SUMMARY AND CONCLUSIONS

As has already been stressed, urbanization is a pre-requisite to achieve rapid economic development. In a country like India, economic development is generally associated with the growth of urbanization. The process of urbanization relates to concentration of people engaged in non-agricultural occupations and concentration of non-agricultural land-use in a specialised area, a ‘place’ as a consequence of population, occupational and land-use shifts.¹ Urbanization thus involves:

1. Concentration of people at population densities higher than those associated with agricultural population;
2. People’s shift (migration) from rural to urban areas; or people shifting;
3. Occupational shift from agricultural to non-agricultural; and
4. Land use shift from agricultural to non-agricultural. Thus Urbanization takes place mainly in three ways:
   a) Natural increase in population.
   b) Reclassification of rural and urban places, so that some rural areas may be treated as urban and
   c) When net rural-urban migration occurs.

Although urbanization is a necessary condition for modernisation, the kind of urbanization take place in developing countries is marked by the growth of few large cities and Metropolitan centres. It may be defined as a process by which villages turn in to towns and towns turn in to cities. In the demographic sense it is an increase in the proportion of the urban population (U) to the total population (T), over a period of time. As long as U/T increases, there will be urbanization. However, theoretically, it is possible that this proportion remains constant overtime in a situation where there is absolutely no rural to urban migration and both the rural to urban population grow at the same rate. In such a case, there will be urban growth without urbanization. The process of urbanization is a continuous one, which is not merely a concomitant of the whole gamut of factors underlying the process of economic growth and social change.

The number of towns has fluctuated from decade to decade on account of changes in the definitions and concepts. In the 1961 census certain towns were
declassified, as a result of which the number of towns had declined from 2843 in 1951 to 2365 in 1961. However, the data for 1971, 1981, and 1991 are comparable, as the definition of an urban unit adopted in 1971 census was also followed in the 1981 and 1991 census. In the 1971, 81 and 91 and 2001 census an urban area was defined as follows:

a) All places with a municipality, corporation cantonment board or notified towns area committee, etc.

b) All other places which satisfy the following criteria:
   i) minimum population of 5,000;
   ii) at least 75 per cent of male working population engaged in non-agricultural pursuits, and
   iii) a density of population of at least, 400 person per sq.km. (1,000 persons per sq.mile).

Today, half of the world’s population lives in urban areas. By 2050, 70 per cent of the population will be urban. India has been witnessing massive urbanization. Over the six decades since independence, India’s population having grown three-fold from 350 million in 1947 to 1027 million in the year in 2001. During the same period, the urban population grew almost 4.6 fold as fast—from 62.4 million to 286 million (Census 2001). Thus, the Independent India has been urbanising very fast. The process of urbanization has been closely linked with the process and pattern of economic development in the country. Although the process of urbanization in India could not be explained fully by the process of economic development, it is positively linked with the latter.²

The rapid increase in urbanization and economic development has led to severe environmental degradation that undermines the environmental resource base upon which sustainable development depends. The growing concern is that as cities grow larger environmental stress multiplies. This is because cities are where action is. The unprecedented growth in population, accompanied by technological and economic growth has enhanced urbanization. Cities are the focal points of opportunities. Hence there is always a movement of population to cities. This increases the pressure on existing facilities of housing and infrastructural facilities
besides leading to congestion. Thus, the situation in our cities has become unmanageable and more alarming with the growing inequalities arising out of logs in adjustment to rapid and extensive urbanization. A great many ‘urban’ dwellers and individual households are not integrated socially, economically or politically in urban life. Their low level of incomes; lack of education; sub-standard living in slums and squatter settlements and increasing population concentrations; overloading the community’s environmental life support system, in the face of already existing backlog of services and amenities, have added new dimensions to the problem increasing the maintenance cost of urban development.\(^3\)

