

## New Paradigms for Protection of Biodiversity

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The most successful bioprospecting venture was established in 1989 in Costa Rica. Interestingly, the distinction of being a forerunner in exploiting bioprospecting goes to India. In 1979, a full decade before Costa Rica, India established the Tropical Botanic Garden and Research Institute (TBGRI) at Trivandrum. Yet, the TBGRI venture with the Kani tribes, which had the potential to become a beacon of bioprospecting success, is showcased as the exemplar of failure. In this era of trade regime, this paper asserts, bioprospecting ventures are important tools for developing countries. Countries like India and organizations like TBGRI should learn from their failures and take leadership roles to evolve techniques to maximize returns by using biodiversity resources. With this as the background, this paper propounds three theoretical models for assigning bio-value to biotechnology products.

**Keywords:** Biodiversity, bio-prospecting, Merck-INBio, valuation of biodiversity

*Those who cannot learn from History are condemned to repeat it.<sup>1</sup> Those who fail to negotiate are condemned by History.*

The biggest achievement of the 20<sup>th</sup> Century is the expansion of the scope of property rights to accommodate intangible property, which in turn, facilitated a set of remarkable negotiations that altered the structure of international trade to facilitate globalization.<sup>2</sup> Ironically, though, the debate on trade and IP rights gained significance not because of the trade facilitated but because of the trade distorted from matters excluded from intellectual property (IP) regime. Harmonized laws, crafted solution to reduce international trade distortions, have resulted in minimum standards that force maximum levels of protection.

Nevertheless, nations differ on the question of what to protect as IP and how to protect IP.<sup>3</sup> Partly, the differences in the treatment of IP rights are attributable to a lack of clarity regarding the subject

matter eligible for IP protection (as opposed to the rights they embody). For instance, protection status for certain properties like genetic (biodiversity) resources recognized in the non-western parts of the globe has at best, remained moot. Developing nations have struggled to appreciate refusal by the modern western paradigm of property that fervently celebrates IP, to treat contributions that enable creation of such property, genetic resources, as a part of IP. Consequently, this era has also seen a push towards global recognition of newer forms of intellectual property right (IPR).

Yet, it is important to remember that developing nations have traditionally been suspicious of IP and indeed, would likely benefit from moderate rather than excessive IP protection. After all, in developing nations, like India and Brazil, IP laws historically played a limited role. Considering this *factum*, the reason why developing countries want IP to embrace genetic resources is unclear. If the goal is to create a return for local resources, holders of genetic resources do not necessarily require IP as a basic tool to structure a return regime for genetic resources. Developing nations should, instead, formulate innovative, alternative, effective tools that protect local resources. The objective of this work is to analyse instruments that developing countries can successfully use to create returns on local biodiversity resources.

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### Of Enablers & the Enabled

Between prospecting and applying technology, importance of biogenetic resources cannot be discounted. Technology, development and research are also important paradigms, but they are already well-recognized aspects of bio-prospecting. It is the *bio*-paradigm that cries of prospecting on the one hand and pirating on the other. The following discussion examines the *bio* paradigm of biotechnology in an effort to highlight a case for creating a value for biodiversity.

### Bio-Prospecting & Biodiversity

Bio-prospecting involves exploration of biodiversity for biological resource.<sup>4</sup> Biodiversity is explored or prospected to determine whether parts of it can be useful to mankind. The term biodiversity encompasses, 'the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems'.<sup>5</sup> A dozen countries, including Brazil, Colombia, Ecuador, Peru, Mexico, Zaire, Madagascar, Australia, China, India, Indonesia and Malaysia, are mega diversity countries ripe for bio-prospecting.<sup>5</sup> These countries account for 60 to 70 percent of the world's biodiversity.<sup>6</sup>

