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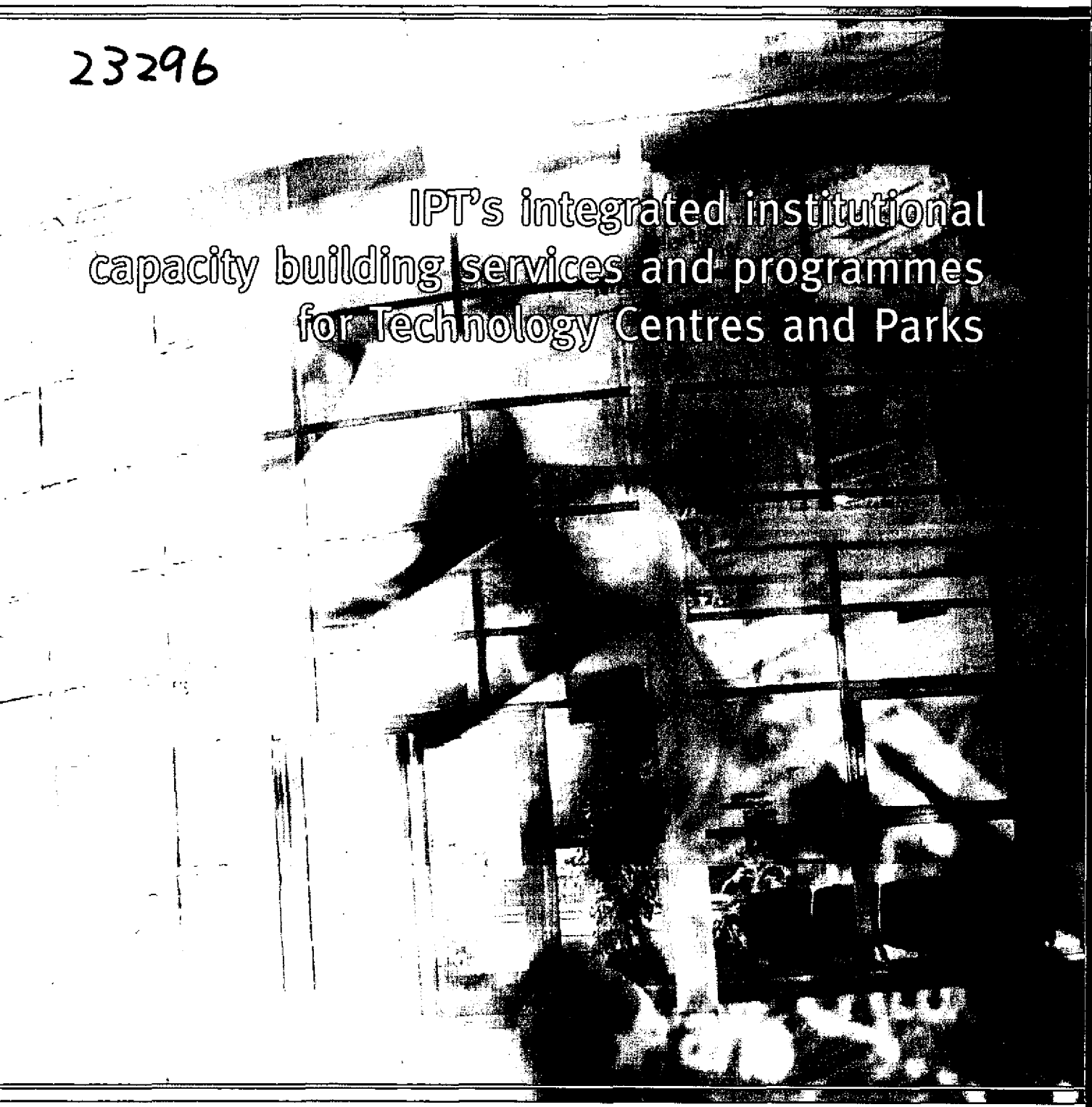
UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

PROGRAMME DEVELOPMENT AND TECHNICAL COOPERATION DIVISION (PTC)

INDUSTRIAL PROMOTION AND TECHNOLOGY BRANCH (IPT)



IPT's integrated institutional capacity building services and programmes for Technology Centres and Parks

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

economy environment employment

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UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna, 2004

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UNIDO's three way approach to enhancing industrial growth

As a specialized agency of the United Nations, UNIDO has a dual role. On the one hand, it provides technical cooperation services, which enhance skills, technology and related capacities. On the other, it also performs "global forum" functions by generating and disseminating knowledge about industrial development processes and associated issues, in order to influence the development agenda in this area. In both spheres of activities, UNIDO focuses on the key elements, which contribute to productivity enhancement in the development process and eventually result in economic, social and environmental wealth.

In the context of a market-oriented, globalizing, international economic environment, the provision of global public goods provides justification and rationale for UNIDO to play a prominent role in relation to the area of industrial development. More specifically the creation, transformation and management of knowledge on industry can be considered a global public good, which is a legitimate concern of UNIDO. This covers areas such as the transfer and upgrading of technology, learning, innovation, building of skills and capabilities, which have a direct bearing on productivity growth.

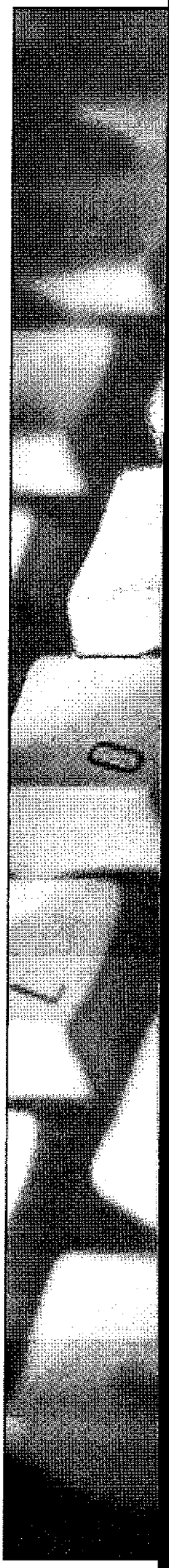
In line with the above, the initiatives of UNIDO's Industrial Promotion and Technology Branch (IPT) aim to help developing countries to mobilize investments as well as modern technologies, so as to expand their productive assets and increase their core competencies and competitiveness while bridging the gap with rich countries by providing a unique range of interlocking services that act as a catalyst for sustainable development through shared technological innovation, access to investment and achievement of internationally acceptable quality standards.

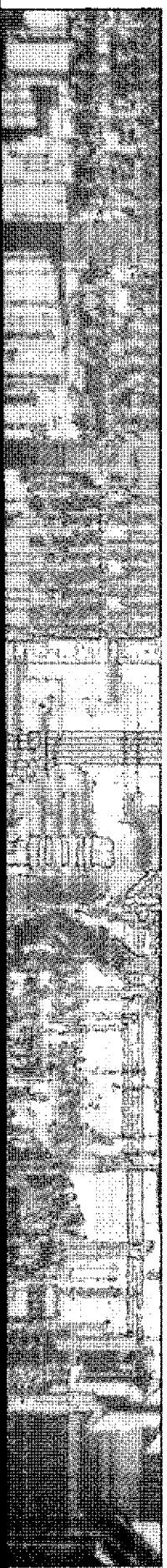
IPT's elements for productivity growth

Technology:
- Bridge the technology gap between existing capacity and market requirement through development of technology management capabilities;
- Enhance competitiveness through innovation and technology diffusion;
- Build competence on innovative policy and technology strategy making;
- Promote networking and sharing of knowledge, technology and skills across borders, by means of North-South and South-South cooperation.

Investment:
- Bridge the investment gap between industrialized and developing countries;
- Enhance competitiveness through better access to investment resources, financial instruments and international markets;
- Build national capacity to attract investments;
- Promote networking to share knowledge and disseminate investment opportunities across borders.

