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PROMOTION OF INVENTIVE AND INNOVATIVE ACTIVITIES IN INDUSTRY AND COMMERCE; ROLE OF ASSOCIATIONS OF INVENTORS; VALUATION AND COMMERCIALIZATION OF INTELLECTUAL PROPERTY ASSETS FOR ENTERPRISES

*prepared by the International Bureau of WIPO*

CONTENTS

INTRODUCTION

1. Today nobody challenges the importance of inventions and innovation for the economic and technological development. Ever since mankind appeared on the planet Earth, one of its major weapons for survival was man's capacity to find innovative solutions to the problems encountered. The development of civilization over the centuries is marked by countless inventions and innovations, that facilitated mankind's live and made it more comfortable and easy. We cannot imagine today's world without those countless inventions and innovations.

2. Over the last two hundred years, with the acceleration of technological progress, life of mankind has changed in a radical way and innovation became a part of our every day life.

3. If in the past, a son had to wait until his father's death to introduce an innovation in his trade, today knowledge develops, accumulates and spreads so fast that as a result technology and production methods, communication tools and methods, behavior patterns, etc., will change several times during the lifetime of an individual. Also, the knowledge and professional skills, an individual has acquired during the years at school and at university, will have to be updated several times during his or her lifetime.

4. Everyday we see and use products, which five or ten years ago, we couldn't even have imagined, and some forecasts show that in five years half of the products we are using today and we see on the shelves of the shops and around us, will have disappeared and will have been replaced by new ones. All these developments are the result of inventive activity and innovation of mankind.

5. Long-term economic growth is the result of increase and accumulation of technological knowledge, i.e. the increase of knowledge about useful goods and how to make them. Such knowledge increases as a result of the fact that what was known before becomes more widely known, and knowledge never known before by anyone is being acquired.

6. Technological development is one of the most important factors for economic development, since its contribution to growth is much more important than other factors, such as capital or labor.

7. The last decade has witnessed sweeping economic changes all over the world. The developing countries, in particular, have undergone a major paradigm shift. Restrictive policies with respect to controls on trade and industry, foreign investment and technological collaborations have been discarded. As country after country has liberalized its economic regime, new competitive pressures have come into play.

8. As new opportunities open up, the critical role of technology as a driver of economic progress has been widely acknowledged. Neo-classical economic theory attributed growth in output to increase in the factors of production, namely, labor and capital. Recent experiences at the national or company level show that contribution of raw materials, and in many cases of labor, has steadily declined in providing competitive edge to the products: their percentage in overall costs has reduced.

9. This is perhaps best reflected in micro-processor technology where raw material content has steadily fallen to an insignificant proportion of its price but the intellectual component has increased. Also the value addition in most new products comes basically through intangible components, including technology.

10. The recent economic achievements of many countries have not sprung from their natural resources. Prosperity is no longer based on tin, rubber or timber. Countries rich in natural resources, for example, oil producing countries, are not necessarily the great economic powers.

11. Economic progress requires a constant stream of new ideas and products to improve quality of life, regardless of whether the innovation is a simple gadget or a sophisticated invention. There is now overwhelming empirical evidence that innovation and creativity bring competitive advantage to nations and companies. Per capita economic growth of countries is driven increasingly by innovation, not by aggregate capital investment *per se*.

12. We are witnessing an increased inter-dependence in global trade and technology as costs and risks of new products and process development increase. Strategic alliances between companies such as licensing agreements, joint ventures, mergers, acquisitions and cooperative R&D agreements are proliferating, cutting across national borders and cultures. Alliances seek to learn and acquire from each other technologies, products, skills, and knowledge that are not available to other competitors. New relationships between enterprises are setting new standards in making it easier to do business together.

## GROWING ROLE OF INTELLECTUAL PROPERTY RIGHTS (IPR)

13. The new economic forces have greatly increased the role of intellectual property rights in economic growth and competition. Intellectual capital is increasingly being recognized as the most important asset of many of the world’s largest and most powerful companies.

14. Intellectual capital is often of considerable value because it is unique. It comprises, *inter alia*, patents for inventions, trademarks, industrial designs, utility models, appellations of origin, integrated circuits topographies, copyrights, but also know-how, trade secrets, proprietary technology, talents, skill and knowledge of the work force, training systems and methods, customer lists, distribution networks, quality management systems, etc.