### Modus of Bio-Prospecting

Bio-prospecting is a three step process. Step one involves exploration, extraction and screening of biological diversity. Bio-prospectors collect plants and other organisms for testing bioactivity in exchange for a licensee fee.<sup>6</sup> Collection involves the process of removing a specimen of identified species from its natural surroundings.<sup>6</sup> Typically, numerous sample collections are identified and examined before identifying the right plant or chemical. Once a researcher identifies a plant with its medicinal properties, the collected plants and organisms are processed and their bioactivity tested.<sup>7</sup> Step two involves experimentation, appreciation of the resources and understanding the prevailing traditional knowledge over the resources. Step three involves using knowledge database over biological diversity from research and traditional sources, to create commercially valuable genetic and biochemical resources.<sup>7</sup> On an average, only one in about 10,000 chemicals derived from the mass screening of plants, animals and microbes results in a potentially profitable drug.<sup>8</sup> For example, the United States

National Cancer Institute screened over 35,000 plants and organisms for anti-cancer compounds between 1956 and 1976.<sup>9</sup> The programme was terminated in 1981 due to its failure to identify a greater number of new anti-cancer agents.<sup>9</sup> Thus, prospecting is a rigorous process with no guarantee of successful results.

### Issues from Bio-Prospecting

Protection of biodiversity in the wake of bio-prospecting raises multifaceted issues that could affect several future generations. First, bio-prospectors assert that they merely scout for natural genetic material<sup>†</sup> in the biological resource, which should be freely available. Biodiversity holders assert that traditional knowledge plays a role in improving the success rate for biotechnology by directing researchers towards particular chemicals in herbs, thus reducing the number of plants screened. The problem becomes exacerbated when the ultimate end-product of the research over the genetic material, is protected by IP rights and commercialized. Often, the IP rights over the product prevent the local communities from accessing it. At that point, local communities feel undermined and exploited.

Second, bio-prospecting is touted as an incentive for developing nations to preserve biodiversity while enhancing biotechnology.<sup>10</sup> The payment made for the right to access biodiversity is showcased as the incentive for developing countries to preserve their flora and fauna.<sup>6</sup> Developing countries dismiss the argument on the grounds that the payment levels are meager, especially when viewed in the light of the multi-billion dollar rewards that pharmaceutical companies reap.<sup>11</sup> Additionally, the payment made to the community or the governments in return for prospecting rarely results in the community protecting biodiversity.<sup>6</sup> Most of these communities are impoverished and lack basic facilities like food and transportation.<sup>12</sup> These communities are rightfully more likely to use the money for their community development. Furthermore, few countries with natural resources have national laws mandating restoration of areas depleted by bio-prospecting. For example, environmental protection is a Constitutional guarantee in India.<sup>13</sup> The Directive Principles of the Constitution mandates policies to 'protect and improve environment and to safeguard forests and wildlife of the country'.<sup>14</sup> Despite, separate legislations protecting wildlife and forestry,<sup>15</sup> until 2000, not a single piece of legislation addressed replenishing the

flora and fauna lost from bio-prospecting.<sup>16</sup> Even the Indian Biodiversity Act of 2002 is arguably a defensive policy primarily addressed for equitable sharing of benefits from bio-prospecting.

Third, bio-prospecting, being a process of extracting valuable chemicals from natural products, impacts the bio-equilibrium of the environment directly and indirectly. The discovery of chemicals with medicinal properties, in particular, varieties of plants, reduces the interest in the preservation of 'ordinary plants' for both the bio-prospector and the communities. Consequently, both holder and prospector parties prefer cultivating particular plants with identified chemicals to reap maximum commercial benefits. Any strategic cultivation or protection of plants will be targeted to profitable varieties. In most cases, other plants, including flora and fauna with as yet undiscovered properties, are destroyed. The agreement of the TBGRI with the Kani tribe in India, for instance, involved cultivation of one particular plant in the forest (to which the Indian forest department objected on the grounds that it could destroy the natural habitat.<sup>17</sup> It is perhaps impractical to assume that bio-prospecting nations and corporate houses using plant extracts to make potentially enormous profits will fund cultivation of anything other than profit yielding varieties. They are rarely concerned about aspects other than access to genetic resources. Likewise, 'access and benefit-sharing arrangement' negotiations rarely involve preservation of biodiversity destroyed by bio-prospecting. Unfortunately, biodiversity preservation is independent of cancer curing and the other wonder plants.<sup>6</sup> Ordinary plants and habitats are essential for the development of the wonder drugs.<sup>6</sup>

