that they participate in the system and contribute to the TSDS in their particular

fields of industrial specialization. In case no suitable institutions exist to cover certain types of services required by the SMIs, measures should be undertaken either to expand the mandates of an existing institute to cover that field, or a new institute should be created. Thus the two surveys will contribute positively to establishing a comprehensive range of technological services which could benefit the overall industrial development efforts of a country, by providing a basis for the strengthening of national technological capabilities and capacities.

Further activities comprise the following:

- (i) Setting up of regional advisory centres which would act as contact points for the SMIs;
 - (ii) Designation of a Central Co-ordinating Unit, preferably in the form of a commission, to manage the entire TSDS. Such a Central Co-ordinating Unit should have a governing body composed of senior representatives from all ministries and agencies concerned with the TSDS. These would include the Ministries of Industry, Finance, Commerce, Trade, Agriculture, Metal, Mining, Labour as well as National Development Banks, Investment Banks, Chambers of Commerce and Industry. It might be useful if representatives of leading national institutes, universities and other scientific and technological bodies were also involved.
- (c) Phase two - sub-system building

Actual experience has shown that at least three systems should be created within the framework of the TSDS.

First sub-system: technological case referral, where activities will be concerned with plant-level technical problems as well as other matters such as selection, negotiation and acquisition of machinery, overall management, financing problems, loans, training. The activities will be undertaken on a day-to-day basis by the staff of the Regional Advisory Centres with the help of experts from the TRIs as required.

Second sub-system: training provisions, covering needs at the various levels of the TSDS, in order to strengthen the human infrastructure within the system. This would include training programmes for the staff of Regional Advisory Centres and the Central Co-ordinating Unit, technical staff of the TRIs and other bodies involved; and management, foremen and factory workers of the SMIs to improve their capabilities as participants in the technological flow.

Third sub-system: technical information dissemination, geared to supporting the TSDS and the sub-systems with a network for collecting data and information on common problems of the SMIs as well as recording past experience.

Annex IV comprises a diagram showing the TSDS system and its three sub-systems.

3. Mandates, Resolutions and Recommendations

- The New Delhi Plan of Action (UNIDO III);
- The Lima Declaration and Plan of Action (UNIDO II);
- International Forum on Appropriate Industrial Technology, the Ministerial-Level meeting, Anand, India;
- UNCSTD, "Vienna Programme of Action";
- Istanbul Declaration.

Part III

4. Project implementation

(a) Time schedule

Months I-III	Setting up of project including identification of industrial sectors to be covered, designation of organizations or units to carry out the functions of Central Co-ordinating Unit, Regional Advisory Centres, Technical Resources Institutions, etc.
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- Months II-VI Initiate surveys to identify technical needs of SMIs and technical service capabilities available at the TRIs.
- Months IV-VII Review Co-ordination Meeting
- Months VII-XII Setting up of sub-systems as required, with particular focus on training for strengthening the human infrastructure within the system.
- Months IX-XXIV At this stage, the project will already be in implementation on an ad hoc basis, providing such required advice and services as can be made available.
- Months XII and Review meetings to assess the activities of
 XXIV the project and modify the action plans as appropriate.

(b) Required inputs

The TSDS should essentially be operated by local organizations and manpower. It is for this reason that it is considered most essential to have the TSDS integrated into the national development plans for small industries. As far as possible, existing organizations or units should be utilized, at least at the initial stage of the project, with appropriate financial resources as may be needed.

The UNIDO input would therefore consist of assigning international experts to support and assist the work of the local officers, particularly at the Central Co-ordinating Unit, but also to provide specific advice on technical and other problems, as required.

IV. SUMMARY OF THE TECHNOLOGY SERVICES DELIVERY SYSTEM (TSDS)
IN THE PHILIPPINES

The TSDS set-up and mode of operation in the Philippines was started initially with the following institutes participating, which performed specific roles based on their existing capabilities. The institutes were:

1. Bureau of Small and Medium Industries (BSMI), Ministry of Trade and Industry

A specific head office unit called the project co-ordination group functioned as the central exchange and planning unit during the initial stages of the project. Linkage between SBACs and TRIs coupled with administrative/support functions was provided through this unit.

