Sustainable Development Systems and PURA

SUSTAINABLE DEVELOPMENT

In September 2003, 130 higher education representatives from around the world gathered at the International Conference on Education at Prague to discuss the role of higher education in achieving sustainable development. The conference addressed various aspects of and impediments to achieving a sustainable future and reflected on the Johannesburg Summit on Sustainable Development which was held a year earlier, in 2002. At the summit various world experts and leaders discussed the challenges of achieving a stable and sustainable future. The conference report says:

> The Johannesburg world summit for sustainable development has made one thing unmistakably clear that the political leadership the world over is incapable of rising to the challenge of sustainability. Yet, most of the hundred or so world leaders who attended have a higher education degree from some of the world's most prestigious universities—the higher education sector is failing society by producing leaders incapable of addressing the most pressing problems. If higher education is the nursery of tomorrow's leaders then the sector bears profound responsibilities to create a sustainable future. This implies that graduates of every discipline need a sound working knowledge about sustainability.[1]

Sustainable development and inclusive growth in all fields will be the major factors in reducing potential conflicts in the country and in a world without borders. That will be our key to achieving a society which is peaceful, prosperous and happy. Let us understand sustainable development in more detail.

SUSTAINABLE DEVELOPMENT AND PEACEFUL SOCIETIES

Sustainable development based on a foundation of inclusion is the cornerstone for building a peaceful and prosperous society across the world. Economic and social empowerment of the people is the solution for attaining productive engagement of every citizen.

Post-Independence, one of the most alarming threats to the security and peace of India has been the surging left-wing extremism, in the form of 'Naxalism' which, in some form or the other, affects 118 districts[2] stretching across one-third of the nation. In the past half a decade, more than 10,000 people have lost their lives to this increasing form of unrest.[3] It is evident from the Annual Report of the home ministry, 2009–10, that extremism thrives in the 'Red Corridor' that largely covers the regions which are economically underdeveloped or socially backward. While the causality between the lack of amenities and the threat to peace may be debatable, the correlation between the two is beyond doubt. Besides the efforts to improve the security coverage, our primary tool for overcoming the problems and for achieving peace and stability across India, would be a fresh approach that aims at sustainable development measures which would also bring about economic prosperity and growth.[4]

TABLE 3.1: State-wise left-wing extremism violence, 2008–09

States	2008		2009	
	Incidents	Deaths	Incidents	Deaths
Andhra Pradesh	92	46	66	18
Bihar	164	73	232	72
Chhattisgarh	620	242	529	290
Jharkhand	484	207	742	208
Madhya Pradesh	7	–	1	–
Maharashtra	68	22	154	93
Orissa	103	101	266	67
Uttar Pradesh	4	–	8	2
West Bengal	35	26	255	158
Others	14	4	5	–
Total	1591	721	2258	908

This situation is not unique to India. Although post-World War II interstate conflicts have remained more or less constant and generally low intensity, there has been a significant rise in civil conflicts within nations, hinting at a connection between lack of sustainable development and state failures.