Impact of the environment notwithstanding, developing countries assert that biotechnology is a form of agricultural industrialization that has historically destroyed biodiversity by creating monocultures divorced from 'nature,' with unintended consequences such as soil erosion.<sup>6,18</sup> Supporters of the commercialization theory argue that biotechnology enhances agricultural productivity.<sup>19</sup>

The bottom-line is that developing as well as developed nations are seduced by the potential payoffs from cultivating profit yielding plant varieties. Consequently, there is rampant commercialization of biodiversity powered by the needs and creeds of both the developing and the developed nations. Hence, developing countries

which are interested in exploiting their natural resources should carefully determine best practices to further commercialization without compromising national objectives like biodiversity preservation.

### **Asymmetries and Current Trends in Bio-prospecting Agreements**

Structuring a viable solution for developing nations requires an understanding of how the current system works along with the benefits and disadvantages involved therein. In practice, bio-prospecting agreements tend to embody several asymmetrical terms. An agreement tends to include asymmetrical terms when parties posited in unequally bargaining positions negotiate. The asymmetry can result from extraneous factors such as poverty of the indigenous communities, financial position of the prospector, availability of low cost information about the use of plants and the communities' lack of information about the profitability of the genetic material. The section highlights two types of biodiversity agreements and demonstrates the damages that an asymmetrical biodiversity agreement can cause.

#### **Agreements Ignoring Biodiversity**

The first type of bioprospecting agreement pays the community but ignores biodiversity preservation completely and thus, fails the goals of the Convention on Biological Diversity (CBD).<sup>5</sup> For example, Shaman Pharmaceuticals Inc, an American corporation, collects plants for research after gathering information from indigenous healers in the rain forests.<sup>20</sup> The company researches plants used for medicinal purposes by at least three different communities.<sup>20</sup> Approximately half of the plants collected by Shaman's researchers return positive results in screening test.<sup>21</sup> Shaman pharmaceuticals brought two products to clinical trials within 24 months from using information about tropical medicinal plant species from local people.<sup>20</sup> The agreement between Shaman and the respective communities address the needs of the community only. The obligation of the community requires them to supply information about plants but does not extend to preserving biodiversity.<sup>20</sup> The agreement is commendable for Shaman's reciprocal arrangement with the community, which is done in three stages – short, medium and long term arrangements.<sup>22</sup> But, initiatives like providing infrastructure to the community facilitate bioprospector's access to plants without fully creating a procedure for biodiversity protection.

### Agreements Ignoring Community

The second type of agreement funds for biodiversity preservation but excludes the community that provides knowledge of plant's medicinal properties.<sup>9,23</sup> Such agreements ignore the communities' role – after all, the communities' cooperation and knowledge of plants are essential to preserve and prevent destruction of biodiversity. Even though this type of agreement provides for biodiversity preservation, it fails in achieving the objective because communities lacking the means for daily bread cannot be expected to have the commitment to channel scarce resources into preserving environment. Furthermore, process of prospecting is accelerated by local people's awareness of healing properties of plants which provide clues to the possible chemical compounds.<sup>24</sup> Agreements that ignore community exploit naivety of indigenous people to the benefit of the prospectors. They merely provide incentives to commercialize biodiversity and encourage continuous supply of chemical-yielding plants to the bioprospector.

