Event Report of

Training Programme on Technology Diplomacy

May 31 – June 04, 2010, Jaipur, India

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Executive Summary

CUTS CITEE[1] organised a training programme on "Technology Diplomacy" from May 31- 04 June, 2010 in Jaipur in order to build the capacity of scientists and technologists working with various ministries/departments/councils/institutes/research labs of Government of India. The Department of Science and Technology, Government of India supported this training programme to fill the vacuum that exists in terms of absence of adequate institutional base in India to offer training/education on issues related with technology diplomacy.

Technology has played a vital role not only in the economic development of countries from time immemorial but has also been an important part of international relations. In recent years, the pace of technological development has increased manifold and today it is at the root of many trade controversies/disputes. Advancement in science and technology has led to increasing demand for expert inputs, especially as a prerequisite for successful negotiation of international agreements. The two important ground realities crucial for international negotiations are:

- scientific and technological knowledge calls for specialised knowledge, and
- international diplomacy caters to demand for application of science and technology to development, leading to specialisation integration in/of divergent areas.

Unlike their counterparts in developed countries, negotiators and policy makers in developing countries often lack understanding of the underpinnings of science and technology agreements and thereby, effective negotiation techniques. One reason is the relative inadequacy of education and training in technology diplomacy. Therefore, this training programme has the aim of facilitating an overview of the basic principles of technology diplomacy including technology sourcing and valuation and an understanding of the technology agreements. Such training programmes will hopefully prepare the scientists and technologists to better exploit the opportunities that arise from the use of technology.

The said training programme was well attended by government officials, scientists and technologists from various ministries/departments/councils/institutes/research labs of Government of India. Participants handle work related to technology, in particular patents and related issues in their official work. The training programme brought experts/resource persons together to explore and deliberate various aspects of technology diplomacy issues. Over the period of five days the participants sharpened their skills on various aspects of technology diplomacy issues through lectures, real life experiences of resource persons, simulation exercises, group discussions, etc.

Based on the feedback received from the participants and resource persons, it can be assertively said that the training programme was successful in terms of quality of participation, resource persons, resource materials and administrative and logistical arrangements. Participants acknowledged that learnings they derived from the training programme proved to be extremely enriching and valuable. Participants overwhelmingly found it very useful and looked forward to attend similar training programmes in the future.

[1] CUTS Centre for International Trade, Economics & Environment (CITEE) was established in 1996 with an aim to be a high-level global standard institution for research and advocacy on multilateral trade and sustainable development issues. Consumer Unity & Trust Society (CUTS), the parent body, was established 25 years back as a consumer rights organisation and has been engaged actively in research and advocacy on policy issues. For more details about CUTS International and CITEE please visit our websites www.cuts-international.org and www.cuts-citee.org

This report summarises the presentations, principal issues identified and points discussed during the course of the five-day training programme.

Inaugural Session (Session 1)

Inauguration and Understanding Participants' Expectations by Atul Kaushik, Advisor (Projects), CUTS International

Atul Kaushik, inaugurated the training programme by giving an overview of CUTS International and mentioned that CUTS International ventured into the field of international trade during the peak of Uruguay Round in 1991 and since then has contributed distinctively as an NGO. He said that CUTS has done intensive work in the field of international trade and works very closely with the government department on various WTO and related issues. He apprised that the Department of Science and Technology (DST) approached CUTS for organising this training programme after considering its rich and valued experience. He warmly welcomed the participants and expressed the hope that the training programme will prove beneficial to them and will certainly help them in acquiring knowledge on substantive issues of technology diplomacy.

In his introductory remarks, Atul Kaushik also mentioned that the objective of the programme is to equip scientists with basic understanding of what it takes to negotiate a better technology agreement/memorandum including knowledge that is required for protection of innovations and prevention of abuse of intellectual property rights on such innovations.

Kishan Rana, in his key note address in the session emphasised on information sharing and creation of epistemic communities as the key to technology diplomacy. Ambassador Rana pointed out that acquiring mastery in one's domain area of knowledge and sharing information through the internet is very important in today's world. He emphasised that entrepreneurial attitude needs to be developed among scientists/technologists of the government sector in India and underlined the objective of the training programme once again. He also praised CUTS and its efforts in general and also applauded the initiative for taking up the mentioned programme

Expectations of the participants

At the close of the inaugural session participants were requested to express their expectations from the training programme. Their expectations are summarised below.

- To understand technology agreements which includes intellectual property rights and the negotiations thereof;
- To learn assessment of technology and commercialisation through, sell, joint venture etc;
- To gain knowledge of patents in general, drafting and filing of the same;
- How to source technology and the related negotiations;
- To learn about diplomacy in general and specific to technology negotiations and the role played by various institutions.

