



Government of India

Planning Commission

Eleventh Five-Year Plan

(2007-2012)

(54th NDC Meeting)

**Rural Drinking Water and Sanitation
in the Eleventh Plan period - Excerpts**

New Delhi
December 2007

Drinking Water, Sanitation & Clean Living Condition

Introduction

5.1. Provision of clean drinking water, sanitation and a clean environment are vital to improve the health of our people, to reduce incidence of diseases and deaths. Women and girls spend hours fetching water and that drudgery should be unnecessary. Drudgery is undesirable in self and it also takes away other opportunities for self-development. Drinking water is less than one percent of the total water demand and should have the first priority among all uses of water.

5.2. Lack of covered toilets nearby imposes a severe hardship on women and girls. Also provision of clean drinking water without at the same time provision of sanitation and clean environment would be less effective in improving health. The two should be treated together as complementary needs.

5.3. The status of provision of water and sanitation has improved slowly. According to Census 1991, 55.54% of the rural population had access to an improved water source. As on 1.4.2007, Department's figures show that out of a total of 15,07,349 rural habitations in the country, 74.39%(11,21,366 habitations) are fully covered, and 14.64%(2,20,165 habitations) are partially covered. Further, present estimates shows that out of the 2.17 lakh water quality affected habitation as on 1.4.05, about 70,000 habitations have since been addressed for providing safe drinking water. Also, from the reported coverage, there are slippages in the prescribed supply level, reducing the per capita availability due to a variety of reasons.

5.4. Water supply in urban areas is also far from satisfactory. As on 31.3.2004, about 91% of the urban population has got access to water supply facilities. However, this access does not ensure adequacy, equitable distribution and the per capita availability is not as per norms in many areas. Average access to drinking water is highest in class I towns (73%), followed by class II towns (63%), class III towns (61%) and other towns (58%). Poor people in slums and squatter settlements are

generally deprived of these basic amenities. The population coverage in the past decades and as of March 2004 is as shown in *Table 5.1* below:

5.5. The quantity of urban water supply is also poor. Water is supplied only for few hours of the day which leads to lot of waste as taps are kept open and water is stored not all of which is used. This is so, despite the fact that per capita availability of water in cities like New Delhi exceeds that in Paris, where water is supplied round the clock.

Table 5.1: Percentage of population covered with Water Supply Facilities

Year	Urban Population (million)	Percentage of Population Covered with Water Supply
1981	152	78
1991	217	84
2001	285	89
2004	308 (projected)	91

5.6. The access to toilets is even poorer. As per the latest Census data (2001), only 36.4 percent of the total populations have latrines within/attached to their houses. However in rural areas, only 21.9 percent of population has latrines within/attached to their houses. An estimate based on the number of individual household toilets constructed under the Total Sanitation Campaign (TSC) programme (a demand driven programme implemented since 1999) puts the sanitation coverage in the country at about 49% (as on November 2007). An evaluation study on programme conducted in 2002, 80% of toilets constructed were put to use. This use is expected to be much higher as awareness has improved much since 2002.

5.7. 63% of the urban population has got access to sewerage and sanitation facilities (47% from sewer and 53% from low cost sanitation) as on 31.3.2004. As a consequence, open defecation is prevalent widely in rural areas but also significantly in urban areas too.

5.8. We look at the Eleventh Plan approach to deal with the problems of rural water supply, urban supply, rural sanitation and urban sanitation.

Rural Water Supply

Past Programmes and Outlays

5.9. Government of India's major intervention in water sector started in 1972-73 through Accelerated Rural Water Supply Programme (ARWSP) for assisting States/UTs to accelerate the coverage of drinking water supply. In 1986, the entire programme was given a mission approach with the launch of the Technology Mission on Drinking Water and Related Water Management. This Technology Mission was later renamed as Rajiv Gandhi National Drinking Water Mission (RGNDWM) in 1991-92. In 1999, Department of Drinking Water Supply (DDWS) was formed under the Ministry of Rural Development (MoRD) to give emphasis on rural water supply as well as on sanitation. In the same year, new initiatives in water sector had been initiated through Sector Reform Project, later scaled up as *Swajaldhara* in 2002. With sustained interventions, DDWS remains an important institution to support the States/UTs in serving the rural population with water and sanitation related services all across India.

