Biodiversity Protection, Farmers and Breeders Right

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Lecture 22 : Biodiversity and Interface with IPR

Welcome to week 5. In this week, we will take up the interface of biodiversity and intellectual property rights. In the lecture 1 in this week, we will look at the overlap of biodiversity with respect to the general aspects of IP. These are the concepts that we will cover. How does IP and bioresource interface? What are the predominant forms of IP relevant? How do we look at the developments in relation to biotechnology and the aspect of intellectual property rights over derived by resources? From the context of the TRIPS to CBD to Nagoya Protocol and today where we see the emerging context of IP and bioresources. These are the keywords for the lecture.

So, let us look at the fundamental context of how biodiversity is relevant from the point of view of products. Bioresources have a lot of value with respect to development of products and services and hence hold a lot of economic value which can be witnessed by the increased growth of the agriculture and the biotechnology industry. There is a growing market demand for products. World over there is a lot of research and development in the network mode as well on how one can utilize the potential of bioresources and the knowledge associated with it.

The need for improving plant varieties is not only from the context of improving food security, but also their ability to adapt in different climatic conditions. It is in this context we look at how the increased appropriation of bioresources in the form of intellectual property rights has happened. While keeping that in mind, we also need to look at how the conservation objectives and the IP objectives are delicately balanced. To remind ourselves on what is put up at the World Bank website, nature does not need us, but we need nature. So, how do we look at the context of IP and bioresources? It is at this stage we need to understand the inherent dichotomy of purpose.

When we look at the conservation objectives vis-a-vis the objectives of IP, trade mandates the need for increased IP protection, so that products can be exclusively sold in certain markets. On the other end, we look at the context of conservation to be very important from the point of view of the goals with respect to biodiversity. We also have the competing interest of provider countries, particularly those which are bioresource rich, the mega biodiverse countries who are also rich in the knowledge associated with the use of bioresources. So, they are TK provider countries and then we have TK recipient countries who are bioresource poor, but technology rich. So, it is in this context that we need to

really look at the aspect of genetic resource protection on one end and the IP appropriation.

So, we move from the common heritage to the identification of new entitlements in relation to derived bioresources. While we are well aware that significant amount of agriculture is dependent on the use of germplasm in relation to wild species and land raises, most of the developing countries are the ones which harbor a lot of genetic resources. 1980s became a very critical time point because of the advances of biotechnology, the ability to modify genes, the ability to identify and pinpoint changes to the genomes began. It is at this stage, the relevance of products that arise out of biotechnology became very important from the IP perspective. And that is where we start beginning to realize the concerns on one end seeking intellectual property rights and the other end looking at ethical considerations in relation to the area.

The notable case of Diamond versus Chakrabarti way back in the 1980s highlights how the area of biotechnology opened up in the case of intellectual property rights. When Anandamoham Chakrabarti engineered a bacterium of the Pseudomonas genus by introducing four different genes which work together to successfully break down oil into simple fatty acids. This invention was put to the test of whether this was manufactured at a time when biotechnology was not considered to be coming up with manufactured articles compared to the erstwhile area of mechanical and the other areas. For the first time in the US as an appeal from the United States Patent Office, the court of the Federal Circuit decided it in favor of Anandamoham Chakrabarti that the modified bacterium is not only a manner of manufacture, but also can come under the context of composition of matter which is interpreted under 35 USC 101 which is the United States Code for Patents. So, this case opened up the floodgates to the increased intellectual property appropriation in relation to biotechnology.

So, we see the shifting post as you can see in this illustration, traditional plant breeding to genetic engineering to synthetic biology, all the way through we are looking at improving traits. And today we also have a minimal bacterial genome which is also filed as a patent at the USPTO. So, therefore, we are looking at modified genes to genomes. While this is so, the International Treaty for Plant Genetic Resources for Food and Agriculture article 13 12.3 clearly points out for the purposes of food and agriculture, no intellectual property rights should be sought so that food security can be secured.

And this is where we also look at the protection of farmer rights where farmers can freely use the seed material. And therefore, article 9.3 addresses the aspects of intellectual property rights where farmers have several rights covered under that. From the international standpoint, we have two developments, one the 1992 Convention on Biological Diversity which made conservation and global obligation to its members, and

on the other hand 1994 TRIPS agreement which made IPA obligation to its member countries. So, here we see these two having different objectives, one which is trade related aspects of IP, another which is looking at the objective of conservation, sustainable use and access and benefit sharing.

So, particularly from the context of IP, it is relevant to bring your attention to article 2 where actual or potential value of bio resources has been considered. And it is at this potential use is where we are concerned about the future IP that can be sought on bio resources. And hence, as we see through the developments in CBD, the work of the working group on ABS in the interpretation of article 8J and 15 together to the development of the Nagoya Protocol where the international framework for access and benefit sharing has been spelled out. We will come to those aspects a little later. From the standpoint of the TRIPS agreement, patents shall be available to inventions from all areas is what is mandated under article 27.

Now, article 27 (2) provides an option to member countries to exclude out certain subject matter. And in this case, we are talking about the exclusion of plant life, animal life and human life not to be covered under IP. Therefore, as such these are not subject matter of patents. And then we come to the context of 27(3), wherein member countries when it comes to intellectual property aspects for protection of plant varieties may either follow a patent system or a sui generis system. And this is where we see post the implementation of the TRIPS agreement, member countries have chosen either patent protection or an effective sui generis legislation.

