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TECHNOLOGY REGULATION IN DEVELOPING COUNTRIES: CASE STUDIES ON INDIA, KENYA AND MEXICO.

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INTRODUCTION

1. Since the late 1960s, with the growing emphasis on rapid industrialization as a major developmental objective, in a large number of developing countries increased attention has been given to the development of technological capabilities and to various aspects of acquisition and development of technology and know-how in different sectors. It has also become increasingly manifest that adequate growth of technological capability does not necessarily follow from the establishment of production capabilities. In most developing countries, accelerated technological growth requires conscious government planning and various policy measures which are designed to improve national capability for selection, use and development of technology. With increasing experience of programmes for industrialization in several developing countries, there is much greater recognition of the need for well-defined policies in respect of scientific and technological development so that this does not lag behind.

2. With the rapid growth of international technology transfer through capital participation and licensing arrangements between enterprises in different countries, the need for such transfer has been recognized by institutions and enterprises in developing countries. At the same time, it is also considered necessary to channel both foreign direct investment and foreign technology in accordance with national priorities and requirements and to improve the terms and conditions of acquisition of foreign technology and services. These aspects may require various degrees of governmental regulation both in respect of foreign investments and of the technology

acquisition process. The regulation of foreign technology is also closely linked with the achievement of increased technological capability and self-reliance which has become a major policy objective in several developing countries. Technological self-reliance has been conceived as the ability of the local economy to make independent technological decisions with respect to the type and source of technology to be selected and the application and use of such technology in local conditions. Such decisions would not only aim at using suitable technologies and acquiring the technologies on acceptable conditions, but also at accelerating the absorption and adaptation of foreign technologies. This would also contribute to a progressive increase in local innovative capabilities.

Role of transnational corporations

3. In most developing countries, historically the major channels of foreign technology acquisition have been subsidiaries and affiliates of transnational corporations (TNCs). By combining capital, technology and management know-how, such companies have achieved important market position in various production and service sectors in several developing countries where such investments had been welcomed and where no restrictions were imposed on such investments. In most cases, foreign direct investments were promoted by various government incentives and facilities. Foreign subsidiaries have often concentrated in the technologically advanced sectors of the economy, where proprietory technology of parent corporations provided subsidiaries with considerable competitive advantage compared to domestic enterprises. The technological advantage of TNC subsidiaries was applicable in most manufacturing branches and in resource-based industries, including petroleum and minerals and constituted an important factor for mobilization of financial

resources and undertaking investments in other countries. The growth in production capability in various sectors, however, was often not accompanied by adequate growth of local technological capability, apart from operational skills, in most developing countries. In the TNC parent-subsidiary relationship, the parent company thus provides the various technological elements and requirements to subsidiaries in countries, retaining control over use of such know-how and in respect of its future developments. As a result, foreign subsidiaries continued to be technologically dependent on their parent companies. Such dependency not only resulted in high direct payments for technology in many cases but also to significant indirect costs in terms of constraints on local production and technological capability. Though TNC subsidiaries have full access to the technology and know-how of their parent corporations, the transfer of technological capability has tended to be partial and limited to the immediate requirements of the subsidiaries over a period of time.

4. With the growing importance attributed to technological development, in most countries, the role of foreign direct investment has also been increasingly considered as an important channel for technology transfer, apart from being a source for capital. While in countries at a relatively early stage of industrialization, TNC subsidiaries and foreign-majority affiliates continue to be viewed primarily as a source of capital investment, in other developing countries with a more diversified industrial structure, TNC investments are increasingly being treated on a selective basis and are mainly welcome in those sectors and activities where their technological contribution is considered to be vital for national objectives. Consequently, in several

developing countries, technology agreements are becoming the most important contractual arrangements between foreign and domestic companies, irrespective of whether such agreements are entered with foreign-owned subsidiaries or affiliated companies or unaffiliated, domestically owned licensee enterprises. Until the late 1960s and early 1970s, the examination of technology agreements, where this was undertaken at all, related primarily to the remittance of foreign exchange required in such agreements. Since such remittances are subject to foreign exchange regulations, the major criteria for their approval in countries having such regulations has been the impact of such agreements on the country's foreign exchange situation. Such evaluation was generally undertaken by the Central Bank or Ministry of Finance and seldom involved any significant evaluation of the technology from an economic, legal or technical viewpoint. In some countries, internal guidelines were used for maximum permissible royalties, in others such rates have varied by sectors and provided the range of permissible royalties for case-by-case approval of remittances. The main objective of such approval had been control of the outflow of foreign exchange rather than the nature of technology or the broader terms and conditions of its acquisition.

Technology regulation

5. During the early 1970s, several developing countries where technological development has become a major objective, introduced regulatory measures, which were directed at a much broader range of issues than that of outflow of foreign exchange. Detailed guidelines for foreign technology acquisition were issued in India in 1969 followed by the Foreign Exchange Regulation Act (FERA) in 1973 which prescribed detailed requirements for divestment of foreign

holdings and various other aspects having major impact on foreign investment and technology. Members of the Andean Pact (Bolivia, Colombia, Ecuador and Peru and subsequently Venezuela) formulated Decision 24 for the common regional regulation of foreign direct investments and technology in 1970, while Decision 84 and 85 dealt specifically with the regulation of foreign technology. In 1971, Argentina passed Law N. 19231 and further legislation relating to foreign technology in 1974 and 1981. In 1972, Mexico promulgated legislation on technology agreements. In Brazil, Normative Act 15 of I.N.P.I. was passed in 1975. In addition, several developing countries, such as Malaysia, the Philippines, Nigeria and others, adopted specific measures for screening and reviewing foreign technology agreements. In some countries, certain aspects of technology transfer are considered as part of the review of foreign investment proposals. In most developing countries, however, no specific legislative or regulatory measures have been adopted and technology transfer agreements are left for negotiations between the parties concerned with the only regulation relating to that of foreign exchange outflow of royalty remittances.

6. The formulation and implementation of measures have varied by countries. The extent of regulation has differed in these countries ranging from a detailed review of licensing and service contracts by specific governmental regulatory agencies as in Brazil, India, Mexico, the Philippines and the Republic of Korea, to a more general review by the government department concerned, as in some other countries. In some countries, particularly in Latin America, regulatory measures have been incorporated in specific laws

towards foreign technology, foreign direct investments and in respect of patents and trademarks. In others, like India, regulation has taken place primarily through administrative guidelines which are implemented through the administrative system. The various approaches which have been adopted have been influenced by the differences in legal and institutional systems, experience with technology regulation and the role which the Government has played in the economy.

7. Despite the differences in approach towards the regulation of foreign technology inflow, the basic objectives have been similar. Regulatory measures have aimed, on the one hand, to improve the bargaining position of domestic enterprises and on the other hand, to direct technology inflow according to national priorities and goals. The legislative norms and administrative guidelines have served several purposes. They made domestic companies more aware of the major issues involved in foreign technology transactions, particularly the importance of considering alternative technologies and sources in technology selection; evaluation of alternatives, the need for rapid absorption and adaptation. Legal provisions and specific and detailed administrative guidelines have been directed to these issues and provided the parameters within which negotiations between the parties could be conducted. These included the permissible maximum duration of agreements and conditions for renewals; terms of payment and basis for calculating royalties; guarantees and warranties to be provided by the technology supplier; access to improvements; provisions relating to patents and trademarks; non-acceptance of restrictive business practices and grant-back provisions; training and

other services to be provided by the licensor, and provisions relating to governing law, settlement of disputes, confidentiality, sublicensing and other contractual terms and conditions. By defining prohibited practices and specifying certain mandatory requirements in technology contracts, the regulatory measures have not only made domestic companies aware of the importance of such issues but also gave them strong legal support in their negotiation with foreign technology suppliers.

8. Besides such direct impact on the technology acquisition process of domestic enterprises, the regulatory measures have also aimed to direct the inflow of foreign technology according to national development objectives and priorities. Thus, regulatory measures have increasingly been directed to channel the required foreign technology into priority sectors. In some countries, for example, in India, sectors have been identified where acquisition of foreign technology is welcome. In others, such decisions have been made by a case-by-case evaluation by the administrative agency. Criteria for approval have been based on the identified national priorities and objectives and, in most countries, the administrative agency has been vested with discretionary power to make such decisions. Generally, national objectives include the impact of foreign technology on import-substitution, effect on local integration, employment creation, usage of local inputs, competitiveness in export markets, and contribution to the scientific and technological infrastructure, including training and R&D capabilities.

9. With the introduction of regulatory measures, institutional mechanisms have been established for their implementation. Approaches towards the administration and monitoring of the regulatory measures have varied among countries. In several countries, a new agency has been created for the screening, approval and registration of most foreign technology agreements. This centralized regulatory agency has been, in most cases, part of the Ministry of Industry or consisted of representatives of the various departments concerned, including planning and development agencies. In some countries, the same institution has also been entrusted with the screening, evaluation and approval of foreign direct investments. In Mexico, the two functions have been merged under one agency. The degree of centralization of decision-making has also varied by countries and over time. In some countries, decisions regarding final contract approval has been delegated to the various respective ministries, while in others, such institutions have only served in an advisory capacity and final decisions have been made by the Technology Transfer Registry or Board. In most countries, remittance of payments for royalties and fees has remained also subject to the approval of the Central Bank. The extent of co-ordination between the Central Bank and the Technology Transfer Registry has also varied in different countries.

10. There has also been considerable difference among countries with respect to the discretionary power vested in the Registry of Technology or like institution. This has been manifest in two major areas: a) the role and participation of the Registry in the decision-making of private parties and b) the extent the Registry is entitled to make exceptions from the general

provisions of the law or guidelines. Thus, in some countries, all the contractual provisions are negotiated by the contracting parties and the role of the government agency is confined to a review of whether the terms in the contract are in compliance with the provisions of the law and guidelines and consistent with national objectives. In some cases, however, the government agency actively participates in the negotiation process, together with the technology supplier and the local licensee. This has been considered important to ensure that the social costs and benefits of the agreement do not diverge widely from private profitability. The participation of the government agency is intended to enhance the bargaining position of the domestic company. In some countries, the role of the governmental agency is of an advisory nature, and provides the domestic company with information on foreign technological alternatives and the terms and conditions of other similar agreements.

11. The extent of discretionary power of the governmental regulatory agency also depends on the specificity of the law and the power vested in the agency to make exception from the general provisons of the law. In some countries, particularly Brazil, the law is rather specific and detailed, and exceptions for certain provisions and contractual elements are prohibited. The rate of maximum permissible royalty and contract duration, for example, are generally applied in fairly inflexible terms. In other countries, like Mexico, particulary since the 1982 modification of the law, the Registry has considerable discretionary power to approve contracts which contain restrictive business practices which are generally prohibited if acquisition of the technology is considered by the Registry to be in the national interest.

Trends in regulatory measures

12. In several countris where technology regulation has been practised for almost a decade, regulatory measures and policies have undergone considerable modification, partly as a result of the experience in the implementation of national legislation and partly with the changing technological capabilities and requirements of the country. Such changes have also been influenced by shifts in priorities and objectives to broaden import substitution from consumer goods to capital goods production and growth of export-oriented production. In several countries, changes in the regulatory measures have also been accompanied by an improvement of the institutional framework. Thus, with growing experience in the administration of the law and guidelines, the economic, legal and technical evaluation of technology and service contracts has improved significantly. The review of such contracts has also been expedited considerably. Certain specific trends can also be identified in respect of important contractual provisions of technology agreements. These are briefly described below, though a more comprehensive description and analysis of such trends is presented for the three countries, India, Mexico and Kenya, which are covered in detail in this paper.

13. Considerable emphasis is being given to well-defined formulation of the scope and coverage of technology contracts. It is considered important to provide a detailed description of the nature and characteristics of the technology provided. This is also considered necessary so that, in case an application for renewal is made, the regulatory agency can evaluate whether

and to what extent improvements or new technology are being supplied during the new contract period. There is also growing emphasis for a detailed description of the services to be provided by the technology supplier. Thus, the frequently-used formulation providing for "supply of technical know-how for the manufacture of product x" is often replaced by the provision of detailed programme of training and technological absorption to be provided by the licensor. Such absorption programmes may also increasingly provide for transfer of design know-how, both for basic and detailed engineering, rather than only the transfer of manufacturing and operative know-how which characterized most previous agreements. Other elements of such an absorption programme may include detailed specification of training to be provided by the licensor, location of such training and the length of time. Provision of R&D and technical assistance to set up research laboratories are also often constituting an important element in more recent agreements in certain countries.

14. There have been important trends prescribing the norms relating to payments for technology. In most countries, this has involved general principles for calculation of royalties. Thus, while formerly royalties were generally calculated as a percentage of sales from the use of the licensed technology, in several developing countries, a more specific and limited base is generally prescribed for royalty calculations. Net sales price, which has become the generally accepted base for royalties, is defined as ex-factory sales minus cost of imported components and taxes. In some countries, like India, the cost of the standard, bought-out components and parts is also deducted from the royalty base.

15. In countries where regulatory measures have been introduced, contracts with unlimited and unduly long duration have been prohibited. This has also been consistent with the assumption that the payment for foreign technology acquisition constitutes the price for a purchase rather than for the temporary usage of the technology. The maximum permissible validity period has been defined variously in the different countries. In Brazil and India, for example, it is generally confined to 5 years following the beginning of production, while in Mexico and the Republic of Korea, a maximum of 10 years is generally applied. Following the termination of an agreement, regulatory guidelines generally prohibit the imposition of restrictions on the usage of unpatented technology and know-how.

16. In most countries where regulatory measures were introduced, a major underlying reason for such measures had been the elimination of restrictive business practices which were considered undesirable and unduly restrictive for licensee enterprises. Such restrictions tended not only to increase the indirect costs of technology acquisition but frequently limited the selection, adaptation and effective absorption of foreign technology. With the introduction of regulatory measures, imposition of several such restrictive provisions were not permitted. Thus, clauses containing grant-back provisions, various tie-in arrangements and restrictions on exports and on post-expiration use of technology were prohibited and could render an agreement ineligible for registration. Also, restrictions on production and domestic and foreign marketing activities of licensee were prohibited in most cases. In several countries, however, it has been experienced that unless the

prohibitory guidelines on restrictive business practices are administered with some degree of flexibility and pragmatism, the acquisition of essential foreign technology may be severely hampered. In cases, for example, when manufacture of a product or usage of a technology requires specialized parts and components or inputs from the licensor, tie-in arrangements may be necessary. Also, if the licensor has already established exclusive sales arrangements in other countries, imposition of territorial restrictions may be unavoidable. Similarly, when improvements have been submitted subsequent to the entry of the original contract, it would be against the interests of the licensor to pass on improvements unless they are protected for the same length of time as other technological elements of the contract.

17. In light of these considerations, in most developing countries where restrictive business practices have been prohibited, considerable flexibility is being used in implementation, which have either been subsequently embodied in the law, as in the case of the 1982 law in Mexico, or by vesting discretionary power in the regulatory agency as in India, Malaysia, the Philippines and the Republic of Korea. In some countries, changes in the pattern of technological needs have also contributed to greater flexibility in dealing with restrictive business practices. As technological requirements have gradually shifted to more advanced and complex technologies, the range of alternatives gets increasingly narrowed, strengthening the negotiating power of technology supliers. In such cases, technology suppliers may only transfer technology to unaffiliated companies if their major export markets are

protected. If the usage of technology is primarily for a domestic market, it may not be inconsistent with national interests to approve agreements containing certain export restrictions.

18. Trends in respect of industrial property rights are of growing importance. In several countries, there have been amendments and modifications in the legislation on patents and the usage of foreign trademarks. While detailed provisions of such legislation vary among countries, a common direction in the trend is discernible. In a number of countries where patent laws have been changed, this has been done to achieve more rapid technological development and to enable acquisition of technologies in vital economic sectors. These measures have been designed to promote use of essential technologies by domestic industry and to accelerate technological diffusion in the economy. In some countries, the scope of inventions eligible for patentability has been narrowed, and particular products are often not eligible for registration and only manufacturing processes can be registered. Certain fields which are considered of vital socio-economic importance, such as pharmaceuticals and food products are either not covered [illegible]s or have had patent life reduced. The duration of patent validity, in general, has also been reduced, as for example, in Mexico to 10 years, in the Republic of Korea to 12 years and in Chile to 5-15 years, depending on the type of invention. In certain countries, the patent law provides for the Government's right to expropriate patents if it is vital for national objectives. Compulsory licensing provisions have been introduced in some countries, as Mexico, the Philippines, India and Brazil. While only some developing

countries have introduced legal provisions in this regard, these include some of the largest and more-developed among these countries and these measures are indicative of a broader trend. In addition to national efforts, negotiations relating to the revision of the Paris Convention are currently taking place through the World Intellectual Property Organization.

19. Regulation of the usage of foreign trademarks and brand names takes place generally through the regulation of foreign technology acquisition. In a number of countries, there has been concern about the high prevalence of foreign branded goods, particularly in the consumer goods sector and the associated foreign exchange remittances for royalty payments. It is also often considered that trademark agreements which solely confer the right to use a foreign trademark do not contribute to technological development and primarily promote the market position of foreign-branded products to the detriment of locally-branded goods. Consequently, in some developing countries, regulatory measures have been initiated which aim either to reduce the payments for the right to use foreign trademark names or prohibit or limit the usage of foreign names in the local market.

20. During the past decade, in several developing countries where the inflow of foreign technology has been regulated, such inflow has increasingly been channelled to priority sectors and there has been considerable improvement in the terms and conditions of acquisition. Through periodic changes in the laws, guidelines or their implementation, adjustment has also been made to suit changes in domestic capabilities and priorities and modifications made in

the light of experience of implementation of specific regulatory measures. At the same time, it is being increasingly recognized that if technological development and self-reliance is to be accelerated, development of local R&D capabilities have to be enhanced. Such capabilities are not only important for more rapid absorption of foreign technology but also for achieving self-sustained technological development and providing appropriate technologies for the local economy. Formulation of policies towards the promotion of domestic R&D activities, to be undertaken both by foreign subsidiaries and domestic companies, would have to be closely integrated with policies towards foreign technology. Thus, within a comprehensive science and technology plan, the role of foreign technology and that of domestic R&D activities would have to be delineated. Such comprehensive technology planning would inevitably call for a continuous technological needs assessment of the country, measurement of available technological capabilities and monitoring of technological changes in various sectors. Such science and technology planning has only been initiated in a few developing countries. Partial plans such as those related to foreign technology, to R&D, and to technical education have been adopted in several countries. The need for a comprehensive science and technology plan is, however, increasingly recognized by a number of developing countries.

21. The paper discusses case studies of technology policies and regulations in three developing countries: India, Kenya and Mexico. India and Mexico were among the first developing countries to adopt regulatory measures for the acquisition of foreign technology and their experience with such measures

dates back for over a decade. During this period, there have been changes and modifications in the policies towards foreign technology and foreign direct investments which will be discussed and analyzed in the case studies. In Kenya, on the other hand, there have been no explicit regulatory measures adopted towards foreign technology acquisition. Control measures in this regard have been confined to the remittance of technology payments and more recently, to the evaluation of the technology element in government-promoted foreign investment projects.

22. The pattern of technology regulation adopted in India and Mexico has been similar though different measures were followed in these countries. In India, regulation of foreign technology acquisition has been undertaken by the administrative system on the basis of specific and detailed guidelines prescribed by the Government. In Mexico, on the other hand, regulation of foreign technology was embodied in statutory legal provisions while the administrative agency is vested with power to exercise the institutional framework used for their implementation, the range of alternatives for the regulation of foreign technology can be broadly demonstrated.

23. Policies towards foreign direct investment, which is closely related to foreign technology have varied among the three countries and over time. In India, since its independence, such policies have been selective and foreign investments have been primarily considered as suppliers of those technologies which domestically have not been available or where, owing to the nature of technology, equity participation by the licensor has been considered

to be important. In India, a major share of the foreign technology inflow has been between foreign suppliers and unaffiliated domestically owned companies, both in the public and private sectors. In Mexico, on the other hand, with a few exceptions, most sectors of the economy have been open to foreign investors and most of the technology transfer has been among affiliated companies. The description and analysis of the technology flows in both countries enables some conclusions to be drawn on the major issues involved in technology regulation and the relationship between technology suppliers and licensee enterprises.