2. Small Business Advisory Centers (SBAC) of BSMI

These played the role of an extension service linking the regional SMI clientele and the participating TRIs. Their functions covered clientele targetting, problem and needs identification, organization of recipient groups for TSDS assistance and follow-through/monitoring activities. Staffing primarily comprised specialized general business consultants.

3. Technology Resource Institutions (TRIs)

Agencies were selected according to their declared areas of expertise and their expressed willingness to co-operate within the project's framework. They comprised:

1. Forest Products Research and Industries Development Commission (FORPRIDECOM)

Area of specialization: wood-based industries, e.g. furniture manufacture. Location: Los Baños, Laguna.

2. Metals Industries Research and Development Center (MIRDC)

Area of specialization: metalworking. Location: Taguig, Metro Manila.

3. Department of Food Science and Nutrition, College of Home Economics, University of the Philippines, Diliman

Area of specialization: Food processing. Location: Quezon City.

4. Department of Food Science and Technology, College of Agriculture, University of the Philippines, Los Baños

Area of specialization: food processing. Location: Los Baños, Laguna.

5. Food and Technology Research Department, National Institute of Science and Technology

Area of specialization: Food processing. Location: Ermita, Manila.

Initial/Preparatory Activities Leading to Technical Assistance Delivery

With the support of a UNIDO team leader, a food processing expert, a metalworking expert and a local wood-processing expert, industry-specific inter-agency teams conducted studies on the set-up and plans and projects of the five technology resource institutions. Parallel to the institutional studies, a survey was conducted on the type of technical problems encountered by regional SMIs. Forty-five regional firms were visited by the TSDS project team, experts and technical staff of the TRIs.

Components and Framework of Co-operation Between Participating Agencies

The initial TSDS outlined the entrepreneur and SBAC-TRI linkages within

the framework of inter-agency co-operation. The system was concerned with three main types of technical assistance, namely:

1. Plant level consultancy. A systematic provision of technical solutions to specific plant-level technical problems.
2. In-plant Technical Training. Provision of group training services based on needs identified by SBACs and the appropriate TRIs.
3. Technical Information Dissemination. Provision of technical information from the TRI to SMI entrepreneurs on
 - (a) production improvement opportunities
 - (b) services available from the TRIs.

A special training component was included for the SBAC extension officers to develop technical capabilities.

Special Considerations Incorporated into the Operating Mechanism

The actual implementation of the planned project activities provided the project team with a better insight of fiscal and non-fiscal operating requirements. These were immediately noted and incorporated into the operating procedures. The following were specially significant:

1. SMI entrepreneurs need to be appraised of better operational alternatives vis-à-vis their own existing operations. Considering time and manpower limitations, technical training activities were given priority over in-plant consultancy or technical information dissemination to start the TSDS.
2. The assistances provided by the system should at all times be matched with financial and/or non-financial inputs from the recipient organizations to emphasize the value of equity investments by them in any undertaking.
3. In view of the significant degree of commonality of problems faced by individual firms within a given industry sector, and the cost-

benefits, which could accrue to entrepreneurs, the provision of assistance based on an industry grouping/association-based approach was adopted. The advantages of TSDS for the participating agencies concerned savings in time and operating costs while increasing the number of firms covered.

4. Co-operative approaches in TSDS also provided the opportunity to develop association-based activities in the areas of common facilities joint marketing, joint purchasing and collective representation for policy adjustments by the Governments, thereby largely offsetting the inherent disadvantage of the limited resources of SMIs.
5. In view of the limited flexibility in budgeting and programming activities of individual TRIs, the Commission on Small and Medium Industries of the Ministry of Trade and Industry found it necessary to allocate special project funds initially amounting to P600,000 for the calendar year 1980 to finance the TSDS activities. This type of funding is expected to continue until resources are incorporated into the budgets of individual agencies in the succeeding calendar years.
6. Project activities were carried out on the basis of co-operative planning and implementation between the entrepreneur-recipients and the SBAC/TRI project team. Thus agreements on problems/needs targets, mode of implementation and activity outputs were arrived at before actual assistance was provided.