Quality:
- Bridge the gap in quality, standards, testing and metrology between developing countries and international practice;
- Enhance competitiveness through transfer of modern management techniques, enterprise restructuring and productivity tools;
- Build national capacity in standards development, ISO 9000 and ISO 14000 system certification, laboratory accreditation and conformity assessment;
- Network quality, standards, testing and metrology infrastructure at regional and international levels to share and harmonize best practices.





Considerations on Technology Parks

Technology Park and Science Park are terms that appeared in Europe in the late 1970s. In those days the aim was to look for new ways to overcome economic stagnation by learning from the American models for industrial development such as agglomeration of technology-based, young and small firms close to Universities and the Academic environment. The concept was to favour technology transfer from the public research community to the private sector as well as to enhance entrepreneurship culture amongst the scientific sector. The guiding example was Silicon Valley, which began with the establishment of a science park within the compound of the Stanford University already in the 1950s.

According to the International Association of Science Parks (IASP), a Technology Park is an organization managed by specialized professionals, whose main goal is to increase the wealth of its community, promoting the culture of innovation and the competitiveness of its associated business and knowledge-based institutions.

Developing countries have been trying to utilize the technology park model in support of their needs and priorities of development. However, due to a combination of a number of impeding factors a high number of failures and deceiving results have been documented, mostly from the fact that no clear objectives for the operation and sustainability of the park had been set from the beginning.

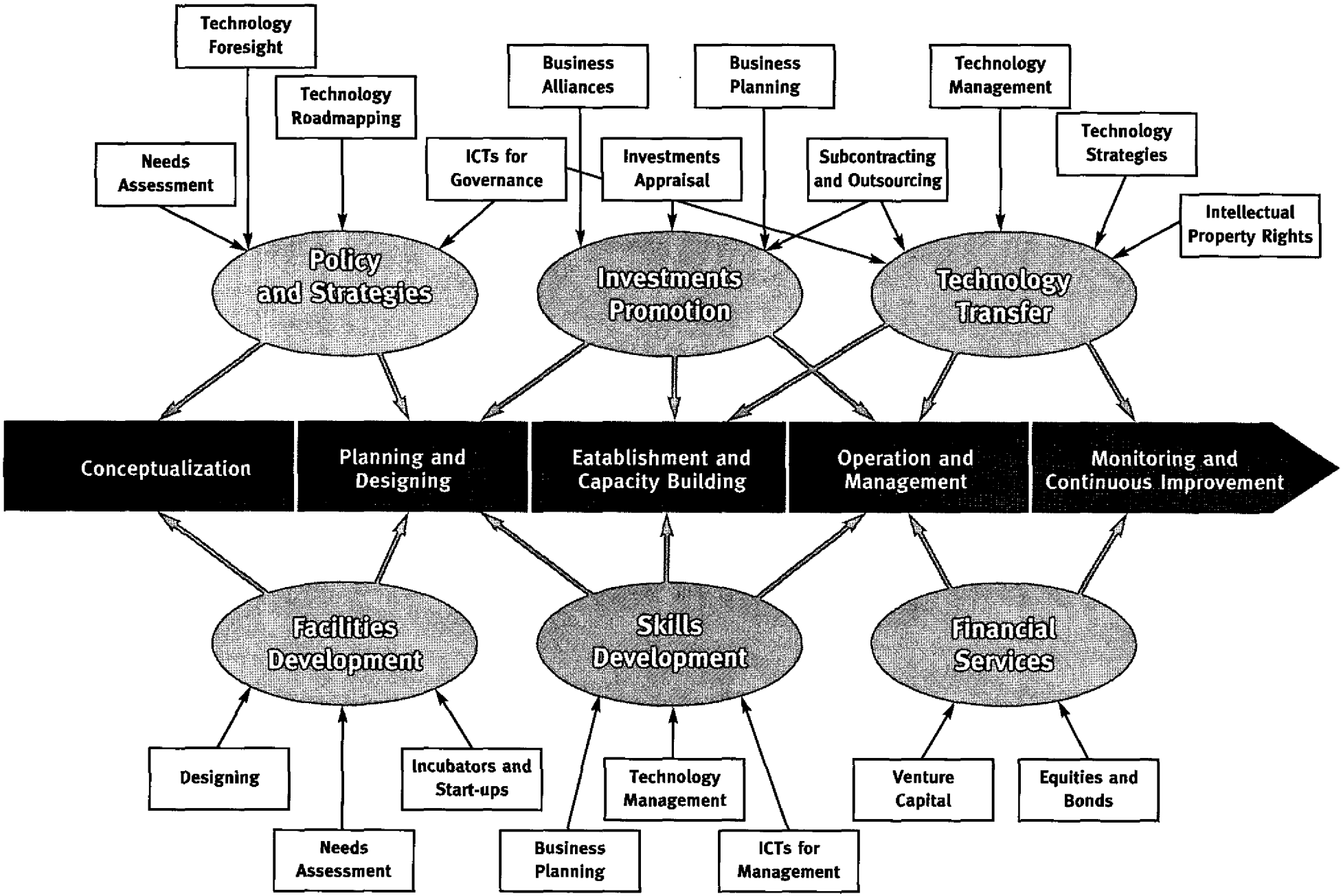
As broadly recognized, productivity is the engine of any development and technological progress. Technology upgrading and diffusion, in turn, primarily drive productivity. Developing countries lag far behind in contributing to the global stock of technological knowledge and this poses the key challenge for development in terms of technology transfer, adoption, assimilation, adaptation and management, and the associated investments needs, including investment on the provision of public goods to overcome market's failure in technology. For this reason IPT seeks to address this challenge by providing thematic and sectorial support services to strengthen the hard and soft technological base of the industrial capacity of these countries

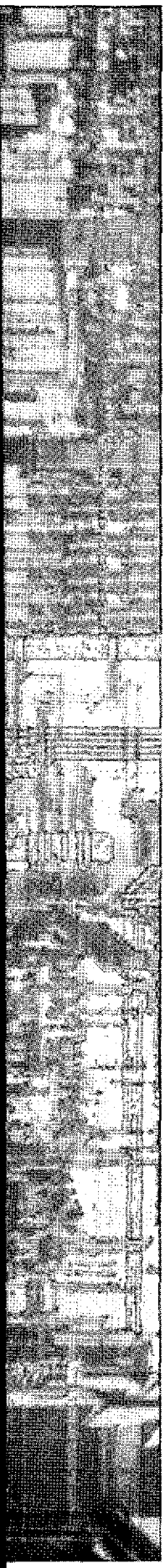
Strengthening developing countries' national innovation and technology management systems is crucial for their industrial development. Technology/Research Parks and Technology Centres are all essential elements for a structured indigenous capacity in support of a national technology diffusion approach. IPT, having matured broad experience in dealing with institutional capacity building, is endeavouring, with tools, publications and methodologies that can be instrumental to beneficiaries' counterparts, to set up new or strengthening existing technological institutions.

Having the above in mind, it was considered useful to develop this brochure in order to package the various implementation phases of a Technology Park/Centre (see figure 1), taking as a priority the operational needs of the local authorities/managers, the various services that IPT could deliver and make this available to its potential "customers". The aim of this document is therefore to present to any Park Management Team the know-how and skills that IPT can make available in relation to specific needs for capacity building, management upgrading, international networking, vision and strategies definition. As a broad reference (at the bottom of each specific page presentation) indication is given on the modus operandi according to which of these services can be made available (seminars, workshops, trainings, fora, etc.)

For further easier reference and understanding to beneficiaries, all proposed IPT services are formed and grouped according to the level of intervention they address i.e. policy, institutional and enterprise level (see figure 2).

Figure 1: Phases for the establishment of Technology Parks





Six IPT's services for Technology Parks and Centres

Policy and strategy

Competence in policy and strategy formulation is twofold. The key aspect is related to the Technology Park mandate and objectives. The park/centre management should have very clear the scope of the activity of the institution in relation to the national/regional core competencies and capabilities. The second facet relates to the advisory input that the institution should provide to national decision makers. For both aspects IPT can provide enabling tools such as: **Technology Foresight, Roadmapping** and **Needs Assessment**

Investments promotion

Attracting investments is a paramount need for enabling technological development that will lead to improved productivity and therefore to enhanced economic growth. Every institutional actor concerned with national development has therefore to contribute for its part in the overall effort to stimulate national and foreign investments. In support of this crucial function that the Park/Centre has to fulfil IPT has developed tools such as **Investments Appraisal, Business Alliances** and **Project Feasibility Study** that are very instrumental.