Urbanization is associated with higher incomes, improved health, higher literacy, improved quality of life and other benefits. Yet along with benefits comes environmental and social ills. The positive role of urbanization is often overshadowed by the evident deterioration in the physical environment and quality of life in the urban areas caused by widening gap between demand and supply of essential services and infrastructure. It affects the environment in many ways: its relation with discharge of pollutants and generation of solid/liquid/gaseous wastes, secondly, its relation with the depletion of natural resources and its relation with the social costs of population explosion, pollution, poverty and sustainable development. Urbanization depletes both renewable and non-renewable resources faster because of the excess energy requirements of urbanities. The increased substitution of machines for labour in urban cities, and the processing and transporting of additional food requirements to urban cities, creates excess demand for energy. With urbanization even the simple matter of waste disposal becomes a problem. The ‘throw away’ societies of cities generate the most trash disposal, which poses a major threat today. The world’s leading cities are polluters par excellence. Urban pollution may be the by-product of the city: its increasing population’s energy requirements. Pollution in the modern cities are caused by the overloading of the environment with noxious substances contained in our daily consumption and production activities; they are the effluents of affluence in one sense. Discarded in the air, land and water, they become the wrong thing in the wrong place at the wrong time.

Waste generation has witnessed an increasing trend parallel to the development of industrialization, urbanization and rapid growth of population. The
problem has become one of the primary urban environmental issues. Enormous amount of waste is generated daily and its management is a huge task. Similarly, the rapid increase in urbanization combines with desperate poverty to deplete and pollute local resource basis on which the livelihood of the present and future generation depends. Apart from these, India has major environmental problems related to industrialization also. In the pursuit for faster industrialization, the environmental factors have not been given serious consideration in the formulation of industrial policies. The cavalier attitude towards environmental degradation and adoption of environmentally less friendly technologies has resulted in air and water pollution and has made most of our major rivers impure and filthy. While the major industries are responsible for macro-environmental problems, the unchecked growth of informal manufacturing sector in most of urban centres has spoiled the micro-environments.

The rapid urban growth is a problem both in developed and developing countries of the world, because there is a wide gap between the rate of growth of urban population and the rate of progress of social overhead facilities including employment opportunities for the educated urban population. But this urban problem is more acute in less developed than the developed countries. Among all the developing countries, India has got a rapid urban growth rather than urbanization due to its rapid population growth. Urbanization is a continuous process, which is not merely a concomitant of industrialization, but a concomitant of the whole gamut of factors underlying the process of economic growth and social change.

India is a part of an earth wide tide of urban growth but the pace of urban growth is slow compared to other countries. For example at the time of independence the percentage of urban population was 17 per cent, but it is only 27.8 today. Among the earth’s ten most populated nations, India has the smallest percentage of urban population and also has the lowest current rate of increase of urban population.

By studying the decadal verification of urban growths two conclusions emerge;

- The proportion of urban growth due to rural urban migration has increased substantially since the 1951-61 and 1961-71 decades.
Migration from rural to urban areas probably accounted for roughly half of the growth of urban population during 1981-91 and 1991-2001.

The city size growth further displays that about 65 per cent of the urban population lived in 300 towns of 1,00,000 population in 1991 and the increase in the class I and class II towns over the period 1961-2001 is striking, particularly in comparison with what happened in town size, class and categorise. The overall trend appears to be one of the increasing concentrations of the urban population in the larger towns.

The 1991-2001 decade has witnessed a significant quickening in the pace of India’s urbanization an acceleration reflecting in particular two important and interrelated trends;

- A shift in the spatial pattern of new urbanization away from the traditional areas of urban growth, and
- A concentration of growth in intermediate size cities.

Moreover, the study is primarily based on secondary data. Keeping all the theoretical and operational aspects of urbanization and environment a set of hypotheses are formulated and tested in the course of study. Some hypotheses are found proved and valid and some are rejected.

