Chapter 1

INTRODUCTION

The 20th century, earmarked as the era of biotechnology, has witnessed two major and divergent international controversies owing to the biotechnology boom coupled with the far-reaching impact of patent monopoly. First one relates to the issue of patenting of life and the social, legal, moral and ethical questions surrounding the same. Second controversy relates to the proprietary claims over genetic resources (GRs) and associated traditional knowledge (TK). Both created unrest in the domain of Intellectual Property (IP) law since they aroused serious questions on the basic standards of patentability itself. These issues still remain unsettled and controversial as they represent the divided policy considerations and politico-economic interests of the North and the South. It is interesting to note that the second controversy mentioned above, i.e. the proprietary claims over biological materials, stands out from the issues of patentability over life forms since they operate on the basic premise that patent protection is permissible for life forms or at least for biotech inventions. This is exposed by the claim of its proponents that the holders of biological materials and associated TK have the right to get compensated


when such resources are being used. So the logical understanding is that genetic/ biological resources and their associated TK can form part of a patented invention if such use is conditional to compensating the right holders of such resources. This positive assertion is posing more problematic issues than the basic questions of patentability. From the inventor's side, it raises the questions ‘who owns?’ and ‘what is owned?’ For the holders of biological materials and associated TK, the remarkable queries would relate to the purpose of research, nature and extent of the use of their entitlements, and the possible compensations. It is to be noted that prior to the patenting over biological materials, the demand for property rights over them was quite unheard. The domain of biodiversity was an open access regime from prehistoric times. The interception of IPRs (Intellectual Property Rights) with biotechnology has made such property claims evolve with an international magnitude. A survey of the international initiatives in the field of regulation of access to GRs shows how the open access regime over biological diversity responded to private enclosure through monopolistic IPRs and the present status of such responses.

1.1 Property in Biological Diversity: An Evolutionary Regime

The most widely transferred resources are plant genetic resources (PGRs) due to their medicinal value and as food supplements. There had been contributions from the farmers for their conservation and breeding. Lot of resources had been collected and conserved in ex-situ collection centres. Due to the technological developments strong proprietary rights like plant breeders right began to be created for the new varieties developed out of the GRs, thereby curtailing the scope of access to genetic resources and also affecting the food security and the same was promoted through international efforts like the International Union for the Protection of New Plant Varieties (UPOV). Thus the Food and Agricultural Organization (FAO) took over the concern of food security and adopted a non-binding International
Undertaking for Plant Genetic Resources for Food and Agriculture (IUPGRFA) in 1983. This was aimed at strengthening the rights of suppliers of the (GRs) and to act as a counterbalance to the increasing protection of technology resultant from the use of (GRs). It stood for free access to GRs and was based on the principle of common heritage. But the IUPGRFA’s efforts were not strong enough to offset the increasing IP protection over PGRs and the IUPGRFA had to make compromises on its open access regime by recognising the IP protection granted over the new and high yielding plant varieties developed by commercial breeders.

The claim for property protection to biological materials and the TK associated with them is of very recent origin, traceable from 1980s. The demand could be directly linked to the overwhelming patents granted to biotechnology inventions that made use of scientific and technological tools like recombinant DNA technology that facilitate genetic manipulation of biological materials to get the desired traits. Inducing characteristics such as insect resistance or pest resistance to crops through genetic engineering is an example for this process. These technological advancements also augmented the demand for high yielding crops worldwide. Even, developing countries replaced their traditional varieties with high yielding crops, which paved the way for eventual species extinction. This increasing demand together with the possibility of stronger monopolistic protection of patents attracted the corporate giants to make huge investments in this field. The legal protection afforded to them was either through patents or through breeders’ rights. The greatest negative impact was that in this private enclosure movement, many crops that ensured food security to the poor and the common man and the

