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The Role of Nigerian Patents Law in Biotechnology Transfer

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Abstract
The advancement in technology, particularly in unraveling the biological intricacies of nature has brought about development of new products and processes useful to human, animal, plants and the environment. Biotechnology is an invention in its own right and patents law protects and makes available details of such invention. Patent system is concerned with transferring biotechnology from the industrialized nations to the less industrialized nations. Effective biotechnology transfer is enhanced and maintained by adequate facilities and sophisticated technology know-how, and patents law that conforms with the technological realities of the time. Nigerian as a developing country lacks adequate facilities like laboratories, good research and development policies, technological know-how and adequate patents law for protection of inventions.
Keywords: Biotechnology, Patents, inventive aclivity, bimolecular processes, Invention, law.

1. Introduction

The need for patents law in the transfer of biotechnology cannot be overemphasized. A good and adequate patents law that protects inventions to meet the technological realities of the time must be present for there to be effective biotechnology transfer. Such law should eliminate newness as a requirement for patentability and include distinctiveness. Biotechnology holds great hope of enriching both developed and developing countries. Hence developing countries should avail themselves of the opportunities of reaping the benefits of biotechnology.

Many relevant technologies are protected by patents right, the recognition of which is an aspect of technological transfer. Patent system promotes the progress of science, hence patents right should be widely applicable to inventions inorder to forestall reduction in technology transfer. In Nigeria, patents right do not apply to all inventions that it should apply to (Patents and Designs Act 2004). This is capable of frustrating indigenous inventive activity, as it puts local inventors at a disadvantage when compared to their foreign counterparts in the industrialized nations, hence reducing the economic benefits of the country.

2. Meaning of Patent

Patent is a government issued grant which confers on the inventor the right to exclude others from making, selling, using or offering for sale, or selling the invention for a period of 20 years, measured from the filing date of the patent application. Patent protection for Nigeria patent extends only throughout Nigeria and its territories and possessions. The Patents and Designs Act does not provide for the meaning of patent. Rooney (1999) defines patent as an exclusive right officially granted by government to an inventor to make or sell an invention. In the words of Okejiri (2008), a patent is a legal document granting its holder the exclusive right to control the use of an invention, as set forth in the patent's claims within a limited area and time by stopping others from among other things, making, using or selling the invention without authorization.

Patent law concerns new industrially applicable inventions. It also reserves very special and powerful mode of protection for an invention to meet requisite standards (D.I. Bainbridge 1999). Typically to get a patent one must have invented a new technology. However, each country has its own laws governing patents so that the rights and requirements of patents differ from one country to another. The international Law that regulates patent includes the Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement. This international instrument has some of its provisions incorporated into our domestic law on patents. The extant Nigerian Law that regulates patents is the patents and Designs Act.

Interestingly, a patent is granted under the law to, protect an invention that is new or essentially better in some way than what was made before, or for a better way of making it. Newness under Nigerian patent law is universal, meaning that the invention must not have been made available to the public in whatever way or anywhere or at anytime before. This requirement reduces technology transfer and affects negatively our economic development. It is trite that newness in our law be replaced with distinctiveness so as to enlarge the scope of patentable subjects and thus enhance and encourage biotechnology transfer. Patents right protection is of tremendous importance to technicians, technologists, medical scientists, researchers, university teachers, physicists, biologists, chemists, agriculturalists, pharmacists, engineers and other professionals.

3. Biotechnology

Biotechnology is an advanced technology that applies industrial and scientific techniques in the exploitation and modification of plants, animals and biological processes. It is essentially a multidisciplinary area including microbiology, biochemistry, molecular biology and molecular chemistry: Additionally it provides new ideas and techniques applicable to agriculture, pharmacy, medicine and engineering.