Session 2: Diplomatic Environment

Kishan Rana, Former Ambassador of India, Senior Fellow, DiploFoundation

Kishan Rana started the session by applauding CUTS in organising the training programme which is very useful for the young scientists. He deliberated on various aspects of technology

diplomacy ranging from description to aim of technology diplomacy, scope of technology diplomacy, key issues of technology diplomacy, structure of technology diplomacy, commercial considerations of technology diplomacy, and others. Rana gave various examples to underline his viewpoint.

Diplomacy and international cooperation is about tradeoffs between the two contracting parties. International cooperation is not about friendship, but is a tool to look after one's interests. Friendship is a two way need, and one always needs to bargain for his/her interests. Friendship with a country does not necessarily allow one to access new technology at a cheaper cost. He mentioned that this is perhaps the reason that when dealing with issues as crucial as technology sharing and its uses, even friendly countries try to maximise their economic and commercial gains.

A country's position in technology diplomacy – sharing and uses – is strengthened by mastery of one's domain. Mastering of one's own domain is now much easy. In the modern world, where the access to information has increased manifold mainly because of internet, one can master his/her domain more effectively. Creating a network of professionals with matching interests could be an effective tool to strengthen one's bargaining position.

At government level, advancement of national interests is at the core of external relations. It is also important to note that in the present world, it is economics that determines politics and not vice versa. It is now important for a country to show its brand in a more powerful, attractive and distinguished way and it must be rooted appropriately and effectively in country's approach to science and technology. It further needs to be noted that image of a country, constructed by its success in various fields of which ST is an important area, affects all aspects of external links, including commercial exchanges and investments, he said.

Advancement of national interests requires a holistic approach. Different ministries – MEA, DST, and others – must come together and work in a more integrated manner. Such integrated perspective allows one to use all options to maximise gains. This would also help a country to exploit its potential in science and technology in a better way.

The above could be achieved by (a) a holistic national approach to ST, (b) building promotional networks, both at home and abroad, (c) target setting through consultations, (d) better utilization of embassy networks, and (e) setting clear ST objectives and close monitoring especially in the context of country's key ST partners.

Session 3: Basics of Technology Diplomacy: Key Tasks

Kishan Rana, Former Ambassador of India, Senior Fellow, DiploFoundation

Kishan Rana introduced the concept of technology diplomacy as a specialised branch of diplomacy that seeks to optimally utilise connections in various fields of interests to the home country'. Due to emergence of economics oriented approach, it has gained in prominence recently. Diplomacy is a craft skill and hinges on connections. It should never be used for a one time gain as it destroys existing trust levels between the partners. In other words, it is a tool which exploits avenues through mutually beneficial partnerships – leading to win-win situations for partners – in various fields. Mutual trusts and common interests are the cornerstone of technology diplomacy, he said.

Technological innovations are not confined to inventions; these also cover improvement in existing technologies. A borrowed technology could also be improved and made adaptable to a given conditions. Innovations could also make a technology more effective and efficient. For example Japan beat US in automobile sector due to sheer innovations. One should, therefore, never underestimate efforts to improve existing technology by innovations.

Today India faces a challenge of connecting research and development (R&D) with the industry. Despite India having done fairly well as far as innovations in the field of science and technology is concerned, it has performed averagely in promoting the applications of the same. Thus, there exists significant gap between technology innovations one the one hand and its application on the other. Bringing together the two sides could effectively result in better utilisation of innovations in technology.

Successful technology diplomacy, according to Kishan Rana, requires: (a) broad-based skills, (b) awareness of technology developments at both home and abroad, (c) using knowledge and skill of science counsellor as key link in promotion of economic interests in both directions, (d) proactiveness in creating opportunities, (e) effective networking and teamwork. Technological innovations need to driven by industry and not vice versa. Kishan Rana also highlighted the fact that efforts by DST to bridge the gap between innovations and their applications has not borne fruits in the past. It is therefore important for the DST to invite past and present counsellor to brainstorm what is needed and how the current situation – the gaps – could be bridged.

Organisations like CUTS could play a significant role in bridging this demand supply gaps, he said. For scientists, who are into innovations in a given field, it is important for them to be aware of developments taking place in other fields.

Session 4: Historical Perspective and Approaches to Technology Diplomacy

Deepak Bhatnagar, Head, Centre for International Trade in Technology (CITT), Indian Institute of Foreign Trade

Deepak Bhatnagar, at the start of the session said that his session would be more interactive in nature. During the discussion, clarifications of queries raised by the participants were answered, as and when they came up. He informed the participants that he expects one example by him should be followed by another real example by the participants, who were from diverse fields and had diverse experiences. This would enhance the richness of discussions. His session was oriented in a way to effectively disseminate the information on historical perspective to technology diplomacy.

