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THE IMPACT OF THE INTERNATIONAL PATENT SYSTEM ON
DEVELOPING COUNTRIES :
STUDY DRAWN UP BY AZIZ BOUAZZAOU

Documents submitted by the Secretariat

The study reproduced in this document is one of four studies on the impact of the international patent system on developing countries commissioned by the Director General and made available as documents A/39/13 Add.1 to Add.4 for further background information, see document A/39/13.

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The views expressed in the study are those of the author and not necessarily those of the Member States or the Secretariat of WIPO.

THEIMPACTOFTHEINTERNATIONALPATENTSYSTEMON
DEVELOPINGCOUNTRIES

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1. INTRODUCTION

The aim of this study is to analyze the impact of the international patent system on developing countries.

The patent system is undergoing significant developments throughout the world.

The competitiveness of a country, economic sector or also a company is based on the capacity for innovation and creation. An innovative or creative act may help to release resources for a company and strengthen its assets. Globalization imposes conduct based on harmonization, standardization and the enhancement of a company.

The enhancement of a company, in a competitive environment, should be based on innovation for the company's development. Thus, a company may base its strategy on the use of the technical information existing in patent literature and also benefit from the intellectual property protection system. Consequently, the company will not be obliged to reinvent what has already been produced or created, but nevertheless to acquire firstly the technical information existing in the patent field and to develop its skills in the best possible conditions in terms of effectiveness and cost.

A patent may play a decisive role in the development of a company, essentially in developing countries. Patents will enable a company to strengthen its capacity for innovation and to make itself better known by highlighting its assets.

The use of the patent system at the national and international level may help to release significant resources in a country's development.

This document highlights the main implications of the international patent system for developing countries, and explores the different alternatives for developing countries to benefit from the advantages of the system in order to meet their needs.

2. INVENTION AND INNOVATION

References to invention or innovation bring to mind the idea of novelty in a particular technical or scientific system. Invention can therefore be defined as a novel idea which, in practice, allows a specific technical problem to be solved. It may relate to a product, a device or a method. Innovation is the specific material or intellectual expression of a subject or concept which has not previously existed. Innovation therefore differs from creation and invention.

In the field of invention, we move away from natural or fundamental sciences and draw close to the technical field, although invention is often confused with innovation. In both cases, this leads to a result which appears to be novel. The specific expression of the idea on the basis of the invention or innovation may take time and require technical resources in order to be carried out. The differentiation made between invention and innovation relates also to the particular features which give rise to one or the other. Certain inventions are based essentially on intuition or the product of chance. Innovation transforms an existing invention and is defined by its capacity to meet a need, either expressed or implicit. Thus, innovation

may consist simply in improving what exists or may actually be a real advance in revolutionizing a sector and opening up new markets. In the first case, it is a question of innovation for adaptation, while in the second case it is a matter of innovation by breaking with what exists.

Innovation in a company may take many forms. It can relate to manufacturing processes, commercialization methods, marketing, the quality management system and so on. The important thing is that value added actually exists.

Generally speaking, the concepts of invention and innovation are confused in companies, in particular in those which use many different kinds of activities, i.e. ranging from product design to commercialization via the implementation of prototypes, the conduct of trials and tests, and the devising of manufacturing processes.

Innovation relates to different areas, in industry, science, technology, administration, and sport or leisure.

The originality of innovation does not systematically involve the applicability of innovation. It has taken a long time for certain innovations to become established: for example, the effectiveness of willow bark against fever was known by E. Stone in England as of the middle of the eighteenth century, but it was another century before A. Von Bayer successfully commercialized the active substance contained in this bark, which is aspirin (acetylsalicylic acid).

The development of innovations is often unforeseen. Inventors and innovators will generally have difficulty in judging their innovative ideas and, consequently, their future. The success of innovation depends as much on the value of the original idea and technical mastery, as on the capacity for developing methods of organization, management and dissemination. Jacques Perrin has established three principles for the design of innovation:

1. no innovation without market sanction,
2. no innovation without design,
3. no innovation without innovative enterprise.

For instance, the Minitel is a significant example. Its success is based on the use of information banks which may be consulted by telephone, and on the design and production of terminals, at prices which are reasonable in comparison to those for computers. Furthermore, commercial innovation has been required in the sense that they were initially distributed free of charge so as to attract and convince potential users to acquire these terminals. To ensure the long-lasting nature and stimulate the development of this service, innovation has been necessary in the method of billing, based on the use of the available services without consumers being obliged, in principle, to subscribe to the services of interest to them. The success of the Minitel in France is due not simply to the original idea, but also to the combination of scientific (in relation to computers and electronics), technical and industrial (for the production of the terminals), commercial (free nature of the terminals) and management (original billing system) innovations.

The fact that we now refer to innovation rather than invention is not simply the effect of what is fashionable. It stems from a profound transformation of the nature of technologies and the conditions for their development. Until the end of the nineteenth century, the most important technologies (in the fields of mechanics, energy and metal working) were still

relatively simple and could be mastered by people working alone with limited available resources. Scientists, employees and engineers were able to devise new ideas and revolutionize certain sectors such as the cinema, cars and aeronautics. The electric light bulb, phonograph, telephone, penicillin and so on date from around the same period and have all resulted from individual initiatives. In the twentieth century, by contrast, technologies have become complex: for example, chemistry, electronics, the processing of materials and energy each utilize every diverse knowledge, require heavy industrial equipment and significant capital. Furthermore, technologies are no longer simply used in conjunction with each other; in contrast, they form a coherent system: a new chemical process will necessarily involve the use of computers or electronic instruments, use new materials and, for its implementation on an industrial scale, requires sophisticated equipment. The development of a new technology requires the collaboration of specialists from various fields and with distance in terms of technological information, in particular in patent literature. This multitude of information sources and skills is sometimes a source of technological or industrial sector development. These information sources may constitute a form of technological supervision for companies, i.e. monitor the technological developments in progress, indeed in all the sectors which may influence the products they manufacture or the technologies they use. This approach may help to improve and to finalize companies' development projects. The development of new products is structured in a gradual manner, by means of innovative procedures. These procedures may encounter difficulties or constraints linked to the technology used. Innovation is therefore a collective action. Bringing an innovation to fruition essentially consists in allowing people from all the components of a company (the financial sector, distribution network, production factory, research laboratory, management and so on) to work together.

It is in this vein that companies devote an ever-increasing share of their budget to research and development (R&D) activities. They consider their capacity to renew technologies and products to be a decisive economic weapon. R&D plays a strategic role in a company, since it forms part of the improvements of processes and products, thereby developing the culture of innovation. Thus, innovation is the guarantee of the company's long-term survival through R&D which is a future-oriented development tool. R&D is perceived by many operators as an accessory. However, it is above all a state of mind and also a procedure which guarantees a company's development. Owing to their position in commercial competitions and their concern with creating value, large groups or multinationals do not have the choice not to support R&D. Thus, large firms and high-technology companies therefore have research and development installations available. Those firms and companies devote increasing sums and resources to this: for example, amounts may reach 25 percent of the turnover of large aeronautics companies. Research and development institutions are equipped laboratories where scientists and technicians work. They have the responsibility of devising, developing and testing new technologies and new products, providing technological supervision, and finalizing or adapting the patents or licenses which a firm has been able to acquire. By way of example, the Moroccan company MANAGEM, which operates in the field of mining, was an SME with a turnover of US\$20 million in the 1980s, and now, by means of R&D, this company has been able to produce more than ten industrial units and its turnover is close to US\$200 million.

