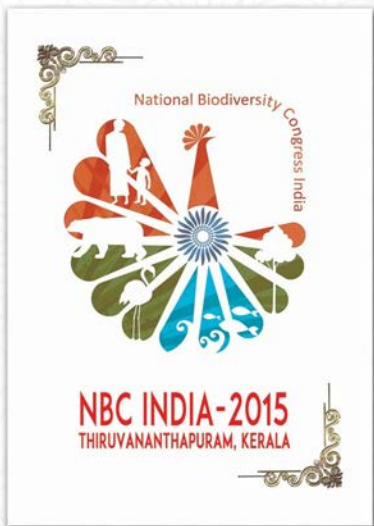


2nd NATIONAL BIODIVERSITY CONGRESS

2015



SUGGESTIONS &
RECOMMENDATIONS



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SUGGESTIONS AND RECOMMENDATIONS

NATIONAL BIODIVERSITY CONFERENCE- ACCESS & BENEFIT SHARING

ORGANIZED BY

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IMPLEMENTATION OF BIODIVERSITY ACT AND RULES

- Presently there is no implementation mechanism for Biological Diversity Act and Rules in Union territories. The Union territories such as Andaman and Nicobar Islands are hotspots of Biodiversity. Hence a time line is to be set up for implementing the provisions of Biological Diversity Act and Rules in Union territories
- At the Grass Root Level the major constraint identified was the lack of awareness among stakeholders on ABS. Strengthening of institutional structures, particularly at local level the BMCs and other line departments is necessary. It is recommended that modules for BMC empowerment and human resource capacity development for Biodiversity governance has to be developed and implemented in a phased manner.
- Political changes hinder progress and the consequent changes in tenure of the committee members were listed as major reasons for noneffectiveness of many BMC's. Thus the tenure of BMC is to be fixed irrespective of political changes.
- Lack of information on the status of potential bioresources, domestic consumption and trading, supply chain, quantity of tradable bioresources etc effects implementation of ABS provisions. Hence a state level study for assessing trade volumes and sources of materials of all the traded bioresources is suggested.
- Need for technical support in developing PBRs: One of the suggestions was to utilize the wealth of Ethnobotanical data available while preparing the PBRs. AICRP has a database collected from all over India from 1982 to 1992 and beyond. This data is available in BSI and ZSI. Data is also available in the form of Ph D and M Phil theses and publications in other journals both Indian and International. This can be made use of for cross reference for greater authentication.
- It was urged that SBB should prepare a priority list of species and work with a range of institutions like Patents and Trademarks etc.
- In the ensuing discussion regarding the confidentiality of PBR it was discussed whether PBR should be kept open or secret. One of the suggestions was that it can be made available in a staggered manner. It can be kept closed for one or two years and made available to those who seek particular information for commercial purposes for a specific charge.



TRADE IN BIORESOURCES

- An analysis of trade in the last 10 years shows a sharp rise in export of raw materials and semi finished products to developing countries. In 2010 the share of raw materials in the total quantity of exports to the developing countries was almost 73% whereas to developed countries the share of semi finished products is close to 54% followed by raw material 42 % and finished products only 4%. A major niche market for India in which more revenue could have been earned through value addition is thus being lost. A Legislative control for export of raw materials without value addition for priority species was one of the propositions to tap this revenue market.
- Biodiversity alert across the nation especially at customs and ports for species listed under various schedules and other priority species can be considered to prevent unsustainable exploitation of species of conservation concern

ACCESS AND BENEFIT SHARING

- ABS as an instrument for economic development. A key point raised during the sessions was that ABS is to be considered as one of the elements for sustainable raising finance for development and not as a regulatory regime. ABS mechanism should not restrict users but on the other hand it should facilitate sustainable development.
- Long term benefits of ABS: ABS mechanism instead of functioning as a regulatory regime should look into how industries function in terms of accruing benefits, understand the sustainability, unravel the entire supply chain and evolve strategies to ensure that industries use genuine materials.