Results of Programme Activities

Technology service delivery projects had a significant impact on the target SMI clientele and the expansion and strengthening of core client groups into working industry associations testify to the benefits gained.

The initial technical assistance activities resulted in immediate gains to the entrepreneurs and the agency network but more important, further project activities were developed for implementation within the project. Examples of these are:

The Ilagan, Isabela Furniture Manufacturers Association Common
Kiln Drying Facility Project (Region II);

Butuan (Region X) Metalworking Association Foundry Project;

Cagayan de Oro (Region X) Metalworking Association Heat Treatment
Project;

Zamboanga Metal Association (Region IX) Electro-plating Project;

Sorsogon (Region V) Furniture Makers' Association Kiln Drier Project;

Bacolod (Region VI) Furniture Makers' Association Kiln Drier
Project.

SECOND PHASE OF TSDS IN THE PHILIPPINES

There is an evident need to initiate follow-through activities under the current TSDS project for the purpose of expanding the industrial sector coverage and the technical assistance delivery capability of the existing system. These are as follows:

- (a) Expansion of the industrial extension service corps capability through:
 - Establishing additional regional SBAC offices and technical personnel;
 - Including the industrial extension force of the National Cottage Industries Development Authority;
 - Implementing human resource development programmes for the extension force.

- (b) Expansion of TRI networking and strengthening TRIs at present participating by:
 - Utilizing the Technology Development Centre (NACIDA);

- Developing a Furniture Industry Centre within FORPRIDECOM primarily for applied research and development, build-up of regional resource facilities and human resource development;
- Building up a research and development capability in the food processing research institutes (NIST, UP-Los Baños, UP-Diliman) to include regional product testing facilities and human resource development;
- Developing a base of co-operation with other TRIs, e.g. Philippine Textile Research Institute, Ceramics Research and Development Center, Technology Resource Center.

The emphasis of technology assistance will be on improvement of product quality and productivity.

Private sector participation will be encouraged in establishing direct linkages for technology assistance and expertise to complement the efforts of the Government. It is envisaged that private sector involvement will be greater than that of the Government.

OTHER CONSIDERATIONS

For greater effectiveness, an integrated/package approach to SMI development is foreseen. The TSDS must be directly related to the programme and activities carried out in covering the other equally important areas of business operations.

These programmes are:

- (a) Financial assistance - the primary output will be the easier access of SMIs to financial sources by ensuring the technical viability of projects and thereby engendering confidence in them;
- (b) Market/marketing assistance - by itself provides product and market opportunities to SMIs but with TSDS link-ups, such opportunities are translated into real terms. Product to process adaptation is expected resulting from the provision of more services.

Links to other programmes have already been made but stronger co-operation would be desirable, e.g. in the field of subcontracting and raw materials sources.

The meeting hoped that UNIDO would continue to provide valuable support in these expansion and strengthening activities.

V. SUMMARY OF COUNTRY PAPERS

1. INDONESIA

Technical assistance and the transfer of technology to SMIs in Indonesia forms part of the Small Industries Development Programme of the Government. Special development efforts in this field have been implemented through the Project for the Guidance and Development for Small Industry. This is supervised by the Directorate General for Small Industry which implements such programmes in co-operation with other government and private institutions.

Although there is no overall TSDS in operation, certain industrial sectors, for example handicrafts and leather, have developed their own forms of technological extension services which meet the needs of SMIs in their particular sector. In other industry sectors, individual TRIs give ad hoc assistance on request. Though certain elements of TSDS already exist in the country, there is to date no overall system with institutionalized functions. In time a fully institutionalized TSDS may be developed but there are no known plans for its establishment at present in Indonesia.

2. MALAYSIA

While Malaysia has yet to institutionalize a TSDS, it has nevertheless provided advisory and consulting services to SMIs. The present framework of extension services, however, has certain limitations in terms of depth and scope, since such services are provided to SMIs merely as an extension to those given to large companies and only on request. Malaysia has many TRIs which could provide a steady flow of technological and other services to SMIs, but so far there is no single co-ordinating body or regional network of SBACs which could act as a link for contacts between the TRIs and SMIs.