Technology transfer

Addressing the issue of technology diffusion at national level, especially in developing countries, entails the issue of technology transfer both vertically (from research to application) and horizontally (from owner to user). In this way IPT can make available decisional instruments necessary to facilitate the choice while understanding the context. The overall approach to **Management of Technology** and how to define a **Technology Strategy,** while being aware of **Intellectual Property Rights,** are part of this service.

Skills development

Among other things, Parks/Centres have the function of providing all those capacity-building and skill development services at enterprise level necessary for the institution beneficiaries to cope with innovation, competitiveness enhancement and sound management. The Parks/Centres have to become a point of excellence in delivering best practices in using and adopting an innovative way of thinking and making business. In this regard IPT can provide tools on **Technology Management, Business Planning** and **ICTs applications.**

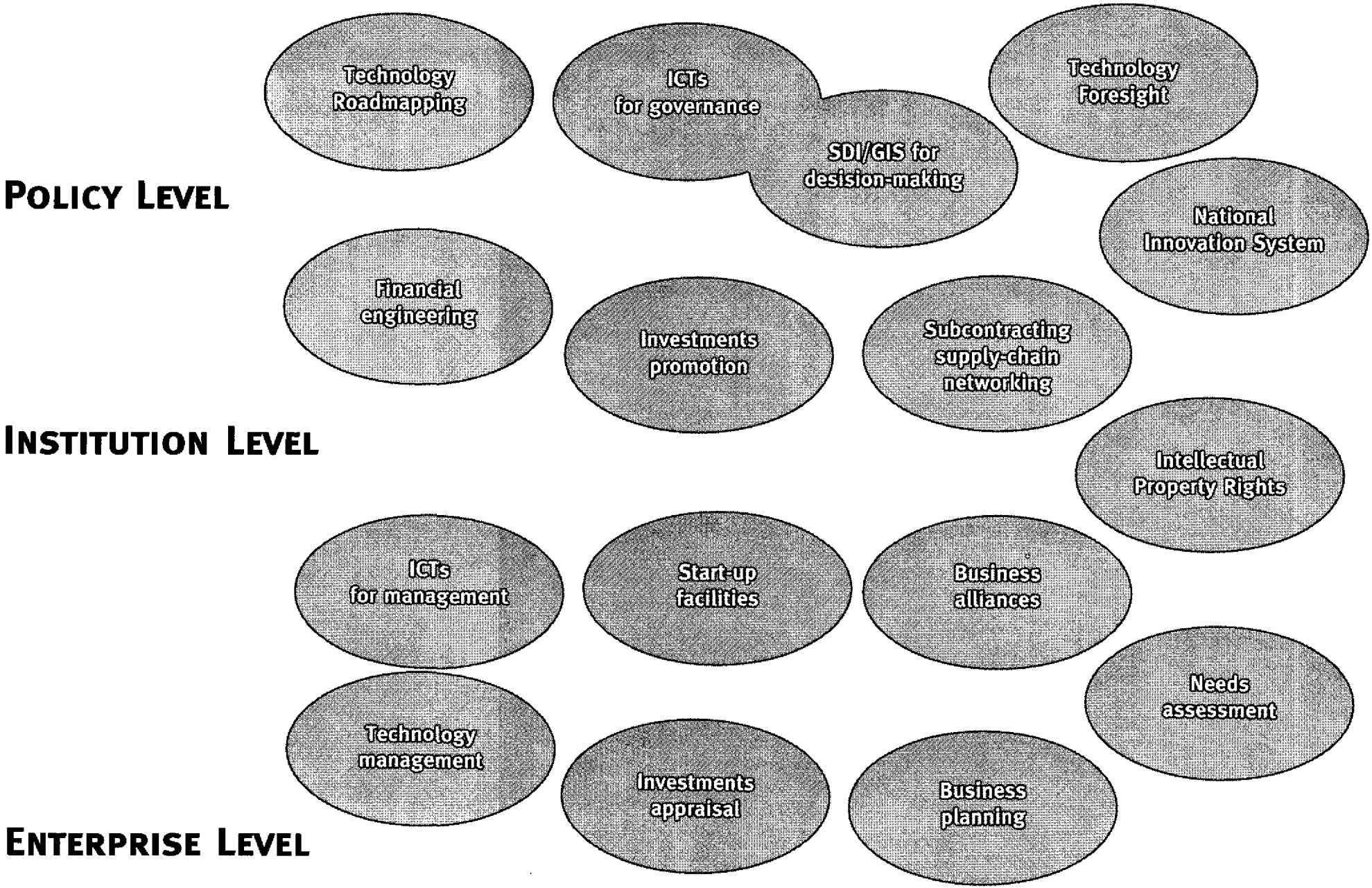
Facilities development

In setting up enabling institutions like Technology Parks/Centres there are a number of operational procedures and instruments that should be taken into consideration in the designing and the conceptualization of the physical infrastructures. To this aim IPT utilizes specific tools such as **Needs assessments, Designing Considerations and Incubators** and **Start-up** facilities that can be of great value in designing the Park facilities.

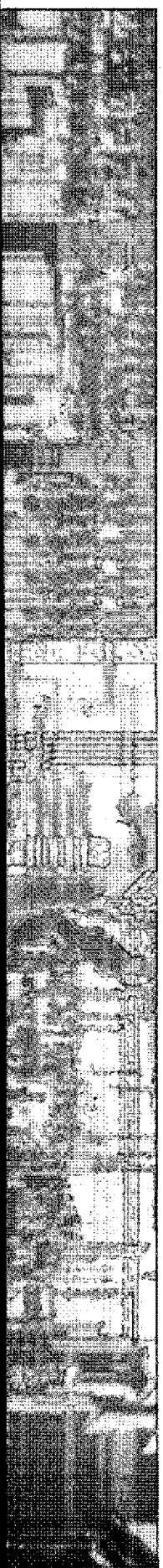
Financial services

Innovative financial instruments are nowadays one of the most relevant assets with which to facilitate the access of entrepreneurs to much needed resources especially for innovation and start-up initiatives. IPT has been analysing and investigating ways and operational mechanisms to bring closer **Venture Capital, Equities** and **Bonds** particularly in emerging markets where these mechanisms could strongly support further industrial development.

Figure 2: IPT services for strengthening Technology Parks and Centres



Technology management



Organizations of all shapes and sizes need to adapt to survive. It is a sobering fact, but experience shows that those firms that fail to learn and change are not likely to succeed. Change is an imperative for the 21st century, with pressures for change coming from all directions: increasing competition, the changing basis of competitiveness, shifting patterns of legislation and regulation, tumbling trade barriers, globalization policies of large firms, fragmentation of markets, the list goes on and on. Of course, it is not all bad news; at the same time as the threats have grown, so too have the opportunities in the environment. New markets are opening up, new technologies are shifting the patterns of opportunity, lowering entry barriers and making possible widespread innovation. Agile firms, which are aware of these opportunities and react early enough, can use the changing external world as a springboard to growth.

Central to all this is the possibility of using technology as a way for adapting and surviving. Technological change offers powerful ways to fight the competitive battle; it contributes in several ways. For example, research evidence suggests a strong correlation between market performance and new products. New products help capture and retain market share and increase profitability in those markets. In the case of more mature and established products, competitive sales growth comes not simply from being able to offer low prices, but also from a variety of non-price factors such as design, customization and quality. And in a world of shortening product life cycles, being able to replace products frequently with better versions is increasingly important. "Competing in time" reflects a growing pressure on firms not just to introduce new products but to do so faster than their competitors.

Whilst new products are often seen as the cutting edge of innovation in the market place, process innovation plays just as important a strategic role. Being able to make something no one else can, or to do so in ways that are better than anyone else, is a powerful advantage. Similarly, being able to offer better service faster, cheaper and with higher quality has long been seen as a source of competitive edge. The ultimate aim of this service is to enable enterprises to become more productive and more competitive in order to better access, with their products and services, the local, regional and international market.

