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CONTRACTUAL ARRANGEMENTS AND POLICY ASPECTS
IN TECHNOLOGY LICENSING ✓

by

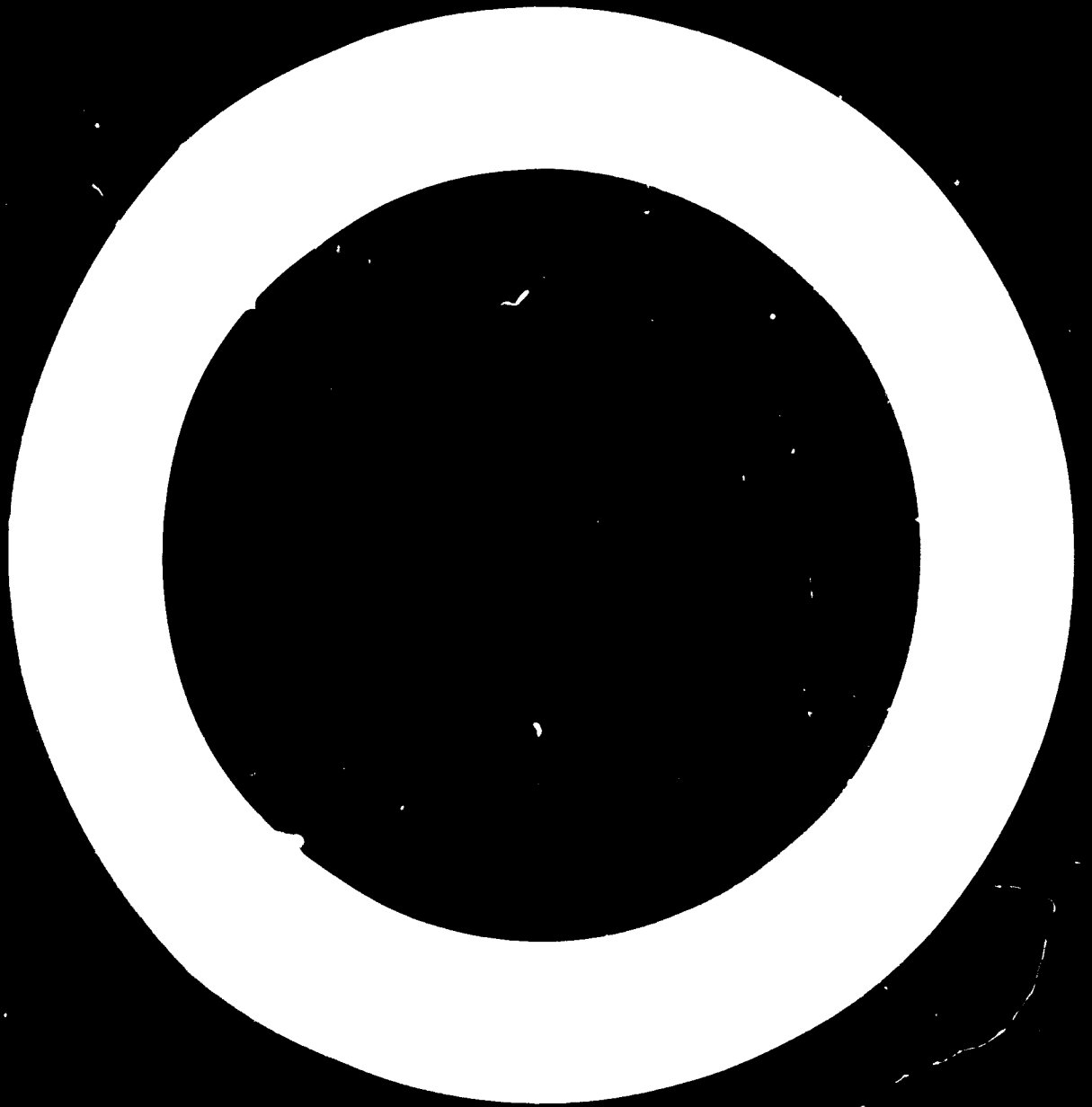
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Technology licensing has emerged, in recent years, as the principal instrument for the acquisition & transfer of technological knowledge & skills. The commercial transfer of technological processes & knowhow has become a common international phenomenon among enterprises in different countries & manufacturing technology has become an internationally marketable commodity. However, the contractual arrangements which have to be entered into by enterprises from developing countries pose certain special issues & problems. These issues assume considerable significance not only for the prospective licensee enterprise but for the economy as a whole, as the implications are far-reaching & can have long-term repercussions on future scientific & technological development.

2. The total volume of trade through licensing was over US \$3200 million in 1970 & continues to increase rapidly. The volume of such trade is much greater between enterprises in industrially advanced countries than those in developing countries & an intricate network of licensing & cross-licensing arrangements often links a number of major enterprises in particular sectors in different countries. In 1970, while the earnings of U.S. companies was \$2160 million on this account, expenditure by companies in the USA, Japan, UK, France, Germany & Italy on licensing amounted to US \$1840 million*. For developing countries, trade in technology is of particular significance, not only because inflow of technology & know-how is an essential prerequisite for industrial growth in most priority sectors but because the commercial acquisition of technology poses certain special problems in these countries. Past experience of licensing, arising out of historical & socio-economic factor-circumstances, has often proved unsatisfactory particularly from an overall national viewpoint, resulting in considerable doubt & distrust in many of these countries of the terms & conditions under which such commercial transfer is effected. There has been a growing trend towards confrontation at policy level between governments in certain semi-industrialised developing countries & multi-national enterprises who constitute the majority of suppliers of technology. In this growing controversy, there is a danger that the basic issue, that acquisition of technology & know-how in a number of production sectors is an essential requirement in most developing countries, may get sidetracked. In a complex industrial society, marked by

*Source U.S. Dept. of Commerce

growing economic and technological interdependence, developing countries cannot afford to cut themselves off from the mainstream of international technological progress, nor can they afford the luxury of rediscovering processes & techniques already established in other countries & which are available through the licencing process. In fact, through the licencing mechanism, technological leap-frogging is possible & manufacturing enterprises can adopt the most appropriate production techniques. This necessarily implies that inflow of technology & know-how to enterprises in these countries must be allowed & encouraged to take place from enterprises possessing such technology. Whether such inflow should indiscriminately take place in all industrial sectors or whether a selective approach should be adopted is a separate issue which is considered subsequently.