In fact, data from around the world (Figure 3.1) show that the majority of conflicts are concentrated in regions of the world where extreme poverty, hunger and disease are most prevalent.[5] This is depicted in Figure 3.2 in a map of the world showing different forms of conflicts during the decade 1990–2000. The geographical correlation between the poverty-affected zones and the prevalence of conflict is abundantly clear. In an interconnected and mobile world, this aspect extends further— today, tensions in one part of the world can result in a ruthless manifestation thousands of miles away in a completely different region. Economic prosperity and sustainable growth will lead to peaceful societies. Sustainable development systems are thus not only a national or a regional, but a global need.[6]
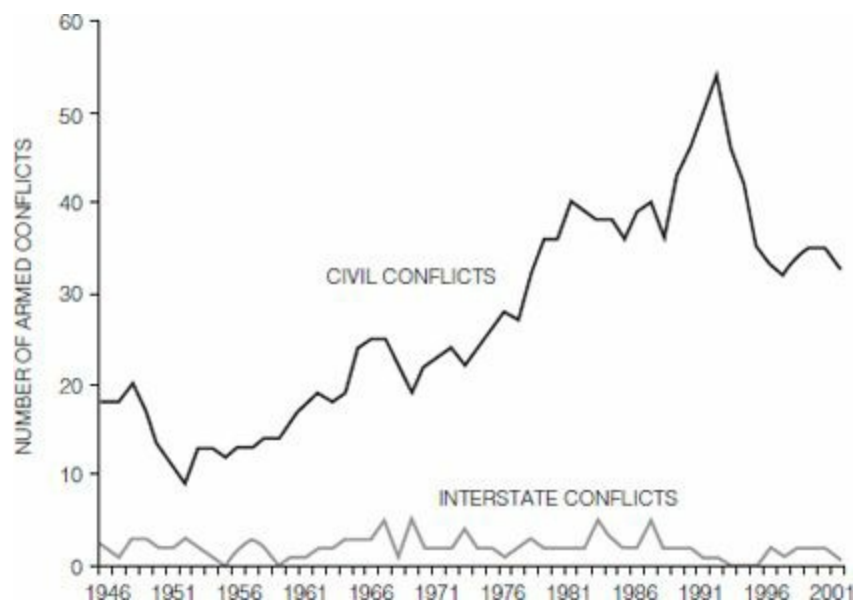
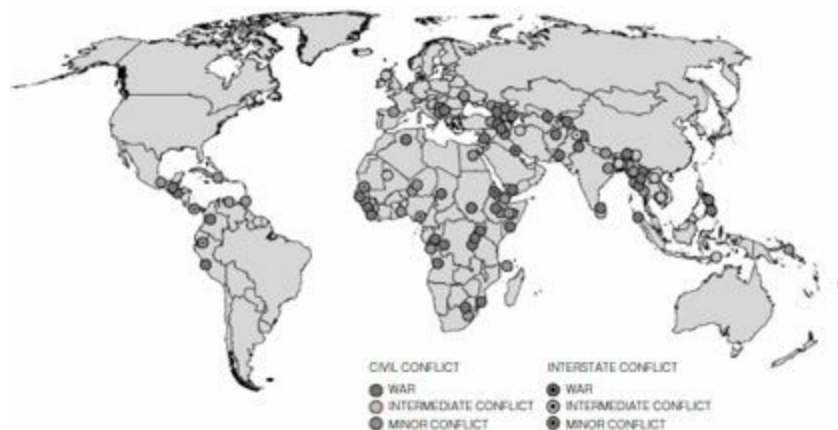**FIGURE 3.1**: Annual number of civil and interstate conflicts from 1946 to 2001

FIGURE 3.2: Zones of armed conflict in the world, 1990–2000

Source: Population Action International (2003)

CONSTITUENTS OF SUSTAINABLE DEVELOPMENT

We have already stressed the need for evolving and executing sustainable development systems, especially for the integrated transformation of rural India. It is important to know the implications of sustainability. The challenges and the opportunities which we, as a nation and the world, face are multi-pronged and unique to our times. The definition of sustainable development has to take into account a network of parameters which will ultimately determine the feasibility of the model for direct beneficiaries, non-beneficiaries, national values, the environment and the stability of the system. Broadly speaking, 'sustainability' can be defined with the following constituents:

- **Economic sustainability**: This implies that the financial model of the development tool is sound and robust. It also implies that development tools are tuned to the core competency of the region marked for implementation; that the products are matched to market demand; and that connectivity with the market is well maintained. Sustainable development systems have to achieve financial stability over a period of time.
- **Technological sustainability**: Technology will be the driving force behind the development tool employed. It will lead to better and faster operations, lower wastage, higher-grade products and services, and will cut down the costs. Modern sustainable development tools have to be technologically sustainable, which means that they should be upgradable and capable of applying competitive technologies.
- **Social sustainability**: Modern institutions, whether government or private, have to accept that one of their primary interfaces comprise people who would not necessarily be their customers. The new requirement of sustainable development systems is to be a partner in the lives of the people, in order to bring about a positive change in human development. This may come about not only as corporate social responsibility and welfare schemes, but also as dedicated enterprises in the area of societal uplift, which would work closely with the local community, building capacities and living standards. Societal sustainability will also lead to peaceful societies, a necessary condition for sustainable growth.
- **Environmental sustainability**: One of the most crucial challenges of the twenty-first century is that of climate change due to global warming caused by man-made greenhouse gases. Today, globally, we release into the atmosphere close to 30 trillion kg, that is, 30,000,000,000,000 kg,[7] of carbon dioxide-equivalent greenhouse gases which come from our industries, power plants, vehicles, homes, shops and agricultural fields. Out of this, roughly half is absorbed by natural sinks like oceans, the soil and forests, while the rest is released into the atmosphere, forming a 'blanket' of greenhouse gases which trap the infrared radiation from the earth's surface and prevent it from going out into space. The net effect is that global mean temperatures are rising; the decade of 2000–09 was the warmest ever recorded.[8] India, too, contributes a significant 5 per cent share to the total emissions generated globally, though our per capita emission is lower than that of the world.[9]

The aspect of environment—covering emission control, reducing pollution of water and soil resources, preserving biodiversity—is, indeed, an important consideration in any sustainable development model.