In certain areas, the complexity, multifarious nature of the technologies to be mastered and the size of the sum to be invested are such that a company cannot carry out the necessary research alone. Thus, an increase in technology partnership agreements is observed, even between companies which are in principle competitors, for the development of new joint products: car engines, microprocessors, electronic components, but also high-definition televisions...

Competitive companies are those which rapidly transform new ideas into new products. This leads to an increase in the number of innovations, which allows new consumer needs to be met, a large range of choice of products and services to be provided, the quality and reliability of existing products to be increased, costs to be reduced, and the performance of the various service functions offered by products to be enhanced.

Finally, staff training and management are also revealed as a priority method for the acquisition of technological skills and their application in new projects.

3. PROTECTION OF INVENTIONS

The protection of inventions and innovations is the very condition underlying their existence. No one can expect researchers and, in particular, companies to invest in research without a guarantee that their innovations which would result therefrom will not be used immediately by their competitors.

In legal terms, there are two possible means for the protection of innovation to be realized.

Secrecy

The first means is that of secrecy which will lead the author of an invention or innovation not to disclose it or make it known to third parties, by preserving it as a factory secret or one relating to know-how. This means should not be marginalized, since it enables large amounts of knowledge, exceeding the prior art mastered by a person skilled in the art, to be preserved against competitors. For those who hold it, this knowledge represents an important competitive advantage. However, such protection of an invention or innovation by means of secrecy has limits and presents risks. Firstly, protection through secrecy can be imagined only in order to protect innovations which may, in technical terms, be surrounded by complete discretion and is consequently excluded for all innovations which would be known immediately through the marketing of a product. It does, however, imply that secrecy can be effectively preserved. If there are information leaks or even a violation, legal action for unfair competition will be dependent on the proof which it is often difficult to provide. Thus, the author of an innovation preserved in the form of a secret does not have ownership in a legal sense and cannot claim any kind of monopoly. This is the reason for which the other means of the protection of innovation has long been imagined: i.e. patents.

Patents

This means of protection consists in requesting and obtaining from the authorities the grant of an ownership title conferring on its holder a temporary monopoly, generally of 20 years, over his invention. This title, known as a patent, allows the holder to prohibit any person from using the invention, i.e. manufacturing and/or marketing the products covered by

the patent, or implementing the method. In case of infringement of the protected right, the legal action against counterfeiting allows such infringement to be halted, those responsible to be sanctioned and compensation for the consequences to be provided. The corollary of this significant advantage is the disclosure and full description of the invention in the patent application and publication. Consequently, this mechanism is a priority instrument guaranteeing dissemination of scientific and technical information. Of course, the protection of innovation by means of a patent must meet the patentability criteria, i.e. the feature of novelty and that of inventive step, which implies that it must not be obvious to a person skilled in the art. In order for it to be patentable, an innovation must therefore satisfy the following three criteria:

- *The invention must be “novel”*

An invention is “novel” only if it does not form part of the prior art. The prior art is defined by all that which has been made available to the public anywhere in the world, prior to the filing date of the patent application.

- *The invention must involve an inventive step*

An invention, even one which is novel, is not necessarily patentable. For a person skilled in the art, any invention which is obvious from the prior art cannot be granted a patent. The invention must lie outside the realm of what is obvious. Since there are numerous documents which allow novelty and inventive step to be assessed, in principle it is never possible to be certain about the patentability of an invention. However, a prior search can, if it discloses prior art, avoid unnecessary costs being incurred.

- *The invention must be industrially applicable*

A patent is intended to protect an invention which can be exploited or used in industry, in the broad sense of the term, and includes the technical processes used in agriculture. It must be able to be carried out in practice and not consist of the statement of an abstract principle.

3.1 PATENT PROTECTION SYSTEMS

Patent systems have undergone significant changes at the international level and have made considerable progress in the past two decades. The rapid development of technologies and the globalization of trade therein have made it necessary to devise tools for protecting new inventions, which are effective, simpler and more economical. In the history of patent systems, progress has also been made with a view to developing and harmonizing patent systems.

Paris Convention

The first relatively old international agreements relating to patents date from 1883, the year of entry into force of the Paris Convention which contains the basic principles of international industrial property law and concerned in particular patents in several of its articles, *inter alia*, Articles 2, 4, 4 *bis*, 4 *ter*, 4 *quater*, 5, 5 *bis*, 5 *ter* and 5 *quater*. This Convention established the foundations of the current international patent system, in

particular by stipulating the principle of national treatment for foreign applicants and acknowledging a priority right for the applicant for a period of 12 months for filing an application abroad, based on a first national application.

National and regional systems

Patent laws are by nature essentially territorial and are governed by national systems in legal, organizational and administrative terms, said systems allowing patents to be obtained and the rights attached thereto to be observed throughout the territory of a country. The majority of national patent laws are based on the fundamental principles of the Paris Convention and have evolved over the years by taking into account technological and commercial development calling for more effective patent protection.

With the globalization of commerce and trade, certain countries have introduced regional patents systems with broad territorial scope. The international agreements establishing these systems are the:

- Bangui Agreement establishing the African Intellectual Property Organization (OAPI) in March 1977, which brings together French -speaking and Portuguese -speaking African countries;
- Harare Protocol relating to patents and industrial designs within the African Regional Industrial Property Organization (ARIPO), which brings together English -speaking African countries;
- Eurasian Patent Convention concerning certain countries of the Commonwealth of Independent States (CIS), which has given rise to the Eurasian Patent Office;
- Patent System established by the Cooperation Council of the Gulf Arab States (GCC), which has given rise in the past few years to the GCC Patent Office;
- European Patent Convention of October 1973, the parties to which are European countries. It gave rise in 1978 to the European Patent Office (EPO). This Convention concerning the grant of European patents has been comprehensively revised and new proposals have been made with a view to establishing the community patents system which allows single patents to be granted that take effect in all European Community member countries.

Patent Cooperation Treaty (PCT)

At the global level, the PCT, a treaty adopted in 1970 and which entered into force in 1978, represents the most notable progress made in cooperation in the patent field since the adoption of the Paris Convention. The PCT, administered by the World Intellectual Property Organization (WIPO), offers a simpler and more economical means of obtaining patent protection at the international level. By filing a single international application under the PCT, it is possible to obtain protection for national or regional filings in several countries or in all contracting parties to the PCT, i.e. 121 States in June 2003.

The PCT also aims to rationalize the filing, search and preliminary examination procedures in relation to the substance and international publication of PCT applications. The PCT, which does not allow an "international" patent to be granted, represents by contrast the best tool for simplifying the procedures for filing patent applications in coordination with the national and regional systems, and which could serve as a basis for the preparation of an international patent system allowing a worldwide patent to be granted.

3.2 LIMITS AND ADVANTAGES

Advantages of patents

Innovative ideas are at the center of most lucrative businesses. They must be exploited, given specific forms in innovative goods or services, and marketed so that a company can benefit from its creative spirit. The patent system can be decisive in transforming the ideas into competitive goods and generating profits.

The reasons for patenting an innovation are the:

1. **exclusive rights:** patents provide exclusive rights which allow an applicant to use and exploit an invention for twenty years from the filing date of the patent application;
2. **position of strength on the market:** patents help to prevent third parties from using a patented invention for commercial purposes, thus reducing competition and exercising a position of strength on the market;
3. **profitability of investments:** investment for the sale of innovative goods allows the investment to come to fruition and greater profitability to be generated;
4. **the possibility of granting under license or selling an invention:** if an applicant prefers not to use the patent himself, he can sell it or grant the rights under license and commercialize the patent;
5. **publicity for a company:** investors and shareholders will see in patent portfolios proof of the high level of value added, specialization and technical capacity within a company. This distinction may prove to be useful in attracting new partners and increasing the company's commercial value.