3. The various contractual arrangements relating to technology acquisition by developing countries can be considered under certain broad heads. Firstly, it is necessary to consider the various forms of such contractual arrangements, together with the special features of technology acquisition & the broad national approach which needs to be adopted in this regard. The difficulties faced by the prospective licensee enterprise need to be specifically considered. Secondly, the pattern of foreign investment as related to technology inflow needs to be examined in the context of overall sectoral priorities in developing economies. Thirdly, the aims & objectives of technology policy need to be defined in the context of the role that foreign technological inputs are expected to play. Finally, certain policy instruments need to be considered to ensure that contractual arrangements conform to the objectives of technology policy in such countries.

4. Technology inflow can take various contractual forms depending on the nature of a project & a country's policies & overall level of industrial development. The most common form is that of operational technology supplied with machinery & equipment for specific projects. In a number of consumption-goods industries, together with industries such as sugar, cement & textiles, the transfer of production & operational techniques, including training of local operators, is part & parcel of machinery supply. As industrial products get increasingly sophisticated in terms of manufacture & extend to production of engineering-goods, & chemicals & fertilisers, electronic items & the like, production technology assumes greater independent significance. It is at this stage that the technology package has to be considered in terms of its various constituent parts.

Nature of technology contracts

5. The nature of technology acquisition varies considerably in scope and magnitude in the case of technology-acquiring enterprises from developed countries & those from developing countries. In the case of the former, the technology license normally comprises of most rights in a specific production process, normally covered by patents but usually

also accompanied by specialised know-how which may be unpatented. Both the licensor & the licensee are functioning in a similar technological environment & are fully aware of the intricacies of licensing & the rights & obligations of each party as also their technological competence. In the case of an enterprise from developing countries, except subsidiaries & affiliates of multi-national organisations, the situation tends to be quite different. There is wide divergence in the overall technological background & the technological services available locally to such an enterprise are much more limited. Engineering services are limited, processed raw materials & even relatively simple components are hard to obtain & the initial level of absorptive skills are much lower. Consequently, the technological package which has to be imported tends, in most cases, to be much more comprehensive in scope.

In terms of contractual arrangements, this can take the form of a turnkey contract or a composite license arrangement concerning various technological services besides the basic production know-how. The content of the technological package for various projects often directly reflects the stage of industrial development of a developing economy.

Project
Implementation
On-
turnkey
operations

6. Project implementation in earlier stages of industrial growth often takes the form of a turnkey arrangement, where a single foreign party is entrusted with full responsibility for all or a number of stages of implementation. This form continues to be utilised, even after a country is fairly developed, for complex projects such as a refinery or a petrochemical complex or a steel plant. It is also common in tied-aid projects where project financing is linked to a foreign engineering group being entrusted with such responsibility. The turn-key contractor can be a supplier of equipment or the owner of particular technology or an engineering consultancy organisation. The relative role would normally depend on which of these aspects is of greater significance for a particular project & needs the exercise of selection & judgment on the part of the client that the contractor can effectively perform & discharge his responsibilities. It is also necessary for the client to ensure that (i) plant capacity is related to adequate investment & market studies, (ii) technology is appropriate to the factor endowments of the country, including levels of skills & (iii) adequate provisions are made for training of local personnel to take over plant operations after start-up (iv) adequate trials or trial runs are provided as part of take-over procedure. It is also essential to avoid such a contract becoming unduly expensive. This is especially true in countries where the cost tends to be packaged but, at the same time, the quality of work to be done is to be guaranteed. It must be noted that such a contract is often a long-term one, though convenient for the client in the short run, it is often more expensive than if the client were to take over the project himself. The cost of such a contract is often very high, especially in the case of a turnkey package in which the contractor is responsible for the entire project. For this reason, such

an arrangement is not conducive to domestic technological development. Such contracts are looked on with considerable disfavour in most developing countries where there has been substantial industrial growth though, in certain cases, they still continue to be unavoidable

Composite
technology

7. Even when a turn-key arrangement is avoided, technology inflow may still cover most stages of project implementation. These can range from feasibility studies & basic engineering through detailed engineering, product or process technology, plant engineering & construction, acquisition & installation of machinery & initial post-installation operations. From a national viewpoint, it is necessary that with progressive industrial & technological development, the size of the imported technology package should be gradually & correspondingly reduced. Domestic enterprises & consultancy agencies must assume an increasingly larger share of responsibility for project planning & implementation. Nevertheless, even in relatively industrialised economies, such as Brazil & Mexico, the technology package often continues to comprise of a wide variety of technological services, besides process or product know-how. The disaggregation of the cost of know-how & of technological services such as plant engineering etc. is necessary & gradually such services need to be replaced by national enterprises. The fact that input manufacture in many developing countries continues to lag behind also constitutes a difficult problem, particularly in the metal-transformation sector, as it results in continued dependance on the technology-supplier for supplies of a wide variety of parts & components. The aspect of transfer pricing of such parts & supplies is generally known & accepted; but normally very difficult to overcome. With inadequate production of processed materials & other inputs, domestic manufacture often comprises principally of assembly operations, with inputs imported for indefinitely long periods. The establishment of backward linkages, however, whether through vertical or horizontal integration also poses problems in terms of material & component costs & pricing and needs to be undertaken with care. The oligopolistic nature of the technology market in a number of production sectors also presents considerable difficulty. The intensity of oligopoly varies from sector to sector but tends to increase with more sophisticated manufacture. Consequently, while alternative technologies are available to a greater extent in simple consumption-goods production, the technology market becomes relatively small & restricted for complex technology such as, for example, in the field of petrochemicals & electronics. This aspect is all the more accentuated in developing countries because of lack of information regarding various alternatives as may exist.