- **Value sustainability**: Development should be accompanied by the creation of a value-based society and lead to the evolution of enlightened citizens, who are powered by knowledge and skills, and guided by moral values. Such a value creation in the societal fabric will help reduce societal conflicts, bring about tolerance and respect for diversity, harmonious interaction and a reduction in crime.
- **Learning and adaptability**: Sustainable development systems require infrastructure, opportunity, incentives for continuous learning from each other and evolution. This will lead to innovations and improvements which would improve the yield, enhance capacity, bring down costs or add value. Development systems also have to be adaptable to conditions of local input and needs. This focus on being dynamic would additionally lend long-term stability to the system which would, in turn, assimilate external alterations and be self-reliant.

ELEMENTS OF ENVIRONMENTAL SUSTAINABILITY

- Reducing emission
- Reducing water and soil pollution
- Protecting biodiversity
- Preserving natural resources—flora and fauna
- Waste recycling; waste-to-wealth, using technology
- Awareness of ecology in the community
- Accountability on environment

THE EVOLUTION OF A SUSTAINABLE DEVELOPMENT SYSTEM IN INDIA

In Indian history, very rarely has the nation come across a situation that involved, simultaneously, an ascending economic trajectory; a continuously rising foreign exchange reserve; a reduced rate of inflation; global recognition of its technological competence; the energy of more than 550 million youths; the umbilical connectivity of 20 million people of Indian origin in various parts of the planet; and the eagerness shown by many developed countries to invest in our engineers and scientists and to set up new research and development centres. The distinction between the public and the private sectors and the illusory primacy of one over the other are vanishing. India, the largest democracy in the world, has a reputation for upholding its democratic principles and for providing leadership to its one billion people with a multicultural, multilingual and multi-religious background. Our technological competency, as also our value systems obtained through our ancient civilization and heritage, is highly respected. Foreign institutions see investing in India as an attractive proposition. Indians, too, are investing and opening new business ventures in other countries. The Indian economy is growing and has an average annual growth rate of about 8 per cent of GDP.

However, there is a pressing need to raise the economic conditions and living standards of over 300 million people living in extreme poverty out of the 1 billion plus population. One of the reasons for this situation is that a large part of the growth comes from the manufacturing and the service sectors. Moreover, the benefits of these two sectors thin down significantly as they reach the rural interior regions of the nation.

While the economy has generally been growing impressively, agriculture has been growing at just 1.2 per cent since the 1990s.[10] If we are to uplift the 300 million people living below the poverty line and provide them with a better life, we have to ensure that the agriculture sector grows at least at 4

per cent per annum. We also need to ensure that fruitful employment is made available to the rural masses and the youths in Indian villages, with avenues for building capacity. The nation and the world need systems which can alter the lifestyle of the 750 million people living in rural India, and give every man and woman the opportunity to build competencies, to be economically active for the family and to have better living standards. During this decade and onward, we require development initiatives which will integrate competencies, skills, employment and market access, and will make available quality education for children and health care for the rural families.

For providing this growth, India and other nations have to extend the development process to the rural sector. Technology needs to reach the doors of the common man, in the most useful form. The skills imparted need to match the competencies and the available resources, and seamless investments need to follow good entrepreneurship, which would, in turn, generate jobs and income. This would lead to an environment of employment generation at the local levels where the skills and opportunities for income generation will be well matched. The villages, individually and collectively, should evolve as economic engines for the nation's development; they should provide better and healthier living conditions to the inhabitants; and become centres of reliable goods and services to the markets with value addition. To achieve such a profile, we need a framework which would enable the movement of goods, services, people, ideas and investments within and outside village complexes.

WHAT IS PURA?

PURA stands for 'Providing Urban Amenities in Rural Areas'. It is a socio-economic system for sustainable growth. As envisioned, it is meant to ensure a better life for millions of Indians who live in deprivation—often a generation behind in basic human facilities—especially in the rural regions. Put into action, PURA stands for a well-planned drive towards achieving an inclusive and integrated development, starting at the village household level.

A common impediment to rural development is the fact that reputable professionals find rural life unattractive. This tendency is manifested in doctors playing hooky from the PHCs (primary health-care centres) and the rural hospitals, and teacher absenteeism from rural schools. Even NGOs (non-government organizations) and the organizations based on rural enterprises and village development mostly have their professional staff and offices based in cities. One factor behind this crippling situation is the total lack of adequate services and amenities in rural areas—a problem which PURA needs to address. Hence, one of its fundamental efforts is to create, in a rural environment, amenities of urban standards. We will study how this can be, and has been, successfully realized in various PURA missions across the nation.

The model of a PURA creation begins at the individual village household level, which is the atomic level of PURA implementation. Here, it has to ensure the participation of all households according to their skills and needs, with an opportunity for capacity-building and gaining access to basic amenities. Typical human-resources-building exercises that are undertaken should again focus on how to attract participation by every household in a rural area. The performance evaluation of PURA implementation should account for the impact created by each household.