15. IPRs are a powerful tool to face the competitive market forces in addition to the traditional techniques of inventory management, human resource development and total quality management. IPRs assets are an important factor on which are based licensing agreements and joint ventures. IPRs are being pledged as security for loans and assessment of the real worth of businesses increasingly require valuation of their intellectual property portfolio.

16. At the corporate level there is an increasing awareness that control over technology, new products and processes provides the cutting edge. The focus is on design competence through innovation and invention. Analysis of product life cycle reveals their falling contribution as they mature. The upgrading of these products and the introduction of new ones, the planning from commercial launch to withdrawal from market, demands well-planned technology inputs.

17. As nations and companies elaborate their new strategies, where technological superiority determines success, the question of assessment and valuation of intellectual property rights (including inventions, industrial designs, trademarks, know-how, trade secrets, etc.) assumes increasing importance.

## ECONOMIC ASPECTS OF INDUSTRIAL PROPERTY

18. Inventions are the concentrated expression of new technological knowledge and innovation is the process of introduction and use of such inventions and knowledge in the production and on the market. Experience has shown that while good inventions are the result of specific technological knowledge, experience, imagination and creativity in problem solving, successful innovations depend mainly on the entrepreneurial and marketing qualities and experience.

19. We often encounter inventors, who have made excellent inventions, but who, despite all their efforts, can not materialize their ideas into a profitable product or process. The basic reason for this is the lack of entrepreneurial experience. Thus the commercial success of an invention will largely depend on the way how it has been presented to the market and the consumers.

20. The neo-classical economic theory assumed the technology progress essentially as an exogenous phenomenon. Current understanding of economic growth is at variance with this view which regards technology as a “free good.” It is now widely acknowledged that technological progress occurs precisely as a result of entrepreneurial activities in anticipation of profits from innovations. A sound patent system contributes to the transfer of technology and research results by providing a legal environment which is conducive to encouragement of technology transfer and application.

21. Intellectual property represents the creations of the human intellect. Intellectual property relates to information which can be incorporated in tangible objects and reproduced in different locations and can be used by several persons at the same time, unlike immovable or movable tangible property. Similar to the movable and immovable property, intellectual property is characterized by limitations of law, for example, limited duration in the case of copyrights and patents in order to safeguard the common interest of the society.

22. New inventions, technologies and products cannot be created by simply issuing ministerial decrees, or by just deciding that new inventions will have to be created. You need to have men and women who can generate and develop inventions and they have to be encouraged to search for and apply innovative solutions to the problems they encounter in their work and life.

23. The industrial property system was designed to encourage inventions and innovation by promoting their protection and utilization so as to contribute to the development of industry. It also offers protection to inventors by granting them exclusive rights to their inventions over a certain period of time to encourage work on new inventions and to promote industrial growth through the use of these inventions.

24. Patents for inventions represent exclusive rights meaning that they confer upon their owners the right to exclude others from using or exploiting in almost any way the invention as claimed in the patent document. The legal exclusivity conferred by the patent grant follows an economic rationale, that of spurring on invention and innovation, i.e. the actual exploitation of the invention in the market place. It does so by affording a guarantee to the inventor that his R & D efforts and innovative investments will not be frustrated by the products launched by competitors, which are cheaper because of free riding imitators, who had not invested in R&D and invention. Consequently, patents really do constitute instruments of economic policy or, more precisely, of industrial policy. As such they are intended to contribute to economic growth to the extent that technical development generally contributes to economic growth.

25. From the economic point of view inventions have three main characteristics:

- Firstly, they are normally costly to make, i.e. they are the result of expensive research and development efforts;

- Secondly, they are costly to exploit, since use of a manufacturing process involving a new invention or manufacture of products incorporating inventions and distribution of the products so manufactured generally requires considerable investment in manufacturing equipment, training of personnel and organization of the distribution network;

- Thirdly, inventions constitute technological information which, after disclosure, can be used at relatively little cost (imitation costs represent only a fraction of the costs involved in developing an invention) and they can be used without any effect of consumption, i.e. the

technological information may be used by several persons independently at the same time with none of them hampering the others' simultaneous use. In other words, contrary to tangible goods, inventions are not subject to any natural barriers to simultaneous use as is the case for foodstuffs, consumer or manufacturing goods, the possession of real estate, etc. Only the introduction of patent protection can make inventions the subject of exclusive use, i.e. they become a piece of individual property.