The Merck-INBio accord provides a demonstration of an agreement prioritizing biodiversity preservation.<sup>25</sup> Merck, an American pharmaceutical company entered into an exclusive agreement with INBio of Costa Rica whereby the latter agreed to provide chemical extracts from wild plants, insects, and microorganisms exclusively for the former's drug-screening programmes.<sup>25</sup> Conservation of biological diversity is high on the agreement's priorities. The agreement obligates INBio to contribute 10% of its upfront payment from Merck and 50% of any future royalties to Costa Rica's National Park Fund specifically for the purpose of conserving biodiversity.<sup>26</sup> The primary asymmetry of the Merck-INBio agreement is that indigenous community of Costa Rica, whose knowledge is heavily relied upon, receives very little from the agreement. Application of knowledge of indigenous societies is absolutely essential to derive maximum benefit from biodiversity resources. Yet, indigenous communities, who form a vital part of region's geographic diversity, receive secondary treatment.<sup>27</sup> Merck uses locally trained people to locate valuable genetic material but unfortunately pays them at local rates. Using low-paid locals to facilitate agreements with potential billion dollar payoffs to the bioprospector remains an unacceptable feature of bioprospecting arrangements.

### Current Trends

Developing nations that allow bio-prospecting should use it to stimulate sustainable development. Commitment towards biodiversity preservation and local communities is the key to steer such agreements towards fulfilling national sustainable development goals. Costa Rica serves as a good example of a country that uses bio-prospecting to attain sustainable development.

When Merck & Co showed an interest to bio-prospect, the government of Costa Rica set-up INBio - Instituto Nacional de Biodiversidad.<sup>28</sup> INBio is a nonprofit organization formed in 1989 to preserve, scientifically classify, and effectively use Costa Rica's biodiversity towards sustainable development.<sup>29</sup> In establishing INBio and facilitating the Merck arrangement, the government of Costa Rica has exhibited a remarkable level of dedication towards using biodiversity as a means for sustainable development. In turn, experience has enhanced the confidence, the national government to bargain terms that benefit Costa Rica. For instance, INBio negotiated a royalty of up to 3% of worldwide sales on any drugs developed from the biological samples.<sup>30</sup> The requirement that royalties be paid on worldwide sales, rather than just sales in the US or Costa Rica, will prevent Costa Ricans from paying royalties on products developed from the INBio samples.<sup>29</sup> The world-wide royalty arrangement would help avoid mistrust between the parties at a later stage of the agreement. Should a blockbuster drug be developed from the INBio samples, the resulting royalty payments will greatly benefit Costa Rica.<sup>30</sup> In the past, Merck had developed successful drugs from biological samples like anti-parasitic veterinary drug, Ivermectin (developed from a microorganism native to Japanese soil)<sup>31</sup> which generated \$100 million in sales in 1991.<sup>30</sup>

Another notable term in the agreement requires the samples be tested in Costa Rica, in contrast to other bioprospecting arrangements where tests are conducted at the prospector's research facilities.<sup>25,29</sup> The local testing provision creates awareness in the region about research progress and facilitates equitable sharing of royalties. This equitable arrangement has fostered an amiable and functioning relationship between Merck and INBio, a highlight which has been distinctly lacking in other bioprospecting arrangements.<sup>31</sup>

Under the agreement, Merck is also required to establish a research facility and provide funds to INBio to supply instruction to native scientists and laboratory technicians.<sup>25,32</sup> Although Merck has invested only about \$135,000 in laboratory equipment<sup>33</sup> and trained about 30 Costa Ricans,<sup>31</sup> INBio has trained locals in parataxonomy to gather samples for Merck.<sup>31</sup> The parataxonomists are lay persons, often from rural areas.<sup>29</sup> INBio's training helps them to collect, catalog, and provide data for input into INBio's National Biodiversity Inventory and Information Management System.<sup>29</sup> Furthermore, INBio retains control of the samples and databases which can be used for future negotiations. Thus, the government of Costa Rica has taken steps to help the local communities.

