IPICA

IPR as a Tool for Knowledge Transfer and Value Creation in Dominican Republic

MACRO-LEVEL STUDY: Dominican Republic

Act. 1.2.

IPICA: Empowering knowledge transfer in the Caribbean through effective IPR & KT regimes - MACRO-LEVEL STUDY: IPR AS A TOOL FOR KNOWLEDGE TRANSFER AND VALUE CREATION IN DOMINICAN REPUBLIC

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List of abbreviations

AADCC	American Association for Development and Cooperation of Crafts
APEC	Universidad APEC
CARIFORUM	Caribbean forum
CATI	Support Centre for Technology and Innovation
CEI-RD	Export and Investment Center of the Dominican Republic
CENDARTE	National Artisanship Center
CERTV	State Corporation Radio and Television
CIBIMA	Center for Research in Marine Biology
CIECA	Economic Research Center for the Caribbean
CNC	National Competitiveness Council
CODOCAFE	Dominican Coffee Council
COPRESIDA	Presidential AIDS Council
CR	Copyright
DGA	General Directorate of Customs
DICOEX	Directorate of Foreign Trade
DIGECINE	General Directorate of Film
DIGENOR	General Directorate of Standards and Quality Systems
DO	Designation of Origin
DR	Dominican Republic
DR-CAFTA	Free Trade Agreement between the United States, Dominican Republic And Central American Countries
DVD	Digital video disco (or versatile)
ECT	Traditional Cultural Expressions
EPA-UE-CARIFORUM	Economic Partnership Agreement between the European Union and the countries of Cariforum

EU	European Union
FONDOCyT	National found of Innovation and scientist and technologic development
GDP	Gross domestic product
HIV	Human immunodeficiency virus
IDIAF	Dominican Institute of Agricultural and Forestry Research
IG	Geographical indication
IIBI	Institute for Innovation in Biotechnology and Industry
INDOTEL	Dominican Institute of Telecommunications
INTEC	Technological Institute of Santo Domingo
IP	Intellectual property
IPR	Intellectual Property Rights
ISA	Higher Institute of Agriculture
ISO	Standard of the International Organization for Standardization
ITLA	Technological Institute of the Americas
MESCYT	National Council of Higher Education, Science and Technology
MIA	Ministry of agriculture
MIC	Ministry of Industry and Trade
MIE	Ministry of Education
MIMARENA	Ministry of Environment and Natural Resources
MINC	Culture Ministry
MIREX	Ministry of Foreign Affairs
NGO	Non-governmental organization
MP	Public Ministry
NDS	National Development Strategy
OCDE	Organization for Economic Co-operation and Development
O&M	O&M University

ONAP	National Office of Industrial Property
ONDA	National Copyright Office
PCT	Patent Cooperation Treaty
PN	National Police
PRO-COMPETENCIA	National Commission for Protection of Competition
PROMESECAL	Essential Drugs Program
PUCMM	Pontifical Catholic University
PYMES	Small and medium businesses
RED-OTRI	Technology Transfer Office Network
SGACEDOM	General Society of Authors, Composers and Publishers of Music Dominican
SGC	Collective Management Society
SNIDT	National System of Innovation and Technological Development
SOPA	Stop Online Piracy Act
TIC	Information and communications technology
TRIPS	Agreement on Trade-Related Aspects of Intellectual Property Rights Related
UASD	Autonomous University of Santo Domingo
UCATECI	Catholic Technological University of Cibao
UNCTaD	United Nations Conference on Trade and Development
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNIBE	Iberoamerican University
UPOV	Convention on the Protection of New Varieties of Plant
WTO	World Trade Organization
WIPO	World Intellectual Property Organization
WHO	World Health Organization

1. Background

This study is the final output of activity 1.2 "Macro-level study: comparative analysis of policy frameworks" of the project "Empowering knowledge transfer in the Caribbean through effective IPR & KT regimes (IPICA)". The IPICA[1] project is co-financed by the European Commission in the framework of the ACP-EU Co-operation Programme in Science and Technology (S&T II) and one of its main goals is generating impact on knowledge and technology transfer policies in three Caribbean countries (Dominican Republic, Jamaica, and Trinidad and Tobago).

