Entwining Development and Poverty Alleviation with Biodiversity : Where do We Stand?

Palpu Pushpangadan
Director General
Amity Institute for Herbal and Biotech Products Development, Thiruvananthapuram
Email : palpuprakulam@yahoo.co.in

Earth is the only one place in this Universe where life in the forms we know is possible. The unique position of Earth in the Solar system made it possible the evolution of life. Air, Water, soil, sunlight and biodiversity are the life support system of Earth. Disturbance in any one of them may upset/distribute this normal life system on Earth. It may lead to extinction of even humans.

Biodiversity or bioresources is the sum total of life on Earth - it covers mircoorganisms to mammoth animals like elephant and man. The UN-Convention on Biodiversity (CBD) describe biodiversity is "the variability among all living organisms from all sources, including, interalia, terrestrial, marine and other aquatic ecosystems and ecological complexes of which they are part; this include diversity within species, between species and of ecosystems". Biological diversity is the central tenet of nature, one of its key defining features. Evolution has produced an amazing variety of plants, animals and micro-organisms, intricately interconnected, and worthy of respect and conservation in their own right. Biodiversity is also the basis for the continuous evolution of species. This diversity is also the backbone of human societies and cultures, in terms of the ecological functions it provides, the myriad survival and the livelihood it meets.

India's economic growth is moving forward at seven to eight per cent a year, making it one of the fastest growing economies of the world. Fast and unregulated urbanization is threatening traditional ways of life and increasing pollution merely due to lack of understanding of sustainability, proper management, poor partnerships between industry, community and research & development. Global efforts to eradicate poverty (income of less than US# 1 a day) are currently focused on the Millennium Development Goal (MDGs). The eight goals first articulated by the United Nations in September 2000 have been in place for five years.

> Approximately 13.5 million living organisms/species now exist on Earth. But hardly 1.3 million have been named and described so far. Man is just one of such life forms evolved on Earth.
>
> Man is considered to be the most successful organism evolved on Earth but has become a great liability to Earth as he has become the main reason/agent in upsetting the normal course of evolution of life on Earth-an agent of destruction and destabilization.

UN Millennium Goals

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Promote gender inequality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria and other diseases
7. Ensure environmental sustainability
8. Develop global partnership for development

Goal # 7 and 8 are crucial that will lead to sustainability. India has achieved self-sufficiency in food yet several stomachs are still hungry. Out of these majority are those that till the land, produce food for others, are small landholders or rural landless.

The environment today

Environment covered water, air, land, and the inhabitants. The focus was on air and water pollution

and its abatement. **The National Environmental Tribunals Act 1995** was enacted to provide for strict liability for damages arising out of any accident occurring while handling any hazardous substance and for the establishment of a National Environment Tribunal for effective and expeditious disposal of cases arising from such accidents, with a view to giving relief and compensation for damages to persons, property and the environment and for matters connected therewith or incidental thereto. Biodiversity was not emphasized while defining environment. Forest, wild life, agriculture, fishes etc. were considered as components of environment but the concept of biodiversity as defined by the Convention on Biodiversity is a recent introduction in the definition of environment. The country did introduce **Green Benches** as constituted by the Chief Justice of the respective High Courts either on their own or on directions from the Chief Justice of the Supreme Court to constitute exclusively a bench (quorum consisting of more than one Judge) to deal with matters relating to environment. However, it did not focus on the issues related to sustainability that cannot be decided in courts.

The **Environmental Statement** is defined by the International Chamber of Commerce as "a management tool comprising a systematic, documented, periodic and objective evaluation of how well environmental organizations, management and equipment are performing with the aim of helping to safeguard the environment by a) Facilitating management control of environmental protection; and b) Assessing compliance with company policies which, would include muting regulatory requirements. Safeguard of biodiversity and sustainable development do not figure in the Environment Statement. India is the first country in the world that has provided for constitutional safeguards for the protection and preservation of the environment. In the constitution of India, specific provisions for the protection of environment have been incorporated by the Constitution (42 amendment) Act, 1976. Now, it is an obligatory duty of the State and every citizen to protect and improve the environment. The Directive Principles of State Policy contain specific provisions enunciating the State commitment for protecting the environment. "The State shall endeavor to protect and improve the environment and to safeguard forests and wildlife of the country". Furthermore, duties of the citizens towards environment are contained in Article 5 1 -A(g), This Article says :- "It shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife, and to have compassion for living creatures" However, the scenario of pollution and environmental damage is alarming. The natural resource base is under siege; poor water management degrades and squanders as precious resource and is linked to the urbanization of poverty.

