

# Building An Innovative Society

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Mankind has made remarkable progress in the 20<sup>th</sup> Century. Science and technology took astonishing steps to transform the world and the human life. It is in this century when most of the inventions that define our present life styles and point to our potential for further progress were devised. If the automobile, the telephone and the telegraph were already known to man by the end of the nineteenth century – the first two as rare and exotic inventions available only to a privileged few – their development and their ubiquity in the 20<sup>th</sup> Century could certainly not have been imagined. Not only are these widespread today, but everything else that we associate with modern life came to light in the 20<sup>th</sup> Century – the aeroplane, the motion picture, the television, the computer. Illness like smallpox, polio and tuberculosis no longer ravage the world as these used to. These maladies, which a hundred years ago were fatal, are now containable and often curable. For an affluent minority, life is full of conveniences and pleasures unimagined a century ago – from the microwave oven

in the kitchen to the television and laptop in the living room and e-mail device in the office. In economics, the twenty first century has culminated as the century of globalization, at the risk of sounding tautological, a world-wide phenomenon.

In the last century, we have seen the miracles of science. Science gained the knowledge of the dance of galaxies in outer space, as also the dance of micro-particles in the womb of the

atom. While continuing with this search for the mysteries of the material world, science should simultaneously redouble its quest for those as-yet-unknown ways leading to human happiness and comforts for all in the new millennium.

## Economics of the 21<sup>st</sup> Century

In every country around the world, trade barriers are being lowered, imports and exports increased, foreign capital avidly sought, legal systems being brought into

line with the needs of international business, tax and property laws being re-examined against foreign standards, and restrictive rules and regulations are being scrapped. The role of the state is increasingly being re-defined as that of providing an 'enabling environment' or a framework so that its citizens could pursue their aspirations. More and more economies are being 'plugged in' to the global system in what is a self-reinforcing process. (This is not to echo the advocates of globalization who blithely suggest that we have moved from a world dominated by super powers to a world dominated by market power).

Economics of the 21<sup>st</sup> Century does not provide just more money for a few but more choices for the consumers and more jobs for the multitude. Liberalization must produce not only foreign cars for the affluent, but work for the unemployed, food for the hungry, shelter for the homeless, medical care for the poor, education for the illiterate and money for the needy. We have to fulfil this dream through innovations and innovative management techniques.

## Knowledge-centred Innovation

The country is, in this context, making pressing demands on science and technology. We are looking for new knowledge and new products in the new century. We are especially looking for knowledge and products that will further reduce human misery, remove hunger and want, and improve the living conditions of the people at large. While doing so we have to protect environment.

Achievement of the above objectives calls for greater cooperation among the scientists and technologists in formulating policies, as well as their implementation directed towards innovations of new products and processes for the well being of the people of the country.

In order to make India innovative, it has become necessary to establish bridges between the traditional approach of research and global demand for innovation. This is where creation of knowledge-based innovation becomes important.

Knowledge without innovation is of no practical value. It is through the process of innovation alone that knowledge is converted into wealth and social good, and this process takes place from firm to firm. When one looks at India today one feels that centuries of subjugation has perhaps undermined our capacity for innovation and creativity. We cannot anymore allow the 'I' in India to stand for imitation and inhibition, it must stand for innovation.

*Innovators are those who do not know that it cannot be done. Innovators are those who see what everyone else sees but think of what no one else thinks. Innovators refuse status quo, they convert inspirations into solutions and ideas into products.*

Building such innovators will require an all-pervasive attitudinal change towards life and work a shift from a culture of drift to a culture of dynamism, from a culture of idle prattle to a culture of thought and work, from diffidence to confidence, from despair to hope. Revival of Indian creativity and the innovative spirit needs to be made into a national movement today in the same spirit and on the same scale as marked the country's freedom struggle.

## Forward and Backward Linkages

The processes of innovation have both forward and backward linkages. The forward linkages will involve technology innovation and production chain, with the consequent process of diffusion representing a further forward linkage. For India, equally important is the backward linkages which pertain to literacy, science education, public awareness, the mass media and the use of innovation in science itself to further these.

## Types of Innovations

There are mainly three types of innovations. First there is the large system innovation such as a man on the moon mission or the green revolution; second, incremental innovation such as the development of an improved fax machine; and third, radical breakthrough including accidental innovations.

1. **Large System Innovation** : Large system innovations invariably take place in formal systems of innovation, namely universities, industrial R&D laboratories. India has done well in large system innovations. The programmes in strategic areas, green revolution and white revolution are indicative of our successes breakthrough leading to the antibiotic industry.

2. **Incremental Innovation:** Incremental innovations take place in industries which continuously innovate to create products, which displace their own products with the fear that otherwise their competitors will do it for them. In the absence of competition in the marketplace, Indian industry has not put demands on innovation, but no more can they afford to do this now. We do hope that the new millennium innovative spirit will propel our industry to change course since that alone will survival or success in an extremely competitive world market.
3. **Radical Innovation:** As regards radical breakthroughs, which gave rise accidentally to antibiotic industry and modern chemical and plastics industries, India cannot, unfortunately, claim any major breakthroughs that owes its origin to an accidental discovery. We need an innovative mind to spot accidents when they happen. After all, eyes do not see what the mind does not know. With the new innovation movement, we will expect many more such radical breakthrough to come out from India.

