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Recognizing the Need of Commercialization of Biological Resources for their Conservation under the International Jurisprudence

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ABSTRACT

Biodiversity Conservation has assumed much importance in discussions across the Globe. Awareness regarding the loss of biodiversity due to unregulated anthropogenic activities has led the world fraternity to adopt several legal mechanisms and incentives to counter such losses. There had been ideological differences in selecting the most suitable approach for the conservation and sustainable utilization of Biological Resources to protect Global Biodiversity. One such ideology that has been lately recognized but globally accepted is that commercialization in a sustainable manner will ensure better conservation of Biological Resources. This ideology has led to the adaptation of several incentives and approaches for ensuring the regulated commercialization of Biological Resources or sustainable Bio-Trading, studying which have become very important, since if such incentives or approaches failed to regulate the commercialization of Biological Resources or Bio-Trading sustainably then it may lead to further exploitation of such Biological Resources. This article will therefore try to analyze the relationship between the conservation and commercialization of Biological Resources and the incentives and measures adopted at the global level for maintaining such a relationship.

Keywords: *Biological Resources; Bio-trade; Commercialization; Conservation; and Sustainable Utilization.*

I. INTRODUCTION

After witnessing the significant loss of the world's biodiversity at the end of the 20th Century, the World Fraternity has realized in whole the need of conserving such biodiversity for maintaining ecological balance and the life support system of the Planet Earth. However, at the beginning of the 21st Century, it was also felt that mere conservation of such biodiversity will not ensure sustainable utilization of it, for which the need of regulating the commercialization within an international perspective was recognized both in theory and practice. Incentives relating to conservation along with the commercialization of Biological Resources were adopted

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across the Globe in several legal platforms.³ Initially, although commercialization was held to be against conservation, later the world started realizing the fact that both conservation and commercialization are complementary to each other if regulated sustainably.

This article will therefore try to understand the definitions and meanings given to different concepts related to the conservation and commercialization of Biological Resources along with their theoretical perspectives to find out whether conservation is possible through commercialization and if yes then what are the incentives or approaches formulated for achieving such goals? Further, this Article will also highlight the global theoretical standards for measuring the development of initiatives related to biodiversity conservation and commercialization.

II. BIOLOGICAL DIVERSITY

(A) Meaning

Biodiversity under the Convention on Biological Diversity indicates the variability among all the living organisms from every source that includes terrestrial, marine, and aquatic ecosystems along with the ecological complexes of which they form a part. The diversity with and between species and with ecosystems is all included within the scope of this term. Biodiversity is a compound word of Biological Diversity and thus possesses the same meaning.⁴

Biodiversity initially was used more for political purposes than using it for scientific contours. It was at the later stage that this concept was used to indicate the richness of life on Earth.⁵ However, it is now not only used to refer to the richness of species but is also used to refer genetic makeup of populations as well as the ecosystem services and is regarded as a support for environmental functions.

(B) Importance of Biodiversity

The world has suffered a huge loss of Biodiversity and it has been proved that the loss of it can immensely affect human well-being. Biodiversity maintains the ecosystem services so therefore there is no doubt in the fact that such loss of biodiversity will result significantly in the loss of goods and products that can be acquired from such services. Reduction of biodiversity may result in the loss of vegetation, decomposition rates, biomass production as well as fish and other marine stocks of Biological Resources. Further, loss of biodiversity may result in the

³ Udisha Ghosh & Chandralekha, Akkiraju, *Biodiversity Act, 2002, An Analysis*, ACADEMIKE (May 2, 2019, 12:14 AM) <https://lawctopus.com/academike/biodiversity-act-2002-analysis>.

⁴ *Biodiversity*, UN@WCMC (May 22, 2019, 11:55 PM) <http://www.biodiversitya-z.org/content/biodiversity.pdf>.