5.10. An investment of about Rs.72,600 crores has been made (under both State and Central Plans) from the beginning of the planned era of development in rural water supply sector. As per available information, this investment has helped to create assets of over 41.55 lakh hand pumps, around 15.77 lakh public stand posts, around 1.60 lakh mini-piped water supply schemes and 45000 multi village schemes in the country under the Rural Water Supply Programme. Of these systems, 88.21% hand pumps, 93.49% stand posts, 91.95% mini schemes and 96.26% multi village schemes are reported functional by the States. During the Xth Plan, the approved outlay for the programme was Rs.13,245 crores. The programme was well funded during 10th Plan (being a part of Bharat Nirman Programme) and by the end of March 2007, an amount of Rs.16,103 crore was released to the states under the scheme. On the

physical achievement side, **3,52,992** habitations have been reported covered by the states during 10th Plan.

5.11. The *Swajaldhara* programme was launched in 2002-03. The programme involves a community contribution of 10% of the project cost to instill a sense of ownership among the people and also to take over the O&M of the schemes constructed under the programme. The Centre provides 90% of the project cost as grant. Under the *Swajaldhara* programme, out of the 19,385 schemes included under the programme with an estimated cost of Rs1,069 crore, only 11,046 schemes could be completed in X Plan with an expenditure of Rs.610 crores. The monitorable target of covering all habitations in 10th Plan, which was aimed to be achieved in 2004, could not be achieved. During the Eleventh Plan, the *Swajaldhara* principles are to be adopted by the State Governments as per local conditions and adequate flexibility has been provided to incorporate such principles under ongoing Accelerated Rural Water Supply Programme itself.

Major Issues in Rural Water Supply

5.12. The main problems are of sustainability of water availability and supply, poor water quality, centralised vs. decentralised approaches and financing of operation and maintenance costs.

Sustainability

5.13. Habitations which are covered earlier years slip back to not covered or partially covered status due to reasons like sources going dry or lowering of groundwater, sources become quality affected, systems working below their capacity due to poor operation and maintenance (O&M) and normal depreciation. Increasing population leading to emergence of new habitations also increase the number of unserved habitation.

5.14. Sustainability of the Rural Water Supply Programme has emerged as a major issue and Eleventh Plan aims at arresting the slip backs. The rate of habitation slippages from fully covered to partially covered and partially covered to not covered is increasing. In addition to this the increase in the number of quality-affected habitations which are

dependent on ground water source is adding to these slippages. This can be gauged from the fact that there are about 6.83 lakh partially covered and not covered habitations as per the 2003 survey. The Mid Term Appraisal of the 10th Plan observed that over reliance on groundwater for rural water supply programme has resulted in the twin problem of sustainability and water quality and suggested a shift to surface water sources for tackling this issue. Restoration of tanks can provide a local solution (*See Box 5.1*). It is important to apply the principle of subsidiarity-to collect water, store water, use water and manage waste water as close to the source as possible.

BOX 5.1

Success Stories in Sustainability - OORANIS – The Lifelines of Rural Tamil Nadu

For the people of Tamil Nadu the traditional Ooranis or ponds have truly proved to be a blessing. The Ooranis were developed as the main supply systems in Tamil Nadu centuries back. These earthen bunded ponds were constructed by the collective efforts of the people over the ages and have been designed hydrologically to have adequate and assured inflow of surface runoffs. Almost all Ooranis are well connected with irrigation tanks called Kanmoi.

In recent years however the Ooranis were neglected and dilapidated due to implementation of new water supply facilities like handpumps, deep borewell and Combined Water Supply Schemes (CWSS). Initiatives were taken therefore to improve and strengthen them under the Ministry of Rural Development's Rajiv Gandhi National Drinking Water Mission (RGNDWM), Pradhan Mantri Grameen Yojana (PMGY) and Accelerated Rural Water Supply Programme (ARWSP) programmes. These included measures like desilting the pond, treatment of catchment areas, clearing of the supply channel, provision of filter media and providing draw well arrangements and fencing of the Oorani. 360 Ooranis have been rejuvenated in several districts with the combined efforts of the Government, the community, technical expertise from the Anna University and NGO participation. Water shortages have now become a thing of the past in these areas, and with the harvested rainwater flowing into the Ooranis, a sustainable water supply system has thus become a reality.