Reduction of
technology
package

8. It is necessary to evolve a broad national approach to reduce the nature, size & magnitude of the imported technology package. The pre-investment stage, comprising the initial feasibility study & the detailed project report, concerning the principal techno-economic aspects,

should increasingly be undertaken by national agencies. Where this is not possible for reasons of project complexity, domestic agencies should at least be associated with the preparation of the DPR. Basic & detailed engineering, including plant designs would initially need to be imported but domestic agencies should be increasingly associated. Civil constructions & ancillary services should normally be provided by domestic organisations. Such services are usually adequately available & the induction of foreign agencies would constitute a major disincentive to domestic construction industry. In machinery selection, erection & installation also, foreign technological services be kept to a minimum. It is principally in respect of manufacturing technology that acquisition of foreign processes & know-how is necessary & here it must be ensured that acquisition is full & complete. The post-installation stage of an enterprise covers the technical & management operations, marketing & distribution. It has been a common practice in many developing countries for management contracts to be given to foreign agencies. This needs to be reduced over a period of time & foreign participation in the operationed stage should be minimised as far as possible, except where there is foreign equity ownership. The various stages mentioned above are of course closely inter-related & merge into one another. It is, however, necessary to define the various functions and responsibilities at each of these stages with the intention that foreign expertise & technological service assistance should be only secured when such services cannot be adequately performed by domestic organisations.

9. Any national approach in technology acquisition has to be implemented only at the enterprise level. The domestic enterprise or entrepreneur not only has to have adequate awareness of such aspects but requires considerable assistance & support. From the stage of product selection to the day-to day management of a manufacturing enterprise, - domestic entrepreneurs face considerable handicaps & difficulties. The preference for particular foreign brand-names in various sectors necessitates foreign collaboration to start with. The relatively less experience of domestic technological service facilities manifests itself in preference for technical services, such as engineering etc., from foreign sources. In most cases, this is in any case a part of the technology package which domestic enterprises & entrepreneurs are unable to disassemble.

Raw materials, components & parts are either not available or expensive in domestic markets or specifications, resulting in dependence on foreign supplies. The lack of partial integration may be a result of the limited knowledge of alternative sources of supply, which is, in any case, inhibited by the lack of information on the international trade-mark situation. The above factors are likely to be exacerbated by the licensing conditions. The above

Weakness of
licenses
from DCS

aspects place the prospective licensee enterprise in a weak bargaining position resulting, in many cases, both in high costs for the technology package acquired & in a number of harsh & detrimental contractual conditions in the license agreement. These can relate to restriction on production and exports, inordinately low phasing of local integration, restraints in acquisition of other processes or techniques, tie-in clauses for purchase of machinery, raw materials & components & for sales & marketing, grant back conditions, high royalty & other payments & other contractual conditions which operate principally to the advantage of the technology-supplier or licensor. Despite these difficulties, the socio-economic impact of technology imports in developing countries leads, in general, to create a strong bias & preference in favour of foreign techniques & processes and, at the enterprise level, a continuing dependence on the licensor. The effect of powerful media advertising, combined with a strong consumer preference for foreign goods & services in these countries, often results in the inflow of technology at high cost for relatively simple products & processes in the consumption goods & services sector. At the enterprise level, with rare exceptions, the tendency is not only to take recourse to foreign technology even for simple manufacture but thereafter to depend unduly on the foreign licensor, particularly when even a small element of foreign equity participation is involved. Even for simple technological services, the assistance of the licensor is sought rather than develop such services in the enterprise itself or obtain these from national entities. In the field of R & D the perpetuation of dependence on the foreign licensor is particularly marked. Speedy absorption & gradual adaptation to local situations should be the objective as has been so successfully demonstrated by Japanese experience in the post-war decades. Instead, most licensees in developing countries are content with very slow & gradual absorption, so that technology contracts are extended over unduly long periods & adaptation becomes an even more distant prospect.

Foreign investment & technology inflow

10. It is necessary, in this context, to consider the close linkage that exists, for principally historical reasons, between foreign investment in these countries & technology inflow. With foreign branch subsidiaries & affiliates occupying a pivotal role in major production sectors in most countries of Latin America, Asia & Africa, technology has usually served as a hand-maiden to foreign investment & the introduction of innovations & new techniques has been largely incidental to the interests of such investments. Since decisions in respect of such investments and consequent technological inputs are usually taken at distant headquarters of parent companies & are part of an overall global or multinational strategy, these can be totally unrelated to the technological needs & potential of particular subsidiaries or affiliates. The

transfer of obsolescent techniques, often accompanied by second-hand plant & equipment for assembly for semi-assembly operations to affiliates in developing countries has been fairly common. While these may serve a useful purpose in the very short run, they may constitute a major obstacle to technological progress in the future. In recent years, the concept of the joint venture, with minority foreign holdings, has developed into a popular corporate tool. This, however, provides only a partial solution. Where national equity holdings are diffused between two or more shareholders & the foreign holding constitutes a substantial minority (40-49%), the decision-making authority regarding techniques & processes still largely rests with the latter. The institution of name-leaders or "prestige-nombres" which is common in many Latin American countries, has its local counterpart in most developing countries, where majority foreign holdings are discouraged or where there is insistence on indigenisation of majority foreign equity over a period of time. However, as a result of national policies & growing industrialization, technology acquisition by enterprises where decision making authority rests with national entrepreneurs is increasing rapidly &, in these cases, the principal problems posed to the prospective licensee are the nature of the technology cum know-how package & his effective knowledge of the market for the particular technology. Where the investment & technological decisions are taken by a foreign investor/technology supplier, technology acquisition may be governed by considerations other than national or even pertaining to the firm in question. Apart from the nature & context of technology in such cases, payment & pricing of technology assumes a different role & can take various forms. There is no simple solution to this question & the only answer lies in such entities gradually developing their own distinct & national character. Where there is not possible, this should be recognised as such.

11. It is also necessary to consider the role of foreign subsidiaries and affiliates in relation to technology transfer in particular sectors.