There is a need to analyse IPR & KT regimes in the Caribbean countries with a view to identify bottlenecks, loopholes and areas of improvement. In this sense, IPICA has developed different activities in the last 3 years, part of them focused on the analysis of the IP and KT frameworks of the Caribbean region. The IPICA consortium collected feedback from a wide range of stakeholders and the current study presents the main findings and recommendations that could be considered by the Governments of Dominican Republic, Jamaica and Trinidad and Tobago for integrating IP considerations into the innovation policy of their countries.

This study is based in the following report:

National Intellectual Property Strategy of Dominican Republic 2012[2]: the National Intellectual Property Strategy aims at integrating IP into Public Policies as well as National Plans and development strategies in Dominican Republic. The initiative has been carried out with the National Office of Industrial Property (ONAPI) and the National Copyright Office (ONDA) and also with the cooperation of the World Intellectual Property Organization (WIPO), through national and international experts.

[1] www.ipica-project.eu

[2] ONAPI/WIPO (2012). Estrategia Nacional de Propiedad Intelectual de la República Dominicana 2012. Santo Domingo, R.D.

2. Methodology

The methodology[3] includes a thorough research and IP audit phase and a national consultation process during which stakeholders were invited to review, discuss and consolidate the draft IP strategy framework, with a view to presenting the final strategy to the government for adoption.

1. The process stated on April 2010 and the first phase consisted on the **data collection** using an integrated tool – the Baseline Survey Questionnaire[4] – which was developed by WIPO. The purpose of data collection was to obtain a clear picture of the current IP situation in Dominican Republic (IP audit), its weaknesses, strengths and potential, and, on this basis, to realistically assess what issues need to be considered during the formulation of the national IP strategy.
2. Data collection was complemented with **desk research** carried out to review existing policy documents, in order to create a comprehensive assessment of the country's national development objectives, strategies and policies, and also in order to identify how to align the national IP strategy with the country's national development priorities.
3. **National consultations** were carried out to enable stakeholders to actively participate in the validation of the IP audit findings and the formulation of the national IP strategy. The ultimate goal of this exercise is to enhance a wide range of IP stakeholders' ownership of the process of developing and eventually implementing a national IP strategy.

The outputs of this process was (1) a diagnosis on the IP System (2000-2010), (2) a document identifying the key productive sectors with potential to increase economic, productive and commercial development using and protecting IP and (3) a proposal with the guidelines for drafting a national IP strategy. The final output was the National Intellectual Property Strategy of Dominican Republic 2012.

[3] http://www.wipo.int/ipstrategies/en/methodology/

[4] WIPO. Methodology for the Development of National Intellectual Property Strategies. Tool 2:Baseline Survey Questionnaire. http://www.wipo.int/edocs/pubdocs/en/intproperty/958/wipo_pub_958_2.pdf

3. Results in Dominican Republic[5]

3.1 Innovation system in Dominican Republic

What is a national innovation system?
It is the institutional arrangement defined by the set of actors and their interactions, organized around the production, transfer, storage and utilization of knowledge (scientific-technological), for value creation in products, goods and services.

It includes public and private organizations that produce knowledge of different types and hierarchies, institutions (defined as rules of the game), the political and regulatory framework that affects value creation activities including the fiscal environment.

The notion of national innovation systems extends to the territorial and sectoral spheres. So you can talk about regional / subnational systems as well as sectoral innovation systems (i.e. agriculture, health, etc.)

Milestones of the STI policy in the Dominican Republic

The 21st century science and technology in the Dominican Republic were born with the promulgation of Law 139-01[6] of 2001. This law structured the national system of Higher Education, Science and Technology.

No market produces enough innovation if it operates spontaneously. Hence the importance that literature has given to the understanding and analysis of market failures that, in any economy, tend to prevent firms from investing in innovation at a socially desirable level.

The limited appropriateness of knowledge, the intangibility of research and development (R & D) results and coordination failures that plague production in new industries make it difficult, among other factors, for innovation investment to reach optimum levels.