Chapter 1 is introductory and discusses the conceptual frame work of the phenomenon-Urbanization and its Environmental aspects. This chapter also explains the general problems arising out of urbanization, need and significance of the study, its objectives, hypotheses to be tested, database used, and methodology adopted in the study. The study is significant as urbanization improved the quality of life in terms of availability of water and sanitation, power, health, education, and poverty has fallen. These improvements must be viewed against the fact that they have been achieved in the presence of rapidly increasing population. In order to analyse the prospects and challenges of urbanization and environment, the methodology used is simple, analytical and involves calculations of statistics like CAGR, Correlation, Simple and Multiple regression, Interpolation and Extrapolation. The entire calculation has been done by using MS-Excel.
Chapter 2 is devoted to a brief review of existing literature available on different aspects of trends and levels of urbanization with respect to environment in India. The existing literature on the subject is wide and varied. We have selected major studies which throw light directly on issue under consideration in our study i.e. studies covering the impact of urbanization on environment. However, all the past studies are either period specific or region specific or deals with particular problems of environment; studies with economic framework are very limited. Thus, the present study tries to fill this gap.

Chapter 3 deals with Urbanization and Environmental Concern. It is in this milieu of the association between urbanization and environmental degradation, this chapter is devoted to the same issue. The chapter discusses at length both the urban planning and policies and issues related to environmental concerns in India’s planning under different Five Year plans. Further, environmental awareness programmes, policies and people’s participation and the lack of integration between environmental policies and economic planning are also being discussed.

Chapter 4 throws light on Urbanization and Available Resources: Present and Future. This chapter includes effects/consequences and benefits of urbanization and explores trends of urbanization in pre and post reform periods and also deals with critical inadequacies in public utilities like land, water, energy, health facilities and sanitation with the burden of increasing urbanization on the status of these available resources. It is clear from Table 4.8 of this chapter, that in all the three categories i.e. intra-district, inter-district and inter-state, migration in males from rural to urban (urban to urban), areas were 47.72 percent (25.56 percent), 59.03 percent (43.32 percent) and 68.19 percent (55.49 per cent) respectively and these are mainly due to the availability of employment opportunities. The employment opportunities are being defined as availability of either employment/work, Business opportunities or availability of education facilities in urban areas. However, the most important factor for female migration is marriage. Table 4.9 shows that employment opportunities in urban areas are more for migrants as compared to non-migrants for both male as well as female. Table 4.10 depicts that wage Rate (Rs.) for persons of age 15-59 years, which is defined to be economically active age group in both casual labour in other type of works and regular wage/salaried persons are quite in urban areas as compared
to rural areas. Further, Table 4.11 shows that the proportion of per thousand households migrated to urban areas is almost 2.5 times as compared to rural areas. It was 33 in urban as compared to 13 in rural areas. In both rural and urban areas, majority of the households migrated for employment related reasons. Nearly 55 per cent of the households in rural areas and 67 per cent of the households in the urban areas had migrated for employment related reasons.

The analysis in chapter 4 of the study has led us to accept the first hypothesis that urbanization in India is a consequence of availability of economic opportunities. On the basis of the analyses based in this chapter we reached to the conclusion that availability of economic opportunities is the most important factor responsible for migration. Therefore, the above statistical facts clearly guide us to conclude that migration from rural to urban has taken place mainly due to availabilities of economic opportunities and the migration has resulted in urbanization.

Chapter 5 intends to explore the Dynamics of Urban system. In the foregoing analysis of this chapter, we also find out the interrelationship between urbanization and growth of slum population. It is evident from Table 5.7 that no significant trend is obtained across the cross section data with regard to the Number of Cities/Towns reporting Slum over different states in India both in 1991 as well as 2001. The value of correlation coefficient between percentage of urban population and Slum population as percentage of total population comes out to be -0.09, which is negative, but insignificant. As the calculated t-value for correlation coefficient test is -0.44 which is much lower than the tabulated t-value of 2.06 at 5 percent level of significance with 24 degrees of freedom. The states where the rate of urbanization is greater than 25 percent (Census 2001), the value of correlation coefficient between the percentage of urban population and slum population as percentage to total population is -0.18 this shows that urban population and slum population are negatively correlated. However, the correlation value is statistically insignificant. As the calculated t-value for correlation coefficient test is -0.63 which is much lower than the tabulated t-value of 2.18 at 5 percent level of significance with 12 degrees of freedom. The correlation coefficient value between urban and slum exponential growth rate across different states in India during 1991-2001 is -0.15, this shows that urban and slum growth rate is negatively correlated. However, the correlation value is
statistically insignificant. As the calculated t-value for correlation coefficient test is -0.54 which is much lower than the tabulated t-value of 2.16 at 5 percent level of significance with 13 degrees of freedom. Table 5.10, depicts that only in states like Punjab, Haryana, West Bengal and Maharashtra, the percentage of Slum to Urban population shows an upward trend whereas the other states either shows negative trend or no trend between percent of Slum to Urban population. On the basis of above observation we can easily conclude that no significant relationship exist between Urbanization and Slum population. This directs us to reject our second Null Hypothesis that Urbanization leads to growth of Slum Population.