As there is a need for a systematic flow of technical and other information from the TRIs to the SMIs (particularly those located in rural areas) the need for the establishment of a co-ordinating institution and a network of

rural offices or SBACs has been recognized and is being considered by the Government.

The Standards and Industrial Research Institute of Malaysia (SIRIM) has been suggested as a possible focus for the co-ordinating function. By strengthening the ability of other existing TRIs to provide extension services and promoting the establishment of SBACs by utilizing existing branch offices of several agencies, a proposal which is currently under review, it is hoped that a full scale TSDS can be evolved gradually.

3. THAILAND

Thailand's preoccupation with the needs of SMIs dates back to the 1960s when agencies for the promotion of such industries were set up, for example the Small Industry Service Institute (SISI now called ISI) and the Small Industry Finance Office (SIFO). Apart from these there are many TRIs which could supply technological assistance to SMIs. Of these the Thailand Institute of Scientific and Technological Research (TISTR), a non-profit-making semi-autonomous body, is probably best placed to take over the co-ordinating function of a TSDS to ensure the supply of a complete package of technological and related services to SMIs.

Using its own facilities and those of other TRIs and the co-operation of ISI and SIFO, a workable TSDS at TISTR could be evolved. So far, however, no attempt to institutionalize a TSDS has been made in Thailand, although judging from the interest expressed by the Thai participants in the holding of a follow-up meeting on TSDS in Thailand, there is a likelihood that such a system may be considered.

4. PAKISTAN

The Pakistan paper on the TSDS experience shows that the transfer of technology and extension services to SMIs has been tackled by a number of specialized institutions which give assistance on request. Among these the Small Industries Corporation, the Pakistan Industrial Technical Assistance

Centre, the Industrial Development Bank of Pakistan and the Pakistan Council of Scientific and Industrial Research (PCSIR) are the main institutions involved.

The paper describes the activities of these institutions and stresses the importance of R and D work and especially its application to the introduction and development of appropriate technology for the benefit of SMIs. The paper gives examples of the type of projects and rural industries that have been implemented and helped to acquire technology. Most of this type of help has been in improving efficient food and agricultural products processing. An overall TSDS has, however, been institutionalized in Pakistan although many of its functions are performed by existing institutions.

5. EGYPT

This paper described the activities of the Institute for Small Scale Industries (ISSI) and the Industrial Design Development Centre (EIDDC) and their impact on the technical development of national SMIs. The emphasis has been on R and D to design cheaper alternatives to copies of sophisticated products for SMI manufacture. Work has been carried out on household consumer products, agricultural equipment, irrigation pumps, solar energy equipment, building materials and small woodworking machine tools. Extension work so far has been mainly concentrated on the technology aspects of SMI problems, while finance, management, marketing, etc. have been provided by other TRIs. It appears therefore that Egypt has already developed a kind of TSDS to suit its own particular requirements even if at this stage this system is less formally institutionalized than the Philippine model.

6. MEXICO

This paper gives a detailed account of the Technology Transfer Monitoring System employed by the Government. It discussed the sources of both foreign and local technology and describes the system of registration and cross-referencing employed. It also shows that the type of technology differs in sophistication between large, medium and small industries as well as between industrial sectors. There is no reference to a TSDS as such.

7. THE CARIBBEAN

This paper describes the need for objectives and operating concepts of a Caribbean Technological Consulting Service (CTCS). The idea is to use existing TRIs to provide technological services to SMIs on a regional basis. The Caribbean Development Bank would act as the co-ordinating unit for this version of a TSDS. Both official and private sources of technology would be included in the system.

The paper then gives details of the proposed project and the various steps that would have to be taken to implement it fully for the benefit of SMIs in the Caribbean.

UNIDO participation is foreseen during the implementation of this project. A step-by-step approach is advocated so that the system can develop out of experience.

8. ESCAP

This paper stresses the need for strengthening existing TRIs and the usefulness of networking TRIs to assist their problem-solving capabilities and technology delivery. Interesting examples of work performed on a regional basis are also discussed in this paper.