⁵ Andrew J. Hamilton, *Species Diversity or Biological Diversity?*, 75(1), JEM, 89-92 (2005), (Jun 01, 2019, 11:23 PM) <https://www.sciencedirect.com/scinc/article/pii/S0301479705000149>

increase of Carbon dioxide in the atmosphere. These losses can bring a situation of severe catastrophe. Thus, we can now easily point out why biodiversity plays an important role in the survival of humanity.⁶

(C) Measurement of Biodiversity

To measure biodiversity, according to the trends as defined by the Convention on Biological Diversity, biodiversity indicators were formulated for quantitatively measuring the aspects of biodiversity, ecosystem conditions, diversity of changes, etc. These measurements help in understanding the cause-and-effect relationship of the changes in biodiversity and the consequences of such changes on human well-being as well as the ecosystem. A variety of metrics are employed for measuring the diverse ambit of the term biodiversity, some of which can be listed below-

- a. Richness of Species
- b. Population Number calculates the number of genetically distinct populations that a particular species possesses as defined by the elements of its genetic makeup
- c. Genetic Diversity indicates the diversity of information related to genetic elements within and among individuals, of a species, population, or a community
- d. Species Awareness measures the way how different individuals are spread among species and
- e. Phenotypic, measures the differences between the phenotypes within a sample.

For the measurement of biodiversity, the Convention initiated the Biodiversity Indicators Partnership (BIP) and this BIP supports the development of measuring indicators under CBD and related Conventions. These indicators are also linked with the Strategic Plan for Biodiversity, 2011-20 (Aichi Biodiversity Targets) and include protection of species, habitat extinction, and protected areas.⁷

III. BIOLOGICAL RESOURCES

Biological Resources mean and include all products that are harvested from nature. These may include a variety of species that are of potential value for human survival in different categories like- medicinal, food wood, and other such categories upon which human beings depend for

⁶KJ. Gaston, *Global Patterns in Biodiversity*, NATURE, 220-227 (May 13, 2019, 01:15 AM) <https://www.nature.com/articles/35012228>.

⁷*supra* note 1.

their survival.⁸

Under CBD, Biological Resources have been defined in a manner to include Genetic Resources, organisms either in whole or in part as well as other biotic components that amount to actual or potential value for humanity.⁹ While the Biological Diversity Act of 2002 in India, defines Biological Resources to include plants, animals, or other species including micro-organisms either in whole or in parts, their genetic materials as well as by-products that possess actual or potential value but do not include value-added products and also genetic materials of human beings.¹⁰ Thus, Biological Resources is a comprehensive term to include every product either of actual or potential use or value for humanity that is derived from biodiversity.¹¹

• Difference between Biological Resources and Genetic Resources

Genetic Resources means genetic materials of Biological Resources that contain genes or metabolic materials acquired from genes and this term is covered by the Nagoya Protocol in case of research or product development. The Protocol does not define the term but goes according to the definition of genetic materials as provided by the CBD which includes genetic material of biotic components that contains the functional unit of hereditary.¹² Thus, the main difference between Genetic Resources and Biological Resources is that Biological Resources may include any species of biodiversity while Genetic Resources are a product of Biological Resources. Biological Resources may also include Genetic Resources and Genetic Resources is a part of Biological Resources.¹³

IV. CONSERVATION OF BIOLOGICAL RESOURCES

Conservation is a multidimensional term that generally refers to the process of using carefully natural substances that are available in a limited amount so that they remain available for as long as possible.¹⁴ It refers to the sustainable use of Biological Resources and encompasses exploitation as well as protection and includes the concept of preservation which means to

⁸HANDBOOK ON BIOLOGICAL DIVERSITY LAWS, ACCESS AND BENEFIT SHARING, National Law School of India University, Bangaluru, (2016).

⁹United Nations Convention on Biological Diversity, 1992, Art. 2

-“Biological Resources includes genetic resources, organisms or parts thereof, population, or any other biotic component of ecosystem with actual or potential use or value for humanity”.

¹⁰ Biological Diversity Act 2002, No. 18 of 2002, Acts of Parliament, 2003 (India), Sec. 2(c)

-“Biological Resources plants, animals and micro-organisms or parts thereof, their genetic material and by products (excluding value added products) with actual or potential value, but does not include human genetic material”.

¹¹supra note 16.

¹²*Genetic Resources and Legislations*, CBD (May 12, 2019, 11:13 PM) <https://www.biodiversity.fi/geneticresources/genetic-resources/what-are-genetic-resources>.