The idea that led UNIDO to the development of a training package was for a course to be delivered to small and medium-sized company managers and owners. The manual developed contains much more information than can be delivered in a single course. This is especially the case considering that company managers typically learn better in an experiental mode (role play/problem-solving) rather than in a lecture format. Throughout the package there are descriptions of exercisies that will help the participant acquire a much better grasp of the concepts being delivered than lectures alone can provide.

Proposed activities

The TP or TC will be the instrumental focal point in organizing:

- Training courses on technology management to enhance technological competitiveness of enterprise;
- Participants (at least 25) will be from local entrepreneurs, industrial institutions and government departments in charge of industrial development for each training course;
- Duration of the training is five working days;
- The training courses will be hosted by the TP and should become a regular yearly service for local SME decision makers.

Needs assessment at enterprise level

Industrial enterprises in developing countries are bogged down by restricted technological development due to the absence of competition and powerful sheltering in restricted economies. If the writing on the wall is worth anything, the world will progress towards open economies. Survival in open economies depends on the fast change towards efficient operations with greater focus on consumers and competition. Hence the rules of the game of competition will have to be learnt by entrepreneurs faster.

Failure to cope with such investment and ability to manage modern technologies has very often resulted in creating sick industries and this will be an additional burden on the respective governments. The problem is therefore connected with taking to technological development in the logical path leading to investment rather than along short cuts leading to additional problems.

Any attempt to catch up with technology requires basic inherent competence. It is a misconception that, acquisition of new technology is a panacea for all the problems of SMEs and that it can be done by all and sundry with only the power of finance. Acquiring technology and applying it to get the advantage of competition and sustained profitability would require basic capacity to assimilate the technology, the management and control results with it; otherwise, dealing with new technology, even more, sophisticated technology could be like catching the tiger by the tail.

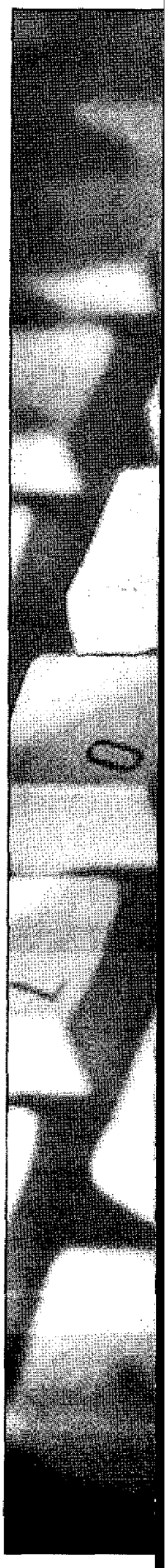
In most cases, entrepreneurs have vague ideas about their strategy shortcomings and operational errors; they do not have the scientific backup of what should be revised strategies, how to shift to these strategies and how to prioritize upon corrective actions against operational deficiencies. These are exactly the issues, which will be addressed by a scientifically supported methodology of technology needs assessment. The UNIDO CAPTECH tool has been exactly developed for this purpose.

Whereas, the UNIDO CAPTECH methodology is scientific the expertise to apply this tool on enterprises and bring out objective recommendations and action plans is not available in most of the developing countries. The training programme is an effort towards developing such expertise. The approach towards the problem of technology needs assessment does not end with the training of experts for the purpose. It has to be supported by field guidance and hand holding for some time until the technology of assessing technology needs gains momentum and permeates through the industry in different sectors.

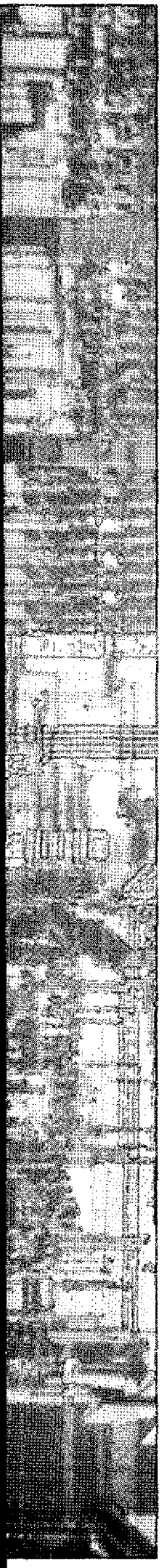
Proposed activities

The TP or TC will be the instrumental focal point in organizing:

- Training courses on technology management at enterprise level;
- Participants will be at least 25 local entrepreneurs for each training course;
- Duration of the training is 3 working days;
- The training courses will be hosted by the TP/TC and should become a regular yearly service for local SMEs technology responsible and/or decision makers.



Investment Project Preparation and Appraisal



Although the new international environment of extended products and market liberalization and globalized interaction has created new demand for training in market based investment analysis, the experience over the past three decades has revealed a pattern of deficiency in the adequacy of investment appraisal in the developing world at large. This observation is supported by the extremely high rate of business failures extending even to those industrialized countries with long commercial experience.

Aside form the often imponderable external factors that can sweep aside "the best laid scheme of mice and men", such as political and economic upheavals, one of the major causes of business failure is the inadequate planning of the enterprise and assessment of the opportunity prior to the investment commitment. The world is littered with the vestigial remnants of business ideas gone wrong.

To promote a more efficient global utilization of investment resources, UNIDO has been conducting training programmes in investment project preparation and appraisal in many development countries. The need for a compact, comprehensive, well-coordinated and cohesive set of teaching materials for short courses in Investment Project Preparation and Appraisal has become evident. To meet this need, UNIDO has developed a set of teaching materials covering the subject.

The teaching materials cover analysis and appraisal of new and expansion investment projects from the point of view of direct stakeholders such as investors, financiers, guarantors and suppliers, and also the project's impact on the regional or national economy. The view of investment analysis is comprehensive, linking the commercial and larger external environment in which a project is to function. This set of teaching material can be applied in a variety of training applications. Participants can be investors and entrepreneurs, bankers, consultants, project planners, project managers, staff members of regulatory and licensing authorities. If the group is homogeneous the materials can be presented selectively.

The material consists of a set of visuals (PowerPoint slides) accompanied by text related directly to each slide, explaining its significance and applicability. The scope and depth of the presentation is defined primarily by the visuals. Where greater depth in any topic is desired, ancillary materials (explanations, examples and exercises) are included that are referenced in the basic text.

Proposed activities

The TP or TC will be the instrumental focal point in organizing:

- Training courses (basic and advanced) on Investment Project Preparation and Appraisal according to needs of the attending participants;
- Participants will be maximum 25 local investment promoters;
- Duration of each of the two training courses is 5 full working days;
- The training courses will be hosted by the TP/TC and should become a regular yearly service for local financial/economic analysts and/or decision makers.

Project Feasibility Study

Industrial investment is a central issue in economic development. If properly implemented, it generates incomes that allow a long-lasting improvement of the level of living in the country and promotes sustainable growth. In order to assure the success of investment projects, investment ideas and opportunities should, or even have to be properly studied and appraised. This in turn calls on the one hand for the application of an internationally (especially in an era of globalization) accepted and comprehensive approach for the preparation and appraisal of investment studies, but also, and maybe even more important, on the other hand for a cadre of well trained professionals who are familiar with all the intricacies of project preparation and appraisal.

Investment appraisal is a skill that requires a lot of accumulated professional experience. No doubt, each project is different, no matter how close it might be to another, and each project therefore needs the individual attention of the responsible project analyst. This is important in any economic system, but requires special attention in environments with scarce financial resources.