9. JAPAN

This paper gives a detailed account of the importance of SMIs in Japan and the contribution they make to the production and export performance of the economy. It then describes the institutionalized framework that has been developed for SMIs, the public R and D institutions, the INTER/INTRO industry technology transfer system and the vocational training system. The paper also describes the type and scope of financial assistance available to SMIs in Japan.

The necessity to organize SMIs into co-operatives is stressed. The latter part of the paper contains an in-depth study which illustrates the interaction of the various systems.

VI. SUMMARY OF DISCUSSIONS

The Philippine representatives stated that the TSDS project was making a positive contribution to the technological improvement and development of regional SMIs. This view was endorsed by the recipients of the technology resources supplied through TSDS by the TRIs. The TRI representatives agreed and expressed satisfaction that TSDS provided increased opportunities of direct access to the regional SMIs, as prior to TSDS only limited links were available.

The representatives of Malaysia said there was a need in Malaysia to improve the industrial extension service system through improved linkage between TRIs and SMIs. They also foresaw the need to strengthen the TRIs' capabilities to serve the SMIs.

The inherent flexibility of the TSDS was recognized by all participants and the view was repeatedly expressed that the system could serve other developing countries or regions, provided that local needs and characteristics were taken into account. The importance of adopting an integrated approach to providing assistance to SMIs was emphasized by Mr. J.P. Leviste, Deputy Minister of Trade and Industry of the Republic of the Philippines and the consensus of opinion supported this view recognizing that a package approach was the only viable means of delivering effective support to SMIs.

The representatives of Egypt and Pakistan raised points regarding the importance of selecting an appropriate institution to act as the co-ordinating body for a TSDS. The need for a network of industrial extension services was also discussed.

After the presentation of the Philippines paper the necessity of providing services to SMIs on a group basis was questioned. The consensus was that group services were more economical in terms of time, operating costs and manpower enabling TRIs/SBACs to service a greater number of clients at reasonable cost. The group approach had the further advantage of stimulating industrialists to solve common problems collectively.

Participants noted the normal tendency for TRIs to be basically research-oriented with a strong academic bias. The Philippine experience showed however that through the TSDS the TRIs were enabled to gear their activities to the real needs of the SMIs by adjusting their traditional approach. Problem-solving and applied technology was now at the forefront of their activities. The representative of the Caribbean region raised the point that some feedback system to measure the merits of the TSDS should be instituted. He also suggested that TRIs should be strengthened in their capabilities. This view was supported by the representative of ESCAP who considered that TRI networking at the country and regional level would achieve this aim. The Senior Industrial Development Field Adviser of UNIDO in Thailand drew the meeting's attention to the advantages of publicizing the achievements of TSDS.

The representative of Indonesia was concerned that the TSDS should work at a regional or subregional level. This however would require the co-operation of TRIs on an intercountry basis as an initial step to the establishment of the TSDS in a regional context. The meeting agreed to the statement by the representative of Mexico that the TSDS system necessarily would entail the establishment of new institutions but that existing ones should be used whenever feasible. As an example of this, the Pakistan representative suggested the institutional alternative of using a Research and Development Unit as a focal point for a TSDS provided that an extension service network was built into it.

It was agreed that TSDS, as a flexible system, could expand its functions to cover other aspects such as investment promotion and the diffusion of imported technologies thereby raising the productivity and competitiveness of the target SMIs.

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ANNEX II

AGENDA

1 November 1981 (Sunday)

17.30 - 19.30 Registration of Participants

2 November 1981 (Monday)

8.30 - 9.15 Registration of Participants

9.30 Opening Ceremony

Welcome addresses:

- Chairman, Bureau of Small and Medium Industries (BSMI), Ministry of Industry, Philippines
- Resident Representative of UNDP Office, Manila Philippines
- Representative of Ministry of International Trade and Industry (MITI), Tokyo, Japan
- Representative of ESCAP, Bangkok, Thailand
- Representative of UNIDO, Vienna, Austria

Opening speech: Deputy Minister of Industry, Philippines
Mr. J.P. Leviste,

11.00 - 12.00 Election of chairman and rapporteur

Adoption of agenda

Overall concept of UNIDO-TSDS - UNIDO representative and briefing of methodology of the Meeting