Limits of patent protection

Although a patent confers on its owner advantages as listed above, it is nevertheless true that the rights granted by patents suffer from certain restrictions:

- *The exploitation and non-commercialization of patents*

In developing countries, most patent applicants are often faced with problems relating to commercialization of their inventions owing to several factors, in particular financial resources.

- *The exploitation of traditional knowledge*

For a number of years, concern has been expressed with the recognition of traditional knowledge as a component of prior art. It has been stated that patents have been granted for inventions linked to traditional knowledge, which did not meet the criteria of novelty and inventive step, when they were compared to the technologies already established. These inventions contained traditional knowledge which could not be identified during the examination of an application by the authorities granting the patents. It should be emphasized that certain pharmaceutical patents should have been revoked once the patented invention was compared with the teaching of the traditional medicine forming part of the prior art.

The practical issue is that patent examiners are unable to discover relevant traditional knowledge in the prior art when they examine patent applications claiming inventions based on this knowledge. The reason for this is that they do not have access to the information on the traditional knowledge in the non-patent classified literature. This information is not collected systematically and there is no effective search instrument allowing this information to be found. This situation persists despite the fact that documentation exists on traditional knowledge in most regions of the world. A great deal of work has allowed collections and banks of traditional knowledge to be established but has not developed options for intellectual property protection, which are able to protect traditional knowledge as such.

However, in addition to the protection of traditional knowledge through the appropriate application of existing intellectual property rights, a number of measures could be taken as part of the intellectual property legislation in force in order, for example, to provide a more effective hurdle to the unjustified grant of patents relating to traditional knowledge, and the transparency and sharing of information concerning patent applications relating to inventions based on traditional knowledge or comprising elements of such knowledge to be improved, so as to facilitate the sharing of the benefits. If a person files a patent application based on knowledge or information which has been obtained unlawfully, the patent legislation in force allows the holder of the right to the knowledge or information to ensure that the patent is revoked or is transferred to him. In certain cases, patent protection may be obtained for technologies which merely copy existing traditional knowledge. In this case, the patent can be challenged on the grounds that the patentability requirements are not satisfied.

This situation is different where traditional knowledge is used as a starting point for other specific innovations. In this case, where they meet the applicable patentability criteria, these innovations can certainly lead to the grant of a patent. The existence of these patents should not, however, neglect the requirements with which they may be combined at the national or international level, such as obtaining the authorization of the holder of the traditional knowledge from which the invention has been created and the remuneration of the holder in return for the use or sharing of the resulting benefits.

Patent offices could take full account of traditional knowledge in their prior art searches, insofar as they have access to this information. In order to put this idea into practice, traditional knowledge should be more systematically documented in directories or databases. To do this, it would be necessary to obtain full participation and prior consent, given with full awareness of the relevant issues, from the holders of the traditional knowledge. Patent offices could easily have access to the relevant information and be able to consult effectively these directories and databases.

- *Patents and access to drugs*

The debate on patents and pharmaceutical products (drugs) and the need for equitable medicine, accessible in economic terms to all, is of increasing topical interest at the international level, especially at a time when the whole world is concerned with the ever more serious problem of HIV/AIDS. In its capacity as a United Nations specialized agency, responsible for issues and standards relating to intellectual property on an international scale, the World Intellectual Property Organization (WIPO) takes part in this debate.

In that regard, a number of exchanges of views on the relationship between the intellectual property system and access to health care are based on an incorrect understanding or concept of the patent system.

Patents fulfil an essential function, in the sense that they encourage the creation of essential drugs, by providing an incentive to invest in expensive long-term programs involving research and creation of new pharmaceutical products. Without patents, the drugs which currently exist to treat AIDS for example would not be developed.

At the same time, the patent system also provides information and makes available knowledge on the fight against AIDS for example. Also, the patent system presupposes the disclosure of important information which leads to the invention of new drugs.

Without the patent system, this essential technical information would remain inaccessible, or even secret. In these conditions, a large number of researchers in medicine and from pharmaceutical product laboratories would therefore be deprived of such information and will be obliged to make greater efforts as regards research, knowing that in the current situation no party can allow itself to waste time while being deprived of such resources.

WIPO considers that it is important to find a happy medium between public health concerns and the interests of patent holders. This balance exists within the patent system itself. It is important to note that a number of member States of the World Trade Organization (WTO) concur that the Agreement on Trade-Related Aspects of Intellectual Property (TRIPS Agreement), which is administered by WTO, may possess the flexibility required to achieve this balance and to meet the needs of the countries which are seriously affected by HIV/AIDS.

Furthermore, patents constitute only one of the many factors which affect access to health care and drugs. Numerous governmental or non-governmental organizations participating in the fight against HIV/AIDS for example also state that certain social and economic factors represent an obstacle to access to drugs. In fact, the statement of commitment by the United Nations concerning HIV/AIDS underlines that the strengthening of health and social infrastructures at the national level is a decisive means of avoiding the spread of the epidemic.

Approximately 95 percent of the pharmaceutical products appearing on the list of essential drugs, issued by the World Health Organization (WHO), which comprises numerous drugs used in the treatment of the various symptoms and side effects of HIV/AIDS, are now in the public domain, i.e. they are no longer protected by patents, the duration of which is generally twenty years from the date on which the patent application is filed.

Patents do not necessarily play the decisive role in the fixing of the price of drugs, which in fact depends on many other factors, such as the cost of research -development, production, distribution and marketing.

- *The limits of exclusive patent rights*

The aim of the patent system is to protect the work of any inventor, be it an individual, a research institute or a company, both in developed and developing countries.

This system substantially favors innovation and investment by providing an inventor with the guarantee of gaining certain economic benefits from his work for a specific period, generally 20 years. An inventor is obliged to prove that his invention, in particular in the sector where he innovates, is novel, involves an inventive step and has a practical use.

A patent owner has an exclusive right to decide, during the period of patent protection, who can and cannot use the patented invention, assign his invention under license or authorize third parties to use it, produce it, assign it under license or sell it, just as he may conduct these operations himself.

In most countries where patent protection is provided, the relevant legislation provides for circumstances in which the rights attached to patents should be restricted or limited, for example, through the grant of non-voluntary (compulsory) licenses, subject to certain conditions.

The right of any person to benefit, as the creator, from the moral and material interests resulting from industrial property, and the right of all human beings to a standard of living adequate for their health and access to medical care are both enshrined in the United Nations Universal Declaration of Human Rights (Articles 25 and 27). These two rights are not incompatible and should, by contrast, be considered complementary, since the first of them allows the second to be exercised, by virtue of progress and scientific innovation. International intellectual property treaties, including those relating to patents, comply fully with the provisions of this Declaration.

However, the exclusive right which the patent owner enjoys faces exceptions which are provided for by the legislative provisions of numerous countries and by those of the international conventions dealing with patents. These exceptions relate to the following cases:

- acts carried out unofficially or for a non-commercial purpose;
- the use of an invention for educational purposes;
- the preparation of drugs for individual prescriptions;
- prior use (use of an invention by a third party who has begun or undertaken serious preparatory work) prior to the filing date of the patent application or its publication);
- the experiments carried out in order to obtain regulatory authorization during the period covered by a patent, in order to market a product immediately following the expiry of the patent in question (Bolar exception in the case of patents for pharmaceutical products),

- the use of an invention for research and experimentation, including for commercial purposes;
- parallel import of a protected product, on the basis of the principle "of international exhaustion."

Under the TRIPS Agreement, the rights of the patent owner are not absolute but may be subject to limitations or exceptions, in particular the use of the patented invention by third parties for research purposes, where the aim is better to understand the invention in the cause of scientific and technological progress.

