

IMPLICATIONS OF PLANT BREEDERS' RIGHTS ON FOOD SECURITY OF DEVELOPING COUNTRIES: THE CASE OF ETHIOPIA

By

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Abstract

Trade Related Intellectual Property Rights (TRIPS) entitle ownership of intellectual property to private innovators. Plant Breeders' Rights, one aspects of TRIPS, empowers private enterprises to invest in the agricultural sector. This has the tendency to limit farmer's access to important farm inputs. Note that currently there are about 1.1 billion people living below one dollar a day and these people are dependent on agriculture for their livelihood. The situation is even worse when private companies develop new varieties on products of export interest to developing countries. It is equally a big challenge when such technologies are utilized to products/crops that are the staple food of the poor. Moreover, farmers are also under threat from multinational companies that tend to introduce genetic use restriction technologies (GURTS) and it is also very challenging to force these companies to invest in the patent granting countries through compulsory licensing so as to facilitate technology transfer. In the case of Ethiopia for its export, medicinal value and food items for its communities should protect plant varieties of its interest from patentability. In addition, articles that provide more rights to farmers should be introduced in to the country's plant breeder's act. Hence, the country has to avoid patentability of plant breeders' right and stick to the Sui generis type protection. Further, International negotiation positions have to be developed based on its export interest and TRIPS flexibilities and limitations.

Key words: Food Security, Sui generis, Monopoly, TRIPS, Patent, Compulsory Licensing, Investment and competition

1. INTRODUCTION

'Trade related intellectual property rights(TRIPS)', which entitles intellectual property(IP) to private innovators¹covers protection in the area of patents, trademarks, industrial design, copyrights and related rights, geographical indications, trade secrets and confidential information, plant breeders right and layouts and integrated circuits. The benefits accruing to developing countries from the various categories of IP rights are debatable. This debate is largely due to the countries stages of economic development which suggest that most of the economies in developing countries are factor/resource driven and lack innovative capacity². Indeed, the relevance of IP protection for economies engaged in trade of primary products which involve very low innovative capacity is questionable. However, some aspects of IP are still important for such countries as well.

TRIPS have far reaching implications for health, food security, biological resources, traditional knowledge and environment which are concerns of developing countries. This

¹ See preamble of TRIPS agreement.

² Michael E.Porter and Klaus Schwab(2008), the Global competitiveness report 2008-2009, World Economic Forum, Switzerland, Geneva.

paper critically examines plant breeders' rights, one aspect of TRIPS, and its implications on food security and biological diversities of developing countries with particular reference to Ethiopia. Plant breeders' rights pave the way for private enterprises investment in the agricultural sector. The question arises when such rights deprive farmers' access to important farm seeds and farm inputs (such as fertilizers and pesticide). The situation is even worse when private companies develop new varieties on products of export interest and food items of developing countries. The world wide trend also suggest such danger as six multinationals already control 96% of global market for patented genetically modified crops, 70% of global pesticide markets and 30% of the global seed markets³. Given these challenges developing countries have looked with some suspicion at plant breeders' rights.

This paper is structured as follows: In section 2 the methodological approach on how to conduct this study will be presented. Section 3 provides literature review and empirical evidences of TRIPS. Section 4 examines the impacts of plant breeders' rights on food security in Ethiopia. Section 5 and 6 proposes domestic policy and strategy, and also international negotiation positions respectively. On the final part conclusions and recommendations are presented.

2. METHODOLOGY

Secondary data's such as Ethiopian plant breeders' act, TRIPS agreement, UN comtrade, WTO and International trade center data base are used. Different authors and institutions' publications on TRIPS and food security are also consulted. Analysis of international trade policy, trade law and micro economics are used. In general, simple statistics and graphs are used in both descriptive and analytical methods.

