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**INTEGRATING INTELLECTUAL PROPERTY INTO INNOVATION POLICY
FORMULATION IN RWANDA**

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Abbreviations

ARDI – Access to Research and Development Information
AfDB - Africa Development Bank
ARIPO - African Regional Intellectual Property Organization
ASPI – Access to Specialized Patent Information
BDF - Business Development Fund
BDS - Business Development Services
CPC - Community Processing Center
DFID - Department for International Development
GIZ - Deutsche Gesellschaft für Technische Zusammenarbeit
HLI - Higher Learning Institution
ICT - Information and Communication Technology
IP - Intellectual Property
IPRs - Intellectual Property Rights
ISAE - Institute of Agronomy and Animal Husbandry
JICA - Japan International Cooperation Agency
KIST - Kigali Institute of Science, Technology and Management
LDCs - Least Developed Countries
MINICOM - Ministry of Trade and Industry
MINEDU - Ministry of Education
MINISPOC - Ministry of Sport and Culture
NIRDA - National Industrial Research and Development Agency
NSTIP - National Science, Technology and Innovation Policy
PCT - Patent Cooperation Treaty
PRS - Poverty Reduction Strategy
RDB - Rwanda Development Board
R&D - Research and Development
RGO - Registrar General's Office
RIF - Rwanda Research Innovation Endowment Fund
PSF - Private Sector Federation
Rwf – Rwandan Franc
SME - Small and Medium-sized Enterprises
S&T - Science and Technology
STI - Science, Technology and Innovation
TISC - Technology Innovation Support Center
TRIPS - Agreement on Trade Related Aspects of Intellectual Property Rights
TVET - Technical and Vocational Education and Training
UNDP - United Nations Development Program
UNECA - United Nations Economic Commission for Africa
WIPO - World Intellectual Property Organization
WTO - World Trade Organization

EXECUTIVE SUMMARY

Background - This project was implemented following a request by the Government of Rwanda to the World Intellectual Property Organization for support on integrating intellectual property considerations into innovation policy formulation.

Objectives – To understand the innovation system in Rwanda and, in particular, to what extent intellectual property has been or should be integrated into innovation policy formulation. A desk review mapping the innovation system in Rwanda was followed by a fact-finding mission carried out from May 5 to 10, 2014. The information collected during the desk review and the field visit formed the basis for the findings and recommendations of this report.

Some of the more important findings include:

- There is high level government commitment to innovation and a number of policies, strategies and laws relating to innovation, including the Science, Technology and Innovation Policy, the intellectual property Policy and Strategy, and an intellectual property law were promulgated but their implementation was found to be inadequate.
- R&D is mainly done in public research and development organizations and higher learning Institutions. However, these institutions do not have systems in place for facilitating the commercialization of research output. Moreover, the linkages between research and industry are weak.
- Funds for innovation and research are mainly allocated from the government budget.
- Fragmentation of intellectual property responsibilities, Lack of or inadequate awareness of intellectual property, inadequate human resource capacity and limited access to finance were mentioned as challenges for the effective use of intellectual property in support of the national innovation system.

Recommendations to the Government:

Ensure integration of intellectual property during formulation or revision of innovation policies; set up the Rwanda Development and Intellectual Property Forum and facilitate its operation; develop institutional intellectual property policies and establish or strengthen technology management offices; streamline intellectual property administration by establishing a development oriented single intellectual property office; design and implement capacity building and intellectual property awareness programs and support Rwandan inventors and innovators in protecting their inventions in and outside of Rwanda.

CHAPTER 1 INTRODUCTION

This project was implemented following a request by the Government of Rwanda to the World Intellectual Property Organization (WIPO) for support in integrating intellectual property considerations into its efforts towards formulating an innovation policy. Following the first phase consisting of a desk review of the national innovation system, a field visit was undertaken by Mrs. Tamara Nanayakkara, Head, Innovation Policy Section, Innovation Division, WIPO and Mr. Getachew Mengisite, Consultant from May 5 to 10, 2014, in Kigali, Rwanda. During this visit individual face-to-face meetings were held with a range of stakeholders¹ and relevant information and documents were collected.

The objective of this project is to understand the innovation system in Rwanda, the role and influence of different actors in the system, their awareness and use of the intellectual property system, the extent of collaboration between the different players and the role of intellectual property therein, nature of available support; business, financial, technical and intellectual property support and, in particular, to what extent intellectual property has been or should be integrated into innovation policy formulation in Rwanda. Based on this understanding, suggest possible ways in which the intellectual property system may be used to create a more effective national system of innovation in Rwanda.

The expected outputs of the project therefore are the following:

- a) Identify key actors in the national innovation system using the information available on-line and collected during the field visit;
- b) Raise the awareness of stakeholders of the national system of innovation and the need to integrate intellectual property while revising or developing innovation policies, national or sectoral development policies or other such initiatives that may impact the national innovation effort;
- c) Develop a report that reviews the innovation policy landscape in Rwanda including strategies, laws, activities, programs, initiatives and projects designed to promote innovation; highlights the efforts made to integrate intellectual property in innovation policy making; gauges the level of awareness and use of intellectual property by stakeholders; identifies needs and gaps; and makes recommendations on measures that may be taken at the national level.

The findings and recommendations of this report and the lessons learnt may be used not only for strengthening the Rwandan national system of innovation by ensuring effective use of intellectual property therein but also for initiating and implementing similar projects in other countries upon request of member states.

¹ The list of stakeholders that the mission met with is attached to this report as Annex II.

CHAPTER 2 METHODOLOGY

The methodology used in implementing the project was as follows:

- a) Desk review - relevant policies, laws and literature related to the Rwandan innovation system were collected and examined. This exercise helped to have a broad picture of the national system of innovation, identify issues and stakeholders.
- b) Interview - The identified issues were used in designing four interview guidelines for stakeholders that were classified under government bodies; academic and research institutions; industry and business establishments; and intellectual property office and practitioners. The interview guidelines, an initial list of stakeholders and a tentative program were sent to the focal person two weeks prior to the field visit. The guidelines were circulated to each of the stakeholders and appointments were set by the focal person, Ms. Myriam Gatsimbanyi, Intellectual Property Policy Officer at the Ministry of Trade and Industry (MINICOM). The preparatory work helped in holding bilateral meetings with 29 stakeholders² on average for forty five minutes, facilitating productive discussions and collecting relevant information.
- c) Report - this report is prepared based on the desk review and information collected during the field visit. The report will be provided to the Government, which may circulate it to the stakeholders in order to solicit their comments. Such comments and input would serve to further enrich and refine the report and facilitate its implementation.

This report consists of six chapters. The first chapter describes the background and the expected outputs, the second, the methodology employed. The third chapter describes the innovation system of Rwanda with a view to defining the policy context and legal framework for promoting innovation; identifying key actors and gauging the level of awareness and use of intellectual property, and determining gaps and needs. The fourth chapter focuses on the initiatives taken to integrate the intellectual property system into the national innovation system. The fifth chapter summarizes the discussions with the stakeholders. The sixth chapter presents the conclusions and the seventh chapter the recommendations.

² This includes the intellectual property practitioners that were met as a group.

CHAPTER 3 INNOVATION SYSTEM OF RWANDA

3.1 POLICY AND LEGAL FRAMEWORK

Rwanda has made significant progress over the last two decades since the enormous challenges it faced in the aftermath of the 1994 genocide that destroyed the entire social and economic fabric of the country. During the decade beginning in 2000, it was the tenth fastest growing economy in the world. The economy grew at an average rate of almost 10 percent per annum between 1995 and 2005.³ The economy continued to grow by 8 percent annually, the headcount poverty and extreme poverty ratios fell by nearly 12 percent, taking a million people out of poverty, and income inequality declined during 2005 -11.⁴ However, the contribution of scientific research and local inventive and innovative activities in attaining development objectives has been insignificant. This can be evidenced by looking at the position of Rwanda in the global innovation index. Rwanda is close to the bottom of the list having a rank of 102 among 142 countries.⁵ The Government of Rwanda recognizes that the socio-economic development of the country is vulnerable⁶ and that it is important to focus on building national scientific, technological and innovative capacity to sustain the achievements made thus far, foster socio-economic development of the country and improve the living standard of its people. This is reflected in Rwanda's national development vision, known as Vision 2020, and the various national and sectoral development policies, strategies and plans.

Vision 2020 aims at transforming Rwanda from a subsistence agriculture economy to a knowledge based economy and attain a middle income country status by 2020. The vision has the following six pillars:

- a. promoting good governance and a capable state;
- b. investing in human resource development and a knowledge-based economy;
- c. stimulating a private-sector-led economy;
- d. investing in infrastructure development;
- e. promoting productive and market-oriented agriculture; and
- f. engaging in regional and international economic integration.