The other view on environment

There are contradicting reports on several issues such as global warming, climate change since these have international implications. Several climate scientists are divided on whether or not there is global warming. US scientists have a different view on the subject. "The core of the Bush policy was a voluntary goal of reducing emissions 'intensity' by 18 percent by 2012," says Aimee Christensen, Executive Director of Environment 2004, a political action group. Compare that to the targets set by the Kyoto Protocol, which would have mandated that by 2012 the U.S. return to emission levels 7 percent below those of 1990, or the McCain/Lieberman Climate Stewardship Act, which asked that the U.S. return to year 2000 levels of emissions. Both those plans would result in actual reductions, not just intensity reductions. However, these did not find approval of US government neither at home nor at international level.

Environment and Biodiversity:

The paradigm change

Over the last century, population, market pressures and the development of new agricultural technologies have encouraged patterns of agricultural development tending towards agricultural intensification (*i.e.* increasing scales of monoculture production, intensive mechanical tillage, irrigation, and the use of synthetic fertilizer, pest control agents and a restricted diversity of crop and livestock

varieties), often leading to natural resources degradation. The growing food demand by a wealthier and larger global population is expected to induce further encroachment of agriculture on unmodified ecosystems (10 billion hectares by 2050), with inevitable negative impact on biodiversity.

The majority of the human population increase is expected to take place in the biodiversity-rich developing countries of the tropics (e.g. the Caribbean, the Philippines, Sri Lanka and the Western Ghats of India), where 19 out of 21 regions of concentrated biodiversity ("biodiversity hot-spots") and human population in these areas is increasing faster than anywhere else). These areas of high population growth (many of which lie adjacent to protected areas) are also experiencing rapid changes towards urbanization where demand for agricultural products is expected to increase as income levels in these areas rise. The anticipated result of such demographic changes is that increased production pressures will be placed on both the wild lands and the agricultural production systems in and around protected areas.

A recent news item "Climate change threatens India: study" based on a study undertaken by Indian Institute of Management-Ahmedabad, TERI and NIO, Goa revealed that Teak and Sal forests may dry out due to higher temperatures, the production of wheat, rice and other major crops could fall and monsoon rainfall will rise, with a drastic impact of climate change in India. It said that 85 percent of India's forests will change due to climate change by 2030-2100 and that rising sea levels will impact coastal railways, roads, major river basin ecology, and rainfall. They also found that incidents of malaria could increase and climate change could introduce malaria in new areas. The NIO, Goa study clearly showed that "the southern peninsular coast will be the most vulnerable to sea level rise". They also observed that there could be large-scale loss of biodiversity. Biological diversity - or biodiversity - is the term given to the variety of life on Earth. The biodiversity we see today is the result of billions of years of evolution, shaped by natural processes and, increasingly, by the influence of humans.

CBD and Environment : Holistic approach

The Brundtland Commission established the conceptual link between biodiversity and sustainable development, reflecting a process of thought and international dialogue that led to the United Nations Conference on Environment and Development in Rio de Janeiro in 1992. Recognizing the fundamental role of biodiversity in supporting human life, the Convention on Biological Diversity, a legally binding landmark treaty, was opened for signature at the Rio Earth Summit and entered into force in 1993. Among the existing global biodiversity-related agreements, it was the first to cover all aspects of biodiversity and to acknowledge the role of biodiversity in sustainable development. The Convention presently has 188 members, reflecting nearly universal participation. The three main objectives of the Convention the conservation of biodiversity; the sustainable use of its components; and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources are reflected in the text of the Convention, which contains both substantive commitments and provisions for the establishment of a framework for implementation.