## Sector-wise Classification of Innovation

The above mentioned classification of the innovations can happen in any sector or area including society, schools, community, politics and legal, etc. Based on the sector or area in which a particular innovation takes place, the innovation can be classified as follows:

1. **Community Innovation:** Innovators do not exist just in formal laboratories. Millions of them exist in villages, in homes and on the streets. To encourage community innovation, it is necessary to scout, support, spawn and scale up the grassroot innovation. This will generate employment, on one hand, and it will use natural resources sustainably through linking of innovation, enterprise and investment, on the other. The initiative already taken by the Government of India by setting up the National Innovation Foundation has been playing a crucial role in making this happen.
2. **Social Innovation:** Beyond S&T – based innovations mentioned here, the concept of innovation is a much wider one. It is particularly important to recognize the need of social innovation. Innovation in India's social,

legal and economic institutions, in the system of their governance is as crucial as innovation in products and production processes of its economy. If paper becomes more important than people, if bureaucracy overrides innovative spirits, if risk-taking innovators are ignored, if decision-making times are larger than new product life cycles, then innovation cannot survive. We must also recognize that innovation cannot arise by itself; it is generated and sustained through the efforts of the people.

3. **Political Innovation:** Political innovations are also important to shape political thinking. *The* current political system in India needs innovations to clean the political mess created by the politicians due to their vested interest like making money, patronizing own community persons, grabbing land and building. A stable government can govern the country in much better way than the unstable government. Transparency in political system at different levels is important for better and effective governance. The politics of '*Gaya Rams and Aaya Rams*' is a dangerous trend in our political system. Therefore, innovations are needed to evolve a better system free from various malpractices currently prevailing in our political parties.
4. **Legal Innovation:** Justice delayed is justice denied. It is very true in the case of our country as our judicial system takes unduly long time to dispose of cases. It is not only time consuming but expensive too. The people lose faith in judicial system when years are taken in delivering judicial verdicts. There is an urgent need to develop innovations for simplifying cumbersome procedures and curtailing delays. There is a considerable scope for innovations to improve our judicial system for speedy and effective justice.

## Enabling Environment for Innovation:

It is imperative that we create an enabling environment in which innovation flourishes. In its absence, innovators will either play safe and not innovate, or they will leave to become a part of other innovative societies which encourage innovation. India has seen this to its dismay; since a lot of its young sons and daughters are migrating to other countries, not due to the lure of the physical income alone, but

because of the psychic income that they gain in those innovative societies. India must resolve to reverse this process as we have already entered the new millennium.

## Creating a Silicon Valley in India

Silicon Valley has become so important in the world in a short time that it has turned into an innovative society. The question that arises is: who have made it possible? No doubt, our bright young Indians have greatly contributed to make it what it is. A world-renowned software company in Silicon Valley employs about 6,000 Indian engineers, technologists and management personnel out of a total 10,000 employees. Of these 4,000 are IIT graduates and post-graduates from India. The same pattern is evident in other software companies in the USA. Why do Indian genes express themselves in Silicon Valley? Why can they not express themselves in India? How can we create Silicon Valley in India? The answers are obvious. We have first to reverse the brain-drain from the country, which will be possible only if we create conducive environment to enable our genes to express themselves in Indian Universities, industry and R & D laboratories.

## Cremation of Anti-innovative Approach

Unfortunately, in the last few decades an anti-innovative approach of learning has crept into our educational system. The basic reasons are:

- an unproportionate shift towards objective-type curriculum under which the student has to rely more on his memorizing capacity than his thinking and creative faculty;
- the cut-throat competition for getting oneself admitted into engineering or medical colleges; and
- the pressure from parents on the students to somehow remain a topper in the class.

This has made the bright young generation to turn into mental 'athletes' rather than the knowledge-seekers and thinkers. Since the young minds are not motivated to enter into the domain of creativity and innovation, they are easily attracted by the glamour of modern commerce and business. This is the reason why most of the best brains from our IITs today are going for business management and Indian Administrative Services, rather than for creative engineering for which they were grooved at an exorbitant amount of public money.

## Revival of knowledge and Wisdom

Keeping this scenario in mind, we must bring back the spirit of the glorious innovative India of the bygone millennia to once again turn India into a nation of creative persons, innovators, original thinkers and down-to-earth teachers (gurus) of contemporary science and technology.

Unfortunately, we did not lead the world in the second millennium because we lacked in original thinking, creativity and innovation. We can reverse the trend in current millennium. Indeed, we have an opportunity to unleash the resurgence of an innovative India. To meet the challenges of international forces successfully, we cannot afford any longer to remain indifferent to scientific and technological developments to build India as an innovative society.

An innovative society, created through an enabling environment for innovations, will not only make the people creative but will also generate intellectual capital which will be real asset as well as a driving force in the current era of globalisation and liberalisation. Intellectual capital must be the *mantra* of new economy in the current millennium.

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**“To raise new questions, new possibilities to regards old problems from a new angle, Requires creative imagination and marks real advance in science.”**

**–Albert Einstein**

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