A number of policies, strategies and plans had been developed and issued by the Government in order to realize the national vision. These include the following:

- Economic Development and Poverty Reduction Strategy 2013-2018,⁷
- Strategic Plan for Transformation of Rwandan Agriculture,⁸

³ World Bank Building Science, Technology and Innovation Capacity in Rwanda, A. Watkins & A. Verma, Eds, Africa Human Development Series, (2008).

⁴ Republic of Rwanda, Economic Development and Poverty Reduction Strategy 2013-2018: Shaping our Development, page 1, <http://www.imf.org/external/pubs/ft/scr/2013/cr13360.pdf>

⁵ See the Global Innovation Index 2014.

⁶ These include that the country is land locked, has very few natural resources, and relies almost entirely on earnings from exports of high volume and low value agricultural products such as tea and coffee, making it vulnerable to external shocks such as price fluctuation.

⁷ Republic of Rwanda, Economic Development and Poverty Reduction Strategy 2013-2018: Shaping our Development. http://www.rwanda-standards.org/~rbs/fileadmin/user_upload/files/EDPRS_2_Abridged_Version.pdf Accessed on August 6, 2014

- Competition and Consumer Protection Policy,⁹
- Education Sector Policy,¹⁰
- Higher Education Policy,¹¹
- Science, Technology and Innovation Policy (STIP),¹²
- Health Sector Research Policy,¹³
- National Industrial Policy,¹⁴
- Small and Medium Enterprises (SMEs) Development Policy,¹⁵
- National Craft Industry Policy,¹⁶
- Handicraft Strategic Plan, ICT in Education Policy,¹⁷
- Environment Policy,¹⁸
- Cultural Heritage Policy,¹⁹
- Technical and Vocational Education and Training (TVET) Policy,²⁰
- National Export Strategy,²¹
- Diaspora policy²²
- Trade Policy,²³ and

⁸ Republic of Rwanda, Ministry Agriculture and Animal resources (2013) Strategic Plan for the Transformation of Agriculture in Rwanda Phase III. Available at http://www.minagri.gov.rw/fileadmin/user_upload/documents/Policies_strategy/PSTA_III.pdf and accessed on June 3, 2014

⁹ Republic of Rwanda, Ministry of Trade and Industry (2010) Competition and Consumer protection Policy. http://www.minicom.gov.rw/fileadmin/minicom_publications/law_and_regurations/CompetitionPolicy_September_2010.pdf Accessed on August 6, 2014

¹⁰ Republic of Rwanda, Ministry Education, Science, technology and Scientific Research (2003), Education Sector Policy. http://www.mineduc.gov.rw/IMG/pdf/EDUCATION_POLICY.pdf accessed on August 6, 2014

¹¹ Ministry of Education (2003), Higher Education Policy. http://www.mineduc.gov.rw/IMG/pdf/Higher_Educ.pdf accessed on August 6, 2014

¹² Republic of Rwanda (2005) National Science, Technology, Scientific Research and Innovation Policy. http://www.mineduc.gov.rw/IMG/pdf/Rwanda_National_STI_Policy.pdf accessed on August 6, 2014

¹³ Republic of Rwanda, Ministry Health (2012), Health Sector Research Policy. <http://www.moh.gov.rw/fileadmin/templates/Docs/Health-Sector-Research-Policy.pdf> accessed on August 6, 2014

¹⁴ Republic of Rwanda, Ministry of Trade and Industry (2011) National Industrial Policy. http://www.minicom.gov.rw/fileadmin/minicom_publications/policies/Industrial_Policy-2.pdf Accessed on August 6, 2014

¹⁵ Republic of Rwanda, Ministry of Trade and Industry (2010) Small and Medium Enterprises Development Policy http://www.rdb.rw/uploads/tx_sbdownloader/SME_Devt_policy_V180610.pdf. Accessed on August 6, 2014

¹⁶ Republic of Rwanda, Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives (2006) National Craft Industry Promotion Policy.

http://www.minicom.gov.rw/fileadmin/minicom_publications/policies/National_Craft_Industry_policy_2006.pdf Accessed on August 6, 2014

¹⁷ Ministry of Education (2008), ICT in Education Policy (Draft) http://www.mineduc.gov.rw/IMG/pdf/ICT_in_Education_Policy_draft1-2.pdf accessed on August 6, 2014

¹⁸ Ministry of Land, Resettlement and Environment, Environmental Policy. http://minirena.gov.rw/fileadmin/Environment_Subsector/Laws_Policies_and_Programmes/Policies/POLITIQUE_EN_VIRON-Anglais.pdf accessed on August 6, 2014

¹⁹ Republic of Rwanda, Ministry Sport and Culture (2008), Policy on Cultural Heritage. http://minispor.gov.rw/fileadmin/templates/Documents/Policy_on_Cultural_Heritage.pdf accessed on August 6, 2014

²⁰ Republic of Rwanda, Ministry Education (2008) Technical and Vocational Education and Training (TVET) Policy. http://planipolis.iiep.unesco.org/upload/Rwanda/Rwanda_technical_vocational_education_policy.pdf accessed on August 6, 2014

²¹ Government of Rwanda (2011) Rwanda National Export Strategy. http://www.minicom.gov.rw/fileadmin/minicom_publications/Strategies/National_Export_Strategy.pdf accessed on August 6, 2014

²² www.rwandadiaspora.gov.rw

- Intellectual Property Policy.²⁴

Each of these policies contributes to the national innovation system in that it guides, supports and promotes innovative activities and/ or supports innovation. Since the purpose and scope of this report is not to examine in detail each of the policy instruments, the Science, Technology and Innovation Policy (STIP), the National Industrial Policy, Small and Medium Enterprises (SMEs) Development Policy are taken as examples to show case how the Government of Rwanda acknowledges the need to promote innovation in order to realize the grand vision of transforming Rwanda to a knowledge based economy and sustain the impressive economic progress made thus far. Moreover, the National Export Strategy and Trade Policy are briefly examined to identify gaps and demonstrate the recognition of the significance of intellectual property in supporting the realization of policy goals and objectives.

Science Technology and Innovation Policy (STIP)

STIP was adopted in 2005 to enhance the science, technology and research capacity, and reinforce the development pillars of Vision 2020 across all sectors of the Rwandan economy.²⁵ The main objective of the policy is “to integrate Science, Technology, Scientific Research and Innovation in a framework that shall include capability building, technical transfer initiatives, and the promotion of innovation, in the context of the issues facing Rwanda. Science, Technology and Scientific Research shall be the catalyst to underpin all public and private sector activities to enable Rwanda’s Vision 2020 to be realized.”²⁶ The policy identifies four priority areas in building up science and technology capacity, namely:

1. Knowledge Acquisition - building science and technology capacity at all levels of education and training beginning from primary schools to higher education;
2. Knowledge Creation - development of research capacity in all priority sectors of the economy;
3. Knowledge Transfer - promoting linkages between R&D institutions and the productive sector and establishment of Technology Consultation Centers, Demonstration Units and Science and Technology Parks; and
4. Innovation Culture - encouraging innovative and entrepreneurial activities at all levels to stimulate economic growth through establishment of business enterprise and innovation centers and encouraging private sector partnership as a key part of every sector.

²³ Republic of Rwanda, Ministry of Trade and Industry (2010) Trade Policy. http://www.minicom.gov.rw/fileadmin/minicom_publications/policies/Trade_Policy_Rev_NPC_.pdf accessed on August 6, 2014

²⁴ Republic of Rwanda, Ministry of Trade and Industry (2009) Intellectual Property Policy. http://www.wipo.int/wipolex/en/text.jsp?file_id=215632 accessed on August 6, 2014

²⁵ See The Republic of Rwanda Policy on Science, Technology and Innovation available at http://www.mineduc.gov.rw/IMG/pdf/Rwanda_National_STI_Policy.pdf and accessed on June 3, 2014

²⁶ Ibid

National Industrial Policy

The vision of the 2011 National Industrial Policy is for Rwanda to have a “competitive industrial and advanced services sectors producing over \$1.5 billion of exports by 2020, while increasing the number of off farm jobs.” To achieve this vision it has three objectives: increasing domestic production for local consumption, improving export competitiveness and creating an enabling environment for Rwanda’s industrialization. The policy deals with technology, research and innovation. For creating an enabling environment for industrial growth, it recognizes the need to build and acquire appropriate science, technology, innovation-entrepreneurial, engineering, and technical/vocational capacity to produce more value added goods and services. The identified measures²⁷ to promote technology, research and innovation include:

- a) Restructuring and expanding the Institute of Scientific and Technological Research (IRST) to become the Industrial Research and Development Agency (IRDA) to facilitate the transfer of innovative technologies, to carry out industrial research and to stimulate national and international partnership,
- b) Establishing appropriate technology dissemination centers in industrial parks, and
- c) Increasing funding to research and higher learning institutions to support desirable targeted industrial sectors.