A direct relationship exists between the two, principally in case where certain types of "high" technology such as sophisticated electronics or chemical processes may not be available without majority foreign investment. In most other cases, however, technology can be obtained either through joint venture ownership or without foreign equity participation. The latter is often a sizeable percentage of foreign investment being made. In such cases there have to be carefully weighed. In Japan, the government has provided full parity equality in respect of foreign investment in most sectors. However, the policy in respect of technology transfer is more restrictive. In about 10,000 license agreements entered into between 1950 & 1970, however, most developed countries have been able to secure a high degree of parity structure in most such

countries, various degrees of foreign investment may be necessary, both to cover internal or external resource gaps & to bring sophisticated technology adequately in its wake. The question must be posed, however, whether foreign investment needs to be permitted in non-essential sectors relating, for example, to luxury goods or to service sectors, including trade & merchandising. There is comparatively limited technological impact of, for example, foreign-controlled supermarkets or chain department stores or car-rental firms or even hotel chains though, in this era of specialised expertise, such service sectors may be considered in certain circles as being fields where domestic entrepreneurship cannot function efficiently without foreign know-how or investment participation. A degree of selectivity needs undoubtedly to be introduced within a framework of pragmatism & flexibility. Even in a number of developed countries such as Australia & Canada, there has been considerable re-thinking on the question of relatively unrestricted inflow of foreign capital. In developing countries, where this is further aggravated by the existence of a large number of foreign branches & subsidiaries, many of whom are engaged in non-manufacturing activities or are occupying a dominant position in various production sectors a good hard look is necessary at the impact & implications of foreign capital. This is already taking place in many countries & a policy of gradual indigenisation is being put into effect. This is easier in countries with a system of industrial licensing such as India, where majority foreign holdings are generally sought to be reduced with every major expansion in a company's activities till the foreign holdings reach an acceptable level. A similar result is sought to be achieved in Mexico through a policy of gradual Mexicanisation. The essential need for pragmatism & selectivity arises, however, from the fact that no single approach may be appropriate for different sectors. While even minority foreign investment may not be desirable in certain purely consumption sectors, a degree of foreign participation may be very necessary in sectors involving "medium" or "high" technology. For example, in the capital-goods manufacturing sectors, minority foreign participation would be very desirable even over a long period to ensure that technology supply & absorption by the licensee enterprise is full & complete & that future adaptation can take place.

Indiscriminate
technology
inflow

12. Together with the question of selective foreign investment, it is necessary to consider the extent to which selectivity in technology inflow should also be exercised. The import of technology should not be permitted to take place indiscriminately in every sphere of production. The import of technology is an expensive process, not only in terms of direct financial costs, which may be disproportionately high, but more so in terms of continuing dependence on foreign processes & techniques & consequent discouragement of local innovative skills. It is consequently necessary to exercise a degree of selectivity in respect of technology

contracts & not encourage inflow of technology in luxury or simple consumption-goals production. Colour TV sets, expensive cosmetics, electronic consumer goods & other such products are not fields where foreign technology should be imported at high cost in developing countries. Nor should this normally take place in simple consumer goods which can be manufactured without such inflow. On this aspect, the viewpoint of a manufacturing concern may be at variance with policy-makers. The tendency to follow industrialised countries is marked even in the matter of product selection by domestic enterprises. This needs to be resisted at the policy level except where such inflow can be directly related to exports. Few developing countries have, in fact, restricted technology inflow in different sectors. This is fairly common, however, in India where technology inflow is restricted in non-essential sectors & in fields where adequate technological development has already taken place. A similar though less-extensive approach is gradually developing in some Latin American countries, such as Mexico, Argentina & the Andean group where technology inflow is regulated by a state agency.

Appropriate
Technology

13. The appropriateness of particular technology in relation to the factor - circumstances of each country is also a judgement that needs to be exercised with considerable care. The primary responsibility for such determination is that of the licensee enterprises but national considerations also have to be taken into account. Considerable literature has emerged on the question of capital-intensive and labour-intensive techniques. It is vital, however, that the production processes & techniques adopted in developing countries are those which can bring about efficient and internationally competitive production over a period of time though, for certain products for purely home consumption, even this may not be a critical factor. In many production sectors such as chemicals or electronics or capital-goods production, alternatives may not really exist between capital and labour intensive techniques as such. Certain technologies are of course related to larger scales of production while others may be principally oriented towards small-scale production but this may bear no relation to capital or labour intensity. The handloom textile industry of India during the period of 1920 to 1950 which developed under the inspiration of Mahatma Gandhi was a case where a labour-intensive process was deliberately adopted but this has not been able to withstand the competition of mill-made cloth adequately in recent decades. Such techniques can be adopted only as part & parcel of a wider context over people's consumption habits & decisions. Even where this is possible, the distinction between such techniques often tends to become blurred, or even academic. Developing countries need to adopt such techniques as are the most efficient in respect of the factor-conditions of the country & particularly so in sectors where products are to be internationally competitive. In some production operations, however, such as unskilled handling and certain services,

labour-saving techniques can be adopted only with limited advantage in these countries but the impact may tend to be mixed in many such cases. The advantages, for example, of using computer programming in various factory operations have to be set off against the workers that may be displaced through such an operation. In the manufacturing sector in particular, the determination of appropriate techniques is directly linked to the availability & knowledge of alternatives. Here again, prospective licensees from developing countries are at a great disadvantage. By & large, they are knowledgeable about particular techniques which are more popular in their respective markets. In many cases, licensees do make considerable efforts to locate alternative technologies but their efforts in this regard can, however, be strongly supplemented by institutional support in these countries.

Centres for technological information, which have been set up in various developing countries have initiated valuable work in this connection & are discharging an increasing role in advising & assisting potential licensees. With much greater industrial specialisation, however, the growth of manufacturing activity has already become so large that a centre, however well-managed, can really provide detailed knowledge of possible alternatives in various manufacturing branches & at various stages of time. This can be done for selected manufacturing sectors but, for other sectors, links will need to be established with other centres & organizations, so that the information required can be collected adequately & speedily.

