

# **FORTIFYING INDIA'S FUTURE THROUGH BIODIVERSITY ORIENTED RURAL DEVELOPMENT WITH SPECIAL REFERENCE TO SUSTAINABLE AGRICULTURE AND FOOD SECURITY**

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## **ABSTRACT**

*Our Planet is shared by 6.4 billion people and millions of species. In brief, wide variety of life on earth, as shown by the many species, is called biodiversity. India has 8.1% of the world's total biodiversity in contrast to her 2.4% of the world area. But unfortunately, there is enormous loss of biodiversity and one of the root causes identified for the loss in India is our wrong model of development followed so far which has centered on commercial and mono cultural agricultural production, large scale industrial expansion and increasing the consumption of goods and benefits through exploiting natural resources with less regard for sustainability. In other words, today replacement of the communities of nature by man made communities has become the new reality to protect life on earth. People must learn to control and adjust the balances in nature that are altered by their activities. In this context, 70% concentrated population of rural India and its development should be analyzed. According to our policy makers, rural development encompasses economic, agricultural, industrial, infrastructural and its management aspects. But the imperative need today in India is the preservation of biodiversity which is sine qua non for participatory rural development.*

## **INTRODUCTION**

India has many endemic plant and animal species. Among plants, species endemism is estimated at 33% with 140 endemic genera but no endemic families. India contains 172 species of animals considered globally threatened by IUCN, of 2.9% of the world's total number of threatened species. The survival of human societies and culture is dependent on biological diversity, which provides the essential ecosystem benefits ~~including hydrological and geochemical cycles and climate~~ regulation, which form the basis for human survival. Today, both ecological and livelihood security have been severely eroded and threatened; hence there is an imperative need to reverse this trend through conservation of biodiversity, sustainable use of biological resources and equity in conservation and use. On the other hand, sustainable rural development refers to the rational use of scarce resources with the support of people and economic policies adopting strategic environmental management practices. Therefore, a multifarious strategy needs to be formulated to solve the rural problems through development process focusing on biodiversity oriented community participated sustainable rural development.

India is one of the world's largest and oldest agricultural societies, which has remained, predominantly rural despite decades of modernization. In spite of its current

status, agricultural sector governs India's economy and policy. It is in the rural areas that the heart of India lies, that is where the money has to be generated to create the demand. Hence, it is very stupid of us, very short sighted of us, or very naïve of us if we presume that we can have a two speed economy. Today, we need to focus on agriculture not only at the WTO but also more domestically. Apart from identifying strategies and action plans to integrate biodiversity and rural development, this paper, also tries to focus on various emerging issues in food security.

## **BIODIVERSITY AND RURAL INDIA**

The term 'Biodiversity' was coined by Walter and Rosen, which is formed by a contraction of the term biological diversity. According to Hunter, biodiversity can be defined as "the diversity of life in all its forms and at all its levels of organization". Global biodiversity is normally divided into three fundamental categories, viz., genetic diversity, species diversity and ecosystem diversity. The world's biological diversity is a vast and undervalued resources. About 100 species are lost every day. The loss of the earth's biological diversity is one of the most pressing environmental and development issues. There is no dearth of biological resources in the rural areas. In rural areas the cultivable lands mainly the paddy lands, have been irretrievably lost by conversion into housing and industrial complexes. The fact is, these paddy lands were located and developed by our ancestors centuries back because of the level nature of soil and proximity of subsoil water table. They had meticulously designed a system of tanks to conserve rain water and to recharge ground water and to eliminate floods, soil erosion and sand deposition. This scientific system sustained the adjacent wild vegetation and maintained equilibrium. But today they are all lost.

## **RURAL DEVELOPMENT FROM A HOLISTIC ANGLE**

In this LPG (Liberalization, Privatization and Globalization) era rural development should be looked from a holistic angle instead of from the angle of compartmentalization between the urban development and rural development mainly because of fast changes, which are taking place in all the spheres of life with market driven economy. A comprehensive outlook including both the rural areas and urban areas can be viewed and strengthened through Prime Minister, Dr. Manmohan Singh's National Urban Renewal Mission (NURM) and President Dr. A.P.J. Abdul Kalam's Providing Urban Amenities in Rural Areas (PURA). PURA is a design that resolves the following four basic problems:

- Elimination of slums,
- Water Scarcity,
- Waste disposal and

- Long hours of commuting to work in a simple and cost-effective manner.