Small and Medium Enterprises (SMEs) Development Policy

According to the Small and Medium Enterprises Development Policy issued in 2010, the definition of SMEs includes micro enterprises and refers to enterprises that meet two of the following three criteria: have net capital investments of below 75m RwF, annual turnover of less than 50m Rwf and has less than 100 employees. Its vision is to create a critical mass of viable and dynamic SMEs significantly contributing to national economic development. The high level objective of the policy is to foster job creation and increase the tax and export base through the promotion of competitive new and existing SMEs mainly in value added sectors. In order to achieve this high level objective, the policy outlined objectives that will help to address both the structural and resource challenges faced by previous government initiatives and challenges encountered by SMEs. The identified key policy objectives are:

- 1) Promote a culture of entrepreneurship among Rwandans;
- 2) Facilitate SME access to services including business development services; access to local, regional and international markets and market information; and promote innovation and technological capacity of SMEs for competitiveness;
- 3) Put in place mechanisms for SMEs to access appropriate business financing;
- 4) Simplify the fiscal and regulatory framework for SME growth; and
- 5) Develop an appropriate institutional framework for SME development.²⁸

²⁷ See page 28 of the policy actions enumerated under section 5 (2), (E)

²⁸ See the preferred policy objectives elaborated in pages 20 to 31 of the policy document.

The policy refers to the Intellectual Property Policy of 2010 as a policy supportive of the SME Development policy.

National Export Strategy

The National Export Strategy, which was issued in 2011, envisions transforming Rwanda into a globally competitive export economy. The goal of the strategy is to identify prioritized actions that respond to issues that affect the country's international competitiveness, or how it can upgrade to high value-added products in export clusters. The sectors targeted are tourism, tea, coffee, minerals and mining services, business process outsourcing, horticulture, home décor and fashion and greenfield industries. Strategies that will be implemented to realize the vision and goal of the National Export Strategy include branding, which can be supported by intellectual property. The Intellectual Property Policy and Act is cited in the Policy as needing to be integrated into the Export Strategy.

Trade Policy

The vision of the 2010 Trade Policy is to build a robust economic base underpinned by expanding and diversified production of quality goods and services for trading nationally, regionally and internationally. The objectives of the policies are:

- a) Increasing productivity, competitiveness and diversified sustainable productive capacities for trading nationally, sub-regionally, regionally and internationally;
- b) Enhancing participation of importers and exporters of goods and services in regional and international trade taking advantage of trade opportunities. Special attention would be paid to supporting women farmers and entrepreneurs as well as rural-based exporters;
- c) Increasing investment, including foreign direct investment, into production of competitive goods and services for the export market;
- d) Increasing human resources skills in trade and development through training and retraining in private and public institutions; and
- e) Strengthening science, technology and innovation policies, strategies and institutions including intellectual property laws, in support of industrial development and creative knowledge-based industries.

The Trade Policy recognizes the significance of intellectual property in that it calls for strengthening of intellectual property laws and the implementation of the IP Policy and Strategy.

3.2. GOVERNMENT SECTOR

The Government of Rwanda is committed to building an economy based on science, technology, and innovation (STI) and making Rwanda a technology hub in Sub-Saharan Africa.²⁹ His Excellency President Paul Kagame has, in various forums, articulated the commitment of the Government of Rwanda in promoting STI and stressed the significance of

²⁹ A. Watkins & A. Verma (eds.) (2008) Building Science, Technology and Innovation Capacity in Rwanda: Developing Practical Solutions to Practical Problems, The World Bank, Africa Human Development Series, p.ix. available at <http://elibrary.worldbank.org/doi/pdf/10.1596/978-0-8213-7356-9> and accessed on June 3, 2014.

science, technology and innovation in fostering socio-economic development and improving the living standards of the people. In his January 2004 address to the diplomatic corps, the President explained the commitment of his government as follows: “We will continue to invest in our people and strive to open up the frontiers of science, technology, and research as we broaden our trade links with our neighboring countries and beyond.”³⁰ In January 2007, at the Eighth African Union Summit he explained the significance of STI as “it is about applying science and technology holistically - in all levels of education and training, in commercializing ideas, in developing business and quickening the pace of wealth-creation and employment - generation, in enabling government to provide better services, and indeed in providing basic tools to society at large for self - and collective betterment.”³¹

There are different government bodies that are responsible or entrusted with implementation of relevant policies and laws. The National Commission for Science and Technology (NCST), which was established by law on September 2013 under the office of the Prime Minister,³² has the mission to:

- 1) advise the Government on policies, legislation and regulation in the fields of science, technology, research and innovation and monitor the implementation of such policies and legislation;
- 2) collaborate with competent organs with intention to advise the Government on educating and training people in matters relating to national needs in the fields of science and technology and to follow up on the organization and productivity of such training;
- 3) ensure that people who are educated or trained in Rwanda or abroad in the fields of science and technology are facilitated to enter the labor market in order to work professionally and stay productive for the benefit of their country;
- 4) examine, identify and support new initiatives that may be useful for the country in the fields of science and technology through investment in people’s potential;
- 5) carry out an analysis of the nature and effective use of national resources and infrastructure in order to support science and technology as well as their innovative use in a sustainable manner;
- 6) establish, update and disseminate a specific database of skills available and those needed in the country in the fields of science and technology;
- 7) cooperate and collaborate with other advanced regional and international institutions of excellence with similar mission; and
- 8) prepare and disseminate an annual report on the state of science and technology.³³

The organs of the NCST include the National Science and Technology Council which is responsible for determining the categories of activities to be given priority in the use of science and technology.³⁴

³⁰ See A. Watkins & A. Verma (eds.), *supra note 29*, p.ix.

³¹ President of the Republic of Rwanda. Address to the 8th African Union Summit on "Science, Technology and Research for Africa's Development". Addis Ababa, Ethiopia. 29 January 2007. <http://www.africa-union.org/root/AU/Conferences/Past/2007/January/summit/speeches.htm>. see also A. Watkins & A. Verma (eds.), *supra note 29*, p.ix.

³² See Law N°80/2013 of 11/09/2013 Establishing The National Commission of Science and Technology and Determining Its Mission, Organization And Functioning.

³³ *Ibid*, Article 5.

The Ministry of Education is responsible for the implementation of science and technology policy,³⁵ offering research grants and administering the Rwanda Research Innovation Endowment Fund.

In addition to the above institutions, there are other government bodies that are entrusted with the implementation of research policies and undertaking research. The Ministry of Health is responsible for the implementation of the health sector research policy, guiding and supporting health research. The Agricultural Research Institute, National Industrial Research and Development Agency (NIRDA), the Bio Medical Research Center and public higher learning institutions, which are accountable to different Ministries, are involved in research.

There are three government bodies that are responsible for intellectual property. The Ministry of Industry and Trade (MINICOM) and Ministry of Sport and Culture (MINISPOC) are responsible for intellectual property policy matters, which include rendering policy advice, implementation and monitoring the implementation of the intellectual property policy, and legislative development related to industrial property and copyright respectively. The Registrar General's Office (RGO), under the Rwandan Development Board, has an intellectual property section that administers the implementation of the intellectual property law.

3.3 FOREIGN PROJECT SUPPORT

The Government recognizes the significance of foreign support and establishes partnership and cooperation with international and regional organizations as well as foreign development partners and benefits from donor support in strengthening the national innovation system.

These include:

- a) needs assessment and action plan studies for STI capacity building in areas identified as essential for the country's development³⁶ and linkage between research and development and the industry carried out with the support of the World Bank³⁷ and the African Development Bank (AfDB)³⁸ respectively,
- b) science , technology and innovation infrastructure development,³⁹
- c) development of the Science, Technology and Innovation Policy,⁴⁰

³⁴ Ibid, Articles 9 and 11 (3).

³⁵ The Ministry of education has been entrusted with science and technology responsibility since 2009. Prior to that the government body that was responsible for the implementation of the policy was the Ministry of Science, Technology and Scientific Research in the President's Office, which was established in March 2006

³⁶ These include client focused agricultural research and extension, food processing and preservation, value added exports, geosciences and geothermal energy, development and diffusion of appropriate technologies, and delivery of clean drinking water.

³⁷ See A. Watkins & A. Verma (eds), *supra note 29*.

³⁸ African Development Bank Group Human Development Department (2009) Mapping Science and Technology For Industrial Development Linking R&D Between Industries and Institutions of Higher Learning.

³⁹ AfDB supported the construction and equipment of science labs for secondary schools and the Higher Institute of Agronomy and Animal Husbandry (ISAE); construction and equipment of a state of art technical school in Gitarama; construction and equipment of state of the art STI labs for the Kigali Institute of Science and Technology, and the construction and equipment of a Faculty of Architecture and Environmental design at the Kigali Institute of Science, Technology and Management. (see African Development Bank Group Human Development Department, *supra note 38*)

- d) capacity building support programs such as those provided by Japan International Cooperation Agency (JICA) and German Agency for International Development (GIZ),⁴¹ and
- e) setting up technical training institutions with external support such as from the government of the Republic of Korea.⁴²

In addition to the above, WIPO rendered assistance in automating the operation of the intellectual property section in the RGO and establishing a Technological and Innovation Support Center (TISC) under the national library as well as training of personnel. In the future there are areas where WIPO's support could be integrated with the foreign support that will be made in strengthening the national innovation system such as including intellectual property topics in training programs, supporting JICA's one product one village initiative through branding and intellectual property tools and participating in innovation studies and policy review programs.