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3 Susanne Droeg and Birgit Soete, “Trade Related Intellectual Property Rights, North South Trade and Biological Diversity,” 19 Environmental and Resource Economics (2001) pp.149-163
livelihood of many farming communities were also enclosed\textsuperscript{4}. The staple food crops and key export crops of many developing countries went prey to this resource hunt venture\textsuperscript{5}. In addition to the monopolisation over many major food crops, there were also efforts to make nature-based products by exploring the biological diversity for commercially valuable traits from biological and GRs\textsuperscript{6}. This process is called bioprospecting which created a strong market for new nature based products ensuring high returns for the investment and the flourishing industries range from chemical, pharmaceutical, biomedical, biochemical, microbiological, cosmetic and so on. The greatest irony was that though the technology rich developed nations of the North were making investments and reaping the benefits, the biological diversity of the developing nations constituted the field of raw materials for them and that in this game, the providers of resources remained mere spectators. Adding to this, the North also began to use the TK associated with biological diversity to prospect the valuable traits of GRs\textsuperscript{7}. Flavouring the resultant products with IPRs finally converted the developing countries the consumers of their own knowledge and of the technology of the North\textsuperscript{8}. The developing countries realized that the reason behind this strange

\textsuperscript{5} Ibid.; Also see Robert W. Herdt, “Enclosing the Global Plant Genetic Commons” available at http://ip.cals.cornell.edu/people/robertherdt/documents/EnclosingGloGenCommonsRevise d.pdf; Sabuj Kumar Chaudhury, “Genetic Erosion of Agro Biodiversity in India and Intellectual Property Rights: Interplay and Some Key Issues” Patentmatics, 5(6)
phenomenon (the so-called ‘biopiracy’ or misappropriation) is the unregulated access to their GRs and associated TK. They found that their GRs treated as common heritage of mankind and their TK in the public domain under the Western legal philosophy ensured unhindered access. This realization together with the reported cases of more and more enclosures prompted them to devise a mechanism for regulation of access to GRs as well as the associated TK. The other factors that accorded momentum to the plan for regulation of access were considerations like species extinction, importance of contributions of farmers and local and indigenous communities in maintaining the sustenance of the biodiversity as well as the global ecosystem. The easiest way of legal regulation of GRs and associated TK was to confer them the status of property that was precisely done by international community through the Convention on Biological Diversity (CBD) in 1992 by access regulation and the obligation to share the benefits arising out of utilization.

Even after the adoption of the CBD, misappropriation of genetic resources without any benefits to their custodians continued to persist and the developing nations started defending this through two different strategies. One strategy was to initiate steps for strengthening domestic Access and Benefit Sharing regimes for which they adopted a legally non-binding instrument, the Bonn Guidelines on Access to Genetic Resources and Equitable Sharing of Benefits Arising out of their Utilization in 2002, providing insight into the different measures in relation to the ABS process. The second strategy was the effort to create binding obligations in the TRIPS Agreement to respect the CBD goals of prior informed consent and mutually agreed terms. The non-binding nature of Bonn Guidelines never compelled

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the nations to carry out the measures suggested and the second strategy too proved to be a failure due to lack of consensus on incorporation of new requirements into the TRIPS. Interestingly, we could see that both the strategies have found new avenues. The ABS process under the CBD has developed into the creation of a new protocol on benefit sharing and the issues related to IP and genetic resources and associated traditional knowledge are currently under the consideration of the WIPO. Similarly, with the adoption of the CBD, the open access regime of the IUPGRFA contrasted with it, which ultimately culminated into the adoption of the International treaty on Plant Genetic Resources for Food and Agriculture in 2001. Thus the whole regime of access and benefit sharing is crowded with multiplicity of actors and multiplicity of instruments with varying objectives. The subsequent sections of the chapter line up the multiple instruments and briefly provide an overview of their objectives and the interesting issues arising out of them.

1.2 The CBD: Evaluation of the Legal Framework

The CBD provides the legal platform for regulation of access to biodiversity. Its main objectives are conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of their utilization\textsuperscript{10}. The CBD operates on the principle that States have sovereign right to exploit their biological resources (BRs) pursuant to domestic environmental policies\textsuperscript{11} and identifies conservation of biological diversity as the common concern of mankind\textsuperscript{12}. Recognising the sovereign rights of States, the CBD vests the right to determine access to GRs with national governments and subject to national legislation\textsuperscript{13}. The