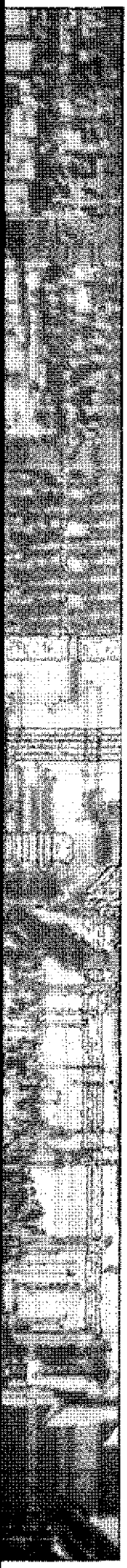
In light of this scenario UNIDO has developed, and successfully applied, over the last 25 years a single global and comprehensively accepted standard for formulating, appraising and evaluating industrial, as well as non-industrial, development projects of any size. The "Manual for the Preparation of Industrial Feasibility Studies", the "Manual for Evaluation of Industrial Projects", the "Guidelines for Project Evaluation" and UNIDO's software package "Computer Model for Feasibility Analysis and Reporting" (COMFAR III Expert) are widely used for preparation and appraisal of investment projects.

COMFAR, the electronic backbone of the above-mentioned methodologies, is a cash flow oriented software program, that accepts financial as well as economic data, produces financial and economic statements and graphical displays, and calculates measures of performance. Supplementary modules, such as sensitivity analysis assist in the analytical process. The program is applicable for the analysis of investments in new projects as well as in expansions or rehabilitations of existing enterprises such as privatization projects. For joint ventures the financial perspectives of each partner (or class of shareholder) can be developed. Analysis can be performed using a variety of assumptions concerning e.g. inflation, currency revaluation or price escalation. Furthermore, in order to support international negotiations as well as local or regional appliance of COMFAR, UNIDO offers this software currently in the following languages: Chinese, Croatian, Czech, English, French German, Indonesian, Italian, Japanese, Korean, Polish, Portuguese, Russian, Slovak and Spanish. Other language versions will follow, depending on demand. Detailed information on COMFAR may be obtained at: www.unido.org\comfar.

Proposed activities

The TP or TC will be the instrumental focal point in organizing:

- Training courses (basic and advanced) on project preparation and appraisal including the application of COMFAR III Expert;
- Participants will be maximum 20 local financial/economic analysts (in order to ensure sufficient practical training);
- Duration of each of the two training courses is 5 full working days;
- The training courses will be hosted by the TP/TC and should become a regular yearly service for local financial/economic analysts and/or decision makers.



Business alliances

Over the past years, the fast pace and spread of technological change and innovation as well as the liberalization and globalization of markets have dominated the economic agenda of economies worldwide. These changes have modified the landscape of economic and business development and have created a sense of urgency in efforts to attain and sustain the international competitiveness of enterprises. New business processes and new organizational forms are emerging. With all the changes taking place in the international scenario, the emphasis is also moving towards cooperative international ventures, agreements between enterprises that can forge new partnerships of different types and scope; enterprises that can compete on a global scale. One emerging form is business alliances; arrangements whereby enterprises collaborate by linking their core competencies, or by combining strengths for synergy, while in the process achieving some form of organizational interdependence.

Alliances are becoming a powerful instrument for coping with escalating technology and research and development (R&D) costs as well as with the increasing speed of product innovation; for expanding into new markets and for building world-class capability. Based on well-defined strategic objectives and the principle of reciprocity where partners pool, share, exchange or integrate specified business resources for mutual gain. Alliances, if properly managed, could be a powerful instrument for positioning an enterprise for future market strength, organizational security and profitability.

Alliances are better nurtured by suitable environments, those with adequate intellectual property legislation and, particularly in the case of small and medium size enterprises (SMEs), with governmental agencies and mechanisms aimed at supporting innovation, helping firms in finding needed complementary technologies and potential partners, in training human resources for new technologies and markets, and in providing financial resources. Furthermore, alliances are the response to the current liberalized environment and to the present triple technological revolution of information technology, advanced materials and biotechnology.

In the developing country context, the use of alliances as a tool for business development and innovation strategy has not been fully explored, nor has its potential as a flexible and dynamic channel of technology access been widely utilized. With this in mind, UNIDO has developed a programme for the promotion of alliances as a strategic option for growth and competitiveness by developing country enterprise, particularly in the high-tech sector. The UNIDO guidelines are intended to provide managers with a map for decision-making in the development and maintenance of alliances, which includes clues as to deciding whether, when, how and with whom to engage in alliances. It will provide a step-by-step approach to the alliance life cycle, the need identification, search for partners, information sourcing, legal matters, negotiation, start-up, management and termination or growth of the alliance.

Proposed activities

The TP or TC will be the instrumental focal point in organizing:

- Seminars on business alliances;
- Participants will be at least 25 local entrepreneurs for each seminar;
- Duration of the seminar is 2 or 3 working days;
- The seminars will be hosted by the TP/TC and should become a regular yearly service for local entrepreneurs.

Subcontracting practices, supply chain management and outsourcing strategies

The UNIDO Supply Chain Development Programme (SCDP) is at the forefront in assisting developing countries to connect to the global subcontracting and supply chain networks. SCDP aims at increasing productivity and sustainable economic progress by enabling institutions in the public and/or private sectors to establish or strengthen linkages with national and international production systems and global value chains in order to promote global partnerships and the integration of developing countries into the world economy.

The services offered by UNIDO in this connection include both Subcontracting and Partnership Exchanges (SPXs) and support with the establishment of supply chain partnerships, as described below.

Building up the supply: SPX Development and Networks

- Establishing and reinforcing Subcontracting and Partnership Exchanges (SPXs) as technical information and matchmaking centres for industrial subcontracting and partnerships between buyers and suppliers. These SPXs are designed to facilitate production linkages between small, medium-sized and large manufacturing firms, and to link up with global markets and value chains in order to assist in optimizing the manufacturing capacities of the affiliated industries.
- The SPX development and networking programme currently comprises more than 56 SPXs based in over 30 countries, and thereby helps to improve the efficiency of the global outsourcing and the development of suppliers' networks. This unique UNIDO methodology and the well-established global network have now emerged as a vital support mechanism for industrial subcontracting and partnership promotion. In the past 20 years, some 65 SPXs have been established of which 56 are still operating on a self-financing basis.

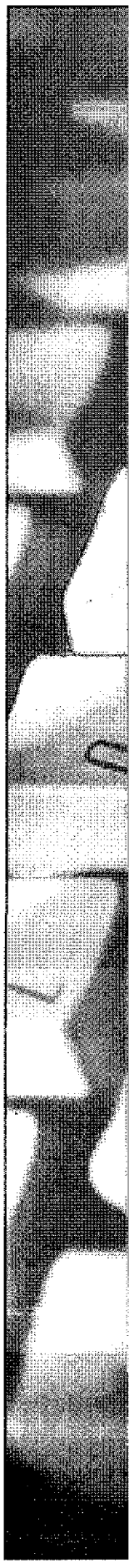
Linking-up with the demand: Supply Chain Partnerships

Organizing, jointly with SPXs, which act as facilitators or brokers, "Supply Development and Upgrading Programmes" to provide assistance to clusters of small-scale suppliers and subcontractors, in order to upgrade their technical and commercial skills and their capability to meet the quality requirements of the international buyers and main contractors.

Proposed activities

The TP or TC will be the instrumental focal point in organizing:

- Seminars on (1) subcontracting practices, (2) supply chain management, (3) outsourcing strategies and (4) suppliers up-grading;
- Participants for each seminar will be at least 25 local Entrepreneurs, Suppliers and Buyers, SPX Managers, and Heads of Industrial Institutions;
- Duration of the seminar is 3 working days for each subject;
- The seminars will be hosted by the TP/TC and should become a regular yearly service for local SPXs, suppliers and buyers.



Investment promotion at sector level

Foreign Direct Investment (FDI) has significantly and positively impacted domestic investment, deepened financial integration and strengthened the foreign capital-domestic investment relationship in developing countries that are newly industrializing and "post-1980 globalizers" as well as in advanced industrialized countries. The evidence of the positive correlation between FDI and output growth, leads to IPT investment related competencies and enabling services in policy and strategic advice at government, institutional and enterprise levels.