¹³*Ibid.*

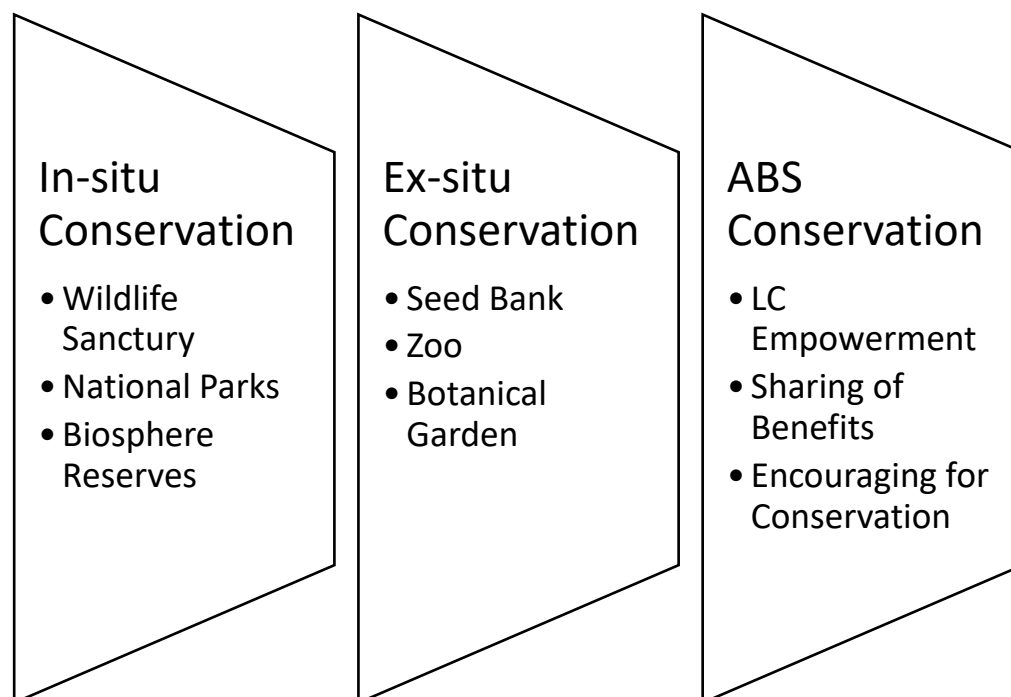
¹⁴*Meaning of Conservation in English*, CAMBRIDGE DICT (Jun 01, 2019, 11:35 PM) <https://dictionary.cambridge.org/english/conservation>.

maintain something in its original form and structure.¹⁵ Thus, conservation means the efficient use of resources and their preservation by dedicated efforts either under physical laws or voluntarily.

• **Methods of Conservation**

The principal methods that are applied for the conservation of Biodiversity can be listed below-

- a. In-situ conservation- This method of conservation is regarded as the most appropriate method of conservation where the biodiversity species are conserved in their natural habitat. Under this method a biodiversity area is selected where there is a huge variety of living species then such areas are converted into National Parks Sanctuaries or even Biosphere Reserves for protecting such species from being exploited by human activities.



Methods of BIODIVERSITY Conservation

- b. Ex-situ Conservation- This method takes into account the conservation of biodiversity species outside their natural habitat and is mostly based on a vast amount of techniques and facilities. Some ways of conducting Ex-situ conservation may include establishing gene banks for storing seeds, sperm, and ova at a very low temperature and humidity enabling for conserving of a large number of species in a very small area, establishing zoos and making botanical gardens for research purposes and creating public awareness.

¹⁵Theda M. Mutiya, *Biodiversity Conservation*, KENGEN UNU (May 26, 2019, 01:12 AM) <https://orkustofnun.is/gogn/unu-gtp-sc/UNU-GTP-SC-10-0805b.pdf>.

Ex-situ conservation proves to be very beneficial for recovering species that have either already lost or is an endangered species.¹⁶

- c. Conservation under Access and Benefit Sharing System- Under this system, the local communities are empowered by sharing the benefits derived from the commercial utilization of Biological Resources with them so that the local communities can engage themselves for further production of those Biological Resources thereby ensuring conservation.¹⁷

V. SUSTAINABLE UTILIZATION OF BIOLOGICAL RESOURCES

Sustainable use of Biological Resources is one of the three objectives listed under Article 1 of CBD. Sustainable use of Biological Resources means utilizing such resources in a manner that secures them from long-term decline so that the utilization of them does not compromise the rights of future generations over such resources. In short sustainable use of Biological Resources can be interpreted from the view of the definition of Sustainable Development (SD) which means a development where the needs of the present generation can be met without compromising the needs of the future generations. Biological Resources are regarded as an important global asset for the both social and economic development of human societies but they had never faced such a heavy amount of loss before, as they are facing today. Thus, a need has arisen for sustainably utilizing them.¹⁸

