

System approach to sustainable development

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Abstract—The impending dangers of climate change and terrorism has resulted due to use of materialistic development with use of scientific and technological innovations with use of colonialism and market forces to colonise the traditional resource regions. The recent researches of ecological sciences have focused on lifecycle degradation and extinction of species and human lifecycle degradation resulting in poverty, unemployment and insecurity. This has all resulted due to use of physical sciences and mechanistic development and neglect of social sciences including political sciences and history of places and regions. The Governments world over have been using colonial and feudal relations and didn't devise ways and means for inter-generational sustainable development path.

The materialistic development with feudal and colonial control over resource has created system imbalances creating imbalances, inequalities, poverty and deprivation within societies, economy and environment at location and regions. The life sustaining development would require balancing the international, regional and local system in geographical natural and human landscapes world over against the maximization of wealth and power to sustainable development and use of brute military powers.

The stop and go determinism needs to focus on deterministic development based on human life and nature in open spatial framework. The concerns of resource conservation and development are useful but equally important to balance ecologic pyramid with increasing pressures of population on environment and lifecycle. The system approach recognizes the subsystem physical, biological, social, economic, political, historical and cultural subsystem in inter-civilisational considerations and collective decisions to sustainable development in exchanges and flows of resources, people and capital in global, inter-regional, intra-regional and relations. The much more focus needs to made to social and historical sciences to reverse the trend of physical materialistic to life sustaining growth.

The system approach in programming framework need to focus balancing development linkages from grass root level upward and spatial continuum in regional and global cooperation and policies of development needs to evolve regenerative growth in context to sustainable development of life keeping in view the perspective, structural and strategic planning.

The efforts are being made to sustainable development. The Governments have not implemented the approach to organismic development in geographic landscape as suggested by **Patrick Geddes** to create order, aesthetics and convenience between organisms (people), function (activities) and space (environment). Likewise, economic base theory developed by geographers and **Tinbergen** was not adopted in India. The concept of new economic geography developed by **Krugman** and social development (**Stiglitz**) hindering globalization in developing countries need also to focus on planning strategies.

Indian culture has been open system to the world and resulted in colonization. A strong defense of the border also requires social and economic and environmental safety mechanism for healthy growth.

The Government of India has identified temporal (historical), perspective of culture and monitoring to sustainable development programmes with concerns of infrastructural and social welfare strategies in programming framework. But, it needs to develop its economy as adopted by Japan after IInd World war through cultural conscientiation for social and economic development and Scandevian Countries based upon grass root organismic development.

Sustainable development reform and development policies have been initiated in India as social welfare and infrastructural development programmes. But, the market forces and governances need to the monitored and evaluated in national transformation of India programme. This is possible only through in traditional cultural contexts. The researches have indicated that products are getting linked to global market there is serious problem of unemployment and access to income. This can only be achieved through local and regional level planning in geographic framework.

Keywords: Sustainability, sustainable development, regional development, green economy

I. INTRODUCTION

The materialistic development in mineral based industrialization has led to serious threat to life and ecosystem relations due to climate change and serious environmental degradation. The researches in 1950s and sixties identified circular and cumulative causation of underdevelopment of resource regions (**Myrdal; 1954**) and core-periphery conditions (**Friedman**). The industrial revolution was associated with exploitation of resource regions by colonizing them. The increasing environmental threats and climate changes has severally affected the lifecycle in ecosystem relations.

The large scale human migration is now treated as environmental refugees and hence its relook and reexamination is required. **The Stockholm conference** on environment and sustainable development in 1972 and identification of sustainable development goals and climate summits have some impacts on outlining regional policy framework in globalisation of markets world over. Concepts of new economy geography (**Krugman; 2009**) and social development strategy (**Stiglitz; 2010**) have identified urgency to balance the development in multidisciplinary integration to focus on sustainable development. The concept of Stop and Go determinism is basically to focus on balancing organismic development strategy with materialistic development.

The system approach needs multi-disciplinary balance along with locational and regional balancing of development in inter-regional global systems. Though developed nations are still using military power and maximization of economic power, they are less interested in sharing resources with under-developed regions. That is why there are increased migration to these developed regions and underdeveloped countries are facing ethnocentric conflicts.

It is generally found that there are imbalances between social, economic and environmental components. The economic development is not socially and environmentally balanced. Moreover, there are inter-sectoral imbalances in development process and pattern. Therefore, sustainable growth needs to be viewed in social, environmental indicators in view of inter-generational development strategies.

This paper identifies multi-disciplinary approach to sustainable development in view of balancing the development of social, environmental and economic factors of development at local, regional and global spatial framework. For this, system approach is identified to achieve sustainable development at grass root levels. The sustainability and sustainable development are identified in terms of ethical, institutional and structural systems and subsystems.