\textsuperscript{10} The Convention on Biological Diversity, 1992, Article 1
\textsuperscript{11} Id. Article 3
\textsuperscript{12} Id. Preamble
\textsuperscript{13} Id. Article 15.1
mandate of the CBD is to facilitate access\textsuperscript{14} subject to prior informed consent (PIC)\textsuperscript{15} and mutually agreed terms (MAT)\textsuperscript{16}. It calls for a positive State action to respect, preserve and maintain the knowledge, innovations and practices embodying traditional lifestyles of local and indigenous communities relevant to the conservation and sustainable use of biological diversity\textsuperscript{17}. It also aims to promote the wider application of such knowledge, innovations and practices with the approval and involvement of their holders and facilitating them to have an equitable share of the benefits arising from the utilization of such knowledge bases\textsuperscript{18}. The CBD also mandates to facilitate access to and transfer of technology including biotechnology, relevant to the conservation and sustainable use of biodiversity, under fair and most favourable terms to other Contracting Parties (CPs)\textsuperscript{19}. As regards technology protected by patents and other IPRs, access and transfer shall be consistent with effective protection of IPRs\textsuperscript{20}. It further mandates that CPs that are developing countries providing access to GRs shall be granted access to and transfer of technology, including technology protected by IPRs, upon MAT\textsuperscript{21}. It also stipulates that patents and other IPRs should be supportive and do not run counter to the objectives of the CBD\textsuperscript{22}. As regards the handling of biotechnology and distribution of its benefits, it is provided that there should be endeavours to promote active participation of developing countries which provide the GRs in biotechnological research\textsuperscript{23}. Promotion of fair and equitable access to results and benefits of biotechnological research based on GRs to developing countries upon MAT

\textsuperscript{14} Id. Article 15.2
\textsuperscript{15} Id. Article 15.5
\textsuperscript{16} Id. Article 15.4
\textsuperscript{17} Id. Article 8 (j)
\textsuperscript{18} Ibid.
\textsuperscript{19} Id. Article 16.1 & 2
\textsuperscript{20} Id. Article 16.2
\textsuperscript{21} Id. Article 16.3
\textsuperscript{22} Id. Article 16.5
\textsuperscript{23} Id. Article 19.1
is yet another mandate in this regard\textsuperscript{24}. Annexes and Protocols can form an integral part of the CBD system and are also liable to be amended including the provisions of the CBD\textsuperscript{25}.

A perusal of the provisions of the CBD does not give any clue to the property rights envisaged or its mechanism of access and benefit sharing (ABS). While acknowledging that biological diversity is a ‘common concern’ of mankind rather than ‘common heritage’ the CBD vests the right to regulate access to (BRs) with the sovereign nations. This right emanates from the right of the nations to exploit their (BRs) stemming up from the permanent sovereignty over natural resources. This confers the GRs the status of property. Since it opens up GRs for exploitation, including by means of biotechnological research, and claims a share of the benefits of exploitation, the CBD aims to commoditise the GRs\textsuperscript{26}. It acknowledges the role of IPRs in the ABS process and claims access to technology protected by IPRs as a \textit{quid pro quo} for access to the resources. The CBD also calls for commoditisation of TK associated with biological diversity and acknowledges the need to compensate them in return. The concept of PIC is incorporated to materialise ownership and bilateral contracts serve as the tools of exploitation and benefit sharing. To regulate the process of ABS, the CBD tries to elicit out the subject matter of access by defining GRs, BRs, genetic material and biological diversity\textsuperscript{27}. But, since the right to regulate access is vested with sovereign States, it is for the individual nations to draw the contours of the subject matter as well as the limits of permissible access. Anyway, by Decision II/11 of the Conference of Parties (COP), human GRs

\textsuperscript{24} Id. Article 19.2  
\textsuperscript{25} Id. Articles 28, 29 & 30  
\textsuperscript{26} Valerie Boisvert and Armelle Caron, ÒThe Convention on Biological Diversity: An Ambivalent Attempt to Reconcile Communal Rights and Private PropertyÓ Paper presented at the \textit{Conference on Constituting the Commons: Crafting Sustainable Commons in the New Millennium}, The Eighth Biennial Conference of the International Association for the Study of Common Property at Bloomington, Indiana, USA during May 31-June 4, 2000  
\textsuperscript{27} Supra n.10, Article 2
are excluded from the ABS framework of the CBD. Again, the State Parties have the freedom to decide whether or not to include TK associated with the GRs within the scope of access. Who can provide access and what can be the pertinent subject of access are the most important questions emerging out of the access regime created by the CBD. This needs clear examination in the context of the uncertainties existing in the implementation of the obligations under CBD.