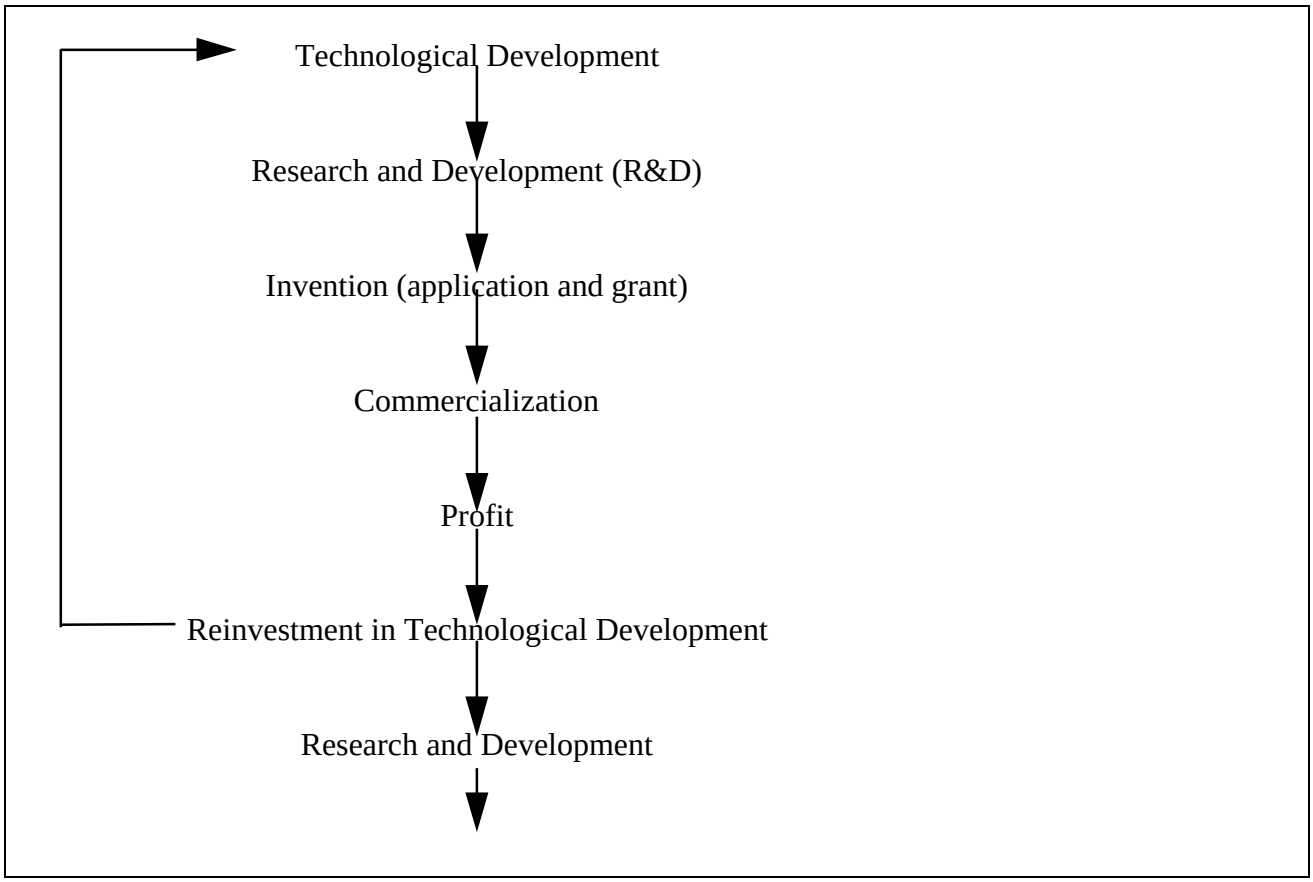
26. In the absence of protection the combined effects of the cost of making and exploiting inventions and of the nature of inventions as public assets necessarily will lead to an under-investment in inventive R & D efforts: where inventions can be used by everybody at less than their R & D cost, inventors will refrain from incurring these costs in the first place, and even if they have made inventions at relatively little cost they will shun the risk of investing in their exploitation because others may imitate their invention and, thus, reduce the profits to be expected from the investment.