Second global biodiversity outlook meeting is scheduled in a few days. 2010 Biodiversity Targets have been proposed in the provisional agenda. It has been realized that there is a threat to biodiversity from human activities. It has been reaffirmed that biodiversity is the living foundation for sustainable development, that the rate of loss is still accelerating, that threats must be addressed, and that the Convention remains a key tool for sustainable development. For these reasons, the Conference of the Parties adopted a Strategic Plan, in which Parties committed themselves to a more effective and coherent implementation of the three objectives of the Convention in order to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level, as a contribution to poverty alleviation and for the greater benefit of all life on earth. In order to achieve the Strategic Plan, and its 2010 biodiversity target, this plan has been proposed in the agenda to develop a framework. The focal areas are:

1. Reducing the rate of loss of the components of biodiversity, including:
   (i) Biomes, habitats and ecosystems;
   (ii) Species and populations; and
   (iii) Genetic diversity;
2. Promoting sustainable use of biodiversity;
3. Addressing the major threats to biodiversity, including those arising from invasive alien species, climate change, pollution, and habitat change;
4. Maintaining ecosystem integrity, and the provision of goods and services provided by biodiversity in ecosystems, in support of human well-being;
5. Protecting traditional knowledge, innovations and practices;
6. Ensuring the fair and equitable sharing of benefits arising out of the use of genetic resources; and;
7. Mobilizing financial and technical resources, especially for developing countries, in particular, least developed countries and small island developing states among them, and countries with economies in transition, for implementing the Convention and the Strategic Plan.

People are having a major and growing impact on the biosphere, the long-term consequences of which are feared by many but are in fact not at all well understood. There are currently well over six billion people on the planet, and the human population is expected to reach nine billion by mid-century. Each person has the right to expect adequate food, clean water, safe shelter, and energy, the provision of each of which has profound ecological implications. Food must be grown on land or in water, water must be clean to drink, shelter must be constructed from ecosystem-derived materials, and energy must be harnessed from natural processes.

For the purposes of assessing progress towards the target to achieve by 2010 a significant reduction in the current rate of biodiversity loss, biodiversity loss is defined as the long-term or permanent qualitative or quantitative reduction in components of biodiversity and their potential to provide goods and services, to be measured at global, regional and national levels (decision VII/30, paragraph 2). The "current" rate is taken to be the rate in 2002, when the Strategic Plan was adopted.

Biodiversity was considered to be a common property till the end of 20th century, it was in the Earth summit held in 1992 at Rio that the first time the world forum agreed on the sovereign rights of states over their bioresources and associated knowledge systems.

This minimum demand is massively amplified however, by the wasteful consumption of resources over and above the level needed to meet basic human needs. This growing demand for luxury products among a relatively small segment of the world population is leading to a greater loss of biodiversity, with consequences for all. As biodiversity is lost, the provision of ecosystem goods and services may also be undermined, with a negative effect on human well-being. Recently, the Millennium Ecosystem Assessment concluded that of the ecosystem services it assessed, and that make a direct contribution to human well-being 15 of 24 were in decline.

Biodiversity loss can have indirect effects on human well-being as well. By disrupting ecosystem function, biodiversity loss leads to ecosystems that are less resilient, more vulnerable to shocks and disturbances, and less able to supply humans with needed services. The damage to coastal communities from floods and storms, for example, increases dramatically following conversion of wetland habitats, as the natural protection offered by these ecosystems including regulation of water run-off is compromised. Recent natural disasters in Asia and North America serve to underline this reality.

Trends and progress towards the 2010 biodiversity target

Biodiversity indicators

Biodiversity indicators are information tools, summarizing data on complex environmental issues. They can be used to assess national performance and to signal key issues to be addressed through policy interventions and other actions. Indicators, therefore, are important for monitoring the status and trends of biological diversity and, in turn, feeding back information on ways to continually improve the

Conservation of Biodiversity Strategies & Priorities

IUCN, UNEP & WWF 1980 came out with the first global strategy for Conservation.

This strategy defined conservation as :

"Management of human use of biodiversity so that it may yield the greatest sustainable benefit to present generation while maintaining its potential to meet the needs and aspirations of future generation"

This definition involves two complementary components - Conservation and sustainability.