If an evolutionary perspective is adopted for a moment, the first generation of innovation policies in LAC has had to do mainly with the establishment of the institutional and instrumental foundations. Transitioning from traditional science and technology councils to modern innovation agencies with the capacity to operate basic public policy instruments, such as non-reimbursable transfers to enterprises to stimulate investment in innovation, has taken up much of the effort, and it is still a work in progress. The same can be said for the transition from the promotion of scientific research based on curiosity to focusing on support for mission-oriented research, that is, a science that has a known

[5] The information in this section is based on ONAPI/WIPO (2012). Estrategia Nacional de Propiedad Intelectual de la República Dominicana 2012. Santo Domingo, R.D.

[6] Ley 139-01 de Educación Superior, Ciencia y Tecnología. Año 2001

linkage, even when this is indirect, with the development challenges of the countries. The Dominican Republic does not escape this Latin American reality.

The economy of the Dominican Republic is divided into three major sectors: Services, Industries and Agriculture, and in that same order it generate jobs in the country. Knowing that, in addition, 82% of the industrial income is manufacturing, which in most cases represents no more than local labor, according to the CEI / RD (2010) the share of the agricultural sector in GDP has been 8.2% per year and all related to traditional high crop products in concentration of land and labor.

It is necessary to develop methods and production that allows for a large growth of new products or products with greater production capacity and in less time. According to the World Innovation Index 2015 (Innovation Global Index), in 2014, the Dominican Republic ranked 83 in terms of innovation, among 143 economies analyzed, with a score of 32.29 out of 100.

According to the results of the National Innovation Survey, ENI (2010), more than 68% of the (scarce) product innovations in the DR were considered completely new to the company, and about 32% declared that they were substantial product improvements already existing in the company. "Overall, these findings confirm that most of the Dominican innovations had an imitative or adaptive character and were therefore of a likely incremental character" (ENI, 2010, pp.)

The Dominican Republic has maintained its relative competitiveness with no change in its ranking in 2015 compared to 2014; The Doing Business evaluation assigns the 84th position of 189 countries, referring to issues in which it has worsened such as opening new businesses, providing electricity, paying taxes, and obtaining credit. In the Global Competitiveness Index 2014-2015, the Dominican Republic is ranked 101 out of 144 countries, ranking seventh among Latin American and Caribbean countries in a position lower than five years ago, 2009-2010, when it held the 95th place among 133.

According to the same source, the score reached by DR in its competitiveness indicators places it in a relatively disadvantageous position in relation to other Latin American countries such as, for example, Chile (33), Panama (48), Costa Rica (51) and Colombia (66), and even other Central American countries such as Guatemala (78), El Salvador (84), Nicaragua (99) and Honduras (100).

However, the Dominican Republic has laws, regulations, even opinions within the Constitution (2015) that recognizes and establishes that the State "will promote research and technology transfer ..." (Constitution of the Dominican Republic, 2015, p. 17) and for that purpose "The State shall define policies to promote and encourage research, science, technology and innovation that favor sustainable development, human well-being, competitiveness, institutional strengthening and environmental preservation" (Constitution of the Dominican Republic, 2015, p.22).

National Legal Framework

Legislation on Intellectual Property in the Dominican Republic consists of the following laws and regulations:

- Law 20-00 on Industrial Property dated May 8, 2000.
- Law 65-00 on Copyright dated 21 August 2000.
- Law 424-06 on Implementation of DR-CAFTA, dated 20 November 2006, amending several articles of Law 20-00 on Industrial Property and the Law 65-00 Copyright.
- Law 493-06 on Implementation of DR-CAFTA, amending several articles of Law 20-00 on Industrial Property and the Law 65-00 on Copyright, dated December 22, 2006.
- Law 450-06 on the Protection of Plant Breeders' Rights Plant Variety dated December 6, 2006.
- Decree 599-01 on Implementing Regulations of the Law 20-00 on Industrial Property, from June 1, 2001.
- Rules Application of Law 65-00 of August 21, 2000.
- Drug Regulation No. 246-06, dated December 22, 2006.