3. LITERATURE REVIEW AND EMPIRICAL EVIDENCES OF THE STATE OF TRIPS

Much has been written about TRIPS in recent years by many scholars and international organizations. Most of these studies share common views as they agree on the side effects of TRIPS for developing countries. Stiglitz and Charlton (2005), Trebilcock and Howse (2005), Matisushita, J.Schoenbamu and Mavroidis (2006), Hoekman and Kostecki (2001), Fink and E. Maskus (2005) and Action Aid (?) emphasized the *need to address the health issues and biodiversity* concerns in developing countries. Further the implementation and enforcement problems facing developing countries are huge. As it stands, TRIPS lacks protection for traditional knowledge and biodiversities of developing countries. The transition period of 2016 under Doha for access to essential medicines is also not enough to address the health challenges facing developing countries currently.

The importances of IP protection for non innovative economies are generally questioned. Particularly, developing countries have comparative disadvantage in technological innovation. Hence, the *protection of intellectual property rights requires weighting between innovation and imitation*⁴. For example, economic growth of Japan in the 1960s and 1970s

³Action Aid(?), Trade Related Intellectual Property rights, available at, http://www.actionaid.org.uk/doc_lib/53_1_trips.pdf visited on April 2, 2009.

⁴ See Trebilcock and Howse(2005), the regulation of international trade , Routledge Taylor and France Group/Landon and Newyork.

was largely attributable to technology imitation and adaptation⁵. Thus, technology adaptation and imitation at early stages of economic growth are unavoidable.

For some scholars IP is not a pure private property. Governments have to finance or support the innovation of new knowledge. Intellectual property is considered here as a *public good* in which its protection constitutes only a part and not the most important part of what we may call our knowledge and research system⁶.

Others even argue that, *requiring all countries to adopt intellectual property protection rights might not result in pareto- efficiency*. The marginal increased returns, from poorer developing countries, to the holder of patent is not adequate enough to promote further innovation while the losses incurred by these countries as a result of restrictions on imitation would probably be very high⁷.

According to Philippe Cullet (2003), plant breeders' rights have far reaching implications on food security, environment, human rights and biodiversity of developing countries. Others also argue that "the impact of TRIPS on farming and food security are equally comparable to the threats it poses on health with multinationals controlling 70 % of the patentable food staples"⁸.

Adoption of stronger IP regime has not resulted in similar outcome for all countries. While South Korea, Taiwan and China registered an increase in patenting after their IP regimes had been strengthened *no such effect was observable in Mexico and Chile which are characterized by a very low level of inventive activity*⁹. Thus, strengthening IP regimes in the LDCs might not result in any increase of innovative capacity.

The implementation and enforcement costs of IP rights are very high. For example, the cost of upgrading intellectual property laws and enforcement cost Mexico over US\$ 30 million¹⁰, and the World Bank's estimation of total losses arising from implementing TRIPS would be as high as 10.1% of South Korea's GDP, 1.4% of China's GDP and 0.6% of India's GDP¹¹.

*China, Kyrgyzstan, Cambodia and Nepal faced a big challenge, during their accession period, as they were requested to adopt International Union for the Protection of New Varieties of Plants (UPOV) Convention (TRIPS plus)*¹². In other words, these countries were requested to adopt a stricter plant breeders rights than the one stipulated in TRIPS.

⁵ See M.Borrus and J.Niosi respectively cited in Trebilcock and Howse(2005), the regulation of international trade , Routledge Taylor and France Group/Landon and New York.

⁶ See Stiglitz and Charlton (2005), Fair Trade for All, how trade can promote development, Oxford University Press.

⁷ See Allan Deardorff , cited in Trebilcock and Howse (2005), the regulation of international trade , Routledge Taylor and France Group/Landon and New York.

⁸ Action Aid(?), Trade Related Intellectual Property rights, available at http://www.actionaid.org.uk/doc_lib/53_1_trips.pdf visited on April 2, 2009.

⁹ See Aaditya Mattoo and Robert M.Stern(2003), India and The WTO, a co publication of the World Bank and Oxford University Press

¹⁰ Finger, J.M. (World Bank) and Schuler, P. (University Of Maryland), (1999), Implementation of Uruguay Road Commitments: The Development Challenge, paper for WTO/World Bank Conference on 'Developing Countries In A Millennium Round', Geneva, September, cited in Action Aid(?),Trade Related Intellectual Property rights, available at http://www.actionaid.org.uk/doc_lib/53_1_trips.pdf visited on April 2, 2009.