24. The three countries covered in this paper have considerable differences in respect of production and technological capability. Thus, India and Mexico are among the most industrialized countries of the Third World while Kenya is at a relatively early stage of its industrialization. Differences between India and Mexico exist with respect to their industrialization pattern. In India, development of heavy industries, including manufacture of capital goods, has been emphasized during the past three decades while in Mexico, this sector has received special emphasis only in recent years. The role of state-owned enterprises has also been different in the two countries, as also the role of transnational corporations.

25. The experience of India and Mexico, where regulatory measures towards foreign technology have been adopted for over a decade, is of major interest to other developing countries, including those which instituted such measures at a later stage and those where presently there is little or no regulation of

technology. Among the latter countries, the need for technological development is particularly important in countries such as Kenya, where presently the regulatory system is in its inception. Comparison of the country experiences also indicates that regulation of foreign technology acquisition can take various forms and institutional organizations and the choice of the appropriate form depends largely on specific country factors and circumstances.

INDIA

Background

26. Since its independence in 1947, within the overall development programme of the country, industrialization and development of a strong technological base have been among the major objectives of the Government. The Government has played a major role not only in formulating detailed industrial policies and programmes but has participated directly through state-owned enterprises. The Government Statement of Industrial Policy of 1956 defined the role of the public and private sectors and 17 basic and core industries were reserved for the public sector and 12 other industrial sectors were identified in which state-owned enterprises would play an increasing role.

27. The progress of industrialization has been fairly rapid in India during the last three decades. The mixed-economy approach, which provided considerable opportunities for Indian private sector industrial groups, as well as for state-owned enterprises, resulted in considerable growth of industrial and technological capability. At the same time, small-scale industries received special facilities and expanded rapidly. The system of industrial licensing channelled resources to prority sectors while import controls provided strong protectionist support to Indian industry, which initially undertook import substitution in most industrial sectors and has gradually achieved competitive export capability for an expanding range of manufacturing products. The rapid development of basic and priority industries, such as steel and machinery, which required high capital

investment and had long gestation periods was largely undertaken in the public sector, since it was considered that private initiative would not be forthcoming adequately. At the same time, private-sector industry also grew rapidly in almost all industrial sectors except those reserved for state-owned industries and a strong technological infrastructure developed in terms of technological services, including complex basic and detailed engineering capabilities in several sectors. An important policy trend since the late 1960s has also been to curb the concentration of economic power by a few large private industrial groups. The Monopolies and Restrictive Trade Practices Act was also promulgated with this objective. At the same time, a large number of industries were reserved for the small-scale sector and for cottage industries.

28. Within the framework of five-year plans, national priorities in industrialization have been primarily directed at import substitution in various industrial sectors and the achievement of national self-sufficiency. Various policies and mechanisms were adopted, including a detailed industrial licensing system, regulation of imports and foreign exchange and public investment policies and policies towards foreign capital and technology.

29. The rapid growth of Indian industry, particularly during the last two decades, was largely based on foreign technology, though in certain fields, domestic technology also made significant developments. Private-sector domestically owned industry in India entered into a large number of joint ventures with foreign companies, mainly to acquire foreign technology and know-how. In most cases, foreign capital participation in new ventures ranged from 26 to 49 per cent. At the same time, TNC subsidiaries in India, which

were mainly from the United Kingdom and tne United States, expanded their operations, though after the passage of FERA in 1973, the ownership structre had to be substantially revised in most cases. With the growth of state-owned enterprises, foreign technology inflow largely took place through technology licensing. In several instances, such enterprises including those engaged in steel and heavy mechanical and electrical equipment production, oil and gas exploration, machine tools, drugs and pharmaceuticals, etc. received technical assistance from the Soviet Union and other socialist countries from Eastern Europe. These state-owned enterprises have also, however, acquired technology from TNCs from developed market economies, particularly at various stages of expansion. As for TNC subsidiaries and affiliates and domestically owned enterprises, technology sources have been largely from developed market economies. As these enterprises expanded and domestic industrial groups and enterprises became stronger, both in terms of financial and technological capability, foreign technology increasingly took the form of licensing arrangements without foreign capital participation. This was supplemented by government policies which have, in general, encouraged foreign investment participation only to a limited extent. Thus, while the technological base of Indian industry in the large and medium-scale sectors has been primarily foreign technology, it has increasingly taken the form of licensing without equity participation, with minority foreign participation only in a few cases. With the changing ownership pattern of TNC subsidiaries and affiliates in India, local partners will participate increasingly in technological decisions in these companies, though their technology base will continue to be foreign and provided by parent corporations.

30. An important feature of the growth of Indian industrial and technological capability has been the strong influence of Government on various economic activities, including private sector enterprises with both domestic and foreign capital. National policies and guidelines have been implemented through a well-developed legislative and administrative system, the sophistication of which has improved significantly with experience of over three decades. In evaluating the effectiveness of technology policy and in comparing it with other countries, this dimension deserves important consideration.

Policies towards FDI

31. Following independence, the broad framework of India's policy towards FDI was laid down by Prime Minister Jawaharlal Nehru. He stressed the need to regulate the inflow of foreign capital according to those criteria which are most advantagenous to the country. FDI was perceived as a supplement to domestic capital and considered to be important in those sectors and subsectors of the economy where it resulted in inflow of scientific, technical and industrial knowledge together with foreign capital.[1/] More specifically, these ideas were subsequently expressed within the framework of the Industrial Policy Resolution of 1956, which identified sectors closed to FDI and, implicitely, those where FDI was considered to be important. At the same time, the Resolution assured foreign enterprises the freedom to remit

1/ J. Nehru, Statement to the Indian Constituent Assembly, 6 April 1949.

profits subject to the prevailing foreign exchange regulations. Approval of FDI has also been subject to the industrial licence system under the Industries (Development and Regulation) Act of 1951 which relates not only to foreign but domestic investments above a certain size. Exemption from this legislation has been provided mainly to small and medium-scale industries which have been largely closed to FDI.

32. Foreign direct investments have principally been encouraged in those priority areas which have not been reserved for the public sector; in sectors which Indian enterprises have not developed adequate technological capabilities and where it was considered that, owing to the nature of the technology or the international market situation, the required technology may not be available without equity participation by the technology licensor. List of such sectors has been published periodically by the Ministry of Industry and applications evaluated on a case-by-case basis.

33. By 1971, FDI stock in India was approximately $US 1.6 billion and since the second part of the 1960s, the compounded annual growth rate was 5.3 per cent.[1/] Exceptions to the FERA Guidelines were tea plantation companies which were permitted to retain equity up to 74 per cent on condition of converting the branches into Indian companies. Tea trading companies, however, were subject to the maximum of 40 per cent equity holding.

1/ United Nations Conference on Trade and Development, Legislation and regulations on technology transfer: empirical analysis of their effects in selected countries, TD/B/C.6/55, 28 August 1980.

34. As a result of the gradual imnplementation of FERA, the number of foreign wholly or majority-owned subsidiaries decreased from 188 at the time of the promulgation of the law, to 125 by 1978-1979. From the various sectors of the economy, the largest number of foreign-majority subsidiaries, 82, remained in the manufacturing sector. Since the introduction of FERA, however, inflow of foreign direct investments has continued to a considerable extent. In the first part of the 1970s, the compounded annual growth rate of such investments was 8.5 per cent, above that of the previous decade and by 1976, foreign direct investments were estimated at $2.4 billion.[1/]

35. The Industrial Policy Statement of 1980 reflects considerable liberalization of policies adopted towards foreign direct investments. In a large number of priority areas, provisions have been made for both domestic and foreign-owned companies for an automatic growth of capacities within a certain range in excess of licensed capacity. Also, an exception was made in respect of investors from oil-exporting developing countries. For such investments, the usual criteria for approval, which requires transfer of technology as part of the FDI flow, has been suspended and such investors are permitted to acquire up to 40 per cent of equity as portfolio investment.

1/ UNCTAD, op. cit., and Business International, "Investing, Licensing and Trading Conditions Abroad, India, April 1981.

36. Since the promulgation of FERA, equity participation by new foreign investors is limited to a maximum of 40 per cent equity, except for companies which are operating in the "core" sector or are engaged in export-oriented activities. Foreign investments up to 40 per cent equity share have been permitted in selected priority industries where the company has a major technological contribution and, in the evaluation of foreign investment proposals, increased emphasis is placed on technological inputs accompanying FDI. Such evaluation takes several criteria into account, including the present level of technological development of the industry and the priority assigned to the industry; characteristics of the technology and its availability in international markets; the need for long-term co-operation between the technology supplier and recipient enterprises; and the export potential of recipient companies. By and large, foreign direct investments are welcome in technologically advanced priority areas which have not been reserved for the public sector. In evaluating proposals, it is also recognized that the latest and advanced technologies may not be available through licensing arrangements without the licensor's equity participation. Depending on the importance of such technologies for India, it is increasingly being considered that, in such cases, foreign equity ownership exceeding 40 per cent would be permitted.

37. Implementation of policies towards FDI has taken place through a well-defined process of screening, evaluation and monitoring. Thus, applications for FDI are filed with the Secretariat for Industrial Approvals (SIA) which is part of the Ministry of Industry. The evaluation report of the

SIA is submitted to the Foreign Investment Board (FIB) which is an inter-departmental agency, including officals from various government institutions and departments dealing with commerce, industry, science and technology, planning and company affairs. Within the industrial approval system, the Project Approval Board (PAB) also evaluates proposals and submits its report to the FIB. The FIB is the central agency for granting permissions for FDI.

Policies towards foreign technology

38. Since the early 1950s, with the implementation of various industrialization programmes, acquisition of foreign technology has been subject to government control and case-by-case evaluation has taken place of all applications for foreign technological collaboration. During the earlier stages of foreign technology regulation until 1969, when detailed guidelines were issued, technology agreements were reviewed within the industrial policy system and foreign exchange regulations. During the earliest stage, particularly from 1948-1955, the total number of technological collaboration agreements approved was 284.[1/] During the 1960s, the number of foreign collaboration agreements entered exceeded 3,000.[2/] In 1969, detailed administrative guidelines were issued . The guidelines identified the fields

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1/ V. Sriram and Associates, Top 300 Companies, Imports, Exports, Foreign Collaboration AGreements and R and D., Economic and Scientific Research Foundation, New Delhi, 1979.

2/ Indian Investment Centre, Foreign Collaboration in India, Policy and Perspective, New Delhi, 1981.

of activities where foreign technology agreements would be permitted, together with equity participation by foreign technology suppliers; those fields where only technology licensing would be permitted between unaffiliated companies, and fields in which no foreign technological collaboration would be permitted. The list of these industries had been revised periodically, reflecting the current priorities of development and changes in the technological capabilities of domestic industry. Thus, during the 1960s, foreign collaboration agreements were permitted in several branches of consumer goods production while, since the mid-1970s, most of these sectors were closed to foreign technology and emphasis has been increasingly laid on selected sectors of the engineering-goods industry and specially on capital goods production.

39. In addition to the identification of such fields, the 1969 Guidelines presented Indian entrepreneurs with a set of conditions to be followed in acquiring foreign technology. These conditions would at the same time, be applied by the responsible agency for the screening, evaluation and approval of agreements. These conditions were enumerated and described as including (a) contractual elements which should be part of technological collaboration agreements (b) restrictive clauses which would be prohibited in contracts and (c) general responsibilities of Indian enterprises in entering into foreign collaboration agreements. The 1969 Guidelines included most of those provisons which were reiterated in the Guidelines for Industries, 1976-1977. Following the adoption of the 1969 Guidelines, each agreement was reviewed in terms of the economic, legal and technical implications. Technical evaluation of technology agreements was further stressed, with the establishment of the

Technical Evaluation Committee, which undertakes systematic appraisal of the foreign technology involved, not only with respect to its appropriateness to Indian conditions but also as to its position in the international market and the reasonableness of the terms and conditions. In the 1976-1977 Guidelines the general criteria for the acquisition of foreign technology have been largely retained from the 1969 Guidelines.[1/] Changes are largely confined to the list of industries where foreign technology is considered necessary and fields which are closed to foreign technological collaboration. Such changes reflect the development of local technological and industrial capabilities and shifts in industrial priorities.

40. The government policy statement of 1980 recognizes the continued need for foreign technology in sophisticated and high priority areas where India's technology has not been sufficiently developed. It is stressed that in areas where foreign technological know-how is not needed, existing technology agreements will not be renewed and foreign companies operating in such fields will have to modify their activities in conformity with national priorities and the FERA provisions. The Guidelines for Industries identifies an illustrative list of 22 industries where foreign collaboration is not considered necessary and, in which, agreements will not generally be approved.[2/] The list comprises a wide range of industries in the

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1/ Handbook of Industrial Policy, 1976-7, Government of India, Department of Industrial Developmentm Ministry of Industry and Civil Supplies, New Delhi.

2/ Copy of the list is given in appendix I.

metallurgical sector, engineering-goods industries, various subsectors of the capital goods industry, chemicals, drugs and various consumer goods products. According to the Guidelines, the list is only illustrative, that is, it is neither comprehensive nor excludes exceptions. Thus, in the case-by-case evaluation of proposals, technology agreements in these sectors can be permitted if the locally available technology is too closely held and is not available for use by new entrepreneurs on a competitive basis; or if new technology is required to update the existing technology in India in order to meet domestic requirements efficiently or to become competitive in the export market; or if foreign technology is required for manufacture of items with substantial export potential such as exports which have buy-back guarantees.

41. The Guidelines also provide an illustrative list of products and technologies for which foreign collaboration is needed by India.[1/] These are grouped under engineering and chemical products and technological processes and associated hardware. The engineering products include 22 products defined with relatively narrow product specifications, such as forged alloy steel mould for cast iron spun pipe industry, specialized gears, like hybrid spiral bevel and gear boxes above 1000 HP. Chemicals include various industrial chemicals such as pesticides, selected fertilizer machinery and rayon and synthetic fibre machinery. Under the category of technologies and associated hardware, technologies for high frequency metal processing, precision casting, high pressure moulding and cold forging processes and equipment for such processes are listed.

1/ Illustrative list is given in appendix 2.

42. The 1976-1977 Guidelines restate the policy of the Government to the effect that foreign investments and acquisition of technology necessary for India's industrial develoment would only be allowed on such terms which are consistent with national interests. To guide Indian entrepreneurs, these are incorporated in a set of guidelines which express the terms and conditions for technology acquisition. The guidelines cover a wide range of isseus related to the choice, terms of acquisition, absorption and adaptation of foreign technology and its possible diffusion within the Indian economy. The guidelines pose certain obligations on Indian entrepreneurs with respect to the type of technology they acquire and the conditions of such acquisition. The following criteria need to be considered and followed by Indian entrepreneurs:

(a) To the fullest extent possible, entrepreneurs should explore alternative sources of technology, evaluate them from a techno-economic viewpoint and provide reasons for the choice of the alternative;

(b) The Indian licensee should have the right to sublicense the foreign technology to other Indian enterprises under mutually agreed upon conditions by the parties concerned and approved by the Government;

(c) The royalty should be based on net sales which are calculated on the basis of ex-factory sales price from which the following charges are deducted: excise duties, cost of standard bought-out components and all imported parts and components. Payment in lumpsum is also permitted in appropriate cases. In deciding on the reasonableness

of the lumpsum, in general, the following method of calculation is used by the Government, viz. royalties plus lumpsum should not exceed 8 per cent of the ex-factory value of the projected production over the 5-year period following the signing of the agreement. The lumpsum payment should generally be scheduled according to the following pattern:

1/3 at the time when the agreement is taken on record;
1/3 at the time when the documents are transferred and
1/3 when production begins.

No separate payments can be charged for the usage of patents as payments for the technical know-how include remuneration for the usage of patents. Exceptions can only take place under special circumstances such as in case of compulsory licensing when a maximum of 4 per cent of net sales is set for royalties. No minimum royalties can be charged. The maximum payment for royalties cannot be related to production exceeding licensed capacity by 25 per cent. In administering the Guidelines, generally the ceiling for fees and royalties has been set at 5 per cent. If no technical assistance is involved, generally the maximum royalty for consumer goods is set at 2.5 per cent of net sales. Royalties exceeding 5 per cent have been infrequent and mainly confined to export-oriented production. Royalty payments are subject to Indian taxes. The present tax rate on royalties is 40 per cent on gross revenues (deduction of expenses is not permitted). Lumpsum payments which are remitted abroad are taxed at 20 per cent.

(d) Tie-in agreements which oblige the licensee to acquire capital goods, intermediate products or raw materials from the licensor are not permitted. Nor is the technology supplier permitted to influence the licensee directly or indirectly in its pricing or sales policy. To the fullest extent possible, there should be no restrictions on the free export of products manufactured by the licensed technology.

(e) The use of foreign brand names is not permitted for internal use.

(f) Indian entrepreneurs should make all efforts to absorb and assimilate the foreign technology within the duration of the agreement. The Government would permit exceptions only in the following cases:

- if the agreement covers a new range of products;
- if the technology is of such a sophisticated nature that it requires a longer period of time than envisaged at the time of its entry and the Indian company has made all efforts to absorb it;
- if the agreement involves continuous access of the licensee of the technological improvements of the technology supplier.

(g) The technology agreement should contain suitable provisions for the training of Indians in the fields of production and management. There should also be adequate arrangements made for undertaking R&D, engineering design, training of technical personnel and other measures for the absorption and adaptation of foreign technology and its further development.

(h) Consultancy services which are required to execute the project should be obtained from Indian consultancy firms. If foreign consultancy is also considered necessary, the prime consultant should be an Indian consultancy firm.

(i) Technical collaboration agreements are generally approved for a maximum length of 5 years, or in case of a delay in the start-up of production, 5 years from the beginning of production. However, this should not be longer than 8 years from the approval date of the agreement. Under special circumstances, as in the case of highly-complex technologies, which require a longer absorption time than 5 years, exceptions can be made.

(j) Collaboration agreements are subject to Indian law.

Modification of procedures, 1978-1982

43. In 1978, new guidelines were issued which reflected a certain liberalization of policies towards foreign collaboration. The new guidelines are more simplified than the 1976-1977 Guidelines in that they present only one illustrative list to entrepreneurs where no foreign collaboration, financial or technical, is considered necessary. Generally, all other fields are open for foreign collaboration, subject to national interest and the norms on terms and conditions identified in the 1976-1977 Guidelines. In continuation of the 1976-1977 Guidelines, technological collaboration can also

be permitted in the closed sectors when a technology is held too closely, or if it is required to update the state of art and for export-oriented manufacture. Modifications have also taken place in the administration of the approvals which are discussed in the next paragrapn.

Administrative procedures

44. In the application for foreign collaboration, the applicant company has to present detailed information on various aspects of the company, including its ownership, licensed capacity approval, value of production for the next three years, estimated requirement of raw materials and components of domestic and imported origin, including need for imported capital goods. Details on the foreign collaboration include terms of foreign collaboration, payments in foreign exchange, duration of agreement, usage of brand names for internal and export sales. Details are required for export performance for the next five years and listing of countries to which exports are excluded and the reasons thereof; effects of the technological collaboration on the foreign exchange earnings of the company have to be estimated both in terms of export revenues and its import substitution effects. Detailed information has to be provided by the applicant on the potential restrictions which are imposed on the licensee, whether in terms of tie-in agreements or restrictions on pricing or sales policy. Key elements of the proposed absorption plan have to be presented, particularly as it concerns R&D activity and absorption of foreign technology, know-how, product design and engineering design activities.[1/]

1/ Copy of the Application for Foreign Collaboration is at appendix 2.

45. Applications for foreign collaboration are filed with the Secretariat for Industrial Approvals (SIA). Since 1974, with the establishment of the Technical Evaluation Committee, applications are also forwarded to this unit which evaluate, the applications from a technical viewpoint and provides the SIA with such evaluation. The Technical Evaluation Committee includes representatives of the following institutions:

- Council of Scientific and Industrial Research (CIR);
- Directorate General of Technical Development (DGTD);
- Small Scale Industries;
- Department of Company Affairs;
- Planning Commission;
- Ministry of Commerce;
- Department of Economic Affairs.

The results of the technical evaluation together with the respective administrative ministry, are submitted to the Foreign Investment Board for final decision.

