

INTELLECTUAL PROPERTY AS A LEVER FOR ECONOMIC GROWTH

The African Experience, Part II

"The real voyage of discovery consists not in seeking new lands but in having new eyes". — Marcel Proust

Seeing things differently – spotting the potential in an object or idea, imagining new or better ways to tackle a problem, wanting to share a vision of life in words, art or music – that is the start of the creative and innovative process. This article is the second in a series that examines how the intellectual property (IP) system can transform the fruits of that process into valuable assets which can be used as building blocks for economic growth, while contributing to social well-being and cultural enrichment.

The first article, in last month's issue, identified certain key elements that need to be in place at the national level to enable the effective creation and identification of IP assets and their subsequent transformation into useful and effective tools for wealth creation. It examined specific instances of IP use – including the development of an anti-HIV vaccine and a treatment for sickle-cell disease – to highlight potential benefits in leveraging the IP system. This article continues that examination with the story of a plant – a cucumber-like succulent – growing in the harsh earth of the Kalahari Desert in South Africa, home to the San people for thousands of years.

Knowledge, IP and benefit-sharing

The San have used the bitter flesh of the Hoodia plant (*Hoodia gordonia*) for centuries to block feelings of hunger and give them energy when hunting or on long trips across their inhospitable land. This practice was brought to the attention of the South African Council for Scientific and Industrial Research (CSIR), based in Pretoria, which began to take an interest in the properties of the Hoodia. The innovative environment in which the CSIR functions allows it to carry out much important research and development. The work resulted in this case in certain properties of the Hoodia and of their potential as an appetite-suppressant and anti-obesity drug. The market potential of such a new drug is considerable, particularly as it is derived from a natural product and, seemingly, does not have the side effects of many such treatments. Thus the CSIR was able to license its patented technology¹ to Phytopharm, a UK-based company, for the necessary investment needed to further test, develop and commercialize this new IP asset.

Importantly – although after a controversial start involving some legal negotiation – the role of San ancient knowledge and innovative activity in the initial discovery and development of the properties of the Hoodia was recognized, explicitly acknowledged by the CSIR, and set out in a memorandum of understanding (MoU) between the CSIR and the San. The MoU was followed by a benefit-sharing agreement, providing for the San to obtain 8 percent of all

milestone payments² received from the licensee by CSIR as well as 6 percent of any royalties CSIR receives on sales of the final product. Reports estimate that the milestone payments will amount to some US\$1 to \$1.5 million, while royalty payments could bring additional millions to the economically poor San.



The Hoodia plant



Photos: CSIR

South Africa's Minister of Arts, Culture, Science and Technology, Dr. Ben Ngubane, is being shown how Hoodia is traditionally sliced and eaten by Mr. Petrus Vaalbooi, Chairman of the San Council, with Dr. Sibusiso Sibisi, CSIR President, looking on. The benefit-sharing agreement between the San and the CSIR was signed on the same day, with Dr. Ngubane as witness.

¹ The CSIR filed an international patent application through the Patent Cooperation Treaty (PCT) (WO98/46243, filed on April 15, 1998, covering more than 100 countries) on the basis of its national application (national application number 97/3201, filed on April 15, 1997).

² Milestone payments are paid during the clinical development stage on the successful completion of certain technical performance targets.

The development of this Hoodia-derived product has had several important consequences for the San. It has resulted in the 100,000-strong San population organizing and setting up the San Hoodia Benefit Sharing Trust³, which will ensure that the monies received are used for “the general development and training of the San community.” Immediate plans include buying land, building clinics and investing in education and development projects.

At a workshop on benefit-sharing held last year “it was decided that the relationship between the CSIR and the San should involve not only monetary ‘sharing’ but also the sharing of knowledge.”⁴ Thus the San are now involved in sharing their expert knowledge and ability to identify and pinpoint the properties of the flora of their arid land with the CSIR.

The lawyer representing the San in the Hoodia case, Roger Chennells, says the ground-breaking, benefit-sharing agreement “represents enormous potential for future bio-prospecting successes based on the San’s extensive knowledge of the traditional uses of indigenous plants of the area. We are optimistic that this case will serve as a sound foundation for future collaboration, not only for the San but also for other holders of traditional knowledge” (see www.csir.co.za).

Thus, the San have been key participants in an agreement that has been called a turning point for indigenous

people fighting to protect their role in the development of potentially economically valuable products. Other benefits include possible San involvement in the commercial cultivation of Hoodia – if a botanical “crop” is required for future production of the potential drug.