Deepak Bhatnagar started the session with Sir Maddox quote – "*... India, the authentic land of tiger, looks like being the next Asian tiger"* – that can make every Indian proud and which also marks arrival of India on world technology map. Technology diplomacy is not a new phenomenon, rather it has existed for centuries, and India was always an important player. One can trace back the history of technology diplomacy way back in 326 BC, when King Porus gifted *talens* – used for making swords with unique features – of steel to Alexander the Great. The gift was though to save his life and kingdom, is a memorable step as far as technology diplomacy in India is concerned.

The legacy of past technology diplomacy continues even in modern India. A large number of technology diplomats who have used their innovative ideas and technological prowess to develop new products and services and to create wealth are now spread all over the world. The modern technological innovations and its applications by India born innovators cover wide areas – innovations that lead to general wellbeing to innovations that specifically focuses on wealth creations. Some of the innovators whose ideas and innovations positively impacted general wellbeing of the people include CV Raman, Hargovind Khurana, S Chandrasekhar, Venkat Raman, besides others. Similarly, a large number of Indian innovators have contributed in wealth creation for themselves and also others. Both the groups of innovators can be termed as technology diplomats.

The need for technology diplomacy in India has increased many folds in the recent period given the growing demand for new and innovative ideas from the people in general. Moreover, there is a increasing need for integration of science and technology with international trade, enterprise development and investment policies. This, however, requires a greater understanding of people associated with diplomacy, and policy makers.

Session 5: Sectoral Case Study: Biotechnology Sector

Deepak Bhatnagar, Head, Centre for International Trade in Technology (CITT), Indian Institute of Foreign Trade

"Biotechnology is aptly described as the technology of hope", said Deepak Bhatnagar, in the beginning of the session. It is an important area of technology has been one of the key industries in providing food security, life saving drugs, alternate energy and sustainable technology. India is duly placed to effectively exploit this opportunity due to its low cost advantage and availability of qualified workforce. This assertion is reinforced by the government of India national technology development strategy and availability of an effective network of research laboratories, huge availability of natural ingredients and state of the art pharmaceutical laboratories and manufacturing facilities.

India's leadership position in the field of ayurvedic and medicinal plants can be effectively utilised in leveraging its position in biotechnology. It is known facts that in India nearly 65 percent of people in rural areas use ayurvedic and medicinal plants. Deepak Bhatnagar noted that about 25 percent of modern medicines are derived from plants.

One of the most significant development in the field of biotechnology is the initiative by an Indian company (Amrita School of Biotechnology in collaboration with Bio-con) to develop low cost *insulin* – used for the treatment of blood sugar patients – which may cost as little as Rs20000 compared to a cost of Rs1.75 lakhs for the imported product. The product is under development at this stage. Another major development has been the innovation and production of *Fungisome*, a product used to treat internal fungal infection.

The biotechnology market is huge valued at $5 billion and is growing at a healthy rate. The approach to attain leadership position in the sector include (a) mind to market, (b) thought to things, (iii) concept to commerce, and (d) bench to bedside.

Session 6 - Records Management, IP Asset valuation and IP Audit

R K Gupta, Head Intellectual Property Management Division, Council of Scientific & Industrial Research

Mr. R.K Gupta stated that with creation of knowledge at a fast pace, the number of knowledge sharing networks has also risen significantly. This has resulted in a need to protect knowledge from being shared freely against creator's approval, through IP rights. He mentioned that in post-WTO scenario, the firms are realising a need to develop a core competence through integration of business and IP strategy. IP assets are important due to financial, productivity and wealth considerations as it protects the technology which gives an industry its core competence. As a result, management of IP rights has become an essential part of business strategy and involves creation, maintenance of an IP portfolio, and enforcement of IP rights by identification of infringers and litigation.

Mr. Gupta discussed IP management at CSIR which is the largest network of publicly funded research labs in the world. To meet the post-WTO challenges, CSIR has an elaborate IP policy with current target to reach 500 foreign and 1000 Indian patents of which 319 and 703 patents foreign and Indian patents respectively have been granted. It has created an institutional structure for this purpose. In his session, he also noted various efforts being made at CSIR for valorisation of IP such as strategic alliances with international firms, licensing, attracting venture capitalists and IP based public private partnerships. .

During the discussion with other participants, Mr. Gupta remarked that a big chunk of SMEs can benefit from patents to a large extent which requires a serious attempt by the potential beneficiary. More importantly, it will be a chain reaction where one or a few units' initiative can encourage others to take interest. Participants raised doubts about the difficulty in deciding upon the license fee, and the industrial and commercial applicability of the patent.