The study also examines the relationship between the levels of urbanization and poverty in this chapter. Usually, urban poverty is less than rural poverty. It is also observed that poverty levels are negatively related with levels of urbanization. No significant trend (upward or downward) is obtained among the data over different states with regard to urbanization and poverty in India both in the years 1993-94 as well as 2004-05 (fig-5.3&5.4). The coefficient of variation of urban population to total population among different states of the country in 1993-94 (2004-5) comes out to be 59.8 (59.4), which is quite high. The coefficient of variation of proportion of persons below poverty line in urban areas among different states of the country in 1993-94 (2004-5) comes out to be 46.4 (55.4) showing larger degree of variability in the data. The value of correlation coefficient between percentage of urban population to total population and percentage of urban population below poverty line in 1993-94 comes out to be -0.05, which is negative and the relationship is statistically not significant. The value of correlation coefficient between percentage of urban population to total population and percentage of urban population below poverty line in 2004-05 comes out to be -0.08, which is also negative but statistically insignificant.

The above observation clearly reflects that the higher values for coefficient of variation during 1993-94 and 2004-05 among different states of the country with regard to the variables of urban population to total population and proportion of persons below poverty line in urban areas shows that there has been wide dissimilarity with regard to these variables among different states of the country. The calculation of correlation coefficient reflects that there exists low degree of negative relationship
which is statistically insignificant and on the basis of this result our study leads us to reject the third null hypothesis that rapid urbanization leads to poverty.

Also the analysis of urbanization and different quality of life among 16 major states of the country for the census year 1991 and 2001 in this chapter, shows the value of correlation coefficient between the ratio of urban population as percentage of slum population and the total population comes out to be 0.12 in 2001 which is statistically insignificant as calculated t-value for the correlation coefficient test is 0.44, a much lower value than tabulated t-value. The correlation coefficient between percentage of urban population and per capita public expenditure (Rs) is 0.85 in 2001 which is statistically significant as the calculated t-value for the correlation coefficient comes out to be 5.97 which is statistically significant at 1 percent level of significance with 14 degrees of freedom. This is a good measure of quality of life. This may be due to the fact that urbanization is the result of availability of job opportunities in the urban areas and as income increases due to the availability of employment opportunities, so does the expenditure. The correlation coefficient between percentage of urban population and percentage of household having safe drinking water has declined by 0.44 (1991) to 0.37 (2001). The correlation coefficient is positive but it has declined. however, as the calculated t-value for the correlation coefficient in 1991 comes out to be 1.81 which is statistically significant at 10 percent level of significance with 14 degrees of freedom and 1.47 in 2001 which is statistically insignificant. The correlation coefficient between percentage of urban population and percentage of household having toilet facilities has shown a reversal in the trend i.e. from positive correlation value of (0.04) in 1991 to negative (-0.14) in 2001. Though both correlation coefficient are statistically insignificant as the calculated t-value comes out to be 0.15 and -0.52 in both 91 and 2001. This is a clear reflection that a toilet facility available for urban population has fallen over a period of time and one of the reasons may be that government expenditure is less as compared to the increase in urban population. The correlation coefficient between percentage of urban population and percentage of household having electricity is positive showing that urbanization has lead to higher availability of electricity facilities. The positive correlation has increased from 0.48 in 1991 to 0.54 in 2001. The calculated t-value for correlation coefficient comes out to be 2.02 in 1991 which is statistically significant at
10 percent level of significance with 14 degrees of freedom and 2.37 in 2001 which is statistically significant at 5 percent level of significance with 14 degrees of freedom. On the basis of the above estimates of correlation coefficient between percentage of urban population and various indicators of quality of life, it can easily be inferred that urbanization has shown the way towards improvement in the quality of life. *Hence, this conclusion rejects our fourth hypothesis that Urbanization leads to degradation in quality of life.*