Primary Goal of World Conservation Strategy is:

- Maintenance of essential ecological processes and life support systems on which human survival and economic activities depend
- Preservation of species and genetic diversity
- Sustainable use of species and ecosystems which support millions of rural communities as well as major industries.
- Thus a logical strategy for conservation of biodiversity should involve:

  Protection, preservation, maintenance, exploitation, conservation and sustainable utilization of Biodiversity

effectiveness of biodiversity management programmes. Small sets of indicators that focus on key issues is referred to as headline indicators, and when used to assess national or global trends, build a bridge between the fields of policy-making and science.

Constituents of Human Well-being

Security
- Personal safety
- Secure resource assets
- Security from disaster

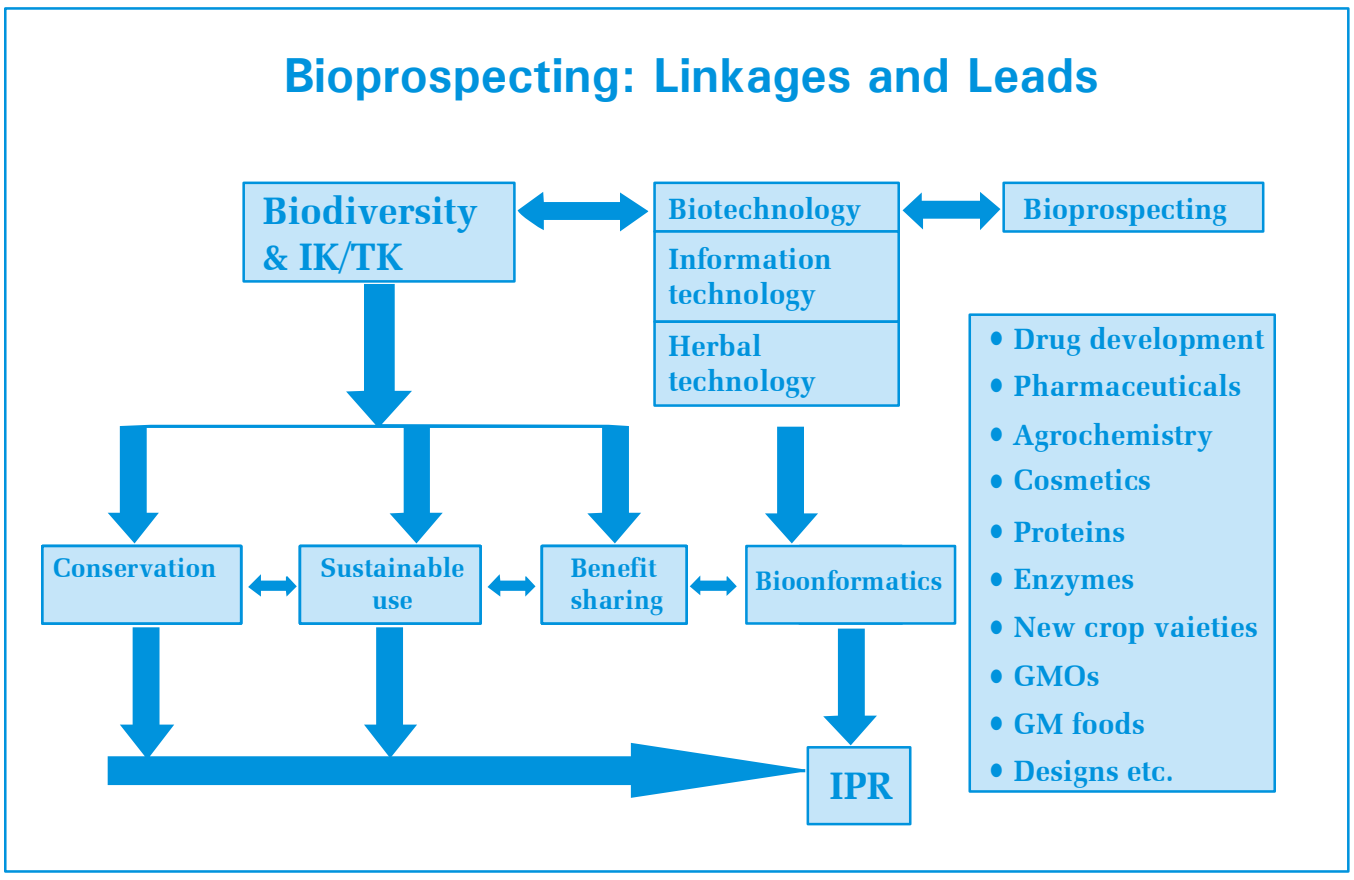
Health
- Strength
- Feeling well
- Access to clean air and water