46. While the SIA functions as a centralized Secretariat for all foreign collaboration approvals, a certain degree of decentralization has taken place since 1980. This is with a view to streamline and expedite the procedures for approvals relating to foreign collaboration. Thus, the administrative ministries have been empowered to approve technical collaboration agreements in cases where[1/] there is no foreign equity participation in the proposal;

1/ Press Announcement No. 9 (19)80-FC (1) issued by the Ministry of Industry, Government of India, dated 25 May 1981.

when the applicant is a wholly-Indian-owned company without foreign equity participation; when the technology relates to a product or process which is identified under the priorities by the Industrial Policy Statement; and when the foreign exchange outflow, lumpsum payment and royalty, does not exceed Rs.5 million.

Post approval procedures

47. The approval for foreign collaboration is valid for a period of six months from the date of approval. In case the terms and conditions approved are acceptable to the parties, an intimation has to be sent to the respective Ministry. Subsequently, the parties can execute the collaboration agreement. The collaboration agreement has to be sent to the administrative ministry which checks for the compliance with the terms and conditions. If the agreement is consistent with the approved terms and conditions, it is taken on record and copy of the agreement is sent to the Reserve Bank of India. This serves as an approval for the remittance of fees and royalties.

Patent Law

48. The patent law currently in force is the Patents Act of 1970 which received Presidential Assent in September 1970 and went into effect in April 1972. In the following, selected features of the law are presented. These relate to those clauses which have a direct impact on technology transfer and diffusion of technology within the Indian economy.

Patentability (Section 2)

49. Inventions, which are classified as follows can be patented:

a. art, process, method or manner of manufacture;

b. machine, appratus or other article;

c. substance produced by manufacture.

In the following sectors, however, patents are granted only for the manufacturing process but not for the products themselves:

(a) foods;

(b) medicine or drug for persons and animals;

(c) insecticides, germicides, fungicides and other substances intended to be used for the protection or preservation of plants;

(d) all chemical substances which are ordinarily used as intermediates in the manufactures of medicines and pesticides in the above category;

(e) inventions relating to atomic energy are not patentable.

Duration of Patent Validity (Section 4)

50. Protection for patents is 14 years from the date of the patent. Exception from 14 years is in the following cases:

(a) for a patent for a method or process to manufacture food;

(b) for a patent for method or process to manufacture medicine or intermediate products for such manufacture.

In these cases, the validity of the patents is 5 years from the date of sealing or 7 years from the date of the patent, whichever period is shorter.

Government Rights of Use and Acquisition (Section 5)

51. 1. Patents are granted subject to the condition (Section 47) that the Government has the right to use any patented process, or make or import any patented machine, apparatus or other article, merely for its own use.

2. Any patented machine, apparatus or other article made by use of a patented process, and a patented process itself, may be used by any person for the purpose merely of experimentation or research including for teaching purposes.

3. In the case of a patent for medicine or drug, the medicine or drug may be imported by the Government merely for its own use or for distribution in any dispensary, hospital or other medical institution maintained by or on behalf of the Government or specified by it.

In these above cases, there is no provision for payment of any compensation to the patentee.

Government use in this context includes the Central Government, a State Government or a government undertaking. According to Section 2 (1) (h), "Government undertaking" means: a. a department of the Government and b.

a corporation established by a Central, Provincial or State Act, which is owned or controlled by the Government; c. the Council of Scientific and Industrial Research or any other institution financed wholly or for the majority part by the Council.

Compulsory Licensing (Section 7)

52. After three years from the sealing of a patent, any person interested, may apply to the Controller for compulsory licence on the ground that the reasonable requirement of the public with respect to the patented invention has not been satisfied or that the patented invention is not available to the public at a reasonable price. Reasonable requirements are considered not met, if the manufacture by the patentee does not satisfy local market demand at a reasonable cost; local market demand is covered predominantly by imports of the patentee and export is not achieved to a reasonable level. In granting a compulsory license, the Controller establishes a reasonable rate of royalty, and the compulsory license right is given under the conditon that the licensee will make available the product at a reasonable cost. A compulsory license does not grant the right for importation of the product. There is also a special provision whereby the Central Government, if satisfied that it is in the public interest to do so, may declare at any time after sealing that any patent, or class of patents, is available for compulsory licensing. After publication of such a declaration in the Official Gazette, the Controller will grant a license to any interested party on reasonable terms.

Licenses of Right (Section 10)

53. Three years from the sealing of a patent, the Central Government may apply to the Controller for endorsement of a patent "Licenses of Right" on the ground that the reasonable requirement of the public with respect to the patented invention has not been satisfied or that the product is not available to the public at a reasonable price. Endorsement of the main patent includes all the additions to the main patent. Similarly, every patent granted in the fields of foods, medicines, drugs and chemical substances can be endorsed "Licenses of Right". The royalty or other forms of remuneration under any endorsed patent in the fields of drugs and medicines will not exceed 4 per cent of the net ex-factory sales price in bulk of the patented article.

Dependent Patents (Section 11)

54. Any time after the sealing of a patent, any person which holds the right to work any other patented invention, which has made a substantial contribution to the development of commercial or industrial activities in India, may obtain a license under the patent if he is prevented or hindered without such licence from working the other invention efficiently. The applicant for licence must be in a position to grant a cross-licence on reasonable terms.

Revocation of a Patent (Section 12)

55. In case a compulsory licence or a Licence of Right has been given, the Central Government or any other interested person, may two years following the granting of such licensees, apply to the Controller for revoking the patent on the ground that the reasonable requirement to the public has not been satisfied or that the patented product is not available at a reasonable price.

Trends in Technology Regulation Policies

56. During the past decades, the number of foreign technology agreements entered between foreign and Indian enterprises has increased steadily. In 1979, for example, 267 foreign collaboration agreements were approved by the Government compared with 135 agreements in 1969. In 1980, largely as a result of the streamlining of the administrative procedures and certain liberalization of policies towards foreign technology, the number of collaboration agreements exceeded 400.[1/]

57. Technological collaboration with unaffiliated companies or non-equity licensing has formed the major channel of technology acquisition. During the 1969-1979 period, for example, approximately 85 per cent of the agreements have been entered among unaffiliated companies and only about 15 per cent of the total agreements involved equity capital participation by the technology supplier. During the same period, the amount of foreign equity investment, accompanying technology and know-how agreements amounted to Rs. 5.7 billion.

1/ Based on information provided by Ministry of Industry (SIA), 1982.

In relation to the size of the Indian economy, the value of FDI in the Indian economy has been very low when compared to most developing countries. Also, the share of foreign collaboration agreements entered into without equity participation shows a distinctly different pattern from most developing countries where the majority of the foreign licensing agreements tends to be associated with various levels of foreign equity participation by the foreign technology licensor.

58. Similarly, compared to other developing countries with similar levels of industrial growth, technology payments by India as a percentage of the country's export revenues is very low. Throughout the first part of the 1970s, for example, annual technology payments by the private sector had been approximately $US 25 million or about 0.7 per cent of the country's export revenues. Since 1976, however, technology payments increased rapidly, and in 1977, they reached $US 65.4 million. These payments, however, include only payments by private sector companies and exclude public sector enterprises which rely heavily on foreign technology. Data on payments by the public sector is not published by the Government.1/

Sectoral and country-wise distribution of foreign technological collaboration agreements

59. In the 1970s, the industry-wise breakdown of foreign collaboration agreements shows the growing emphasis and priority which has been given to the

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1/ Technology payments by the private sector are shown in appendix 4.

various subsectors of the machine building industry. In 1979, for example, out of the total technology collaboration agreements which were approved in that year, 72 related to the manufacture of industrial machinery, 50 to the production of industrial electrical equipment, 26 for transport equipment and parts thereof, 15 for machine tools. The electrical and non-electrical machinery group was followed by the chemical industry, excluding fertilizers, for which 24 agreements were entered in that year.[1/] During the 1957-1979 period, out of the 5,706 technological collaboration agreements which were entered during that period, the largest number, 1,345, were entered with U.K. companies, followed by U.S. companies with 1,096 agreements and the Federal Republic of Germany with 998 agreements. In the late 1970s, U.S. companies have become the major suppliers of technology and agreements entered with such companies surpassed those with U.K. companies. In addition to Western European and Japanese companies, Indian enterprises have also maintained technological co-operation with several Eastern European socialist countries and the Soviet Union.[2/]

1/ List of industry-wise break-up of foreign collaboration cases approved by the Government of India up to 31. 12. 1979 is published by Ministry of Industry (SIA), Government of India, 1982 (appendix 5).

2/ Indian Investment Centre, Foreign Collaborations in India, Policy and Perspectives, New Delhi, 1981.

Summary and conclusions

60. Since its independence and, with the planning and implementation of subsequent development plans, India has recognized the need for foreign technology and know-how for its rapid development. It has, however, also been considered necessary to regulate acquisition of foreign technology and India was among the first developing countries to undertake regulatory measures in this regard. India has not promulgated specific legislation towards the acquistion of foreign technology, rather such regulation has been undertaken within the broader framework of foreign exchange regulation and has been implemented by administrative guidelines.

61. During the past three decades, the major features of policy towards foreign technology have remained consistent. These have been characterized, on the one hand, by selectivity regarding acquisition of foreign technology, which has been guided by prevailing priorities. On the other hand, the implementation of such measures has improved with growing experience, both of Indian enterprises and the responsible government agencies. While overall policies have been consistent, one can identify three stages during the past three decades when significant modifications in the policies or in their implementation have taken place. During the first stage, from the early 1950s till 1969, regulation of foreign technology took place by internal guidelines which were used in the case-by-case evaluation of applications. In 1969, detailed guidelines for entrepreneurs were published, indicating lists of products and technologies in which foreign technological collaboration, with

or without foreign equity participation, would be permitted. In 1978, the guidelines were streamlined and the illustrative list of products and technologies were reduced to one published list which contained products and technologies in which foreign collaboration agreements in general have been not allowed.

62. The 1969 guidelines also contained detailed norms on acceptable terms and conditions for foreign technology acquisitior Those contractual provisions were identified which should form part of collaboration agreements, including the right to sublicense the technology and provisions for the absorption of technology such as training, R&D and transfer of design engineering know-how and usage of domestic consulting engineering services. The Guidelines also emphasized the responsibility to Indian entrepreneurs to evaluate various sources of technologies and select the most appropriate to Indian conditions. Restrictive business practices such as tie-in agreements, unreasonable export restrictions, and restrictions on sales and production were also to be avoided. The Guidelines thus identified those preconditions which would facilitate Indian entrepreneurs to select the most appropriate technologies, adopt and absorb them within a reasonable time and avoid unfavourable terms and conditions. Rapid absorption of the foreign technology has been aimed at by limiting the duration of collaboration agreements to a maximum of 5 years and adopting a highly selective policy towards extensions.

63. Technological development of the country according to national priorities and objectives has not only been aimed at by adopting policies towards foreign

technology acquisition but also by co-ordinating several other industrial policy measures which have a direct or indirect effect on technological development. While a broad range of industrial policies have influenced the pattern and rate of technological development, policies towards FDI and imports have had a major impact on the effective implementation of technology policies. While policies towards FDI have been selective, such investments have been channeled to those sectors where, due to the complexity of the technology or the nature of the international technology market, equity participation by technology suppliers has been considered necessary. In such high-technology areas, there has also been considerable flexibility and, in suitable cases, entry and operation of foreign-majority subsidiaries has been permitted. At the same time, the basic policy has been to promote technological collaboration between foreign- and Indian-owned enterprises and, during the past three decades, over 85 per cent of foreign collaboration agreements approved have been between unaffiliated companies.

64. The adaptation of foreign technology to local conditions and its absorption have been strongly supported by import policies. The requirements for scheduled indigenization of production by both foreign subsidiaries and affiliates and domestic companies are largely enforced by the import licence system. Until 1981, such licenses have not only been required for the import of finished products but for parts and components as well. With the increase in the share of locally manufactured parts and components, the technological base of the companies has broadened and their technological self-sufficiency increased. The close co-ordination of indigenization plans with the grant of

import permit has required a case-by-case evaluation and called for a substantial administrative effort. It has, however, undoubtedly exerted a positive influence on the technological capacities of Indian enterprises. In 1981, within the framework of a broader liberalization of imports, certain licensing requirements for the import of parts and components were removed. As of now, the impact of this measure on the technological develoment and absorption of technology is too early to evaluate.

65. Despite the significant advances which were achieved in technological developments, the policies have also resulted in shortcomings in certain areas. Thus, acquisition of foreign technology has been uneven in the various sectors and over a period of time. According to industrial priorities and the importance which had been attributed to indigenous technological development, certain industrial sectors and subsectors have been closed to foreign technology. Others became closed following a certain period of time, when local capabilities were considerd to be adequately developed. In a number of such sectors, however, the level of technological development has fallen considerably behind that of the latest international standards. In many cases, this has not only influenced the export potential of these sectors, but has led to inefficient products and production methods for the local economy.

66. The preference of the Government for outright purchase of technology for a lump-sum and the difficulties posed for renewals of technical know-how agreements have often impeded companies from continuous access to latest foreign technologies and improvements. Often, the restrictive import policies

which have shielded domestic manufacturers from foreign competition has also resulted in the build-up of technological lag. In the absence of viable foreign competition, domestic manufacturs have often failed to upgrade their technology to internationally competitive levels.

67. Some criticism has also been levelled against the technology acquisition process of state-owned enterprises. While published information on technology payments and the exact terms and conditions for such acquisition is very limited, it is argued that foreign technology acquisition by such enterprises has not been subject to a similarly rigorous evaluation process as that of the private sector. Thus, technology payments, duration of the agreements, and xtension of agreements have been assessed more liberally and also failed to achieve more rapid absorption of foreign technology. Also, the ease of approval of foreign technological collaboration and availability of foreign exchange for this purpose might not have given such enterprises sufficient motivation for adequate increase in indigenous technological development. Such criticism, however, has not been directed uniformly to all public sector enterprises, nor has a general consensus emerged on this issue.

68. The need to upgrade the technological base in several industrial sectors has been expressed in the current Sixth Five Year Plan (1980-1985). Thus, according to the Plan, the principal objective in the heavy industries sector is, inter alia, "increasing productivity, improving process design and development of capabilities for the design and fabrication of equipment and plants for the manufacture of fertilizers, petrochemicals, cement, paper,

steel, non-ferrous metals, etc. As far as machine tools are concerned, development of the capacity of the industry to design and manufacture newer and more sophisicated tools and development of supporting technologies would be the principal goal. Specific areas where major effort would be required are automobiles, agricultural machinery and mechanical and electrical equipment and printing machinery."1/

69. Consistent with this objective has been the streamlining of the approval process of foreign collaboration agreements which were initiated in the late 1970s and which, by 1980, resulted in a significant increase in the number of approved agreements from the previous years. More rapid upgrading of technological growth in several industrial sectors may, however, call for an increased degree of liberalization of policies towards foreign technology. This would include, for example, the exercise of much greater flexibility in approving technology licensing agreements in those sectors and subsectors where availability and access to the most advanced technologies is rather limited in world markets. In such cases, the policies towards FDI may also have to be reconsidered and more exceptions approved than under the prevailing system.

70. For the updating of technological capabilities, the Sixth Plan also envisages an important role to be played by the in-house R&D activities of public sector enterprises and R&D institutions. According to the Plan, "The

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1/ Government of India, Planning Commission, Sixth Five Year Plan, 1980-1985, New Delhi, 1980.

main objective of in-house R&D units will be to develop competence to provide engineering services, bring about improvement in product design and efficiency, import substitution and technology absorption, as also for a steady flow of new products, processes and services".[1/] Towards implementing a comprehensive technology policy, development of technological capabilities through indigenous R&D and technical development would have to be closely integrated with policies towards foreign direct investment and foreign technology acquisition.

1/ Sixth Five-Year Plan, op. cit.

Appendix 1

Illustrative list of Industries where no foreign collaboration, financial or technical, is considered necessary.

1. METALLURGICAL INDUSTRIES:

   FERROUS: Ordinary Castings, Bright Bars, Structurals, Welded CI Steel Pipes and Tubes.

   NON-FERROUS: Antimony, Sodium Metal, Electrical Resistance Heating (nickel free alloy), Aluminium litho plates.

2. ELECTRICAL EQUIPMENT:

   Electric fans, Common domestic, appliances, Common types of winding wires and strips, Iron clad switches, AC motors, Cables and Distribution transformers.

3. ELECTRONIC COMPONENTS AND EQUIPMENTS:

   General purpose transisters and Diodes, Paper, Mica and Variable Capacitors, T.V. Receivers, Tape Recorders, Teleprinters, P.A. Systems, Record Players/Changers.

4. SCIENTIFIC AND INDUSTRIAL INSTRUMENTS:

   Non-specialised types of valves, meters, weighing machinery, and mathematical, surveying and drawing instruments.

5. TRANSPORTATION:

   Railway wagons, Bicycles.

6. INDUSTRIAL MACHINERY:

   Building and constructional machinery, Oil mill Machinery, Conventional rice mill machinery, Sugar Machinery, Tea processing machinery, General purpose Machinery.

7. MACHINE TOOLS:

   Forged hand tools, General purpose machine tools.

Foreign investment and collaboration are liberally welcome in industries which are predominantly export-oriented (minimum exports being 60 per cent of the total production) and where the link with a foreign collaborator will provide an avenue for export. In January 1969, certain policy decisions having a bearing on foreign collaboration in industries, exclusively aimed at increasing India's exports were announced which, inter alia include the following:

(a) Foreign collaboration would be allowed even in low priority or non-essential industries if the collaborators agree to undertake a major share of the production for exports; and

(b) Units with substantial export performance to their credit would be allowed, on merits, to expand their production capacity to enable them to step up their exports.

The Indian Government has now clearly identified the industries where no foreign collaboration is considered necessary. A list of 22 industrial groups has been drawn up wherein foreign collaboration both financial and technological will not ordinarily be permitted. The list of industries is only illustrative. A broad technology base has already been established in the country. But, with constant technological advancements taking place in developed countries the need to update production technology would arise in almost all industries over a period of time. Therefore, import of technology even in these fields may be permitted if:-

i) indigenous technology is too closely held and is not available for use by new entrepreneurs on competitive basis;

ii) technology is required for updating the existing technology in India to meet efficiently domestic requirements or to become competitive in the export market;

iii) such import is required for manufacture of items with substantial exports backed by buy-back guarantees.

In order to streamline and further expedite the procedures for securing approvals relating to foreign collaboration, Administrative Ministries have been empowered to approve technical collaboration agreements if:-

i) there is no foreign equity participation in the proposal;

ii) the applicant is not a company with existing foreign equity investment;

iii) the item proposed to be manufactured is consistent with the priorities set out in the Industrial Policy Statement;

iv) foreign exchange outgo in each case on lumpsum, if any, and royalty together does not exceed Rs.5 million in the aggregate.

8. AGRICULTURAL MACHINERY:

Tractor drawn implements, Power tillers, Foodgrain dryers Agricultural implements.

9. MISCELLANEOUS MECHANICAL ENGINEERING INDUSTRIES:

10. COMMERCIAL, OFFICE AND HOUSEHOLD EQUIPMENT OF COMMON USE:

11. MEDICAL AND SURGICAL APPLIANCES:

12. FERTILISERS:

Single super phosphate, Granulated fertilisers.

13. CHEMICALS (Other than Fertilisers):

Acetic Acid; Acetamilide; Ethyl Chloride; Viscose Filament Yarn/Staple fibre; Melathion technical; Sulphate of alumina; Potassium Chlorate; Fatty Acid and Glycerine; Butyl Titanate; Warfarin; Silica gel; Lindane; Endosulfan; Phanthoate; Nitrofen; Ethyl ether; Plastipeel.

14. DYESTUFFS:

Benzidine; O-Teludine; Carbozole Dioxazine violet pigment; Cadmium sulphide orange.

15. DRUGS AND PHARMACEUTICALS:

Caffeine (natural); Phenyl Butazone; Tol Butamide; Para Acetamel; Phanacetin; Senna extract; Diasogenin; Clofibrate; Hydroxy Cumarin; Xenthopotoxin; Calcium Gluconate; Choline Chloride; Glyceryl Gualacolate; Phenylethyl biguanide hydro-Chloride; Scopolamine hydro-bromide; Niacinamide; Ortholelyl biguanide; Colchicine; Diazepam; Sorbitol from dextrose monohydrate; Berberine hydrochloride; Balladonna; Acriflavine; Calcium hypophosphite; Chlordiazepoxide.