Simply put, biotechnology is technology based on biology (Biotechnology Industry Organization 2014). Biotechnology is the use of biological processes, organisms or systems to manufacture products intended to improve the quality of human life (Whatls.com 2014) . According to the New International Websters Comprehensive Dictionary of English Language (2004), it is the application of industrial techniques for the exploitation of biological processes. Further, in the words of M. Robinson (1999) biotechnology is the use of living organisms (e.g. bacteria) or the enzymes produced by them in the industrial manufacture of useful products, or the development of useful processes e.g. in energy production, processing of waste, manufacture of drugs and hormones.

Biotechnology harnesses cellular and bimolecular processes to develop technologies and help improve our lives and the health of our planet. Biological processes of microorganisms have been used for several years to make useful food products, such as bread and cheese and to preserve daily products (Biotechnology Industry Organization 2014). Importantly the earliest biotechnologists were farmers who developed improved species of plants and animals by cross pollination or cross breeding respectively. However, in recent years biotechnology is more encompassing.

Biotechnology encompasses everything from the technology of bread-making to that involved in the production of human insulin from a bacterium induced to take up a non-bacteria gene and produce the protein coded by that gene. Its history dates back centuries. The recent technology developments in genetic engineering, enzyme technology and fermentation technology are often called the new biotechnology. New biotechnology is typically a science-led technology, in the sense that most of the inventions and process and product innovations have emerged from breakthroughs in scientific and technological research undertaken in universities, research institutes and industrial research and development departments (Chikaire et al 2012).

There is no gainsaying that modern biotechnology provides technologies for fighting and curing rare diseases (for example Ebola Virus Disease (EVD), currently ravaging some parts of West African Countries), fighting poverty, feeding the hungry and making available more efficient industrial and manufacturing processes. Biotechnology, like other technologies is subject to abuse and misuse, hence the enactment of legislation restricting and banning certain programs and processes, such as human cloning and embryonic stem-cell research. In essence, biotechnology is applied scientific knowledge with a problem solving intent. It is used to refer to genetic engineering technology for the 21st century.

3.1 Significance of Biotechnology

The significance of biotechnology is multifarious and they include:

a) Production of High quality plants**:**
   Biotechnology brings about plants improvement, for there is production of transgenic plant varieties, draught and disease resistant plants .
b) Livestock Improvement**:**
   There is livestock improvement, for new vaccines are produced for livestock diseases. DNA vaccines have been developed for rinderpest, cowdriosis and foot and mouth diseases (Chikaire et al 2012).
c) Production of highly improved nutritional plants:
   Biotechnology has enabled scientists to produce highly improved nutritional plants. Vitamin A, iron contents etc of plants has been highly enhanced (Chikaire et al 2012).
d) Reduction in intensity of the use of energy and materials:
   It contributes to the reduction in intensity of the use of energy and materials (Chikaire et al 2012).
e) Elimination of major diseases traits and consequent increased productivity of plants and animals:
   Biotechnology employed in agriculture and agroindustries have drastically eliminated major disease traits and thereby increasing productivity of plants and animals.
f) Facilitates the use of renewable energy resources:
   Biotechnological processes and products present the ability to use renewable energy resources and to recover reusable or marketable by-products in the processing industry, thus increasing the productivity of all energy and materials inputs through ‘maximum recycling’ and minimum effluents.
g) Modification of Genetic Make-up of oganisms:
   The genetic make-up of plants and animals can be modified by either insertion of new useful genes or removal of unwanted ones. It also changing the way plants and animals are grown, boasting their values to growers, processors and consumers (US National Science and Technology Council 2010).
   In summary, modern biotechnology provides so much facilities and opportunities for the improvement of products qualities, nutritional plants and animals, and economic benefits.

3.2 What is Genetic Engineering

Genetic engineering is the technique of removing, modifying or adding genes to a DNA molecule in order to change the information it contains. By changing the information, genetic engineering changes the type or amount of proteins an organism is capable of producing. In the words of Thesaurus, genetic engineering is the

development and application of scientific methods, procedures, and technologies, that permit direct manipulation of genetic material in order to alter the hereditary traits of a cell organism or population (Thesaurus 2014). It is also the technology entailing all processes of altering the genetic material of a cell to make it capable of performing the desired functions such as producing novel substances (Biology online 2014).
Genetic engineering through transgenesis is used to give a plant or other animal positive characteristics and to eliminate undesirable characteristics.