Similarly, public use for non-commercial purposes (use by the authorities) without the rights' holder's authorization is permitted by the TRIPS Agreement which lists a number of conditions that must be respected in order to protect the lawful interests of the patent owner.

Among these conditions, prior to the grant of the compulsory license it is necessary to obtain a voluntary license from the patent owner, based on reasonable conditions and commercial procedures, and the remuneration paid to the rights' holders should be appropriate according to the case in question, taking into account the economic value of the license.

In addition, certain countries expressly allow third parties to undertake procedures with a view to the registration of drugs, even before the expiry of the patents, so as to accelerate the marketing of the generic products after this date. For this purpose, in the dispute between Canada and the United States relating to the protection granted by a patent for pharmaceutical products, the WTO special group decided that this provision, which authorized limited exceptions, covered a provision of Canadian legislation permitting the manufacturers of generic drugs to use patented products, without authorization and before the expiry of the protection period, in order to obtain from the authorities responsible for public health approval for marketing of their generic drugs as soon as the patent expired (Bolar provision).

The exceptions to exclusive rights are automatic. In other words, it is not necessary to request the patent owner, a court or other authority for authorization to use the invention in the manner provided for as part of the exception. Compulsory licenses also limit the exercise of the rights attached to the patent and allow the use of an invention, but only by the person authorized to do so by a judicial or administrative authority after the requirements fixed by the law appear to have been satisfied.

Also, compulsory licenses can be granted for very varied reasons, subject to certain conditions and requirements as to the requesting party and the procedures for use of the compulsory license. Thus, compulsory licenses are generally non-exclusive and are dependent on compensation being paid to the patent owner.

In relation to the TRIPS Agreement, member countries of the WTO can provide for patents different forms of compulsory licenses, which are explicitly authorized by said agreement, in accordance with Article 31 relating to the other uses of the subject matter of a patent, without the authorization of the rights' holder.

The TRIPS Agreement does, however, leave member States complete scope to create compulsory licenses for reasons other than those for which it provides, for example for reasons of public interest or in the interest of the national economy.

Although Article 31 of the TRIPS Agreement does not provide a restrictive list of the reasons justifying the grant of compulsory licenses, it sets a number of conditions, in particular the need to decide on a case-by-case basis, the obligation made in certain cases to the user applicant to request in advance, from the patent owner, the authorization to use his invention, subject to reasonable commercial conditions, the non-exclusive nature of the licenses, the fixing of compensation dependent on the economic value of the license and on the conditions for revocation of the authorization.

Article 31(g) places in particular a serious financial burden on the systems since it opens up the possibility of revoking the compulsory license, given that the conditions which led to it being granted no longer exist. This provision could discourage applicants since the licensee runs the risk at any time of seeing his license revoked.

The licenses granted to remedy anti-competitive practices follow the rules of a particular system as regards the remuneration to be paid to the patent owner. National authorities may interpret Article 31(k) as authorizing them to reduce the remuneration or even to abolish it.

These exceptions, which relate in particular to compulsory licenses, could be interpreted as being an obstacle to the promotion and development of research in the economic sectors and as an unfavorable element discouraging inventors from pursuing their work and research, and limiting their right to gather the fruit of their intellectual efforts. These exceptions could also represent, in financial terms, an obstacle for settling the investments made for research purposes, which are moreover extremely high in certain cases.

However, these exceptions draw their foundation from the alarming situations linked for example to public health, from which several countries are suffering, particularly developing countries and the least developed countries which are distinguished by the existence of epidemic diseases such as AIDS, clearly constituting an emergency situation for the countries of Sub-Saharan Africa and for other countries experiencing similar conditions.

3.3 SITUATION IN DEVELOPING COUNTRIES

In the patent field, in 2001 the World Intellectual Property Organization (WIPO) received an unprecedented number of applications within an international filings system which makes it easier to obtain patents in more than one country. Almost 104,000 international applications were filed in accordance with the Patent Cooperation Treaty (PCT), which represents an increase of 14.3 percent on 2000.

Use of the PCT by developing countries increased by 70.6 percent in 2001 (3153 in 2000 and 5379 in 2001). Between 1997 and 2001, the number of international applications received from these countries increased from 680 to 5379, representing an increase of 791 percent in the use of the system by applicants from developing countries. In 2001, the strongest increases in percentage terms among these countries were recorded by China (188.4 percent), India (102.6 percent), Republic of Korea (53.1 percent) and Mexico (50.7 percent). In 2001, of the 115 States parties to the PCT, 61 were developing countries.

The success of the PCT in developing countries highlights the interest of the patent system for countries keen to promote economic growth. The absence of such a system would lead to enormous expenditure in obtaining patent protection in several countries.

The PCT has several advantages for developing countries, in particular the:

- reduction of the fees in the international phase, a reduction of 75 percent for domestic natural persons, resident in a country where the national average annual per capita income is below US\$3000;
- international search system and the international preliminary examination for countries whose national legislation does not provide for search and substantive examination;
- international publication of PCT applications strengthens the patent document collection for States parties to the PCT;
- increase in the number of patent applications at the national level would offer a solid base in terms of investments, transfer of technologies and conclusion of license agreements, thereby constituting an improvement in the level of economic and technological development in these countries;
- increase in the deadline for national phase entry has allowed applicants from these countries to evaluate further their inventions and to seek companies which can invest in the use and continuation of the procedures for national phase entry in other countries. An applicant who files a PCT application benefits from an additional period of 18 months, in relation to the twelve-month period provided for in the Paris Convention, which means that the applicant has a period of 30 months between the first filing and entry into the national phase.

Use of the PCT in Morocco

Morocco filed its instrument of accession to the PCT on July 8, 1999 and the PCT entered into force in Morocco on October 8, 1999. Morocco is the 104th State party to this Treaty.

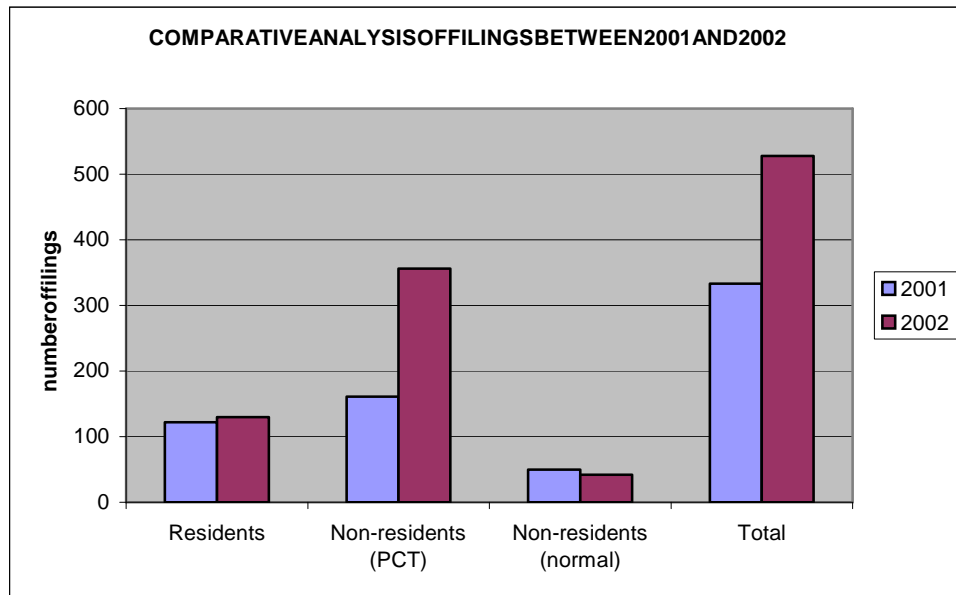
Since Morocco's accession to the PCT, the Moroccan Office for Industrial and Commercial Property (OMPIC) has registered eight international applications by individual applicants and Moroccan companies relating to different sectors, *inter alia*, agriculture and food, chemistry, and physics - electricity. Also, 673 patent applications have entered the PCT national phases since October 8, 1999.