¹¹ World Bank (2002), Global Economic Prospects and Developing Countries, quoted in http://www.cepr.net/relative_impact_of_trade_liberal.htm, cited in Action Aid(?),Trade Related Intellectual Property rights, available at http://www.actionaid.org.uk/doc_lib/53_1_trips.pdf visited on April 2, 2009.

¹² Policy Brief(2003), UPOV: Faulty Agreement and Coercive Practices.

The experiences of India suggest the tough works expected from developing countries. For the last eight years India identified local traditional varieties and excluded over 200,000 plants and animals from the list of patentability¹³. Hence bold and imaginative leadership is crucial to overcome the danger of biodiversity loss in the future.

4. IMPLICATIONS OF PLANT BREEDERS' RIGHTS ON FOOD SECURITY OF ETHIOPIA

The world leaders in their 2000 summit set eight goals to alleviate the problem of poverty in the world. One of the Millennium Development Goals (MDGs) is 'eradication of extreme poverty and hunger'. Such objectives cannot be achieved without ensuring food security worldwide. The plant breeder's right, which is part of TRIPS, limits farmers' access to seeds and other important farm inputs. Thus, it contradicts with MDGs. This part of the paper discusses, within the context of TRIPS, plant breeder's rights and its implication for food security, competition and investment.

4.1 Food Security and Plant Breeders' Rights

There are about 1.1 billion people who live on less than one US dollar a day of which 430 million in South Asia, 325 million in Sub-Saharan Africa, 260 million in East Asia and the Pacific and 55 million in Latin America¹⁴. The majority of these people depend on agriculture for their livelihood. For example, in Ethiopia agriculture constitute 50% of GDP, over 80% of both employment and export earnings. The majority of the poor in Ethiopia lives in rural areas and affected by recurrent drought and famine. For example, in 2002/2003, as a result of drought, agricultural GDP declined by 11.4% resulting in overall GDP growth of -3.3%.

Ethiopia has many biological diversities to protect and benefit from. The country is endowed with estimated plant varieties of more than 6500 species out of which 14% are used as medicinal plants and 10-12% is endemic plants¹⁵. These plant varieties include; various *vegetations*, *cereals* (barley, wheat, sorghum, teff, finger millet, oats and rice), *oil crops* (gomenzer, noog, linseed, sesame, sunflower and crambe), *pulses* (faba bean, field pea, chick pea, enset, anchote, etc), stimulus industrial crops (coffee, chat, cotton, vernonia, castor bean and kenaf), spices, aromatic and perfume plants and forage species¹⁶.

These plant varieties are the main source of income and food to the Ethiopian people. They are also the main sources of medicine as 80% of human population and 90% of livestock in Ethiopia rely on traditional medicine¹⁷. Hence, they are used to keep healthy labor force in the rural areas and constitute income generating means for the rural society. These varieties are also the main inputs for the agro processing industries of the country.

¹³ Science and Development Network, available at <http://www.scidev.net/en/science-and-innovation-policy/intellectual-property/news/india-protects-traditional-medicines-from-patents.html>, visited on April 1, 2009.

¹⁴ see Joachim von Braun, M. S. Swaminathan, and Mark W. Rosegrant(?), Agriculture, Food Security, Nutrition and the Millennium Development Goals.

¹⁵ See Institute of Biodiversity of Ethiopia, available at <http://www.ibt-et.org/biodiversity/fgbs/medicinal-plants-field-genebank>, visited on March 26, 2009

¹⁶ Leipzig(1996), Country Report to the FAO International Technical Conference on Plant Genetic Resource, Plant Genetic Resources Center, Addis Ababa, Ethiopia, April 1995.