The immense confidence that the government of Costa Rica gained from its experience went a long way in future negotiations. Thus, while renewing the agreement in 1994, INBio successfully bargained for more research funding, transfer of technology and training opportunities for Costa Rican scientists at the Merck facility in New Jersey.<sup>29</sup> Soon, Costa Rica also enacted a Wildlife Conservation law allocating responsibilities to specific agencies to negotiate strategic bioprospecting agreements to benefit both environment and economy.<sup>29,33</sup> Additionally, a Biodiversity Prospecting Program coordinates high-end tests at the University of Costa Rica to locate compounds for Merck.<sup>29</sup>

Unfortunately, not all developing countries even should show minimum commitment exhibited by Costa Rica towards biodiversity preservation and sustainable development. For instance, Brazil's Association for the Sustainable Use of the Biodiversity of Amazonia (BIOAMAZONIA) negotiated a three-year bioprospecting agreement with Novartis pharmaceuticals in return for \$4 million and a 1% royalty commitment from worldwide sales.<sup>29</sup> Unlike the Merck-INBio, this agreement does not require parties to use funds towards biodiversity preservation, nor does the agreement provide opportunities for Brazilian scientists.<sup>29</sup>

India's effort in bio-prospecting is yet another example of questionable commitment towards bioprospecting. The story from India, a mega-diversity country, involves the Kani tribe of Kerala whose knowledge was used to create a drug called *Jeevani*.<sup>34</sup> The highpoint of the agreement is to share 50% of the license and royalties with the tribe.<sup>34</sup> The

low point is that the sharing was done more as a charitable gesture in recognition of tribe's contribution without any policy or standardized structure for doing the same.<sup>34</sup> The shameful aspect of the agreement is the low royalty and license fee that TBGRI seems to have negotiated with Arya Vaidya Pharmacy (AVP), which is a private company. For instance, reports suggest that each tribal family earned merely about Rs. 8,000 on sale of leaves from the cultivation of the *T. zeylanicus* plant.<sup>17</sup> The Indian government seems to lack reasonable guidelines for such negotiations. For instance, it is unclear whether and what component of the royalty is for imparting knowledge about the plants (which is the most important property transferred in this case) and for the sale of the leaves. In fact, reports suggests that there was a lack of clarity on what constituted the *Kani Tribe* for a considerable period.<sup>34</sup> Similarly, there seems to be no reasonable study to estimate or project the drug's market potential, nationally and internationally. There is also no study discussing the existing potential AVP to effectively position the drug and whether the AVP would need more assistance to fully capitalize on ventures in the future. The lack of a uniform policy for such ventures reflects poorly on the Indian government and the TBGRI.

The various discussions above go to outline that ultimately, developing nations must realize that sustainable development can be achieved while simultaneously preserving biological diversity. Such a realization can help countries to strategically use bioprospecting agreements to further objectives of CBD.

### Valuation of Bio-Diversity Assets

The discussions above demonstrate that bio-prospecting is a by-product of mutual agreement between prospector and local communities or the government, as the case is. It posits negotiations as one key to success in bio-prospecting arrangements. Thus, bargaining positions are central to determining equities. The prospector seeks biodiversity material in order to create biotechnology by-products. By virtue of biotechnology assets being eligible for IP protection, qualifying by-products of bio-prospecting immediately generates a market value. In other words, IP protected products automatically embody a certain value and goodwill. Value is important because property theories tend to be value based. Measured in value terms, biodiversity's value in being the holder of the genetic material for use by prospectors cannot be discounted. So, the question for developing nations

should perhaps not be whether the genetic material is an IP. Instead, the question is determining the value in genetic materials – or, the *bio* value in biotechnology. While IP remains one method of generating value, countries need to realize that value can be generated without IP too.

Value of any property is ultimately a measure of need. Appreciating the extent of need is central to generating maximum value over any property, real or intellectual. Several so called ‘intellectual properties’ suffer in the market because it did not generate adequate need in the market. Abandoned trademarks, patents that are not renewed are all examples. In such cases, although the respective intellectual property offices may be arbiters of the existence of property, the lack of market need prevented the product from realizing its maximum value. Similarly, valuable IPs that are not marketed, may also not generate its full value. It goes to prove that a property has to be well-positioned in the market to realize its full value from the market need. Hence, merely granting a property status or generating a value disconnected with need also does not serve the objective of exploiting a resource beneficially. Thus, equation requires the holder of a property to work towards achieving twin goals of generating value and measuring need. The reliance of biotechnology over genetic materials creates ‘need’ and hence, generates a value for the genetic materials. It is up to the biodiversity holder to maximize upon the value during the course of negotiations. The following discussion highlights some models over which developing countries can further build to maximize the value of biodiversity resources.