Chapter 6 examines the Environmental Aspects of Urbanization. The analysis of the interrelationship between Urbanization and Environmental degradation in this chapter shows (table 6.14(b) correlation matrix) high degree positive correlation between state of ambient air quality and population in 10 metro cities of India during 1991. As the main source of these pollutants is growing industrialization with unplanned urbanization causing increase in vehicular pollution, industrial emissions, automobile exhaust and the burning of fossil fuels. Also correlation matrix in table 6.15(b) shows high degree of positive correlation between emission load and population in metropolitan cities of India in 2001. As the transport sector contributes a major share of environmental pollution (nearly around 70 per cent). This is because all metropolitan cities have been facing consistent rise in vehicular stock due to growth in demand for fast and convenient mode of travel & transportation. Table 6.16 depicts noise levels in various cities which show that noise pollution crosses the prescribed limits almost in all the cities and it is increasing at an alarming rate as the population moves to these mega cities in search of employment and better standard of livings. The additional population and extra vehicles add up to the burden of noise. Table 6.5, shows the comparison of water supply, wastewater generation and treatment in Class I Cities and Class II Towns during 1978-79, 1989-90, 1994-95 and 2003-04. From the analysis of this table, we find that the wastewater generation has increased three fold i.e. from 8233 million litres per day (mld) in 1978-79 to 26254 mld in 2003-04 putting together the figures of both categories of urban centres. Although, the treatment capacity has also increased by two and half times from 2823 mld in 1978-79 to 7044 mld in 2003-04 but the gap of untreated volume has increased drastically. This may be due to the increase in mass urban population and lack of proper management/incentives by the government.
On the basis of above information and analysis of the data, it is being observed that all air, water and noise pollution has increased in urban areas in India over a period of time. The major reason for this has been an influx of population due to availability of job opportunities owing to industrialization in urban areas. The urbanization itself is defined as an index of transformation from traditional rural economies to modern industrial one. It is progressive concentration of population in urban unit. These facts provide sufficient amount of reasoning to confirm our fifth and last hypothesis that environmental degradation is the consequence of rapid urbanization.

Thus, urbanization contributes to economic development as much as it seems to constraint it. Urban areas have become symbols of many contrast and conflicts. Our cities are a mixture of splendour and squalor. They provide better employment opportunities, higher income levels, better education, health and social services. At the same time, they are also congested, chaotic and squalid. The rapid rate of urbanization has produced radical changes in the basic pattern of living environment. The rapid urbanization will exacerbate disruptions in the pattern of living of people migrating from rural areas in adopting urban pattern of living. This will be particularly conspicuous between the small group of rich and powerful and the overwhelming low-income households in large urban agglomerations. The dispersed pattern of cities will contribute to social inequalities because of limited access to jobs by the urban poor, residing in the periphery of cities. Clearly, the environmental challenges posed by the economics of growth are going to multiply in magnitude and complexity-more people are going to emit pollutants, and there is going to be less land available for competing uses.

In order to comprehend the above issues and problems of urbanization and environment, the National Development Plans have, from time to time, developed certain techniques and solutions in the process of urban and environmental planning policy. The key factor that must be faced is that urbanization will continue in India in the foreseeable future and going to place heavier demand on the environment. It is, therefore, important to understand the process of urbanization in different regions and design appropriate policies of urban development. Thus, the five year plans prepared by the Planning Commission of India reflect the aspirations and long-term plans of
the central government on all aspects of economy, environment and development. These plans can be helpful in analysing the policy continuation regarding various sectors. Some of the schemes launched for the benefit of the urban people are: National Building Organisation, Housing and Urban Development Corporation, The Urban Land (Ceiling and Regulation) Act 1976, Integrated Development of Small and Medium Town, Urban Poverty Alleviations Schemes etc.