The next in the PURA hierarchy is the village, where its implementation requires a careful analysis of the available resources and the prioritization of the needs of the local population. Also, it is in this area that the acceptability of PURA's various initiatives needs to be developed to make it a process of community participation.

The next higher grouping is the PURA Village Cluster, which is a group of villages sharing basic economic and social assets, such as connecting roads, markets, advanced health-care services, higher educational facilities and electronic connectivity. Depending on the terrain and the population, the size of a PURA cluster can vary from ten to even fifty villages. The clusters would be located close to each other, physically as well as culturally and linguistically, and may typically have some common elements in the resources they possess or the skills they have developed. A PURA cluster would be the basic 'element' of the PURA design, each possessing its unique qualities, economic inputs and outputs, and be capable of existing independently. It is at this aggregate level that PURA planning should start.

Each cluster would exist independently as a socio-economic entity. Beyond this level, our focus would move to inter-PURA coordination. PURA clusters may collaborate for mutual benefit, dividing fixed costs, exchanging knowledge and sharing markets, core competencies or products. They may also establish common brands and standards for strengthening their position in the market.

There is no doubt that, in India, development of the rural sector is very important. The government and the private and the public sectors have been undertaking rural development, but in a haphazard manner. For example, during the last few decades, they have set up educational institutions and health-care centres; laid roads, built houses and marketing complexes; given communication links in a particular rural area, but as disconnected activities. It has been our experience that these initiatives start well—just like heavy rain resulting in multiple streams of water. As soon as the rain stops, a few days later, the streams dry up because there are no water bodies to collect and store the surplus water. Now, for the first time, PURA envisages an integrated development plan with employment generation as its focus, driven by providing good habitation, health care and education, and by developing skills; through physical and electronic connectivity, and marketing. This will lead to the generation of stable employment for sustained development.

India—taken as an entire country—needs 7,000 PURAs covering more than 600,000 villages. The theme of PURA—apart from concentrating on reinforcing agriculture—is to emphasize agro-processing, develop local crafts, dairy farming, fishing and silk production, so that the non-farm revenue for this sector is enhanced, based on the core competency of the region. Moreover, its economy will be driven by sources of renewable energy, such as sun, wind, biofuels and the conversion of municipal waste into power. In this approach, the objective is sustainable development, using the core potential of the rural sector.

One such sustainable development system is the mission of PURA. It involves:

PHYSICAL CONNECTIVITY

The villages must be connected with each other and with main towns and cities by good, well-

networked roads and, where needed, by railway lines. This connectivity would depend on the local climatic and terrain conditions. For example, in the case of deltaic, island or coastal PURAs, the most efficient way might be to use carefully planned waterways or seaways with a proper traffic management system. There must be other infrastructure, such as schools, colleges, hospitals, irrigation networks and amenities for the local population and visitors. This is Physical Connectivity.

PHYSICAL CONNECTIVITY

- Ring Road
- Rail connectivity
- Public infrastructure
- Enables movement of people and goods
- Improves access to schools and health-care centres
- Reduces investments in distribution of power, water and communication networks

---

Physical Connectivity goes beyond the mere creation of assets; it has to attain full utilization. So, building connecting roads between villages and cities would be useful only if it were backed by a public transport system which could ferry people between them. Physical Connectivity in the form of a school building would be beneficial only if it were accessible to both teachers and students. Of course, the creation of such a system can be shared between multiple partners and often be market-driven.

It is important to understand that Physical Connectivity would act as an 'enabler': it would facilitate the movement of goods and people, and thereby enable enterprises, assets or societal missions to have a wider access to their inputs, markets or intended beneficiaries. A network of good roads or seaways with proper traffic management would connect enterprises with their suppliers and buyers and bring down the time and cost of transport. Similarly, in the case of services, a school or a hospital building would be a fundamental enabler upon which further societal missions could be based, to benefit a large section of people at one common location with limited human investment.

ICT AS A LEVELLER

The spread of information and communication technology (ICT) tools promises to be the greatest leveller of twenty-first-century societies. ICT tools are facilitators which enable low-cost access to knowledge and the networking of people. This can lead to:

- Access to real-time information on input.
- Low-cost dissemination of information about efficient processes and access to education and training.
- Increase of scale by allowing connection with a large network of thousands of individuals.
- Direct access to remote markets.
- Facility of accessing from home which encourages participation, especially by women.
- Mechanism for transparent feedback and redressal of grievances at low cost and in less time, thereby ensuring accountability.
- Add-on services like education, health care and financial services.
- Standardized processes that allow replication at low cost.

ELECTRONIC CONNECTIVITY

In this era of emerging knowledge, native intelligence has to be preserved and enhanced with the latest tools of technology, training and research. Villagers, wherever they are, must have access to good education from the best teachers, the benefit of good medical treatment and the latest information on their occupations such as agriculture, fishery, horticulture and food processing. This means that they must have Electronic Connectivity.