#### **Prospect Based Model**

The prospect model provides for two levels of compensation. The first level provides for a base compensation for access to genetic resources. At this stage, need is marginal because complete information about the materials is unavailable to the bio-pro prospector. The second level of compensation is dependent on the market success or failure of the bio-pro prospecting venture relative to the extent of involvement. The success of this level depends on the extent of disclosure requirements that both parties agree to make during the course of the agreement. Thus, assuming the prospecting results in a drug that yields 100% profits (relative to the investment made for that particular prospecting operation – which would, in essence discount regular employee costs that are made generally by the corporation like regular

employment related costs, *etc.*), the bio-value of the compound would depend on several factors like importance of the bio-diversity resource for creating the drug, information imparted by the community, extent of effort by the prospector and type of information generated, methodology of prospecting and technology used for prospecting.

The prospect model works on the assumption that both parties to the bio-pro prospecting deal are working to maximize their financial prospects by exploiting the resources beneficially in the market. The model’s focus is not what is needed to keep the community (or the government, as the case is) happy but on the need of biodiversity materials to the prospector. Thus, negotiated royalty is independent of the levels of economic and/or social development of indigenous communities at the time of negotiations. Otherwise, bio-pro prospectors easily satisfy communities by building schools, a few roads or throwing community development ‘crumbs’ while carefully ensuring that billion dollar returns that keep investors happy are not disturbed.

The advantage of the model is that it eliminates deficiencies of the current models where only the prospector benefits from highest market price if the drug is successful. Under the prospect model, the negotiated price of the biodiversity can fluctuate upward based on the success or the failure of the compound.<sup>35</sup> By forcing prospecting company to provide data on screening programmes, expected levels of success in each stage of research and information about the on-going research,<sup>35</sup> both parties would benefit if the drug is successful relative to the extent of involvement.

#### **Information Based Model**

A more sophisticated version of the prospect model is on the lines proposed by Anthony Artuso.<sup>35</sup> Under this model, royalty payment would be streamlined depending on the outcomes of each stage of test result, thus generating a continuous range of values for both parties.<sup>35</sup> The prospector would be required to initially negotiate based on a prediction of the rate of success of the prospecting effort and typology of information that may be generated.<sup>35</sup> Further tests or trials performed over the compound would be like purchasing a call option.<sup>35</sup> If the results meet the expectations, then the increase in need for the biodiversity material proportionally increases the value of the option to proceed with further research

and development increases.<sup>35</sup> If the results are unsuccessful, value of return diminishes thereby affecting the option to go forward.<sup>35</sup> The benefit of this model is that it forces the 'researcher to think more systematically about the correlation between test results of compounds in consecutive phases'.<sup>35</sup> Further, in reassessing the need for biodiversity repeatedly, it provides an expected value for the compound at every stage of research and development. Notably, Artuso highlights that the model is focused more on pharmaceutical research and development. Perhaps, bio-values can be evaluated similarly depending on data like the type of research and type of knowledge that quickened a particular research phases.

#### **Contract Based Model**

The contract model which can be worked alongside the other models essentially recognizes that more information would help streamline negotiating mechanism. The model works on the assumption that, first, developing nations are committed towards biodiversity preservation and the local communities. Second, in order to fully benefit, developing countries should appreciate that bio-prospecting is a rigorous and risky process. Considering the risks involved, the prospector is usually unable to predict success when they enter into bioprospecting agreements. Similarly, return to the prospector is not immediate. Therefore, biodiversity rich countries are bound to create low-returns for themselves when they negotiate a total return payment at the beginning of prospecting venture without any connection to the level of success, like how it is currently done. Hence, the need for biodiversity holders to negotiate returns that takes into account risks and needs at every stage of the development process. In essence, this model lends information (like, disclosure requirements) that works the other models more efficiently by taking account of the increased value from the need.