14. The acquisition of technological know-how has become a fairly specialised process & prospective licensees from developing countries find themselves in a weaker bargaining position in the contractual arrangements principally because of inadequate knowledge of the technology market & inadequate experience in negotiating technology agreements. The licensor has something to sell & his interest is naturally to get the maximum price. More versed in the intricacies of licensing, the licensor is in a more advantageous position with licensees from developing countries. Normally, the bargaining strength of the licensor reflects the imperfections of the technology market for a particular process or product. The greater the imperfections, the greater is the oligopolistic situation enjoyed by the licensor & the stronger is his bargaining position. Yet, a prospective foreign licensor also has considerable advantages from a licensing arrangement, apart from his direct financial returns. A licensor is able to enter & control a market in a developing country, usually insulated from imports in many developing countries, with little or no risk capital. From the viewpoint of a licensor, a license can be a very suitable compromise between exports to a developing country's market or direct manufacture in that market with

all the attendant risks, if such direct manufacture is permitted. The prospective licensee, therefore, has also something to sell i.e. the home market & this is something he must remind himself of in the process of negotiations. A license is a two-way deal & must be clearly recognised as such.

Selection of Technology

15. An essential licensee function is the selection of the most appropriate technology. With a few exceptions, a particular type of technology can generally be acquired from more than one source. In such selection, the licensee enterprise needs to determine the relationship of the technology with locally-available or potentially-available inputs, determine the relationship of the technology with present & future market demand & define the nature & type of technology required in terms of capital resources. It is desirable to link technology, as far as possible with available raw materials & local skills. Often imported technology is closely linked not only with a high degree of component imports but also substantial imports of industrial raw materials. To the extent that alternative technology is available which would more fully utilise domestic materials, including industrial raw materials, the latter should be preferred. This is particularly so in industrial sectors such as chemicals, including drugs and pharmaceuticals, though it has equal relevance in engineering industries in respect of supply of components. The relationship with potential growth of local skills is also of significance.

This is necessary from the view point of generating and maximising local employment and also for effective absorption of imported know-how within the period of agreement. It is also necessary to link the type of technology to be acquired with the stage of industrial growth and with the extent of employment that can be generated without affecting efficiency. To the extent that more labour-intensive technologies are available and provided that a basic level of productive efficiency is maintained, the latter may prove to be more advantageous, both in terms of costs and local employment.

The most advanced technology in a particular manufacturing sector may not be the most appropriate for a developing country at a particular time and a careful assessment should be made of various alternative techniques that can be adopted in terms of their impact on imports, requirement for maintenance, effect on employment and growth of local skills and labour.

Selection of Licensee

16. Apart from the selection of appropriate technology, it is also necessary to select the most suitable licensor. It is usually desirable to select the most suitable licensor from those in the industry who have the most experience. These various possibilities have been mentioned in the preceding paragraphs. It is essential in selecting the licensor

(i) adequate information should be obtained regarding the licensor (ii) a detailed description should be prepared for the product technology and/or process (iii) detailed information should be obtained from the licensor on the type of know-how and the patent situation related to this (iv) information needs to be obtained regarding the licensing history of the process or product for which license is to be acquired (v) it would be desirable to obtain a list of materials (intermediate products and/or components) required in the process, from the potential licensor and (vi) it is necessary to obtain necessary information which would enable the licensee to determine the manufacturing costs of a given operation. An analysis of costs can be exemplified by obtaining normally at the request of licensee) from the licensor information on a typical case i.e. the manufacturing cost of a product based on a certain volume of production.

17. As for the various provisions in the technology contract, these are discussed in detail in a separate paper it is only necessary to highlight certain aspects & conditions which are of special significance. These are briefly mentioned hereinafter (i) the scope of technology being acquired should be clearly defined, together with the special technical services that the licensor needs to perform (ii) the remuneration to the licensor should not be unreasonably high in relation to the income earning capacity of the enterprise. The licensee needs to evaluate various alternatives in respect of total technology payment, particularly where it is spread over a period of years in the form of royalty. A provision for a minimum royalty or a high initial fee may prove a serious liability to a licensee enterprise entering a new field. The method of royalty calculation is also of great significance & it would be desirable to have certain guidelines which most licensee enterprises in a country could follow. A generally accepted method of computation is on net sales minus the value of imported materials & components & commission on sales. A closely related question is that of the period of agreement. It is in the interest of the licensor to have the contract for as long a period as possible as royalty would continue for such period, where the technology is highly innovative & the technology contract adequately provides for access to all such improvements, it may be advantageous for the licensee also to have a relatively longer duration. In any event, the contract period should be long enough to enable the licensee enterprise to absorb the know-how adequately & fulfil the basic purpose & the contract. Subject to these aspects, however the duration of the period should be as short as possible from the licensee's viewpoint. A number of tie-in provisions need to be carefully guarded against by the licensee. Such provisions can relate to machinery purchase, supply of intermediate products & components, sale & distribution rights for the licensee products & the like. It is necessary for the licensee to evaluate the full implications of such tie-in clauses & thereafter negotiate suitably. Transfer pricing in respect of intermediate products often represents the principal source of revenue to the licensor. This necessitates careful appraisal of the licensor's integration programme, both at the level of the enterprise & in national

terms. An onerous provision often included in the contract relates to territorial restrictions for sale. This can prove a grave disadvantage to many licensee enterprises & often a licensee may be able to produce competitively for the international market but is restricted from such sales by the terms of the agreement. Another significant aspect of a technology contract relates to patents & trademarks. Sometimes, a licensee may find himself paying for a package license including payments of payments which are not required by the licensee. In other cases, all the necessary patents may not have been covered or the life of the patent may go well beyond the period of the contract. In the latter case, renegotiation is inevitable, with the licensee in a very weak situation. The question of infringement of third-party patents also needs to be negotiated with care so that the licensee does not get saddled with the full responsibilities in this regard. The trademark aspect of a license also needs careful handling, as it can result in the indefinite continuance of a technology contract in order to swell of the trade-name. Various other aspects of a technology contract such as grant-back provisions, governing law, arbitration clauses & the like also need special attention on the part of the licensee. An interesting provision is often incorporated to the effect that the know-how cannot be utilised by the licensee once the contract is terminated. Recent judicial decisions in the USA in other industrialised countries indicate that, in these countries, such a provision would not be legally enforceable as the knowledge, where it is not covered by patents, would be considered to be in the "public domain". Yet, such a provision is commonly incorporated in licenses relating to developing countries. Such a situation is applicable to a number of contractual provisions. The trend of anti-trust legislation in the USA has tended to favour the licensee and considerable case-law has been built up in recent years which militates against license clauses which aim to reduce legitimate competition. In the case of EEC countries, Articles 85 & 86 of the Treaty of Rome prohibit the prevention or restriction of competition within the EEC or the improper exploitation of a dominant position in the Common Market or a substantial part thereof. In Japan also, a similar approach is adopted by the Fair Trade Commission. There is no reason why license provisions which would not be valid in industrialised countries should be imposed on licensees from developing nations. Apart from the licensee's own efforts to pursue such a situation, the regulatory authority of the country also becomes a necessity. It will thus be seen that various contractual provisions in a license contract have considerable & far-reaching implications & need to be evaluated with great care. This evaluation should be done by the licensee's own staff or by a professional firm. The licensee must do considerable "home work" before entering into a license agreement & also must develop adequate legal and technical relationships with potential licensors, who have much to offer to the licensee in the technology mechanism.