It has now turned out to be one of the most reliable measures for protecting Biological Resources. The guideline of Sustainable Management provides that economic and other benefits to the people are dependent on a healthy ecosystem which ultimately secures long-term survival. The World Summit on Sustainable Development (WSSD) mentioned that the Sustainable Use of Biological Resources can also effectively reduce poverty and thereby can ensure Sustainable Development. But one of the challenges for a sustainable utilization framework is the absence of critical indicators for measuring the amount and parameters of Sustainable Utilization.¹⁹

The figure below shows how environment, society, and development are linked to each other and the role played by the policy intervention and institutional framework to attain sustainable

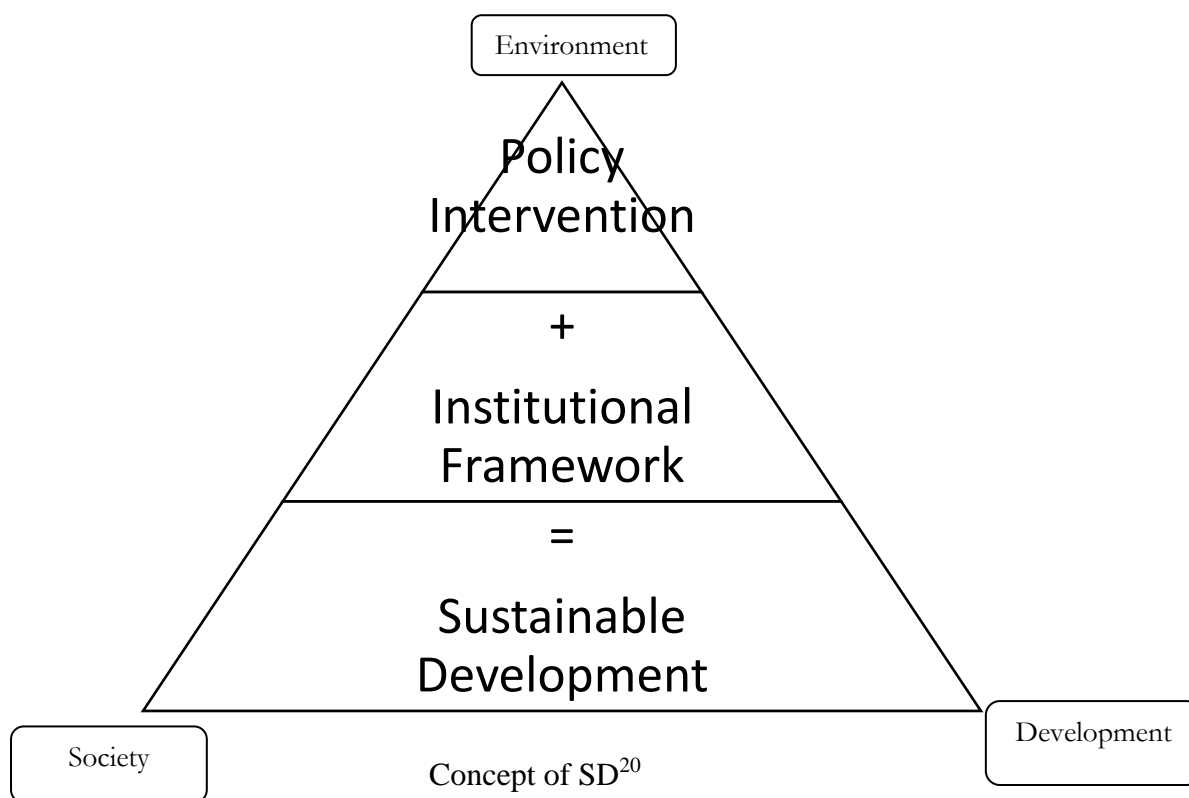
¹⁶Puja Mandal, *Conservation of Biodiversity: In-situ and Ex-situ Conservation*, VIDA (May 15, 2019, 02:25 AM) www.yourarticlelibrary.com/biodiversity/conservations-of-biodiversity-in-situ-conservation-and-ex-situ-conservation/30144.

¹⁷KANCHI KOHLI & SHALINI BHUTANI, *THE 'BALANCIN' ACT: EXPLORING WITH ACCESS AND BENEFIT SHARING (ABS) UNER INDIA'S LEGAL REGIME*, (Swissaid, India), (2015).