Coming to the benefit sharing mechanism of the CBD, the only traceable elements are the bilateral contracts to be entered into between the persons seeking access and the country providing access. Though it talks about PIC, the CBD is silent as to from whom PIC is to be obtained. The most interesting part is the absence of provisions in the CBD mandating PIC and MAT as the obligation to be fulfilled while taking IPRs over GRs and associated TK. Other legal vacuums relate to the benefits to be shared, with whom, and the mechanism to share. All these areas provide the CPs enough flexibility to design legislations responding to and reflecting their national, economic and social priorities. To provide proper insight in relation to the ABS process, the CBD has adopted the Bonn Guidelines as an instrument facilitating implementation.

1.3 The Bonn Guidelines on Access to Genetic Resources and Equitable Sharing of Benefits Arising out of their Utilization, 2002

For the purpose of operationalization of the provisions of the CBD, the COP of the CBD had adopted the Bonn Guidelines at its sixth meeting. The Guidelines are intended to help the Member States while establishing legislative, administrative or policy measures on ABS and also during contractual negotiations for the ABS process. The non-binding Guidelines

28 COP Decision VI/24
are voluntary in nature\textsuperscript{29}, and are intended to assist the Parties in developing an overall ABS strategy and to identify the steps involved in the process of obtaining access to GRs and sharing the benefits\textsuperscript{30}. It provides that competent national authorities should be established for regulating the grant of access and sharing of benefits with responsibility towards the negotiating process, securing of PIC and MAT, monitoring and evaluation of ABS agreements, enforcing ABS agreements, processing and approval of applications, ensuring stakeholder participation in different steps in the ABS process etc\textsuperscript{31}. The Guidelines also provide that the CPs have the duty to ensure that the decisions regarding access be informed to relevant indigenous and local communities and relevant stakeholders and also the responsibility to enhance the capacity of local and indigenous communities to represent their interests fully at the negotiation\textsuperscript{32}. It requires the users of the GRs to seek informed consent prior to exercising access; respect the values, customs, traditions and customary practices of local and indigenous communities; respond to requests for information from indigenous and local communities; stick on to the terms and conditions of the PIC and MAT; endeavour to carry out the use of GRs in and with the participation of the providing country; and to ensure the fair and equitable sharing of benefits including technology transfer to providing countries in accordance with the MAT established with the stakeholders\textsuperscript{33}. It identifies stakeholder participation as the key to ensure adequate development and implementation of ABS agreements\textsuperscript{34}. Participation means consulting the relevant stakeholders and taking into account their views in each step including determination of access, negotiation and implementation of MAT, sharing of

\textsuperscript{29} The Bonn Guidelines on Access to GRs and Equitable Sharing of Benefits Arising out of their Utilization, 2002, para. 7
\textsuperscript{30} Id. para. 12
\textsuperscript{31} Id. para. 14
\textsuperscript{32} Id. para. 16
\textsuperscript{33} Id. para. 16(b)
\textsuperscript{34} Id. para. 17
benefits and in the development of national strategies, policies or regimes on ABS\textsuperscript{35}.

The Guidelines lay down that the basic principles of a PIC system are legal certainty and clarity, transparency, minimal cost, and consent of the relevant competent national authority and indigenous and local communities or the relevant stakeholders as the case may be\textsuperscript{36}. The chief elements of a PIC system involve competent national authorities, timing and deadlines, specification of use, procedures for obtaining PIC, mechanisms for consultation of stakeholders and the process/ procedure followed by the competent national authority for the grant of access\textsuperscript{37}. The Guidelines reiterate that respecting established rights of local and indigenous people, securing PIC from them and their approval and involvement in accordance with their traditional practices and domestic policies is essential\textsuperscript{38}. The Guidelines also reiterate that the State while granting PIC can insist for clarity as to the benefits that could be claimed including the benefit arising out of the utilization of derivatives and products arising out of the utilization of the GRs and associated TK. As regards MAT, the basic requirements are legal certainty and clarity, minimization of transaction cost, creation of user and provider obligations, development of model agreements and creation of suitable contractual arrangement for different uses and different resources, setting out reasonable time span for negotiation process and specification of terms in a written agreement\textsuperscript{39}. The guiding parameters for contractual arrangements are consideration of the concerns of relevant stakeholders, indigenous and local communities, ensuring the continued customary use of