3.3 Biotechnology Transfer
Biotechnology transfer is the transfer of scientific and industrial techniques and knowledge generated and developed in one place to another in order to achieve some practical end. United Nations Conference on Trade and Development (UNCTAD 1990) defines biotechnology transfer as the 'transfer of systematic knowledge for the manufacture of a product, for the application of a process or for the rendering of a service'. To Anderson (1989) biotechnology transfer occurs when a country acquires, imitates or adopts biotechnology developed elsewhere.

4. Patents law and Biotechnology Transfer

Patent law has a profound influence on the transfer of biotechnology. Patents on inventions greatly add to the information available for innovation through the description of the invention in the patent application. Biotechnology (genetic engineering) is an invention in its own right, and patent law makes available the details of such inventions. Hence the publishing of an invention gives researchers and the public at large immediate access to such information for study and use. The wide availability of such vast information spreads and widens technical knowledge and encourage investment, which create and maintain employment for all.

The patent system has been claimed to be one of the ways of facilitating the transfer of technology from the industrialized nations to the less developed countries. It is by no means the only way in which this can be done. Not every technology is patented, however, for patenting to be successful there is need for the transfer of unpatented know-how along with the technology covered by the patent (Date-Bah 2012).
There is no gainsaying that an effective patent regime facilitates the transfer of technology from well endowed to the less privileged countries as the transferors of such technology are assured adequate protection of their rights in the transferring country. The underlying goal of a good patent system is the encouragement of development and growth. Patents law aims at protecting specific commercial and technological interest through the grant of inventions.
Patent is one means of protecting inventions, especially from private research and development. This patent is regulated by patent law which operates within each country. The need for globalization and harmonization of intellectual property rights, patents rights inclusive led to the introduction of Trade-Related Aspect of Intellectual Property Rights (TRIPS) Agreement 1994. This International Agreement provides a unified law and minimum standards for member states.
The TRIPS Agreement harmonizes and globalizes the entire body of intellectual property law. However it also has important provisions on technology transfer and they include Articles 7 and 27.
Article 7 of TRIPS Agreement recognizes and stipulates the role of technology in the socio-economic welfare thus:

> The protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producer and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations.

Article 27(1), further provides inter alia that:

> Patents shall be available and patents rights enjoyable without discrimination as to the place of invention, the field of technology and whether products are imported or locally produced.

The implication of the above provisions is that TRIPS Agreement has not only globalised patent protection to member states, but has also included all fields of technology in patent grant. This assertion was supported by Kur (20008) when he stated that the contending issue as it may affect Nigeria is that, before the emergence of TRIPS Agreement, member countries excluded some fields of technology from patent grant which most developing countries took advantage of and excluded food and pharmaceutical products from patentability in other to make their prices competitive and affordable. However with such reservations now disallowed, the developing countries have no option but to grant patent in these areas as well. Patent grant brings about monopoly of the patented invention.

It is pertinent to point out that the main objectives of Article 7 of TRIPS is the assumption that both the inventors and users enjoy certain amount of leverage. Also the developing countries, including Nigeria that need technology will benefit a great deal. Article 27 (1) of TRIPS Agreement grant patentees the monopoly of importing their products into developing countries, because foreign patentees usually prefer to manufacture their products outside and import them into the patenting developing countries and sell. The issue, addressed here is that developing countries like Nigeria should not give or be given equal treatment in intellectual property matters with nationals of developed countries because of their low technological capabilities (Kur 20008). This is because developing countries lack the necessaries for the creation of inventions, such as sound technology base, adequate technological know-now, laboratories facilities, good research and development policies etc. Developing countries need special treatment as an encouragement, so as to feel that they are really participating in the international patent system.