Like Physical Connectivity, Electronic Connectivity has to be customized so that it can be availed of by the intended user. The 'true' value of Electronic Connectivity would be a function of its relevance and user-friendliness.

$$\text{Value of Electronic Connectivity} = \text{Relevance} \times \text{Usability}$$

Relevance would be the balancing factor between the technology available and the cost economics. Usability would derive from the number of people who could use the connectivity with little or no training, and the support system behind it. User-friendliness and usage-frequency can be enhanced in a variety of ways.

TABLE 3.2: Customization of Electronic Connectivity

Measure	Explanation
Assistance	Availability of guidance at the electronic interface centres to facilitate usage.
Technological	Adaptation into native language, user-friendly interface and usage. Built-in robustness within the system.
Training	Building-capacity for spreading awareness and knowledge of using Electronic Connectivity for oneself.
Value-adding Services	Using Electronic Connectivity as a tool for delivering value-adding services, such as finance, education, health care, and creation of income via areas like business process outsourcing (BPO).

INDIA'S ELECTRONIC CONNECTIVITY INITIATIVES: NATIONAL E-GOVERNANCE PLAN (NEGP) OF INDIA

NeGP was set up in 2006 with the aim of improving the quality of and access to government services in India with the help of ICT. The components of NeGP are:

1. SWAN (State Wide Area Network): To connect each state and Union Territory (UT) headquarters with the district headquarters and similarly, the district headquarters with block headquarters with 2 Mbps-leased lines.
2. National and state data centres across the nation.
3. Common Service Centres (CSCs): They have been conceived of as the front-end delivery system with a special focus on IT services for the government as well as the private sector for the remotest villages. A network of about 100,000 CSCs to cover each of the panchayats (or a cluster of five to six villages) across 600,000 villages is being currently aimed at. As of July 2008, about 75,000 CSCs were already in place, forming a network between villages.

The CSCs are designed as ICT-enabled kiosks with a PC and basic support equipment like a printer, a scanner, a UPS, with

wireless connectivity as the backbone and additional equipment for edutainment, tele-medicine and projection systems.

Electronic Connectivity is essentially a facilitator to help create knowledge networks; enhance educational initiatives; connect hospitals with remote locations; bring in better banking services; and open up market access in a faster and more transparent manner.

ELECTRONIC CONNECTIVITY

Establishing Electronic Connectivity through Broadband/Fibre/Satellite/Wireless/Leased Line.

Tele-Education

- Satellite Link
- Wireless Connectivity
- Fibre Connectivity
- Public Call Offices (STD/ISD/ISDN)
- Leased Line Connectivity

Tele-Medicine

- Village Internet Kiosks
- e-Government Access
- e-Market Access
- Tele-Training on Farming
- e-Banking
- ATM Centres for Villagers

KNOWLEDGE CONNECTIVITY

Once the Physical and the Electronic Connectivity are enabled, the Knowledge Connectivity has to be set up. This can facilitate an increase in productivity; utilization of spare time to tackle underemployment; and the spread of awareness of health welfare. It can ensure a market for products; increase quality consciousness; interact with partners; help obtain the best equipment; and increase transparency. This, in short, is Knowledge Connectivity.

KNOWLEDGE CONNECTIVITY

- Schools/Hospitals
- Vocational Training
- Knowledge Training
- IRS Imagery for
    - – Land and Crop Management
    - – Water Management
    - – Forest Management
    - – Environment
    - – Proactive Health Care
    - – Cooperatives Product Marketing

This connectivity will essentially be a 'value-adder' to either the local strength or the capacity of human resource. Knowledge Connectivity has to map and match the local competencies at the village

cluster level. It is an excellent avenue for creating enterprises, especially among women and the young. It would bring the best relevant practices to a ground-level realization. As PURA matures, Knowledge Connectivity itself will enable the creation of knowledge-service enterprises, providing value addition to the lives of the local people. Some of the prominent functions which it would have to perform for each village include:

- Waste management
- Soil and fertilizer management
- Agro-processing technologies
- Mapping of land, water and other resources
- Value-adding practices in non-farming activities
- e-Health care and distance education
- Environment and forest management
- Value-based education and inculcating morals
- Entrepreneur training and incubation
- Weather management
- Any special local or seasonal needs

KNOWLEDGE CONNECTIVITY THROUGH VILLAGE RESOURCE CENTRES

Village Resource Centres (VRCs) were established by the Indian Space Research Organisation (ISRO) as part of its societal mission of bringing space-based services emanating from Satellite Communication (SatCom) and Earth Observation (EO) to rural society. While SatCom provides the method for an effective delivery of information and services across vast regions, EO provides community-centric information regarding geo-referenced land records; natural resources; the environment; sites for exploiting ground water for potable use and recharging; wasteland and reclamation; watershed profile; and cropping patterns. It can also provide customized local area information. These systems are very useful for predicting disaster, giving early warning and vulnerability-related information.