¹⁷ See Institute of Biodiversity of Ethiopia, available at <http://www.ibt-et.org/biodiversity/fgbs/medicinal-plants-field-genebank>, visited on March 26, 2009

Among the exportable items, the important commodities for Ethiopia include coffee, tea, mate and spices (HS 09), oil seeds, oleaginous fruits, grain, seed, fruits, etc, nes (HS 12) and vegetable plaiting materials, vegetable products (HS 14). For example, these products account for 41%, 16.6% and 8.2% of total export of the country with Bela Balasa revealed comparative advantage of 227.6, 62.3 and 1778.7 in 2006 respectively¹⁸. Amongst these leading export items, except product code HS 12, the country has a convincing comparative advantage in the real world in HS code 09 and HS 14. In other words, these plants are the source of comparative advantage of the country in its external trade.

The agricultural sector in Ethiopia is mainly dominated by small households. They are mainly engaged in the cultivation of cereals, pulses, stimulus plants, oil crops and vegetables. Among cereals; barely, wheat, maize, sorghum and teff are the most important food items. Particularly, teff is endemic to the country. It is almost part of the staple food of the people and the bi product is useful for animal fodder. It is highly related to the culture of the people and specific to the soil. Geographic indications are vital instrument to protect Ethiopian teff and other related endemic products of the country from piracy. The country already faced threat of bio-piracy in this important plant. The other important food product, particularly to southern Ethiopia is Enset. It is the culture of the society to ferment the root plant (false banana) for up to 10 to 15 days and make their own food. It contributes to food security of the people and needs to be protected. But, there is no immediate danger as to bio-piracy in the area of Enset. Nonetheless, it should be good to have awareness on the possibility of bio-piracy and private sector intervention in this important plant.

The genes of some of the Ethiopian plants are used for further scientific research. For example Ethiopia is considered to be the home of barley diversity and it is used as a source of genes for barley yellow dwarf virus resistance, high lysine, drought resistance and also resistance to diseases such as powdery mildew, leaf rust, spot blotch, septoria, loose smut and barley stripe mosaic virus¹⁹.

Protecting these varieties from patentability should be a crucial goal of Ethiopian authorities. The accrual of benefits to multinationals at the expense of Ethiopian farmers was evident from the Stur bucks –Ethiopian organic coffee case. Trademarks and geographical indicators can be used positively to increase the value of Ethiopian products in the international market. Particularly, as Ethiopian coffee is organic with its own flavor, trademarks significantly improve the price of the product. It is a mark, symbol, logo etc that distinguish Ethiopia's coffee from the rest of other coffee varieties produced in different parts of the world. Geographic indications can also possibly used as Ethiopian coffee are specific to the soil and other natural factors such as geographic boundary of production. For example, one cannot find the taste of Harar coffee elsewhere. Thus, trade mark and geographic indications can possibly used together to protect Ethiopian coffee and other similar agricultural products of the country.

According to Art.27 (3b) of TRIPS plant varieties are protected either through patents or by an effective Sui generis system or by any combination of the two. The economic and legal implications of TRIPS in relation to plant breeder's right depending on the two types of protection will be explored in the following section.

¹⁸ International Trade Center (2006), available at <http://www.intracen.org/mat/Default.aspx> visited on April 2, 2009.

¹⁹ Leipzig(1996), Country Report to The FAO International Technical Conference on Plant Genetic Resource, Plant Genetic Resources Center, Addis Ababa, Ethiopia, April 1995.

a) Economic implications if plant varieties are patented

The first economic implication of TRIPS is on the price of the patentable plant variety. If based on Art.27 (3b) patents are given to multinational companies the price of new varieties will go up. This could emerge from two sources; (i) there are technologies embodied in the new varieties implying higher wages and cost of capital, (ii) due to the fact that they are patented. These two can affect farmer's easy access to important farm inputs such as seeds, fertilizer, pesticides etc. Particularly, if farmer's income does not increase proportionally with the increase in price of these inputs, the purchasing power of farmers will decline that further has negative impact on retarding economic activities of other sectors.

Second, it limits farmers' freedom of choice. Farmer's right to save seeds from their production and use for the next farming can be limited. Third, similar to the first argument, TRIPS creates a monopoly power over plant varieties. Obviously, the monopolist charges prices above the marginal cost and supplies the market with limited farm inputs. Definitely, the deadweight losses to the farmers are higher which brings in the issue of competition that will be discussed later on in this paper.