International Legal Framework

Dominican Republic is currently signatory of the following International Treaties on Intellectual Property:

- Paris Convention for the Protection of Industrial Property, July 11, 1890
- Berne Convention for the Protection of Literary and Artistic Works, accession on 24 December 1997.
- Madrid Agreement concerning the repression of false or misleading indications on products sources, entered into force April 6, 1951.
- Rome Convention on the Protection of artists, performers, phonogram producers and broadcasters, entered into force January 27, 1987.
- WIPO Treaty on Copyright
- Law 450-06 on the Protection of Plant Breeders' Rights Plant Variety dated 6 December 2006 entry into force 10 January 2006
- Treaty of the WIPO Performances and Phonograms Treaty, which entered into force on January 10, 2006
- Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, entered into force on 3 July 2007.
- Patent Cooperation Treaty, entered into force May 28, 2007
- Convention on the Protection of New Varieties of Plants (UPOV), entered into force June 16, 2007

- TRIPS Agreement (TRIPS), entered into force January 1995
- Chapter XV of the Free Trade Agreement between the Dominican Republic, United States and Central America (DR-CAFTA), signed on August 5, 2004 and entered into force March 17, 2006
- Economic Partnership Agreement between the European Union and the countries of CARIFORUM, better known as EPA-EU-CARIFORUM Agreement. Entry into force November 1, 2008.

Institutional Framework & System Users

Intellectual Property System in the Dominican Republic consists of the following agents and institutions:

At the level of Government:

- The National Office of Industrial Property (ONAPI), attached to the Ministry of Industry and Commerce, administers the industrial property system in the Dominican Republic.
- The National Copyright Office (ONDA), attached to the Ministry of Culture, administers the system of copyright and related rights in the Dominican Republic.
- The Intellectual Property Department of the Directorate General of Customs is responsible for the implementation of border measures related to violations of intellectual property rights.
- The Assistant Attorney General in charge of issues of Intellectual Property and the Public Prosecutor in charge of issues on Intellectual Property to act ex officio in cases of crimes that infringe intellectual property rights.
- The Judiciary, with ordinary courts to settle disputes arising from civil and criminal violations of Intellectual Property Rights
- The Directorate General of Drugs and Pharmacies of the Ministry of Public Health and Social Welfare, responsible for procedures and for the protection of test data for innovations and creations of new pharmaceutical products.
- The Department of the Ministry of Agriculture, responsible for the protection of Plant Breeders' Rights of Plant Varieties.

At the level of Users:

Users of Intellectual Property system are those who produce goods and services that may be protected by Intellectual Property Rights or users of these rights that holds a third:

- **Individuals**: inventors, creators, entrepreneurs, students, authors, artists, craftspeople, composers, writers, musicians, artists, performers, producers of film, television and phonograms, journalists, system programmers, lawyers, architects;
- **The companies**: national and multinational companies and industries, SMEs, industry associations and producers, cluster, collective management societies, etc., academic institutions, research centres and public and private development, universities, technology parks, incubators businesses, government institutions, law firms, professional associations, etc.

Knowledge/research base

Since the creation of the Secretary of State for Higher Education, Science and Technology, through Law 139-01, the country began to take steps to integrate R&D, science, technology and innovation at the national level. There are 48 Higher Education Institutions of which 32 are public and private universities as well as several centres and institutes for scientific and technological research that would enable Dominican Republic with the necessary bases to develop the sector of STI:

- Science and Technology Centre (CCT-O&M)
- Economic Research Centre for the Caribbean (CIECA)
- Centre for Research in Marine Biology (CIBIMA)
- Specialized Centres of the Autonomous University of Santo Domingo (Biotechnology, Energy, Physics, Microbiology, etc.)
- Institute for Innovation in Biotechnology and Industry (IIBI)
- Dominican Institute of Agricultural and Forestry Research (IDIAF)
- Technological Institute of the Americas (ITLA)
- Higher Institute of Agriculture (ISA)

3.2 Integration of IPR in the national innovation system

By its nature, intellectual property includes the protection of goods and services resulting from the creation of the human intellect, and is granted through copyright, literary and artistic works and industrial property including patents, trademarks and other distinctive signs. Breeder's Rights, are another form of intellectual property, and protect plant varieties.