ISRO has undertaken the mission of assisting the VRC programme with a portfolio of services which are being established in collaboration with forty partner agencies across twenty-two states. A total of 473 VRCs have been set up with plans for rapid expansion in the future. Each VRC essentially has digital connectivity; specialty health-care providers enabled via the Indian National Satellite System (INSAT); spatial information on natural resources; facilities for primary health care and distance education. Thus the VRC service portfolio includes:

- Tele-education: for development of skills and livelihood support. It also includes supplementary teaching for children and non-formal education to adults
- Tele-health-care: both preventive and curative, VRCs have customized health-care software with diagnostic instruments. With the help of local doctors and paramedics, expert consultation is provided to the villagers from specialty hospitals
- Land and water resource management
- Interactive advisory services: VRCs facilitate interaction between the local people and experts at knowledge centres such as agriculture universities and technical institutes.
- e-Governance services
- Weather information and forecasts
- Tele-fishery: information pertaining to potential fishing zones (PFZs) and other data
- Local services as needed by the villages

So far, VKCs have conducted over 6,500 programmes benefiting several hundred thousand people in the rural regions of the nation.

ECONOMIC CONNECTIVITY

Once the Physical, the Electronic and the Knowledge Connectivity have been established, they will

facilitate Economic Connectivity in the area.

Economic Connectivity would essentially lead to the creation of employment, entrepreneurship and income augmentation of the rural area through the setting up of agro-based, manufacturing and service industries. Its role in the overall PURA scenario is important since PURA complexes strive to be economically independent and, thereby, contribute to the economic growth of the nation in a positive manner. Moreover, the Economic Connectivity model would have to be customized according to the state of the PURA complex in terms of:

- Agro-climatic conditions of the region
- Quality of human resources
- Specialized skills
- Special competencies
- Connectivity to the markets and cities, and within the villages
- Support industries
- Services most needed at the local level which may be seasonal in demand

The Economic Connectivity model has to be based on a holistic prediction of the demand for support services in the future. For example, while setting up an agro-processing unit, the PURA initiator must also acknowledge the additional services in terms of logistics and the capacity-building which would be needed to support it. PURA's Economic Connectivity would be achieved by a mix of institutions of various sizes, stake-holding patterns and activities.

ECONOMIC CONNECTIVITY

- Small-scale Industries
- Agro-industries
- Warehouse
- Micro Power Plants
- Renewable Energies
- Village Markets
- Employment Opportunities
- Value System—Economic Strength
- Women's Empowerment
- Urban Decongestion
- Improved Quality of Life
- Increased Purchasing Power

There would be a distinct and direct correlation between the economic activity in terms of the agro sector and creating a demand for the services. As the income of the rural population rises, there would be a corresponding increase in the disposable income level. Some part of it would initially go towards better and more food, but a larger and increasing share would go into non-food expenditure. If we have a value-driven society where this extra income is not wasted on non-productive activities, much of the income generated would translate into capacity-building and human development services. This would create an opportunity for economic activities based on a demand for local services as well, generating further employment activities.
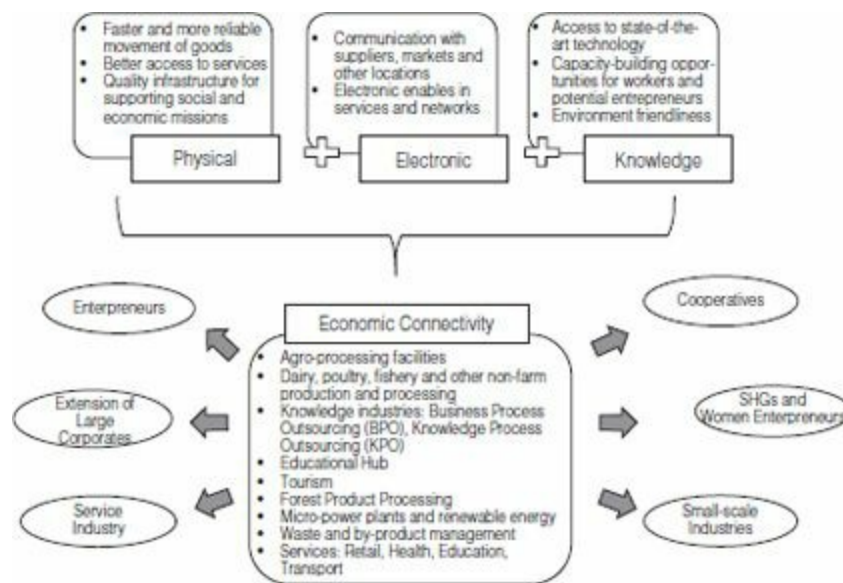
FIGURE 3.3: Block model of Economic Connectivity for PURA