¹⁸*Ensuring Sustainable Use of Biological Resources*, UIA (May 15, 2019, 02:55 AM) encyclopedia.uia.org/en/strategy/197343.

¹⁹Theda M. Mutiya, *Biodiversity Conservation*, KENGEN UNU (May 26, 2019, 01:12 AM) <https://orkustofnun.is/gogn/unu-gtp-sc/UNU-GTP-SC-10-0805b.pdf>.

development.



Bio-trading (commercialization of biological resources)

(A) Meaning-

Bio-trading generally means the commercialization of products that are derived from native Biodiversity species including activities like collection, transformation, production, etc. in a manner that is environmentally, economically, and socially sustainable. Bio-trade as per CBD means the production of value-added products derived from biodiversity both in international as well as domestic markets.²¹

Bio-trade forms a part of the broader biodiversity business since illegal Bio-trade and over-exploitation of Biological Resources form the major section of this business. The definition of Bio-trade by the United Nations Convention on Trade And Development (UNCTAD) includes trading of the rights to access both agricultural and non-agricultural Biological Resources between the countries of origin and the users, with the object of utilizing such resources for scientific Research, for animal/crop breeding purposes either by conventional or by biotechnological means, and also includes services from native biodiversity through eco-

²⁰*Ibid.*

²¹Hem Pande, *Implementation of ABS Mechanism in India*, CBD (Jun 12, 2019, 01:11 AM) <https://www.cbd.in/doc/meetings/abs/icmp-03/prsentations/icnp-3-india-H-Pand.pdf>.

tourism involving both consumptive and non-consumptive uses.²²

(B) Principles of Bio-trading

The UNCTAD along with other participants across the globe has defined seven core principles of Bio-trade that provide an integrated framework for achieving the three objectives of CBD. These principles can be listed as follows-

- a. Conservation of Biodiversity;
- b. Sustainable Use of Biodiversity;
- c. Fair and Equitable Sharing of Benefits derived from the Utilization of Biodiversity;
- d. Socio-economic Sustainability- This includes productive, market, and financial management;
- e. Compliance with National and International Laws;
- f. Respecting the Rights of Those who are involved in Bio-trading; and
- g. Clarity about Access and Use of Natural Resources, Land Tenure as well as Knowledge.²³

(C) Benefits of Bio-trading

The benefits of Bio-trade accrue to people belonging to every unit of stratification within a society ranging from marginalized poor farmers, shell collectors, and wildlife hunters to big businessmen. But it has a more influence on the rural poor or even the poor sections of the population in most of the developing nations. It becomes one of the most important rather than the only source of income for most such people. Because of the lack of tools to justify the value of Bio-trade, it becomes very difficult to ascertain the number of people dependent on Bio-trade. The policy-making sources are more focused on calculating GDP growth rather than ascertaining the sources of accumulating the growth of GDP. However, in just Asia and Pacific regions only, the number of people whose income is based on Bio-trade ranges from 200 million to 1 billion, while approximately 500 million people are dependent on coral reefs, cultural items, tourism, and coastal protection. In Uganda, USD 200 million is amounted from lake fisheries where 135,000 fishers and 700,000 small-scale businessmen are employed or associated with the fishing industry and it contributes 2.2% to the country's GDP. While on the other hand,

²²UNCTAD, *Business of Bio-trade: Using Biological Resources Sustainably and Responsibly*, (United Nations, Geneva) 2014.

²³*Ibid.*

Nepal earns around USD 35 million from the NTFP trade. Likewise, in Peru, in the Department of Made de Dios, 27,000 people amounting to 38% of the population depend both directly and indirectly on the trade of Brazil nuts. These are a few instances that show how Bio-trade becomes an important source of poverty alleviation compared to other economic sectors. Further eco-tourism that is based on healthy coral reefs leads to sustainable economies for most of the developing countries. The rural poor are mainly dependent on Bio-trade. Sustainable Bio-trade may accelerate development in countries consisting of a high rural population, for instance, Cambodia where 90% of the poor population resides in rural areas since they are in easy access to natural resources. While the exploitation of such resources or environmental degradation might undermine the development of the country concerned. However, both Bio-trade and poverty reduction are based upon a healthy natural base. And this relation was established by the Millennium Ecosystem Assessment (MA). MA highlighted that biodiversity supplies a range of ecosystem services on which human survival is dependent. They further argued that the huge loss of biodiversity taking place due to excessive exploitation by human beings will become a chief challenge for implementing the MDGs in the first half of this century. Much of this loss is a result of illegal Bio-trading, it is estimated that out of 50,000-70,000, medicinal species 15,000 are heavily threatened by over-exploitation. Bio-trade is expected to contribute to the success of MDG as well as SDGs since it might increase the standards of income, and nutrition, eradicate poverty and hunger, and in lot many ways if Bio-trade can be managed sustainably.²⁴