Water Quality

5.15. There are about 2.17 lakh quality affected habitations in the country with more than half of the habitations affected with excess iron (1,18,088). This is followed by fluoride (31,306), salinity (23,495) nitrate (13,958) arsenic (5,029) in that order. There are about 25000 habitations affected with multiple problems. About 66 million population is at risk due to excess fluoride in 200 districts of 17 states. Arsenic contamination is widespread in West Bengal and it is now seen in Bihar, eastern UP and Assam. The hand pump attached de-fluoridation and iron removal plants have failed due to inappropriate technology unsuited to community perceptions and their involvement. Desalination plants have also met a similar fate due to lapses at various levels starting with planning to post implementation maintenance.

5.16. The Bharat Nirman programme aims at **addressing water quality problems in all the** quality affected habitations by 2009. It has given a sign of hope for addressing the issue. While higher allocation (20% of Accelerated Rural Water Supply Programme funds committed for water quality) of funds is addressed, the next important step is to achieve convergence, ensure community participation and an Information Education and Communication (IEC) campaign. Convergence would offer twin benefits i.e. sustain the source (also provide alternative surface source) and dilute the groundwater chemical contamination.

Decentralisation

5.17. Whenever the community has been involved from planning stage, the programme has always become sustainable. While our programmes have elaborate guidelines for community involvement, it is obvious that field level adoption is far from satisfactory. The 73rd and 74th Constitutional amendments have devolved the water supply responsibility to Panchayati Raj Institutions/local bodies. Due to their inherent weaknesses like funding constraints, low technical ability etc the devolution of power is yet to make a desirable impact on the ground. While sporadic success

stories are trickling in, this aspect has yet to go a long way. States have to play an important role in placing the Twelfth Finance Commission (TFC) grants devolved to Panchayats and placing the implementation agency at the command of local bodies. The second is simply absent in many states.

Financing of the Capital Cost and O&M (Rural Water Supply Programme)

5.18. States have been expressing constraints in providing adequate matching share for availing Accelerated Rural Water Supply Programme funds. The Department of Drinking Water Supply has suggested that funding pattern of the programme should change from the current 50:50 (Center:State) to 75:25 for Non Special Category States and 90:10 for Special Category States.

5.19. The Bharat Nirman Programme has nearly doubled the fund available for the sector through the Accelerated Rural Water Supply Programme. The Centre is also encouraging the external assistance for this sector. The average cost of coverage of not covered, slipped back and quality affected habitations have gone up considerably.

5.20. The Twelfth Finance Commission has provided enough funds for the O&M of the water supply systems in rural areas. Also the rural community is not averse to paying charges for a reliable supply. Convergence of various programmes would also bring additional funds. While the funding for the programme would be provided for through various sources, what is more important for the success of the programme is the change in the approach (community based local solutions) and mind set (moving away from the pure asset creation towards service delivery approach).

Eleventh Five Year Plan Targets for Rural Water Supply

The Targets

5.21. To “Provide clean drinking water for all by 2009 and ensure that there are no slip-backs by the end of the Eleventh Plan” is one of the monitorable targets of Eleventh Five Year Plan . The first part of the goal coincides with the terminal year of Bharat Nirman

Programme under which it is proposed to provide safe drinking water to all habitations. Under Bharat Nirman 55,067 not covered habitations, 2.8 lakh slipped back habitation and 2.17 lakh quality affected habitations are proposed to be covered. The first two years of Eleventh Plan forms second half period of Bharat Nirman Programme. While the coverage reported by the states under Not Covered and Slipped Back habitations are encouraging, the coverage under water quality affected habitations is far from satisfactory. This would be one of the major challenges during the Eleventh Plan. The states have done well in covering the slipped back habitations (1.63 lakh habitations covered) and not covered habitations (23,000 habitations covered). However, achievement in the quality-affected habitations is way below the target. Against 2.17 lakh habitations, ***as on 1.4.05, about 70,000 habitations have since been addressed.*** The states find it difficult to establish alternate sources of water supply to the quality-affected habitations, as either the source is very far off or simply not available nearby.

5.22. The Government is also committed to provide 100% coverage of water supply to rural schools. The ARWSP includes school water supply also. Department of Drinking Water Supply has estimated that by April 2005, there are 2.31 lakh uncovered rural schools in the country, which needs to be covered with water supply. While Accelerated Rural Water Supply Programme has provision of water supply to existing schools, the new schools are covered under other programmes like Sarva Shiksha Abhiyan of Ministry of Human Resources Development. The funds required to cover the schools at the rate of Rs.40,000 per school works out to Rs.924 crores. The coverage of schools could be best achieved by convergence of various programmes of Department of Elementary Education and Literacy and Department of Women and Child Development.