Long-term
objectives
for DC's

18. - It is against the above background that the long term needs & objectives of technology licensing for developing countries should be considered. Such objectives must be part & parcel of the overall policy programme of scientific & technological development that developing countries need to evolve. Technology licensing is an important tool & vehicle for technological progress but must necessarily be dovetailed within such an overall programme. It is, however, possible to identify some of the principal needs & objectives of technological licensing in these countries. Some of the principal objectives can be defined as being to ensure that (i) enterprise-level decisions as to technological needs & inputs should, as far as possible, be independent of decisions & considerations of multinational or transnational groups with which the enterprise may have licensee-licensor relations or of which it may be an affiliate (ii) inflow of foreign technology takes place adequately in selected, priority sectors of production & that such positive & promotional measures as are necessary are taken to effect this purpose, (iii) the technology imported is consistent with other basic objectives, particularly increased employment and is suitable & appropriate to conditions & factor-endowments in the country, enabling production at internationally competitive levels & development of exports over a period of time (iv) the technology selected is based on as adequate a knowledge as possible of the market for such technology (v) the terms & conditions in the technology contract, including payment provisions, are reviewed & are not unduly harsh, onerous or restrictive for the licensee & that such terms & conditions are consistent with general guidelines which may be prescribed for the purpose, either through legislation or executive measures (vi) the technology & know-how supplied is full & complete & is absorbed by the licensee enterprise as speedily as possible &, in any event, within the duration of the agreement (vii) the national infra-structure in terms of engineering & technological services is strengthened & that such national infra-structure is taken into full account in technology agreements & (viii) a base for indigenous R & D is created in the licensee enterprises, which in turn is inter-related with broader R & D activities in the country & for the sector in question. The above objectives are, in no sense, exhaustive but are intended primarily to illustrate the comprehensive impact & coverage of technology inflow & consequently the aspects and implications that have to be taken into account. The growing technological gap between industrialised & developing countries cannot be covered by the latter perpetually following in the footsteps of the former & picking up technological crumbs that may be available in return for the protected & insulated markets in these countries. Rather, developing countries must look upon technological licensing as a possible & dynamic instrument of overall technological change, an instrument that must be used hand-in-hand with other policy instruments so that the

technological gap in sectors critical to particular economies, is substantially reduced over a period of time. In its very nature, this responsibility cannot be left to enterprises alone & must be part & parcel of overall national policy. This raises the question of the institutional & other mechanisms through which these objectives can be sought to be realised.

19. - In order to achieve these objectives, it is necessary to consider an institutional mechanism at a national level in these countries. Such a mechanism has been set up in many developing countries for prior approval of foreign capital investment. In countries where foreign exchange is a major constraint & foreign remittance is controlled this, in any case, necessitates previous governmental approval for capital inflow. A mechanism which is becoming increasingly popular is a form of Foreign Investment Board or Commission, on which the concerned departments of government are usually represented. Such a mechanism serves a very useful purpose in that the various aspects of a particular investment proposal are brought out in clear focus. It is of course essential that such a Commission should evolve guidelines over a period of time on investment aspects such as (i) definition of sectors where foreign investment is particularly desired for resource or technological consideration (ii) prescribing fields where foreign investment should not be encouraged or approved even in the form of minority holdings such as certain non-manufacturing activities or production of non-essential consumption goods, (iii) the pattern of joint venture holdings & the role of local entrepreneurial groups as well as banking & institutional investors (iv) the pattern of gradual indigenisation, both of existing foreign majority holdings or new investments where majority foreign shareholdings are to be reduced over a period of time (v) pattern of shareholding in the case of export-oriented enterprises, & the like. It is more important, however, that the technological aspects of foreign investment propositions are taken into consideration, when evaluating such proposals. These are often ignored in many developing countries. In some countries such as Mexico, a separate agency has been set up for the regulation of technology agreements. Whether one institution examines both of the investment & technological aspects or whether this is done by two or more institutions working in close co-ordination, it is essential that the close relationship between investment & technology are fully recognised & acted upon. It is also essential that there is one institution discharging both investment & technology aspects in different directions.

It is also essential that there is a regular flow of feedback of information from the investment & technology aspects to the other. This can be done by having a regular report from the investment & technology aspects to the other. This can be done by having a regular report from the investment & technology aspects to the other.

be normally decided upon. The need for such institutional review of foreign investment in these countries has been generally recognised & such regulation has become an important factor in many countries.

Promotional efforts

20. - Together with regulation, however, it is necessary to evolve a strong promotional mechanism to ensure that investment inflow, together with technology can be channelised in sectors of priority. Too often, efforts in this regard are diffused & unco-ordinated. While certain agencies are seeking to introduce an element of selectivity in foreign investment, other institutions are keen to promote such investment in general and initiate promotional activities on that basis. This not only leads to confusion on the part of investor interests, both foreign & domestic, but often leads to investment decisions which are inconsistent with stated objectives. The elements of pragmatism & flexibility should be viewed in the context that no set of guidelines can really be universally applied in all cases. At the same time, the "rules of the game" do need to be set out fairly clearly so that potential investors are aware of the overall framework within which they are required to operate. The promotional role needs also to be viewed in a positive & dynamic manner. It is not enough to define the fields in which foreign investment is welcome in the identified sectors. The manufacturing sector in most developing countries is still in early stages of growth & some institutional agency should play a catalytic role. This could be done either through an investment planning & promotion agency, as in certain countries of Asia or by a financial institution as in the case of Nacional Financiera in Mexico or directly by certain governmental departments. The promotional role, however, needs to be carefully defined & followed-up and the responsible institutions have a vital responsibility in this field. The relationship between promotional & regulatory agencies also needs to be determined with care as close co-ordination between the two is an essential pre-requisite for effective implementation.