Fourth, TRIPS creates farmers dependency on new varieties produced by seed companies. The possibilities of losing the traditional seed varieties are higher as TRIPS forces farmers to buy seeds from the owners of the new variety every time in their farming activities. Fifth, TRIPS retards the export earning capacity of LDCs when patents are acquired by multinational companies on products of export interest to such countries.

b) Economic implications if plant varieties are protected by Sui generis

Sui generis provides members with flexibilities. Here members can use measures which they considered as appropriate. It could take the following form²⁰:(i) members can protect both the rights of farmers and plant breeders, (ii) acknowledge and reward the role of farmers as the fundamental basis for modern agriculture and plant breeding technology, (iii) develop a system wherein farmers and breeders have recognition and rights accruing from their respective contribution to the creation of new varieties and (iv) recognition of the right of local communities control over their biological and traditional resources, etc.

This type of protection has the following positive economic implications:(i) It regulates the monopoly power, (ii) It reduces farmers dependency on seed companies, (iii) Farmers get a relatively cheaper access to new seed varieties, (iv) It increases freedom of the farmers, (v) It creates a more harmonious agricultural system as it balances the rights of farmers and breeder's and (vi) It constitute an incentive to conserve the environment

Ethiopia has these types of plant breeders' rights. It balances the rights of both farmers and breeders. However, (i) the definition of new plant variety lacks the durability criteria; (ii) the words and verbs used to protect farmers' rights are not strong. For example, Art.6 of the act says the following may be exempted from plant breeders' rights. The verb 'may' is loose and not enough to protect farmers' rights, (iii) the farmers right in part five lacks substantive elements such as joint ownership of IP rights, criteria for royalty sharing, the rules of origin requirement and the like.

²⁰ Policy brief(2003), UPOV: Faulty Agreement and Coercive Practices.

c) Legal implications of plant breeders' rights

Developing countries are not forced to adopt stricter rules and regulations on trade related intellectual property rights. So members may: (i) adopt own sound legal system and practice, (Art.1 (1)), (ii) protect and enforce IP rights in a manner conducive to social and economic welfare, (Art.7), (iii) adopt measures necessary to protect public health and nutrition, (iv) promote public interest in sectors of vital importance to their socio-economic and technological development,(Art 8(1)), (v) adopt unique and effective Sui generis in protecting plant varieties,(Art. 27, 3b) and (vi) put limited exceptions on the exclusive rights conferred by patent,(Art.30). Hence while adopting plant breeders' rights developing countries are free to develop their own legal system, which is compatible with their socio economic development, and technology transfer and adaptation. However, the interpretation of some of the provisions creates loophole to these flexibilities. For example, what constitutes *sound legal system and effective Sui generis* are not clear.

The other legal implications of TRIPS in terms of plant breeders right emanates from the difficulties of enacting and enforcing the patent right or Sui generis. TRIPS require the law, administrative and institutional measures to be in place. As already stated, Ethiopia has adopted plant breeders right in its proclamation number 481/2006. However, the implementation capacity gaps remain there. The administrative forum for complaint and the enforcement mechanisms are lacking. The judicial order which includes the compensatory mechanisms, measures to stop infringements and criminal penalties are also at their rudimentary stages. Moreover, the knowledge about patent rights and other IP categories are also missing to undertake just prosecution and investigations.

d) Other implications of plant breeders' rights

The introductions of new plant varieties are external to the surrounding environment. The environment reacts to the new varieties and their effect on human being, soil and the already existing plants are not clear. When multinational companies develop new plant varieties there are associated spill over benefits and costs. Amongst the spillover benefits, the new technologies that can possibly used by other firms, the improved seed varieties and farm inputs may be mentioned. The costs, on other hand, include environmental pollution, health problem and loss of traditional varieties etc. While these costs to the society was not clear the benefits to the plant breeders is obvious. So, TRIPS does not address the social costs borne by societies and no regulatory mechanism was introduced in TRIPS to compensate the social cost (for example, the environmental side effect of new seed varieties).