16. PAPER AND PULP INCLUDING PAPER PRODUCTS:

17. CONSUMER GOODS

18. VEGETABLE OILS AND VANASPATI

19. RUBBER INDUSTRIES:

20. LEATHER, LEATHER GOODS AND PICKERS:

Belting-Leather, Cotton and hair finished leather; Pickers; picking bands; Vegetable tanning extracts; Fat liquors other than synthetic.

21. GLASS AND CERAMICS:

22. CEMENT & GYPSUM PRODUCTS:

NOTE: List of illustrative are not exhaustive. Clarification of details within the broad headings is the responsibility of Administrative Ministries.

TERMS OF COLLABORATION

Regarding specific terms of collabroation, the Government has defined certain norms and principles within which individual cases are considered. These are summarised below.

Equity Participation

The ceiling for foreign equity participation is 40 per cent although in exceptional cases involving export-oriented industries and industries requiring sophisticated technology, larger equity holding by foreign companies may be considered. The foreign share capital should be by way of cash without being linked to tied imports of machinery and equipment or to payments for know-how, trade marks, brand names, etc.

Technical Collaboration (Licensing Agreements):

Technical collaborations are considered on the basis of annual royalty payments which are linked with the value of actual production. The percentage of royalty will depend on the nature of technology but should not ordinarily exceed 5 per cent. Royalty is calculated on the basis of ex-factory selling price of the product net of excise duties minus the landed cost of imported components. Royalty payments are subject to Indian taxes. (The present rate of tax on royalties is 40 per cent). Wherever appropriate, payment of a fixed amount of royalty per unit of production is preferred.

Suitable lumpsum payments, in addition to the recurring royalty, may also be considered in appropriate cases for the import of drawings, documentation and other forms of know-how. In deciding on the reasonableness of such payments, account will be taken of the value of production so that the

Appendix 2

Illustrative List of items where foreign technical collaboration can be needed by India.

Engineering

1. Steel cord and reinforced conveyor belting;
2. Forged alloy steel mould for cast iron spun pipe industry;
3. Tyre Building machinery;
4. Tyre Curing Press;
5. Specialised gears, like hybrid, spiral bevel and gear boxes above 1000 HP;
6. Hydraulic transmission including torque convertors;
7. Fuel injection equipment for multicylinder engines;
8. Ball & Ball thrust bearings;
9. Cylindrical, taper, spherical and other special types of bearing such as combined ball and roller bearings and needle roller assemblies for special applications;
10. Heavy duty alloy iron castings;
11. High alloy steel castings;
12. Ferrous castings adopting highly specialised technology, investment castings (Lost Wax Process) Centrifugal castings, pressure die castings etc.;
13. Special alloy steel forgings
14. Specialised earthmoving equipment;
15. Columns for special applications, like Ultra high pressure;
16. XLP Cables;
17. Piston & Piston rings;
18. Earth moving equipment;
19. Gasket;
20. Industrial combustion engine;
21. Poly-propylene capacitors;
22. Material handling equipment, mechanical seals, process control instrument.

Chemical

23. Selected pesticides;
24. Carbon Black;
25. Commercial explosives (Slurry type)
26. Engineering plastics, like PTFE, Polyacetal, polysulphone, reinforced polyamine and polyamide;
27. Selected type of machine tools, like, gleason range of gear cutting machinery, glass bottle making machinery etc.

28. Nitrogenous & Complex fertilisers;
29. Hydrocyanic acid and metal cyanides;
30. Industrial explosive (conventional type);
31. Selected speciality papers, like, cigarette tissues, stencil base;
32. Phenol;
33. Toluene Diisocyanate;
34. Fibre glass;
35. Butadiene from Butene;
36. Catalysts;
37. Fertiliser plants and machinery (selected);
38. Rayon and synthetic fibre machinery.

Additional Illustrative list of Technologies and associated Hardware required by India

1. Technical cooperation in the field of remote sensing of earth resources;
2. Cooperation in the field of ground water development especially in hard rock areas;
3. Power generating and transmission equipment specially gas turbines;
4. Hot line technique.
5. Oil drilling rigs.
6. Manufacture of X-ray and graphic art films;
7. Special welding techniques like
   (a) Intertia welding
   (b) Under-water welding.
8. Powder metallurgy;
9. Wound pressure vessel manufacture;
10. High frequency metal-processing;
11. Explosion forming;
12. Precision casting techniques like investment casting;
13. High pressure moulding techniques for mass production;
14. Ferrous die casting.
15. Laser machining;
16. Chemical machining;
17. Precision forging with thin walls;
18. Cold forging processes;
19. Techniques for low cost forming dies;

20. Hot rolling of gears;
21. Extrusion presses;
22. Presses in Kilns for sophisticated refractories;
23. Palletization equipment;
24. Tunnelling machinery;
25. Cryogenic equipment;
26. Printing equipment;
27. Hydraulic controls and equipment;
28. Rubber machinery;
29. Leather machinery;
30. Radio frequency spectrum management and propagation studies;
31. Rural communication;
32. Pipeline transport of sand and coal;
33. Cold rolled grain oriented steel sheet making;
34. Processes of direct reduction of iron ore;
35. Tall coke oven batteries;
36. Energy study in India with special reference to substitution of oil energy, energy and fuel efficiency and development of substitute fuels including conversion of coal to oil;
37. Research and development in the fields of petroleum, lubricants and additives for fuels and lubricants, petro-chemicals both oil and coal based;
38. Peaceful uses of outer space especially in the fields of communication and remote sensing;
39. Coal gasification;
40. Non-conventional energy sources namely solar energy, geo-thermal energy, wind energy, etc.

Form FC

APPENDIX XV

Application for Foreign Collaboration

(To be submitted with 10 spare copies)

1. Name and address of the Applicant.

2. (i) Name and registered office address of the Indian company which will implement the project. Please specify whether the company is existing or proposed. If the company is proposed to be formed give the names and addresses of the promoters.

   (ii) Whether it is/will be a public limited or a private limited company.

3. (i) Whether the applicant and/or the implementing company is registered under the Monopolies and restrictive Trade Practices Act, 1969.

   (ii) If so, whether clearance required for implementing the proposed scheme under the MRTP Act, have been obtained.

PART 'A'—Capital Structure and Form of Management

[Note : Information in reply to questions4, 5, 6, and 7 should be furnished in respect of the applicant company as well as in respect of the company which will implement the project.]

4. Is the Indian Company controlled either directly or indirectly by non-residents ? If so,

   Please give particulars of (i) the direct participation and (ii) the indirect beneficial participation, i.e , in the list of shareholders, are there any companies which themselves have non-resident share holding? (Particulars of major shareholding of 5% & above of the equity capital alone may be taken for this purpose)

5. Names of the Directors of the Board —

   (i) Foreign Nationals

   (ii) Indian Nationals

6. Names of Selling Agents, Secretaries, Treasurers and consultants to the company, if any, existing or proposed and the extent if any, of foreign equity interest therein

*In accordance with Guidelines for Industries 1976-77

7 Capital Structure

I. *Existing*	*Equity*	*Preference*
Authorised		
Subscribed		
Paid-up		
of which		
(a) Foreign holding		
(i) Direct participation		
(ii) Indirect beneficial participation (as defined in column 4 above)		
(iii) Total : [(i) and (ii)]		
(b) Indian holding.		
(c) (i) Borrowing		
(ii) Existing debt ; equity ratio in the Company.		
II. Proposed		
Authorised		
Subscribed		
Paid up		
(a) Foreign holding		
(i) direct participation		
(ii) indirect beneficial non-resident participation (as defined in column 4 above)		
(iii) Total [(i) and (ii)]		
(b) Indian holding		

8. Whether the proposal contains any provision which relate to matters pertaining to company Law or which attract the provisions of the Foreign Exchange Regulation Act 1973. If so, what steps the company has taken or proposes to take in this connection ?

PART 'B'—Line of Manufacture, capital Cost and Import Content

9. (i) Existing business/item(s) of manufacture and the number and date of Industries (Development and regulation) Act licence, if any.

(ii) Is/are the item/items mentioned above being manufactured with foreign collaboration ? If so, please give the particulars of each collaboration, including the names of collaborators.

(a) Item of manufacture/proposed activity for which foreign collaboration is applied for :

(b) Has any letter of intent/Industrial licence been obtained under the Industries (Development and Regulation) Act 1951 for the items of manufacture for which the foreign collaboration application has been made ? If so, furnish an attested true copy.

(c) In case an application for an industrial licence under the Industries (Development and Regulation) Act 1951 has been made, furnish the reference number and date.

(d) If registered with the DGTD, please quote the reference and the annual capacities for which registered.

(e) Whether the proposed manufacturing programme would be in the small scale sector ? Furnish registration No. if any, and capacities for which registered.

10. Estimated value of annual production.

Year	Items of manufacture	Quantity	Ex-factory value net of excise duties	Ex-factory value after deducting landed cost of imported components,
1st Year				
2nd Year				
3rd Year				

11. Location of factory.

Tehsil.....District.....State.....

12. Proposed capital cost of Project of Rs.

(a) Cost of capital equipment—

(i) Imported:

(ii) Indigenous.

(b) If imported equipment is required, has the capital goods application been submitted approved? Furnish reference No. and date of application/approval.

(c) Cost of other items of capital nature viz

Land

Building

(d) Working capital.

13. Estimated requirements of raw materials and components

Sl. No	Name of raw matrial/component	Indigenous or imported	Quantity	value c.i.f. value if imported
1	2	3	4	5

14. Phased manufacturing programme for Import substitution. Furnish details for 5 years.

Year	Items of manufacture	Annual Production		Percentage by C.I.F. value of imported content (i. e. total of all imported raw materials and components)
		Quantity	Ex-Factory value	
1	2	3	4	5
1st Year				
(i)				
(ii)				
(iii)				
(iv)				
2nd Year				
(i)				
(ii)				
(iii)				
(iv)				
3rd Year				
etc				

PART 'C'—Details of foreign Collaboration

15. Name and address of the foreign collaborator(s) with whom the Indian Company proposes to collaberate.

16. What will be the specific services to be rendered by the foreign collaborator in pursuance of the agreement.

17. Terms of foreign collaboration.

(a) If the foreign collaborator proposes to invest in the equity capital of the Indian company, furnish the following details :

(i) The amount of foreign equity investment (in rupee equivalent).

(ii) What percentage it would constitute of the total authorised equity capital of the Indian company.

(iii) Whether the foreign investment would be in the form of cash or in terms of shares for supply of equipment/technical know-how/other services.

(iv) Estimated annual payments on dividends and profits (gross of taxation) on the foreign investment.

(b) Nature and quantum of lumpsum payments. Rs. Foreign Exchange

(i) Technical know-how fees

(ii) Payments for design engineering consultancy, etc.

(iii) Payments, if any for use of patents brand names, trade mark and the like.

(iv) Any other payment of a lump sum nature.

Total

[Note : Indicate in each case the proposed instalments in which the above payments will be made.]

(c) (i) Whether a recurring annual royalty is proposed ? If so, percentage of royalty (gross of taxes) computed as a proportion of the ex-factory value of annual production (net of excise duties) after deducting the landed cost of imported components, if any

(ii) Are separate rates of royalty envisaged on internal sales and exports? If so, furnish the figures.

(d) Proposed duration of the agreement and the period for which royalty payments will be restricted.

18. (i) If this application is for the extension of an existing collaboration agreement, please indicate the period for which the collaboration has already run and attach a copy of the previous approvals.

(ii) In case of (i) above, please indicate whether you have set up any R & D Cell to absorb the know-how and the progress achieved in this regard.

(iii) In case the initial approval for foreign collaboration was subject to any export obligation, to what extent such obligations have been fulfilled so far?

19. Are the items proposed to be manufactured patented in India? If so, the dates of expiry of the patents.

20. Does the Indian company propose to use any foreign brand name for internal sales and/or exports?

PART 'D'—Other Information

21. Nature of export franchise :

(i) Please specify the names of the countries if any, to which exports are excluded; and if so, the reasons thereof.

(ii) Please indicate if the letter of intent/Industrial Licence or Capital Goods Clearance granted for this item contains any stipulations in regard to exports.

(iii) Export commitments, year-wise, which the applicant is prepared to undertake.

	Quantity	Percentage of Production	Value (FOB)
1st Year			
2nd Year			
3rd Year			
4th Year			
5th Year			
		Total :	

(iv) Brief details on how the applicant proposes to fulfil the export commitments.

22. Effect on balance of payments for the first 5 years.

A. Foreign exchange earnings

(i) Foreign exchange earning based on f.o.b. value of exports covered by export obligation (vide col. 21(iii) above)

(ii) Foreign exchange savings anticipated as a result of import substitution.

Total A

B. Foreign exchange outgo on

(i) Import of machinery and equipment [vide col. 12 (a) (i) above].

(ii) Import of raw materials and components [vide col. 13 above].

(iii) Dividends and profits [net of taxes based on col. 17 (a) (iv) above]

(iv) Lumpsum payments (net of taxes based col. 17 (b) above].

(v) Royalty payments [net of taxes based on col. 17(c) above taking into account the value of production in col. 10 above]

(vi) Number of foreign technicians proposed to be employed and payment to them (net of taxes)

(vii) Other payments, if any.

Total B

C. Net foreign exchange inflow (A-B)

23. Give an account of the attempts made to explore alternative sources for the import or technology and the techno-economic considerations for preferring the particular collaboration which has been applied for

24. Whether the proposed collaboration will contain any restrictive arrangement or clauses which in any manner bind the Indian party with regard to the procurement of capital goods, components, spares, raw materials or the use, adaptation and improvement of know-how or pricing policy, selling arrangements etc.

25. Please confirm that the foreign collaborator is agreeable that the technical know-how/Product design/engineering design can also be made available to other Indian parties; should it become necessary, on terms and conditions as may be agreed to by all the parties concerned, including the foreign collaborator, and subject to the approval of the Government.

26. Whether the foreign collaborator has other collaborations with any other party in India for the same or similar product. If so, give details.

27. What steps does the applicant propose to take for research and development in respect of the technology involved, engineering design, training of Indian technological personnel and other measures for the absorption, adaptation and development of the imported technology. Give specific details.

Date.....

Signature of the Applicant

Place.....

SPECIMEN LETTER FOR APPROVAL OF FOREIGN COLLABORATION

Government of India
Ministry of Industrial Development
Secretariat for Industrial Approvals
Foreign Collaboration Unit

Messrs..... .....

.....

... .

No. FC:.....(.....) New Delhi, Dated the .....

Subject: Application from Messrs..... .....for foreign collaboration with .....for the manufacture of .....

Ref: FC. Sl. No.....

Centlemen,

With reference to the above application, Government of India are prepared to approve the terms of collaboration with Messrs..... for the manufacture of ....subject to the following conditions in addition to those detailed in the annexure:

(i) The foreign collaborator will invest to the extent of Rs..... .....in the total issued capital of Rs..... .....of your company (..... ...per cent of the total issued capital). The total non-resident share-holding in the joint venture should in no case exceed the percentage being agreed to.

(ii) The foreign collaborator shall be paid a royalty @.....per cent, subject to Indian taxes, of the net ex-factory sale price of the product exclusive of excise duties, minus the landed cost of the

imported components, irrespective of the source of procurement including ocean freight, insurance, custom duties etc. The payment of royalty at the rate mentioned above will be restricted to....., plus 25% in excess thereof. In case of production in excess of this quantum, prior approval of Government would have to be obtained regarding the terms of payment of royalty in respect of this extra production.

(iii) In addition to the royalty mentioned above, the foreign collaborator shall be paid lumpsum of Rs.....subject to applicable Indian taxes, for technical know-how, drawings, designs, documentation, erection and commissioning, etc. The lumpsum shall be paid in three instalments as detailed below:

(a) 1/3 after the agreement has been taken on record.

(b) 1/3 at the time of transfer of technical documentation.

(c) 1/3 after the commencement of commercial production.

(iv) This approval is subject to the condition that you shall export the product to be manufactured at least of the value of Rs.....in terms of foreign exchange per annum for.....years/over a period of...../.....% of your annual production for a period of.....years, and for this purpose, the requisite guarantee *i.e.*, legal undertaking/bank guarantee as may be required should be furnished. For this purpose, you may contact the CCI&E (EO Cell) and the Ministry of Commerce (TAEP).

2. You are requested to confirm to the Foreign Collaboration Unit, Secretariat for Industrial Approvals, Udyog Bhavan, New Delhi-110011, and also to the Ministry/Department of.....that the terms of collaboration stipulated above and in the annexure are acceptable to you.

3. Ten copies of the collaboration agreement which should be strictly in according with the terms as indicated above, as finally executed, and which should be signed by both the parties may be furnished to the Ministry/Department of.....

4. This approval to the terms of collaboration is valid for a period of 6 months from the date of issue of this letter.

Yours faithfully,

Under Secretary to the Government of India

Annexure

(i) The Indian Company should be free to sub-license the technical know-how/product design/engineering design under the agreement to another Indian party, should it become necessary. The terms of such sub-licensing will, however, be as mutually agreed to by all the parties concerned including the foreign collaborators and will be subject to the approval of Government.

(ii) The deputation of technicians either way shall be governed by specific approval to be granted by the Government on application in terms of numbers, period of assistance and training, rate of allowances to be paid, travelling charges and other items of expenses, etc.

(iii) Import of capital equipment and raw materials would be allowed as per import policy prevailing from time to time.

(iv) Foreign brand names will not ordinarily be allowed for use on the products for internal sale although there is no objection to their use on products to be exported.

(v) Exports shall be permitted to all countries except* where the foreign collaborator has existing licensing arrangements for manufacture. In the latter case, the countries concerned shall be specified.

(vi) The duration of the agreement shall be for a period of five years from the date of agreement or five years from the date of commencement of production provided production is not delayed beyond three years of signing of agreement (*i.e.* a maximum period of eight years from the date of signing of the agreement). Within this period, the Indian Company should develop and set up their own design and research facilities so that continued dependence on foreign collaboration beyond this period will not be necessary.

(vii) In case the item of manufacture is one which is patented in India, the payment of royalty/lumpsum payment made by the Indian Company to the foreign collaborator for a period of agreement mentioned in condition (v) above shall also constitute full compensation for the use of the patent rights till the expiry of life of the patent and the Indian Company shall be free to manufacture that item even after the expiry of the collaboration agreement, without making any additional payments. A specific provision in this regard must be incorporated in the collaboration agreement to be entered into between the two parties.

(viii) In case any consultancy is required to execute the project, this should be obtained from an Indian Consultancy Engg. firm. If foreign consultancy is considered unavoidable, an Indian consultancy firm should nevertheless be the prime consultants.

(ix) The Indian Company should submit a return about the progress of the undertaking as in the form enclosed ** showing the position as on 31st December each year. This return should be submitted by the 31st January of the following year annually till the date of expiry of foreign agreement. The return should be addressed to the following authorities:

(a) The Ministry/Department administratively concerned with the field of collaboration.

(b) The Directorate General of Technical Development, Udyog Bhavan, New Delhi-110011 (to be sent in duplicate).

(c) The Secretariat of Industrial Approvals (Foreign Collaboration Unit), Ministry of Industry & Civil Supplies, Department of Industrial Development, Udyog Bhavan, New Delhi-110011.

(d) Ministry of Finance (Department of Economic Affairs), North Block, New Delhi-110001.

(x) The agreement shall be subject to Indian laws.

Under Secretary to the Government of India

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* The countries concerned to be specified.

** (Available on request)

INDIAN INVESTMENT CENTRE

FREE TRADE ZONES

The Indian Government has established Free Trade Zones for promotion of exports. There are two such Free Trade Zones at Kandla on the West Coast of India and at Santa Cruz near Bombay. The Free Trade Zone at Santa Cruz has been established exclusively for manufacturing units in the electronics industry. The various facilities and concessions available at these Free Trade Zones are described below:

KANDLA FREE TRADE ZONE (KAFTZ)

Located in Gulf of Kutch, some 500 km from Bombay, Kandla Free Trade Zone (KAFTZ) was established in 1965 primarily with a view to promote exports and to bring about fuller utilization of the facilities at Kandla Port. The goods already under production in the Zone include Stainless steel utensils, embroidered fabrics, art knitting machines, drugs and pharmaceuticals, waterproof tarpaulins, spectacle frames, nylon, fabrics, embroidered nylon sarees, embroidered full-voile Arabian scarfs, blended tea, laminated PVC, ladies handbags, roasted peanuts and cashew nuts, etc. An illustrative list of items for manufacture in KAFTZ is given in Annexure.