The initiative to develop this project to formulate a National Strategy on Intellectual Property for the Dominican Republic has been carried out with the support and commitment of the national authorities of the area of Intellectual Property, specifically, the National Office of Industrial Property (ONAPI) and the National Copyright Office (ONDA); and with the cooperation of the World Intellectual Property Organization (WIPO) through national and international experts, in order to help developing countries to take advantage of the potential of this instrument to boost their economic and social development.

The National Intellectual Property Strategy is the result of extensive work carried out with the collaboration of the representatives of the country's national intellectual property offices and of the public and private sectors associated with the subject. It was attended by more than 20 institutions grouped in guilds, associations of productive sectors, craft and professional sectors, management companies, business incubators, representatives of SME programs, academic institutions, the public ministry, and key ministries, among others.

The strategy is defined as a tool for political and institutional articulation of the Intellectual Property System which pursues, as a general objective, to encourage and promote the strategic use of intellectual property in all areas of national productive activities by users and sectors of interest, so that through its use and protection, creativity and innovation are promoted and its exploitation contributes to the economic, social and cultural development of the Dominican Republic.

These axes, which in turn are linked to the key sectors of interest and key subjects of the country, at the same time identify the most relevant components of intellectual property at a general level, define scope and objectives, and also cover recommended actions for the achievement of the national strategy.

The **six strategic axes** identified are:

- **Intellectual Creation and Generation**. It seeks to encourage innovation and creativity and significantly increase the production of intangible intellectual property assets in companies, centers of scientific and technological research, universities, entrepreneurs, artistic creators and Dominicans literary, through the incentive to the creation and intellectual production;
- **The Protection of Intellectual Property**. To have a reliable level of protection and solidity in the administration of the IP system for the benefit of the creators of this type of rights, guaranteeing the maintenance of obtained IPRs and accessibility to users;
- **The Use, Exploitation and Management of Intellectual Property**. It seeks to commercially and economically exploit intellectual property rights;
- **The Promotion of Intellectual Property**. It aims to promote culture and knowledge generation in the field of intellectual property in the country, and raise awareness of the importance of this instrument, in order to increase the use of the IP system;
- **Enforcement of Intellectual Property Rights**. Build awareness in respect of Intellectual Property Rights, to prevent infringement of these rights;
- **Establishment of an interinstitutional body on intellectual property policy**. The need to create a coordination mechanism at the highest level, which should define public policies as well as coordinate all actors and supervise everything related to the national intellectual property system in the Dominican Republic.

The general and specific objectives of this strategy are intended to be achieved through the implementation of the proposed recommendations based on the six strategic axes mentioned above, which are aimed at promoting innovation and gradually encouraging the culture of use, protection and exploitation of intellectual property in all national productive sectors. At the same time, the instruments of public and private interest are made available to the public in a structured and coherent way to implement concrete actions on intellectual property.
For all of the above, the National Intellectual Property Strategy is conceived as a tool that should lay the foundations in the short, medium and long term for the development of intellectual property policies, by complying with the proposed recommendations, which seek to define them , strengthen the system, address identified weaknesses and threats, strengthen existing strengths and opportunities, address challenges, and contribute to the advancement of research, science, technology and innovation.

Finally, the formulation of this National Intellectual Property Strategy will contribute to the integration of Intellectual Property in the context of the public policies of the Dominican Government, as well as putting them at the service of economic, social and cultural development, so that the result will be of benefit to all national productive sectors.