The San and the CSIR, as well as development organizations and the drug companies, seem satisfied with the agreement:

- ▶ Petrus Vaalbooi, Chairman of the San Council – “We see this as an opportunity to engage with a partner in a way that will achieve benefits that will permeate to the very poorest people within our communities” (see observer.guardian.co.uk/international/story/0,6903,676735,00.html). (As early as 1998, a WIPO fact-finding mission on IP and traditional knowledge met with Mr. Vaalbooi and other members of the San community to discuss their IP needs and expectations.)
- ▶ Dr. Petro Terblanche, CSIR Bio/Chemtek Director – “We are proud to be working in domains which require us to enter maiden territory in terms of how indigenous knowledge and science interact and how this interaction can best unlock the economic and social benefits inherent in the country’s biodiversity” (see www.csir.co.za).
- ▶ Richard Dixey, CEO of Phytopharm – “I have always believed that this type of knowledge

is the most valuable asset of indigenous tribes...royalty payments from medicines could transform their prospects” (see education.guardian.co.uk/higher/medicalseience/story/0,9837,508790,00.html).

- ▶ Kxao Moses, Chairman of the Board of Trustees of The Working Group for Indigenous Minorities in Southern Africa (WIMSA) – “The international interest that the agreement...has aroused has helped...to raise awareness of the need to protect and control San intellectual property...”⁵

Lessons learned

The Hoodia story illustrates many of the elements necessary in constructing an effective IP strategy that impacts positively on national economic growth and is of benefit to all the protagonists:

- ▶ Recognition of existing and potential national intellectual assets – here, traditional phyto-pharmaceutical use of Hoodia: many countries would profit from an “IP audit” to identify and assess their competitive sectors to enable targeting and clustering of innovative activity in those areas;
- ▶ Strong government support for research and development (R&D) and innovation creation: CSIR has government support and partial government funding; it is also the owner of patents it takes out on the fruits of its research and has gained experience in using these

³ The trust is composed of three representatives appointed by the San Council, a CSIR representative, a non-voting observer from the South African Department of Science and Technology, three representatives appointed by WIMSA, a member of WIMSA, and a professional appointed by the San Council.

⁴ Paper prepared by V. Geingos and M. Ngakaeaja for the Second South-South Biopiracy Summit in August 2002.

⁵ Speech delivered to the San Hoodia Benefit Sharing Agreement Celebration at Molopo Lodge, South Africa on 24 March 2003.

to obtain financial return to fund further research. The percentage of government funding has dropped considerably over the years as the CSIR harvests the return on the IP it has created;

- ▶ Importance of an IP management strategy: for example, the filing of a patent application through the PCT (see footnote 1) for technology and products potentially profitable in the global market. In this case, the international application under the PCT has already resulted in patents in several countries, which allowed the CSIR to ensure the maximum benefit from the technology, covering the most promising markets for the end product, and contributing to the successful conclusion of a patent licensing agreement with a UK-based company;
- ▶ Partnership building between the public and private sectors as well as with foreign companies, using patents as a catalyst;
- ▶ Expertise in creatively leveraging IP— here, negotiating the licensing agreement, although this could also involve joint ventures, outright sale, etc.;
- ▶ Benefit-sharing for all those contributing to the creation of the IP asset – in this case, helping to cement a partnership with the knowledge asset holders to ensure further collaboration;
- ▶ Spin-off benefits, such as job creation (potential Hoodia farming by the San), enhanced respect for

the collective knowledge of traditional communities, and the encouragement of innovation on a wider national level, which helps contribute to the creation of an IP culture.

The Hoodia example shows how an indigenous knowledge asset can be developed and commercialized in the interests of national wealth creation. It also underscores the role of IP rights – in this case, patents – in the benefit-sharing process. It is this development of an economically exploitable asset that allows the creation of an income stream to be distributed among beneficiaries such as the San.

Sharing the riches of cultural heritage

Using patents to give economic value to national innovation and invention is only one means of exploiting the IP system; copyright, performers' rights, designs, trademarks and geographical indications can also be extremely effective means of leveraging a financial return on intellectual assets, particularly in relation to cultural heritage. Using these IP tools, African musicians, performers, craftsmakers and designers can contribute to economic development in the form of job creation, skills training, tourism and foreign exchange earnings. The marketing of cultural products and services is also a way for communities to reduce poverty and to strengthen their cultural identity. This also contributes to cultural diversity and enriching the lives of those outside the



traditional communities themselves. These themes underpin WIPO's ongoing program on the IP protection of traditional cultural expression/expressions of folklore.

Many African countries' copyright laws provide for the protection of expressions of folklore in recognition that traditional creations merit protection as intellectual assets. The Bangui Agreement of the *Organisation africaine de la propriété intellectuelle* (OAPI) provides a regional system for folklore protection. African countries and organizations are leading participants in the work of the WIPO Intergovernmental Committee (see page 18) exploring how to effectively protect, among other things, expressions of folklore and traditional or cultural expressions.

Governments are increasingly aware of the importance of the IP system in relation to the cultural industries and as a revenue-generating tool, and are constructing the necessary national infrastructure to enable the benefits of the system to be realized. For example, the Copyright Society of Malawi (COSOMA) – which, among other things, collects and distributes royalties to its membership of over

1,000 authors and composers – was funded by the government from its creation in 1992 until 1998, when it was able to become self-financing. Using its distribution figures for the banderole stickers (see WIPO Magazine July-September 2002) used to distinguish between genuine and pirated music cassettes as a basis for an estimate on domestic music sales, COSOMA calculates that, between 1999 and 2001, over three-quarter of a million US dollars was distributed to rightsholders in this sector.