In a nutshell, the major findings of the study can be summarised as follows:

I. Urbanization is a universal process. It is a natural consequence of economic changes that take place in state or country, which contributes population development. Simultaneously, it is a process by which people, instead of living in predominantly dispersed agricultural villages, start living in towns and cities dominated by industrial and service functions. It involves multiplication of urban places and/or an increase in the size of existing cities. Moreover, it is a two-way process because it involves not only movement from village to cities and change from agricultural occupation to business, trade, service and profession but it also involves change in the migrants attitudes, beliefs, values and behaviour patterns.

II. According to 2001 Census, there are 286 million urban population and 35 metropolitan cities in India. These included Calcutta, Mumbai, Delhi, Chennai, Bangalore, Hyderabad, Ahmedabad, Kanpur, Pune, Nagpur, Lucknow, Jaipur etc. The proportion of urban population increased from 45 percent to 69 percent in Class I cities having population of 100,000 and above during 1951 to 2001 rather than Class II, III and Class IV cities and this exhibits that the concentration of the cities in the bigger class size towns is thriving faster over time at the cost of the smaller towns.

III. The process of urbanization in post-independence period was fastest during 1971-81. The size of urban population increased from 109 million in 1971 to around 160 million in 1981. The number of towns increased from 2590 in 1971 to 3378 in 1981.

IV. The rapid growth of one million cities has brought in its wake a large set of problems. Rural-Urban fringe has emerged around most of the larger cities. The provision of basic amenities to slum dwellers and the fringe villages poses
a major problem to the city administration. Nearly half of the population in 2001 Mumbai (49 percent), Kolkata (32 percent), Delhi (18 percent), and Chennai (17 percent) were living in slums.

V. The rural-urban migration is the most important factor of the urbanization. People move into cities to seek economic opportunities. A major contributing factor is known as "rural flight". In rural areas, often on small family farms, it is difficult to improve one's standard of living beyond basic sustenance. Cities, in contrast, have strongly emerged as the prime engines of the Indian economy and generators of national wealth, the future is inescapably urban. During 1991-2001, almost 55 percent of people migrated from rural to urban pattern.

VI. The study also discusses at length both the urban planning and policies in India and environmental concerns in India under different Five Year plans. The Five Year Plans prepared by the Planning Commission of India reflect the aspirations and long-term plans of the central government on all aspects of economy, environment and development. These plans can be helpful in analysing the policy continuation regarding various sectors. For example, The Eight Plan for the first time explicitly recognised the role and importance of the urban sector for the national economy, whereas concern of environmental problem made its first footsteps in the Sixth Plan. For the first time, in India’s planning there was separate provision for environmental degradation. Steps were taken for water pollution, air, noise and land pollution separately.

VII. The study also find out the interrelationship between urbanization and growth of slum population and on the basis of the observations made in chapter 5 of the study, we can say that no significant relationship exists between the two.

VIII. The study also reveals the relationship between the levels of urbanization and poverty. Usually, urban poverty is less than rural poverty. The calculation of correlation coefficient in chapter 5 reflects that there exists low degree of negative relationship which is statistically insignificant and thus observed that poverty levels are negatively related with levels of urbanization.

IX. The analysis of urbanization and different quality of life among 16 major states of the country for the census year 1991 and 2001 can easily be inferred that urbanization has lead to improvement in the quality of life.
X. The rapid population growth and economic development in country are degrading the environment through the uncontrolled growth of urbanization and industrialization, expansion and intensification of agriculture, and the destruction of natural habitats.

XI. Population pressure on arable land contributes to the land degradation. The increasing population numbers and growing affluence have already resulted in rapid growth of energy production and consumption in India. The environmental effects like ground water and surface water contamination; air pollution and global warming are of growing concern owing to increasing consumption levels.

XII. Environmental pollution is one of the serious problems faced by the people in the country, especially in urban areas, which not only experiences a rapid growth of population due to high fertility, low mortality and increasing rural-urban migration, but also industrialization which is accompanied by growing number of vehicles. In India, the rapid increase of human numbers combines with desperate poverty to deplete and pollute local resource bases on which the livelihood of present and future generations depends.