In this session, Atul Kaushik, Project Advisor, CUTS International, discussed the records management systems. These systems are significant to ensure proper storage and easy retrieval of knowledge that otherwise would be lost in case of poor records management systems, which is a common problem faced by many companies and government departments. Records management system is also very essential as an accurate and legally defensible evidence of the innovation which is required to support the patent application. He emphasised that the companies should try to meet the ISO record management standards, which will ensure that they are meeting the standards of most of the countries.

Kaushik apprised that the session was specifically included due to the feedback given by the participants in the previous training. They found these inputs very essential to understand the right value of the whole process of information, technology and scientific innovation. Both technology diplomats and executives giving inputs to the diplomats must understand the value of the inputs. Also, for scientists, it becomes important to understand the commercial value behind the innovation, not only from a profit making perspective but even from a nationally beneficial point.

Session 7- Technology Sourcing and Assessment

Vinay Kumar, Former Advisor & Head, Technology Management Division, DSIR and Visiting Faculty at IIT Delhi

Vinay Kumar spoke about the challenges that industry faces with regard to technology development and use. Due to continuous R&D, life cycle of technology has become shorter and the time gap between innovation and commercialisation has also reduced. Intense domestic and international competition has led to an increase in investment risk involved in technology. Also, requirement for high energy efficiency and environmental friendliness of new technologies adds to the challenges which an innovator and technology developer have to face.

Science and technology plays an important role in international relations owing to the rising volume of international trade and foreign direct investments (FDI), higher degree of international cooperation in manufacturing and research, and emerging issues such as infectious diseases, environmental standards and crimes.

Vinay Kumar explained the two options of obtaining technology- acquisition and development (in-house, outsourced or joint) – and the conditions under which each of these should be preferred. He explained the *technology transfer matrix* which is built on the interactions among the various technology suppliers and receivers of technology. In case of acquisition, there must be a wide search for the kind of technology which is required. Such technology may be displayed at exhibitions and conferences; its details could be published in international journals or patent literature. Government databases and directories can also be searched through for relevant information about inventors and developers.

Once suitable technology is located, technology supplier must be evaluated in terms of market share, financial health. Ownership of technology and the authority to transfer it are necessary. But the sufficient condition for the decision to acquire a technology is the suitability of the technology itself to the purpose for it is being acquired. A sound evaluation on the basis of inputs (type and quantity) required, efficiency and productivity and safety consideration.

Session 8: Technology Acquisition

Vinay Kumar, Former Advisor & Head, Technology Management Division, DSIR and Visiting Faculty at IIT Delhi

Vinay Kumar briefed about acquisition process of technology. Acquiring technology is unlike purchase of equipment or raw materials and the acquisition process is more complex especially due to dynamic nature of technology. First step is to know the technology package which is constituted of the output of technology, its components, details of assemblies, list of purchased items, details of the plant and machinery along with the use and safety instructions.

Decision regarding the price of a technology is quite difficult for both supplier and acquirer. A price must be calculated depending on the stage of life cycle in which the technology currently exists. The success of an acquisition is based on good agreement, mutual trust among the parties and their respective competence, optimum planning and choice of acquisition channel.

Vinay Kumar discussed the clauses of technology transfer agreements, especially the Arbitration Clause which is decisive in case of disputes which can be caused by flaws in the agreement, wrong interpretations, lack of mutual trust and delayed payments among other reasons.

With higher volume of international trade, more technology transfers are being facilitated among different countries. However, these transfer lead to transfer of funds between countries, and thus they attract government regulation. Technology import is being regulated in terms of royalty,

license requirement, and lump sum payment made for such acquisition. Government of India has specified FDI limits for different sectors which are revised regularly as deemed fit for country's benefit.

Session 9: Sectoral Case Studies

Vinay Kumar, Former Advisor & Head, Technology Management Division, DSIR and Visiting Faculty at IIT Delhi

To increase the understanding of the participants about the various concepts listed above, Vinay Kumar discussed and analysed two sectoral case studies. The first one was a successful Indian case of technology transfer. An existing manufacturing SME decided to diversify by acquiring the technology for an allied product line. This acquisition was to be made from a company operational in a developed country. Vertex Corporation (name changed to maintain confidentiality) which was manufacturing electronic typewriters in India suddenly saw the demand take a dip due to improved technology pouring in this field. Thus, it decided to venture into production of automatic currency counting machines.

The owners did market research about the product, size of the domestic and international market and the risks involved in the production and marketing of the product. Upon being satisfied about the profit making potential of this technology, they identified a Japanese company, Yomikawa Corporation, which was involved in the production and exports of the technology.