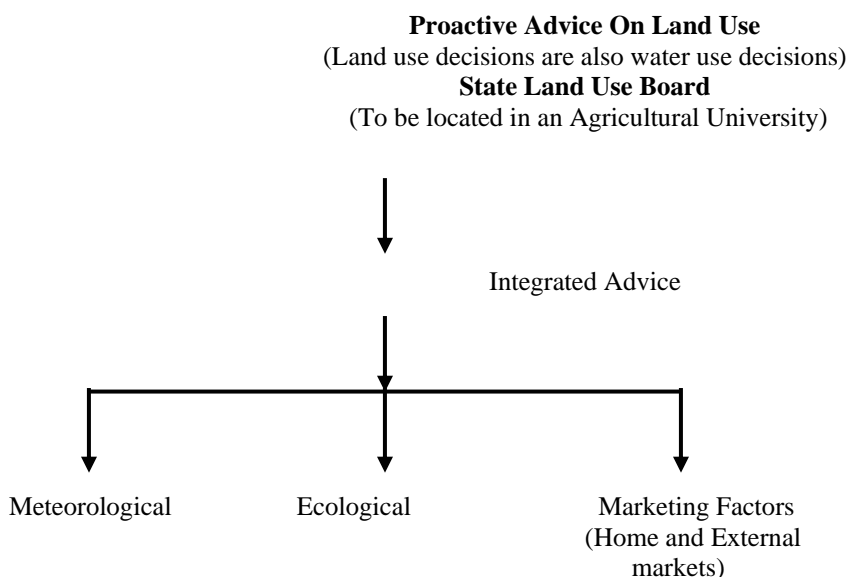
NURM is a design to resolve all aspects of urban blight like sanitation, roads, transport, power and water apart from governance problems caused by regressive urban laws. But NURM will fail to deliver if it is not coordinated with PURA and similarly PURA will fail to substantially deliver if it is not integrated with Biodiversity conservation in rural areas.

## **EDUSAT AND BIODIVERSITY ORIENTED RURAL DEVELOPMENT**

GSLV launched from Satish Dhawan Space Centre, Sriharikota, the 1,950 kilogram EDUSAT in the intended Geosynchronous Transfer Orbit. This orbit had a perigee or the nearest point to Earth at 180 km and an apogee or the farthest point to Earth at 36,000 km. The orbit plane was inclined at 192 degrees with respect to the equatorial plane. EDUSAT is the India's first thematic satellite dedicated exclusively for educational services which can provide connectivity between urban educational institutions that have infrastructure for imparting quality education and a large number of rural and semi urban educational institutions that lack necessary infrastructure. This thematic satellite can be extremely utilized to impart the strategies of Biodiversity oriented rural development and to make the Rural India shine.

## **RESTRUCTURED STATE LAND USE BOARD AND RURAL BIODIVERSITY**

Dr. M.S. Swaminathan's restructured State Land Use Board will help us to strengthen the rural biodiversity in a big way.



According to Dr. M.S. Swaminathan, the Land Use Board through a virtual college should give proactive advice on the choice of crops and farming systems, so as to achieve a match between demand and supply in farm commodities and to ensure that the most efficient crops are grown in different agro-climatic and agro-ecological regions.

### **Rural Knowledge Centres and Biodiversity Oriented Rural Development**

In this context it is apt to look into Mission 2007 and its goals with reference to the 60th anniversary of India's Independence. The two goals are:

1. A Hunger-free India and
2. Every village a knowledge center

Which is conceived by M.S. Swaminathan Foundation. We can utilize this rural knowledge centres in a bigger way with the support of Self Help Groups (SHGs) to interact and transfer the knowledge on biodiversity conservation available in rural India to farmers and others and thereby strengthen the rural development and agriculture.