Be that as it may, many relevant technologies are protected by intellectual property rights, particularly patent, such that the recognition of these rights become an aspect of biotechnology transfer. Patent grants encourage investments by private sector, especially for an easily copied invention. Patents also encourage access to inventions produced elsewhere. This is particularly important to developing countries, like Nigeria. The presence of strong and effective patent system brings about the dissemination of information, provides an incentive to invest in the development of new products and processes which will eventually fall into the public domain.

4.1. Effect of S. 1(4)(a) Patent and Designs Act on Biotechnology Transfer in Nigeria.

Section 1(4)(a)of the Patents and Designs Act was partly adopted from Article 27(3)(b) of TRIPS Agreement into our law. It provides thus:

> Patents cannot be validly obtained in respect of plants or animal varieties, or essentially biological processes for the production of plants or animals (other than microbiological processes and their products).

The above provision excludes from patentability varieties of plants or animals or essentially biological processes for the production of same, but does not exclude micro-biological processes for products of such processes thereof.

The issue that immediately comes to fore is the distinction between 'essentially biological processes' and 'microbiological processes'. To Kur (2008), under the concept of 'essentially biological processes', classical plant breeding methods would be excluded from patentability, but genetic engineering processes and technique would be patentable. He quickly added that, the difference between the two concepts lies only in the degree of technical intervention, scientific growth and industrial, capacity or intervention in natural traits of plants and animals.

It is worthy of note that the Patents and Designs Act did not provide for the meaning of the two concepts, biological process and microbiological process. New International Webster's comprehensive Dictionary (2003) defines biological process in patent law as a means of effecting a result produced by biological research and practice. And 'microbiological process' as a means of effecting a result gotten through scientific study of the structure, development, function and mode of action of micro-organisms, as bacteria, viruses, molds etc, especially with regards to their significance in health and diseases.

A further appraisal of S. 1(4)(a) of Patent and Designs Act and other paragraphs of article 27 of TRIPS Agreement, seems to contravene the basic tenets to which patent laws and TRIPS regime are based, which aim at globalizing and universalizing technology. This is contrary to developing countries zeal for sustainable development. Africa which is the least developed continent, is one of most richly endowed in biological resources (Fagboh 2000).

However, many countries have objected to the patenting of living organisms or naturally occurring materials. The African sector are of the view that substances and processes that occur in nature are discoveries and not inventions and consequently not patentable (Robinson 1999). However, it is my humble view that only human beings should not be patented, every invention made by man that is not against public order and morality should be patented, including all plant and animal varieties, in other to create incentives to scientist, so as to be eager to carry out research and development. At last the patented inventions will fall into public domain and available to all for use. Therefore, s. 1(4)(a) of the Patent and Designs Act should be completely expunged or amended and modeled to be in tandem with modern technology, beacause its provision is an obstacle to patenting and transfer of some aspects of biotechnology.

It is an obvious and a notorious fact that Nigeria modeled its Patent Law (S.1(4)(a) of thePatents and Designs Act 2004) in line with Article 27 (3) (b) of TRIPS Agreement and after that of Britain. Britain has long modified its patent law to replace novelty with distinctiveness, so as to meet the realities of the time, Nigeria should follow suit. Adequate legal protection is needed to encourage the high-risk investment involved in research and

development (R & D) in biotechnology, particularly in genetic engineering, so as to enhance biotechnology transfer.

5. Conclusion

Technology has always been important to the economic well being of any nation. In the 21st century biotechnology has generated interest, as well as concern, hence transfer of biotechnology is widely discussed and accepted in international economic relations and applied across several sectors of development. Biotechnology is used in third world countries, Nigeria inclusive, to enhance agricultural productivity , create employment and thus reduce poverty, improve food security and promote the use of natural resources.