The key factors highlighted in this successful acquisition of technology and its utilisation is:

- Both parties collected required information about each other's technical capabilities, market share etc.
- The acquirer had a strong technology and R&D base which convinced the supplier about their capability to produce and market the product.
- A comprehensive technology transfer agreement was drawn up where clauses regarding all the possible dispute areas were factored in, and suitable mechanism for dispute settlement was also clearly stated.
- The acquirer accounted for it the paucity of time and its own technical and production capabilities before deciding the technology package that they want to purchase. Thus, the decided in favour of higher dependence on the supplier for production assemblies and sub-assemblies. This helped them in bringing out the first batch of machines in a record time.

Also, it is important to observe that this was a win-win situation for both parties and thus, negotiation was smooth and successful

Vinay Kumar discussed another case study based on a hydraulics manufacturing company, Hydraulics Equipments and Systems limited, which is at the threshold of expansion. Hydraulic equipment and systems are high value added items with critical manufacturing (safety hazards due to faulty design) and rapid design changes. This company is trying to decide its research and development (R&D) strategy with specific tasks to be accomplished for this purpose.

The participants were provided with the technological background and organisational structure of the company. Company's new strategy for R&D project identification and selection was also given in detail. This included steps such as six monthly meetings with various functional heads, making the production department responsible for informing the management about any new

R&D projects with commercial orientation, preparation of activity charts and decision about timelines for completion of each target in the R&D process.

Project monitoring was also paid keen attention, which would be done through achievement of milestones set prior to the commencement of R&D. Deviations from the expected course would be fixed with corrective action. Close customer interaction would also aid the R&D process.

The company has many action points on its list which still have to be looked into. The acse study was analysed with the participation of the participants of the training programme where they suggested many more actions which the company must take before the R&D process is taken forward. The completion of such tasks would ensure that the company attains the growth that it is poised to achieve.

Session 10: Competitive Intelligence

Atul Kaushik, Advisor - Projects, CUTS International

Atul Kaushik defined CI as a process involving stages from data to information to intelligence, in order to get insights into what might happen in the future. Systematic data gathering, study and the analysis of the operating environment (with regard to external bids, acquisitions, mergers and other corporate strategies) for a company allows for effective competitive intelligence which contributes to critical company decisions. Some of the objectives are to define market spaces and establish presence before competitors; learn to provide industry leading products and services cased on what customers need and want; learn where competitors are vulnerable and how to gain the advantage; and grow and protect advantages and nullify competitor actions. The components of CI which lead to the fulfilling of these objectives are planning/direction of research in priority subject areas; data collection from primary and secondary sources; data analysis to extract trends, make projections and confirm strategies of competitors; executive strategies formulated based on definition of the business environment; appropriate corporate tactical action; and information feedback, further data gathering and analysis, and further execution of a refined plan.

Kaushik stressed that CI is definitely *not* knowledge management (it is a subset of this), intelligence practice (again it is a subset of this), market research (this is a subset of CI), industrial espionage, or a way to mine trade secrets (information not generally known to the relevant business circles and public). Kaushik said that the objective of competitive intelligence is not to steal a competitor's trade secrets or other proprietary property, but rather to gather in a systematic, legal manner a wide range of information that when collated and analysed provides a fuller understanding of a competitor firm's (in this case a government scientific establishment) structure, culture behaviour, capabilities and weaknesses.

Kaushik said that patents and other forms of intellectual property rights (IPR) are often a good indicator of what competitors are involved in, with published patent applications being the most useful source of assessing trends of technological development in a company. He informed the participants that are several companies that offer software packages to collate, map and chart patent holdings. Graphic mapping of the density and frequency of patent filings across all technologies for a competitor reveals the focus and intensity of their research efforts, and temporal profiles for patent filings may show a competitor is abandoning a certain field. Kaushik said IP also helps to identify individuals or groups of inventors who are valuable as employees. He also said that information on the expiration of patents can provide commercial opportunities.