So, when we compare the objectives of the CBT to the TRIPS, we see certain differences. In fact, under the paragraph 19 of the Doha Declaration, the TRIPS council took up the aspect of comparing or understanding the relationship between TRIPS and the CBD. So, both these have their own individual objectives, they run parallel. While the TRIPS recognizes intellectual property rights as private rights, in the context of CBD, we look at bio resources and the access to bio resources will need to be looked at from the perspective of the three principal objectives of the convention. And there is a specific role for the state to promote conservation objectives, whereas in the case of the intellectual property rights, they are private rights.

So, predominantly the fabric of TRIPS does not deal with any aspect of prior informed consent or the benefit sharing part of it. No specific recognition to the rights of indigenous or local communities is there with respect to the TRIPS agreement. So, we see inherent differences with respect to the objectives of each of this. In fact, this is the one which became the starting point for the WIPO fact finding missions to take up the cause of understanding how the context of intellectual property rights have to be understood with

respect to genetic resources and TK. And given that there is an expansion of the context of genetic resources and TK under the WIPO, to today what we see as a possible effort to be realizing a treaty with respect to TK.

The working group on ABS and the expansion of the context of ABS under the discussions at the various COP meetings, 2010 was the important standpoint where the Nagoya protocol was announced which spelt out the international framework for access and benefit sharing with the aspect of monetary as well as non-monetary benefits. Intellectual property rights are also an important aspect of this. The possibility of intellectual property rights or joint IP ownership on derivatives of the bio- resources have been also realized. So, it is essential to look at the implementation of Nagoya as well in the context of IP and bio resources. The WIPO, the World Intellectual Property Organization has also covered the context of IP in its mission from the point of view of traditional cultural expressions, identifying an expansion of disclosure requirements, the examination of defensive protection when it comes to intellectual property rights.

The WHO has also specifically examined the context of traditional medicine and intellectual property rights and announced the traditional medicinal strategy. So, we come to all in all the predominant forms of intellectual property rights that are relevant to buyer resources and IP context are what you can see in this illustration patents, plant variety protection and geographical indications. When we come to the context of patent protection, we are looking at patents to be offered for products and processes of both which are eligible passed through the criteria of patentability and disclosure norms. The IP system can be positively used for the protection of products that arise out of bio-resources in terms of licensing out inventions which are of value. And there are several patents being filed in every jurisdiction with respect to novel bioproducts, novel enzymes, modified genes, enhanced expression of genes, antisense expression all these are interventions coming out from the area of biotechnology.

To illustrate to you what is the representative subject matter when it comes to patents in this area is what you see in this illustration. A whole series of them with respect to proteins, to modified genes, to ESTs, to antibodies, to several other interventions in the area. Today, the area of biotechnology has grown such that we now can also look at some sustainable solutions with respect to where we have the need for instance the case of artificial photosynthesis, synthetic biology, gene editing. So, there is enormous scope for intellectual property in the area of buyer resources use. This is one illustration to indicate the number of species that have been utilized with respect to developing inventions.

On the other area, we are looking at the several technology areas under the IPC which are covered with respect to IP and bio resources. So, the area of patents continues to grow in

nature and scope in the context of bio resources and IP. Another area which is very relevant is the area of geographical indications. The indications which are specific to geography, which indicate the goods coming from those regions which are either natural, manufactured, and their characteristics attributable to that particular geography. Some examples are shown in this illustration, and it is found that predominantly GIs have at the background some basic bio resources.

In the making of traditional handicrafts, foodstuffs, traditional textiles, it is bio resources that are used. And hence, this is one form of IP which provides some sort of protection to the use of bio resources and importantly also the associated traditional knowledge. World over many countries have enacted GI legislations, and this is one form of IP which is relevant to bio resources. In the context of geographical indications, we also have traditional knowledge being documented. Traditional knowledge represents human intellect with generations have been using with respect to either a product or a skill, and this gets documented whenever a GI is documented.

We also have known of cases of biopiracy with respect to turmeric, neem, basmati, and many other examples. And it is important therefore, to look at the context of how the knowledge associated with bio resources is currently protected. We will take up the aspects of biopiracy in the further lectures. The third predominant form of IP that is relevant is plant variety protection. As mentioned earlier, the need to recognize improved varieties has been recognized, and 27(3) of the TRIPS agreement provides two options of protecting plants in the existing patent legislation. Since the US does that under plant patent act 1930, not all aspects of plants are protected. The processes of developing transgenics can be protected under patent legislation. So, one can have process patents under the patent act, but if you want to take a protection for the transgenic plant or the improved plant, then a separate legislation of the plant variety legislation is desirable. So, many member countries have enacted post TRIPS separate legislations for protection of plant varieties.

In the case of India, the protection of plant varieties of Farmer Rights Act 2001 is relevant, in which you can have the protection of plant varieties, novel plant varieties, farmer varieties, extant varieties, and essentially derived varieties. In the case of essentially derived varieties, one can look at the protection of mutants, the case of transgenic plants. So, this is one legislation which is protects the IP particularly in relation to improved plant varieties. And so, if one is looking at the context of IP and bio resources, one needs to look at this entire paradigm of different types of IP and how they can be relevant to bio resources. In conclusion, we have understood that bio resources have a lot of value to the market in terms of bringing in products and services for human necessities as well as used to in routine life.

Using the conservation objectives and intellectual property rights is a subject matter of international fora and continues to be a debate. From the context of IP and bio resources, the work done under the TRIPS agreement, CBD, the Convention on Plant Varieties, the work of WIPO, WHO, whichever interfaces with the area of IP and bio resources is very relevant. The predominant forms of IP relevant to bio resources are patents, GI, and plant variety protection. In the subsequent lectures, we will take up more specific aspects of each of these. These are a few references to the lecture. Thank you.