1) Valuation of Biodiversity - fundamental step towards operationalizing the benefit sharing agreement

- Biodiversity have significant economic value and understanding the benefits of biodiversity and proper valuation of biodiversity are critical for initiating policies towards conservation and sustainable utilization of biodiversity. Valuation of biodiversity is the fundamental step towards operationalizing the benefit sharing agreement. For achieving this the primary necessity is to bring out the different techniques adopted for valuation of biodiversity in public domain.

suggestions and recommendations



2) Green Accounting would help a country to focus on all its assets to obtain a balanced, sustainable and inclusive growth of its economy. Contributions of forest fall outside the domain of markets, many of the services are not traded consequently the services are not priced and unaccounted. Green accounting is constrained by several factors as

- Lack of robust and reliable data on stock and flow changes in forests.
- Lack of understanding of ecosystem services interactions.
- Valuation of intangible benefits – assumptions and approximations.
- Scaling up of accounting framework – studies have remained local and contextual.

Conventional measures of national income and wealth do not account for environmental and social costs of development. It is therefore necessary to develop a system of accounting of natural resources, which is likely to provide ample support to design the economic system, in such way that it is possible to attain economic growth without destroying natural resources.

Forests provide tangible marketable goods such as timber, fuel wood and non-timber forest produce and also life sustaining services like sequestration of atmospheric carbon, generate atmospheric oxygen, regulate temperature and rainfall, protect soil cover, and ground water recharge. The intangible services of forestry sector are ignored in calculation of the GDP. It is necessary to provide weightage to ecosystem services in the calculation of GDPs, so that critical importance of natural resources are quantitatively measured and adequate funds are provided in state budgets for maintenance and development of forest ecosystems. Any decision regarding conservation or diversion of forest resources should be taken with a cost to benefit analysis incorporating the value of their ecological functions.

3) ABS- Legal frame work, administrative structure required and operationalization at BMC level.

- As Biodiversity Act stipulates BMC can levy charges by way of collection fees from any person for accessing or collecting bioresources for commercial purposes , but further clarity is required on this aspect and the percentage of levy to be collected has to be specified. It is requested that Guidelines for BMC for fixing percentages based on criteria such as the threat status of the bioresource to be accessed, quantum of resources available, quantum required etc may be developed.
- BMC should be empowered to implement the ABS provisions of the Act. Guidelines are to be translated, widely discussed in panchayats in order to facilitate capacity building of BMC.

suggestions and recommendations



- A major issue which was brought out during the course of the discussions was the complexity in dealing with ABS applications by SBB's as Form I should be subjected to a technical review as well as a legal review and the SBB's have limited capacity to process such a huge amount of data.

4) Implementation of ABS

With our restrictive ABS regime, India is not a sought after partner in many international projects using genetic resources. Request of India for import of critical germplasm like bio-control agents are being turned down. Some of the key questions to be addressed while formulating ABS framework for SBB were listed as

- a) How to interpret ABS laws in terms of arriving at development and what institutional measures are required to bring in balance
- b) What policy changes are needed for encouraging SBB's and agencies to implement ABS in terms of development perspective.
- c) Does the current ABS regime clarify what is covered and what is not?
- d) Does the regime support enhancing research and development and offer incentives to comply
- e) Is the regime predictable, equitable and inclusive?

- The difficulty in implementing a Singular Mechanism/ Formula for benefit sharing was stressed. This is mainly because the profit margin of different sectors varies as for example the profits of seed industry are different from biotech industry or pharmaceutical industry etc. Hence it was suggested that formula for different sectors should be fixed differently within the framework of the existing guidelines.

- Principle of Fairness & Equity are to be adopted that is the agreement should be "Agreeable for Both the Parties"- in common parlance

- Delays and lack of clarity in approval process impact sustainable utilization of bioresources.

- Local biodiversity fund to be established for conservation and promotion of biodiversity in the areas falling within the jurisdiction of the local body and for the benefit of the community.

- Correct identification of the conservator and the exploiter of resources and the identification of how much is taken out and how much given in and identification of value addition is important for drafting benefit sharing agreement

- The ABS agreement can also incorporate provisions for submitting an Annual report by the complying industries, whereby the agreement can be subjected to review once in three years or so, leaving a provision for renegotiation if volume of resources goes up.



5) Gateways to regulate access.

- Uniform guidelines on strategies to be adopted to deal with non compliance and regulation of the access of bioresources which are overharvested are available. It is suggested that the possibilities of developing synergies with provisions of Section 7 of BD Act with manufacturing licenses and GMP certification by Drug control department/ issue of permits by forest department also has to be explored. Building synergies between such policies will facilitate stricter enforcement of ABS provisions.
- Presently there is no system to track application once submitted to NBA or SBB or to check whether companies are complying with the provisions of the act or to track the supply chain. Hence it was suggested that SBB should gradually evolve an Automated On line application process, to provide transparency and ease of dealing with applications.