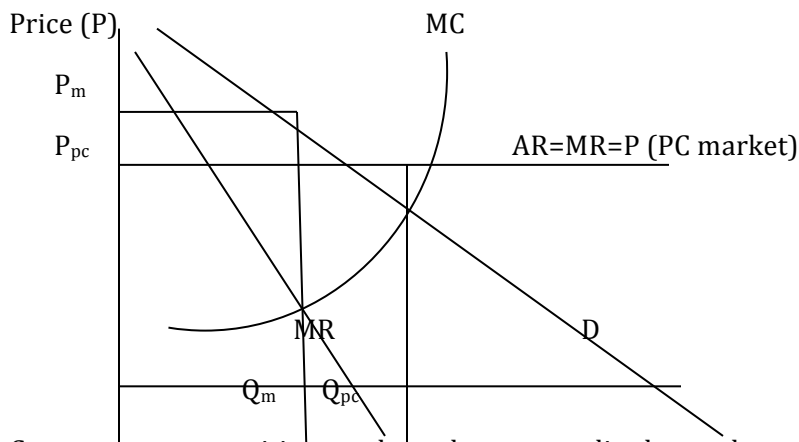
So any plant breeders' rights act adopted by developing countries should have to take in to account the environmental, health and indigenous biodiversity loss resulting from new plant varieties. For example, the loss of traditional plant variety and its replacement by new one contributes towards environmental imbalance. Thus, there should be regulatory mechanisms that overcome such a problem.

4.2 Plant breeder's rights and Competition

The issue of competition arises in TRIPS because it empowers the right of property to private owners. In essence TRIPS encourages monopolies all over the world. In particular,

Article 28 restricts the use of IP without the consent of the owner. Hence, the central issue becomes *how to foster competition policy on individual's resource?*

Such monopoly power is created particularly if the producers of new innovative technologies are very few or one. For example, the major share of markets for GMO (96%), Pesticides (70%) and Seeds (30%) are controlled by six multinationals²¹. Monopolies generally lead to deadweight loss as they set prices above marginal cost and supply the market with lower level of outputs than that prevails in perfectly competitive market. The following diagram illustrates the price setting mechanism of the monopolist in the new plant varieties which indicates a sub-optimal outcome than what would have been under perfectly competitive conditions.



Contrary to competitive markets the monopolist has a downward sloping demand curve. This enables the multinationals to charge different prices for different level of new plant varieties they produce. Hence, marginal revenue (MR) is lower than the demand curve. Any profit maximizing firm sets its MR equal to marginal cost (MC). Thus, the multinational companies with monopoly power supply the market with output (Q_m) at price of P_m . The price is well above MC and the perfectly competitive price (P_{pc}). The output is also by far lower than what would prevail under competitive environment.

To address this imbalance, TRIPS faced with dual objectives: (i) ensuring private property rights and (ii) regulating monopoly rights emanating from IP. TRIPS regulates monopolies from IP rights in three ways: (i) when the right holder do not sufficiently supply the market through compulsory acquisition, (Art 31 TRIPS), (ii) to avoid free riders by regulating unfair commercial practices²², and (iii) regulation of the conduct of IP holder. For LDCS the use of

²¹ Aventis, Dow, Dupout, Mitsui, Monsanto and Syngenta are the biggest multinational companies in these sectors.

²² Unfair commercial practices includes, mislabeling, false indication of origin, false packaging, misspelling, use of marks closely resembling one another etc.

compulsory acquisition to break down monopoly is difficult. It requires the capacity to produce the product through a third party. There are no such strong third parties in LDCs that are capable of producing the patented products. The human mind and the machineries required to manufacture the product are lacking.

As part of its limitations, TRIPS fails to regulate the monopolies created as a result of plant breeders rights. Here we talk about the power between the seed companies and the poor farmers. TRIPS have forgotten the billions of poor in developing world that are far from the negotiation arena. Big companies in the developed world threaten to introduce genetic use restriction technologies (GURTs), which are technologies to be put in seeds so that seeds convert to weeds the following year.

4.3 Plant Breeders' Rights and Investment

The relationship between TRIPS and investment arises when you question the benefit of awarding patent right. Thus, what is the benefit of giving patent right within a given domestic territory? For any intellectual property a country imports, it meant an employment in the country of IP holder. So, why not obliged the patent holder to come and invest in the patent granting country?