FDI needs to be seen as a package of dynamic elements (capital, product and process know-how and technology know-why), which allows increasing returns to domestic production through productivity spillovers. There are increasing returns and positive externalities from the technological progress, which is generated by FDI. The diffusion of innovation and technological advances through businesses is key to total factor productivity growth (TFPG) and this TFPG can be achieved by FDI given a sufficiently receptive and fertile host regulatory environment. Achieving this receptive and fertile host environment dynamically, and over the long-term, is extremely difficult because the ultimate impact of FDI on growth depends not only on the scope for positive spillovers but also on the recipient country's capacity to capture the scope of those positive externalities for domestic firms.

Economy-wide, FDI is correlated with output growth and evidence indicates that FDI is a catalyst for industrial development wherein endogenous technological change is correlated with economic growth patterns within countries and among firms. Increases in TFPG, arising from FDI, explains the variation in income divergence among countries. The positive correlation between FDI and output growth is:

- ➤ Stronger in smaller and more open economies.
- ➤ Significant in both technological laggards and technology leaders.
- ➤ Stronger under export promotion (and open trade) regimes.
- ➤ Strongly affected by imported technology (as part of the FDI).

IPT applied investment competencies involves integrated application of Foreign Direct and Domestic Investment enabling services comprising methodologies, products, tools and training formalities for overcoming government and market failures. These enabling services within the investment promotion strategy programme elements comprise of:

- ➤ Industry and sub-sector analyses
- ➤ Institutional capacity building
- ➤ Cooperative policies and promotion strategies

Proposed activities

The TP or TC will be the instrumental focal point in organizing:

- Forum on investment promotion;
- Participants will be at least 100 companies seeking for investment partners;
- Duration of the forum is 4 working days.
- The fora will be hosted by the TP/TC and should become a regular yearly service for the local industrial community.

Financial engineering

Enterprises in developing countries are restricted from capital markets: it is difficult for them to access both equity market and debt market instruments. To utilize efficiently the financial market's potential is an important advantage in order to increase productivity growth, to improve the technology level and to utilize environmental friendly processes. To cope with the industrial and technical challenges faced by developing countries, there is a need for interaction between different actors in the capital and financial communities such as private financial institutions, global corporations, multilateral institutions, donor countries, and public institutions. The source of capital from which a company may choose to finance its operations are:

- Short term debt: overdraft and export credit to finance the working capital needs;
- Term financing: export credit, mortgage loans, international cooperation credit lines and corporate bonds to finance long term investment and debt restructuring;
- Equity: risk capital, private equity and venture capital funds, initial public offer, and stock exchange to finance project development, start up projects, prototypes, sustain growth and launch of new products.

Institutional capacity building for emerging financial markets includes:

- Defining a proper theoretical and empirical framework of the equity investment flows on the region and financial engineering techniques;
- Identifying potential partners able to attract and facilitate investments;
- Opening a discourse and debate with main players operating in the selected countries, such as multinational institutions, governments and the private sectors to facilitate equity investment and to design effective strategies and policy framework;
- Providing policy suggestions, guidelines and actions to facilitate equity investments as well as developing new financial instruments and mechanisms.

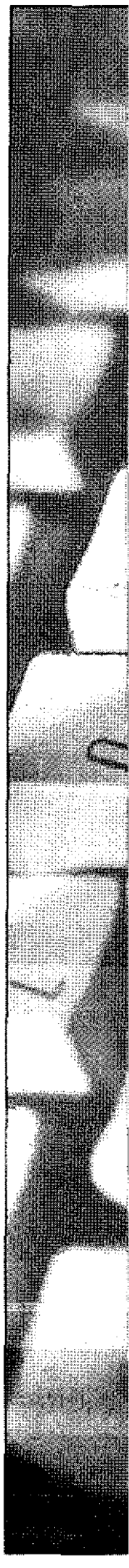
To facilitate equity investments, Technology Parks should be instrumental in advising companies and entrepreneurs to develop higher standards of corporate transparency and governance, partly through education and training, and thereby increasing their chances of acceptability in accessing capital markets, acquiring visibility and helping them to meet financial market requirements. A wide business and cultural gap keeps away enterprises in developing countries from the attention of financial institutions in industrialized countries. Enabling services that could facilitate understanding and adoption of innovative financial engineering mechanisms comprise:

- Promotion of dialogue between universities, financial institutions and entrepreneurs;
- Bringing enterprises closer to financial services and innovative instruments;
- Undertaking surveys of capital market competitiveness, countries financial player assessment and financial instruments mapping.

Proposed activities

The TP or TC will be the instrumental focal point in organizing:

- Seminar on new approaches to financial services for enterprises;
- Participants will be at least 20 financial and banking institutional decision makers;
- Duration of the training is 2 working days.
- The seminar will be hosted by the TP/TC and should become a regular yearly service for national financial community.
- National Financial Market Assessment to identify ways, actors and oppourtunities to facilitate venture capital initiatives as well as to support "selected companies" to exploit both debt and equity markets.



Incubation methodologies and services

While the recent globalization of markets might also broaden the opportunities for entrepreneurs in developing countries, it is also signalling that entrepreneurship in those countries urgently needs encouragement and strengthening. Management and technological systems must also be promoted so that product and process technologies of existing companies can be upgraded and rationalized and new ventures can flourish.

In addition, once a conducive regulatory framework is in place, business and technology services must be provided in order to create a favourable environment for entrepreneurship and the expansion of existing enterprises. Such services would, for example, give access to financing, market information, suitable technology, training support, quality standardization, and certification. They would also bring into being inter-firm linkages and, more concretely, provide office space. This is where incubation services come in. Such service system can nurture start-up and newly established firms by providing the above-mentioned services and office space on a shared, affordable basis. However, its core is the financial, marketing and design support and the managerial training given to the emerging entrepreneur. Another by-product of incubation services is the internal dynamics that result from working together in a shared physical space: the joint and cross-disciplinary learning taking place and the opportunity to form the business networks and contacts are also critical to the launch of successful ventures.

Incubation services embrace a wide-range of institutions, all of which are fostering the creation and development of enterprises wherever this has not happened spontaneously. Deliberate efforts are made to ensure that the services needed by the entrepreneurs are provided in a comprehensive and integrated fashion. Incubation services encompass:

- Incubation space, either in the form of offices or workshops but in both cases on an "easy-in-easy-out" basis.
- Common services, including secretarial support, common reception and mailing facilities, access to computers and other office equipment, meeting rooms, etc.
- Enterprise counselling, namely "hands-on" assistance with regard to business planning, training in management skills, access to accounting, legal, marketing and financial expertise, and ad hoc advice;
- Access to finance and specialist advice, access to specialists will be provided if incubator staff do not have the skills and know-how itself, and this will particularly be the case with regard to R&D's;
- Networking services, encouraging business relations inside the incubator among neighbouring tenants themselves through an informal cross-fertilization of ideas and advice between tenants and creating outside of it a linkage with the business and technology actors in the surrounding environment;
- After-care and outreach services: assistance to its tenants after they graduate, and also offer advisory services to small technology businesses in the region.

Proposed activities

The TP or TC will be the instrumental focal point in organizing:

- Seminars on incubation services for enterprises;
- Participants will be at least 50 potential entrepreneurs selected in surrounding technological, research and academic institutions;
- Duration of the seminar is 2 working days;
- The seminars will be hosted by the TP/TC and should become a regular yearly service for the technology-oriented entrepreneurial community.

Intellectual Property Rights

Developing countries need to understand policy implications with regard to Intellectual Property Rights (IPR), to comply with the adoption of the General Agreement on Tariffs and Trade (GATT)/World Trade Organization (WTO). The Uruguay Round's Trade-Related Intellectual Property Agreement (TRIPS) sets worldwide minimum standards for intellectual property law. These changes, because of GATT/WTO, relax trade barriers within the global community while protecting the rights of importing and exporting parties. National laws have to be adjusted to implement GATT, representing major changes and at the same time helping and encouraging the creation and expansion of local businesses.