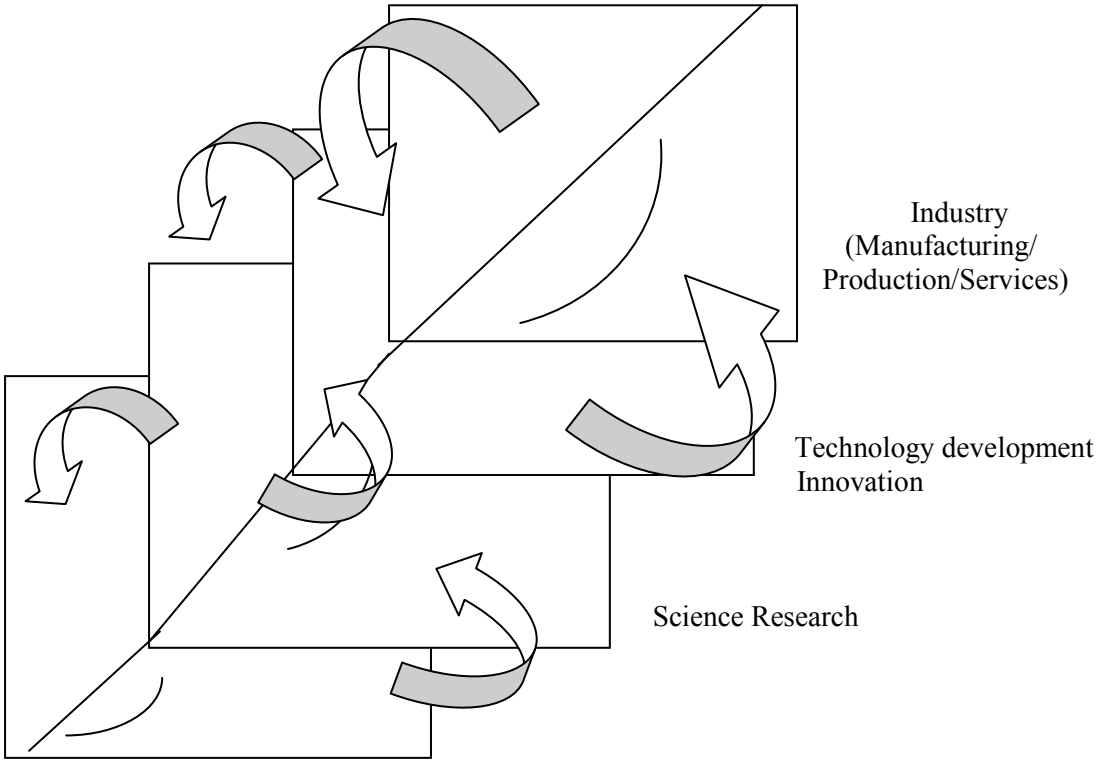
Kaushik linked CI with technology diplomacy saying that it strengthened the diplomatic effort by enabling focus on own strengths and other's weaknesses, and helping in the preparation for better bottom lines for the end game. He concluded by saying that CI is here to stay and as a result establishments need to put in place modern systems of data creation, storage and disposal; and make room for CI personnel.

Session 11: Negotiations of Technology Transfer & Session 12: Trade and Technology promotion: Role of Indian Ministries, India's Missions Abroad, and Industry Associations

Ashok Jain, Vice President, Research & Academic Development EMPI School

Ashok Jain began the session by saying a key term to keep in mind when talking about negotiations is win-win. Negotiations are held at the macro level (which is the national level) and the micro level (which is the individual organisation/industry level). Negotiations should keep in mind both the interests of the nation as well as the individual organisation. Negotiating a win-win game involving different actors can bridge the macro and micro divide. It is important to note that at different levels, different actors are involved. For scientists, institutions, laboratories negotiations are at micro level and at the macro level, the likes of external affairs ministries are involved.

He described the national innovation system through the following diagram:



S&T Infrastructure + Human Resource

Jain said that in negotiations there are several elements that need to be linked with each other in order to have successful negotiations and these linkages are known as the national innovation system. The top segment is the manufacturing industry, where the technology is and where the scientists are at work; the middle segment (science research) is important as it connects R&D

with manufacturing; and innovation falls between these two segments. Negotiations at each level involve different actors and it is important to know what is being negotiated – industry, innovation, science research or infrastructure. Linkages between these segments need to be strong in order to serve the national interest. Jain quoted the Japanese technology negotiators as having a solid understanding of these linkages as compared to their Indian counterparts. He stressed that if there is an internal mismatch in these linkages, negotiations are bound to fail.

Jain went on to explain what is negotiated in each segment of the diagram. In the lower segment (infrastructure and human resources) negotiations take place on improved support for technical education, internship programmes and exchange programmes, visa restrictions and free flow of professional services. In the middle segment R&D is negotiated taking into consideration national interest issues as well as individual organisational interest issues. For example, in pursuit of national interest negotiations can take place for public sector R&D for global public good (agriculture, health, environment etc.); and in pursuit of organisational interest, negotiations may primarily be about patents.

Jain highlighted some emerging issues which have not been addressed in negotiations. Some of these were how the presence of foreign R&D firms in India benefited R&D here; whether there should be regulation for putting restrictions on staff movement to prevent transfer of intimate organisational knowledge; and restrictions on reverse engineering. He also mentioned the need to know what level of development the country one is negotiating with, is at. This is where the role of the Indian missions is crucial. For example, in the 60s R&D in Japan was weak, while its manufacturing was its strength. India went to Japan to negotiate R&D and as a result, the negotiations were not fruitful. Missions must be able to convey to the negotiator that the country in mind is not suitable to negotiate a certain aspect such as R&D.