With the rise in income, the demand for services gradually increases. Initially, it is slower since the rise in income will largely provide for better food and nutrition. But as the income keeps rising, a larger share will go towards creating local demands. This will contribute further to income augmentation with employment in the service industry of the PURA complex, and will also help handle the problem of underemployment. As better services become available, the capabilities of the population will get upgraded. This will help generate a larger yield in terms of employee productivity in the agro or the manufacturing sector, thereby enhancing production, provided the necessary space is available for expansion in terms of Physical and Electronic Connectivity. All this would translate into the income of the household rising further by a combined effect of agro-manufacturing and the service industries.

To achieve this profile of an increased income and better human resources through Economic Connectivity issuing out of the other three—Physical, Electronic and Knowledge—the following conditions are necessary:

1. Vertical integration of the agro-manufacturing processes.
2. Adequate entrepreneurship and planning in the service sector as the demand increases.
3. A value-based society at the domestic level so that the augmented income is used for creating capacity and not frittered away; this would impede the process of increasing productivity.
4. Adequate room for Physical, Electronic and Knowledge Connectivity to account for the rise in economic activities with a more capable workforce.

~

A CASE STUDY OF SOCIO-ECONOMIC DEVELOPMENT THROUGH WARANA PURA

In March 2010, we were in the Warana Valley of Kolhapur district in the western India state of Maharashtra, where I interacted with many students, farmers, milk producers, rural entrepreneurs and villagers. I also inaugurated a PURA centre at the Tatyasaheb Kore Institute of Engineering and Technology. The Warana PURA mission demonstrates that the PURA development system requires an integration of initiatives and that capacity-building and economic development are concomitant. The Warana mission began as a sugar cooperative movement in the 1950s—the vision of a great social

leader called Tatyasaheb Kore for transforming the Warana region, which was then a backward area overrun by unlawful activities and poverty.

Since then, Warana PURA has evolved into a cooperative framework and implemented sustainable models based on the core competencies of the rural areas covering sixty-nine villages and about 400,000 people. It has more than 60,000 farmers, women entrepreneurs and villagers as its members, to whom it has been able to give a consistent dividend of over 20 per cent per annum.

The Warana PURA programme has succeeded in creating income generation through value addition to sugar and dairy products, innovative agricultural practices and entrepreneurship, striving towards literacy and providing health care for all. The Warana cooperative sugar factory, with about 20,000 farmers as its members, has also taken area development as one of its missions and has helped construct schools, medi-care institutions and libraries. There has been a significant effort to upgrade technology and practices, which has reflected in the consistently high sugar recovery rate of more than 12 per cent which is almost one-fifth higher than the national average. As a result, the sugar cane farmers in and around sixty villages near the factory have been receiving significantly higher revenues.

WARANA PURA MISSION

Sugar Factory

- Warana Cooperative Dairy has more than 20,000 farmers as members
- Has undertaken area development as well
- Has one of the highest sugar recovery rates of more than 12 per cent (almost 20 per cent above the national average)
- Began as a Sugar Cooperative Movement in the 1950s under Sahkarshri Tatyasaheb Kore
- Covers 69 villages and about 400,000 people
- Based on a cooperative set-up, has more than 60,000 members comprising farmers, women and craftsmen
- Has been giving 25 per cent and more returns on investments

---

WARANA PURA DAIRY

Warana Dairy

- More than 16,000 milk producers are members
- Spread across 60 villages
- Collects and processes more than 500,000 litres of milk from 1,753 collection centres
- Advanced technology and highest quality of value addition; exports to large cities

---

Warana's economy had to be made inclusive. This meant the creation of income opportunities for the landless and the smaller farmers who were otherwise underemployed. For the welfare of landless villagers, Tatyasaheb Kore envisioned and pioneered the creation of the Warana Poultry and the Warana Dairy which are now a known brand in the state of Maharashtra. The Warana Cooperative Dairy, with more than 16,000 milk producers spread over seventy-eight villages, collects and processes over 500,000 litres of milk every day from its 1,753 collection centres. Each of these collection centres acts as an opportunity for creating more enterprises through the self-help groups (SHGs) that operate them. Generally, there are multiple options in terms of collection points

accessible to the milk producers and hence, through competition, the farmers are able to obtain the best price for their products.

