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South African model of access and benefit sharing and its implication for India

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Abstract
Access Benefit Sharing under *CBD*, 1992 requires the equitable sharing and inclusion of every stakeholder involved in the development of biological resources. South Africa and India has taken steps in the formulation of ABS oriented IPR regime for regulating access to biological resources. South Africa is rich with biodiversity which could be a source of products that are commercially exploitable and beneficial for the economy. The development of such kind coupled with efficient natural resource management system can bring both financial and non-financial benefits. Similarly, India has modeled biodiversity governance demonstrating for equitable sharing of benefits under *Biological Diversity Act*, 2002; *Biological Diversity Rules*, 2004 and *ABS Guidelines*, 2014. It also developed system for non-resident Indian to undertake research on biodiversity by issuing an Internationally Recognized Certificate of Compliance in 2015.

Keywords: South Africa, IPR, CBD, ABS, bio prospecting

1. Introduction
The sustainable use of biodiversity and equitable sharing of the benefits of genetic resources are the focal points of CBD, 1992(CBD, 1992) [1]. The Convention builds up as one of its goals to the reasonable and impartial sharing of benefits of genetic resources to reasonable and fair sharing of the advantages with the nation (Nomani, 1992) [2]. Ever since its implementation of CBD, 1992 into effect on December the 29th of 1993, Access and benefit sharing (ABS) has become the centerpiece of biodiversity-related legislation and public policy both nationally and internationally(Nomani, 2010a) [3]. A standout amongst the most discernible point is that even following a long time since the definition and execution of CBD, countless parties to the Convention keep on facing challenges in the selection and usage of useful national ABS laws and measures(Nomani, 2010b) [4]. As per the CBD Secretariat, to date, just 60 nations have some sort of laws, measures or instruments to manage access to their genetic assets and the reasonable and impartial sharing of advantages emerging from their use. The Nagoya Protocol was embraced at the tenth gathering of the Conference of the Parties (COP 10) to the CBD held in Nagoya, Japan from 18-29 October 2010 (Fedder & Winter, 2011) [5]. The South African biological systems expanded in natural surroundings spread over agribusiness, urban advancements, afforestation, mining, and dams.

South Africa is a rich country in terms of biological diversity. It is one of the 17 mega diversity regions of the world. The Cape floristic region is also situated in South Africa which is dense with varieties of flora and fauna. There are almost 350 plant families which include 19500 plant species, South Africa is home to rich varieties of temperate flora. South Africa's biodiversity can be very beneficial for the development of new Pharmaceuticals and other products and could contribute significantly to the economy of the nation.

The over-exploitation of specific species, the presentation of extraordinary species, and the contamination or intoxication of the dirt, water, and climate has affected South Africa's earthly, freshwater, and marine biodiversity. As of now 3 435 (15%) of South Africa's plant species, 102 (14%) of leaves, 72 (24%) of reptile, 17 (18%) of amphibians, 90 (37%) of mammals, and 142 (22%) of butterfly species are recorded as debilitated in the South African Red Data Books, which show the preservation status of undermined species and biological communities. Moreover, numerous vital biological systems have been corrupted, and natural procedures disabled. Patterns demonstrate that this circumstance isn't enhancing and that developing human populaces and unsustainable rates of resources utilization will bring about expanding negative effects on biodiversity. Unless we act quickly, much biodiversity, including the life-emotionally supportive networks whereupon we depend, will soon be lost. South Africa's biological diversity is unique in nature and all of its components including various numbers of species; genes etc. are of great value and significance to the country as well as the world. There is a wide array of life form enriched in South Africa's river, wetlands, mountains, plains, estuaries, oceans, and coastline which are integral to the existence of all South Africans and upon which a large sector of the national economy is dependent.