XIII. Waste generation has witnessed an increasing trend parallel to the development of industrialization, urbanization and rapid growth of population. The problem has become one of the primary urban environmental issues.

XIV. Finally whatever be the positive and negative impacts of urbanization on economic development of the country, one thing is clear from the study that the process of urbanization is ever changing i.e. it is dynamic.

Suggestions of the Study

Based on the findings of the study and in the light of the observations the following suggestions are made for achieving high level of urbanization with maintaining environmental quality so that sustainable development could be achieved in India:

1) Pattern of Urbanization

Developing spatial pattern of urbanization suited to the socio-economic conditions of India. With a total urban population of 286 million and 35 metropolitan
cities and metropolises, India's urban issues with all their related challenges and opportunities demand their firm place on the national agenda.

2) Urbanization of poverty

It is one of the key features of India's urbanization. Unplanned urbanization has resulted in the growth of slums in the cities dividing them into formal and informal settlements. The non-recognition of this fact has contributed to enormous strains on urban infrastructure. What is worrying is that cities have not sufficiently taken notice of this phenomenon and its impact on cities. It is evident that if cities fail to deal constructively with poverty, poverty would seriously undermine the sustainability of cities.

3) Government Incentives

Government should provide health, education, housing, and pension services for rural migrants in urban areas which is essential for promoting human capital movement from rural to urban areas or to the industrial sector. Promoting the development of the rural non-farm economy and rural small towns is another effective way to correct rural/urban bias and to create significant synergies between the two sectors.

4) Good Urban Governance

The Global Campaign for Good Urban Governance should be incorporated which aims to realise the “inclusive city”, which include decentralisation, integration of the poor and marginalised, environmental sustainability, mobilisation of municipal finance, transparency and civic engagement, better municipal management and capacity building.

5) Creating Employment Opportunities

Government should create employment opportunities for low-income communities through the promotion of micro-enterprise and public works and also encourage and facilitate the participation of slum dwellers in housing construction and shelter upgradation so that it will aims at improving the quality of life and making cities free from the worst features of slums.
6) **Emphasis on Service Sector**

Among fast growing developing countries, India is distinctive for the role of the service sector. This is due to the fact that India has a large pool of highly skilled, low cost, and educated workers in the country. By services sector we mean the tertiary sector, which is the largest of the three constituent sectors in terms of contribution to Gross Domestic Product (GDP) in India. Therefore, government should take all possible steps to provide economic opportunities to this sector which is also a pollution free sector.

7) **Prime Concern to Urban Poverty**

Quite clearly, in many cities, urban poverty does not seem to be getting the kind of priority that it deserves from the local authorities. The focus of urban service delivery mechanisms also seems biased against the problems of the poor in cities. Many cities need to go beyond the MDG stipulation of extreme poverty and hunger and set targets that are more meaningful in terms of urban poverty and more helpful to urban poor.

8) **Public Awareness**

It is essential to make the public aware of the formidable consequences of the Environmental Degradation, if not retorted and reformative measures undertaken would result in the extinction of life. It is essential to get the country acquainted with these challenges so that their acts may be eco-friendly.

9) **Role of Environmental Organisations**

Organisations like TERI, CPCB UNEP/WHO, World Bank, CESE/IIT, EIA/EPCA/NEP/MoEF etc have carried out studies in the past to estimate the contribution of various sources towards the environment but the main problem is the lack of environmental awareness among the people. What is needed is strict enforcement of these laws and creation of environmental awareness among the masses.

10) **Environment Consciousness**

The environment noise levels are to be checked with prescribed noise standards for residential, commercial and industrial areas. If the noise exposure levels
are higher, suitable noise control measures like personal protective equipment, installation of barriers, enclosures etc., need to be suggested.