3.4 RESEARCH AND EDUCATIONAL BASE

Rwanda's S&T institutions were damaged and qualified scientific and technological human resources were lost⁴³ during the genocide. Efforts have been made by the Government to build the research and educational base by rehabilitating earlier institutions and establishing new ones as well as developing the human resource base in areas of science and technology. The institutions that were rehabilitated include the National University and the Higher Institute of Agriculture and Animal Husbandry (ISAE).⁴⁴ Newly established institutions include Kigali Institute of Science, Technology and Management (KIST), Kigali Institute of Education (KIE) and Kigali Health Institute (KHI).⁴⁵ Science and technology is given emphasis in the educational system⁴⁶ and integrated into the curriculum of primary and secondary schools.⁴⁷

⁴⁰ The World Bank, Department for International Development (DFID), United Nations Educational, Scientific and Cultural Organization (UNESCO) and United Nations University provided support at different levels beginning from the elaboration of a concept paper to publication of the policy.

⁴¹ JICA is providing technical and advisory support service aiming at adding value to local products and strengthening marketing position through one village one product (OVOP) program. GIZ is involved in building up technical and business skills in line with the development priority and program of the country and launched the technology catalyst initiative, which aims at identifying people with technological and business skills that will be used in strengthening the capacity of the private sector.

⁴² An example is the Rwanda – Korea Technical Training Centre (RKTTTC) for Vocational Education Training (VET) that was established with the support of the government of the Republic of Korea.

⁴³ Some were killed while others fled out of the country.

⁴⁴ See the Education Sector Policy, see supra note 10.

⁴⁵ Ibid.

⁴⁶ One of the objectives of the education sector policy is to promote science and technology with special attention to ICT and the specific objectives of the policy includes promoting the teaching of science and technology with a special focus on ICT. Moreover, the significance of promoting science and technology education is well articulated in Vision 2020 and the STI policy. Vision 2020 clearly spells out the need to develop the teaching of science and technology at secondary and university levels and to emphasize on vocational and technical training in the fields of technology, engineering and management in order to address the problem of the shortage of technically qualified professionals and enhance development. The STI policy clearly defines the need to reorient the educational system in order to build human resource capacity in the area of science and technology. It provides that S&T will be fully integrated into the education system and greater emphasis will be made on science and mathematics including full integration in curricula at all levels of education.

There are institutions that offer technical and vocational training and educations⁴⁸ as well as universities that provide education in science and technology fields. According to the 2008 Higher Education Policy, the country had 25 higher learning institutions of which 13 were public (six universities, five colleges and two specialist post graduate) and 12 were private providing education for 44,000 students as well as engaging in research, innovation and knowledge transfer in support of socio-economic development. This figure significantly increased within a short period of time. In 2012 there were 31 higher learning institutions of which 17 were public and 14 were private with a student population of 76,621.⁴⁹ In addition to building up human resource capacity locally, efforts have been made to enable Rwandans acquire further education and training abroad. In 2012, for example, there were 1,091 students sponsored by the government to pursue their studies at Bachelor's, Masters and Doctorate degrees level in 41 countries.⁵⁰

R&D is mainly done in public research and development organizations and higher learning Institutions.⁵¹ The private sector involvement in R&D, except in very few enterprises,⁵² is very limited. The Government has taken various measures to stimulate R&D activities including reorganization of research and development institutions, provision of incentive schemes and creation of an enabling environment to tap the expertise of the Diaspora. An example of reorganization of R&D Institutions is the establishment of the National Industrial Research and Development Agency (NIRDA) replacing the Institute of Scientific and Technological Research (IRST) in order to facilitate application of research results and the development of the industrial sector. The Government recognizes the need for strengthening R&D activities by providing incentives⁵³ and took measures to attract and use qualified and skilled individuals from the Rwandan Diaspora.⁵⁴

⁴⁷ See p 15 of the Education Sector Policy "At primary level, pupils are taught to observe the environment which surrounds them and are encouraged to learn by handling different objects" and a course entitled "Science and Elementary Technology" will be incorporated into the curriculum of primary education. At secondary level, science subjects such as biology, chemistry and physics will be offered.

⁴⁸ An example is the Integrated Polytechnic Regional Center in Kigali that started operation in 2008 and offers modern and practical training that contribute to the employable skills needed in the country. The number of institutions that offer technical and vocational training as well as the students enrolled has increased. For example, in 2011 there were 98 VTCs with a student population of 11,315. This figure had increased to 116 VTC that provide training for 13,577 students in 2012. See Ministry of Education (2013), 2012 Education Statistics Yearbook. Available at http://www.mineduc.gov.rw/IMG/pdf/2012_Education_statistical_yearbook.pdf and accessed on June 3, 2014

⁴⁹ See Ministry of Education (2013), 2012 Education Statistics Yearbook

⁵⁰ Ibid.

⁵¹ These include National University of Rwanda, University of Kigali, Rwanda Agricultural Research Institute and National Industrial Research and Development Agency.

⁵² Kirezi natural products extraction enterprise and Utexrwa textile factory are engaged in research activities to support their field of activity.

⁵³ The S& T policy, for example, requires the government to introduce incentive schemes and systems such as exempting from all taxes equipment and material imported for R&D activities and providing tax incentives for the resources committed by the private sector to S&T development, and in particular R&D.

⁵⁴ These include conferring double citizenship and providing incentives such as allotting free land for constructing accommodation and transferring money free of charge.

3.5 INDUSTRIAL BASE

The industrial sector in Rwanda is weak but growing. The sector contributes 16 percent of the GDP⁵⁵ and is the third largest contributor following the service and agriculture sectors that contribute 45 percent and 33 percent respectively.⁵⁶ However, the industrial sector registered a higher growth rate compared to services and agriculture. In 2010/11 and 2012/13 industry grew by 11.3 percent, service by 7.7 percent and agriculture by 3.9 per cent.⁵⁷ The industrial sector is dominated by small and medium enterprises (SMEs), which consist of more than 99 percent of all firms,⁵⁸ and provide for more than a million off-farm jobs.⁵⁹ The survey on large industries and SMEs conducted by MINICOM revealed that the sector faced a number of challenges including insufficient demand due to cost and quality of production, lack of access to reliable and affordable power,⁶⁰ access to raw-materials, inadequate road infrastructure and transport, taxes and fees, standards, handling and logistics infrastructure to reach export markets and access to finance (finance is a severe problem for SMEs and start-ups).⁶¹ The Government has been trying to address these challenges. These include a broad set of support services ranging from helping entrepreneurs access finance and advice through the national Hanga Umurimo support program to expanding market access through selling points and support to trade fairs.

3.6 INTERMEDIARIES, INSTITUTIONS AND ACTORS THAT SUPPORT THE INNOVATION SYSTEM

Relevant policies such as the STIP and the Industrial Policy recognize the significance of facilities and institutions that will support innovation in the country. STIP provides that “Technology Consultation Centers shall be established; Technology Incubators and Demonstration Units shall be set up; Science and Technology Parks shall be introduced, essentially to target rural communities.” Similarly the 2011 Industry Policy identified measures to promote technology, research and innovation, which include establishment of appropriate technology dissemination centers in industrial parks. As a result of these clear policy directions, there are technology and business incubation centers in the country. These include the:

- a) KIST Technology and Business Incubation Facility (TBIF) that provides business incubation and support services to accelerate the development of technology based start-up entrepreneurs in Rwanda,⁶²
- b) Knowledge laboratory (Klab), which provides an open space for IT entrepreneurs to collaborate and innovate and an opportunity for fresh graduates, entrepreneurs and innovators to work on their ideas and turn them into viable business models,⁶³ and

⁵⁵ MINICOM Report 2012/13. Available at http://www.minicom.gov.rw/fileadmin/minicom_publications/Reports/MINICOM_Annual_Report_2012-13-2.pdf and accessed on June 3, 2014

⁵⁶ ibid

⁵⁷ ibid

⁵⁸ ibid

⁵⁹ Ministry of Trade and Industry, Rwanda SME Survey 2013.

⁶⁰ The main source of energy, which is electricity is expensive compared to neighboring countries and is unreliable due to power failures.

⁶¹ See Ministry of Trade and Industry, Rwanda SME Survey 2013 and Ministry of Trade and Industry, Brief on Challenges and Issues Concerning the Larger Industries.