Concessions

Besides the general facilities and incentives, such as those relating to income tax, imports of machinery and raw materials, exports, etc., which are available for establishment of export-oriented industries elsewhere in India, industries set up in the KAFTZ are given special incentives as below:

* There is no restriction on the line of manufacture so long as it is 100 percent export-oriented and is not reserved exclusively for public sector; items banned in the rest of the country can also be imported with a few exceptions.
* Duty free import of capital goods and equipment from preferred sources.
* Import licenses granted to meet raw material requirements for buffer stock up to 12 months.
* Exemptions from customs and additional (counter-vailing) duty on consumable raw materials, components, spares, tooling and packaging materials imported.
* Exemptions from Central Excise Duties and other levies on products manufactured within the Zone.
* Capital goods, equipment, raw materials, components, spares, tooling and packaging materials supplied to the Zone from the rest of the country are treated as exports and are eligible for all the concessions such as compensatory support, duty drawbacks, etc., as are available

Appendix 4

Technology payments by the private sector in India
thousand dollars

	Royalty	Technical Know-how	Total
1970	7,700	17,400	25,100
1971	7,300	28,600	35,900
1972	7,300	17,400	24,700
1973	9,000	14,000	23,000
1974	7,800	17,600	25,400
1975	9,500	14,100	23,600
1976	11,900	29,100	41,000
1977	19,300	46,100	65,400

Source: UNCTAD Legislation and regulations on technology transfer: empirical analysis of their effects in selected countries, TD/B/C.6/55, 28 August 1980.

Appendix 5

NUMBER OF FOREIGN COLLABORATIONS APPROVED INDUSTRY-WISE

Industry	As on 31.12.79
Electrical Industries including Telecommunication	1,068
Industrial Machinery including Agricultural Machinery	1,163
Metallurgical Equipment and other Machinery	490
Machine Tools, Accessories, Instruments including Medical and Surgical Instruments	577
Chemicals, Drugs and Pharmaceuticals and Allied Industries	880
Transport Equipment and Material Handling Construction Equipment	519
Technical Consultancy	65
Others e.g., Ceramics, Glass, Cement, Fuel, Food Industries, etc.	1,025
Grand Total:	5,787

Source: Ministry of Industry, SIA, Government of India, New Delhi, information was provided in 1982.

Appendix 6

COUNTRYWISE FOREIGN COLLABORATIONS APPROVED BY THE GOVERNMENT OF INDIA

Country	*Number Approved*	
	1957 to 1979	*1980*
U.K.	1345	110
U.S.A.	1096	125
F.R.G.	998	100
Japan	502	35
Switzerland	328	37
France	272	24
Italy	179	25
G.D.R.	113	8
Sweden	104	6
Netherlands	89	8
Czechoslovakia	68	4
Denmark	58	6
Belgium	50	2
Austria	43	5
Canada	41	—
Hungary	31	2
Poland	24	2
Yugoslavia	17	3
Finland	16	5
Others	332	19
Total	5706	526

Source: Indian Investment Centre, Foreign Collaborations in India, Policy and Perspectives, New Delhi, March 1981.

KENYA

Background

71. During the 1970s, industrial production has increased gradually in Kenya and from a largely agriculture-oriented economy, a more diversified manufacturing industry has evolved. Besides the traditional processing industries of agricultural products, as tea, coffee, sugar, sisal and cotton, production of durable consumer goods expanded and manufacture of simple industrial standard products has been undertaken. While, since independence, progress in these latter sectors has been significant, development of the metal-working and metal-forming industries is still at an early stage. In the absence of significant production and technological capabilities in iron, steel and non-ferrous metal production, most of the local manufacture of durable consumer goods is presently assembly-oriented, with limited value-added. Thus, a wide range of products, from small consumer electrical products to automobiles are assembled from imported CDK and SKD units and progress in local integration of -oduction has been slow. Together with the local assembly of consumer durables, there has also been an increase in the local production of some standard, common-use industrial products, like small motors, pumps and distribution transformers.

72. Local production of consumer non-durable goods and local assembly of consumer durables, such as household electrical products, automobiles and commercial vehicles, together with the manufacture of standard industrial

products, has been largely undertaken by foreign subsidiaries. A number of these subsidiaries have grown out of sales offices of large foreign manufacturers, mostly from the United Kingdom, which in response to government import policies, have initiated local assembly. In the late 1970s, it was estimated that about 70 per cent of the value-added of the manufacturing sector has been undertaken by foreign subsidiaries.

73. Rapid growth of the industrial sector has, however, been limited not only by the weak production and technological structure of the metal-working and forming industries but also by the relatively small market size. Also, with the disintegration of the East African Union, export potential has decreased significantly.

74. The current Development Plan (1979-1983) envisages a broad pattern of industrialization, including development of the intermediate and capital-goods sectors.[1/] The Plan also provides broad outlines for the financing of such industrialization and defines the role to be played by state and private enterprises, of foreign and domestic origin. The Plan also delineates the objectives of science and technology policy, which includes both domestically-performed R&D activities and the role and characteristics of foreign technology. The Plan envisages the establishment of appropriate institutions for the implementation of the country's science and technology policy. The importance of local technological development and acquisition of foreign technology has also been emphasized in the Ministry of Industry Paper

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1/ Government of Kenya, Development Plan, 1979-1983, Nairobi, 1979.

Statement of 6 March 1980, delineating the policy of the Ministry. According to the Statement, the policy of the Ministry will be directed to "establish instruments for acquiring, adapting and assimilating foreign technology to our circumstances and for the development of appropriate indigenous technologies."[1/] The Statement also makes provisions for strengthening the institutional framework for this purpose. Thus, improved project evaluation capabilities will aim to ensure that the selected technologies are appropriate to the country, the fees for technology and management are competitive and that adequate training will be provided for Kenyans at all levels.

75. It is against these broad objectives for industrial and technological development that the past and prevailing policies and legislation of the country towards FDI and foreign technology acquisition need to be discussed. In light of the objectives delineated in the 1979-1983 Development Plan, and based on the experience of Kenya and some other developing countries at a similar level of industrial and technological development, some policy suggestions have also been made.

Policies towards FDI

76. Foreign direct investments have been the major channel for technology transfer in the advanced industrial sectors of the country. Local assembly of consumer durable goods and simple industrial products which are locally

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1/ Quarterly Economic Review of Kenya, London, 1981.

manufactured is predominantly undertaken by such companies. Foreign presence is, however, also important in the non-durable consumer goods sector and foreign branded products command substantial market share. In the late 1970s, foreign direct investments in the country were estimated at about $US 900 million, of which over half was of U.K. origin, followed with about $US 250 million from the United States and $60 million from the Federal Republic of Germany. The balance of about $US100 million was distributed among investors from Italy, France, Japan and Switzerland.1/

77. The Government has traditionally followed an open-door policy towards FDI and except utilities and infrastructure, all sectors have been open to foreign investors. There was no mandatory requirement for screening of foreign direct investments; rather it has been promoted by incentives. Thus, under the Foreign Investment Protection Act of 1964, registered foreign investors obtain a Certificate of Approved Enterprise which entitles the company to remit earnings and makes it eligible to other privileges such as access to foreign exchange for imported machinery, equipment and other required inputs and work permit for the employment of expatriates.

78. Sunce the mid-1970s, the open-door policy has been tightened in some areas. Thus, additional measures have been adopted to control the outflow of foreign exchange, and foreign direct investments became subject to increasing screening and evaluation. In 1976, the Foreign Investment Protection Act of 1964 was amended and made provisions retroactive to 1964 that the invested

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1/ Business International, Investing, Licensing and Trading Conditions Abroad, Kenya, New York, August 1981.

capital be repatriated at the exchange rate which was in force at the time of the original investment. Also, it confined the guarantee of foreign exchange repatriation to the capital of the original investment and excluded reinvestments from such guarantee. In December 1978, a ceiling of 10 per cent was set on the permissible rate of dividend repatriation.

79. In the mid-1970s, a New Project Committee (NPC) was established as an interdependent organization for the screening, evaluation and approval of foreign investment projects, which apply for a Certificate of Approved Enterprise. While registration of foreign direct investments has not been made mandatory, a Certificate of Approved Enterprise became necessary for day-to-day operations of such companies. The NPC is chaired by a representative of the Ministry of Industry and includes representatives of the Ministries of Commerce, Finance, Economic Planning and Development and the Government-owned financing institutions. The criteria of evaluation by the NPC includes the investment proposal's impact on the country's foreign exchange situation, employment and the company's financial rate of return. Criteria used with respect to technological development of the country relate to the following dimensions: appropriateness of the technology to local conditions; training of Kenyans at various qualifaction levels and management capabilities of the company, including charge of management fees.

80. While foreign direct investment applications have become subject to increased scrutiny, there are no statutory restrictions imposed on the maximum ownership to be held by foreigners and most of the foreign subsidiaries which

operate in Kenya are majority or wholly foreign-owned. At the same time, in the approval procedure for granting a Certificate of Approved Enterprise status, Kenyanization of the economy and formation of joint ventures with local partners has been encouraged. In cases when several applications are submitted for a specific project, preference is given to joint ventures.

81. The Development Plan of 1979-1983 defines the role and acknowledges the importance of foreign investments and particularly encourages such inflow into priority areas which includes a wide range of intermediate and capital goods sectors, together with export-oriented and labour-intensive production. Foreign investments are also considered to be important to fill the saving-investment gap of the country and thus are welcome for projects which require high capital investments. At the same time, small-scale industries (those wiht investments of less than K.Sh.5 million) are reserved for local investors.

82. Recently, development of certain basic industries, and participation of foreign investors in such projects, has been encouraged by the proposed participation of government financing institutions in joint ventures with foreign investors. Thus, presently negotiations are under way for the establishment of joint ventures between the government finance corporation, the Kenya Industrial Development Bank and foreign partners for the manufacture of machine tools, small agricultural machinery and electronics products. The contribution of the Government's finance corporation is envisaged to be confined largely to the provision of equity capital while active management

would be vested with the foreign partner. Participation of such para-statal organizations in the supply of capital and transfer of the management function to the foreign partner is intended to attract foreign investors in the priority sectors.

Policies towards foreign technology

83. In formulating policies towards foreign direct investments, besides the supply of investment capital, an important contribution of such investments is to provide the necessary technology, including training of the local labour force. Since the mid-1970s, increasing attention was paid to screening and evaluation of foreign investment proposals, supply of technology and its contribution to technological development have also been within the criteria included in such evaluation. The Government, however, has not adopted specific legislation towards the acquisition of foreign technology nor has formulated specific administrative guidelines in this regard.

84. Technology agreements between foreign technology suppliers and their local subsidiaries or domestically owned companies are not subject to registration. Under the provisions of the Exchange Control Act of 1962 and its amendment in 1965, remittance of technology fees and payments is, however, subject to the approval of the Central Bank. According to the provisions of the Exchange Control Act, the approval of foreign exchange remittance for technology payments has to be evaluated by the Capital Issue Committee in the Ministry of Finance. The Committee has not published specific guidelines for evaluation, and its major criterion relates to the examination of the financial implications of the contract from the viewpoint of foreign exchange

inflow and outflow. There are no maximum permissible royalty rates established but, in practice, the generally applied royalty rates have been between 2.5 per cent and 5 per cent of net sales for management contracts and 1 per cent to 2.5 per cent for technology contracts. Besides the rate of royalty, the Committee takes the export potential of the licensee company into account but imposition of restrictive clauses, including export market restrictions have not been prohibited. Applications to the Committee have to include estimated sales of the company which provides the basis for the calculation of the royalty or management fee. Approval of the agreement by the Committee, however, does not guarantee a blanket permission for the remittance of royalties. Each year, a new application has to be filed and permission is subject to the foreign exchange situation of the country at the time.

Industrial property law

85. Industrial property rights are regulated by the Patents (Registrations) Act (Cap. 508 of the Laws of Kenya); Trademarks Act and Rules 1950-1970 (Cap. 506); and U.K. Designs (Protection) Act (Capt. 510). These laws closely follow the provisions and stipulations of the corresponding UK laws on which they were patterned. Thus, only those patents can be registered which have been registered in the United Kingdom during the past three years and protection of the patent runs parallel to the validity in the United Kingdom. According to the UK patent law, inventions registered until 1977 obtain 16 years protection. Under the 1977 amendment of the UK patent law, duration of the validity for inventions registered following that date, was extended to 20 years. The Kenyan patent law has no provisions for compulsory licensing.

R&D activities

86. Industrial R&D by the private sector has been very limited. This is partly related to the assembly nature of the machinery and durable consumer goods industry and the large presence of foreign subsidiaries in the advanced industrial sectors. In case of such companies, all the technological elements are transferred by the parent company and no separate R&D activities have been established in the relatively small Kenyan subsidiareis.

87. R&D activity in Kenya is largely undertaken by the government-financed Kenya Industrial R&D Institute (KIRDI), previously called the East Africa Research Organization. Presently, KIRDI has a staff of approximately 50, of which about 10 are engineers and activities are divided into three areas: textiles ceramics and foods. In the near future, it is envisaged that the scope of KIRDI's activities will be expanded and divisions for leather, electronics and engineering will be added. The engineering department is planned to function as a service department for other departments, and to solve technological problems related to prototype development and manufacturing. It is alsc envisaged tht KIRDI will play an increasing role in the technical evaluation of licensing agreements when procedures will be established for this purpose.

Summary and conclusions

88. Kenya's science and technology policy delineated in the Development Plan, 1979-1983, lays emphasis, inter alia, on the effective use of foreign technology. The National Council for Science and Technology (NCST) has

already been established for this purpose. To implement the objectives of the Development Plan, particularly the envisaged rate of growth in intermediate goods and capital goods production, it is important to assess the need for foreign technology, to screen and evaluate foreign technologies and to promote inflow of the needed technology. Implementation of these objectives will require establishment of appropriate legislation or administrative guidelines towards foreign direct investments and foreign technology and the establishment of institutions to implement such measures.

89. Presently, there are few restrictions imposed on FDI and, according to the objectives of the Development Plan, such investments are welcome in a broad range of sectors, including intermediate and capital goods, and in export-oriented, capital-intensive and labour-intensive projects. If FDI is to be channeled effectively, it may be important to establish more clearly-defined priorities rather than a wide range of activities. In light of the relatively small market size and the weak industrial and technological infrastructure, entry of foreign investments in such priority sectors may need considerable incentives and assistance. Granting of incentives would, however, usually involve scarce government funds, as in the case of the proposed joint ventures between the government financing corporation and foreign investors, and it is important to establish more narrowly-defined investment priorities.

90. With the low technological level of the country in the metal-working and metal forming industries and in the manufacture of intermediate products, technology acquisition in these sectors will have to rely significantly on

followed over the next few years. Initially, such indigenization plan may need to be established on a case-by-case basis, but subsequently, sectoral targets may be set up.

92. Until now, most of the foreign technology inflow to Kenya has been associated with FDI and the number of technology agreements between foreign technology suppliers and domestically owned companies has been very limited. Such arrangements have been largely confined to the manufacture of consumer non-durable products when, due to the small market, the foreign technology suppliers has not been interested in establishing local production in Kenya. It has also generally involved technologically simple products such as soaps and cosmetics, when the domestic licensee company was largely motivated to obtain the right to use a foreign reputable brand name which enjoyed good market acceptance.

93. With the implementation of Development Plan, the need for foreign technology will increase significantly. Thus, legislative measures have t ensure that such inflow is monitored by a government agency and that legislative norms or administrative guidelines improve the bargaining position of domestic companies. Such measures would have to ensure that the technology supplier imposes no undue restrictions on the usage of technology, production and marketing of the product, either in the domestic or foreign markets. Provisions would also have to be made that agreements do not involve unduly long duration in relation to the time required to absorb the technology. Evaluation of the terms and conditions would also have to involve the assessment of the reasonableness of technology payments and its relationship

foreign direct investments. In the advanced sectors of the industry, the low technological capacity would generally require significant technological inputs from the foreign licensor and such inputs would generally be only available through equity participation by the licensor. Equity control and adequate profit from equity holdings may be required to ensure long-term relationships betwen the technology supplier and recipient enterprises. Also, financial participation of the licensor may be necessary to ensure that the foreign technology is effectively absorbed by the domestic company over a period of time.

91. The promotion of FDI in selected priority sectors, with particular emphasis in those areas where acquisition of technology combined with FDI is critical, would need to be complemented by the imposition of certain control measures. From the viewpoint of technological development, particularly with respect to the absorption and adaptation of foreign technology, approval of FDI projects would have to be subject to a specific integration or indigenization plan over a period of time. Unless a gradual increase in the local content of production is determined, the pattern of foreign subsidiary operations may remain at assembly level as at present. In such cases, the extent of technology transfer remains very limited and confined to the development of relatively simple, operative skills. Also, as major share of the parts and components continues to be imported, there is little scope for adaptation of products to local conditions and such imports continue to adversely influence the balance of payments. Consequently, if local integration is expected to increase, and if technology transfer is to be broadened, it is important that approval of FDI proposals should define the

to the services to be provided by the licensor, including training of the Kenyan labour force at various levels.

94. In the Kenyan context, where most technology agrements will be entered between parent companies and their subsidiaries in the immediate future, monitoring of the compliance of the partners with the original contractual agreement becomes of major importance. Such monitoring should include, for example, the institution of training programmes, export performance, compliance with the prescribed integration schedules and corresponding decrease in the imports of parts and components and other inputs.

95. Presently, FDI proposals which apply for a Certificate of Approved Enterprise status, are approved by the New Projects Committee, an inter-departmental agency headed by a representative of the Department of Industry and Commerce. Technology payments involving foreign remittances are subject to the approval by the Central Bank and the Capital Issue Committee of the Ministry of Finance. In most countries, where FDI and technology have been co-ordinated effectively, the institutions responsible for FDI and foreign technology have been merged into one agency. This allows the effective control, monitoring and promotion of foreign technology inflow in conjunction with FDI or without equity participation by the foreign technology supplier. It also helps to avoid duplication of efforts when both FDI and foreign technology are involved in one proposal, as is usually the case. This issue is of importance in the Kenyan context where experienced personnel for economic, legal and technical evaluation of FDI projcts and technology transfer agreements are still in relatively short supply.

96. Besides the regulatory and control functions to be vested with such a centralized agency, a major function would also relate to the promotion of foreign technology inflow in critical areas. Thus, based on the priorities and objectives identified in the development plan, and together with the planning institution, the agency would have to assess the technological needs for the required industrial programmes. Based on an assessment of such needs, technological alternatives would have to be identified, both in the local and foreign markets and this information diffused to user companies. Such information gathering and diffusion would provide a major element in promoting foreign technology inflow and would serve as a valuable advisory function for local enterprises.

MEXICO

Background

97. Foreign technology has played a very vital role in Mexico's industrialization. Within the import substitution programmes, particularly in the technologically advanced industrial sectors, foreign subsidiaries and affiliates have been the major channels of technology transfer. During the 1950s and 1960s, government policies encouraged the entry of such companies by granting various incentives. Thus, under the various incentive schemes, foreign subsidiaries had the freedom to enter most sectors of the economy, except the few which were reserved for state enterprises, such as public utilities, petroleum and basic petrochemicals. Besides supplying capital, foreign subsidiaries were considered necessary for supply of technological inputs and know-how in areas where local domestic capabilities had not been developed. The technology transfer arrangement between foreign subsidiaries and their Mexican affiliates were generally formalized by contracts, though there was little governmental control over transfer of technology fees and payments to parent enterprises and technology suppliers. The technology contracts were not evaluated by governmental agencies from a legal, technical or economic viewpoint during this period. Foreign exchange remittances were made on the basis of compliance of the contractual terms for remuneration for technology and services.