WARANA PURA'S DIVERSE SERVICES

- Warana Bazaar: 58 branches managed largely by women
- Educational Initiatives: schools, engineering college, art and science college, pharmacy college, dental college
- Health Care: Mahatma Gandhi Hospital
- Financial Services: Warana Cooperative Bank with 18,000 members and 24 branches
- Realizing the vision of integrated development and empowerment—next goal to become a carbon-neutral PURA by 2015

Warana sells around 150,000 litres of liquid milk in Mumbai alone. With advanced technologies for value addition and by observing the highest quality standards, the Warana Dairy manufactures and exports many value-added milk products to the Middle East. It has forty-seven stock-keeping units (SKUs) currently in its product portfolio.

Enhanced incomes have led to better living standards for the rural people of the region. The Warana PURA complex has established innovative models in the service and the retail sectors in the form of Warana Bazaar with its fifty-eight stores.

Warana Cooperative has provided its youths with a wide spectrum of education to empower themselves and take the vision of the Warana development further.

The health of the citizens is taken care of by initiatives such as the Mahatma Gandhi Hospital and the Dental College. To inculcate a spirit of saving, the Warana PURA complex opened the Warana Cooperative Bank in 1966. It now has more than 18,000 cooperative members and twenty-four branches across the Warana Valley.

We also visited the Warana Sugar Parliament, which is a mark of empowerment in the democratic framework that the Warana PURA complex has provided to the farmers. I was impressed to see the building which closely resembles the Indian parliament, echoing Tatyasaheb Kore's message of his faith in the democratic, economic, social and educational empowerment of the grass-roots-level rural population.

Today, Warana is a remarkable region which, by keeping in mind a socio-economic objective, has been transformed. It is aiming at becoming a carbon-neutral PURA by the year 2015.

The Warana PURA complex has a message: innovative missions, with focus on better technology and sound management, can fulfil socio-economic objectives of creating a prosperous and happy society emanating from the bottom of the pyramid. The cooperative model, the product diversification, the process innovation and market understanding have all been the hallmarks of creativity of Warana's citizens. We will discuss in more detail the Warana model and its constituents in subsequent chapters.

~

The size, activity and needs of every PURA are affected hugely by the kind of terrain on which it is located. If we were to classify PURAs according to terrain, then we could do a loose grouping as per the core competencies and needs which are often common to a particular type of terrain. For example, most of the coastal-and island-type fishery and other marine enterprise PURAs are prominent income assets, for whom information and market connectivity for perishable goods is an important need. Similarly, most of the desert or, to some extent, even plain PURAs will have to tackle conservation and the creation of water bodies as one of the primary challenges.

Based on this classification, the types of PURAs as in Table 3.3 can be envisaged.

MOVING AHEAD ON PURA

A well-planned PURA would be our tool for the integrated development of Indian villages where three out of every four Indians live. The same concept would be equally applicable towards the empowerment of the 3 billion rural population of the world. It would be a transformation of villages from a subsistence entity to a knowledge and economic powerhouse for the nation and the world. We have already stated that we would need 7,000 PURA complexes in India alone, all over the rural regions. This is indeed going to be a challenging task and would be an opportunity for every sector to contribute—the government, industry, entrepreneurs, administration, institutions, citizens and NRIs (non-resident Indians). It would require active participation by all strata of society in an integrated manner.

TABLE 3.3: Types of PURA

Plain PURA	Would cover a population of around 20,000–100,000, spanning around 20–30 villages each. It would be based on diverse competencies depending on the nature and resources of the region. Agriculture and forest products would be a prime focus area in most cases along with non-farm employment opportunities.
Coastal PURA	Would cover a population of around 20,000–80,000 spanning around 20–25 villages each, largely located near the sea. Marine occupations would be a major focal point here.
Desert PURA	Would be established on large stretches of sparsely populated land; each would consist of around 30–50 villages with a population of 7,000–15,000 people. One key challenge which would be common across all Desert PURAs would be the scarcity of water and the need to utilize the available water for maximum economic development.
Hill PURA	Would be similar to the Desert PURA in terms of the size and number of villages. On an average, it would span 30–45 villages with a population of 7,000–15,000 individuals. The rather daunting problem of Physical and Electronic Connectivity would be both a challenge and an opportunity

	commonly found in these PURAs.
Island PURA	Would be similar to the Coastal PURA in the primary economic assets, but more demanding in establishing connectivity both within the PURA and with the external markets. Typically, it would contain a group of neighbouring islands with a population of 7,000–15,000 people.
Delta PURA	The delta region of the lower Gangetic course in West Bengal is rich in soil fertility and has unique natural resources of bio-medicinal value, especially in the fragile ecosystem where fresh water finds confluence with sea water. It can be a difficult proposition for PURA implementation. The common key issues would be establishing Physical Connectivity and developing a knowledge base. Such a PURA would cover roughly 20–40 villages with 20,000–50,000 people.

The realization of PURA would require focus on multiple facets. In the following chapters we will analyse the PURA strategy for different kinds of activities, drawing from existing examples in India and elsewhere in the world.