Investment is one of the means through which technology can transfer from developed countries to developing countries. TRIPS allow the use of compulsory licensing for the production of the patented product in the patent granting countries. It involves giving the right to locally produce the product through a third party. However, it is difficult for LDCs to use such regulatory measures as strong third party capable of producing the product nonexistent. It is largely because of lack of the necessary human capital and capital goods in such economies.

The local working of patent, which is part of Paris convention, is not part of TRIPS. This is a measure that obliges the patent holder to invest in the patent granting country. Hence, TRIPS is not compatible with the economies of developing countries. This is due to measures that encourage access to the patented product and investments in the sector are not easily used in the context of developing countries.

5. DOMESTIC POLICY STRATEGY

Intellectual property should be part and parcel of development strategy to increase the values of the country's products in the international market. Plant varieties which made up the Ethiopian biodiversity need to be protected and farmer's access and right over them also need to be preserved. The domestic policy strategy should start from giving due consideration to what the country has. Ethiopia's adoption of plant breeder's right is a good step but farmers right needs to be further integrated in to such a system. For example, to introduce legal provisions relating to joint intellectual property rights ownership those derived from plant species originating from Ethiopia, prior informed consent of the local communities and rules of origin requirement for the propagating material, etc.

Second, we need to address factors reducing the quality and quantity of plant varieties of the country. Challenges to plant conservation in Ethiopia, among other things, constitutes low level of income, deforestation, lack of knowledge/awareness, weeds and soil erosion, etc. For example, deforestation of forests is estimated to range from 150,000 to 200,000 ha per year²³ which erodes the various plant species of the country. To address these and related problems, there should be: (i) improved forest and soil conservation methods, (ii) encourage and stimulate alternative non agricultural income generating activities in the rural area so that farmers can not destroy forests, (iii) increased farmers access to finance by introducing micro finance schemes and establish institutions in the rural areas, (iii) enhance awareness or capacity building activities on the importance of plant and forest conservation, (iv) introduce alternative energy sources in rural areas, (v) use animal dungs as compost to improve soil fertility and (vi) increase farmers involvement in the preparation of plant breeder's right, adoption of policies and legislations.

Third, overlap in the areas of conservation and development of agricultural genetic resources should be sorted out and streamlined. There should be strong coordination between different ministries, institutions, civil society, private sectors and the Ethiopian Intellectual Property Office.

Fourth, to strengthen the agricultural research institutes in the country. Research centers on plant breeding such as Adami Tulu and Debreziet Agricultural Research Centers have to be provided with technical assistance and capacity building programs.

Fifth, currently the country has the Wendo Genet and Bale Goba gene banks. Such initiatives are of a great significance to the country in preserving the precious plant species varieties the country has and the government needs to strengthen such activities and monitor counterfeit in the sector. Six, to introduce stricter customs regulations at ports and borders to effectively control plant smuggling. Such measures help the country protect its plant varieties from bio-piracy.

6. INTERNATIONAL NEGOTIATION POSITION

Ethiopia is in a process of accession to WTO and any countries joining WTO is requested to bring its IP regimes consistent with TRIPS. In light of the discussion presented in this paper, Ethiopia's negotiation position should focus on areas of its export interest and TRIPS flexibilities and limitations based on our biological diversities. To design ways in which to optimally use the flexibilities in TRIPS to the benefits of the poor and to negotiate on the possibilities of amending TRIPS to accommodate legal provisions which ensures the right of farmers and the sovereign right of developing countries over biological diversity.

6.1 Position to be taken as far as TRIPS flexibilities are concerned

1. The main TRIPS flexibility relating to the plant breeders right is the protection of such rights by Sui generis. Since Ethiopia already has plant breeders right act of 2006, which is more or less a Sui generis type. As this act incorporates the rights of both farmers and breeders rights the country has to stick to it. However, in that act the country has to

²³ See Institute of Biodiversity of Ethiopia, available at <http://www.ibt-et.org/biodiversity/fgbs/medicinal-plants-field-genebank>, visited on March 26,2009.

introduce in a very clear manner the rights of farmers. For example, substantive provisions on joint ownership of IP rights derived from the countries bio-diversity, criteria for sharing royalties, prior consent of the local community, etc should be included in the act.