98. By the early 1970s, a significant share of the manufacturing industry, particularly the technologically-advanced sectors, was dominated by foreign subsidiaries and affiliates, largely from the United States. In 1970, for example, over 60 per cent of the production and sales of electrical equipment, transport equipment and major sectors of the mechanical equipment industry, such as agricultural machinery, construction and mining machinery, and equipment for the chemical industry had been undertaken by foreign subsidiaries which dominated production in these sectors.[1/] Similarly, a major share of consumer electrical products, automobiles and standard industrial products was held by foreign subsidiaries and affiliates. Though these foreign-controlled enterprises progressively increased local production of technologically simple items, particularly non-durable and durable consumer goods, the manufacture of technologically complex and sophisticated products generally remained at the assembly level, with a high import content and low percentage of local value-added. Technological and import dependency in respect of these products changed only insignificantly over the years.

99. By the early 1970s, the prevailing pattern of industrialization, based on relatively unrestricted inflow of foreign capital and technology posed several problems for the Mexican economy. While increasing foreign participation in several advanced industrial sectors had raised industrial production and output significantly, the enormous increase in equipment and intermediate

1/ Sectoral distribution of foreign direct investments in selected ...s of the industry is presented in F. Fainzylber and Trinidad Martinez Las Empresas Transnacionales, Fondo de Cultura Economica, Mexico, 1976.

goods and components resulted in large gaps in the balance of payments, which became of growing concern to the Government. It was also clear that the prevailing pattern of industrialization and build-up of production capacities had not been accompanied by similar development of local technological capabilities. Compared to countries like Brazil and India, which were on similar levels of industrialization, production of capital goods in Mexico lagged substantially behind. While production of consumer goods grew rapidly, with low levels of integration in durable consumer products, domestic manufacture and growth of technological capability for production of machinery and equipment and intermediate products for the engineering goods sector remained very limited. There continued to be a high degree of dependance on foreign technology, and payments increased significantly while local R&D activity by most foreign subsidiaries and affiliates remained extremely low. The existing pattern of technology acquisition and operation of foreign subsidiaries tended to perpetuate not only the dependence on foreign technology for even simple products and processes but also on imported inputs and on foreign technical services.

100. Since the early 1970s, Mexican industrial development programs have placed growing emphasis on a shift from import substitution in the consumer goods sectors to production of a wide range of intermediate and industrial products, including manufacture of various categories of mechanical and electrical equipment. In the production of durable consumer goods, particularly automobiles, manufacturers have been required to rationalize production so as to reduce maintenance imports or increasse exports of vehicles or parts and components to pay the high import bills on such

account. A greater degree of self-sufficiency has been sought to be achieved for an increasing range of economic and industrial activities. Considerable policy emphasis has also been given to increase national participation and control in the vital sectors of the economy. These policy trends provided the background for the introduction of legislation towards FDI, foreign technology and industrial inventions and trademarks. In 1972, the Law on Registration of the Transfer of Technology and the Use and Exploitation of Patents and Trade Marks was promulgated and in 1973, the Law for the Promotion of Mexican Investment and Regulation of Foreign Investments were issued. In 1976, the Law on Inventions and Trade Marks was enacted which amended major provisions of the prevailing law on industrial property. In 1982, there were certain modifications of the 1972 law on technology transfer.

101. Underlying these legislative measures has been the major policy emphasis to exercise greater local control over the pattern and rate of industrial and technological acquisition. The new law on industrial property was also intended to achieve greater technology diffusion in the economy, particularly in sectors considered vital in the national interest. During the 1970, the technology policy of the country has been significantly shaped by these legislative measures and the pattern and trends in foreign technology inflow have been subject to their implementation. In the following section, the major features of these legislative measures are discussed and some empirical data are presented regarding the inflow of foreign technology, both in conjunction with foreign direct investment and in the form of technology agreements. Finally, based on the available evidence and experience, some conclusions are drawn on the effectiveness of the adopted policies and areas are pointed out where changes and modifications in the policies may become necessary in future.

Law on the Transfer of Technology and the Use and Exploitation of Patents and Trademarks, December 1972, effective from January 1973 1/

102. The major objective of this legislation was to promote national technological development of the country and to provide greater domestic technological support to the country's industrialization programme. At the same time, through screening and evaluation of foreign technology agreements and ensuring acceptable terms for its acquisition, the conditions for foreign technology inflow were intended to be improved. As the law defines prohibited clauses in technology contracts and specifies required norms, these measures have provided an improved framework for domestic companies in their negotiations with foreign technology suppliers. To meet these objectives of the law, institutional mechanisms were established for its implementation.

103. In order to regulate foreign technology inflow and to ensure compliance with the law, the law requires all technology agreements to be registered. Such agreements and contracts covered the use of patents and trademarks, the supply of plans, diagrammes, models, instructions, formulas, engineering details for installations, managerial and technical assistance agreements, consulting and evaluation services. (Until 1982, in-bond units (maquiladoras) were exempted from this requirement. Since February 1982, these enterprises are also subject to the same law.) For the implementation of the law, a National Registry of Technology Transfer was created, which was empowered to screen, evaluate and approve technology transfer agreements. The National Registry, together with the Foreign Investment Commission, are part of the Secretariat of National Property and Industrial Development.

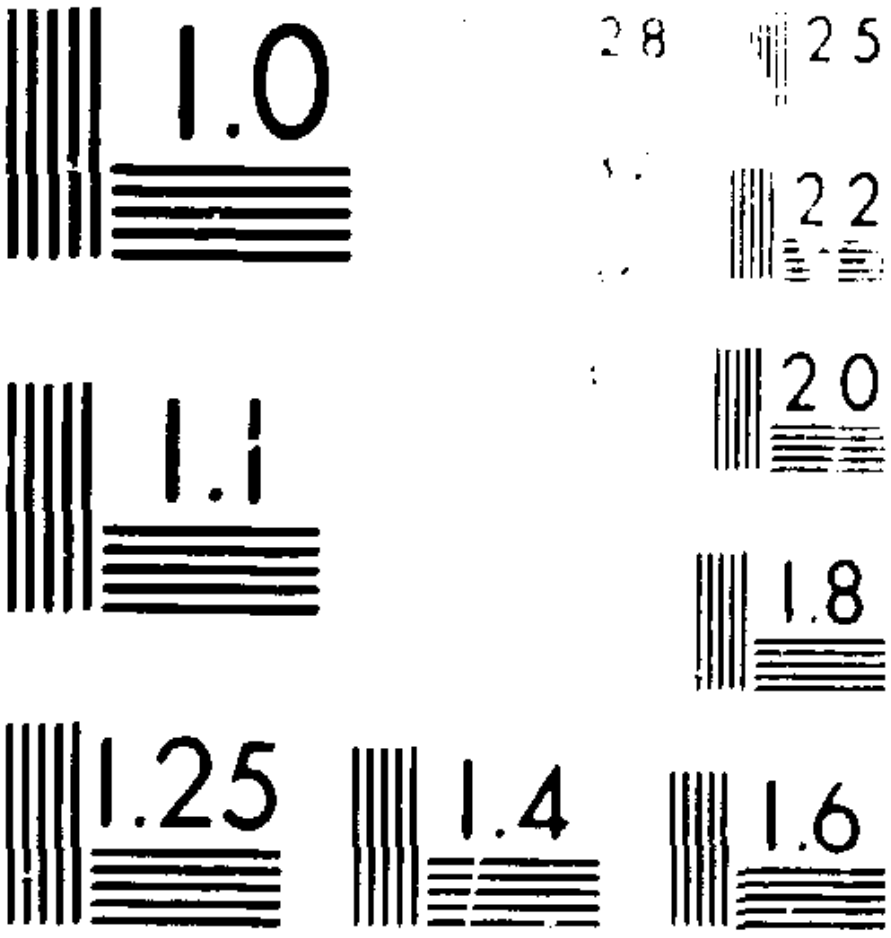
1/ This law was published in the Offical Gazette of the Federation, on 30 December 1972.

104. The requirement of compulsory registration included all the above-mentioned contracts with Mexican nationals, foreign residents in Mexico and foreign subsidiaries and affiliates located in Mexico. Exempt from the registration were contracts related to installation of factories or machinery, repairs, designs, and general assistance forming part of the purchase of machinery and equipment and training of personnel in schools or by companies for their work force. All other contracts which were not registered within the stipulated period were to be considered null and void and neither of the parties could appeal to courts or apply for fiscal or other benefits granted by the Government.

105. The major provisions of the law relate to the specification of those conditions under which the Registry would prohibit the conclusion of an agreement. These terms and conditions relate to the following issues:

a. Availability of the technology. Technology supply agreements which involve technology already available in the country are prohibited;

b. Price of the technology. Article 7/11 specifies that agreements will not be registered "when the price or counterservice is out of proportion to the technology acquired or constitutes an unwarranted or excessive burden on the country's economy". The article, however, does not set permissible maximum rates of royalties either by sectors or across the board. Nor does it prohibit the charging of minimum royalties, irrespective of the sales volume of the licensee. There are no provisions defining permissible rates of or royalty rates relating to different ownership relationships between the technology supplier and recipient enterprises.


1.0
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c. Duration of agreements. According to Article 7/XIII agreements are not registered "when they establish an excessively long term of enforcement. In no case may these terms exceed a ten-year obligation on the technology-importing company." Similarly, the 1976 Law on Inventions and Trade Marks grants a maximum protection of 10 years for industrial inventions. The issues related to the post-expiration usage of the technology are, however, not covered by the Law. In a broader context, this may be addressed to by Article 7/XI which prohibits imposition of limitation on the volume of production of the licensee. It is, however, not specified whether cases of post-expiration usage would be treated under this category. Neither does the law provide for the protection of proprietory information which was passed on by the licensor as an improvement, subsequent to the conclusion of the original agreement.

d. Restrictive clauses. Article 7 enumerates those clauses which the law considers to be restrictive for the operations of the licensee and which are consequently prohibited. These are the following:

- Direct or indirect intervention by the technology supplier in the management of the licensee company;
- Imposition of grant-back provisions for improvements and innovations made by the licensee;
- Tie-in agreements for raw materials, intermediate products or capital goods;
- Export restrictions, when they are contrary to the country's interests;
- Obligation to sell the goods produced by the licensed technology to the licensor;

- Assignment of personnel by the licensor on a permanent basis;
- Limitation on the production or pricing of the licensee, either in domestic or in foreign markets;
- Obligation to sign exclusive sales or representation contracts with the supplier company;
- Foreign jurisdiction in case of litigation.

Flexibility in the implementation of the Law

106. Article 8 of the law states that if the technology is of special interest to the country, the Secretary of Industry and Commerce is entitled to register contracts which contain restrictions identified in Article 7. Exceptions, however, are not permitted in those cases when the contract relates to technology which is freely available in the country or grant-back provisions are imposed or if R&D activities of the licensee are limited or if exports are unduly restricted or if the duration of the contract exceeds ten years or if foreign jurisdiction is specified.

Administrative procedures for registration

107. Articles 4, 10, 11 and 12 specify the procedures for registration. According to Article 4, applicants have to file the documents related to the contract with the Ministry of Industry and Commerce in the National Register for the Transfer of Technology within 60 days of their signing by the parties. The Secretary of Industry and Commerce decides on the compatibility

(or lack of it) of registration within 90 days of the date the documents have been submitted. If, within 90 days, no decision has been reached, the contract is considered as registered in the National Registry (Article 10). If the registered terms of the contract are in violation of the provisions of the law, the Secretary of Industry and Commerce cancels the registration (Article 11). The Registry is obliged to maintain complete confidentiality with respect to the technological information related to the products and processes which are presented to the Registry (Article 13). Organizationally, the National Registry for Transfer of Technology is headed by the Director-General which heads two divisions: the Subdirectorate for Evaluation and the Subdirectorate for Registration. The former comprises the departments of Economic Analysis, Technical Analysis and Studies and Statistics. The Subdirectorate for Registration comprises the departments of Legal Analysis and of Reception, Registration and Control and of Decisions.

Determination of royalties and fees

108. With the implementation of the law since 1973, the various guidelines and interpretations of the law by the Registry have clarified several of those issues which had been left unspecified in the legislation. These include, for example, the rate of reasonable rates of roylties and fees for foreign technology, the Registry generally uses cost-benefit measurements, using the following criteria:

a. Nature of technology. This includes the age of technology and in general, the older the technology, the lower is the royalty rate considered reasonable. In case of older technologies, evidence has to be provided about the dynamic impact of such technology on the economy. The supplier must show that, despite its age, the technology in question generates economic activity consistent with national goals.

b. Alternative sources of technology. The Registry has increasingly adopted measures to compare the price of various technologies to those of alternatives in the world markets and to similar technologies in the domestic market. The former has been done largely through discussions with agencies from other Governments and comparing prices of alternative foreign suppliers.

c. Ownership relationship between contracting parties. While the law does not differentiate in the permissible maximum rates of roaylty to be charged between affiliated and unaffiliated companies, in practice, the Registry has taken the ownership relationship between technology supplier and user into account. In parent-subsidiary relationships, the Registry has considered a lower royalty rate as appropriate compared to those charged between unaffiliated companies.

d. The economics of the licensee's operation has continued to be the most important evaluation criterion by the Registry. Thus, royalty rates have been prohibited which the Registry considered as disproportionately high, compared with the sales or profits of the licensee. It is, however,

acknowledged that estimation of the benefit of the technology to the licensee is difficult to assess and thus, the appropriate rate of royalty is estimated by the costs of alternative technologies or competitive technologies from other foreign sources.

109. Until the late 1970s, a 3 per cent royalty of net sales was used most frequently. Depending on the sector, however, the Registry differentiates the permissible maximum rate of royalty. In 1976, these were in the following range: 6-10 per cent for pharmaceuticals; 2.5-5 per cent for light engineering products and vehicles; 4-5 per cent for electronic products and 1-3 per cent for food products.[1/] Since the late 1970, however, the Registry has used a more flexible approach and, in the priority sectors, royalty rates exceeding the above rates have been approved. Thus, royalties in selected capital goods and in agro-industries have been generally much higher.

110. The law specifies 10 years as the permissible maximum duration for contracts. It does not, however, deal with the regulation of renewals. Through experience, it appears that the Registry takes the stand that royalties which are paid during the contract period are considered as price for the purchase of technology rather than a fee for its usage. Thus, renewals have generally only been then permitted if they involved transfer of new technology.

1/ Hope Camp and Carlos A. Rohas Magnon, "Recent Developments under the Mexican Foreign Investment Law and the Law Regulating the Transfer of Technology," Lawyer of the Americas, Volume 8, No. 1, February 1976.

111. The approach of the Registry of treating a licensing agreement as a technology purchase transaction rather than an agreement for temporary usage of a technology has also repercussions on the treatment of confidentiality issues. Concerning the confidentiality of the information which has been submitted to the user during the licensing agreement's period, the Registry considers that after termination of the agreement, the licensee owns the technology for which adequate payment has been made. In certain cases, the Registry agrees to keep confidentiality for ten years, starting from the time when the licensee received the information.

Control and Registration of Technology Transfer and Usage of Patents and Brandnames, 1982. 1/

112. In February 1982, a new law was passed which amended the legislation issued ten years earlier. The new law does not have retroactive effect for contracts which had already been registered or registration of which is pending but parties to such contracts must abide by the terms of the new law. The new law has retained most of the key provisions of the 1972 law but some important modifications have been made. The new law confers greater discretionary power to the Registry by entitling it to approve contracts which contain restrictive clauses which would generally be prohibited. While the 1972 law prohibits grant-back clauses, according to the new law such provisions are permitted if there is a reciprocal agreement between the parties or other benefits exist for the Mexican company. The earlier

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1/ Published in Diario Oficial, 11 January 1982.

provision against obligatory sales of the licensee to the licensor has also been modified. The Registry will allow such clauses if the Mexican company can prove that the technology licensor can undertake better marketing efforts abroad. The new law also added control measures which were not contained in the 1972 formulation. Thus, the supplier of technology has to guarantee the quality of the technology and the results achieved by the transferred technology. The licensor must also assume the responsibility for any infringement of industrial property rights of third parties. The new law also introduces higher penalties both for non-registration of contracts and for furnishing incorrect information to the Registry. In the former case, the penalty can amount up to 5,000-fold of the minimum annual wage in Mexico and in the latter case, up to 10,000 times the minimum annual wage.

Policies toward FDI

113. Until 1973, there had been few restrictions imposed on the entry and operations of foreign subsidiaries. With the exception of a few closed sectors to FDI, entry of FDI was facilitated by various government incentives. In the 1950s and 1960s, entry of foreign subsidiaries was promoted by permitting TNCs to capitalize used machinery and equipment, granting of fiscal and financial incentives and protection from competing imports.

114. By the early 1970s, with changes in national development objectives and priorities, policies towards FDI were modified. The new policies were primarily aimed to increase the participation of Mexican enterprises and

shareholders, particularly in those sectors where the strong presence of foreign subsidiaries had restricted the scope for domestically owned industry. Towards this aim, the share of foreign equity participation in new enterprises was generally limited to a minority position, which enabled majority control by local industrial groups. Prohibition of wholly foreign-owned subsidiaries in most sectors of the economy was also intended to promote the creation of joint ventures between foreign companies and Mexican partners. Such joint ventures were envisaged to facilitate the absorption of foreign technology by local entrepreneurs which would, in turn, contribute to the development of domestic technological capabilities. This Mexicanization policy has been implemented gradually and majority-ownership of existing foreign subsidiaries was permitted to be retained. While the 1973 law did not provide for dilution of majority ownership, expansion of operations has been generally subject to increased Mexicanization of the company. Such increased participation by domestic enterprises has also been increasingly promoted by the incentive system which favoured Mexican-majority owned companies and reduced progressively the availability of incentives to foreign-majority companies. In the Mexicanization of companies, increasing emphasis has been laid on the formation of joint ventures with local partners rather than selling shares to the public. This is intended not only to increase Mexican participation and control in operations but also to enhance the technological capabilities of the domestic partner. The major features of the 1973 law are briefly described, which provide the legislative framework for the implementation of national policy towards FDI.

Law for the Promotion of Mexican Investment and Regulation of Foreign Investment, 1973. 1/

115. This law established the National Commission on Foreign Investment (NCFI) which implements its provisions. For the screening, evaluation and approval of FDI, the law provides the criteria to be used by the NCFI. Foreign direct investments should complement national investments and should not displace national enterprises nor enter into fields which are already adequately covered. They should contribute to national development objectives as identified by Government and embodied in development plans. More specifically, foreign direct investments are to be evalua on the basis of their effect on balance of payments, employment creation, training of technians and managerial personnel, contribution to R&D and technological development and usage of local materials and inputs. FDI should not occupy a monopolistic position and should preserve the social and cultural values of the country.

116. Within this broader framework, FDI is permitted with the exception of these sectors which are exclusively reserved for state enterprises or which are only open to Mexican companies. Activities which are reserved exclusively for the state include petroleum and basic petrochemicals, selected utilities and certain mining activities. Radio and television, selected utilities, forestry, gas distribution and highway and domestic airline services have been reserved for Mexican-owned companies. In all the other fields of the economy,

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1/ Secretaria de Patrimonio y Fomento Industrial, Law to promote Mexican Investment and Regulate Foreign Investment, 1980.

foreign investors are generally permitted to participate up to 49 per cent of equity. The maximum permissible foreign equity ownership is 40 per cent in the manufacture of secondary petrochemicals and manufacture of parts for automotive vehicles and 25 per cent for private financial institutions. In exceptional cases, the NCFI may permit foreign equity share in excess of 49 per cent. These would include, for example, cases which involve transfer of sophisticated technology in priority sectors such as certain capital goods and agro-industries.

117. The National Commission on Foreign Investment is comprised of the Ministers of Interior, Foreign Relations, Finance and Public Credit, Programming and Budget, Patrimony and Industrial Development, Commerce, and Labour and Social Welfare. In addition to the members, the NCFI may consult private and public organization if such consultation would be necessary. Foreign investments which are not registered in the National Registry of Foreign Investment are considered as void and are not enforceable before any legal authority.