## TECHNOLOGICAL POLICY AND THE INDUSTRIAL PROPERTY SYSTEM

27. To encourage and spur innovation and invention which will lead to technological and economic development governments adopt specific policies among which the following could be mentioned:

- Financing inventive activity and innovative related to technological development;
- Subsidy for inventive activity and innovative related to technological development;
- Partial tax exemption;
- Encouraging invention, innovation and R&D by introduction of research associations or systems for cooperative research;
- Technological guidance of public laboratories;
- Joint R&D projects of government, private companies and universities.

28. These technological development policies are implemented effectively at appropriate stages of the following technological development cycle:




29. In other words research and development activities produce an invention. Once a patent is granted, an inventor can begin commercialization activities for making profit. Part of the profit can be used for further research and development activities. As a result, the invention is disclosed to the public and encourages further development of technology.

Industrial Property and Strategic Planning

30. In the highly competitive environment of international trade, increasing importance is being placed on planning and forecasting, and the development of appropriate commercial and industrial strategies on the part of individual enterprises, industrial groupings, and even countries. Such strategic planning is an increasingly important part of the successful implementation of the product and marketing policy of individual companies, and of the establishment and development of a technological base which is appropriate to the capacities and opportunities of the relevant country.

31. Recently, increasing attention and importance has been given to the role of the industrial property system as an analytical instrument for such industrial planning and decision-making.

32. As a tool for industrial planning and strategic decision making, the industrial property system may be very useful through analyses of the statistical aggregation of patenting activity as revealed through published patent documents. Since the degree of patenting activity provides an index of the degree of technological activity in a given technical field, the statistical analysis of patent documentation can indicate which countries or companies are active in various fields, in which industries technology is moving at a rapid pace and in which

the technology is stable, and which are the enterprises active in particular technical fields. Registered trademarks witness a clear commercial interest in the market of a country or group of countries. Analyses of IPR and their presence in different countries provide a means of forecasting future industrial developments, identifying areas in which market demand is increasing, monitoring general technological progress, and testing the soundness of policy and investment decisions.

33. Technology, and inventions, as a fundamental part of it, are, by nature, both private goods in creation and public goods in productive use or consumption. They are private goods in so far as their creation consumes both mental and physical resources which are thereby diverted from other production or consumption activities. Once technology or inventions become available in the form of information, however, they lose their characteristics as private goods. Unlike a tangible object, they can be used by many without loss to any person, and without further investment in re-creating it for new users.

34. These characteristics of technology and invention create a dilemma. If all are free to use technology and inventions which have been created, who will be willing to bear the cost associated with their creation? One of the basic rationales of the patent system is to provide such an incentive for the creation of new technology and inventions. It does this by offering to inventors exclusive rights to commercially exploit patented inventions for a limited time in return for the disclosure of the inventions to the public.

***One of the basic rationales of the patent system is to provide an incentive for the creation of new technology and inventions by offering inventors exclusive rights to commercially exploit patented inventions for a limited time.***

35. The exclusive rights to exploit the invention commercially permit its creator to work it without fear of interference from imitators who have not incurred the investment in research and development which produced the invention. The inventor will thus have the opportunity to recover research and development costs through the competitive advantage which the exclusive rights to exploit the invention confer. The patent grant in this respect acts as an instrument of economic policy to stimulate further risk-taking in the investment of resources in the development of new products and technology.

36. Patents are granted on technical criteria and not on the basis of commercial or market criteria. The exclusive rights which are conferred by the patent relate to the commercial exploitation of the invention, and do not preclude another person from experimental work using the technological information contained in the patent specification. In other words, while the patent owner can prevent others from using, for commercial purposes, the same technology as is revealed in the disclosure of his invention, he is not protected against those who derive from his disclosed invention a perception of a market need which may be satisfied by the legitimate adaptation or improvement of his technology, or through the discovery of a different technical solution to satisfy the same market need

FUNCTIONS OF THE INDUSTRIAL PROPERTY SYSTEM

37. It is generally acknowledged that society derives satisfactory compensation for the exclusive rights it temporarily confers on certain individuals since this exclusivity generates benefits that, in the long run, offset any economic disadvantages or risks which "exclusive rights" might entail. In general, the industrial property system is a means to

- Encourage and safeguard intellectual creativity;
- Promote investment, by giving a guarantee against unauthorized use of the patented inventions to those who accept the risk of advancing from the prototype stage to mass production;
- Provide consumers with the fruits of inventive and innovative activity, by the large-scale production and distribution of higher performance and higher quality goods;
- Disseminate quickly and widely new ideas and technologies, by creating a public "database" of new inventions and technologies.