⁶² See <http://www.smeportal.gov.rw/?Business-incubation-centers>, accessed on June 3, 2014

- c) The Masaka Business Incubation Centre that targets SMEs engaged in leather goods; bamboo products; cheese making and fruits processing and facilitates access to finance, market and technology information and serves as a place for demonstrating technology.⁶⁴

The Private Sector Federation (PSF), which was established in 1999 replacing the former Rwanda Chamber of Commerce and Industry as an umbrella organization consisting of nine business associations, is dedicated to promote and represent the interests of the Rwandan business community.⁶⁵ The Federation pioneered the establishment of Business Development Service (BDS) Centers in each district of Rwanda. These provide consultancy services, market access services, input supply services, technology and product development services, training and technical assistance, infrastructure-related and information services, access to finance, basic accounting and policy and advocacy to SMEs, Cooperatives and sole proprietors.⁶⁶ The services provided by the BDS centers do not however include information and advisory services related to intellectual property. This gap is appreciated and the leadership is willing to host an intellectual property help desk within the PSF.

The Intellectual Property Section under the Office of the Registrar General confines itself to the receipt and processing of intellectual property applications. As such, while it may have access to patent databases abroad it does not provide any patent and technological information advisory services nor any business support services. Some of these services may be provided by the recently established TISC in the National Library with the support of WIPO.

Most attorneys and law firms that are engaged in intellectual property activities are engaged in filing trademark applications and defending these rights. A few have been engaged in the area of patents. They are not providing advisory support in the management of intellectual property rights nor in the area of technological information.

3.7 FINANCIAL SUPPORT AND FUNDING AGENCIES

The sources of funds for research and innovative activity as envisaged by STIP include:⁶⁷

- a) Government allocation that will amount to 0.5% of the total budget;⁶⁸
- b) Resources that will be generated through participation in bilateral and multilateral projects and regional scientific and technological programs; and
- c) Income generated from commercialization of the services and outputs of S&T institutions.

⁶³ See <http://klab.rw/public/about>

⁶⁴ See <http://www.smeportal.gov.rw/?Business-incubation-centers>, accessed on June 3, 2014

⁶⁵ See <http://www.psf.org.rw/about-us/>

⁶⁶ See <http://www.psf.org.rw/about-us/services/business-development-services/general-information> accessed on June 3, 2014

⁶⁷ See section 6.5 of STIP

⁶⁸ The RIEF is part of the 0.5% of the total budget that the government committed to allot for science and technology.

The Rwanda Innovation Endowment Fund (RIEF)⁶⁹ which was launched by the Government of Rwanda on April 5, 2012, is managed by the Ministry of Education and has the following objectives:

- a) Stimulate economic transformation through R&D in innovative market-oriented products and processes in priority areas of the economy;
- b) Increase prosperity and competitiveness of the Rwandan economy;
- c) Stimulate research commercialization through public private partnership;
- d) Provide network to support individuals and R&D centers to take their output to the market or transform them into businesses;
- e) Promote innovation amongst entrepreneurs; and
- f) Enhance capacity of Rwandan companies to develop advanced services.⁷⁰

The Fund is available to an individual or group of individuals or an organization whose project is related to agriculture, manufacturing, ICT, energy or focused on SMEs and business startups.⁷¹ The individual or group of individuals or the organization requesting for financial support must demonstrate that she/he or it has skills including entrepreneurship/innovation, R&D, and business/marketing. The Fund is open to any Rwandan that demonstrates entrepreneurial inspiration to start an innovative business. However, preference is given to applications made by:

- a) a young graduate, who graduated in the past five years, or a team led by a young graduate whose members have skills that include entrepreneurship/innovation, R&D, and business/marketing; and
- b) an academic researcher from a higher learning institution or a research and development institution or a team led by a researcher consisting of members that have skills including entrepreneurship/innovation, R&D, and business/marketing.

The Ministry of Education also offers research grants, which currently amounts to 80 million Rwf and is open only to higher learning institutions to fund projects that are in line with the priority sectors stated in the national STI Policy.⁷² In addition to these, there are special research funds made available by donor agencies such as African Development Bank, Department for International Development, United Kingdom, German Agency for International Development (GIZ), World Bank, and United Nations Development Program.

STIP also provides that another source of funding for research and innovative activity is income generated by research and academic institutions. Implementing this policy direction would

⁶⁹ RIEF is the result of partnership between the Government of Rwanda and the United Nations ONE UN Fund. It is implemented by MINEDU and the United Nations Economic Commission for Africa (UNECA), which is the lead implementing partner. In the first round, the Ministry of Education awarded up to \$ 50,000 (fifty thousand dollars) to 8 successful applicants on May 2, 2013. Invitation for the second round of funding is made and applications are collected. See Accessing Guidelines at http://www.mineduc.gov.rw/IMG/pdf/RIEF_Accessing_Guidelines_FINAL_VERSION_10_08_2012.pdf accessed on August 6, 2014

⁷⁰ <http://mineduc.gov.rw/rief/spip.php?article2>

⁷¹ Please note that the eligibility criteria and other requirements of the Rwanda Innovation Accessing Guidelines do not refer to intellectual property such as giving preference to an individual or group of individuals that own intellectual property over innovative work or requiring protection of innovations to facilitate their exploitation and ensure repayment of the fund.

⁷² Information given by Remy Twiringiyimana, Director of Research and Development, Ministry of Education

require further guidance on how the disclosure, protection and exploitation of research results can be managed by public research and academic institutions given that, at present, public research and academic institutions in Rwanda do not have institutional intellectual property policies and technology management offices.

3.8 COOPERATION BETWEEN THE RESEARCH AND INDUSTRIAL BASE

Linkages between institutions that generate research results and the industrial sector is critical for promoting innovation and enhancing technological progress. Effective collaboration between them will strengthen the capacity of each of these sectors, address challenges they face and serve their respective needs. The significance of promoting such cooperation between research and industry is well recognized in Rwanda. The STIP at page 10 provides that “the public and private sectors have different strengths such as the research skills of the public institution and the entrepreneurial, marketing and business skills of the private enterprise. It is important to recognize and reinforce these complementary strengths and ensure a link to bridge the gap between the public research institution and private enterprise through the engagement in scientific research and development specific to fulfill the needs of the private enterprise.” The 2009 Intellectual Property Policy also provides for promotion of public private partnership to facilitate the development and exploitation of innovations and research results.

In order to facilitate linkages between research and industry, a study, which aimed at providing concrete orientations and strategies for the establishment of sustainable partnerships between institutions of higher learning and research and the productive sector, was made with the support of the African Development Bank.⁷³ This study identified potential partnership areas between Higher Learning/R&D Institutions and industry; proposed a model for partnership and outlined measures that may be taken by the Government and the Bank. Following this, the Government launched the “knowledge transfer partnership program” in 2013, which is implemented by the Ministry of Education (MINEDUC). Each partnership will involve a business seeking to implement a strategic project, an academic or research partner providing essential knowledge and a high quality recent graduate who will manage the project. The objective of the program is to address the challenges and improve the productivity and competitiveness of the industry using the scientific knowledge and technical skills available in higher learning and research Institutions through collaborative projects. MINEDUC plans to support five partnerships under this program, where each of the partnership projects will be provided with a budget of 10 million Rwf⁷⁴ per year for two years. Each of these projects is expected to deliver the following:

- a) Commercial benefit to the company or industry, increased employment and prosperity;
- b) Beneficial feedback to the University in terms of relevant curriculum development, case studies and student projects;
- c) A well-developed graduate business leader that will contribute to the realization of the objectives of the industry or company and meeting its needs; and

⁷³ See AfDB (2009), Mapping Science and Technology for Industrial Development in Rwanda: Linking Research and Development between Industries and Higher Learning Institutions.

⁷⁴ The money will be used by the HLI or R&D Institutes to cover the costs for travel, academic time, academic development, graduate training and minor equipment. The industry will be responsible for the salary of the graduate.

- d) An ongoing strong partnership between the Company and the University/Research and Development Institution.

In addition to the Knowledge Transfer Partnership Programme, all the higher learning institutions have been encouraged/requested to establish incubation centers to ensure linkages with their surrounding community mainly the industry thereby promoting the culture of entrepreneurship among students, educators and the community.⁷⁵ Many have already established such centers.⁷⁶

3.9 FRAMEWORK CONDITIONS, EDUCATION

The Rwandan Constitution recognizes education as a right and makes primary education mandatory and free in public schools.⁷⁷ The national vision identifies a severe shortage of professionals as an obstacle to development and aims at enhancing human resource capacity emphasizing science and technology education and vocational training. A number of policies such as those in the areas of science, technology and innovation,⁷⁸ education⁷⁹ and higher learning⁸⁰ have given emphasis to human resource capacity building and science and technology education and vocational training in order to foster the socio-economic development and technological progress of the country.