Legislation on industrial property rights

118. Until 1976, inventions had been subject to the Law of Industrial Property of 1943. In 1976, a new patent law was promulgated which amended the previous law. This legislation was motivated by the view that the prevailing regulation of innovations had not adequately promoted the diffusion of technological know-how in the economy and may, in fact, have impeded this

process. Two major factors were considered in this regard. First, the ownership of registered parents in the mid-1970s showed that over 90 per cent of registered patents in Mexico were owned by foreign companies and individuals. Furthermore, the share of foreign-owned patents had been increasing over time and tended to reduce and pre-empt the scope for domestic innovations. Second, there had been substantial non-utilization of patents, which by the mid-1970s was estimated at around 95 per cent of registered patents. Registration of patents by foreign companies served mainly to secure import privileges for the patent owner rather than protecting the rights for local production. It was considered that reliance on imports to cover domestic demand had not only limited the development of local manufacturing capabilities but also impeded the diffusion of technological progress in the economy. The industrial property law which was promulgated in 1976 addresses itself to those issues and aims to reduce the negative consequences which resulted from the Industrial Property Law of 1943. The 1976 law also covers the regulation of trademarks. A major feature of these provisions relates to the registration and usage of foreign trademarks and the progressive usage of local trandemarks and trade names. In the following section, the major features of the patent and trademark law are discussed, with particular reference to those provisions which affect technological development, particularly acquisition of technology and its diffusion in the economy. These include the patentability of inventions; the validity period of protection, provisions for compulsory licensing and the right of Government to expropriate inventions.

Law to Regulate Rights of Inventors and the Use of Brand Names, 1976 1/
Major provisions concerning inventions

Patentability

119. The law only extends protection to processes which are used in production, and products cannot be patented. Inventions, which serve major national interests, either economic, social or political, cannot be patented. Inventions in the following sectors are excluded from patentability:

a. food industry
b. agriculture
c. pesticides, herbicides and fertilizers
d. pollution control
e. nuclear energy

Inventions in these sectors are, however, eligible to be registered as inventors' certificates (certificados de invencion). Ownership of an inventor's certificate entitles the owner to charge royalties to users on mutually agreed terms. If the parties cannot reach an agreement on the rate of royalty payment, authorities of the Patent Office make the decision. Innovations protected by inventor's certificate are eligible for usage by all interested parties and exclusive arrangements with one user cannot be made.

1/ Published in Diario Oficial, 10 February 1976.

Duration of validity period

120. The term of protection granted to patented inventions has been reduced from 15 to 10 years and the validity period cannot be renewed. Protection for industrial designs and models are granted for five years without possibility for renewal.

Compulsory licensing provisons

121. A major feature of the 1976 law regulating inventions relates to the definition of patent working and provisions in case of non-working of patents. Working of a patent is defined as the permanent use of the process protected by the patent either directly by the patent owner or by a licensee or assignee. Import of the product is not considered as patent working, rather it has to be effective industrial production, which adequately covers domestic demand in appropriate quality and at a suitable price. To meet the conditions of patent working, the potential export market has also to be developed. In the absence of sufficient working of the patent for three years following the date of grant of the patent right, interested parties can apply for obtaining a compulsory licence. If, by the end of the fourth year following registration of the patent, the patent has not been worked either by the patent owner or a licensee on a voluntary or compulsory basis, the validity of the patent protection elapses automatically and the invention will be in the public domain. In case, after three years following the non-working of a patent, an application is made to obtain compulsory licensing rights, the patent owner has two months to redress the non-working of the patent.

In the absence of production by the patent owner, the applicant obtains the right to production. This right is non-exclusive and other qualified applicatns can obtain similar rights. In case the patent owner and the applicant fail to agree upon the rate of royalty or payments, the Patent Office and the National Registry of Technology Transfer decide about the royalty to be paid.

122. In the implementation of these provisions, however, the Patent Commissioner has to follow the provisions of Article 5 (A) 3 of the Paris Convention, Stockholm Revision of 1976. According to these provisions, patents are not revoked on account of non-working nor are they subject to compulsory licensing if the patent owner can provide an affidavit indicating that such non-working has been due to financial and economic conditions. such conditions would include the size of the required investment to undertake production and the small size of the domestic market. In such cases, the patent owner has to bring evidence to prove that the domestic demand can be provided more efficiently by imports than by domestic manufacture.

Expropriation

123. For reasons of public health, national defense or public interest, patents can be expropriated by the Government.

Regulation of trademarks

124. The major provisions of the 1976 law which relate to the use of trademarks aim to: (a) limit the non-usage of registered trademarks, mainly for foreign subsdidiaries and thus reduce the possibility for domestic companies; (b) protect the consumer by preventing the usage of different trademark names for similar services and thus avoid misleading product perception; (c) enable the Government to require manufacturers and companies to use certain trademark names to abstain from using certain names if this is considered to be in the national interest; and (d) gradually reduce the usage of foreign trademark names in favour of local names. This would not only reduce the foreign exchange remittances related to royalty payments for the usage of trademark names but also limit the imposition of restrictive clauses which may be associated with the usage of foreign trademarks or brand names. By the gradual introduction of domestic trademark names and their acceptance in domestic markets, export potential for domestically branded products would also increase. These key provisions of the law are specified in the following articles:

Term of Protection and Renewal of Trademarks (Article 112)

125. The terms of protection for trademarks has been reduced from 10 to 5 years, with the possibility of indefinite renewals for periods of 5 years. Granting of renewals is, however, subject to proof of usage of the trademark within three years from the period of registration. Unless adequate usage of

the trademark name is proven, the Ministry of Industry and Commerce may cancel the registration automatically.

Use of Trademark Registration (Article 116)

126. Products and services rendered by the same manufacturer or company which are significantly similar have to be sold under the same trademark name. Usage of different trademarks for such products or services would lead to misjudgement by the user and are thus prohibited.

Mandatory or Prohibited Use (Article 125)

127. The Article entitles the Ministry of Industry and Commerce: (a) to require the manufacturer or company to use a specific trademark name for a given service or product (this would be in most cases in the pharmaceutical and food sectors and involve the usage of generic names); and (b) prohibit the manufacturer to use certain brand names if this is considered undesirable from the viewpoint of national interest.

Use of Combined Trademarks (Articles 127 and 128)

128. According to this provision, foreign trademark names have to be displayed together with local trademark names with equal prominance and presenting in a clear manner that the two names are linked. An 1978 decree, however, amended this provision and authorized the Department of National Property and

Industrial Development to grant extensions of 12 months. Based on this amendment, such extensions have been granted for 1979, 1980, 1981 and 1982.

Inflow of FDI and foreign technology

129. Foreign direct investments have been traditionally the major channel for foreign technology transfer to Mexico. During the 1970s, such investments increased rapidly and by 1980, the total stock of FDI reached $US 8.5 billion, compared to $US 3.5 billion in 1970. In 1979 and 1980, the rate of increase of FDI exceeded 100 per cent, compared with an average annual growth rate of 23 per cent for the 1970-1980 decade.1/ Also, FDI has increased more rapidly in the second part of the 1970s, indicating that the introduction of the 1973 legislation has not negatively influenced the inflow of total FDI but rather the ownership structure of such investments. IN 1980, 5,431 companies had foreign equity share with various degrees of foreign participation. In the majority of the companies (52.8 per cent), the share of foreign equity was between 49.1 per cent and 100 per cent. Only a minority of the companies (8.2 per cent) had foreign equity participation of less than 25 per cent.2/

1/ Dirección General de Inversiones Extranjeras y Trasnferencia de Tecnologia, Anuario Estadistico, Mexico 1980. FDI inflow for 1970-1980 is presented in appendix 1.

2/ Ibid. Total number of foreign subsidiaries and affiliates and their sectoral distribution is shown in appendix 2.

130. Historically, the major source of foreign private investments has been the United States and, in 1980, such investments accounted for 69 per cent of the total FDI stock. The balance is distributed among a number of Western European countries, namely investments by companies from the Federal Republic of Germany (8 per cent), United Kingdom (3 per cent), Spain (2.4 per cent), Switzerland (1.5 per cent) and Japan (5.9 per cent).[1/] In recent yars, investments from Japan have been on the rise while somewhat lower growth rates have been registered by investors from the United States. Part of this trend has been influenced by a consdcious effort of the Mexican Governmen to diversify the sources of FDI and technology, and partly resulted from changing competitive conditions in the Mexican market.

131. The predominant share of FDI inflow has gone to the various sectors of manufacture. In 1980, close to 78 per cent of the FDI stock was accounted for by this sector. The commerce and services sectors received about 9 per cent and 8 per cent of total FDI inflows, respectively, while the mining and agriculture sectors receivefd relatively low FDI (4.9 per cent and 0.1 per cent of total FDI).[2/] Within the manufacturing sector, most of the foreign direct investments have concentrated in the technologically advnced sectors which accounted for most of the FDI inflows. Thus, investments in five sectors account for over half of the total foreign direct investments in Mexico. These include chemicals (18.5 per cent); transport equipment (14.5 per cent); manufacture of electrical and electronic products (9 per cent);

1/ Distribution of FDIs by countries of origin is shown in appendix 3.

2 Dirección General, op. cit.

manufacture of non-electrical machinery (7.4 per cent) and food processing (6.9 per cent). FDI in the traditional sectors, such as textile, paper and pulp, tobacco and in the various subsectors of the metal processing and transformation subsectors has remained relatively low.

Inflow of foreign technology

132. By the end of 1979, the Registry for Technology Transfer had registered 8,257 technology agreements.[1/] Most of these agreements (61 per cent) related to the usage of technical know-how, and about half of the agreements (49 per cent) contained provisions for the usage of foreign trademarks. The right to use patents involves less than 20 per cent of the agreemnts and transfer of basic and detailed engineering know-how forms part of 11 per cent and 8 per cent of the agreements, respectively. Most of the agreements contain provisions for the transfer of several technological elements, such as a combination of technical know-how, trademarks and detailed engineering and other technical services.

133. Approximately 70 per cent of technology agreements were entered between manufacturers from the United States and domestic companies, both foreign subsidiaries and domestically owned public and private sector enterprises.

1/ Anuario Estadistico, Inversiones Extranjeras y Transferencia de Tecnologia, Mexico, 1981. Dirección General de Inversiones Extranjeras y Transferencia de Tecnologia, Mexico, 1981. Distribution of technological elements in the technology contracts registered by the Technology Transfer Registry are shown in appendix 4. The total of 8,257 agreements registered includes 1,923 agreements which are entered among Mexican companies.

This high concentration on United States sources of technology has not changed significantly over the past three decades and technology agreements from other countries have accounted for a relatively small share of total agreements. Thus, the balance of agreements is mainly distributed among technology suppliers from the Federal Republic of Germany, Switzerland, United Kingdom, France and Japan.[1/] Up to 1979, over 75 per cent of the agreements were concluded between affiliated companies, that is, between parent companies and their Mexican subsidiaries and affiliates and less than one fourth were between foreign technology suppliers and unaffiliated domestically owned Mexican companies.[2/]

134. Ir the second part of the 1970s, particularly since 1977, technology payments have increased significantly. In 1979, such payments reached $US 285,3000 compared with $US 190,000 in 1977. During the 1975-1979 period, Mexico's payments for foreign technology exceeded $US 1 billion and thus ranked among the highest in developing countries. Most of the payments were effected by companies engaged in the manufacture of intermediate goods, largely in the chemical and petrochemical sectors. In 1979, these payments amounted to $US 138,4000 and accounted for close to 50 per cent of the country's total payments. This was followed by the consumer goods and capital goods manufacturing sectors, payments by each of them accounted for approximately

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1/ Anuario Estadistico, op. cit.

2/ Ibid. Distribution of technology agreements by industrial sector and ownership relationship betwen the parties is shown in appendix 5.

18 per cent of total payments.[1/]

135. While direct payments for technology transfer have grown significantly, this has resulted partly from an increase in the number of agreements concluded and partly by the acquisition of more advanced technologies which generally command higher fees and royalties. According to the estimates of the Registry, with the progressive improvement of the evaluation procedure of contracts from legal, economic and technical viewpoints, there has not only been a significant reduction in the number or restrictive clauses in the contracts, but also more favourable payment conditions have been obtained. Largely because of high royalty and other technical payment requirements, a significant portion of the contracts submitted for approval were either rejected or renegotiated and subsequently, more favourable conditions obtained.

Summary and conclusions

136. Since 1973, with the introduction of legislation for the acquisition of foreign technology, specific and detailed provisions have guided the formualtion of such contracts. Thus, the law has primarily served an important role in making domestic companies aware of the critical issues involved in the selection, acquistion and absorption of foreign technology and in reducing those restrictions imposed by the licensor. By specifying the

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1/ Direccion General de Inversiones Extranjeras y Transferencia de Tecnologia, o. cit. Distribution of technology payments by sectors is shown in appendix 5.

terms and conditions which the Registry would not approve, the law has improved the bargaining position of domestic companies vis-à-vis foreign technology suppliers. Awareness of domestic companies of the critical issues involved in foreign technology acquisition and support by the law has undoubtedly improved the terms of technology acquisition as well. While exact figures about the resultant savings are difficult to quantify, various estimates support this fact. Thus, comparative studies of contracts which were entered before 1973 with those registered subsequent to the introduction of the law, indicate a signficant reduction in the number of restrictions imposed by the licensor in the case of the latter. Such restrictions have undoubtedly decreased the indirect costs associated with the acquisition of foreign technology.

137. Since the introduction of the law and with the growing experience of the Registry to screen and evaluate agreements, both the Registry and domestic companies have made considerable efforts to ensure that important contractual elements be included in the contracts. These clauses relate to the detailed specification of the services to be provided by the technology supplier, for example, training of the licensee's labour force at various levels, such s managerial, engineering, technical and operative staff; transfer of design know-how both for basic and detailed engineering, and contribution to the licensee's R&D efforts. Such elements have increasingly formed part of more recent agreements while preceding 1973, and even a few years subsequent to the introduction of the law, such technological elements were seldom included in the agreements.

138. The analysis of recent agreements also shows a more detailed description of the technological process to be transferred by the licensor and specification of the channels for such transfer. This has facilitated monitoring of the technology transfer process during the validity period of the contract, both by the receiving company and the Registry. such monitoring has not only been important for assessing technological capabilities but also for ensuring that all the technological elements have been transferred and effectively absorbed during the contract period and renewals would only take place if improvements or new technology are transmitted.

139. Despite the specific provisions of the law concerning contractual clauses which are prohibited, considerable flexibility has been shown by the Registry. Thus, according to the 1972 law, in case of a number of restrictions the Registry could use a considerable degree of discretionary power to approve contracts containing clauses which are generally prohibited. Such exceptions were made when access to the concerned technology was considered by the Registry to be vital to national interests and, because of the nature of the international technology market, availability of the technology was subject to certain restrictions. The modification of the law in 1982 has extended the discretionary power of the Registry and entitled it to approve contracts containing a wider range of restrictions than specified in the 1972 law. The exercise of such flexibility by the Registry has been partly made possible by the growing experience of the Registry to screen and evaluate technology contracts and assess the international technology market. Greater flexibility may also be necessary because of the growing needs for

advanced technology in critical and priority areas, where availability of foreign technology is often more restricted.

140. With the accumulation of experience in implementing technology legislation, there has also been an increasing awareness that if the technology policy is to be effective, it needs to be closely co-ordinated with FDI policies. Until the late 1970s, effective co-ordination of these policy measures and their administration had been hindered to some extent by the separation of institutions which had been engaged with the formulation and implementation of foreign technology and foreign direct investment policies. In response to this problem, the Commission for FDI and the Technology Transfer Registry have been merged in one body, which has allowed more effective co-ordination of policies and their administration.

141. The development of local technological capabilities has also been complemented by policies on foreign direct investment. The 1973 law which regulates the entry and ownership of foreign subsidiaries and affiliates has largely confined the operation of foreign investors to joint ventures. Greater participation of domestic companies in joint ventures with foreign partners has not only been considered important for the growing local control of the industry but also for technological growth of domestic companies. Consequently, foreign investment policies which aimed at the Mexicanization of foreign-majority firms, encouraged this through bulk purchase of stock by domestic partners rather than by selling shares to a large number of local share holders.

142. Despite the considerable effectiveness of technology legislation on the terms and conditions of foreign technology acquisition, some areas of technology policy and its implementation may need to be strengthened. One of these areas relates to the improvement of selection and choice of foreign technologies which are most appropriate to local conditions. Presently, the selection of technology is left primarily to the domestic company and the role of the Registry is mainly confined to the evaluation of terms and conditions of the application. In case of larger or long-established companies which have substantial experience in the field, there may be suitable resources available, both financial and technical, to locate the most appropriate technologies in the world market. For smaller and medium-sized companies, however, their more limited resources and the complexity of the international market would, in most cases, affect the selection of suitable technologies. While the extent of the role of the Technology Registry in technological decision-making of private companies may pose a difficult policy issue, an increase in the advisory capacity of the Registry would be useful and of importance in most cases.

143. For improvement of the technology acquisition process, the role and functions of the Registry may also need to be broadened in two areas, namely assessment of technological needs and compilation and dissemination of information on technological alternatives to user enterprises. Within the broader framework of industrial planning on a sectoral and subsectoral level, production areas and targets are specified with varying levels of accuracy. Thus, the present development plan for 1982-1990 provides fairly detailed

production projections and growth rates for various industries and indentifies priority sectors. If the industrial targets are to be reached effectively, such planning and projections would have to be complemented by a detailed assessment of technological needs for those sectors. Once the technological needs are identified, they can be passed on to domestic companies. Such assessment and its dissemination to domestic companies could be undertaken by the Registry, together with the planning and other government agencies involved in industrialization.

144. An important role of the Registry would also be to monitor technological change in critical sectors in the domestic and world markets. In the domestic market, such change takes place with the successive acquisition of foreign technology and its adaptation by local industry. Also, there is progressive growth of domestic service capability, with the development of expertise and capability of consulting engineering companies and specialized engineering companies. With the upgrading of domestic technological skills and capabilities, the need for foreign technology changes, nd these changes need to be identified and monitored over a period of time. Monitoring of international technological developments would also be an important task to be performed by the Registry as global scanning, information gathering and evaluation is generally beyond the horizon and capabilities of individual domestic firms. Yet, such information would be critical for the planning of production capabilities and technology acquisition of domestic companies. Keeping up with technological development in world markets in selected industrial sectors would not only be essential for export-oriented production sectors but also for more efficient domestic production.

145. A major task of the Registry may be to gather and disseminate information on technological alternatives. Global scanning for available technologies cannot, in most cases, be performed by individual companies and would need a centralized effort. Presently, considerable information on foreign technologies is compiled in Mexico by CONACYT. These efforts, however, would need to be amplified and extended to a broader range of technologies and on a larger scale. Also, as the Registry is in charge of screening and evaluating technology contracts, its direct involvement in the compilation and dissemination of information to user enterprises may be more practical and effective. Such efforts by the Registry, together with CONACYT, would contribute to a more informed technological decision-making of private enterprises.

Promotion of local R&D activities

146. Within a comprehensive technology policy, policies relating to the acquisition of foreign technology would need to be closely co-ordinated with those promoting local R&D activities. While recently, in negotiation with foreign technology suppliers, the performance of local R&D has been given increased emphasis, such activity has been very limited in the case of most foreign subsidiaries and affiliates. Increase in local R&D activities, both by foreign subsidiaries and domestically owned companies would be critical for improving the bargaining position of domestic companies, for accelerating the

absorption of foreign technology and increasing local innovative capability. With the importance of these factors, several government incentives, including fiscal and financial, have recently been introduced. In certain areas, the effectiveness of these measures has already been evident while, in most other sectors, the response has been relatively slow. Due to the difficulty and complexity of the task of promoting local R&D efforts of private companies, it is important that the Registry co-ordinates with other government agencies more closely.

Appendix 1.

Foreign direct investments, 1970-1980
(thousand US$)

Year	New investments	%	Cumulative investments	%
1980	200.7	-	3714.4	-
1971	168.0	-16.3	3882.4	4.5
1972	189.8	12.9	4072.2	4.9
1973	287.3	51.3	4359.5	7.1
1974	362.2	26.1	4721.7	8.3
1975	295.0	-18.6	5016.7	6.2
1976	299.1	1.4	5315.8	6.0
1977	327.1	9.4	5642.9	6.2
1978	383.3	17.2	6026.2	6.8
1979	810.0	111.3	6836.2	13.4
1980	1622.6	100.3	8458.8	23.7
Average		23.0		8.6

Source: Direccion General de Inversiones Extranjeras y Transferencia de Tecnologia, Anuario Estadistico, Mexico, 1991.

Appendix 2.