38. In other words, the main functions of the industrial property system could be summarized as follows:

- To stimulate inventive and innovative activities;
- To encourage development of new technology;
- To encourage commercialization of inventions and innovations;
- To facilitate access to latest technological information.

39. Some explanations of above-mentioned four functions of the industrial property system are given in following paragraphs.

Function to stimulate inventive and innovative activities

40. A patent right is granted to a person who has invented (created, developed) an invention and who is the first one to file an application for the grant of a patent. As already mentioned, the exclusive right granted for the invention makes it unique and thus the inventor can expect to commercialize it on favorable terms. All kinds of inventions, fundamental or improvement type, benefit equally from the exclusive protection. While fundamental inventions are very important for new products and industries, the so called improvement-type inventions are also important, especially actual appliance for industries often they result in cost reduction or improved the quality of the products.

41. The patent system provides a protection to the inventor and an incentive to continue his work, because he can be sure that if his invention is patented he will be the only one who, for a limited period of time, could legally exploit the invention and has, at the same time, the right to exclude everybody else from using his invention. This means that there will be no free ride on his invention by others who would just like to copy and use the invention free.

Function to encourage development of new technology

42. Inventions are created in the process of development of new technology or when solving technical difficulties. They are utilized by enterprises which apply the above-mentioned technological policy.

43. Proper protection of inventions by a industrial property system guarantees inventors an exclusive right of working inventions on a commercial base. It makes enterprises develop and utilize inventions for their own development. The period of exclusive rights in the invention is limited to certain period in time. Thereafter the knowledge becomes part of the public domain. Therefore enterprises make further efforts for developing further advanced technology as follow-up activities for keeping their products competitive and profitable.

Function to encourage commercialization of inventions and innovations

44. A mature industrial property system will support accelerated introduction of technology (domestic or foreign) through proper protection of patent rights. New technologies can be transferred more easily to countries with established and well-functioning industrial property systems. The industrial property system is a guarantee for the inventor that when he transfers his invention to an industrial user, this is done on a legal basis.

45. The industrial property system provides security for investors. When a financial institution or an investor are interested to invest in a new process or invention, they would like to be sure that while they are investing Th. the research and development related to the new invention or process nobody else would do the same and they would be working “competition free” for a certain period during which they will not be suffering from similar developments by competitors and develop safely their product and offer it to a receptive (because unsaturated) market.

Function to facilitate access to latest technological information

46. One of the basic principles of the industrial property system is that protection may be granted only in return for full disclosure of inventions (which, otherwise, could have been kept secret, at least for a certain time). This could be called the information function of the industrial property system. Originally, this information function was hardly more than a collateral effect of the industrial property system since, by and large, patents are taken where and when inventions cannot be kept secret anyway. But with time the information contained in patent applications amounts to a stock of technological knowledge which, due to systematic and precise documentation and classification, constitutes a valuable national asset in its own right.

47. The patent system provides an unique and by far the most complete collection of technological information and data on what is going on in the different fields of technology. By studying the patent documents, everybody working on the development of new products, or in R&D in specific fields of technology, can know what developments are taking place in

any company or firm in the world. He can also identify the state of the art of the research in specific technological fields and learn about the progress of the competitors, what are their most recent inventions and where protection for such inventions is being sought.

48. Awareness of the state-of-the-art in a particular technical field can avoid duplication in research work by indications that the desired technology already exists. Also it can provide ideas for further improvements and can give an insight into the technological activities of competitors and, by reference to the countries in which patents have been taken out, the marketing strategies of competitors

***A state-of-the-art search can identify newly developing areas of technology***

in which future R&D activity should be monitored.

## THE INDUSTRIAL PROPERTY SYSTEM AND MARKET ECONOMY

49. As regards the economic and institutional framework within which the industrial property system can operate satisfactory, two considerations have to be borne in mind.