The Way Forward

5.23. The problems of sustainability of water availability, maintenance of supply system and dealing with the issue of water quality are the major challenges in the Eleventh Five Year

Plan. *The conjunctive use of groundwater, surface water and roof top rain water harvesting systems will be required to be encouraged as means of improving sustainability and drinking water security.* While convergence of various programmes for funds and physical sustenance is most important, states should put in place an effective coordinating mechanism for attaining success. Otherwise the vicious cycle of coverage and slip back would continue in the next plan also. The Eleventh Five Year Plan proposes to deal with the various issues as follows:

5.24. The Twelfth Finance Commission awards for maintaining the water supply systems by local bodies must be implemented and schemes transferred to Panchayats. State can share a part of the O&M cost of such Panchayat as a hand holding support for first few years before the local bodies become self sustainable. To enable local bodies, an effective Management Information System for knowing the status of water supply in every habitation in the state should be put in place. State should earmark funds for this purpose. All the states information system should be connected to the all India server at Delhi and this MIS should be web enabled for moving to the larger objective of public monitoring. Also adequate training at local bodies' level should be undertaken for enhancing their technical capacities for maintaining the water supply systems. The implementing agencies must be made accountable to the local bodies for providing water supply services. However major engineering schemes can be with the state level agencies.

Local Participation and Convergence

5.25. In order to universalise access to safe drinking water, it needs to be isolated from agriculture and other uses wherever possible. To prevent lowering of water tables due to excessive extraction, cooperation with agricultural users becomes necessary. A cooperative mechanism of water users and Panchayat representatives has to regulate use within average annual recharge level. All groundwater based resources should be provided with a recharge structure which would help keep the source alive. Also rain

water harvesting in schools and community buildings should be made compulsory *and individual household rooftop rain water harvesting system like individual household toilets should be promoted*, if necessary, special funds should be earmarked for this purpose.

5.26. Where groundwater quality *and availability*, is unsatisfactory surface water sources need to be developed. Restoration and building of tanks and other water bodies *along with rainwater harvesting structures for recharge and for direct collection at community and household levels* constitute an attractive option. The Central Government should support the states for tapping the maximum external assistance for this purpose, a part of the assistance could be shared by the Centre as decided in the case of the external assisted Water Bodies Restoration programme wherein 25% grant of the project cost is passed on to the states. The assistance here could be restricted to covering the quality affected habitations in various states.

5.27. Another alternative is to bunch the habitations into large numbers and involve the technically sound private service providers to cover the quality affected habitations on an annuity basis for a certain period. Meanwhile parallel efforts to restore the source through water augmentation programme should continue in these habitations as an alternative arrangement *provided such systems are proposed by and have the consent of the Panchayati Raj Institutions (PRI's) and Local Bodies.*

5.28. Involvement of the community in the monitoring of the water supply works should be made a primary condition for release of funds for completed work. Department of Drinking Water Supply has initiated monitoring of the water quality under the National Rural Drinking Water Quality Monitoring and Surveillance Programme under which the Gram Panchayat/Village Water and Sanitation Committee provided with user friendly field test kits for testing both bacteriological and chemical contaminants followed by testing of the samples at district and state level laboratories. Such initiatives need to be extended to the

other regular programmes under the Accelerated Rural Water Supply Programme also. ***Involving the community in bringing quality and sustainability to the village level drinking water supply systems should be encouraged, rewarded and recognised in an appropriate manner along the lines of the Nirmal Gram Puraskar which has galvanised communities and local bodies for an enthusiastic and effective response to the Total Sanitation Campaign of the Government of India.***

5.29. While our programme guidelines do recognise the role of women in planning and post implementation maintenance with some success stories of women maintaining the hand pumps and tube wells, the success has to spread far and wide. Of late, the country is realising the potential of women in the form of Self Help Groups. Women Self Help Groups are functioning well in states like Tamil Nadu & Gujarat. Women Self Help Groups also should be given the responsibility for collection of maintenance funds after the source is handed over to them for maintenance. Women self help groups should be encouraged for taking up the O&M of the existing functional systems. If the source is dysfunctional, the state should incur one-time expenditure to set it right and encourage SHG to take them over.

5.30. The resources required could be easily mobilised if the various programmes can be converged to work in complementary ways.