The number of patent applications which have entered the national phase in Morocco has undergone a significant increase since the country's accession to the PCT, i.e. an increase of 121 percent between 2001 and 2002.

The data reflect the comparison of the filings made between 2001 and 2002:

	Residents	Non-residents (PCT)	Non-residents (normal)	Total
2001	122 (37%)	161 (48%)	50 (15%)	333
2002	130 (25%)	356 (67%)	42 (8%)	528

The graph below shows that the total number of filings made during 2002 increased by 59 percent in relation to the total number of filings for 2001. The number of applications which entered the PCT national phase increased from 161 in 2001 to 356 in 2002, i.e. an increase of 121 percent. The filings made by residents increased by seven percent.



4. INTERNATIONAL PATENT SYSTEM

4.1 CURRENT SITUATION

The PCT, which does not allow an “international” patent to be granted, does, however, represent the best tool for streamlining the procedures for filing patent applications in coordination with the national and regional systems. This system could serve as a basis for devising an international patent system allowing a worldwide patent to be granted.

The PCT is often presented as the most important advance in international cooperation in the patent field since the adoption of the Paris Convention. This Treaty offers inventors and industrialists an advantageous means of obtaining protection for patents at the international level. By filing a single “international” patent application according to the system established by the PCT, it is possible to obtain the effect of regular national filings in several countries or in all the countries which are parties to the PCT.

Also, this Treaty is intended to rationalize the filing, search and examination procedures relating to such patent applications, and to achieve cooperation in this field and disseminate the technical information contained in these applications.

Main aims of the PCT

The main aim of the PCT is to streamline, and make more effective and economical, in the interest of both the users of the patents system and patent offices, the procedure to be followed in applying for protection for a patent in several countries, by avoiding the duplication of the filing and processing procedure in each country. The PCT also facilitates and speeds up access for industries to the technical information contained in patents.

By facilitating the filing of patent applications, the PCT helps countries to obtain information on new technologies and facilitates their acquisition from their holders.

Thus, the PCT allows the:

- establishment of an international system allowing the filing, with a single patent office, of a single application, drafted in one language only and taking effect in each of the countries which are parties to the Treaty that the applicant mentions or designates in his application;
- provision of an examination of form of the international application by a single patent office (the receiving office);
- submission of each international application to an international search which results in a search report being drawn up, citing the relevant elements of the technology and which should be taken into account in determining whether the invention is patentable;
- provision of the international publication of international applications and search reports;
- provision of the possibility for an international preliminary examination of an international application, which is made by the offices required to determine whether it is appropriate to grant a patent. This examination also gives the applicant an opinion as to whether the invention meets certain international patentability criteria.

The characteristics of the PCT system are, *inter alia*, an examination of form of an international application by the receiving offices, the international search, centralized international publication of international applications accompanied by the appropriate international search report and, optionally, the international preliminary examination.

The grant of patents remains within the remit of the national and regional offices which may make use of these search and international preliminary examination reports.

In the context of harmonization of patents systems, certain recent or current initiatives are quite promising in relation to harmonization.

Under the auspices of WIPO, the following have been established:

- the Standing Committee on the Law of Patents (SCP) responsible for debating matters relating to patent law and submitting draft treaties for negotiation. The debates on the Patent Law Treaty (PLT) and the Substantive Patent Law Treaty (SPLT) constitute the main work done by this Committee;

- the Committee on Reform of the PCT responsible for streamlining and revising the whole of the PCT system.

Consistency in the debates of the two committees has been taken into account in producing treaties which are aligned with each other.

Patent Law Treaty (PLT)

The Patent Law Treaty (PLT), concluded in June 2000, is designed to streamline and harmonize the administrative requirements set by the national or regional patent offices for the filing of applications and the maintenance in force of patents, in particular for:

- obtaining a filing date;
- the electronic filing of patent applications;
- the possibility for the applicant to designate a representative;
- the requirements for extending a deadline set by an office;
- the establishment of rights and of a priority claim.

The PLT provides, moreover, standardized forms and streamlined procedures for dealings with offices.

After five years of negotiations, this Treaty was finalized during the Diplomatic Conference bringing together the representatives of more than 140 States, held at WIPO from May 11 to June 2, 2000. The PLT has been signed by 53 States and one intergovernmental organization. Once this Treaty has entered into force, it will harmonize and rationalize, at the global level, the administrative formalities relating to national and regional patent applications, and to the maintenance in force of patents. Currently, these requirements of form vary between different countries. By standardizing them, the PLT provides a number of advantages both for inventors and national and regional patent offices.

Also, the PLT provides for the requirements, relating to the international applications filed in accordance with the PCT, in national and regional legislation. Furthermore, the requirements and procedures applicable to national and regional patent applications, and PCT international applications, respectively, will therefore be harmonized. Thus, bringing the PLT and the PCT close together will allow convergence toward common standards relating to administrative requirements, thus giving specific form to a major objective in the sense of the international streamlining of the formalities and procedures for all patent applications throughout the world. The PLT constitutes, moreover, an important step on the road to harmonization of patent law.

Substantive Patent Law Treaty

The diversity of the legal systems (legislation and practices) for granting patents is due to the principles of substantive law, which differ between countries. Consequently, for a single invention a patent application can lead to the grant of a patent in certain countries, while in other countries a patent cannot be granted or is invalidated once it has been granted. In addition, the lack of harmonization leads to additional costs for the inventors and applicants, as well as for patent offices, owing to the repetition of certain tasks.

“...the next stage will consist in working toward harmonizing substantive law provisions and establishing a single protection standard at the global level...” declared the WIPO Director General in his address to the PLTDiplomatic Conference in June 2000. The PLT expressly excludes the aspects of substantive patent law and the need to harmonize patent law in addition to procedures, which has led the Standing Committee on the Law of Patents (SCP) to undertake work in this area and to launch deliberations on the harmonization of the substance of legislation as regards these aspects since November 2000.

In May 2001, at its fifth session the SCP examined a first draft of the SPLT with its regulations and practical guidelines prepared by the Secretariat of the WIPO International Bureau. During its last sessions (the ninth of which was in May 2003), the SCP examined the revised texts of the draft substantive patent law treaty and the draft regulations which are reworded at each session, taking into account the debates conducted at previous sessions.

The SPLT covers a number of fundamental legal principles on which the grant of patents in different countries throughout the world is based, *inter alia*: the definition of the prior art, novelty, inventive step (or non-obviousness), industrial applicability (or usefulness), appropriated disclosure, and the structure and interpretation of the claims.

The work of the SCP aims to create a patent system offering a greater ability to foresee events, and better and more uniform cost effectiveness, by complementing the existing international structures which for the moment achieve only part of the desired harmonization objective. The PLT is limited to the harmonization of the procedures and formalities relating to national or regional patent applications, and to the maintenance in force of the patents granted. The PCT concerns certain principles of substantive law which are applicable only in the international phase of the PCT application. During the national phase, each State party to the PCT designated or elected is free to apply the substantive requirements of patentability stipulated by national or regional law.

The first sessions of the SCP concerning the SPLT represented an initial stage of reflection intended to clarify and provide greater understanding of the concepts underlying the different national legislations and practices. This approach has made it possible to observe that, in certain cases, even if appropriate provisions are worded differently between systems, the fundamental legal principles and practices are in fact the same.