2. Material & Methods
This study endeavours to deeply study the objectives of CBD principles in the context of ABS system in South Africa and India. It examines the veracity and legitimacy of the proposal for the implementation of the ABS system in both the countries to draw parallels and distinct features for mutually cohesive bioprospecting regime. It devises an implementation and institutional mechanism for South Africa and India ABS regime congenial to the native indigenous knowledge system. This paper applied qualitative and quantitative research in the doctrinal and semi-empirical framework by employing CBD principles underpinned in CBD, 1992 and foundational values of *National Environmental Biodiversity Management (NEBM)*

Act, 2004 and *Bioprospecting, Access and Benefit-sharing Regulations (BABS) Regulations,2008;Biodiversity Act*, 2002; *Biodiversity Rules*, 2004 and *ABS Guidelines*, 2014 as a case study in this study. This study has analyzed relevant international and national legal materials intimately linked to international environmental cooperation in the arena of bioprospecting legal policies. This action was necessary in order to determine the highest level of reliability in the framework of Maxwell's qualitative research design (Maxwell, J.A., 2005) [6].

3. Results

The South African biodiversity law is underpinned in *National Environmental Biodiversity Management (NEBM) Act*, 2004. The Department of Environmental Affairs and Tourism (DEAT) debated this law through 13 cycles for people's comment and finally gazetted as an Act in June 2004.

3.1 South African Biodiversity Law

It covers a wide range of issues such as bioprospecting, access and advantage sharing, recognition of indigenous people, regulation of natural assets in South Africa. The implementation of different part of the Act requires considering suitable directions by DEA. The *NEBM Act*, 2004 has only ratified CBD, but other international agreements more specifically *CITES*, 1971 but the objectives remain analogous.

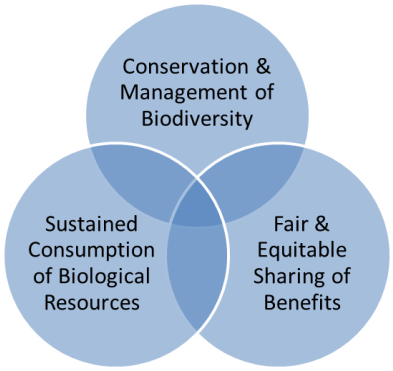

Fig 1

It regulates the protection and preservation of biodiversity, bioprospecting of indigenous bioresources, and fair sharing of benefits among stakeholders as per rules of the CBD. However, the act does not characterize the term 'access' or 'use', despite the fact that it refers to 'access'. The act also does not explain how much use of biological resources (including medicinal plants) for commercial exploitation and industrial exploitation will be regarded as access. In South Africa, however, genetic resources are also included by the definition of biological resources.

The partners who are under any benefit-sharing agreement with anybody with bioprospecting license and are relied upon to get an advantage out of this assertion were characterized as 'an individual or any part of the state or any association of people, giving or offering access to the local natural assets to which the application is assigned(*NEBM Act*, 2004) [7]. According to the act an indigenous network which will add to or partially shape few of the part of the actually proposed bioprospecting by the help of traditional employment to which application indicates; or to which the bioprospecting relates, the learning of or disclosure of information regarding indigenous organic assets (Section82 (1) (b), 2004) [8]. Thus the Act requires that the competitor goes into BSAs with the above accomplices, and moreover a material transfer agreement (MTA) with the bioresource provider, supported by the minister, before the genuine bioprospecting award application will be considered (Section 82(2), 2004) [9]. In spite of the fact that *NEBM Act*, 2004 does delegate a considerable measure of obligations on the authorities however it neglected to address any significant point recommended by the *Bonn Guidelines*, 2001 under ABS rules.

3.2 Bioprospecting Laws of South Africa

The bioprospecting of local organic resources means the examination, or advancement or use of the indigenous local organic assets for the purpose of industrial usage. It includes the collection of advantages and extractions of benefits for research, advancement, and application. The usage with the intent to conduct research or development of any data with respect to any customary usage of the indigenous organic resource by indigenous communities is allowed to be investigated for business or industrial exploitation. In relation to bioprospecting, 'indigenous biological resources' have been defined to include:

- Any living or dead creature, plant or another life form of an indigenous species;
- Any derivative of such creature, plant or another organism; or
- Any genetic material of such creature, plant or another organism