VI. INCENTIVE MEASURES FOR SUSTAINABLE BIO-TRADE UNDER THE INTERNATIONAL REGIME

Most of the Biodiversity Conventions recognize the need for incentives to achieve their objectives. This section will focus on some of such incentives adopted with the assistance of the UNCTAD for regulating Bio-trade and engaging private sectors for the conservation of Biological Resources. Some of such incentives can be described below-

- i. CBD and incentive measures- Article 11 of CBD recognized the importance of adopting economically and socially sound measures as incentives for making sustainable use of the biodiversity components. For the implementation of this Article, Conference of Parties (CoP) policy guidance and an International Program of Work (IPW) were developed. At present dissemination of information related to

²⁴Gus Le Bretin, *Benefit-sharing & Bio-trade*, KATAVI (May 14, 2019, 01:25 AM) <http://www.abs.initiative.info/uploads/media/Biotrade.pdf>.

best practices about the implementation of CBD including the difficulties faced and countered, the lessons learned as well as assessments, studies, capacity building, analysis, etc. have been taken as the primary initiative in the CoP Decision IX/6. While UNCTAD Bio-trade initiative has been acknowledged as a co-partner for the implementation of CBD by virtue of CoP Decision VIII/26 and IX/6.

- ii. CITES²⁵ and non-detrimental trade incentives- A technical workshop was held by CITES CoP in relation to economic incentives in December 2003 where Decisions 13.76 and 13.77 were adopted in 2004. The incentive measures became important agendas for discussion in the CoPs. Decisions 14.42 to 14.47 provided the framework for working on the incentive measures for the implementation of CITES. Decision 14.42 provided for the parties that were adopting such incentive measures to provide details about those in the biennial reports. By Decision 14.43, the parties were encouraged to adopt the standard operating procedures for completing the formalities that are required for trading the species efficiently listed in CITES and also encouraged the authorities and agencies responsible for trading activities to benefit themselves from the expertise and support offered by them. As per Decision, 14.44 the parties were encouraged to take practical initiatives for enhancing the number of stakeholders. While Decision 14.46 recognized the UNCTAD Bio-trade initiatives as a partner in the process of implementation of CITES for ensuring the conservation of species listed in CITES and also to encourage compliance to the Convention and other national legislations by the private sectors involved in the trade practices of such species.
- iii. Ramsar²⁶ and Incentive Measures- Ramsar adopted the following resolutions to address the incentive measures- Resolution VIII.23 (2002) where the large parties were encouraged to initiate such incentive measures so that they can be used as tools for achieving the objectives of the convention thereby conserving and making wise use of the wetlands; Strategy 1.11 of Ramsar Strategic Plan for 2009-15- it held that the incentive measures that promote wise use provisions of the convention shall be promoted and such measures shall be implemented by all parties and shall also be assessed and monitored.

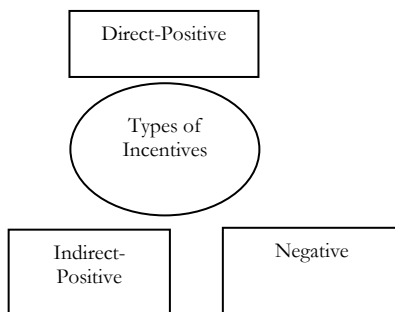
²⁵ The Convention on International Trade in Endangered Species of Wild Fauna and Flora (Washington Convention), 1975.

²⁶Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat, 1971.