At the latest SCP sessions, the debate has continued on these principles for granting patents, formulated in each new version of the draft SPLT. The discussion of certain principles tend toward a single standard. Other questions remained to be solved, pending a consensus taking account of the:

- differences on certain points of view concerning the first applicant principle, industrial applicability or usefulness, the technical or general nature of the invention, the grace period and so on;
- concerns in particular of developing countries on matters relating to genetic resources, traditional knowledge and folklore.

Also, the question of points of convergence between the draft SPLT and the PLT, as well as with the PCT, has also been raised and has been the subject of a study by the Secretariat of the WIPO International Bureau, presented and approved by the SCP.

Reform of the PCT

The PCT reform procedure was launched by the PCT Assembly in October 2000 and the Committee on Reform of the PCT was set up in May 2001. It was agreed that the reform would be carried out in two stages. The Committee was instructed to examine, during the first stage, the concept of designation and functioning of the designation system, improved coordination as regards the international search and international preliminary examination, as well as the deadline for the opening of the national phase, changes in harmony with the PLT, and streamlining and general rationalization of the procedures. It has been agreed that the second stage of the PCT reform relates to more comprehensive revision of the whole of the PCT system.

The Committee has agreed that the reform of the PCT system, which will lead to amendment of the articles and rules, should be based on the general objectives, i.e.:

- streamlining the system and rationalizing the procedures, taking into account the fact that the field of application of numerous requirements and procedures mentioned in the PCT will be broadened under the Patent Law Treaty (PLT);
- reducing the costs borne by applicants, taking account of the different needs of users in industrialized countries and developing countries, be they individual inventors, small and medium-sized enterprises, or large companies;
- ensuring that the PCT administration can cope with the workload while maintaining the quality of the services provided;
- avoiding the futile repetition of the work done by the PCT administration, and national and regional industrial property offices;
- ensuring that the system functions for the benefit of all offices, irrespective of their size;
- maintaining an appropriate balance between the interests of applicants and third parties, taking into account the interests of States;

- developing technical assistance programs for developing countries, in particular in the field of information technologies;
- aligning the PCT, to the greatest extent possible, with the provisions of the PLT;
- coordinating the reform of the PCT with the harmonization work in progress, on the basis established by the WIPO Standing Committee on the Law of Patents;
- benefiting as much as possible from modern information and communication technologies, including the establishment of common standards in terms of technology and software for the electronic filing and processing of applications filed in accordance with the PCT;
- streamlining, clarifying and, where necessary, condensing the text of the provisions of the Treaty and the Regulations;
- rationalizing the distribution of provisions between the Treaty and the Regulations to achieve, in particular, greater flexibility.

4.2 PROBLEMS AND DIFFICULTIES ENCOUNTERED BY USERS IN THE INTERNATIONAL PATENT SYSTEM

Patents are not easy for an SME to use. They are often used largely by big companies from industrialized countries, as a tool for their international development. However, SMEs make insufficient use of patents systems or sometimes are unfamiliar with them. SMEs do not have patent or intellectual property specialists available to implement a patent strategy monitoring issues of protection and technological supervision.

The cost of obtaining a patent in several countries is relatively high for SMEs. SMEs consider themselves to be more vulnerable to counterfeiting than large companies and do not, moreover, place great trust in the protection granted by a patent and demand accelerated court procedures.

Individual inventors also represent an important source of innovations. Numerous individual inventors do not undertake feasibility studies, in order to interest companies in their inventions, and have difficulties in funding their projects. Also, they are not able to draft their technical description perfectly, thus neglecting certain important elements of protection. Such inventors often wish to set their innovative ideas themselves and encounter many difficulties.

At university level, scientific research results, which sometimes relate to applied research, constitute a reserve of innovations suitable for patent protection. Researchers and universities are not often able to enhance their innovations themselves. They often have the difficulty of assessing the patentability and economic interest of those innovations, and of finding an industrial partner able to use the invention.

The profession of intellectual property adviser, which is not very developed in many countries, in particular developing countries, limits the possibility of several users, *inter alia* SMEs, resorting to these professions.

The applications sent to several national and regional offices, which are separate for a single invention, obviously lead to repetition of the filing formalities, in particular the problems of translation into several languages. For the PCT, the formalities of national phase entry in each designated or elected country represent the same difficulty for the applicant, in particular the preparation of search and examination reports by several national or regional offices for the same invention. The PCT system currently provides for the requirements of preparing international search and international examination reports. However, these reports do not constitute binding opinions which States are obliged to follow when granting a patent.

The multiple charges and payment formalities borne by the applicant, in particular fees, are relatively high for small companies and independent inventors. The same is true of the additional charges owed by applicant to national and regional patent offices for repetitive processing of patent applications relating to a single invention. For the PCT, the applicant is required to make payments to several authorities: the PCT receiving office, the international searching authority, the international preliminary examining authority, the WIPO International Bureau, and the designated or elected offices.

The excessive workload in patent offices can lead to slowness in the systems for processing and procedures for granting patents to users, to the detriment of the promotion of the patent system for the benefit of economic operators.

5. PROSPECTS FOR THE INTERNATIONAL PATENT SYSTEM

The externalization of R&D as part of technological cooperation and dissemination of technical information based on such knowledge, via the Internet for example, requires more and more an appropriate legal framework providing better conditions of protection at the international level. Despite the progress made toward harmonization of the Paris Convention, regional systems and the PCT, the current international patent system does not offer its users complete harmonization of the main substantive aspects of patent law.

In general terms, effective international harmonization of patent systems should allow:

- patent to be obtained, maintained in force and observed, by means of simple, inexpensive and reliable procedures;
- the use of patented technologies to be promoted in production, through measures to encourage investment, the granting of licenses or technology transfer agreements.

In practice, this harmonization should provide patent offices with access to common operating standards, allowing them to cooperate in order to:

- limit the repetition of their work;
- exchange information;
- share resources;
- provide for reductions in costs borne by applicants;

- provide a system which functions for the benefit of all offices, irrespective of their size;

These objectives are translated by important elements of an international system in particular:

- the processing of applications prior to the grant (filing formalities, payment of fees, publication, search and examination, and soon);
- the grant of rights: decision to grant and grant of a title;
- the settlement of disputes.

A title with global reach, allowing the grant of a "worldwide" patent, requires harmonization of the legislation of different States, in particular patentability requirements. This title can be introduced in the medium or long term, since it will be based on the result of the work of the SCP and the SPLT.

In the short term, an international system incorporating the PCT reform principles, which has already made significant progress in terms of harmonization, may be desirable and may result in a centralized system for granting protection titles comparable to the Madrid and Hague agreements - a system which takes into consideration both the needs of applicants and those of third parties. As part of such a centralized process for granting patents, the facilities provided for applicants should be balanced by a centralized system for opposing and challenging the validity of protection titles.

Furthermore, the application of common standards for search and examination is a principal aim of any harmonized international patents system. The PCT which, in its international phase provides for the preparation of search and examination reports by specialized authorities, may achieve these common standards by means of the proposed reform. Also, option C concerning the development of search and examination proposed as part of this reform will strengthen the advantages of centralizing search and examination. This option proposes a system in which the international phase is extended (36 months instead of 30 months) so as to allow the processing of an application to be continued, in particular the reexamination of its substance. An applicant may request the continuation of an examination for a new series of amendments, in order to produce an application likely to lead to a positive international examination report. Under normal circumstances, this report should give rise to the grant of a patent without additional examination in all the countries using this option.