The upper segment of the diagram is about negotiations by the main actors i.e. manufacturers and service providers, who are the actors that negotiate the technology. The starting point here is the corporate unit of the manufacturer which produces products and delivers services, and whose main aim is to expand its user or adopters base. Jain mentioned the existence of five 'Ms' that go into production: machine know-how (M1), material and energy (M2), manpower/management (M3), money (M4), and market/users (M5). He stressed the importance of the need for synchronization between these Ms by the corporate unit, because the best combination of Ms leads to successful negotiations. The corporate unit has to negotiate in India and overseas with know-how suppliers (M1), material suppliers (M2), manpower suppliers (M3), financiers (M4), and marketing and servicing agents (M5). Jain said that each of these has related TRIPS regulations which need to be taken into consideration when negotiating.

Session 13: Sectoral Case Study: Pharmaceutical Sector

Ashok Jain, Vice President, Research & Academic Development EMPI School

The case study dealt with the issue of how Indian biotechnology has to not only address significant health needs but also assume a profitable position in the global market. The aim of the case study was "to understand better the product development capabilities of India's nascent biotech sector and the strategies used by private firms to survive and grow amid a myriad of challenges related to operating in a developing world context". It involved four major categories namely, affordable vaccines, non-vaccine therapeutics, innovative product development and contract services.

The participants were divided into three groups and each group dealt with separate issues. They were asked to delve into the Indian pharmaceutical setup through the case study and use the framework discussed earlier to assess the situation, if possible by using their own experiences. Each group discussed their respective parts for an hour before taking turns to present their findings and views.

Session 14: Simulation Exercise Case Study

Atul Kaushik, Adviser (Projects) CUTS International

In this session the participants were given a case study from WIPO publication 'IP Panorama', which would use and apply the knowledge imparted in previous days of the programme about negotiations. During previous day's session, the participants had been divided in two parties: Indico Company Limited (Indico), an inventor firm based in Mumbai, India, and Chemical Formulations Incorporated of Florida, USA (Chemical), leading pharmaceutical firm which is trying to buy out Indico's newly invented method of coating microscopic components. The aim of the activity was that these two groups discuss within group and negotiate with other group and exchange language, which can be put together as an agreement. By the end of a one and a half hour discussion, they should have a mutually agreed upon deal.

Before starting the negotiation process, the teams took around 15 minutes time to discuss within their groups to finalise their stands. Indico focused on the money deal to be agreed upon by the two parties whereas Chemical persisted on deciding the framework of the module being patented. After the rigorous discussion led by the chosen leaders of the two parties, with the Chief Finance Officers and MDs supporting the negotiation, a deal was reached.

The session was concluded with the evaluation of the negotiating process. Team Chemicals Inc. succeeded in obtaining an agreement on a price lower than the initial offer by team Indico. The activity assisted the participants in understanding the negotiating process and in enhancing their own skills.

Also team Chemicals which seemed to be less prepared at the initiation of the negotiating process, turned out to be victorious at the end of the process as they focussed more on the scope of the contract and the rights and privileges that it will offer to their company regarding the product's future as well as were able to reach the deal at a price lower than the initial offer.

Session 15: Analytical Presentation:

Atul Kaushik, Adviser (Projects) CUTS International

The session was conducted at the request of the participants in the inaugural session of the programme. The session mainly focused on developing an understanding of *Drafting a Patent*. The presentation first defined patents and the criterion of granting one on the basis of novelty, inventive step and industrial applicability. Then the focus was directed towards drafting process of a patent application, and discussed in detail the various parts of an application like title, field of invention, background, prior art, objects of invention, detailed description of invention, drawings and claims. As was discussed, detailed description of invention is a tricky part of the application because what applicant discloses at first about invention is important. This information cannot be amended and correction of mistakes is also not possible. Claims in the application are particularly

important section of the application as it defines the monopoly to be conferred by the patent. Moreover, for the purpose of infringement proceedings, only claims are interpreted to make decisions.

In addition to the delivering the documented information on patent application, the presentation also provided certain tips for filing patents. Also, in order to ensure that the participants learn actual drafting of the patent application, a practical example of wooden box with walls and a base was discussed at length in the session, which clarified the whole process further for the participants. The queries of the participants reflected that the exercise was well-received and the members of the workshop gained from it.