The Government has invested in education and impressive achievements have been registered. These include an increase in the size of enrollment of students in primary and secondary schools, vocational and technical training Centers (VTCs), and higher learning institutions. Enrollment in primary schools has increased from 2,190,270 in 2008 to 2,394,674 in 2012 (the rate of enrollment is considered to be the highest in Africa) and, in lower and upper secondary schools, the enrollment of students has almost doubled from 288,036 in 2008 to 534,712 in 2012. Moreover, the number of students enrolled in technical and vocational training and private and public higher learning institutions has significantly increased. Enrollment of students in VTCs rose from 7,134 in 2010 to 13,557 in 2012. Students enrolled in public and private tertiary level institutions increased from 46,268 in 2008 to 76,629 in 2012.⁸¹ Donor agencies have also been assisting the development effort of the Government in improving and strengthening the education sector.⁸²

⁷⁵ Information given by Remy Twiringiyimana, *supra*note 72.

⁷⁶ *Ibid*

⁷⁷ See Article 40 of the 2003 Constitution of Rwanda

⁷⁸ STIP recognizes education of the citizens of Rwanda in science and technology as an essential component of building Science and Technology capacity in Rwanda. S&T education will help to acquire skills ranging from the basic to advanced skills that will enable Rwandans to take the lead in high level research aimed at Rwanda's development.

⁷⁹ The policy considers education and training as a critical lynchpin to achieve development and poverty reduction in Rwanda and provides that particular attention will be given to the teaching of science and technology at all levels.

⁸⁰ The policy has a vision of building up a world class higher education system that will support the development of a dynamic, entrepreneurial and internationally competitive Rwanda, through the production of a skilled and educated workforce and the carrying out of research and innovation.

⁸¹ For details see Ministry of Education (2013), 2012 Education Statistics Yearbook.

⁸² See, for example, Japan's support in science and technology education and technical training, available at http://www.jica.go.jp/rwanda/english/office/about/about_01.html

CHAPTER 4 EFFORTS TO INTEGRATE THE INTELLECTUAL PROPERTY SYSTEM INTO THE INNOVATION SYSTEM

National development goals and the various national and sectoral policies and strategies can be meaningfully supported by intellectual property. Effective use of intellectual property as a tool for development would be facilitated if the intellectual property system is integrated into the national and sectoral development policies and mechanisms which would set the foundation for the effective use of the intellectual property system in meeting the policy goals and objectives. Intellectual property may, for example, support the goals of the Higher Education Policy by facilitating access to technological information contained in patent documents which would support research activities. The intellectual property system would enable the protection and exploitation of research results there by generating funds for further research. It would also serve to support branding efforts which would strengthen the competitiveness of Rwandan products and meet the objectives of the Export strategy. However, neither the Higher Education Policy nor the National Export Strategy has identified areas where intellectual property may be used in support of their objectives and goals. Effective use of intellectual property as a tool for development requires qualified manpower and sensitization of potential innovators. This can be made possible by promoting intellectual property education. However, the education and higher education policies have not provided guidance for integrating intellectual property education into the curriculum of primary and secondary schools as well as higher learning educational establishments.

In contrast, STIP and the Health Research Policy have made an attempt to exploit the benefits of the intellectual property system to support the objectives of these policies.

STIP identifies intellectual property as a strategy. It provides that:

- a) An effective intellectual property management framework shall be established in Science and Technology Research and Development institutions and firms so as to create the capacity to support local researchers in protecting their intellectual property rights. If this is not done, research and technological developments will be at risk of premature disclosure which could prejudice the rights of the inventor and invalidate a patent; and
- b) A legal framework shall also be established to protect Science and Technology intellectual property rights.

The Health Sector Research Policy provides that “data collected from research in Rwanda will be co-owned by the Rwanda health sector and the home institution of the Principal Investigator of the project.” The policy goes on to state that “research commissioned and paid by a Rwandan institution is owned by that institution.”⁸³ It is not clear from this how the issue of ownership of research results such as inventions will be treated. This provision is not adequate to deal with situations such as where R&D activity is funded by Government or donors and a research result is made by researchers and scientists using research facilities of Rwandan R&D and academic institutions.

⁸³ <http://www.moh.gov.rw/fileadmin/templates/Docs/Health-Sector-Research-Policy.pdf>

A positive attempt to integrate intellectual property into innovation policy formulation was the issuing of the Intellectual Property Policy in 2009. This is complemented by the enactment of a comprehensive intellectual property law linking the national intellectual property system to the regional and international intellectual property systems.

Intellectual Property Policy of 2009 - The Government of Rwanda recognizes the significance and role of intellectual property as an effective policy tool for unlocking the local creative, inventive and innovative potential, for stimulating the transfer and use of technologies and creative works, for encouraging fair competition thereby promoting the creation of wealth and fostering national social, cultural and economic development. It is one of the pioneer countries in Africa in issuing a national intellectual property policy. It articulates a vision, defines policy objectives and specifies strategies for ensuring the effective use of intellectual property as a tool for development and to support the goals of Vision 2020 and the objectives of various policies such as STIP, education policy and industrial policy.

The vision expressed in the policy is for creating “an environment in which the Rwandan sectors of business, government and culture, create ideas and innovations that are protected in a way that ensures the greater prosperity of the Rwandan people, while making optimal use of international technologies to promote growth and productivity for the whole Rwandan nation.”

The objectives of the policy include:

- a. increasing technological literacy and advanced scientific and technological skills that in turn would increase the innovation capacity;
- b. promotion of innovation and creativity including minor and incremental innovations to provide an opportunity for the largest number of individuals and firms to participate in innovation;
- c. increasing access to foreign and local technology by local firms and research institutions;
- d. improving access to intellectual property-based essential goods and services especially health and food;
- e. facilitating investments in innovative and creative activities; and
- f. enhancing the protection of traditional knowledge and facilitating equitable access to genetic resources and benefit-sharing.

Intellectual property Law 2009 - The law deals with patents, utility model certificates, industrial designs and models, layout designs of integrated circuits, marks, collective marks, certification marks, trade names, geographical indications, protection against unfair competition, and copyright and related rights. Its objectives are to:

1. contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare of population, and to a balance of rights and obligations;

2. create a fair and equitable commercial environment by the reduction and the prevention of distortions and impediments to free trade and to set up principles, rules and disciplines dealing with trade in counterfeit goods.

Rwanda is a member of the following international treaties administered by WIPO:

- The Convention establishing WIPO,
- Paris Convention for the protection of Industrial Property,
- Bern Convention for the Protection of Literary and Artistic Works,
- Brussels Convention Relating to the Distribution of Program- Carrying Signals Transmitted by Satellite,
- The Hague Agreement Concerning the International Registration of Industrial Designs,
- Patent Cooperation Treaty (PCT), and
- Protocol relating to the Madrid Agreement Concerning the International Registration of Marks (Madrid Protocol).

Rwanda is also a member of the Agreement on Trade Related Aspects of Intellectual Property (TRIPS Agreement) administered by the World Trade Organization (WTO), the Lusaka Agreement on the Creation of the African Intellectual Property Regional Organization (ARIPO) and the Protocol on Patents, Utility Models and Designs administered by ARIPO. Membership in relevant intellectual property treaties could facilitate the protection of intellectual property assets generated by Rwandans, provide access to foreign intellectual property assets and benefit from services and opportunities offered by international organizations such as access through WIPO to scientific and technological information contained in patent documents and scientific journals.

Patents and utility model protection, by conferring exclusive rights for a limited period of time and thereby enabling the recoupment of investment and a reasonable return from innovation, stimulate inventive and innovative activities. However, their use appears to be low perhaps due to little awareness of the benefits of these tools. The Intellectual Property Section of the RGO informed the mission that five patents and two utility models were filed in 2012. The statistics, however, were not categorized as resident and non-resident, did not provide data on granted titles and conflicted with the statistics available on WIPO web site. According to the statistics maintained by WIPO, in 2012, 70 patent applications of which 40 and 30 were filed by residents and non-residents respectively and 12 utility models applications were made by residents.⁸⁴ Moreover, during the same year 24 patents were granted of which 12 each was issued to residents and non-residents and no utility model certificates were issued.

⁸⁴ See WIPO statistics database. Last updated : 03/2014, available at http://www.wipo.int/ipstats/en/statistics/country_profile/countries/rw.html

CHAPTER 5 SUMMARY OF DISCUSSIONS WITH STAKEHOLDERS

5.1 STRATEGIES/POLICIES

The existence of a clear development vision expressed through various national and sectoral policies, strategies and laws that embrace innovation and intellectual property as a tool for development is positive. However, issuing policies, strategies and laws is not an end itself. They need to be given life through implementation. The stakeholders were of the view that the policies and the intellectual property law were not adequately implemented. They felt that the problem in Rwanda is not the lack of clear policies that will support the national innovation system but inadequate implementation of these policies. The impact of policies and strategies should be evaluated on a periodic basis to determine the extent of the achievement of goals and objectives, identify challenges and take corrective measures. Stakeholders pointed out that there has been no such impact study on existing policies.