Also, the PCT system, as it could be reformed, would lend itself to greater integration, in the international patents system, of developing countries, the least developed countries and countries in transition, which wish their patents system to provide better services and be more broadly used.

An important concern of the offices in these countries is to provide applicants therein with the possibility of search and examination services. Small offices, in particular in developing countries, which often adopt a registration system do not conduct an examination of the substance of patent applications. These offices do not often have a sufficient number of examiners available to carry out the search and examination of the patent applications in the different areas of technology. Generally, the budgetary resources of these offices are limited

incarryingoutsufficientrecruitmentofqualifiedhumanresourcesandinhav ingavailable appropriateequipmentforsearchandexamination(computers,informationsystemsand databases).Moreover,thelownumberofpatentapplicationsdoesnotjustifyinvestmentina searchandexaminationinfrastructure.

The sub -contracting of thesearchandexaminationoperationbyspecializedauthorities couldbeasolutiontoremedythisdifficulty.ThePCTsystemprovidingforthesearchand examinationstageintheinternationalphasecansubsidizetheneedsoftheseoffices.

Furthermore,option C inthePCTreformproject,theprincipleofwhichisexplained above,wouldbebeneficialtoapplicantsfromdevelopingcountries,whomayresorttoa re-examinationoftheirinventionsuntilissuesofpatentabilityareresolvedwithoutthenee d foranexaminationadditionaltothenationalphaseand,consequently,supplementarycosts.

Inaddition,thePCTwhichprovidesfortheinternationalpublicationofallPCT applicationswillfurtherfacilitatecentralizedaccesstoalargervolumeoft echnical informationdisclosed.

Theestablishmentofaharmonizedinternationalsystemwouldofcourseleadtoa reductioninthecostofapatent,somethingwhichrepresentedthemajorobstacletousersof thesystem,inparticularthoseindevelopingc ountries.Suchareductionwouldhelpto encourageapplicantsfromthesecountriestousetheinternationalpatentsystem.

Inthiscontext,theintegrationofanappropriateanduniforminternationalpatentsystem willconstitutethesolidbasisofthe pyramidofOffices/Users/Thirdparties,inparticularin developingcountries.Consequently,patentofficescouldbeaprioritytoolforthe introductionofsuchanationalinnovationpolicy.

Asusers,SMEsaretheprioritytargetforawareness -raisingandpatentpromotion actions.Theseactionsshouldbeexpandedatalllevels,amongacademics,studentsand researchcenters.Actiontocreteapatentculture(intellectualpropertyingeneral)shouldbe takenonseverallevels,beginningwithaware nessraisingandgoingasfarastrainingof teachers.

Asregardspatentaccess,thedevelopmentofdatabasesandthepossibilityof accessibilitytopublishedpatentsareamajorassetfortheusersofpatentsystems,awareofits importanceasasource ofinformationandtechnologicalsupervision.Thedevelopmentand useoftheworldwidenetworkWIPO NET(worldwidedigitalinformationnetwork)anddigital patentlibrarieswouldhelptointegratetheresources,methodsandinformationsystemsof patento fficesthroughouttheworld,andalsotofacilitateaccesstoinformationservices, particularlythoseofsmalloffices.

Thus,theintroductionofrelaybodiesallowsjudicioususeofaninternationalpatent system,inparticularthroughthetrainingof relevantspecialists(for example:patentagents, intellectualpropertyadvisers,lawyers,judgesandcustomsofficers)andthestrengtheningof networksworkingtopromotethepatentsystem, *interalia* intellectualpropertycoordinators attachedtounive rsities,innovationnetworksinliaisonwithSMEsandsoon.

However, harmonization based on the reform of the PCT will not subsidize all the needs of users of the international system. Certain limits in the development of the international patents system are worth mentioning, in particular so as to:

- provide a harmonized system of penalties, which does not form part either of the PCT reform or of the current debate on the SPLT: even if a patent is obtained on the same criteria in different countries, national courts will be free to decide counterfeiting cases;
- cover the patent costs which will remain relatively high for:
 - the translation required by each national office,
 - the payment of several different fees and annuities to several national offices,
 - gain access to technical information for certain developing country offices which have difficulty in acquiring means of access and modern information technologies, in particular the Internet. Furthermore, this limits the possibility for these countries to develop technology transfer tools;
 - use electronic filing (for example the new IMPACT system) which is a key factor in the success of any international patent system, but which represents a constraint for certain countries, in particular developing countries which do not have necessary means of communication or have high-cost Internet access;
 - broaden the field of prior art, in particular to traditional knowledge, so that the substantive examination of patent applications is based on broader and better supported prior art.

6. PROMOTION OF THE INTERNATIONAL PATENT SYSTEM AT THE NATIONAL LEVEL (EXPERIENCE OF MOROCCO)

The promotion of the national and international patent system is essentially based on the introduction of support structures for innovation. Supporting research and innovation by stimulating the potential for innovation, in particular of SMEs and SMIs, now constitutes a strategic approach adopted by the Moroccan authorities. Recent strategic guidelines and forecasts are included, *inter alia*, in the:

- 2000-2004 five-year plan, which provided for the preparation of a national policy for the promotion of scientific and technological research and engineering, as well as an increase in the share of national income assigned to research;
- the national education and training charter which aims to introduce a spirit of enterprise and management for innovation in research and training institutions;
- the SME/SMI charter, the main aims of which are to encourage the creation of companies by engineers and senior managers, and to develop the national capacity for innovation in order to modernize the national economic fabric.

Main achievements

The main elements of the emergence of a policy to support innovation and R&D in Morocco are represented by the specific measures adopted and promotion tools put in place, in particular:

- laws and decrees relating to research have been adopted, *inter alia* for the:
 - Public Interest Grouping (GIP) (May 2000);
 - Fund for Research – Development (PRD) which is a tax incentive (1999-2000 finance law) which authorizes companies to accumulate capital of up to 20 percent of taxable income for R&D expenditure on innovation projects;
 - national support fund for scientific research and technological development (January 2001), which aims to provide aid for innovation by means of a financial contribution of a maximum of 50 percent of internal expenditure concerning R&D expenses and for development of a new product and also company research grants;
- subject-based programs to support scientific research (PROTARS);
- the structures providing an interface between universities and companies, the skill disciplines (promotion of excellence in the latest fields of research) introduced by the Ministry of Higher Education, Managerial Training and Scientific Research (MESFCRS);
- the technical centers in different industrial fields set up by the Ministry of Industry, Trade and Telecommunications (MICT);
- the priority program for the improvement of research in industry and enhancement of Moroccan companies, which has helped to establish the Moroccan Institute for Scientific and Technical Information (IMIST), the Technology Dissemination Network (RDT), the Industrial Engineering Network (RGI) and the Morocco Incubation and Expansion Network (RMIE);
- the prizes and competitions designed to encourage the search for excellence in several activity sectors (about ten competitions);
- the events designed to enhance the results of research, in particular colloquia, fora and seminars aimed at generating momentum for and raising awareness of R&D, innovation and intellectual property;
- the R&D projects supported by the Morocco R&D association which launches appeals for proposals for R&D projects, in order to provide it support for proposed innovative projects by companies in partnership with research laboratories.

In the context of this policy of support for innovation and R&D, significant initiatives and important actions have been observed, primarily as part of the priority research enhancement program.

This program was the subject of a funding agreement, signed on January 8, 2002, between the Moroccan and French Governments. It is of three years' duration (2002 - 2004).

The main aims assigned to this program are based on:

- bringing companies and research laboratories close together;
- providing access to scientific and technical information for the benefit of companies;
- raising the awareness of the different players in R&D projects as to aspects of intellectual property rights.