50. The first is that the grant of a patent for an invention normally does not amount to the grant of a monopoly and, indeed, talking of patents as of monopoly rights is grossly misleading. For one thing, there are only very few, if any, inventions that may not be replaced by alternative technologies. In addition, the patent grant itself contains the seed for the development of substitute technologies in that the disclosure of the invention facilitates the understanding of the new technological knowledge, its circumvention or adaptation to specific needs. In this way, the patent is a self-destroying exclusivity.

51. This limited nature of the exclusive protection granted by the industrial property system leads to the second and more important consideration which is that the industrial property system operates on competitive markets and, indeed, will yield its maximum benefits on competitive markets only. The grant of exclusivity permits that a portion--but only a portion--be excluded from an otherwise competitive market replete with rivals ready to imitate the invention and the limited term of the patent protection makes sense only in view of the prospect that upon lapse of the patent term competitors will in fact imitate the invention. Firms which already dominate markets need no patent protection for the introduction of innovations.

52. Patents may, however, allow fresh entry into oligopolistic or monopolistic markets for enterprises offering new products or processes, which due to their exclusivity, cannot be imitated at predatory prices by the firms dominating the market.

53. In other words, the efficient functioning of the industrial property system depends on the existence of a dynamic competition on the market. This, of course, does not necessarily

mean that a system of exclusive patent protection will work in a market economy only, but it will produce the totality of its beneficial effects only under conditions of effective competition among enterprises.

54. This complementary function of the industrial property system, i.e. to spur competition, means that governments cannot introduce patent protection as means to promote technological development unless they also allow for at least some effective competition among enterprises and unless they do not take care of the maintenance of competitive market structures by also controlling economic concentrations and restrictive business practices which are based on the use of patents.

55. It is not only the reward structure of patent protection which depends on the establishment of competitive markets, but also its very function as a means of stimulating and selecting commercially successful inventions. Patents are granted purely on the basis of general technical considerations such as novelty and non-obviousness, but they are not granted because of the particular economic or social value of the invention. This value is to be determined exclusively by what the market yields for the exploitation of the invention after due efforts by the inventor. Patents do not directly reward inventions. The success of the inventions on the market place will generate the reward, and the function of a patent is no more than to offer a basket for the collection of such reward.

56. By the same token, the industrial property system provides a relatively safe guarantee that the inventive and innovative potential of any given company or country will in fact be activated. By covering all fields of technology, patent protection as a tool of selecting opportunities for innovation operates on as broad a basis as possible using the interests and efforts of all people in a decentralized way. What is most important, it leaves the difficult problem of how to determine the economic and social value of an invention to the market place, i.e. to the actual user or consumer of the new process or product.

57. More generally speaking, the determination of which R&D projects are to be undertaken in view of the actual or potential needs of the market is left to the individual enterprise or company rather than to a centralized, bureaucratic institution charged with directly subsidizing R&D projects that have been selected on the basis of some more or less well designed development plan. It is this mode of operation which constitutes the particular advantage of the industrial property system over other systems of promoting technological progress.

## SUPPORT TO INVENTIVE ACTIVITY AND INNOVATION

58. It is difficult to identify socially desirable inventions, which may not reap sufficient rewards under patent protection, by a precise economic test. However, by political judgment, at least three kinds of support are commonly the subject of specific government intervention. Such interventionist measures, however, are not intended to replace the industrial property

system, but rather an attempt to establish the conditions necessary for the proper functioning of the industrial property system or to give an adequate message to inventors or innovators that their efforts in specific directions will not be in vain.

59. In order to exploit the market opportunities for invention and innovation, the inventor must have the necessary scientific and technical skills, i.e. he must be able to find adequately trained personnel and he must have access to a broad scientific and technological basis. The advantages offered by patent protection are insufficient to support all these costs (as distinguished from the actual costs of labor and of laboratory equipment).

60. What is at stake in fact is the establishment of the basic infrastructure of industrialization and of the operation of the industrial property system which governments must provide in the form of an efficient education system and the establishment of competent research institutions.

61. In addition to providing the educational and scientific infrastructure for industry, governments of many countries have been led to directly support the inventive and innovative activities of industry by granting all kinds of financial assistance to individual R & D or innovation projects. The measures differ in their form, by beneficiaries and by subject matter.