Questions and answers

14.00 - 17.00 TSDS Experiences in the Philippines (Part 1)

1. TSDS concept - W.J. Dziecielewski
2. TSDS project in the Philip. - BSMI representative
3. Information dissemination system - BSMI representative
4. Training subsystem - BSMI representative
5. Refined services subsystem - BSMI representative
6. Small Businesses Advisory Centres - SBAC representative

Questions and answers

3 November 1981 (Tuesday)

- 9.00 - 12.00 TSDS Experiences in the Philippines (Part II)
(continuation)
1. Technology Research Insts. - TRI representative
 2. Small and Medium Industries - SMI representative

14.00 - 17.00 TSDS Experiences in Other Countries (Part I)

A. ASEAN Group Countries

1. Indonesia
2. Malaysia
3. Thailand

Questions and answers

B. Other than ASEAN Group Countries

1. Pakistan
2. Egypt
3. Japan

C. Regional

1. ESCAP Region
2. Caribbean Region

Questions and answers

4 November 1981 (Wednesday) Study visits to selected Technology Research Institutes and Small Business Advisory Centres in vicinity of Manila

5 November 1981 (Thursday)

- 9.00 - 12.00 TSDS Experiences in Other Countries (Part II)
(continuation)

- 14.00 - 17.00 Formulation and presentation of national/regional level TSDS projects and identification of technical assistance needs

by selected participants

General discussions including recommendations

6 November 1981 (Friday)

- 9.00 - 12.00 Preparation of Draft Report

- 14.00 - 18.00 Presentation and Adoption of Draft Report

Closing Ceremony

- UNIDO representative
- BSMI remarks
- Closing speech

The MIRDC Program for the Promotion of Small- and Medium-Scale Industry

by: Emmanuel Nolasco
(ID/WG.350/10)

Metalworking Industry in Region X

by: Eric Avanceña
(ID/WG.350/11)

Ilagan Wood Furniture Industry Development Project, a Pilot Project for the Development of the Wood Furniture Industry in Region 02 (Philippines)

by: Jose Hipolito
(ID/WG.350/8)

Technology Services Delivery System, FORPRIDECOM Experience

by: Enrique C. Amio
(ID/WG.350/9)

An Egyptian TSDS Experience

by: Yusef K. Mazhar
(ID/WG.350/23)

Country Paper on the Development Scheme for Japanese Small and Medium Scale Industries

by: Naoto Suzuki
(ID/WG.350/13)

Technology Services Delivery System (TSDS), Experiences in the ESCAP Region

by: H.G.R. Reddy
(ID/WG.350/14)

Country Report: Thailand Technological Services Delivery System (TSDS)

by: Smith Kampemool
(ID/WG.350/22)

Small Industry Development Programme, Indonesia Country Paper
by: Djajakusuma Sutadi
(ID/WG.350/12)

Experiences of the Agency for Industrial Research and Development of
Indonesia in the Technology Services Delivery System (TSDS) for Batik
and Handicraft Industries
by: Toetti T. Soerjanto
(ID/WG.350/15)

Strengthening and Modernization of the Technological Performance of
Small and Medium Scale Industries in Pakistan
by: M. Aslam
(ID/WG.350/16)

Technological and Other Services for Small Industries in Malaysia -
An Overview
by: Ambrin Buang and Annuar Bin Jaafar
(ID/WG.350/17)

Role of United Nations Industrial Development Organization
in the Comprehensive Development of Small Scale Industry
by: Faqir M. Iqbal
(ID/WG.350/180)

Caribbean Technological Consultancy Service (CTCS)
by: Jeffrey Dellimore
(ID/WG.350/19)

Technical Services for Small and Medium Industries in Thailand
by: Chane Boonsong
(ID/WG.350/20)

Transference of Technology in Mexico, the Case of Small-Medium Industries
by: Diana Sztajer and Laura López Alvarez
(ID/WG.350/21)

UNIDO - TECHNOLOGY SERVICES DELIVERY SYSTEM (T S D S)

CONCEPTIONAL DIAGRAM