This interministerial program, in which public and private organizations are participating, consists in establishing and introducing the following institutions:

- *Moroccan Institute for Scientific and Technical Information (IMIST)*

This institute which is being set up will be designed to:

- provide scientists and industrialists with all scientific and technical documentation, in particular patent literature and technology supervision services;
- provide familiarity with the scientific works and skills of Moroccan experts.
- *Technology Dissemination Network (RDT)*

This network consists of specialists from universities, technical centers, regional delegations of the Ministry of Industry and Trade, and the Moroccan Office for Industrial and Commercial Property (OMPIC). It currently comprises around 30 technology experts who make advance assessments of Moroccan companies (SMEs), in order to identify their industrial development and/or technology needs, and make available to them solutions in terms of expertise and funding.

- *Industrial Engineering Network (RGI)*

This network, which essentially brings together teachers and researchers specializing in the different fields of industrial engineering, is designed to provide SMEs in industry with assessments of their production system and a plant to improve the productivity of their organization. The RGI uses specific industrial engineering tools to implement this plan.

- *Morocco Incubation and Expansion Network (RMIE)*

The RMIE consists of public and private participants (incubators, financial institutions, start-up funds and OMPIC) working to enhance research and innovation. It aims to accompany and support projects to set up innovative and viable companies, by means of an incubation and expansion procedure. The network can provide financial support for feasibility studies and help to carry out innovative projects.

A number of innovative projects used are being hatched, in particular in the Technology Innovation Center (CIT) incubator and the incubator of the Marrakech Faculty of Sciences. In fact, most of the incubators launched within this network are set up in conjunction with university institutions.

All these networks incorporate in their procedures an intellectual property component, in particular in RDT, as regards technical information, and in RMI the concept of protection for innovative projects which are hatched.

The role of the patent office, as a public player in the field of innovation, is to work to enhance this momentum and to provide support for innovation, by strengthening its cooperation and partnership actions with the different players in this field, in particular by contributing to the development of the national innovation networks.

Thus, in the case of Morocco OMPIC included in its development plan for 2002-2004 a principal strategy relating to the promotion of innovation, which comprises two main points:

- the contribution to development of the innovation networks;
- the measures designed to promote creativity and inventive activity.

In this context, OMPIC has contributed to this national strategy of support for innovation through several actions, *inter alia* :

- raising awareness of the role of the patent in the innovation process;
- training of industrial property teachers for those in charge of the RDT, RGI and RMI networks;
- participation in piloting, management and innovative project selection committees within these networks and the Morocco R&D association;
- preparation of research reports for evaluation and selection of innovative projects;
- accompaniment of project leaders and those accompanying them in the patent protection procedures;
- development of information services, in particular by updating its database through its website www.ompic.org.ma (in four languages), and the electronic archiving of patent documents and industrial designs;
- preparation of partnership agreements with players in the field of innovation.

Also, other projects corresponding to this approach of support for innovation are being set up by OMPIC and other national departments in conjunction with WIPO, in particular the support network project for inventors and project leaders in Morocco.

As regards the support network project for inventors and project leaders, a survey was carried out by the Ministry of Industry, Trade and Telecommunications and OMPIC, during the first quarter of 2003, in order to take stock of inventions in Morocco, through an understanding of the relevant existing potential and the identification of the constraints to the

enhancement of inventions and their transfer to production sectors on the one hand and, on the other hand, by assessing the reactions of the different participants in the field of inventions, as regards the introduction of a support structure for inventors and project leaders, and gathering their needs and proposals concerning the services that may be provided by this structure.

The survey concerns the main players in the field of inventions and entrepreneurs, grouped together in four categories:

- independent inventors;
- research centers which are part of research institutes and university institutions (faculties of sciences, engineering schools, high technology schools);
- support structures for proponents of ideas and existing project leaders (incubators, assistance and advice units within the regional delegations of the Department of Trade and Industry, and the Chambers of Commerce, Industry and Services, and associations and foundations involved in the fields of innovation and entrepreneurship);
- funding bodies (start-up funds and risk-capital companies).

The survey conducted as part of the first stage of the project to introduce a support structure for inventors and project leaders, although not exhaustive, has allowed the opinions of the different players involved with inventions and entrepreneurship to be understood as regards the situation relating to inventions in Morocco, and the main constraints to the enhancement and specific expression of inventions to be confirmed on the ground. In addition, it has been an opportunity to evaluate the needs of the producers of these inventions in relation to aid and assistance, and to gather their proposals regarding the priority actions to be taken to meet these needs.

The results of this first stage of the project highlight the following points:

- potential for invention exists both within research institutes and centers and among independent inventors, but is as yet unexplored and insufficiently exploited;
- certain independent inventors have been able to protect some of their inventions, but the enhancement of those inventions and their transfer to the production sector remain very limited. In addition, the number of inventions which have been or are being improved in relation to the inventions presented, in particular to the different support structures surveyed, especially incubators, is on average around three per cent;
- the major constraints specific to this category of inventors are mainly linked to the viability of inventions and to the lack of assistance in drafting patents;
- as regards the researchers-inventors from research institutes and centers, in particular those attached to university institutions, most of them do not protect their inventions. In this regard, the patent applications filed by Moroccan university researchers during the past five years represent only two per cent of the total number of national patent applications and seven per cent of the patent applications filed by residents of Morocco. This situation is due, in principle, to a lack of knowledge of the system of protection for inventions and to the legal framework governing the relationship between university institutions and their researchers in relation to intellectual property;

- furthermore, the inventions produced by research centers and laboratories are not sufficiently improved. Only a minority of researchers and inventors, in particular those from university institutions without incubators, are now attempting to give specific form to their inventions;

- in general, the constraints which hamper the development of inventions in Morocco, and which are cited by the different categories of the surveyed sample, are essentially linked to the following aspects:

- lack of assistance for protection of inventions (in the drafting of patents, in relation to assistance for studies of opportunities to patent inventions, insufficient awareness of and information on the importance of protecting inventions and so on);
- lack of assistance in assessing the technical and commercial feasibility of inventions;
- inadequacy of financial aid devoted to inventors;
- difficulty of gaining access to funding;
- weakness of the economic fabric, in particular in industry, for inventors' projects.

7. CONCLUSION

The intellectual property system appears to be one of the tools for economic development. At the international level, a majority of countries attach ever-increasing importance to matters relating to intellectual property rights, in particular in developing countries.

The indicators provided by means of intellectual property title filings show increasing changes in developing countries. However, these indicators represent a small share compared with that of developed countries. These changes are due, *inter alia*, to the efforts made during the past few years by developing countries and, in particular, following the signing of the Marrakech Agreement establishing the World Trade Organization. These efforts have been consolidated essentially through the close cooperation of WIPO, which has strengthened its action to raise awareness in developing countries and the least developed countries.

Furthermore, the problems of counterfeiting and piracy have become more acute, in particular in developing countries. Counterfeiting affects a larger range of products, comprising spare parts for cars, pharmaceutical products and so on. Faced with these scourges, which hamper creation and constitute a danger for consumers, awareness-raising is the most appropriate and effective means of protection for consumers and creators. An awareness-raising strategy proved to be necessary so as to stimulate creation and innovation, in particular in sectors such as the crafts industry, and to encourage economic operators to use the intellectual property system. The use of this system will enable technical information to be enhanced, but will also encourage protection for innovations where necessary.

However, the existing patent system appears to be a complex and very diverse one between different countries, which makes its use by developing country operators more difficult.

Harmonization through the introduction of an international patent system could in part help to solve these difficulties. Also, the teaching and involvement of small and medium-sized enterprises could play a decisive role in the intellectual property system.

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