Intellectual property is cross sectoral. It relates to health, agriculture, trade, culture, education etc. Effective use of intellectual property as a tool for development requires integration of intellectual property into the relevant policies and greater coordination amongst the key government and private bodies in the development and implementation of policies, strategies and laws. However, stakeholders stated that there is inadequate integration of intellectual property into national and sectoral policies and little coordination amongst the relevant players.

5.2 INTELLECTUAL PROPERTY ADMINISTRATION

The majority of the stakeholders expressed frustration over the fragmentation of intellectual property responsibilities under three government bodies which they felt prevented the delivery of quality intellectual property services. They felt that there was an urgent need for streamlining of intellectual property responsibilities and the establishment of a single development oriented intellectual property office that would meaningfully support local R&D and innovative efforts.

Perhaps arising from this situation, they observed, that none of the three entities had neither the resources nor the capacity for the effective implementation and follow up of the intellectual property policy and law. In addition, the process of enacting laws and approving legislative proposals was time consuming, sometimes taking a year or more from submission of a proposal to being taken up by the Ministry for consideration. The Intellectual Property Section in the Registrar General's Office of the Rwandan Development Board had very limited number of staff, they lacked training and their facilities were inadequate. For example, the lack of automation was creating challenges for the implementation of the intellectual property policy and law. The staff of the intellectual property section expressed the need for attachment to regional intellectual property offices and support of an intellectual property expert that will offer on the job training and provide advice in the implementation of the intellectual property policy and law.

5.3 ACCESS TO FINANCE

Access to finance was mentioned as a critical problem faced by inventors and innovators. Lack of access to finance created an obstacle to them to further develop, protect and exploit their inventions. The establishment of the Rwandan Innovation Endowment Fund may partly help in addressing this problem where the financial support may be used in further developing a technological idea and developing a prototype. However, inventors will need financial support in commercializing their inventions. Moreover, protection of inventions in and outside of Rwanda will be a problem as inventors may not have the resources that will enable them to cover the costs involved in the filing of and securing patent protection. Access to finance is equally a problem for innovative SMEs who, typically lacking physical assets and as such traditional collateral, may not have access to credits and loans offered by financial institutions. To address this problem, the Government has embarked upon a number of programs and initiatives. An example is the Business Development Fund (BDF), which provides guarantees to facilitate access to credit and has set up a quasi-innovation fund in equity to support SMEs and individuals with innovative ideas and projects.⁸⁵

5.4. COLLABORATION BETWEEN SCIENCE AND INDUSTRY

Though the existing policies promote the establishment of linkages between institutions that generate research results and the productive sector, stakeholders stated that in practice there are no formal linkages between academic and research institutions and industry. The knowledge transfer program that is implemented by the Ministry of Education with support of Donor Agencies referred to in section 3.8 above, is expected to fill this gap.

Institutions of higher learning, R&D organizations and some of the industries that are involved in R&D and innovative activities do not have technology management offices that will help in protecting and exploiting research results. This gap is well understood by the stakeholders. They requested support in the drafting of institutional intellectual property policies and establishment of technology management offices. Establishing such offices in each of the institutions may not be justified, at least initially, due to lack of critical mass and the costs involved in setting up such offices. Stakeholders appreciated this problem and suggested that such offices may be set up in the Ministry of Education and National Commission for Science and Technology to cater for higher learning institutions and R&D institutions respectively, and an intellectual property help desk under PSF to support and guide industries and business establishments.

5.5 LEGAL SUPPORT

There are law firms and practitioners engaged in handling intellectual property matters. However, the service is mainly limited to filing trademark applications and following up the

⁸⁵ For details , see www.bdf.rw

process. The practitioners reported that they have had no or inadequate training in the field of intellectual property. They sought, in particular, training in patent specification drafting. They also complained that the processing of intellectual property applications took more time than necessary due to the understaffing of the Intellectual Property Section and appealed that the Section be strengthened so that the needs of the users of the intellectual property system be adequately met. Moreover, the practitioners indicated that there was a practical problem with respect to the lack of clarity and incomplete documentation in dealing with trademarks that were protected prior to 2009, many of these registrations having been destroyed or lost. They sought WIPO's support in assigning an experienced intellectual property expert for a prescribed period of time to assist the staff of the Intellectual Property Section in dealing with this problem.

5.6 INTELLECTUAL PROPERTY TEACHING

Stakeholders reported that intellectual property is not offered in higher learning institutions and vocational and technical training centers. They sought WIPO's technical assistance in integrating intellectual property into the curriculum of these institutions, training instructors and provision of teaching materials.

5.7 AWARENESS CREATION AND CAPACITY BUILDING

Stakeholders pointed out that key players in the national innovation system, including policy makers, were not aware of the role of the intellectual property system in the innovation system. Some of the stakeholders stated that lack of awareness was one of the reasons as to why there was little buy in by policy makers and suggested that parliamentarians and government officials should be sensitized on the role of intellectual property in supporting innovation. It was also important that the other stake holders of the innovation system; research, industry and the various intermediaries as well as other stakeholders we spoke with (customs officers, negotiators that take part in bilateral, sub-regional and regional trade negotiations that involve intellectual property issues, commercial attaches) be also appropriately sensitized on the advantages of the intellectual property system for their respective needs. There had been limited activities to raise intellectual property awareness through few seminars organized in cooperation with WIPO and ARIPO. They suggested that these efforts would be more effective if they were targeted to the specific needs of the particular stakeholders and implemented in a continuous and sustainable manner. Moreover, the stakeholders expressed the need for intellectual property education at all levels.

Many stakeholders were unaware of the services offered by the Intellectual Property Section of the Registrar Generals' Office. A leading manufacturer was to his cost unaware of the services offered by this office in registering and protecting industrial designs. The Section is however only offering services for obtaining intellectual property rights and is not at present providing other services such as technological information services which is very important for innovation.

The majority of the stakeholders were not aware of the significance of technological information contained in patent documents and the services offered by WIPO such as the state of the art search service and ARDI in supporting R&D and innovative efforts. Stakeholders sought the support of WIPO in making its services more widely known and facilitating access to technological information by establishing as many TISCs as possible under different institutions.

5.8 OTHER

The representative of the Customs Department of the Rwanda Revenue Authority explained that the East African Customs Act lists counterfeit as a prohibited good and does not provide guidance on how to deal with it. Moreover, the representative of the Ministry of Finance indicated that Article 43 of the Protocol on the Establishment of the East African Community Common Market deals with cooperation on intellectual property, which needs to be supported by the national intellectual property law and other complementary measures. The officials expressed the need for support in implementing regional agreements and specifically requested WIPO's support in the examination of compliance and adequacy of the national intellectual property law and putting in place implementation tools. The officials of MINICOM underlined the need to develop a program and project that will be implemented with the support of WIPO aiming at strengthening the intellectual property system, building capacity and ensuring the use of intellectual property as a tool for development. The Rwandan copyright society expressed the view that while the Government has made available office space they needed support for running their operations and strengthening the society at this initial stage.

CHAPTER 6 CONCLUSIONS

Rwanda has a lot going for it. The catalytic role of science, technology and innovation in fostering socio-economic development of Rwanda and improvement of the welfare of its people is well recognized. This can be evidenced by looking at Vision 2020 that aspires to build a knowledge economy and a technology hub in the region, STIP that aims at building up scientific, technological and innovative capacity and the intellectual property policy that encourages local inventive and innovative activities and facilitates transfer of technology. The political leadership is committed to supporting science, technology and innovation, institutions are engaged in building up the scientific and technological human resource and/or generation of technology and the economy is growing at a much higher rate than the average rate of growth in sub-Saharan Africa.

The contribution of intellectual property to these endeavors has thus far been minimal. This may be due to a number of factors. One is the absence of an institutional mechanism that ensures the integration of intellectual property in the process of formulation and revision of relevant policies, oversees the implementation of intellectual property policies and laws, monitors and evaluates the contribution of intellectual property in realizing the objectives and goals of sectoral policies. The Rwandan Development and Intellectual Property Forum that was envisaged by the national intellectual property policy with the main mandate of coordinating the implementation, evaluation and review of the policy would have filled the gap. However, the Forum is not yet in place.

Further, there are three government bodies - MINICOM, MINISPOC and RGO - that are responsible for handling different aspects of intellectual property. Each of these bodies has little or no role in promoting the use of the intellectual property system in supporting the local research and innovation effort. None of them, for example, provide technological information services to support the research and innovative endeavors of researchers and entrepreneurs. This may be due to a number of reasons including lack of adequate manpower, trained staff and facilities. There is one staff member responsible for policy and legislative issues related to industrial property and copyright. The intellectual property section in RGO has two members of staff. One is responsible for administering and implementing industrial property and the other, copyright provisions of the intellectual property law. Their functions include receiving and processing of applications, issuing registration certificates and renewing titles. The understaffing of the offices spread across different government bodies will not only affect the quality of service to be rendered but also affect the building up the requisite capacity in the field. The workload of the officers is increasing and processing of applications is taking more time. There were instances where the relevant staff member was not able to benefit from training opportunities as there was no one to assume the work of that staff member during his or her absence. The fragmentation of intellectual property policy and administration will not help to build core capacity in the field, enhance quality of services, ensure integration of intellectual property into development policies and promote the effective use of intellectual property as a tool for development.