Session 16 and 17: Excursion Tour

By CUTS International

These two sessions consisted of an excursion tour to local handicraft units Jaipur. It provided the participants an exposure to the local techniques involved by the artisans in making of these handicrafts. The participants were also introduced to the local artisans who then explained th e participants on the various methods used by them to manufacture a particular handicraft. The participants also took a tour of local tourist places in Jaipur. The tour enabled the participants to understand nuances of old and new technology. Thus it was a useful exercise and the efforts of the organisers were well appreciated by the participants.

Session 18: Values and Visions

Vandana Sharma, Jaipur Finishing School

An overview of importance of values such as responsibility, integrity, commitment, relationship of ethics and values with diplomacy in general and technology diplomacy in particular was discussed in this session.

Vandana Sharma began the session with the discussion on vision and values. Each of the participants was asked about what they understood by the term "Values" & "Vision" in their life. She stressed on the need to have a good knowledge among the employee's about the organisation values and visions. She highlighted an important fact that it's the values and vision that act as motivating and guiding force for an organisation. Vision also gives a lot of scope for defining realms. It is not restricted to specific aspects of development or any one aspect of the organisation. It operates at multiple levels. And within an organisation every employee must define and align his vision to the overall organisational vision and continue his pursuit for perfection. Sharma concluded the session by saying that the mission, vision, values and ethics statements should identify: context of the work, intended outcomes, aspirations, value of the work and principles that guide the work. She said clarity on purpose and process are the main factors that influence organisational well-being and differentiates a successful organisation from a mediocre one.

Further, Sharma divided the participants into groups of 6, so that they could discuss the case study and then present their respective group's views by designating spokesmen from the group. The first case study was on values and ethics dilemmas. Based on this, participants were given 13 different cases such as Box seats, request for lenient inspection, managing immigration risks etc.

Each of the cases demanded a decision on part of the participants and each were asked to present their own point of view on what they thought was the best course of action in each of the cases.

Then the participants were provided with a test on personal values that would help them to understand about the personal values and their importance in their respective lives. They were asked to rate each of the values in terms of its importance on a scale of 0 to 100.

Session 19 – Stress Management

Vandana Sharma, Jaipur Finishing School

In this session, Sharma gave a case study on ABC Civil Engineering firm. The case study revolved around ABC civil engineering firm. The firm has recently made significant cut in staff and the work load on existing employees has increased considerably as a result. The two main characters of the case study were Ted Waltz – Managing Director of ABC Engineering & Elaine Tillman – Civil Engineer. In the case, Elaine is under lot of stress as she is overburdened with the work and has to meet a deadline. She is also not able to pay attention to her family as a result of too much work. To add to it the internal environment of ABC engineering was far from normal, annual raises and bonuses were deferred. Apart from Elaine, the other one who was under lot of mental stress was Ted Waltz as he was the one who had to make the staff cuts, termination discussions and try to keep the business profitable. He had never faced such a situation in his life before. He was facing challenges on both personal and professional front. Sharma requested each of the participants to suggest ways on how Ted and Elaine can handle their personal stress. Later on in the session, participants underwent a professional life stress test to understand more about their life and their ability to cope up with stress.

Sharma, in the session also looked at the general awareness required to manage stress, such as understanding stress, symptoms and internal and external sources of stress, etc. The major approaches to handling stress were action-oriented, emotionally-oriented and acceptance oriented. Stress caused emotional disturbance (depression, tearfulness, fits of rage, etc.), disruption of thought processes (memory lapses, confusion and disorientation, etc.), physical discomfort (nausea, dizziness, palpitations, etc.), and behavioural changes (loss of appetite, nail biting, increased intake of alcohol, nicotine, etc.). To tackle stress, she suggested regular physical exercise, healthy eating and drinking, relaxation techniques and to accept real circumstances.

Session 20 – Evaluation of Program and Suggestions

Atul Kaushik and Archana Jatkar, CUTS International

In the closing session, the importance of technology diplomacy and the necessity to organize such training programmes was reiterated especially in developing countries like India. During the five days programme it was felt that in spite of developments in this field, a lot needs to be done especially in India and therefore this field offers great opportunities for promoting our growth and development.

Further, the participants were requested to provide the feedback on the training programme. They opined that the training programme provided them with a better understanding and exposure to technology diplomacy and related issues. They appreciated and acknowledged the rich experience and expertise of resource persons, quality of resource material and overall administration of the

training programme. Most of the participants expressed their interest to attend similar training programmes of longer duration in the future.

At the end of the training programme Atul Kaushik and Archana Jatkar thanked all the participants and resource persons for their valued participation and contribution to the success of the training programme. They thanked the Department of Science and Technology for assigning CUTS this training programme and assured that the future programmes will take into account the suggestions. They also thanked their colleagues in CUTS for their diligent support.