\textsuperscript{35} \textit{Id.} para. 18
\textsuperscript{36} \textit{Id.} para. 26
\textsuperscript{37} \textit{Id.} para. 27
\textsuperscript{38} \textit{Id.} para 31
\textsuperscript{39} \textit{Id.} para 42
GRs and related knowledge, possibility of joint ownership of IPRs according to the degree of contribution etc\textsuperscript{40}.

Benefit sharing agreements also form part of MAT and the benefits could be monetary and/or non-monetary and short-term, medium-term or long-term. Monetary benefits could include access fees/fee per sample, up-front payments, milestone payments, payment of royalties, license fee in case of commercialization, special fee to be paid to trust funds supporting conservation and sustainable use of biodiversity, salaries and preferential terms as mutually agreed, research funding, joint ventures and joint ownership of IPRs\textsuperscript{41}. Non-monetary benefits could be sharing of research and development results; collaboration, contribution and cooperation in scientific research and development programmes; participation in product development; collaboration, contribution and cooperation in education and training; admittance to ex-situ facilities of GRs and to data bases; transfer of technology under fair and most favourable terms including concessional and preferential terms; strengthening capacity for technology transfer to developing countries and countries with economies in transition; institutional capacity building; training related to GRs; access to scientific information relevant to conservation and sustainable use of biodiversity; contributions to local economy; research directed towards priority needs such as health and food security; food and livelihood security benefits; social recognition and joint ownership of IPRs\textsuperscript{42}. Benefits are to be shared fairly and equitably with all those who are identified as having contributed to resource management and scientific or commercial process. The benefits should be aimed at promoting conservation and sustainable use of biodiversity\textsuperscript{43}. Mechanisms for benefit sharing may vary depending upon the type of benefits, the

\textsuperscript{40} Id. para 43
\textsuperscript{41} Id. Appendix II
\textsuperscript{42} Ibid.
\textsuperscript{43} Id. para 48
specific conditions of the country and the stakeholders involved\textsuperscript{44}. Such mechanisms should include full cooperation in scientific research and technology development and those that derive from commercial products including trust funds, joint ventures and licenses with preferential terms\textsuperscript{45}.

The Bonn Guidelines make it clear that the spirit of the CBD lies in public participation in all stages of ABS. It acknowledges the different practices followed in CPs and the problems that may arise during identification and ensuring participation of stakeholders, especially the local and indigenous communities. Through this participation, the CBD as well as the Bonn Guidelines envision an ideal scenario where the communities and the common people can argue for their cause as per their needs and this would strengthen them socially as well as economically. This would serve as a tool to bring these usually downtrodden and sidelined groups towards the forefront of the society. It is inferred that the CBD agenda expressed through the Bonn Guidelines places before us the need to design highly decentralised system to make its dreams come true. The ultimate object of the CBD as depicted in the Bonn Guidelines is the overall development of the people who are actively engaged in the conservation, preservation and maintenance of biological diversity through their constant and continuous interactions entwined to their traditional and customary practices and life styles. In another way, the CBD aims to operationalize its conservation ethic by providing incentives to the custodians of biological diversity. This implies that though the CBD recognises ownership of States over their natural resources, it provides ample scope for the recognition of the rights of the custodians of biological diversity and associated TK and to properly reward them for their contributions. The same principle is reflected even in the indicative list of possible benefits that could be claimed viz., social recognition, food and livelihood security benefits, contribution to local

\textsuperscript{44} Id. para 49
\textsuperscript{45} Id. para 50
economy, joint ownership of IPR and facilitation of the abilities of the local and indigenous communities to conserve and sustainably use their GRs. No doubt, enacting a piece of legislation conceiving this real spirit of CBD could serve as an instrument of social change.