II. PROBLEMS OF SUSTAINABLE DEVELOPMENT APPROACH

Though sustainable development goals are identified at global levels, these are being implemented in feudal systems inherited from colonisation of resource regions resulting in social and political conflicts. That is why large number of people are forced to migrate as environmental, political and economic refugees in inter-regional systems. These have resulted due to institutional conflicts in dominance and succession process. The industrial civilisation in colonial relations of resource regions has led to serious socio-economic and environmental threats world over and traditional society dependent upon agrarian economy have been neglected in institutional frameworks and use of market forces in globalisation framework. Traditional societies are finding it difficult to adjust to the market economies. Socialistic institutions again became authoritarian in centralized systems and used suppressive methods in centralized institutions. Rise of global terrorism and environmental threats have resulted as major problems and needs to be addressed at global, regional and local levels. The spatial dimensions provide of framework in resolving these problems to achieve sustainable growth. Materialistic development in modernisational model has neglected organismic development and used feudal, colonial relations with social, economic and natural resources exploitation for raw materials demanded for maximization of GDP. This has led to serious backwash effects on resource regions.

The opening of regional economies through market economic process has increased the flows of resources, labour and savings from resource regions to market regions. But, the increasing capital intensification has substituted employment in the resource regions creating serious socio-economic problems. There are serious intersectoral and inter-regional problems alongwith increasing inter-sectional and socio-economic inequities.

The increasing threat of climate changes due to increased use of fossil fuel has further created serious environmental and socio-economic problems and incidences of floods, forest fires, earthquakes, cyclones and tornado in the form of disasters have increased.

The geo-physical, biotic, human and wildlife subsystems are not in balance. The faster rate of extinction of species, people and communities facing hunger, malnutrition, poverty and migration are being treated as environmental refugees.

The political institutions are not seriously responding to problem of resource regions in the institutional rigidities created in materialistic development for maximisation of economic growth sustainable growth all created due to materialistic development in colonial relations with resource regions.

III. SYSTEM APPROACH TO SUSTAINABLE DEVELOPMENT

The problems of increasing inter-regional disparities and human development has necessitated global concerns to life and environment as outlined in sustainable development goals. These have largely focused on social welfare and basic infrastructural support systems. The globalisation effects have created a dynamics of private investments in markets as opposed to coldwar and closed centralised socialistic policies. The closed regional economies were subsistant opposed against colonial exploitation. But, opening of markets has provided market access to the global markets. But, there are production constraints due to flow of savings to developed market centres and regions.

The systems are closed and open and have been defined as input-output relation and having subsystems- social, economic, political, environmental etc. systems and subsystems could be defined in many ways. One of the popular approaches to sustainable development was identified by **Patrick Gaddes** using geographic landscape of ecologic-economic regional subsystems using mining, forestry, animal husbandry, agricultural and urban subsystems with the objectives of organismic development creating balances between people, activities and environment. But, most popular system was to identifying population or community approach and habitat approach to sustainable development. Population pyramids have also been used to identify the problems of subsystems.

There is convergence in scientific investigation related to life and environment with the growth of ecological and environmental sciences- environmental biology, geography, economics, sociology, politics etc. Nevertheless, biological and social sciences are being given primacy to define social, biological sustainability in time and spaces because of use of physical sciences and technologies in materialistic development have disrupted the organismic balance.

In view of sustainable development, both population and environmental approaches are being pursued with basic need approach to poor and resource conservation and development of natural resources and alternative energy resources. **Krugman** identified new economic geography in view of low level of economic geographical development and urbanization in resource regions leading to failure of globalization. **Stiglitz (2010)** identified backward social development for low level of economic development.

In India, decentralized planning approach has been adopted for sustainable development through social welfare, infrastructural development and resource conservation and development programmes. This has initiated social and economic sustainabilities. However, with large scale migration of labour, it is necessary to use **Tinbergen's** model of economic base planning using local, national and global sector planning in inter-sectoral and intra-regional linkages. Adoption of indicative planning in **NITI Ayog** for perspective, structural and strategic planning framework has been initiated alongwith policy of cooperative and competitive federalism for centre-state relations. The policy of Scandenavian countries with grass root development has brought up sustainable growth in Sweden, Norway, Denmark etc.

IV. CONCLUDING REMARKS

For sustainable development, green economy has been emphasised for sustainability. This includes agriculture, horticulture, animal husbandry, forestry etc. alongwith mining and industry. In fact, Indian economy became globalised in agrarian civilization through river basin planning linking with trade transport corridors in terrestrial and marine transport system in Asia and Europe. However, due to lack of national defense, India was colonized by Islamic and British colonial forces. The subjective criteria and policies of cultural nationalism and internationalism is being pursued alongwith strengthening defense and security of the country. India faced serious problems in Corona pandemic period due to lack of health infrastructural problems. There are enough local and regional potential of growth and sustainable development. Hence, regional policies need to be strengthened for development in cultural and economic development policy framework including tourism, sports and recreational infrastructural growth.

To achieve sustainable development a lot needs to be done to evolve self-sustaining growth at local and regional levels particularly in underdeveloped and developing countries. It is required to evolve a global economic order by human and environmental

development and developed countries must engage with development of backward economic geographies and societies to compensate for the colonial exploitation of the resource regions in cultural and economic cooperation.

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