This is regardless of fact that indigenous biological resources assembled from the wild or got to from some other source, including any creatures, plants or different living beings of indigenous species developed, reproduced or kept in bondage or developed or modified in any capacity by biotechnology. This also includes life forms of any cultivar, assortment, a derivative of any life form, complex mix of two or more forms of local species found in the biodiversity alluded to change in the genetic material. The origin of such material can be traced back to any exotic creature, plants or any other life forms collected from the wild or whatever sources and the change was through any scientific process including any genetic material or concoction found in any creatures, plants or different living beings. This, however, excludes the following subject matter:

- Genetic material which is any way related or is the origin of human;
- Any exotic creatures, plants or different life forms, other than exotic creatures, plants or different life forms alluded to in (an) iii); and
- "International Treaty on Plant Genetic Resources for Food and Agriculture list edindig enous biological resources.

This is also very strange as no definitions have been given in the Act in regard to 'indigenous community' or 'business or industrial misuse. The stakeholders involved in bioprospecting in ABS agreements are characterized under Section 82 (1) (a) and (b) of *NEBM Act*, 2004 as:

- An individual which includes any part of the state or community, granting access to the local biological

resources and assets to which application desires and relates,
- An indigenous group or community whose traditional utilization of the resources to which the application relates have initiated or will contribute to or form part of the proposed bioprospecting
- An indigenous group or community whose knowledge and discoveries about the biological resource of indigenous origin, and
- The application relates to being used for the expressed purpose of bioprospecting (*NEBM Act*, 2004) [10].

Bioprospecting has not always been regulated in South Africa historically. The absence of legislation for bioprospecting and associated regulations has resulted in"almost unregulated access to South African bioresources, with materials being collected, often in excessive quantities, and being exported to research and development abroad," and for commercial and industrial exploitation. The result of this was that the benefit of this exploitation was not shared by the country as a whole including the indigenous holder of traditional knowledge. This was compulsory as it was necessary to regulate the bioprospecting within the biodiversity of the nation and equitable sharing of benefits without any discrimination. The biological resources are rich in South Africa and can contribute immensely if regulated by proper legislation and government agencies. It can also help in the development of technology and indigenous pharmaceutical industry as well as the other industries of South Africa. It is very important to understand that these regulations should not be very restrictive as heavy restriction can put a restraint on the bioprospecting through unreasonable regulations. In reality, none has applied their ABS functions as effectively as it was originally planned (Tvedt &Young, 2007) [11].

4. Discussion

South Africa introduced bioprospecting legislation and regulations focusing on eliminating the irregularities in the ABS Agreement (Goldblatt & Manning, 2000) [12]. They reflect sovereignty of nation over the access to bioresources, and recognizing traditional knowledge, intellectual property rights (IPR), and benefit sharing with the stakeholders. Meanwhile, several notable industries have developed and proved beneficial in South Africa (Mander & McKenzie, 2005) [13].

4.1 South Africa Abs Model

A biodiversity driven market is developing by training and employment regarding conservation of the biodiversity as well as the proper usage of the biological resources. This is generally opined that the Act lacked room for implementation of any practical system and involve long and inappropriate processes. To address such shortcomings, it was necessary to eliminate the obvious deficiencies in chapter 6 of the *NEBM Act*, 2004. As a natural sequel, the result was the formulation of *Bioprospecting, Access and Benefit-sharing Regulations (BABS) Regulations* was enacted on 1 April 2008 to incorporate various definitions which are not characterized in the *NEBM Act*, 2004 (DEAT, 2008) [14]. The ABS defined indigenous community', which means:
- Any network of individuals living or having rights or interests in an unmistakable land territory inside the Republic of South Africa with a leadership structure,
- Which will add to or partially shape few of the part of the actual proposed bioprospecting by the help of traditional employment to which application indicates; or
- Whose discoveries and other findings including the newly obtained information of the biodiversity and its respective components are to be used for the purpose of the proposed venture of prospecting in biodiversity.

The word leadership structure is not defined in the regulation. The definition given for 'commercialization' obliquely defines the following activities in relation to indigenous biological resources to infer leadership structures under:
- Application filing relation to intellectual property rights, whether in South Africa or internationally;
- Transferring of any rights to intellectual property or any other rights as well as obtaining them;
- Executing clinical trials and development regarding the product, including activities such as commencing research regarding market development as well as seeking premarket approval for the sale of the product; or
- The reproduction of the indigenous products and other related biological resources through cultivation, cloning, propagation or other processes to develop and produce.