Compared to the CBD, the positive attitude towards acquisition of IPRs over biological materials is more visible in the Bonn Guidelines thereby promoting the commoditisation of GRs as well as the related TK. Calling for stakeholder participation, the Guidelines propose a regime where the people including the local and indigenous communities can claim ownership rights over the resources as well as the TK associated. So, theoretically, the Bonn Guidelines expand the ownership regime by permitting the communities to take part in ABS. But due to its non-binding nature, the countries are still free to legislate on this aspect whereby they can determine complete state ownership or joint ownership with communities. Similarly, the same option continues in relation to the inclusion of TK within the access domain as well as to enjoy the benefits out of its utilization. The gap in the CBD created by not linking access obligations of PIC and MAT with the IPR is identified here as well. The leeway allowed by the CBD and the Bonn on different aspects of ABS permits adaptation of the mandates tailor made to the domestic conditions of the CPs. Neither the CBD nor the Bonn Guidelines gives a proper account of the nature of ownership over the GRs or the TK associated with it. The widely exchanged nature of the GRs within a country can anticipate the possibility of getting associated with the State and with the people and these instruments provide no insight to appreciate ownership in such situations. To claim ownership over something, there should be the element of exclusivity in enjoying the rights over it which makes it a property. This requires an effective appreciation of the idea of property in GRs and associated TK as conceived by the CBD, elaborated through Bonn and implemented by the different CPs.
1.4 The Nagoya Protocol on Access and Benefit Sharing, 2010

The limitations of Bonn Guidelines in achieving the objectives of ABS have led to the most recent international initiative concerning the issue of ABS, the Nagoya Protocol. It is particularly aimed at operationalising the benefit sharing objective of the CBD. It is quite astonishing that even after 18 years of CBD’s adoption, there is a need of another instrument to carry out the most cherished benefit sharing objective of the CBD. This clearly depicts the gaps in the ABS process contemplated in the CBD and Bonn Guidelines. This raises the primary question whether Nagoya is able to achieve fair and equitable benefit sharing as envisioned by the CBD. Whether the Nagoya system is in tune with the philosophy of property established by the CBD is yet another concern in this regard. As the specific benefit sharing instrument of the CBD, the importance of Nagoya is that it should spell out the boundary of property right in the GRs and associated TK. It should also stipulate when the benefit sharing obligation begins and how. The Nagoya’s contribution in preventing misappropriation through IPRs also requires special emphasis. In short, since Nagoya is the benefit sharing mechanism of the CBD, a thorough analysis of the system is warranted.

1.5 The International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)

After the adoption of the CBD which proclaimed sovereign rights over GRs, the IUPGRFA which operated on the principle of common heritage stood in conflict with the CBD. So there arose a need for harmonization of the CBD with the IUPGRFA. Though CBD generally regulates access to genetic resources, access to ex situ collections and farmers’ rights were not addressed by the Convention, and Resolution 3 of the Nairobi Conference for the Adoption of the Agreed Text on the CBD
recommended for the establishment of a global system for the *in situ*, on farm and *ex situ* conservation and sustainable use of PGRs for food and sustainable agriculture to be operated by the FAO. Subsequently, through a series of negotiations, the ITPGRFA was adopted in 2001 providing for farmers’ rights, access to PGRFA and a multilateral system for sharing the benefits arising from their utilization. Under the ITPGRFA, the access is solely for the utilization and conservation for research, breeding and training for food and agriculture. Access is free of charge and no IPR could be claimed limiting subsequent access in the form received at the time of access.

Coming to the ITPGRFA, though it is based on the basic principle of permanent sovereignty over the resources, it envisages a multilateral system of benefit sharing as opposed to the bilateral contractual system of the CBD. So how the two instruments operate harmoniously is a fundamental question to be addressed. Yet another basic question is that if access is free, how it differs from its predecessor, the IUPGRFA? It also necessitates an enquiry regarding the possibility of any difference in the concept of property as conceived by the CBD as well as the ITPGRFA. Another interesting channel of discussion is the benefit sharing mechanism of the ITPGRFA which has already become functional from 2006 even before an international imperative for a similar mechanism under the CBD. Since the ITPGRFA insists that no IPRs can be taken over materials in the form received from its multilateral system (MLS), would it run contrary to the positive approach of the CBD towards IPRs is yet another concern to be addressed in this regard. Yet another outstanding issue is how far the ITPGRFA has succeeded in achieving the benefit sharing end through the regulation of access.
1.6 TRIPS Council Deliberations