62. The reasons for such financial assistance are manifold. In part, they relate to inadequacies in the industrial property system: patents may be granted too slowly in areas of fast technological development or they may not afford sufficiently broad protection for technologies of large intersectoral applicability. More frequently, R&D projects are considered to be too risky or too expensive to be undertaken on the basis of patent protection alone. In this respect, it should be noted that patents provide for rewards only at a late stage of the innovation process so that inventors and enterprises have to make advance outlays. Depending on the size of the enterprise and on the substance of the project, the necessary capital may be difficult to find.

63. The problem of all of these forms of financial assistance is that the attempt to compensate for insufficient patent protection may easily result in over-rewarding inventions that would have been made anyway. Therefore, these forms of promoting inventive and innovative activity have given rise to some criticism. Such criticism, however, fails to take sufficient account of the complementary function of the industrial property system and of direct financial assistance as instruments to promote inventive and innovative activity.

64. Finally, as patents protect only the opportunities to invent and innovate which the market offers, there must be a demand which, if met by the invention, will bring the expected reward. Markets, however, may be imperfect in at least two respects. Firstly, there may be insufficient competition on the demand side. Secondly, markets do not always support a demand for socially desirable inventions. Consumers do not pay for new processes or products if these yield an advantage to society at large rather than to the individual consumer himself. This phenomenon of inventions that produce larger social than individual benefits is well known in the areas of environmental protection, safety and public health. The appropriate remedy is to regulate the market by establishing environmental and safety

standards to which any processes and products have to conform so that new processes and products which correspond to these standards will find a demand. Exhaust emission standards for automobiles are the best known example in point.

65. Quite a different risk is that of the promotion of inventive and innovative activity by patent protection being superseded rather than reinforced by other systems of incentives to invention and innovation. This risk is particularly acute where direct subsidies are granted for R&D investments and related costs. If not finely tuned to the operation of the industrial property system, such subsidies may impair the function of patents as an instrument for the demand-oriented selection of rewarding opportunities for invention and innovation. Where investments in R&D and in innovation are largely financed by governments, patent protection is easily reduced to the mere function of facilitating technology transfer and, to the extent that it actually protects a reward, it produces social costs rather than benefits because the inventor is paid twice, first by the government and then by the patent exclusivity. To be sure, this need not be the case as in quite a variety of situations patent protection may be an insufficient stimulus to invention. But the risk is always present and should be watched carefully.

## THE IMPACT OF THE INDUSTRIAL PROPERTY SYSTEM ON INVENTION AND INNOVATION

66. The establishment of markets, therefore, where demand is competitive and innovation-minded is a prerequisite to the proper functioning of the industrial property system as a stimulus to socially desirable inventions and innovations. In other words, as an instrument of infrastructure intended to support inventive and innovative activities of enterprises, the industrial property system depends on a well-functioning, complementary infrastructure upstream from the inventor--i.e. a science basis and workable competition--as well as downstream. But it is the industrial property system which, for the most part, serves as an effective catalyst between both sides.

67. The preceding explanation of the economic rationale and function of the industrial property system as a necessary policy planing instrument which will encourage invention and innovation, may appear somewhat theoretical. It is not infrequent that in many countries disappointment is expressed as to the yield of their own industrial property system and their patent statistics indeed indicate that it may benefit foreign applicants much more than the domestic inventors. However, dominance of national markets by foreign technology may not be attributed to the industrial property system alone. Such dominance cannot be successfully defeated by refusing patent protection since, in any event, patent protection is indispensable for the establishment of innovative domestic industry. In fact, availability of patent protection represents a strong shield for the development of domestic industry however small it may be at the moment. The industrial property system does not constitute an instant remedy, but rather a long-term infrastructure investment in national industrialization.

68. All along the innovation process, right from the definition of a project to the conception of an invention and its transformation into a prototype and finally into a marketable product, patents play a role as a source of information and as the instrument to protect the investments

necessary at any given stage. This role, however, varies somewhat according to whether inventions and innovations are developed and introduced by one and the same enterprise or whether they are contracted out totally or in part to other institutions or enterprises.