Research results are generated essentially in public organizations. There is no system for managing these research results so as to protect them and benefit the researchers and institutions concerned. The STIP provides that “an effective intellectual property management framework shall be established in Science and Technology Research and Development institutions and firms so as to create the capacity to support local researchers in protecting their Intellectual Property Rights (IPR). If this is not done, research and technological developments will be at risk of premature disclosure which could prejudice the rights of the inventor and invalidate a patent.” However, none of the public research and academic institutions have institutional intellectual property policies nor technology management offices designed to promote the creation, protection and commercialization of intellectual property assets. The absence of such mechanisms will impede the creation of linkages between the institutions that generate research results and industry. The private sector would be reluctant to enter into collaborative agreements in the absence of clarity on ownership of research results. Further, public R&D institutions will not benefit from the exploitation of research results made with the support of industry where issues related to ownership and benefit sharing are not explicitly dealt with.

The patent system, which provides exclusive rights over inventions for a limited period of time, helps to stimulate technological development not only by providing the requisite protection but also by making available valuable technological information contained in patent documents. Such information is particularly useful in helping to solve technological problems by avoiding duplication of effort and wastage of investment resources. However, this resource is not well known and, as such, not used by researchers in R&D and higher learning institutions. WIPO has launched programs that will support R&D and innovative effort in Least Developed Countries (LDCs) such as Rwanda. These include Patent Scope, Free State of the art search service, Access to Research for Development and Innovation (ARDI) and Access to Specialized Patent Information (ASPI). ARDI was launched in July 2009 to make scientific and technological journals and literature freely available to LDCs such as Rwanda. ASPI was launched in 2010 to enable patent offices and academic and research institutions in LDCs have free access to retrieve and analyze patent data from commercial databases. However, these opportunities have not yet been used in Rwanda.

Enterprises in the private sector involved in R&D activities have produced research results including new designs and products. However, these results have not been protected and not exploited as they could have been. The tools of the intellectual property system can thus be more effectively used to improve the competitive situation of the enterprise sector, find solutions to technological problems, improve the quality of products, create distinctive identities and improve and strengthen the marketing position of industries.

CHAPTER 7 RECOMMENDATIONS TO THE GOVERNMENT OF RWANDA

1. Ensure integration of intellectual property into the national and sectoral development policies and strategies during their formulation or revision.
2. Undertake or initiate a study on the status of implementation and impact of existing innovation and related policies and take corrective measures.
3. Develop guidelines for the intellectual property management of research output including development of institutional intellectual property policies.
4. Consider the establishment of technology management offices under the National Science and Technology Commission and Ministry of Education to protect, manage and facilitate the exploitation of intellectual property assets generated by public R&D organizations and higher learning institutions.
5. Establish an intellectual property help desk under the Private Sector Federation to serve the intellectual property needs of the private sector.
6. Set up the Rwanda Development and Intellectual Property Forum envisaged in the national Intellectual Property Policy for its coordination and implementation.
7. Streamline the intellectual property administration by establishing a single intellectual property office, bringing under one roof the human resources and facilities scattered under the three government bodies, namely the Ministry of Trade and Commerce, Ministry of Sport and Culture and Rwanda Development Board, with a development oriented mandates such as supporting local R&D and Innovative effort.
8. Develop and implement an appropriate organizational structure, staffing requirement and plan for the single intellectual property office taking into account international best practices and the specific situation and needs of the country.
9. Design and implement capacity building programs aimed at strengthening capacity for implementation of the intellectual property policy and law as well as the use or promoting the use of intellectual property as a tool for development. The program may include on the job training, use of training opportunities offered by WIPO, WTO, ARIPO and similar organizations, and study tours and attachments in selected African countries and intellectual property offices.
10. Support the collective management society until it is in a position to cover the costs of its operation from the royalties it will collect.
11. Incorporate intellectual property into the curriculum of primary, secondary and higher educational establishments and promote intellectual property education at all levels on a phase by phase basis beginning with higher learning institutions in faculties offering technical and legal education.
12. Design and implement target oriented intellectual property awareness and outreach programs reflecting the needs of different groups such as intellectual property right holders, researchers, politicians, enforcement officers, potential users of the intellectual property system, business, industry and the general public, designating a government body that is responsible for the promotion of intellectual property awareness and implementation of the intellectual property awareness program, and allotting budget for the purpose.

13. Allot funding or expand the scope of the Rwanda Research Innovation Endowment Fund to cater to the needs of inventors that do not have the means to protect their inventions and innovations in and outside of Rwanda.
14. Use the training opportunities offered by the WIPO Academy and take advantage of WIPO's ARDI and ASPI initiatives.
15. Organize a stakeholder's forum in cooperation with WIPO where these findings and recommendations can be discussed and further enriched as well as creating a sense of shared ownership by the stake holders which would facilitate further follow up and implementation.
16. Take steps to implement these recommendations as further enriched by the stakeholders forum in an integrated project format with a defined budget and in a time bound manner.

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ANNEX I - WIPO MISSION TO RWANDA

- Mrs. Tamara Nanayakkara, Head, Innovation Policy Section, Innovation Division
- Mr. Getachew Mengistie, Intellectual Property Consultant & Attorney, Addis Ababa, Ethiopia

Ms. Myriam Gatsimbanyi , Intellectual Property Policy Officer, Ministry of Trade and Industry (MINICOM) facilitated the meetings with key stakeholders and participated in all the interviews.

ANNEX II. STAKEHOLDERS INTERVIEWED

1. Ministry of Trade and Industry - Emmanuel Hategeka, Permanent Secretary, Robert Opirah, Director General (Ag), Trade and Investment Department, Dan Hetherington, Advisor to the Director General of Industry and SMEs, Olivier Gasore, Annoncée Kuradusenge, Director of Entrepreneurship & SMEs Development
2. Ministry of Education - Remy Twiringiyimana, Director, Research and Development
3. Ministry of Health - Christine Ukize, Legal Advisor
4. Ministry of Finance and Economic Planning - Pacifique Mugwaneza, Macroeconomic Convergence Variables Expert
5. Ministry of Foreign Affairs and cooperation - Ngango James, Director General for Bilateral and Multilateral cooperation
6. Ministry of Infrastructure - Lisette Buki Rwiyeruka, Urbanization Analyst, Innocent Walter Kabagambe, Transport Economist & Analyst
7. Ministry of Culture - Makuza Lauren Thecle, Director of Culture
8. NGALI Holdings - J.F.Regis Ngezi, Program Manager, Engineering Services
9. Rwanda Development Board - Louise Kanyonga, Registrar General and Eusebe Muhikira, Ag. Head, Trade and Manufacturing Department
10. Intellectual Property Section, Office of the Registrar General, Rwanda Development Board - Ruhima Blaise, Head, Industrial Property Unit and Tumukunde Yvette, Head, Copyright Unit
11. Rwanda Agricultural Board - Rutonesha Oliver, International biodiversity international project
12. Tekutangije ltd - Nzeyimana Isidore, Inventor and Director general
13. Customs Service department, Rwanda Revenue Authority - Jackline Murekatete, Head of Compliance and Enforcement Division
14. Green Axis Ltd. - David Nkusi, Inventor
15. Rwanda Society of Authors - Epaphrodite Binamungu, Chairman

16. University of Rwanda School of Science, Biology department - Dr. Aisha Nyiramana
17. Institute of Scientific and Technological Research - Dr. Jean Baptiste Nduwayezu, Director General
18. Rwanda Biomedical Center - Happy Mukama, Research Regulator
19. Private Sector Foundation - Gerard Nkusi Mukubu, Deputy CEO and Chief Advocacy Officer
20. UTEXRWA - Ritesh Patel, CEO
21. Ikirezi - Dr. Nicholas Hitimana, Managing Director
22. Science & Technology Commission, Office of the Prime Minister - Felly Kalisa migambi, Skills Needs Assessment Analyst
23. Rwanda Development Board - Eusebe Muhikira, Ag. Head, Trade and Manufacturing Department
24. Business Development Fund - Innocent Bulindi, CEO
25. Ministry of Youth & ICT - Batte Redempter
26. Intellectual Property Agents - Maitre Geoffrey Mwine, Daniel Gasatura, Makuza Desire, Ruzindana Robert Clement, Rugango Arthur, GLF Attorneys and Agents, Maitre Celine Karugu
27. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH - Gilbert Rubangisa and Philipp Conze-Roos
28. Integrated Polytechnic Regional Centre, Kicukiro Campus - Eng Diogène Mulindahabi, Principal
29. Japan International Cooperation Agency, Rwanda Office - Samuel Sangwa

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