- iv. UNCCD²⁷ and Incentive Measures- The UNCCD does not mention anything expressly as incentive measures but Decision VIII/1 of COP 8 in 2007 invites the developing nations to make efforts for sustainable land management as well as integrated water management inclusive of economic measures with conformity to International laws, sectoral policies, and national legal framework. Although UNCCD does not mention any incentive measures, the concept of sustainable land management resembles the ecosystem approach of CBD for which it is expected that incentive measures will play an important role under this Convention too.²⁸

(A) Types of Incentive Measures under CBD and Bio-trade

CBD has provided three basic categories of incentives. They are-



Direct-Positive Incentive Measures- these are for designing beneficial activities for the conservation and sustainable use of biodiversity and are economic, legal, or institutional,

Indirect-Positive Incentive Measures- changes in an indirect way the costs and benefits of specific activities. Under this measure conservation and sustainable use of biodiversity are encouraged by creating or improving markets for Biological Resources through trading mechanisms and other institutional arrangements.

Disincentives or Negative Incentive Measures- These incentives include pollution taxes, penalties, and other measures to discourage activities that are against the health of biodiversity.

The Bio-trade initiative is mainly focused on positive measures either direct or indirect including the private actors. These measures are even linked with government policies including some which might be negative incentives like green tax while others are mostly positive like clearance of public funds, property rights, etc.

In addition to the above incentives, two different but interlinked approaches are adopted from a Bio-trade perspective. These include-

²⁷ United Nations Convention to Combat Desertification, 1994.

²⁸ *supra* note 19.

- i. Value Chain Approach- it is an approach that is related to the coordinated activities between the parties involved in production activities to take the product produced to the customers. It includes producers, distributors, traders, support institutions, and other parties that are based on the demands of markets for their services and products. Actors within the value chain jointly work by sharing benefits as well as risks for achieving their goals together and at the same time invests time and energy in those goals.
- ii. Sustainable Livelihoods Approach- This approach includes the assets and capabilities including access, claims, resources, and stores as well as activities that are essential for living a healthy life. Livelihoods will be regarded as sustainable if they can enhance and maintain the assets and capabilities providing opportunities that are sustainable for the next generations and contributing net benefits for other livelihoods at both global and regional levels across time. Thus, this approach puts both people and communities at the center of enhancing human capital including health, labor skills, knowledge development, etc., social capital including relationships of trust, networks, and exchanges; financial capital such as savings and credit access; physical capital includes basic infrastructures for producing goods and natural capital like clean air, biodiversity, water, etc.

These two approaches help in classifying incentives that can engage private sectors for the conservation and sustainable use of Biodiversity.²⁹

VII. CONCLUSION

From the above discussions, it becomes clear that sustainable commercialization of biodiversity is required for its conservation of it since if Biological Resources are not commercialized or traded then it may hinder the growth of human civilization or might lead to the end of entire humanity. It is also to be noted that illegal Bio-trading or excessive exploitation of Biological Resources is one of the most important factors leading to the extinction of most such resources with either actual or potential value for humanity. Which conservation of such resources is also to be acknowledged. This necessity requires adopting a suitable framework for regulating the commercialization of Biological Resources sustainably. Article 11 of CBD recognizing this need, highlighted the importance of taking economical and sound incentives for conserving and sustainable utilization of biodiversity components.³⁰

²⁹*ibid.*

³⁰*supra* note 19.

The UNCTAD initiative framework for Bio-trade attempts to combine the normative framework of CBD, SDG, and MDG and at the same time tries to support the UNCCD, CITES, and the Ramsar Convention. These initiatives are expected to regulate the Bio-trade in a manner that will eventually ensure the conservation of Biological Resources as well as their sustainable utilization. These initiatives are however dependent on three core complementary approaches, - Strengthening value-chains for facilitating good practices that are related to sustainable utilization of Biological Resources and conservation of biodiversity; promoting equitable sharing of economic, environmental as well as social benefits among the value-chain participants and Adaptive management that assists in implementing sustainable practices structured on improved knowledge about the impacts of Bio-trade on species as well as ecosystems. This ensures that the Bio-trade will be responsible environmentally and socially with reference to the species, ecosystems, habitats, and local communities.³¹

The above discussion proves the relationship between the commercialization of Biological Resources with their conservation and the reason why both are complementary to each other. Both of them are mutually dependent and are necessary for human survival with the only requirement that Bio-trade must be regulated and done sustainably for better conservation of Biological Resources. This requirement requires the Member-States to be more vigilant, active and dedicated toward such an objective. To ensure such commitments from the Member-States collectively, the International Treaties will have to establish a strong governing system at the global level.

³¹*Ibid.*