11) **Use of Economically viable Gaseous fuels**

The use of gaseous fuels, that is, CNG and LPG, ULSD and electricity (in the form of battery operated vehicles) for automobile applications should be encouraged. Vehicles using CNG proved to be economically viable, can help in reducing the levels of pollutant emissions and are quite cost effective. In a study carried out at IGIDR in the year 2001, it was found that CNG technology with discount rate of 10 percent outperforms the conventional technology. For example, Conventional three-wheelers (autos) Life cycle operating cost was Rs 1.18 pkm whereas CNG three-wheelers (autos) Life cycle operating cost was 0.65 pkm. Similarly, Conventional cars 2.45 Rs pkm whereas CNG cars was 1.92 Rs pkm. Commercialization activities of natural gas vehicles (NGVs) have taken place for varying reasons in different countries since their initial introduction in Italy in the mid-1930s. In India, they were introduced during 1990s.

12) **Transport Mitigation Strategies**

The adverse effects of emissions produced by the transport sector can be minimized by the implementation of concerted local, national and international efforts. These efforts, if implemented wisely, can also reduce dependence on fossil fuels.

13) **Emission Standards**

The Government should accept the emission standards EURO I, EURO II, EURO III, etc. for the vehicles as adopted by ECs. EURO III norms are applicable nationwide from 2010. Emission standards for new heavy-duty diesel engines under EURO III—applicable to vehicles of GVG > 3,500 kg— are listed as follows: CO (2.1), HC (0.66), NO\(_x\) (5.0), and PM (0.10). The automobile industries and oil industries must also come forward to improve their existing standards to save the atmosphere from air pollution. Rivers and seas should also be protected from similar dangers of pollution. Dumping of waste into the river and sea should be prohibited.
14) Strengthening Infrastructure Facilities

As the country is on the verge of preparing the Twelfth Five-Year Plan (2012-2017), the urban transition is considered one of the major challenges, requiring a massive expansion in urban infrastructure and services. Thus, the impact of degradation on urban space, environment, and quality of life is tremendous. The provision of infrastructure facilities required to hold such large concentrations of people is lagging far behind the pace of urbanization. As a consequence, the urban environment mostly in big and large cities is worsening very rapidly. Therefore, all this calls for a holistic approach to problem-solving i.e. development of Satellite towns well connected with main towns. For example, the development of Noida, Ghaziabad, and Gurgaon as satellite town to New Delhi has not only reduced the population burden on the capital but also generated millions of employment opportunities.

15) Cooperation between the State and the Centre

Strengthening inter-sectoral development between State and the Centre. There should be good cooperation between State Pollution Control Board, Central Pollution Control Board, Municipal Administration, Ministry of Urban Development and Poverty Alleviation, and Ministry of Health and Family Welfare etc.

16) Increase Awareness among Masses

The Planning Commission should note that “addressing the problems posed by the urban transformation that is likely to occur” is among the four key challenges for the next Five Year Plan (2012-2017). The others are described as those of managing energy and water and of protecting the environment. Greater emphasis should be given on urban infrastructure creation and management and on the need to ensure that the growing cities are “liveable” as ignoring the above formidable challenges are perilous because the adverse implications are not long term or even medium term: they are likely to come and bite us only too soon.

17) Role of NGOs

Finally in order to make policies effective, apart from making people aware of environmental concerns, there is a need to augment the available human resources
capacity so that the environmental issues are addressed properly. For this we need to look into the existing facilities in this regard at higher levels of education, participation of NGOs and the private sector. There are number of NGO’s who are working actively in agriculture, natural resource management, and economic development. Some of them are as follows: The Association of Sarva Seva Farms (ASSEFA) grew out of the Gandhian- Sarvodaya tradition in Tamil Nadu. It began with cooperatives for landless people who were voluntarily given land under the Bhoodan movement. The Centre for Youth and Social Development (CYSD) began in 1982 on the initiative of a number of university professors as a support organization for social entrepreneurship development training of youth activists in Orissa. The URMUL Trust grew out of a successful dairy cooperative in the Bikaner district, a desert region on the India–Pakistan border. Set up in 1985, it began with a rural health service for the cooperative’s members, which was extended to all the inhabitants of the region and then moved into other sectors.
References