The integration of Intellectual Property in the Innovation System is visible in the following tables:

1. Intellectual Property in Key Sectors of the Dominican Economy and its Needs.

Sector	**IP Elements**	**Necessities**
Farming	Varieties of plants, origin denomination, collective marks, certification marks.	• Training in IP • Sustainability awareness projects • Incentives • Implementation of breeder's law • Promotion of the use of the Distinctive Sign System.
Higher Education	Patent system, copyright.	• Training in IP • Establishment of the IP Academy • Regulations of IP Granting IPR licenses, making contracts and dividing benefits.
Biotechnology Industry	Patent system for protection and for obtaining technological information	• Training in IP • Alliances with other entities • Create IP Networks. • Promotion of the use and protection of patents

Cultural Industry	Copyrights, collective marks, appellations of origin	• Training in IP • Technical assistance to manage effectively the Collective Management Societies. • Effective enforcement
Software Industry	Copyright, trademarks and patents for processes that include software.	• Training in IP • Alliances with other entities • Integrated Circuit Protection
Research & Development, Science Technology and Innovation (R&D&I)	Patents, utility models, industrial designs, trademarks, copyrights	• Awareness and Training • Incentives • Financing • Creation of IP networks • Studies in asset valuation and asset management
Health	Trademarks, Patent System for protection and for obtaining technological information, compulsory licenses.	• Training in IP • Information on patents and pharmaceuticals in public domain • Patent monitoring systems
Information and Communication Technologies (ICT)	Copyright and Related Rights, trademarks.	• Training in IP
Tourism	Trademarks, collective marks, copyright.	• Raising awareness in IP • Training in IP • Promotion

2. Strategic Plan for Science, Technology and Innovation 2008-2018.

Current Situation	**Actions and Elements associated to IP**	**Objectives**
Lack of a clear national policy to facilitate collaboration between institutions, organizations and enterprises on IP.	Form a coordinating body on IP, led by a higher authority that can adopt policies and guidelines in the area. Promotion of the IP system to obtain more resources due to the increase of patent applications and to allocate those additional resources to increase promotion. Include ONAPI in evaluations of research projects to be funded by FONDOCyT.	Strategic Objective 1: Strengthen the public and financial institutional framework of the national science, technology and innovation system, supporting initiatives aimed at its consolidation
Shortage of human resources	Training of experts in the use	Strategic Objective 2: Create

trained in intellectual property, science and technology.	of patents and trademarks as a source of technological information and protection and in the drafting of patents.	human capital in science and technology required for the strengthening of national capacities for knowledge generation and innovation
The information available on IP has no added value.	Make public the patents that are going public and design information system of free inventions in the Dominican Republic. Automation of procedures and establishment of IP information systems.	Strategic Objective 3: To facilitate the dissemination and social appropriation of science, technology and productive innovation
Little use of the IP system to promote technological development and innovation as a factor of enterprise valuation and economic development.	Promote the use of licenses and participation contracts for the economic use of research results that are susceptible of being patented in favor of inventors, researchers and creators. Improve provisions on licensing procedures and formalities with the aim of promoting and monitoring IP activities.	Strategic Objective 4: Create and foster a management and administration system for intangible assets resulting from research, development and innovation programs

3. National Competitiveness Plan of the Dominican Republic.

Current Situation	**Actions and Elements associated to IP**	**Objectives**
Underutilization of IP as a tool for competitiveness	Promote the use of IP as a tool of competitiveness; promote the patent system to encourage innovation; promote the use of licenses to support technology transfer processes; develop studies on valuation and management of IP assets in industries or companies.	To increase the competitive capacities of the companies of the productive sectors integrated in strategic cluster
No formal system for innovation and development.	Greater participation of ONAPI in the National System of Innovation and Development; of Intellectual property training programs in business incubators and techno park; Establishment of technological information centers in techno parks.	Strengthening of the National System of Innovation and Technological Development with its three pillars: the institutes of innovation and technological development, the incubator network and the development of techno parks.

The IP system is not considered as a factor that may affect investment levels.	Strengthening of Administrative and Enforcement entities in the area of IP. Streamline and automation of procedures.	Create a favorable business environment for investment, both domestic and foreign
Little use of the IP system to promote technological development and innovation as a factor for business valuation and economic development	Encourage innovation and technological development through a friendly and reliable patent regime.	That innovation and technological development are the basis for the Dominican Republic to move from the industrial and manufacturing era to the era of knowledge and mind-bending, developing intellectual capital as a new essential factor for innovation and technological development.
Institutional weaknesses in issues of IP enforcement and administration, and lack of regulation of law 488 of 2008 on the development and competitiveness of SMEs.	Strengthening of Administrative and Enforcement entities in the area of IP. Regulation of Law 488 of 2008 on the development and competitiveness of SMEs.	The modernization of institutions and the legal framework in terms of competitiveness.