6) Incentive mechanisms for compliance

The experts opined that development of Incentive Mechanisms for compliance such as Certification would encourage better compliance. Some of the other incentive mechanism for the industries to come on board which was suggested included

- ABS accreditation certificate
- Deduction in income tax for levy for ABS
- Drug licensing authorities should issue green channel certifications

7) Nature of Benefit sharing agreements

The benefit sharing agreements can be monetary or non-monetary. Some of the options for non monetary benefits suggested included support for Awareness programmes on sustainable harvesting techniques, group farming , buy back arrangement from farmers etc

Monitory contributions

- Collection of annual levy from major industries
- Levies from sellers of herbs
- Registration of units
- Licensing raw drug selling shops

8) Framework for monitoring

- Constitution of Panchayath, district and state level committees to monitor the activities.
- Separate subcommittees for resources, awareness programmes and preservation of biodiversity.



9) Priority areas identified to use the benefits accrued for the sustainable development

The different sectors were requested to identify the priority areas in which they think is important to use the benefits accrued through the ABS mechanism for the sustainable development of the sector. It was suggested that benefits accrued from benefit sharing agreements should focus on

- Improved cultivation of medicinal plants
- Provide livelihood for farmers and collectors of herbs
- Protecting forests.
- Training herbal collectors
- Promote group farming
- Promote cultivation of home remedies.

10) Some suggestion for India to capture benefits from ABS

- Creating a un-ambiguous framework that provides clarity, certainty and predictability to various stakeholders using biological resources for commercial purposes
- Overcome the misconception that all commercial uses of biodiversity entail ABS and stop thinking ABS as a 'money spinner'
- A differential approach to sectors and stakeholder groups when the biological resources and associated traditional knowledge are accessed and commercialized.
- Ensure sectors come on board with full understanding of the framework and are willing partners to make ABS work for development

COMMUNICATION, EDUCATION AND PUBLIC AWARENESS

Biodiversity can only be preserved through voluntary participation of every individual member of the society and Aichi Biodiversity Target 1 specifies that By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably. Some of the suggestions evolved during the conference for achieving this vital target included

- Establishment of a legal literacy unit to create awareness of Biodiversity act, Plant variety protection and farmers rights act, Forest Conservation Act etc
- Effective Awareness on PIC, MAT and MTAs
- Develop pictorial tool kits and to involve media including social media for spreading the message of biodiversity conservation to a wider audience.

suggestions and recommendations



- Documentation of best practices and ABS case studies and BMC evolution, innovations and accomplishments.
- Develop professional expertise in biodiversity related policies and laws

CONSERVATION OF BIODIVERSITY

Invasive alien species

Various reports suggest that the ecological consequences of the invasion of tilapia and their establishment in the natural water bodies could be serious. Impact assessment of tilapia have shown that it can make up a substantial part (up to 25%) of the catch in many reservoirs of Kerala, resulting in stunting, poor growth or even elimination of some indigenous species. Its prolific breeding habit and parental care help it to multiply every three weeks, causing space overlap with local species, particularly carps. Reports indicate that the presence of well established population of tilapia in the Chalakudy River will cause negative effects on native fish fauna especially to Orange chromide, *Eetroplus maculates*, because tilapia shares more or less the same resources as those of orange chromide. *O. mossambicus* posed severe threat to the existence of Tor khudree in Periyar Lake as 78% of their food were common. Tilapia was displacing local prized species, *Eetroplus suratensis*, in Kayakulam Lake, Kerala. The further spread of the exotic fishes could unfavorably affect the rich fish diversity of the reservoir, which may ultimately bring an imbalance to the ecosystem stability. The uncontrolled population expansion of *O. mossambicus* should be checked urgently which is counted as one of the most invasive fish globally. A regular monitoring and studies on the population characteristics, diet and reproductive capabilities of exotic fishes in the reservoir is to be engaged to generate a database which will enable for the complete or partial irradiation of exotic fishes with a view to protect the native fish fauna.