2. Not to accept the protection of plant breeders right through patent. As mentioned earlier in this paper, the protection of plant breeder's right through patent deprives the right of farmers to save, re sow, exchange or sell the seed varieties acquired from seed companies. Patents only protect new invention involving innovative steps and having the characteristic of industrial application. Hence, it does not give any chance for the farmer's right to be protected.

3. Art.1 (1), Art.7 and Art. 8 give more freedom for developing countries to adopt plant breeders' rights compatible to their socio economic development levels. So, Ethiopia needs to maximize the benefits of adopting intellectual property rights that is compatible to her socio economic development and technology transfer.

6.2 Positions to be taken as far as TRIPS limitations are concerned

1. To resist any agreements insisted by developed countries such as TRIPS plus. The accession process of NEPAL is a typical example in which case USA tried to force NEPAL in to UPOV. As per TRIPS there is no obligation to accept something which is not there. Like the Nepalese government which was aided by civil society groups successfully resisted UPOV, Ethiopia has to resist if similar case arises during its accession process.

2. TRIPS Art. 27 provides for the exclusion of patentability based on public health, moral, etc. For countries such as Ethiopia, it is impossible to isolate food security from the public sphere. Above all, there is no way to separate food security and health as well. Thus, exclusion of patentability based on food security concerns should be introduced in to TRIPS.

3. To negotiate on ways to introduce joint ownership of IP and criteria's for sharing royalties emanating from plant varieties originating from local communities in Ethiopia. In this regard to join other developing countries on how bio diversities effectively used for the development of their economies, and

(4) In TRIPS there are no special and differential treatments and the technical assistance is limited to implementation and enforcement issues. So, the country may seek aid for trade to develop its capacity in the field of intellectual property.

6.3 Positions relating to Ethiopia's export interest and food items

(i). To acquire geographical indications and trade marks for its major export items such as Coffee

(ii) To acquire geographical indications for important products peculiar to the culture, soil of the country having clear boundary of production. Examples are teff and Enset. Since some of the products, such as Enset, are not under immediate danger, it needs cost benefit analysis before seeking geographic indications. However, awareness creations on the threat of loss of such product are very necessary.

(iii) To work closely with other developing countries to protect plant varieties of export interest from patentability.

7. CONCLUSIONS AND RECOMMENDATIONS

A clear insight in to the arts of TRIPS and its relationship with investment and competition policy has been made. TRIPS faced with a dual objective of protecting private IP ownership and regulating the monopoly power ensuing from such ownership. Plant breeder's rights, one aspect of TRIPS, and its implication on food security and the relation it has with investment and competition were assessed. Plant breeder's rights protection through patent limits farmer's access to important seed varieties. As farmer's lives are dependent on seed inputs restriction and on its use leads to food security problem. Currently there are about 1.1 billion people living below one dollar a day of which the majorities are dependent on agriculture for their livelihood. Hence plant breeder's rights constitute a food security issue for billions of poor in the developing world.

As far as Plant breeder's right and the rest of IP categories are concerned, TRIPS lack regulatory measures through which patent granting country force the patent holder to invest in its country. Although compulsory licensing can be used to regulate monopolies, it is difficult for LDCs to execute them. Farmers are under continued threat from multinational seed companies due to the latter's capacity to introduce GURTs. This technology allows the multinationals to control the market and reduce the supply of new varieties.

The legal applicability of TRIPS is limited to its members. However, countries in the accession process such as Ethiopia are under big pressure to bring their domestic regulations in conformity with WTO rules and regulations. The evidence from Nepal, China and Colombia reveal the challenges ahead in the international negotiation arena as far as plant breeder's rights are concerned. To overcome the multidimensional problem relating to plant breeders rights a systematic approach to TRIPS based on the domestic policy strategy and international negotiation positions illustrated in this paper are recommended.

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