5.31. The National Rural Employment Guarantee Programme (NREGP) has seven identified work component related to water. Rural Development Ministry is implementing major water shed schemes through Department of Land Resources. There are other programmes like Backward Region Grant Fund, artificial recharge of groundwater schemes and rain water harvesting, restoration of water bodies scheme (both pilot and external assisted) by Ministry of Water Resources ***the National Project for Renovation of Water Bodies and schemes such as the National Afforestation Programme, River Valley Project, Flood Prone River Programme, Integrated Wasteland Development Programme, Grants***

under Twelfth Finance Commission, Hariyali and the states own schemes. Convergence of these programmes should help to augment funds and bring institutions together for sustainable water supply.

Urban Water Supply

Past Programmes and Outlays

5.32. The coverage of urban population with water supply facilities in the past had not been very impressive, due to various reasons, including the fact that the investment made in the urban water supply sector had been inadequate. The 10th Plan projected a requirement of Rs.28,240 crore for achieving population coverage of 100% with Drinking Water supply facilities in the 300 Class-I cities by 31.3.2007. The estimated outlay for the 10th Plan period, however, was only Rs.18,749 crore in the State sector, and Rs.900 crore in Central sector making a total outlay of Rs.19,649 crore only.

5.33. The Tenth Five Year Plan envisaged augmentation of water supply in urban areas to reach the prescribed norms, higher degree of reliability, assurance of water quality, a high standard of operation and management, accountability to customers and in particular special arrangements to meet the needs of the urban poor and levy and recovery of user charges to finance the maintenance functions as well as facilitate further investment in the sector. The achievement of these tasks depends to a large extent on the willingness of the State Governments and Urban Local Bodies to restructure water supply organisations, levy reasonable water rates, take up reforms in billing, accounting and collection and become credit worthy in order to have access to market funding. Measures were suggested for water conservation, re-use and recycling of waste water.

5.34. While there were progress in some of the suggestions of Tenth Five Year Plan like adoption of the rain water harvesting, tariff revision for sustaining O&M, augmenting the water supply and reducing the leakages etc. this progress is confined to some pockets of the country. Thus, for example the southern metropolitan water supply and sanitation service providing institutions of Chennai and

Bangalore are meeting their O&M expenditure from the revenue generated from water tariff. The Capital city of Delhi's service provider Delhi Jal Board is performing far below the desirable levels both in terms of service provision, persistence of large amount of unpaid and unaccounted for water as well as in tariff realisation.

5.35. However the Tenth Five Year Plan has triggered the realisation that institutions have to be self sustaining and efficient service is the key to realise that. The lesson to be learnt is in today's scenario, in urban areas, people are willing to pay for the services provided they are reliable both in quantity as well as in quality. Experience of Bangalore is reflected in *Box 5.2* below.

BOX 5.2

Urban Slum Water Supply

The Social Development Unit (SDU) of Bangalore Water Supply and Sewerage Board under the AusAID Master Plan project, has helped to cover 10000 households with water supply in 43 Bangalore slums. This was made possible by reducing the connection fee, tariff and effecting changes in the proof of residency. This way the illegal water connections were connected to revenue earning ones. All these connections were metered and with individual connections, dependence on public stand posts reduced. BMWSSB then cut down the wastages also. The most significant part was the assessing the willingness and capacity to pay by slum dwellers and the tariff made acceptable to the community by ensuring reliable service.

5.36. To extend financial support to the State Government/Local Bodies and to provide water supply facilities in towns having population less than 20,000 (as per 1991 census), the centrally sponsored Accelerated Urban Water Supply Programme (AUWSP) was launched in March, 1994. These towns are often neglected during normal times and are worst hit during the period of drought.

5.37. So far, water supply schemes for **1244** towns have been sanctioned at a cost of Rs.1,822.38 crores under AUWSP since its inception from 1993-94 and **639** schemes have been completed/commissioned. Since 2005-06, no schemes are being sanctioned under the programme since scheme has been merged with the "Urban Infrastructure Development

Scheme for the Small and Medium Towns (UIDSSMT). An amount of Rs.828.60 crore (till 9/2006) was released to states and the states have reported incurring an expenditure of Rs.805.83 crores and the total expenditure reported is Rs.1,412.88 crore.