To efficiently implement GATT, at least two types of knowledge must be in place. One is understanding of the meaning of the Uruguay Round and the different forms of implementation. In order to meet the new standards of GATT/WTO, public and private sector communities need to know what intellectual properties are, and how to use and manage them. GATT/WTO presents sound solutions to trade barriers but poses a challenge. The continuing evolution of intellectual property law presents a complex issue for many involved in trade, patents and copyrights. As such, there is a need for an improvement and dissemination of the knowledge base. A substantial educational programme can assist the local community in understanding the issues and implications of intellectual property.

The second type of knowledge is an awareness of the context within which an intellectual property system must operate to be effective. Scientists must be aware of means to protect an invention. Research administrators must be cognizant of the steps to ensure that inventions within the organization are patentable, and of the methods needed to license those inventions to profit-making enterprises. Government officials, for their part, must be instrumental in ensuring that inventions can be fairly and justly commercialized. Finally, private sector parties should know how to bring advanced technology from a basic concept to commercial product. An appropriate and substantial educational programme can assist in building these kinds of knowledge. Such a programme should include training to enhance and augment the skills of the scientific community, legal personnel, administrators, entrepreneurs and policy makers in these issues.

Fundamentals of Intellectual Property (IP)

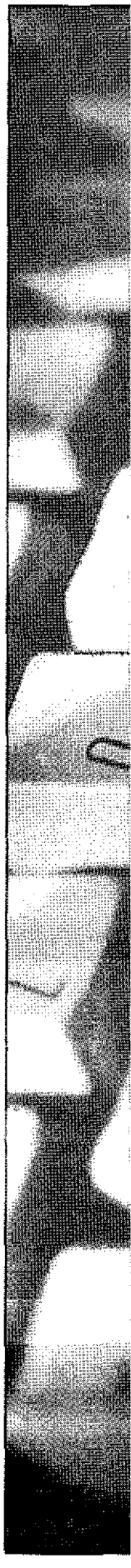
Basics of Intellectual Property

What is IP: copyrights; trademarks; trade secrets; patents. Intellectual property policy, institutional policies; national policies. Marketing of intellectual property licensing; public distribution; sales. Management of intellectual property uses; follow through; long-term relationship building. Patenting and Patent Laws; Licensing Setting up of a Technology Use and Management Programme

Proposed Activities

The TP or TC will be the instrumental focal point in organizing:

- Awareness building seminars on use and application of IPR for decision making at company, sector or government level;
- Participants will be at least 60 decision makers at public/private level;
- Duration of the seminar is 4 working days;
- The seminars will be hosted by the TP/TC and should become a regular yearly service for concerned local authorities and local concerned entities



ICTs for management and governance

The potential of Information and Communications Technology (ICT) for development is yet to be comprehensively harnessed. The challenges lie at the policy, technical and implementation capacity and resource mobilization levels. There is often a lack of awareness of the role that ICT can play in developing countries. ICT can be a powerful enabler of development and help to achieve many of their common development goals. It can facilitate knowledge sharing, improve democratic governance, local economic development as well as enable developing countries to avail themselves of opportunities offered by globalization. ICT is an increasingly powerful tool for participating in global markets; promoting political accountability; improving the delivery of basic services; and enhancing local development opportunities. But without innovative ICT policies, many people in developing countries—especially the poor—will be left behind. UNIDO helps countries draw on expertise and best practices from around the world to develop strategies that expand access to ICT and harness it for development.

As the adoption of information technologies and the maturity of their application increases across sectors and markets, a new picture of the digital economy is emerging: IT and electronic business do matter, perhaps more than ever. E-activities relates both to external and to company internal processes. Our understanding of the term "e-function" is such that it does not only address external communication and transaction functions, but also relates to flows of information within the company, institution and government i.e., between departments, subsidiaries and branches.

In its current ICT-for-development approach, UNIDO is both building on existing competencies and proactively responding to new development realities. Its policy assistance is primarily aimed at the formulation and implementation of ICT strategies focusing on sector or institution specific requirements. Our niche also lies in assisting countries in putting in place the kind of innovative public-private partnership processes that can not only leverage expertise and extend the reach of ICT, but also facilitate enterprise and community development, promote connectivity using the full range of appropriate technologies, and build the necessary human capacity.

Improved governance through ICT

In today's world connectivity is becoming a key development and competitive and more and more we hear talk about e-government. What is e-Government? Fundamentally, it's the word that governments have adopted for the use of information technology as a means of improving and transforming public services. E-Government is not an end in itself, nor is it purely about technology. It is the means of making services more accessible, more convenient, and more cost-effective. It includes ways of making the public authority and all concerned stakeholders, more accountable and responsive to the needs of citizens, and it also includes opportunities for assisting in the economic development of an area, a sector or a society.

Proposed activities

The TP or TC will be the instrumental focal point in organizing:

- Workshops on ICT for management at enterprise level and decision makers at institutional and government level;
- Participants will be at least 25 local entrepreneurs;
- Duration of the workshop is 3 working days;
- The workshops will be hosted by the TP/TC and should become a regular yearly service for local entrepreneurs, practitioners and ICT managers.

SDI/GIS for decision-making

For efficient planning and implementation of government policies and strategies, information is a prerequisite. Quality information as a resource base is required for appropriate decision-making processes, as well as for monitoring of economical and industrial development. The delivery of goods, production and services in all sectors of the economy depend on a considerable degree of information, which is coming to occupy centre stage as a key strategic resource.

A Spatial Data Infrastructure (SDI) is a collection of technologies, policies and institutional arrangements that facilitate the availability and access of spatial data necessary to promote sharing of data throughout all levels of government, private sector, institutions and the academia. A Geographical Information System (GIS) is the tool for capturing, storing, processing and disseminating geographical data. An SDI provides a basis for discovery of spatial data generated by a GIS. Geographic Information (GI) and Spatial Data Infrastructure (SDI) can be considered as special tools and technologies for information management that further to identify the geographic location and characteristics of natural features and boundaries of the earth provide the operational support for policy formulation, decision making and strategy implementation. The economic significance of these instruments consist in general referencing that it provides for large numbers of different data sets integration from many fields of application in both the public and private sectors. In fact up to 80 per cent of all data kept by governmental agencies can be estimated as geographical data.

Usually there are scattered, and disjointed data collection, information processing and dissemination initiatives both at national and local levels, unable to reap the benefits of working together in an integrated framework. There is need to coordinate and harmonize such initiatives. The SDI will therefore play a significant role in the following aspects:

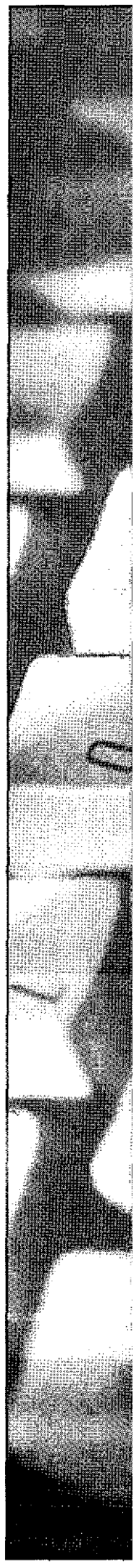
- ➤ Enhancing data exchange and promoting data sharing among stakeholders;
- ➤ Incorporating a spatial dimension into the existing sector information systems;
- ➤ Minimizing duplication, fragmentation of data and reducing the cost of data collection;
- ➤ Enhancement/harmonization of data/information through integration of sectoral datasets;
- ➤ Increasing usability of sectoral data;
- ➤ Improvement in efficiency and effectiveness of monitoring and evaluation of service delivery systems.

The guiding principle to implement SDI with the support of GIS is that; "the user shall have the spatial data infrastructure needed to support its economic growth, its social and environmental interests, backed by national standards, guidelines, and policies on community access to that data."

Proposed activities

The TP or TC will be the instrumental focal point in organizing:

- Awareness building workshops on use and application of SDI and GIS for decision making at company, sector or government level;
- Participants will be at least 60 decision makers and sectoral experts;
- Duration of the workshop is 4 working days;
- The workshops will be hosted by the TP/TC and should become a regular yearly service for concerned local authorities and sector specialists.