Good social relation
- Sccial cohesion
- Mutual respect
- Ability to help other

Basic Material for good life
- Adequate livelihoods
- Sufficient nutritious food
- Shelter
- Access to goods

Freedom of choice and action:

Opportunity to able able to achieve what an individual values being and doing



Trends in invasive alien species

Ecosystems that are out of balance - for example as a consequence of fertilization/eutrophication - are particularly vulnerable to the establishment and spreading of non-native species, including pests and pathogens. Such invasive alien species can have devastating impacts on native biota, causing extinctions and impacting on valuable economic species. Invasive species can transform the structure and species composition of ecosystems by repressing or excluding native species. In the recent past, the rate and risk associated with alien species introductions have increased enormously because human population growth and human activities altering the environment have escalated rapidly, combined with the higher likelihood of species being spread as a result of increased travel, trade and tourism. A major source of marine introductions of alien species is hull fouling and the release of ballast water from ships, although other vectors, such aquaculture, and aquarium releases, are also important, and less well regulated than ballast water.

Conclusion

On the basis of the information available to date a common message emerges: that biodiversity is in decline at all levels and geographical scales, but targeted response options whether through protected areas, or resource management and pollution prevention programmes - can reverse this trend for specific habitats or species.

There should be no illusions. Achieving the 2010 biodiversity target requires not only a redoubling of efforts, but a firm commitment to act according to the

Biodiversity, Hunger and Poverty Alleviation

- Hunger and poverty alleviation efforts have frequently focused on improving agricultural production inter-alia with a view to provide adequate but safe food to meet local demands as well as for exports.
- The market for export has stringent requirements on important foods including minimum acceptable pesticide residue level.
- Recent years there have been a rise in demand for organic food, providing more opportunities for export of tropical produce.
- In this area the biological control is the management of Invasive Alien Species (IAS) particularly under Article 8h of CBD.

Livelihood and Employment

- Nearly a sixth of the world's population depends on protected areas for significant percent of their livelihoods.
- Over a billion people in developing countries rely on fish as a major source of food and 80% of the world fisheries are fully or overexploited.
- Cost of global network of marine protected areas conserving 20-30 % of the world's seas: up to$ 19 billion annually creating around one million jobs.

Health, Nutrition and Vulnerability

- Percentage of people in Africa estimated by WHO to rely on traditional medicines (plants and animals) as the main source of their health care needs: 80 %
- Number of people worldwide who depend on drugs derived from forest plants for their medicinal needs : 1 billion.
- About 8 % of the 52,000 medicinal plants used today are threatened with extinction.
- Number of times more likely a person living in a poor country is to be hit by a climate change-related disaster than someone from a rich country: 79 (UN-CBD, 2009)

Impending environmental dangers

- Rachel Carson's "the silent spring" (1963) created ecological ripples around the world, and it is for the first time, that the world as a whole took note of the impeding dangers that the deteriorating environment posed to humanity at large. This book has been regarded as a watershed in environmental history.

priorities identified through the Strategic Plan. The conservation and sustainable use of biodiversity need to become an integral element of planning, policy, and practice for all economic and social sectors of society. We all derive benefits from biodiversity, and will all suffer from its loss. We do need to acknowledge however that failure to deal with biodiversity loss will burden the poor disproportionately. Proof of the compassion and care of the global community for the poor can be shown by ensuring that the basis for their livelihoods is conserved, used sustainably and the benefits shared equitably. These are heavy commitments. The burden however can be lessened and synergy realized at all levels through cooperation and the contribution of all.

(The author is Former Director, National Botanical Research Institute, Rana Pratap Marg, Lucknow).