Targeting partnerships

Partnerships are a major element in the successful leveraging of IP in many developing countries. Collaboration can be between the public and private sectors (see article page 10), such as government support for R&D and assistance to small and medium-sized enterprises (SMEs) in their efforts to commercialize national innovation, as well as with international and regional bodies. This includes support from international governmental organizations for na-

tional initiatives as well as joint ventures, licensing agreements and other forms of collaboration with international private sector companies.

Other activities designed to create a favorable environment for innovation to flourish, include such initiatives as the *Fond d'aide à la promotion de l'invention et de l'innovation* (FAPI) set up by OAPI to promote innovation among African SMEs and to assist them in the protection of their IP assets. FAPI currently operates within OAPI and caters to SMEs and inventors from the 16 OAPI member States. It seeks to contribute to the economic development of OAPI Member States by supporting the commercialization of innovation and providing specialized services, both technical and financial, for potential investors, inventors, researchers and start-ups. FAPI is now fully functional with national focal points in each of the OAPI Member States (see www.oapi.wipo.net/projetfapi.html).

Similar organizations, concerned with creating a fertile environment for the economic exploitation of IP assets, have also been set up on a national basis; Senegal's *Agence sénégalaise pour l'invention technologique* (ASIT), is a notable example.

Conclusion

Throughout the African region, innovation and invention are receiving increasing recognition for their ability not only to ease and enhance daily living but also to function as an effi-

Public outreach – explaining the “why” and the “how”

Public outreach to increase awareness of the potential of the IP system, allied to an infrastructure that provides a user-friendly system – plus a good dose of individual determination – can help innovators themselves bring their products to market.

Mr. Abdellahi Ally, a Mauritanian inventor, did just that. Mr. Ally asked for information on how to protect and commercialize his invention, a novel procedure for making date preserve, and received assistance from the Mauritanian Ministry of Industry, OAPI and professional advisors that enabled him to patent his invention.

Patent protection boosted the confidence of potential investors and helped him to obtain financial support from banks and find partners interested in marketing his product. This led to a continuous increase in production, as well as his receipt of several prizes, including the first prize in the National Invention Fair in 2000, a gold medal from the Food and Agriculture Organization of the United Nations (FAO) on World Food Day that same year and the prize for the “best invention likely to interest the international market” at the second African Invention and Technological Innovation Fair. Mr. Ally is now planning to market his product abroad, in particular in date-producing countries such as Morocco, Algeria and Tunisia. He is considering granting licenses to allow production to be undertaken by companies already established in these countries. He is currently working on creating a suitable trademark for his product.

UNIVERSITY-INDUSTRY PARTNERSHIPS: FINDING THE RIGHT BALANCE

cient tool for economic growth. From a pilot silk project based on the cocoons of various subspecies of *Gonometa* worms, which has triggered a return to the dying art of hand spinning, to production of a pump powered by children at play, via the invention of an efficient cost-effective way of obtaining accurate CD4 white T cell counts – the people of this vast continent are leveraging ancient knowledge and skills to create and innovate in new fields.

In looking with “new eyes” at their intellectual assets, which often have been left untapped for commercialization, African countries are increasingly recognizing why and how it is important for them to protect and exploit these assets through the IP system.

The case studies in this article indicate that the mere existence of an IP system does not bring immediate results. Economic growth through the strategic use of the IP system will happen only if governments, partners and other stakeholders work together with creators and innovators to integrate IP into development policies and into individual business and economic activities. WIPO, along with its own partners and stakeholders, seeks to ensure that, through informed and skilful use of the IP system, its benefits are made available to all.



Technological innovation, fueled by government-led research and development (R&D), is a driving force for industrial growth and enhances a nation's competitive advantage. Universities are among major players in the innovation system – both in research and in training skilled personnel. They have the potential to act as strong drivers of growth in the knowledge economy. Consider one example: in the United States of America (U.S.) 73 percent of the research papers cited in bio-industry patent applications were written by scientists working in universities or government or non-profit organizations (source www.bio.org/laws/impact.html).

To enhance economic growth, it is crucial to transfer the knowledge generated in universities and government-funded research institutions to business and industry for commercial exploitation. Such transfer usu-

ally requires industry to license the patents granted to universities and research institutions. The resulting university-industry partnership through the transfer of intellectual property (IP) rights can result in significant economic benefit for countries and their people.

Governments are increasingly recognizing that it is not enough to fund public research organizations (PROs) and allow the research to be placed in the public domain. Private ownership and commercial interests provide a strong incentive to research. Technology transfer from universities to industry is encouraged when universities are allowed to patent and license the results of their research to industry. This results in a “win-win” situation for both PROs and governments. For PROs such transactions yield licensing and royalty revenues, more resources for research, and greater exchanges be-