However, the lack of professionals, sophisticated equipment, relevant infrastructure, inadequate national legal instruments on patents rights and financial support widen rather than bridge the gap of research and development in biotechnology between industrialized and developing countries. Inadequacy of patent law discourages private and public partnerships. On the other hand, the presence of a strong and effective patent system will bring to fore multifarious benefits such as providing incentives to invest in the development of new products and processes; thus encouraging biotechnology transfer.

Patent system in Nigeria has not really been able to protect as many inventors as it should because obtaining patent is expensive and takes a long time. The system favours large wealthy corporations more.

Consequently, it is my view and recommendation, that the Patents and Designs Act should be amended to meet the realities of the time so as to enhance technology transfer. The patent system should be made less expensive by the government. Inventors should be given incentives for their inventions as an encouragement. The necessary linkages to facilitate the transfer of biotechnology from developed countries to Nigeria should be put in place by the relevant agencies, departments, and ministries of the government, while vigorous research and development in biotechnology should be encouraged in the country.

References

Agreement on Trade-Releted Aspects of Intellectual Property Rights 1994

Anderson, M. (1989) 'International Technology Transfer Agriculture' *Agro.Info. Bulletin*, Aug., 571- 572

Bainbridge, D. I. (1999) *Intellectual Property* (4th ed.) Edinburgh: Financial Times Pitman Publishing, (Chapter 3).

Biotechnology Industry Organization (2014), 'What is Biotechnology' (Online) Available http://www.bio.org/articles/what-biotechnology (11 March, 2014).

Biology online (2014) 'Genetic Engineering', (Online) Available http://www.biology-online.org/dictionary/exenetic_engineering (September 12, 2014).

Chikaire, J., et al (2012)' 'Agricultural Biotechnology and Bio-safety Tools for Attaining, Food Security and sustainable growth in Nigeria', *Continent Journal of Agricultural Science,* **6**(1), 14- 16.

Date-Bah, S. K. (1994), 'R&D, Biotechnology and Technology Transfer (2012) *NLIPW Patents Law,* **1**(2), 1-4.

Fagboh, D. L. I. (2000) 'The Dialectics of Biosphere Protection and the All Model Law' *LASU LJ* ,**4,** 222 -223.

Kurr, J. J. (2008) "Globalization of Intellectual Property Rights and the Regime for the Protection of New Plant Varieties: A Nigerian Perspective' *Journal of Public and Private Law Benue State University, Nigeria,* **1**(1) 217-231.

Okejiri, E. C. (2008) 'Patent Search and Drafting'; *A Paper Presented at a Workshop for Intellectual Property and Technology Office (IPTTO) and Research Community at NAU, Awka,* I- 3.

Patents and Designs Act Cap P1 Laws of the Federation of Nigeria 2004,

Read, A. W. (2004) *New International Websters Comprehensive Dictionary of English Language* (Encyclopedic Edition) Florida: Typhoon International Corporation, 804-1005

Robinson, J. (1999) 'Ethics and transgenic Crops,' *Electronic Journal of Biotechology,* **2**(2) 396-397

Robinson, M. (1999) *Chambers 21st Century Dictionary,* Edinburgh: Chambers Harrap Publisher, 133

Rooney, R, *et al* (1999) *Encarta World English Dictionary,* London: Bloomsbury Publishing PLC, 1382.

Thesaurus (2004) 'Genetic Engineering, defined', (Online) Available http://www.dictionary.reference.com/ngineering (September 17, 2014).

UNCTAD (1990) 'Transfer and Development of Technology in Developing Countries', *A Compendium of Policy Issues. Geneva.*

U S National Science and Technology Council (2010) 'Biotechnology for the 21st Century New Horizons',(Online) Avialable Http://www.nal.usda.gov/bic/bio21 (May 9, 2014)

Whatls.com, 'what is Biotechnology' (Online) Available http://www.whatis.techtarget.com/definition/biotechnology (March 11, 2014).

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