In addition to the above mentioned international instruments specifically involved in the process of access regulation and benefit sharing, the TRIPS Council of the WTO (World Trade Organization) is another active player in the field. It is addressing the interrelationship between the GRs, associated TK and IPRs. The TRIPS regime, as it stands now, does not recognize the GRs and associated TK as a private property the use of which necessitates consent and due returns. So, at present there is no internationally binding obligation under the IP laws for the researchers to obtain consent from the resource holders and to give them a due share of the commercial returns. As long as appropriate changes are not made in the patent system in an international plane in the TRIPS level, the issue of misappropriation will continue to exist. Therefore negotiations are going on to implement new requirements in the TRIPS Agreement in relation to disclosure of the source and country of origin of the GRs used in the invention, evidence of PIC and benefit sharing. Altogether, all the above circumstances constitute unrest in the international level in the context of access.

Coming to the ongoing TRIPS Council negotiations in respect of the new disclosure requirements, the disclosure of source and country of origin of the GRs used is proclaimed as a basic tool in identifying the country of origin, which has the proprietary rights over the resources. So source will be the actual place from where the resources were taken, the country of origin will be the country where the resource actually originated. But due to the practical difficulty in tracing the country of origin, there is a push in the international level to limit it to the disclosure of the source country. If this position is accepted, it will go against the total philosophy of the CBD, which recognizes the rights of the country of origin. This issue and the adequacy of the proposed tools in curbing down the question of misappropriation are areas requiring special address.
1.7 Outline of the Thesis

In light of the various international instruments and international agencies that are actively engaged in resolving the issue of ABS, the present work tries to find an answer to the larger question how far the above agencies have succeeded in regulating access and make sure of benefit sharing. In this process, the work comprehensively analyses the work of different agencies involved in the process. It tries to find out the major obstacles that stand in the way of fulfilment of the benefit sharing objective and proposes the ways and means to tackle them. The study first traces the legal foundations of the concept of property in GRs and associated TK in Chapter 2. For this, it starts with analysis of the nature of property and the questions related to ownership in GRs as contained in the CBD as well as in various State legislations. It further examines the notion of property before and after the enactment of the CBD and establishes that the CBD contains strong private property jurisprudence.

Based on the theoretical foundation of private property right, Chapter 3 analyses the benefit sharing mechanism of the CBD, i.e. the Nagoya Protocol. It searches for a theoretical convergence of the notion of property as reflected in the two instruments and successfully establishes the same. It makes an appraisal of the Nagoya regime to find out how far it has gone beyond the CBD in ensuring the task of benefit sharing and the impediments in its way.

Realizing that the ITPGRFA forms part of the CBD system, Chapter 4 analyses the benefit sharing structure of ITPGRFA as revealed through its multilateral system. This gives the work the benefit of comparing two different benefit sharing models operating on the same philosophy of property. This chapter tries to find out whether there is conceptual coherence in the notion of property when the benefit sharing model changes. It also
compares the merits and demerits of both the systems and tries to locate the hurdles in achieving benefit sharing.

Aware of the legal impediments caused by IPRs in the process of ABS, Chapter 5 tries to explore the linkages between IPRs and GRs and associated TK and assesses why contract-based CBD system fails before the monopoly rights under TRIPS. Chapter 6 analyses the different solutions suggested by the international community at the TRIPS Council as well as the WIPO (World Intellectual property Organisation) and examines their effectiveness. Chapter 7 concludes that considering the inability of the present IP system to understand the grass root realities of the indigenous communities as well as the varying situations of the country of origin, the best possible way to recognise the CBD goals in the TRIPS could be better achieved through linking the two instruments by means of the triple disclosure requirement in Article 29 as suggested by the Disclosure Group during the TRIPS Council deliberations. It also recommends that considering the nature of property in GR, a new section/chapter in the TRIPS dealing with GRs would be another workable solution.