Technology Roadmapping at sector/company level

A key priority for institutions, productive sectors and countries is to set up clear strategic goals to guide their initiatives toward a sustainable and competitive development. This entails new and focused sectorial management and technological policies that will address in a balanced manner competitiveness, employment, investments and sustainability. This in turn requires new policy/strategy-making tools to set, in conjunction with public and private sector stakeholders, community organizations and users of new technologies, national/regional development strategies. Technology Roadmapping (TRM) is prominent among these new tools.

TRM is a need-driven, technology planning process to help identify, select and develop technology alternatives to addess specific development needs. Starting from identified needs, TRM provides a structured approach to development, organization and management of information related to critical requirements and set objectives to be achieved within a defined time frame. It also identifies technologies to be developed/aquired and quantifies the investments necessary to pursue the indentified targets.

TRM is used nowadays by many successful corporations and governments to model, understand and shape the future to their advantage. Developed in reaction to the failure of conventional approaches to assessment and forecasting, TRM is an interactive process that involves identification of the most likely scenario and the evaluation of alternative, desirable or feasible scenarios. Also, in the case of the development priorities at company/institutional level, the main applications of TRM will be to:

- ➤ Facilitate effective short, medium and long-term decision-making;
- ➤ Guide selection of innovative, modern technology choices;
- ➤ Generate alternative trajectories for sustainable development;
- ➤ Improve preparedness for emergencies and contingencies;
- ➤ Motivate change for improved competitiveness.

In its implementation the TRM exercise will involve:

- ➤ Teamwork with experts of concerned industries and relevant institutions;
- ➤ Identification, comparison and evaluation of a range of possible future options;
- ➤ Sequential Analysis, from the chosen future scenario to the present, to identify the necessary decisions to be taken having clear the critical events and changes to be faced.

This part of the process, called "back casting", allows decision makers, managers and entrepeneurs to develop strategic plans, which will guide their actions as critical events unfold. This in turn will enable people and institutions to become proactive agents of change, rather than being passive spectators of change, and secondly creates new sectorial trends.

Proposed activities

The TP or TC will be the instrumental focal point in organizing:

- Studies and exercises on Technology Roadmapping at sector/enterprise level;
- Participants will be local entrepreneurs, decision makers and institutional authorities;
- Duration of the exercises could span 6-9 working months;
- TRM awareness building activities could be hosted by the TP/TC and should become a regular yearly service for public decision makers, sector strategists and company managers.

Innovation system at sector/country level

Innovation is mainly the offspring of knowledge and science and technology breakthroughs. The general perception of innovation is that it enhances productivity, creates new jobs and ultimately helps to foster trade capacity. It is recognized that innovation cannot be cultivated in isolation but needs a wealth of supporting services, infrastructures, institutions and enabling conditions which in broad term are usually referred to as the National Innovation System (NIS). The NIS concept rests on the assumption that understanding the linkages among the institutions, and strengthening their mutual relation as elements of a collective system of knowledge creation, diffusion and use, is a crucial step to improving a country's innovative performance. These institutions relate both to "instruments that pattern behaviour" like norms, rule and laws (such as patent systems and technical standard) and to "formal structure with an explicit purpose" such as firms, industrial R&D institutes, universities, and public S&T laboratories.

Innovation is being broadly accepted as a very significant public policy issue. More and more policy makers recognize the importance of innovation to their countries' competitiveness. However, the understanding of NIS and its implication for the national industrial sector is still vague. There are several issues that need to be thoroughly explored and a methodology to assess country's national innovation performance is necessary. Policy makers need better knowledge of processes of innovation and technological change in order to assist national firms to become more innovative in order to achieve greater international competitiveness. They also need to be advized on methods likely to stimulate innovation, and produce greater social benefits and more effective commercial outcomes from R&D and innovation investments.

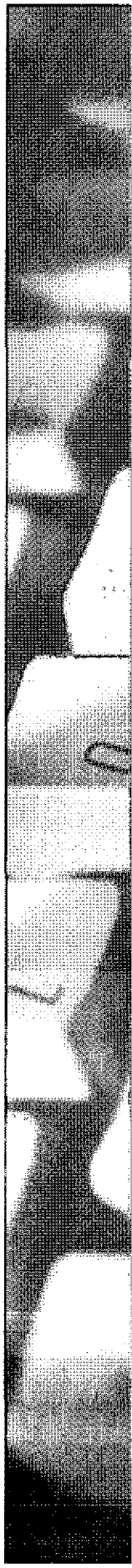
There is a growing awareness among regional authorities that the economic growth and competitiveness of their region depend largely on the capacity of indigenous firms to be innovate. Offering the appropriate support to indigenous firms to become more competitive through innovation is becoming a must. There is a clear need for support in the design of innovation policies, both from an analytical perspective and based on experiences and best practises in regions around the world. In many cases TPs could play a leading role in stimulating discussion and providing informed input to decision makers on strengthening public goods and services in support of products, processes innovation at cluster, regional or country level

This service will be implemented in close synergy and cooperation with the Strategic Research and Economy Branch of UNIDO, which has already produced dedicated documents and case studies relevant to this subject.

PROPOSED ACTIVITIES

The TP or TC will be the instrumental focal point in organizing:

- Seminar on the role and services of the national innovation system;
- Participants will be at least 25 government, institutional and association decision makers;
- Duration of the training is 3 full working days;
- The seminar will be hosted by the TP/TC and should become a regular yearly service for national decision makers.



Software packages and publications

SOFTWARE:

COMFAR
Detailed financial appraisal of investment projects

Pharos (Business Navigator)
Software for strategic management of SME's

MCCT
Measurement Control Chart Toolkit for calibration and laboratories management

SHARE
Support for implementing and mangement of investment and technology promotion

OUTSOURCING 2002 (available in English, French and Spanish)
Database management programme for manufacturing capacities and capabilities of industrial companies

Event management software 2004 (available in English, French, Spanish and German)
An innovative event management software developed by UNIDO Exchange, the SPX programme and the Technology Foresight programme

PUBLICATIONS:

UNIDO BOT Guidelines
Financial and legal issues concerning the development of BOT projects

Manual for the Preparation of Industrial Feasibility Studies
Established and internationally accepted methodoligies to approach project preparation

Guidelines for Project Evaluation
Shadow prices and national parameters for government project evaluators

Manual for the Evaluation of Industrial Projects
Step-by-step methodology for industrial project evaluation

Guide to Practical Project Appraisal
Essential aspects of project appraisal focusing on economic and social benefits

Manual for Small Industrial Business: Project Design and Appraisal
Guidance on planning, analysis, appraisal and implementation of investment projects

UNIDO Manual on Technology Transfer Negotiation
Guide to broad range of relevant topics

Training Package on Technology Management
Assistance for SMEs to manage technology in a competitive environment

CAPTECH (CAPacity Building for TECHnology and Absorption)
Manual on Technology Needs and Assessment and companion Software
Technology needs assessment tool at enterprise level

Training Package on Investment and Technology Promotion
Addresses the capacity-building needs of institutions and practitioners dealing with promotion of investment and technology transfer

UNIDO Manual on Diagnostic and Industrial Restructuring
A comprehensive tool to carry out in-depth enterprise assesments

A Pathway to Excellence: TQM methods and case studies from ASEAN
A pratical tool for implementing TQM based UNIDO/Japanese experiences from 1995 to 1999

World Information Directory of Industrial Technology and Investment Support Services
Sources of technical information, training and investment on specific industries throughout the world

Code of Conduct for Industrial Subcontracting Supply and Partnership Relations,
Nov. 1999 (available in English, French and Spanish)

Demand for Environmental Services within the UNIDO SPX-Network, Sept. 2000
Guide to Supplier Development, 2002 (available in English, French and Spanish)

International Subcontracting versus Delocalization,
2003, (available in English, French and Spanish)

Guidelines on Business Alliances
A tool for the planning, negotiation and management of alliances for industrial enterprises in developing countries

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UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, PO Box 300, A 1400 Vienna, Austria
Telephone: +(43) (1) 26026-0, Fax: +(43) (1) 26926-69
E-mail: unido@unido.org, Internet: http://www.unido.org