3.3 Conclusions

It is well known that patenting in Latin American and Caribbean economies has traditionally been very weak. This data is usually presented as part of the standard diagnosis of the technological backwardness of the region: few patents seem to indicate clearly that the scientists and companies of the region do not produce sufficient new ideas capable of generating new technological developments, or - as a minimum - that inventors lack the proper knowhow to market their ideas.

In this context, patents are the result of a (more or less linear process) of R&D investment. The approach of De León and Fernández is different: the low level of patenting is worrying because it deprives companies of a primary source to finance their activities and investments. The lack of intellectual property valuation in practice represents a formidable obstacle to the development of the venture capital market and is therefore a key part of the severe constraints faced by a new or well-established innovative firm to

obtain financing for innovative initiatives, by definition of high risk and consequently beyond the reach of conventional commercial banking. This perspective is not that there are no patents because there are no ideas but there are no successful attempts to market ideas because intellectual property cannot be used as a lever to obtain financing for projects that incorporate new ideas.
The fundamental shortfall of LAC innovation systems in the field of technology valuation represents, in practice, a major contribution to the difficulties of obtaining financing for innovation activities, a constant complaint of companies throughout the country.

From this perspective, the next natural step is to fully understand the root of weakness in technology marketing. A conventional view would suggest that, given the market failures implicit in the production of ideas, and especially the lack of rivalry in their use, which discourages its production, the institutionalization of strong intellectual property regimes that create processes, guarantees and public agencies responsible for the management of intellectual property, in accordance with good international practices in the field, should have had a visible influence on a number of advances in the number and quality of patents originating in Latin American countries. However, although the institutional development mentioned in fact took place, the desired result did not occur and the indicators of patenting remained, for all practical purposes, unaltered. Clearly, institutional reforms such as the creation of a national patent office or its modernization, or the introduction of modern intellectual property legislation, constitute important and necessary change, but they have not been enough.

In the case of Latin America, the relative low R&D investment may be an interesting indicator of several aspects of the general development gap in the region: the relative low competitiveness of the region compared to other emerging regions; levels of economic growth volatility and limited progress in the fight against poverty and social exclusion.

This implies that the innovative potential of R&D investment as well as its economic and social impact is seriously limited by a public over-allotment that may be desirable in the short term, but requires a gradual and systematic reorientation towards increasing private participation, thus promoting more confidence among economic agents, a culture of risk investment, more innovations in strategic economic sectors and a better overall positioning of regional economies.

This shows market failures in Latin American economies that limit both participation and impact of R & D activities in the social and economic structure of the region, such as: (i) the low conditions of appropriation and diffusion of the knowledge and (ii) the levels of risk associated with R & D investment. That is, due to the low conditions of appropriation of the specialized knowledge required for R & D activities, the return of private investment in R & D activities is lower than their social return, so the firms' investment will tend to be less than the optimal social level that is required.
In the case of the Dominican Republic, there are no appropriate measures to estimate the degree of investment in R&D as part of the EIP. According to estimates made by the team

of the University of La Coruña, in the framework of the Technological Policy Project (INPOLTEC 11), in the case of Dominican Republic it was concluded that investment in R&D for 2003 was lower than 0.06 of the PIE, an appreciation that has to be taken with reservations because of the limited methodological coverage of the study. However, taking into account the public investment made in recent years in initiatives such as the Community Technology Centers conducted by INDOTEL, the Office of the First Lady and investments such as the Santo Domingo Cybernetic Park, the estimate may yield modest results with respect to the EIP.