Foreign subsidiaries and affiliates and their sectoral distribution, 1980

Sectors	Number of enterprises	Foreign Participation			Total per cent
		Up to 24.9%	From 25.5% to 49.0%	From 49.1% to 100.0%	
Agriculture	29 (0.5)		9 (31.0)	20 (69.0)	100.0
Mining	260 (4.8)	20 (7.7)	212 (81.8)	28 (10.8)	100.0
Manufacturing	2820 (52.0)	209 (7.4)	1075 (38.1)	1536 (54.4)	100.0
Commerce	1213 (22.3)	99 (8.2)	373 (30.7)	741 (61.1)	100.0
Services	1109 (20.4)	116 (10.5)	447 (40.3)	546 (49.2)	100.0
Total	5431 (100.0)	444 (8.2)	2116 (39.0)	2871 (52.8)	100.0

Source: Same as appendix 1.

Information as of 31 December 1980.

Appendix 3.

Country of origin of foreign direct investments, 1975-1980, percentage distribution

Country	1975	1976	1977	1978	1979	1980
United States	70.1	72.2	70.2	69.8	69.6	69.0
Germany, Fed. Rep.	6.2	6.5	7.3	7.3	7.4	8.0
Switzerland	4.3	4.2	5.3	5.5	5.5	5.6
Japan	2.0	2.0	4.2	4.8	5.3	5.9
United Kingdom	5.5	3.9	3.7	3.6	3.0	3.0
Spain	0.9	1.1	1.0	1.4	1.8	2.4
Sweden	1.0	1.0	0.9	1.5	1.7	1.5
Canada	2.9	2.0	2.1	1.8	1.6	1.5
Netherlands	1.7	2.0	2.0	1.8	1.3	1.1
France	1.8	1.4	1.3	1.3	1.2	1.2
Italy	0.9	1.5	0.6	0.6	0.8	0.3
Other	2.7	2.2	1.4	0.6	0.8	0.5
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Same as appendix 1.

Appendix 4.

Types of technology transfer agreements,
as of December 1979

	Number	Percentage of total 1/
Total	8,257	100
Patent	1,568	19
Trademarks	4,045	49
Supply of technical know-how	5,036	61
Technical assistance	3,9	48
Basic engineering	908	11
Detailed engineering	660	8
Services	990	12

Source: Anuario Estadistico, Inversion Extranjera Directa Transferencia de Tecnologia, Direccion General de Inversiones Extranjeras y Transferencia de Tecnologia, Mexico, D.F. 1979.

Note: As one contract usually involves several types of agreements, the total percentage of contracts adds up to above 100 per cent.

Appendix 5.

Distribution of technology contracts by sectors and ownership of licensee, 1973-1979

Economic sector	Total number of contracts	%	Ownership of licensee company: Mexican	%	Foreign	%
Priority sectors						
Agro industries	330	4.0	102	30.8	228	69.2
Capital goods	887	10.7	119	13.4	768	86.6
Strategic inputs	97	1.2	46	47.4	51	52.6
Durable consumer goods	689	8.3	92	13.4	597	86.6
Non-durable consumer goods	623	7.6	158	25.3	465	74.7
Intermediate products	1686	20.4	352	20.9	1334	79.1
Sub-total	4312	52.2	352	20.9	1334	79.1
Non-priority sector						
Transformation	2369	28.7	704	29.7	1665	70.3
Extractive	198	2.4	100	50.5	98	49.5
Commercial services	1378	16.7	398	28.9	980	71.1
Sub-total	3945	47.8	1202	30.5	2743	69.5
Total	8257	100.0	2071	25.1	6186	74.9

Source: Dirección General de Inversiones Extranjeras y Transferencia de Tecnologia, Mexico, 1982.

Appendix 6.

Foreign technology payments, 1975-1979
(in thousands of dollars)

	1975	1976	1977	1978	1979	Total	%
Priority sectors							
Intermediate products	74.1	82.7	86.5	99.1	138.4	480.8	45.9
Capital goods	31.2	32.8	33.3	36.4	50.2	183.9	17.6
Consumer durables	23.1	24.5	23.0	26.5	32.2	129.3	12.3
Consumer non-durables	18.7	20.9	22.4	21.3	30.0	113.3	10.8
Agro-industry	15.9	17.6	15.4	15.0	21.4	85.3	8.3
Sub-total	163.0	178.5	180.6	198.3	272.2	992.6	94.8
Non-priority sectors							
Including, extraction, transformation and service and comerce	10.5	11.1	9.5	10.6	13.1	54.8	5.2
Total	173.5	189.6	190.1	208.9	285.3	1047.4	100.0

Source: Dirección General de Inversiones Extranjeras y Transferencia de Tecnologia, Mexico, 1982.

147. In all the three countries studied, viz. India, Kenya and Mexico, the need for foreign technology has received growing importance for the implementation of development objectives. While the priorities and the pattern of industrialization have varied significantly among the three countries, acquisition of foreign technology has been considered to be important for the acceleration of technological development.

148. In India, foreign technology is primarily required to cover continuing technological gaps in various sectors and for the updating of technological capabilities in several industrial sectors, where technological capabilities of the domestic industry have remained behind international standards. Foreign technology and know-how are also essential for export-oriented production and in new, high-technology areas such as electronics, materials research and bio-technology, where the country continues to lag behind. Technology inflow may largely take place through licensing without foreign equity in most cases, though in the high-technology and export-oriented industries, considerable foreign equity participation may be necessary.

149. In Mexico, foreign technology continues to play an important role and most of such technology has been transferred through subsidiaries and affiliates of foreign companies. While, since 1973, foreign-majority subsidiaries are only permitted exceptionally, such as in high-technology areas, joint ventures involving technology supply by foreign partners have

been welcomed. Foreign technology appears to be necessary in most sectors and is also recognized to be important for increased local integration of production and broadening of the production and technological base. Increased production of local capital goods manufacture is also identified among the priority sectors and such production, both by joint ventures and domestic companies, is encouraged. Promotion of the inflow of the required technological know-how is among the major policy objectives in the industrial development plan.

150. In Kenya, development of the technological infrastructure of the industry is at an early stage. As a result of the weak technological capabilities of the industry and of the low absorptive capabilities of domestic entrepreneurs, foreign subsidiaries are likely to play a major role in the development of production and technological capabilities. In most sectors, licensing arrangements between foreign technology suppliers and domestically owned companies has remained very low. Several projects for the manufacture of industrial machinery are, however, under negotiation with foreign companies. Such projects are envisaged to be formed into joint ventures between foreign companies, which supply technology and know-how and government-owned financing bodies. during the initial period of operations, management is expected to be undertaken by the foreign company.

151. In these three countries, the role to be played by foreign technology varies not only in terms of sectoral priorities but also depends on the extent of local integration of production and the required depth of technology

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151. In the three countries, the role to be played by foreign technology varies not only in terms of sectoral priorities but also depends on the extent of local integration of production and the required depth of technology

transfer. In India, since the issue of the 1969 Guidelines, it has been recognized that channelling of foreign technology in priority sectors needs a conscious government policy towards that aim. Thus, sectors have been specified where foreign technology has been considered welcome and those which were closed for foreign technology agreements and have been left to local technological develoment. In Mexico, the flow of foreign technology has been directed to a lesser extent by the Government. Rather, the 1972 technology legislation has largely aimed to improve the terms and conditions of technology acquisition of domestic industry. In the approval of technology agreements in the priority areas, however, the Registry has agreed to more liberal terms, and approved higher royalty rates and contracts with generally-prohibited restrictive clauses. Foreign technologies have been mainly channeled by FDI regulations which treated investors in high-technology areas and priority sectors with more flexibility than those in non-priority sectors. Thus, in priority sectors, exceptions were made to permit foreign-majority subsidiaries, while the law prescribed other foreign investments to a minority equity position.

152. Since the introduction of regulatory measues in 1969 in India and 1972 in Mexico, there have been modifications in the administrative guidelines and legal provisions, respectively. Similarly, the institutional framework has also changed in both countries. The 1969 Guidelines in India provided Indian entrepreneurs with three illustrative lists: one listing sectors and activities where foreign collaboration agreements were permitted in conjunction with foreign equity participation; one where only foreign

collaborations were permitted; and one where no foreign technology was considered necessary. Since 1978, there has only been one illustrative list published indicating those fields and activities which are generally closed to foreign technology even though, under special conditions, acquisitiion of foreign technology may be permitted. Within the parameters of the Guidelines, Indian entrepreneurs are permitted to acquire foreign technolocy in all other sectors. With this streamlining of the Guidelines, the technology acquisition process was facilitated and since 1978, the number of technological collaboration agreements has increased significantly.

153. In Mexico, in 1982, after a decade since the first legislation on foreign technology, some provisions of the law were modified. Some of the changes have softened the provisions of the 1972 law while others introduced penalties for non-compliance with the law. Thus, the 1982 law vests greater discretionary power in the Registry to approve technology agreements which contain restrictive business practices which are generally prohibited. The Registry is entitled to make such decisions if it considers the technology to be in the national interest and to be consistent with development objectives. The new law also introduced provisions which impose strict penalties on companies which fail to comply with the provisions of the law or supply inaccurate information to the Registry.

154. In Kenya, there have been no statutory provisions promulgated or administrative guidelines issued which regulate the acquisition of foreign technology. Remittance of royalties is subject to foreign exchange

regulations and such approvals are based on foreign exchange considerations rather than on the evaluation of the foreign technology from a legal, economic or technical point of view. Technology transfer through FDI has, however, been increasingly scrutinized by the Government in projects which are eligible to certain privileges. Currently, for example, a number of projects are under negotiation for the formation of joint ventures between the Government-owned financing corporation and foreign investors and a major factor in the Government's evaluation of the project relates to the technology to be provided by the foreign investor. Also, the current science and technology plan reflects the increased emphasis which the Government lays on technological development and specifically on the acquisition of appropriate foreign technologies for Kenyan conditions. For this purpose, the plan envisages the creation of institutions for the screening and evaluation of foreign techrologies.

155. In India and Mexico, since the introduction of regulatory measures, the terms and conditions for the acquisition of foreign technology have improved significantly. While the benefits of such improvements cannot be quantified in monetary terms, the improvement in the quality of the technology acquisition process relates to a wide range of technological and developmental issues. More directly measurable impacts are the direct savings resulting from the scrutiny of royalties and other technology payments by the regulatory bodies and denial of approvals if these are considered to be unreasonable. Also, prohibition of contracts with excessively long duration in relation to the time required for the absorption of the technology hve reduced technology

payments. In both countries, a rigorous policy has been adopted towards renewals which has also limited the direct payment of roaylties. Significant savings which are more difficult to quantify have resulted from the prohibition of restrictions imposed on the licensees. By prohibiting tie-in agreements, restrictions on production and marketing of the licensee, undue restrictions on exports, imposition of grant-back obligations and other such provisions, the licensee has been given greater operational freedom and choice, rather than the constraints often imposed previously by licensors.

156. Improvements in the contractual arrangements between foreign technology suppliers and licensees in these countries have gone beyond cost savings which resulted from the payment of reduced royalties and avoidance of restrictions. In both countries, but particularly in India, the scope of coverage in technology agreements has broadened and services provided by the technology supplier have been much better defined. Also, in India, both domestic licensees and the FIB have paid increasing attention to ensure that the technology transfer process is complete and all the technological elements are transferred which ensure rapid and effective absorption of foreign technology and allow its adaptation to local conditions. This would generally involve the transfer of design capabilities which allows the licensee company to modify products and processes and undertake improvements. Thus, while in the early 1970s, most of the technology agreements in India related to the transfer of prodction know-how, including training in production engineering and operative skills, more recently an increasing number of contracts also provide for the transfer of design capabilities. Such capabilities generally

include both basic and detailed engineering know-how. In India, applications for foreign collaboration agreements have to give a detailed description of the technology absorption plan, which contains the services to be provided by the licensor. This enables both the licensee company and the Government agency to monitor the technology transfer process and to evaluate the performance of the licensor.

157. In Mexico, it is only recently that there has been growing emphasis on the acquisition of design capabilities and such provisions appear more frequently in recently concluded agreements. This has been mainly caused by the industrialization pattern pursued until the late 1970s rather than to the regulation of foreign technology acquisition. Thus, until the mid-1970s, import policies and relatively low local content requirement in several industrial sectors had not given rise to significant increase in the indigenization of production and consequently greater need for design capabilities. In the case of assembly-oriented industries, the major share of the critical parts and components had been imported and the need for local design capabilities remained low. It is only within the framework of the 1982-1990 Development Plan that a rapid increase in the local manufacture of capital goods is envisaged and appropriate policies in this regard have already been formulated and adopted.

158. Both in India and Mexico, with a decade of exprience in regulation of foreign technology acquisition, the administration of regulatory measures has improved. In India, significant improvement has taken place with the

establishment of the Techical Evaluation Committee in 1974 which screens and evaluates technologies from a techno-economic viewpoint and in terms of its appropriateness to Indian circumstances. Such expertise has also been used to advise domestic companies on alternative technologies and trends in technological developments in the world market.

159. In Mexico, the staff of the Registry has accumulated significant expertise in screening and evaluating contracts from a legal, economic and technical viewpoint. In light of the relatively large number of new agreements, and the wide range of technologies covered by licensing arrangements, the scope of technical evaluation, particularly the advisory function related to the selection of technologies needs strengthening. Significant improvement in the administration of both foreign direct investment and technology laws has taken place with the merger of the responsible government agencies in the late 1970s. This has not only contributed to closer co-ordination of policies but also to a better assessment and monitoring of foreign technology inflow, both in conjunction with FDI and in the form of licensing arrangements without equity participation.

160. Regulation of foreign technology acquisition in India and Mexico has shown considerable improvement in the terms and conditions of technology contracts. Foreign technology, particularly in India, has also increasingly been channeled to those areas which have been consistent with Government development objectives. With the growing experience in regulation of foreign

technology and in light of the shifts in priorities in the development plan, regulatory measures and institutions have been modified and adjusted to current development needs. There are still, however, areas where regulatory measures and policies would need changes and strengthening if technological development is to be accelerated and the technological requirements of the development plan are to be met.

161. Regulation of foreign technology until presently has mainly been effective in the screening, evaluation and registration of the contracts. Once the contracts are approved, implementation of the technology transfer is left to the parties. In most cases, subsequent to the registration of the contract, the technology regulating agency would only be involved if there is an application for renewal. Monitoring of the actual performance of the technology supplier tends to be more difficult in the case of affiliated companies. When the technology transfer takes place between a parent company and its foreign subsidiary, the technology agreement may be completely free of restrictive clauses, yet the subsidiary's behaviour is determined largely by the parent company which might impose various restrictions on the freedom of the subsidiary if this leads to global profit maximization. Such restrictions may include tie-in arrangements, particularly purchase of parts and components, and restrictions on export markets and limitations on the usage of alternative technology. Monitoring tends to be more difficult in Mexico, where most of the technology transactions take place between affiliated companies. In India, on the other hand, the pattern is the opposite and only about 15 per cent of the technology agreements involve capital participation

by the licensee. Also, the number of foreign-majority subsidiaries is rather limited and, in most affiliated companies, majority-ownership and control is held by the domestic partner. With the proposed introduction of regulatory measures, the problem of monitoring is also bound to arise in Kenya where, with few exceptions, most of the technology agreements are company-internal transactions and this pattern is bound to continue in the next future.

162. Partial monitoring of the performance of technology transfer has been exercized in India. Thus, in the application for foreign collaboration, for example, export performance for the next five years has to be indicated and this can be related to the actual performance. Also, until the liberalization of the import licensing system in 1981, progressive increase in the local content and the resulting broadening of the company's technological base have been controlled by the import licence system. As of 1981, however, the licensing requirements for import of parts and components has been relaxed but it is too early to evaluate its impact on the depth of technology transfer.

163. In all the three countries, the need for increased technology inflow in selected sectors and subsectors has been emphasized. Accelerated inflow of foreign technology in these selected sectors may, however, require adoption of promotion measures. This may need certain modifications in the prevailing technology policies, which are largely defensive and control-oriented. In some countries, for example in the Republic of Korea, it has been recognized that more liberal and flexible policies are necessary if inflow of foreign technologies is to be accelerated and the most advanced foreign technologies

acquired. Thus, since the early 1980s, with the introduction of the "automatic approval" system for a broad range of technology agreements, substantially higher royalty rates and contracts with longer duration periods have been permitted than previously.

164. In several countries, including Mexico and the Republic of Korea, it has also been considered that promotion of inflow of advanced technology would have to take place in conjunction with the modification of FDI policies and regulations. Thus, while in several of these countries, there has been an increasing shift to greater local ownership and foreign-majority subsidiaries are either prohibited or discouraged, this pattern may need to be reviewed in order to encourage the inflow of complex and advanced foreign technologies.

165. In countries such as Kenya, where domestic technological capability is at an early stage and the local market size is relatively small, promotion of FDI and transfer of technology into priority sectors may require considerable government assistance and incentives. In such cases, policies towards foreign technology and investments have to be closely co-ordinated with other policies such as import policy, protectionism and grant of fiscal and financial incentives for investments.

Promotion of local R&D activities

166. In all the trhee countries, promotion of local R&D activities has been a growing concern of policy makers. Improved R&D capabilities of the industry

have been considered to be important for strengthening the bargaining position of domestic companies with foreign technology suppliers; to allow a better selection and evaluation of foreign technologies and accelerate the absorpiton and adaptation of foreign technologies. Such capacities are also expected to further the development of indigenous technologies which are appropriate to local conditions and reduce the technological dependency of the country. In India, much of the R&D activity has been performed by government-owned or financed R&D institutions and public sector enterprises. Private sector efforts, by both foreign subsidiaries and domestically owned companies, have been predominantly directed at absorption and adaptation of foreign technologies. To meet the technological objectives of the Sixth Development Plan, the plan envisages a substantial increase in R&D activity by the public sector enterprises.

167. During the past few years, Mexico has adopted several policy measures to promote R&D activities of the private sector. Incentives include various fiscal and financial measures to which companies are eligible. In Kenya, on the other hand, most of the country's R&D activity is envisaged to be performed by specialized government-owned R&D institutions. It is planned that the results will be diffused to a large number of private users.

168. As R&D efforts generally involve long gestation periods, both for the development of inventions and their commercialization, it may be too early to evaluate the effectiveness of some of the recently adopted Mexican policies in this regard. In India, partly due to the uneven performance of state-owned

R&D institutions, more recent policies aim to increase the R&D activity of user enterprises in the public sector. Growing recognition of the need to increase local innovative abilities and its reflection in recently introduced measures constitutes an important element in the technology policy of several developing countries. In countries, where most of the R&D activity is performed by state-owned R&D institutions, more effective diffusion of the inventions to the productive sector will be an important step towards its success. Long-term effectiveness of policies directed at the promotion of local R&D, both in the public and private sector, will however, largely be influenced by the co-ordination of such policies with those directed towards the acquisition of foreign technologies. Co-ordination of policies towards foreign technology and local R&D activities has only been initiated in a few developing countries. In most countries, technology policies have remained partial but, in a growing number of these countries, the need for a comprehensive science and technology plan is recognized.

The role of technology policy

169. The functions of technology policy are similar in developing countries, irrespective of their level of economic development. Thus, appropriate policy measures have to be instrumental in promoting the development of technological capabilities which are required for the implementation of development objectives. Formulation of technology policies, consequently, presupposes the delineation of a detailed economic development plan not only in the short and medium term but in the long term as well. Definition of sectoral growth

targets are important prerequisites for assessment of technological needs and the identification of means to meet those needs. Technological needs vary, depending on the level of economic development of the country and the objectives of development. Similarly, the means to achieve growth targets vary depending on the political objectives and the available resources of the country. Such parameters determine the role to be played by technology policy.

170. In most developing countries, technology policy would include measures for regulating the inflow of foreign technology and those which promote such inflow in selected fields. Control measures would most often be necessary for improving the bargaining position of domestic companies vis-à-vis foreign technology suppliers. Thus, need for control measures may be of particular importance at relatively early stages of technological development of a country when domestic entrepreneurs have an asymmetrically weaker position than foreign technology suppliers. Subsequently, with the growing technological sophistication of domestic industry, local companies become increasingly qualified to bargain with foreign companies on a more equal basis. Government control over the acquisition of foreign technology, however, may be important in such countries as well when the market economy principles are not considered to be the best allocators of resources. In such countries, the role of Government policies is to ensure that social and private profitability do not diverge significantly and national objectives are met.