Even then the identification of all key holders is one of the most difficult tasks in bioprospecting of a lot of plants used by indigenous groups under traceable leadership structure. To identify a stakeholder in Cynodondactyon DC plant is a glaring example Europeans traditionally uses it in the Transvaal area. It is used for heartburn, and as first aid for wounds. The other example is a decoction of the same plant is 'Dutch remedy' whereby Xhosa people and several ethnic groups also use as a remedy for sores as traditional knowledge. This led to a revision of chapter 6 of *NEBM Act*, 2004 in the light of *BABS Regulation*, 2008(Botha & Kogler,1998) [15]. However, there is feeling that *BABS Regulation*, 2008 is an in-depth explanation of the bioprospecting still there are a lot of issues which requires serious considerations.

4.2 Implication for Indian Biodiversity

Indian biodiversity is very rich as it contains over 91,000 species of animals and 45,500 species of plants have been documented from 10 bio-geographic regions of India (Nomani,2018) [16]. Nearly 6500 native plants are still used prominently in indigenous healthcare systems. Thousands of locally adapted crop varieties, grown traditionally since ancient times, and nearly 140 native breeds of farm livestock, continue to thrive in diversified farming systems (Nomani, 2001) [17]. The country is recognized as one of the 8 Vavilovian Centres of Origin and Diversity of Crop Plants, having more than 300 wild ancestors and close relatives of cultivated plants still growing and evolving under natural conditions The CBD, 1992 is ratified by India in February 1994 and to fulfil the mandate of Article 6 it developed a strategy for biodiversity conservation at macro-level in 1999, followed by slew of legal enactment such as Biological Diversity Act, 2002; Biological Diversity Rules,2004 and *ABS Guidelines*, 2014 (Nomani, 2017) [18]. the India ABS model is spread over 'experimental model' in

the 'pre-CBD,1992 era' by recognizing medicinal value of plant Trichopus zeylanicus plant derived from the Tropical Botanic Garden and Research Institute, Palode, Thiruvananthapuram and used by the Kani tribal community of Kerala (Nomani & Rahman, 2016) [19]. The other ABS model is posted CBD, 1992 phase is pioneering action from Madhya Pradesh State Biodiversity Board signing an MoU for ABS with Gram Mooligai Company Ltd (GMCL), Jabalpur (MPSBB,2014) [20]. This is supplemented by an Internationally Recognized Certificate of Compliance (IRCC), 2015 by permitting a non-resident Indian to undertake research on biodiversity in India (CBD, 2017) [21]. The biodiversity governance has taken a quantum leap from October 2015 to April 2016 by certifying 24 more IRCC (Prajeesh, 2017) [22].

5. Conclusion

The South African laws and regulations necessitate disclosure time of bioprospecting in MTAs and BSAs in 250 000 plant samples lead directly to a commercial drug (Macilwain, 1998) [23]. The *NEBM Act*, 2004 allows for amendments to BSAs (NEBM, 2004) [24]. whereas *BABS Regulation*, 2008 goes to the extent of requiring the irregular review (BABS, 2008) [25]. The simple procedure recommended by the enactment will fortify this observation, given the improper planning of the BSA negotiations and the bureaucratic character of the permit process. However, some international case studies have shown that some traditional people do not always seek financial rewards in such situations (Hardison, 2000) [26]. The *NEBM Act*, 2004 legislates for the establishment of a bioprospecting Trust Fund into which all money arising from BSAs and due to stakeholder's need be deposited (NEMB, 2004) [27]. The *BABS Regulation*, 2008 requires that the director-general should manage and be accountable for the Trust Fund [28], and oversee the payment of what is due to stakeholders (BABS, 2008) [29]. It needs to be seen that the South African model of ABS has realized in a fair and equitable way in intellectual property and the patenting biological material (Ganguli, 1998) [30]. The South African as well as Indian legislature should take important steps for the shaping of bioprospecting legislation and its effect on the economy with the greatest of speed and determination.

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