## PRACTICAL USE OF THE INDUSTRIAL PROPERTY SYSTEM BY ENTERPRISES AND COMPANIES

69. Discussions of the role of the industrial property system in the innovation process are commonly based on the assumption that, at least in developed countries, enterprises generally make their inventions themselves and transform them into innovations by manufacturing and selling the new products or the products made by new processes themselves. In this model situation of intra muros R and D and direct innovation the industrial property system serves as a source of information on the existing technology, on the direction technological development may take and on the technological and competitive position and intentions of other enterprises, while patent protection is sought as a matter of protecting the inventing enterprise's own investments, its market position and marketing strategy and, more generally speaking, as a matter of seeking a reward on the market on the basis of patent exclusivity.

### Rewarding employee inventors and innovators

70. In addition, patentable inventions provide a perfect opportunity and a very good reason to reward the in-house inventor, i.e. the employee who was capable to concretize technical knowledge into an invention. Indeed, rewarding employee inventors is not only a matter of justice, since they afford a means to the enterprise of excluding competitors from making or selling the same product or from using the same process, i.e. they provide the enterprise with a well-protected competitive advantage, but indeed remuneration for employee inventions calculated as an equitable share of the profits made on the basis of the patented invention (with, of course, due account taken of the respective contributions of the employee and the enterprise to the invention) will operate as a strong incentive to inventive and innovative activities within the enterprise itself. Inventions present clearly defined situations for remuneration and they may easily (and should be) calculated on the basis of the enhanced potential profit of the enterprise rather than on the basis of mere cost saving (as is done in many cases). A well-remunerated inventor becomes an active participant in the running of the enterprise since he has a stake in it.

### Industrial property rights in transfer of technology

71. The framework of the patent system also provides a necessary element of certainty for a technology transfer transaction. If a potential technology recipient were located in a country which did not maintain a patent system, the supplier of the technology would need to rely on purely contractual arrangements seeking to guarantee non-disclosure and use of the invention by third parties. Such arrangements establish an element of commercial risk for technology

suppliers which is more pronounced than in circumstances where the transfer transaction can be linked to a patented invention or technology guaranteeing protection against illegal exploitation by third parties.

72. The existence of a patent also introduces another measure of certainty to the commercial transfer transaction by enabling the potential recipient of the technology to sight the essence of the technology which he is wishing to acquire. In the absence of a patent, such initial sightings of the technology which it is proposed to transfer must take place through disclosures under secrecy and confidentiality agreements, which can again introduce an element of commercial risk of the leakage of the technology to third parties, thus undermining both the value of the technology from the point of view of the supplier, and the value of the technology for which the recipient will be paying. Furthermore, to cover such high risk the supplier would calculate it into a higher price of his technology.

73. Contrary to secret technological know-how, patents perform several simultaneous functions which are critical for the efficiency of the network for transfer and dissemination of technology, namely:

⇒ Patents provide information on who possesses which technology;

⇒ Patents give evidence of the technological strength of the respective partners because they are easy to investigate and, by their very nature, represent R&D efforts resulting in an advance in the art;

⇒ Patent claims allow to define precisely the technical and territorial scope of any technology transfer transaction, as well as the technology to be transferred to be clearly distinguished from any other technical knowledge of which a partner may learn during the transfer contacts. This is particularly important in contract research and in cooperative research projects where the background knowledge of each partner must be distinguished from the jointly developed new technology, and where the jointly developed technology must be duly attributed for exploitation to each partner;

⇒ The exclusive nature of patents, which transforms ubiquitous technical information into an appropriable asset, makes it possible that inventions can actually be transferred from one owner to another for monetary consideration in respect of the contract performance, the cooperative efforts or the commercial value attributed to a particular technology.

74. Therefore, the transfer function of patents is as important as is its information and incentive function, and is by no means limited to the grant of licenses as an additional source of income or as an instrument to serve markets into which an enterprise is not able to enter itself.

CONCLUSION

75. Finally, it can be said, that today it is generally accepted, that invention and innovation are crucial for successful participation in the very competitive global market place. A well functioning national intellectual property system will contribute substantially to encouraging invention and innovation. It will also serve public welfare by upgrading the technical and technological base of the country, preparing the ground for creation and exchange of advanced technology, and fostering greater human resource development in technical fields. In short, the stimulus to expanding a country's stock of technical knowledge will be materially increased and the stimulus to investment in useful development of that knowledge is likewise increased.

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