Role of institution

21. - It is in respect of the terms and conditions of technology contracts that licensees from developing countries face serious difficulty & need institutional assistance. As discussed earlier, licensees from developing countries are prone to accept a number of harsh and restrictive clauses in technology contracts. In most clauses of a technology agreement, there is a licensor's viewpoint and a licensee's viewpoint and a license agreement should essentially represent an effort to bridge the promise between the two viewpoints & to mutual advantage. The bargaining position of the licensor is, in its nature, somewhat stronger & all the more so where a licensee from a developing country is involved. It is principally in order to redress the balance that

many developing countries, institutional regulation of technology contracts has been introduced. In Mexico and Argentina, this has been effected through specific legislation for this purpose, as also in the Andean group of countries. In Brazil, such control is exercised through the institutions dealing with industrial properties. In India, such regulatory authority is exercised through the Foreign Investment Board on which the various concerned governmental departments are represented. The institutional mechanism that needs to be set up has to be determined in the context of each country & should, as mentioned earlier, be closely related to overall policies & procedures relating to foreign investment. It is important, however, that such an agency, which for purposes of convenience is called a Bureau in subsequent paragraphs, should not be viewed as having only 'watch dog' functions but should be an integral part of the technological growth process. The role of the Bureau should be three-fold in concept: (i) to ensure that the legislative or executive guidelines that may be prescribed to govern technology agreements, are observed (ii) to analyse the impact of technological inflow in various sectors & in the light of such analysis, relate future technological inflow to long-term technological objectives for each growth sector & (iii) to ensure that technology inflow is linked with the availability & growth of indigenous technological services within the country.

Discretionary
judgement re-
quired

23. - The nature of the technology acquisition function suggests that whatever guidelines are prescribed, these should involve the use of discretionary judgement to a considerable extent. Wherever the guidelines are rigid & specific, there is a tendency to by-pass the rules in one way or another. The prescription of a fixed rate of royalty in general or for particular branches often tends to result in higher lump-sum fees or built-in in costs of machinery or components. A rigid approach on the question of unrealistic export rights may well result in certain technologies not being available, as the licensee may be legally restricted from giving such rights, over certain goods. Guidelines are necessary but the exercise of suitable discretion is even more important on the part of the Bureau. The prescription of a suitable lump-sum payment or royalty rate, the nature of assignment, territorial sales, tie-in provisions in whatever form, provisions relating to patents & trade-marks & the like are all matters where discretionary judgement have to be exercised. It is important that the prospective licensee should be given the opportunity to exercise judgement on these matters, both from a national as well as an international perspective. Experience has shown that the benefits of such regulation are realized only when the long-term interests of the country are taken into account. The discretionary judgement should be exercised in favour of the country.

Study of im-
act of licen-
sing

23. - The dovetailing of a specific license contract with long-term technological objectives necessitates a continuing review of the impact of various licence contracts. Such follow-up should also constitute the responsibility of the Bureau. It is in the light of such assessment that a view can be taken regarding the need for restricting technology inflow in certain cases & making positive efforts to obtain technology in the case of others. Over a period of time, the Bureau should exercise its discretion negatively in not permitting technology inflow which is either (a) non-essential or (b) adequately available within the country or (c) which would hamper the growth of indigenous technology in certain fields. The preference for foreign knowhow & foreign brand names needs to be curbed in non-essential sectors as these unnecessarily involve technology imports, often at high cost. Payments for brand names & marks are cases in point. The Bureau needs to exercise judgement in the matter of use of foreign brand names in the domestic consumption sector & relationship between technology policy & that relating to industrial patents needs to be considered in this context. While this is a major subject for itself & will not be gone into in this paper, it is difficult to cite more than a few instances where the existing international patent system has not worked to the disadvantage of developing countries. A review of the patent system is consequently an essential aspect of long-term technology policy in developing countries. On the positive side, the institutional agency should participate in the acquisition of required technology. Though this is a function which may be discharged by other agencies concerned with scientific & technological growth or by enterprises themselves, the securing of such technology on acceptable conditions could be an important function which could be jointly discharged by the Bureau & the enterprise concerned.

24. - It is important that technological inflow should be closely linked with the availability & growth of indigenous technological services. It should be the responsibility of the Bureau to ensure that technological services which are adequately available in the country are not imported as part of the technology package. Such services often add considerably to the cost of technology & also constitute a strong disincentive to the growth of indigenous engineering & technological services. A country intending to build a chain of refineries, fertilizer & petrochemical plants over, say, a five year period, should be able to progressively provide the technological services, including plant engineering & even process knowhow for such plants by the end of such a period. In order to discharge its role in this field, the Bureau would not only need to be fully abreast of contemporary development in the country but would have to work in close collaboration with other national agencies & entities engaged in the development of national technological services.

25. - The role of the Bureau dealing with technology inflow & agreements should, therefore, be conceived in dynamic terms & beyond the mere scrutiny of license contracts. Such a role cannot, however, be discharged in isolation of other national agencies & institutions. The priority sectors will need to be defined, presumably by the governmental departments dealing with planning or industrial development. In assessing the suitability of a particular technology in a country's context, the Bureau should draw on the technical advice of the institution dealing with science & technology, which may even need to be specially equipped for giving such advice. An alternative is to build up a strong technical advisory agency within the government which can advise both governmental agencies & domestic enterprises on technological matters. The manning of such technical agencies, whether in the form of mentioned above or as a Centre for Technical Information is difficult in most developing countries but such an institution must be developed gradually as an upto date source of technical information & guidance. In matters relating to industrial properties viz patent & trademarks, the Bureau must work in close collaboration with the national agency responsible. The Bureau should serve as a feedback of data regarding the actual utilisation of various patents & trade-marks through license contracts & the impact of such utilisation on the concerned sectors. Finally, the determination of overall policies not only in terms of the foreign investment pattern but over a wide range of policy instruments, such as protection & tax & export incentives should bear close relationship with the pattern of technology inflow. All these aspects should be viewed as part & parcel of the overall industrial policy-package for every developing country.