Forest fragmentation

Fragmentation and degradation of forests due to forest clearances is one of the long term threats to biodiversity and forest ecosystem. In the Indian scenario, the tremendous anthropogenic pressure on the forests has resulted in the loss of biodiversity. Large chunks of forests have been reduced to small pockets. However small these pockets are, they continue to be the treasure house of biodiversity. It is absolutely essential not to neglect these pockets of biodiversity

Conservation of indigenous varieties

Maintenance of (agro-) biodiversity and mitigation of global warming through the process of carbon sequestration are the two important and complementary environmental service functions provided by agro ecosystems. Newly developing cultivars are replacing the original and indigenous forms of available gene pool. Traditional varieties are endowed with qualities like disease, pest and drought resistance. . NBC 2015 calls for evolution of strategies for minimizing genetic erosion and safeguarding the genetic diversity for achieving Aichi Biodiversity Target 7 and 13. Some of the suggestions developed for this included

suggestions and recommendations

- Documentation of traditional farming practices and traditional varieties
- Recognize the local level movement for conservation of traditional varieties.
- Validation of ethnobotanical knowledge
- Facilitation of process registering the farmers varieties under of Plant Varieties and Farmer's Rights Authority, New Delhi.
- Home gardens are considered to be the traditional agro-ecosystems which fulfil the basic needs of the local populations, avoid environmental deterioration, etc. The most important structural attribute of home gardens is the great diversity of herbs, shrubs, vines, trees, other perennials, which may be a consequence of the interplay of several socioeconomic and biophysical processes. Home gardens represent a 'genetic backstop', preserving species and varieties that are not economically viable for large scale cultivation and are planted in small scale for reasons of taste preference, tradition or availability of planting materials. Tree improvement, domestication and sustainable cultivation of these non-crop edible fruit tree species in home gardens and other agroforestry systems can provide better opportunities for farmers to conserve crop diversity, enhance the economic value of their crop lands and ensure food security.

Pollution control and Phytoremediation

Contamination of fresh water ecosystem with heavy metals is a great concern nowadays because of its impact on ecological balance and human health. Remediation of toxicity through cheap and sustainable measures is needed to conserve these precious resources for future generations. It is suggested that Aquatic macrophytes like *Colacasia esculenta*, *Cynadon dactylon*, *Nymphoides indicus*, *Nelumbo nucifera*, *Pandanus* sp. and *Eichhornea crassipes* with phytoremediation capacity should be effectively utilized in alleviating the pollution hazards with minimum threat to the environment.

Biodiversity monitoring and citizen science

- Though monitoring select species or species groups could be achieved by groups of professionals; monitoring the diversity of an entire class across space and time has humungous resource requirements. Popularity of certain groups like birds and butterflies amongst amateurs opens up the possibility of crowd sourcing techniques known as citizen science. This opens up possibilities to funnel the observations and studies of highly skilled amateurs through crowd sourcing techniques known as citizen science. The time is ripe for India to take the plunge and marshal its citizens to improve our biodiversity monitoring.

suggestions and recommendations



- In India 100 Million frogs are captured and killed for experimental. It is urged to replace use of live Animals by non-animal alternatives for education and experiments . A Three R's approach is to be implemented urgently mainly 1) Replacement of use of Live Animals By Non-animal Alternatives 2. Reducing Number Of Animals used for experiments 3. Adoption and refining procedures Alternatives to be developed such as educational aids or teaching approaches to replace animal killings. In Education types of alternatives suggested included Models, Mannekins, Videos, CDROMS and Online resources as in vitro Labs

INCLUSIVE BIODIVERSITY CONSERVATION

- Exclusionary models have failed to address the real conservation practices of the resource dependant people resulting in massive deterioration of the biomes, landscapes, ecosystems and biodiversity along with denial of rights of the most vulnerable and marginalized ecosystem people including indigenous communities. Conservation is materialized through practices of the communities of those who depend directly on the land and resources through multiple means. The reflections from the Community Managed Forest areas of the World indicate 'co-existence' policies of the traditional resource use dependant people were the basis of strong conservation and sustainable use and management of biodiversity. The indigenous people are integral part of ecosystem and their non economy based livelihood are the major part of the complex web that ensures 'conservation and governance" in action. There is a necessity of advancement of biodiversity conservation strategies and legislation to right based inclusive frame work.
- The intertwining of traditional knowledge with the scientific knowledge of west must be leveraged via establishing 'Biodiversity Chair' at the university level.
- Women play a vital role in maintaining and protecting local genetic resources and hold extensive knowledge of domestic and wild plants, agricultural practices, local species and animals to sustain their livelihoods. Women are always found in frontline of such efforts of biodiversity activities, strategies and opportunities in consumption, conservation and management. Although women play crucial role in biodiversity conservation, their systematic exclusion in decision making and policy making from the community up to national, regional and international level is methodologically ignored. The conservation, access and benefit sharing of genetic resources and associated traditional knowledge largely depends upon the socio-cultural, political and economic context that must be integrally addressed with gender based perspective.