Systematic investment in specific areas of R&D has taken a significant step with the annual calls for projects carried out by the National Fund for Innovation and Technological Development (FONDOCYT), which was put into effect for the first time in 2009, with the approval of thirty-four (34) projects with an investment of 213 million pesos in the areas of Biotechnology, Basic Sciences, Energy, Environment and Natural Resources (MESCYT, 2009).

Despite these limited efforts, there is a serious disarticulation between research and development policy and economic policy aimed at a higher level of economic growth and competitiveness, as well as social policies aimed at promoting human well-being and development the size of the gap in science and technology in the Dominican Republic, and the magnitude of the challenge posed by the implementation of this type of policy.

Institutional weakness of the national science, technology and innovation system; as a consequence of this situation, it is difficult to coordinate relations between the actors of the system and the public entity, and in addition the productive sectors, especially SMEs, are left out of the perspective of policies and development opportunities in terms of innovation and transfer of technology.

Limited mechanisms for linkage, coordination, collaboration and inter-institutional and sectoral participation; as a consequence of this situation, different initiatives have been developed and the Council of Innovation and Technological Development has been created to promote among other things, inter-institutional coordination linking the science and technology system with the productive sectors, without achieving the desired articulation from a concerted strategy between the different actors and sectors that has to do with the production, management and transfer of knowledge.

Weakness of the System of Innovation and Technological Development: The process of technological transfer is consubstantial to productive innovation and competitiveness. This is a complex process that takes place in four basic environments (scientific, market, legal and financial), involves several actors and depends on a number of elements or critical factors. Innovation and technology transfer policies should aim to promote the formation of innovative agents and human resources groups and to improve specialization in productive cooperation contexts, favoring the development of a common language and techniques that encourage division of labor, specialization and the complementarity of

agents and institutions and consequently create key externalities for increasing competitiveness and for sustaining a process of sustainable growth of the economy.

Within the market failures approach we have:

- Knowledge as a public or quasi-public good
- The notion of externality: the creator of knowledge cannot appreciate all its benefits and often a substantial part of it
- Low investment in knowledge production
- Lower private returns than public returns

The scale of the externality depends on factors such as:

- How basic or directed is the production of knowledge and
- How protected is the knowledge produced.

As a country and within this context we must highlight flaws in these directions:

- Infrastructure failure (ICT, telecommunications, analytical services).
- Path dependency: the system cannot come out of its technological dependence by itself.
- "Hard" institutional failures (in formal institutions, regulation, etc.)
- "Soft" institutional failures (politics, culture, norms, values, etc.)
- Connection and networks failures (watertight logic, lack of links, capacity failures)
- Failures in SIN governance

3.4 Recommendations

The main opportunities of the system are:

- Improving coordination and public-public dialogue.
- Promote social networking around innovation issues: bottom-up.
- Building strong consensus through public-private dialogue on the specific topic of ITC From the point of view of STI policies. A central question is to understand the interactions of both policies and their instruments, that is, a perspective that incorporates the combination of instruments (policy-mix) is required. This implies thinking at least from two perspectives: from a narrow perspective and from a broad perspective.
    - The narrow perspective implies thinking of a combination of innovation policies and instruments, that is delimiting the scope of the instruments in the field of innovation.
    - The broad perspective implies thinking of a combination of policies and instruments for innovation, i.e. the combination of policy instruments that interact to influence the extent to which innovation policy objectives are achieved (innovation outcomes).
- Public policy needs: to provide general funding for science, fundamental research, and support R&D.

The approach of systemic failures: Knowledge production and exploitation needs:

- Development of generation and absorption capacities
- Exchanges, cooperation, interaction (complementarities and specialization)

4. References

ONAPI/OMPI. (2012). Estrategia Nacional de Propiedad Intelectual de la República Dominicana 2012. Santo Domingo, R.D.

WIPO. Methodology for the Development of National Intellectual Property Strategies. Tool 2:Baseline Survey Questionnaire.
http://www.wipo.int/edocs/pubdocs/en/intproperty/958/wipo_pub_958_2.pdf

IPICA project (2016). Empowering knowledge transfer in the Caribbean through effective IPR & KT regimes - MICRO-LEVEL STUDY: BENCHMARKING REPORT. Universidad de Alicante.