26. - It is necessary, however, to stress that technology licensing is essentially an enterprise to enterprise transaction. The role of national institutional agencies in developing countries assumes importance only because prospective licensees enterprises face special problems & difficulties: because technology inflow has repercussions in these countries beyond the parameters of particular enterprises. Nevertheless, it is important to be fully cognizant of how far regulatory control should go. A national Bureau cannot substitute itself for the licensee enterprise in the world wholly detract from the basic nature of licensing. The Bureau can indirectly assist the licensee enterprise in obtaining terms of license and can also determine the full impact of the license, but it cannot, however, detract from the basic element of any license transaction. The Bureau should be viewed as a dynamic element in developing countries.

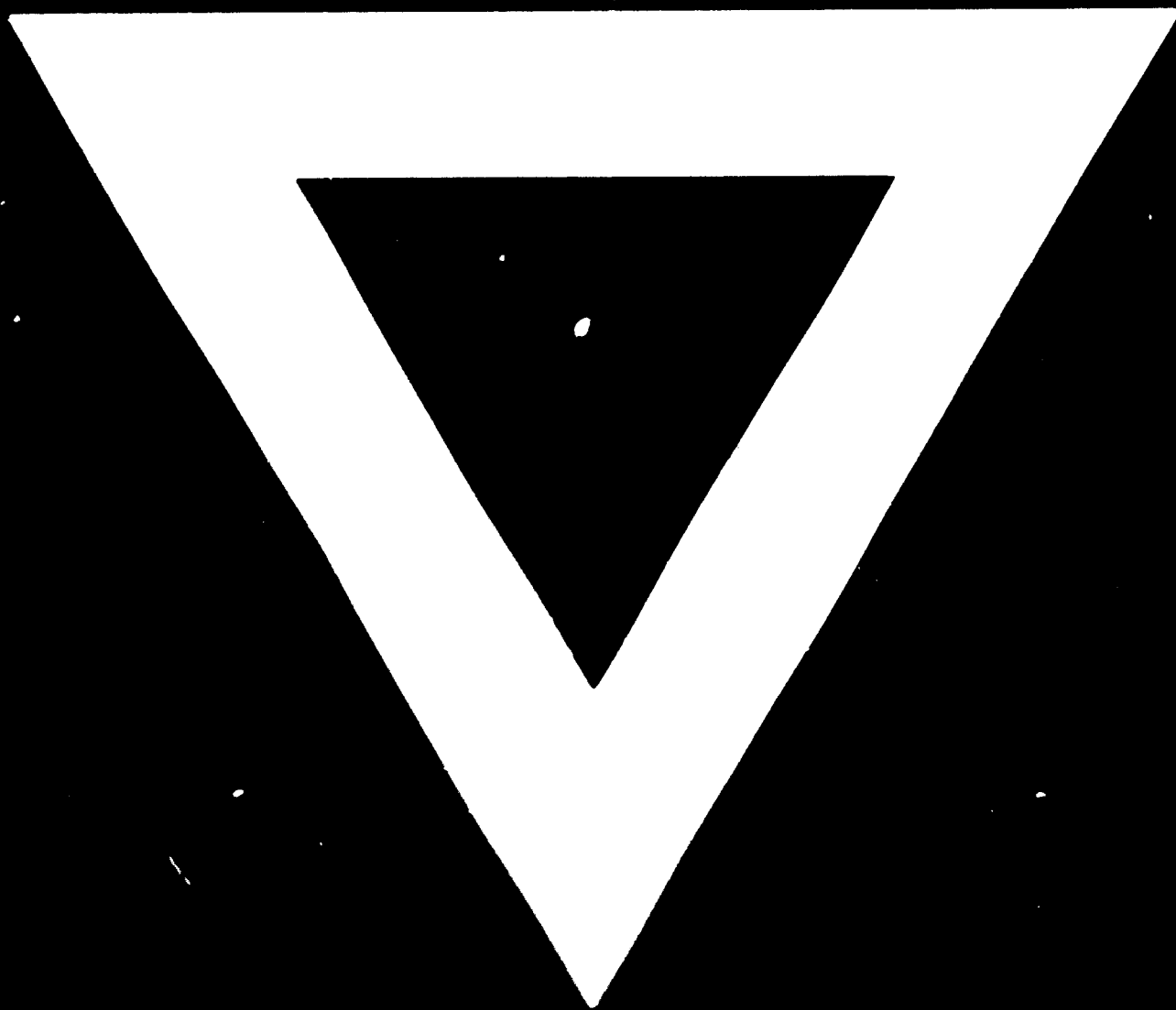
Licensing as
enterprise to
enterprise transaction

& of the national economy. These conditions should normally tend to be completerly in agreement, may be a conflict in approach such as when the licensee's interests are essentially short-term or when the licensee's views are coloured by the interests of the multi-national entity of which he may be an affiliate. In such cases, the wider interests of the community must prevail but, by & large, licensing is the primary responsibility of the enterprise concerned & should be clearly recognised as such, with the Bureau playing an indirect & supporting role.

27. - It has been sought, in this paper, to highlight some of the principal aspects of contractual arrangements in acquisition of technology by developing countries & some of the major policy aspects involved. The issues involved are undoubtedly complex & have to be considered both in the context of the licensee enterprise & broader national interest. Acquisition of foreign processes & techniques have to fit in with national objectives of scientific & technological development & this necessitate close & continuing attention to the problems & issues posed by technology licensing in the context of a particular developing country.

28. - Finally, it needs to be stressed that, despite the wide range & differences in the stage of development of various developing countries, the problems of technology licensing tend to be very similar in nature. Exchange of opinion & sharing of experience in this field can prove very valuable in enabling enterprises & regulatory agencies in these countries to utilise this mechanism for technological development in the best interests of each country.





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