BIODIVERSITY AND CLIMATE CHANGE

• Adequate food is not available throughout the year at one particular place, therefore, inhabitant of that ecological zone start moving to a place having adequacy of food, less competition with congeneric and conspecific species and factors favorable for reproduction and ecological succession. Migration is common in the life cycle of many species of birds, but over the past years migration has become even more difficult because of extensive habitat loss and fragmentation of remaining habitats. Additional challenges are presented by climate change, increases in the frequency of extreme weather events and changes in temperatures at different latitudes thus affecting migration patterns. Garganey has been reported for the first time from the Chandertal Wetland and from the meadows in the vicinity of Spiti river at Lossar village of Spiti Valley, Himachal Pradesh. This new and interesting migration pattern of garganey is opening up new vistas of avian migration.. NBC 2015 suggests that more detailed studies of migration pattern of birds should be undertaken to understand the interrelationship between climate change and biodiversity.

• Global warming and climate change are imminent threats to livestock production. Cattle, like most mammals, rely on a delicate balance of heat production and heat loss to maintain their thermal status. Vechur cow and Kasaragod Dwarf, two popular native cattle breeds, noted for their disease resistance and low maintenance, have been proved to possess thermometer genes for heat tolerance, making them ideal candidates for selective breeding of livestock capable of withstanding global warming and climate change.

• Wetlands are the world's primary carbon sequestration mechanism. Construction of buildings should be permitted taking into account the ground water facility and the effects they could bring to the nature nearby.

BIODIVERSITY FOR HEALTH CARE

Another research work presented at the congress has validated the efficacy of the urine of Vechur cow in the treatment of immune disorders associated with several diseases and cancer therapy. The tests proved that the body weight, spleen and liver weight, total leukocyte count, lymphocyte distribution, serum total protein, and globulin levels were significantly higher in the mice treated with the distillate of Vechur cow urine. The finding establishes the therapeutic effect of Vechur cow urine in the treatment of immunosuppression during chemotherapy and its potential for protective use in immune mediated disorders, Vechur cow urine distillate exhibited better immunostimulatory effect on immune system compared to crossbred urine distillate in normal as well as in immunosuppressed mice.



BIODIVERSITY FOR FOOD SECURITY

The nutritional and livelihood benefits derived out of diverse food basket are one way of achieving food security. Relying on a narrow genetic base for nutrition submits society to many risks. Some of the suggestions for diversifying the food basket for meeting the nutritional needs includes

- Seaweeds or marine algae are one of the important marine living resources with tremendous commercial importance. Seaweeds contain protein, carbohydrate, iodine, bromine, vitamins, minerals and amino acids. Seaweed meal prepared from Sargassum & Gracilaria can be given as supplements to the daily rotations of cattle, poultry & other farm animals. In India the common people are ignorant of the importance of marine algae as food & feed. Hence there is an urgent need to educate the people & inform them the utility of the seaweeds .
- Meliponiculture should be popularized for pollination service, ensuring sustainable agriculture and the conservation of biological diversity resulting in food security. Meliponiculture should be popularized in the rural homesteads for poverty alleviation and additional income generation to women. Besides being a honey producer, stingless bees possess many characteristics that enhance their importance as crop pollinator both in wild and agricultural situations.
- Edible non-crop plants enhances economic value of crop lands , conserve crop diversity, contribute to food and nutrition security as an important addition to people's diet, provides essential vitamins and minerals, play an important role as seasonal food and provides additional sources of income.
- Community owned seed banks should be established at local levels for the conservation of genetic diversity.
- On-farm conservation of traditional varieties of crops should be promoted