Bio-prospecting agreements should incorporate four standard terms. They are: (a) allocation of funds towards biodiversity conservation, (b) allocation of funds towards community development of the locals that provide valuable information, (c) IP sharing/ownership and (d) local manufacturing requirement. The first two heads should be negotiated in return for the initial access to the genetic resources. The success of the initial testing creates a higher value (and need) which serves as the basis for the terms

relating to sharing of IP and incorporating a local manufacturing requirement which can result in transfer of technology and sustainable development, as envisaged in the Article 16-19 of the CBD. With respect to IPR, communities can share rights in IPs under different heads. IP may also be transferred from use of the name as trademark, or as part of geographical indicator of the resulting product. Communities that provide information about bio-genetic resources can share relative to the extent of their involvement, a portion of worldwide royalties on sales or, under some circumstances, become joint patent holders. Once the heads for sharing IP are determined, communities can structure several options to generate returns. Thus, communities can seek specific infrastructural changes, or stagger royalty percentage with sales. That is, developing country would become eligible for 'x%' of royalty over the first 50 million dollars of sales and 'y%' over the next 50 million dollars of sales. Thus, it is important to create a mechanism to continually generate the value from need. The resulting information will result in awareness and lead to discussions within indigenous communities, which can ultimately translate into beneficial negotiations.

Similarly, with respect to the local working requirement, biodiversity resources can be strategically exploited to attract foreign direct investments. Thus, bio-prospecting agreements can include a training component or include a provision to funds for training local scientists and/or to set up local manufacturing or research facilities. After all, developing countries became signatories of the trade agenda in the expectation of foreign direct investment. Including a local manufacturing requirement in bio-prospecting agreements would reduce the adverse effects developing countries suffer from national treatment TRIPS which forbids discrimination on the basis of place of manufacture.<sup>36</sup> In order for the model to work more efficiently, the Governing Body of the CBD should assume a more active role in encouraging such agreements. The Governing Body of the CBD can constitute an advisory body - An Expert Advisory Committee (EAC) - to assist developing countries at different levels of the biodiversity pyramid to negotiate favorable bioprospecting agreements. Such a body can assist member states in their expert capacity regarding the bio-prospecting negotiations in the following manner<sup>37</sup>:

- (a) EAC can issue advisory opinions to member states regarding bio-prospecting negotiations. The advisory opinions can highlight different terms that developing countries should include in the negotiations. It can also outline various options to structure royalty terms. Negotiating a bio-prospecting agreement is difficult because biodiversity resources do not fall within clear ownership of any one person or group in particular.<sup>38</sup> The advisory body can be helpful in highlighting various options to negotiators, be it the government representatives or community representatives and to understand the ramifications of bio-prospecting arrangements.<sup>38</sup>
- (b) EAC can provide guidelines as part of its duty to help developing countries appreciate the issues that might be involved in such negotiations. The Bonn Guidelines, for instance, serve as a useful tool for members to legislate national laws on Access and Benefit Sharing.<sup>37</sup> Similarly, guidelines can be issued on various aspects like sharing IP, creating local working and determining the extent of community involvement.

The EAC's work in itself can create a library of information, drawing lessons from steps that other countries have taken steps to facilitate fair exchange of genetic and technological resources.

### Conclusion

It is economically unfeasible for developed countries and the big pharmaceutical companies to demand low-cost access to biodiversity and respect for IPR from developing nations. Respecting local rights can be the first step to nurture respect for IPR. Developing countries should ensure that the trilogy of objectives - protection of biodiversity, sustainable development, and equitable sharing of resources - work in tandem with trade objectives.

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- Protection and improvement of environment and safeguarding of forests and wild life - The State shall endeavor to protect and improve the environment and to safeguard the forests and wild life of the country.
- PART IVA, Article 51A discussing the Fundamental Duties details that:
- It shall be the duty of every citizen of India,...(g) to protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living creatures.

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