### **PDS AND SUSTAINABLE BIODIVERSITY IN RURAL INDIA**

The Indian Public Distribution system is one of the largest pro poor affirmative action by the State anywhere in the world. We can be proud of it because we have successfully fought famine in India and it provides Food Security for millions of poor. According to government statistics over the last couple of decades, the amount of cultivable fallows in the dry land belts has increased in almost direct proportion to the amount of rice supplied through the PDS system. The seven dry land states of India, viz., Andhra Pradesh, Gujarat, Karnataka, Maharashtra, Madhya Pradesh, Rajasthan and Tamil Nadu, account for nearly 70% of the cultivable fallows in the country amounting to roughly 60 million hectares. And these seven states receive up to 70 million tonnes of rice through PDS. Keeping in mind the fact that the present productivity levels of dry lands in India are estimated at 0.9 tonnes, if the rice were to be replaced by Sorghum (jowar), Pearl Millet (bajra), Finger Millet (ragi) and other millets all of which are locally grown in complex diverse farming systems, all the food needs of the local communities could be met comfortably. As a result the greatest beneficiary of this system would be the local farming systems that could regenerate their lost biodiversity.

### **SUSTAINABLE AGRICULTURE AND FOOD SECURITY**

Agriculture is directly linked to many facets of sustainable development, including poverty eradication, sustainable consumption and production, management of natural

resources, energy, freshwater, health education, trade and market access and also technology transfer and capacity building. It is high time to eliminate the subsidies which are at the cost of environment. Both economic and environmental benefits will be achieved by removing subsidies that encourage the use of coal, electricity, pesticides and irrigation water. Subsidies typically benefit the politically influential. We should keep in mind that 'There is NO FREE LUNCH'!!! The major challenges to food security today are:

- Food security must focus on a diversified food basket, not food grains alone;
- To produce additional food while conserving depleting natural resources and also to provide physical, economic and ecological access to food and nutrition security at the household level;
- Food security must not be based on market, but rather on self-reliance and sufficiency. The approach should be one of moving from food security to food sovereignty;
- Food security strategy should strengthen the ecological balance so as to eliminate hunger and malnutrition;
- Development of climatic database;
- Development of agro-ecological zoning system;
- Ensuring resource support to agricultural research by allocating a minimum proportion of the agricultural GDP;
- Preparedness for disaster prevention and management to overcome the hardships arising from natural and man-made calamities;
- Strengthening regional food security through fostering the maintenance of regional food reserves to assist the participating countries in overcoming food shortages and abnormal price increases arising from contingent situation like floods and other natural calamities through exchange of food and
- Low intensity agriculture to be practiced to promote food security since it promotes biodiversity farms across landscape whereas agricultural intensification has been found to impact biodiversity in farms badly.

## **CLIMATE CHANGE AND SUSTAINABLE RURAL DEVELOPMENT**

The important relationship between sustainable development and climate change was brought into sharp focus in the Delhi Declaration made at COP-8 in November 2002. This declaration resolved that climate change related policies and adaptation

measures should be appropriately integrated with national development programs. Climate change impact studies in India suffer from the following pitfalls:

- Lack of reliable regional climate change scenarios and information about changes in weather variability and seasonality;
- Lack of long-term ecological data sets;
- Major gaps in current scientific understanding of community and population ecology;
- The difficulty of differentiating climate change impacts from other stress related environment degradation and
- Creating a recycling-based society so as to mitigate the climate change and tread the development path and develop harmony with the environment.

In this context, we have to seriously think of developing an accurate monsoon prediction system as emphasized by our President Dr. A.P.J. Abdul Kalam.

## **STRATEGIES AND CONCLUSION**

- Implement the National Biodiversity Strategy and Action Plan (NBSAP);
- Dissemination of database to the users accurately, swiftly and in the desired format;
- Imperative need to proper diagnosis of soil for which we have to increase the number of soil testing laboratories in all villages of India in order to improve the soil by supplementing appropriate dose of chemical fertilizers and strengthen the farming activities in rural areas;
- Proper records of land productivity status should be prepared with the help of soil scientists;
- Creation of rural resource centres for which community polytechnics can be networked;
- Development of rural technologies bank;
- “Bharat Nirman” should focus on biodiversity conservation to strengthen rural India;
- Improve agricultural education and

- Develop programmes to train panchayat leaders in gender-integrative participatory approaches and local planning.

Therefore, the long-term agricultural policy should be ecologically sound, economically viable, socially relevant and sustainable for different agro-climatic systems and suitable for promoting agro-biodiversity and rural development so as to create a “SHINING RURAL INDIA”

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