5.38. An evaluation study carried out in 62 towns in 24 states has shown that the programme has resulted in water supply augmentation and improved health outcomes but indicated the need for some design flexibility and institutional strengthening of local bodies for managing the completed schemes.

Major Issues in Urban Water Supply

Sustainability and Equity

5.39. Sustainability in the urban water supply is addressed mainly through supply side augmentation. Distant perennial sources are identified and long distance piped water transfer to the cities and towns are common. Augmentation plans are generally gigantic and engineering oriented and has greater acceptability all levels. The demand management is the least preferred option. However when it comes to payment of water charges, the decision is invariably with the elected Government and not with the executing agency, which has to depend on the grants for operation and maintenance, for sustaining the quantity and quality.

5.40. It is not uncommon that pockets of urban areas would get higher service levels both in terms of number of hours of water availability as well as per capita availability. The Unaccounted for Water (UFW) due to leaking water supply systems and illegal tapping reduces water availability. The average water loss in the leaking water supply systems varies from place to place and it is generally between 20-50%. Dedicated efforts to plug the leakages are required in addition to demand management measures for achieving the sustainability and equity.

5.41. Long distance water transfer has brought in the attendant issues of dependence on other states for urban water supply. For example, Delhi depends on Haryana and Uttar Pradesh for its water supply. Chennai gets 15 TMC of Krishna River Water from Andhra

Pradesh. Bangalore water supply is fully dependent on Cauvery waters. There are a few instances when even within the state people object to transfer of water from one district to another. Some times, these issues have a serious implication on the sustainability of supplies to the cities.

Demand and Supply Management

5.42. There is a huge gap between the demand and supply of water in urban areas, which is also growing due to population and urbanisation. Norms for various places depending upon the level of development have been established and it is maximum for metropolitan cities. The regular Plan programmes by states are heavily tilted in favour of supply side management. Recycling and reuse of water, reducing the water demand through rain water harvesting, using water efficient household equipments including flushing cisterns would go a long way in conserving water and reducing demand. Proper metering of water and rational tariff would reduce water demand and encourage conservation. We need to have a concept of Water Efficient Homes in urban areas and for this there is a need to have a well orchestrated

information campaign. Long distance piped water transfer and desalination of water in coastal areas as augmentation measures are very capital intensive. Demand management is necessary to achieve sustainability. An integrated water supply and use strategy such as used in Singapore (*See Box 5.3*) should be encouraged.

Financing and Institutional Issues

5.43. Provision of water supply in urban areas is basically a responsibility of urban local bodies. The Public Private Partnership (PPP) efforts to attract financing of water supply projects are finding its place, though so far only in few cases (*See Box 5.4*). PPP is important to leverage government investments and to access private sector management efficiencies. Reforms are a necessary precondition for gaining success through PPP. It is paradoxical that urban utilities receive funds from institutions like HUDCO, LIC, and Government etc without any reform conditionalities, but on the other hand, states are given additional financial support towards implementing reforms through schemes like JNNURM.

BOX 5.3

PUB Singapore

PUB is the National Water Agency in Singapore charged with water, wastewater and storm water management in the city state. The public agency services about 4.5 million people and a number of major industries with intensive water use. The development and implementation of the complete management system is ongoing but has taken over a period of about 40 years.

PUB's holistic approach has resulted in a lower dependence on external water sources by diversification of water sources including water reuse, desalination, storm water storage in new water storages and supply of very high quality recycled water to industry with some internal reuse of this supply. Singapore presents a challenging environment for water resources management, as it is a small but densely populated island city state.

In its own operations PUB has significantly reduced water losses due to leakage in pipes and inaccurate meters. It has 100% servicing of its population with water and waste water services and strong political and public acceptance of its policies and services.

It has been accompanied by a major change in water pricing and access policy, which aims to use the rate structure to encourage the more efficient use of water. PUB has been able to provide lowered costs of delivered water of improved higher quality to industry and the community. Reclaimed water branded *NEWater* in Singapore is recognised for its high quality. Singapore has also been able to maintain low water costs for households on the lowest tariff water supply despite the major capital investments in new equipments and systems. Its household directed campaign of "Water efficient homes" helps residents to save water at home and reduce their water bills.

Through an extensive partnering programme with water industry in all aspects of implementation it has been a model of out-sourcing skills. From this it has developed an industry capable of transferring this knowledge and skills to the region as well as attracting a broad range of industry skills and capabilities as well as research in Singapore.

The PUB story would fit well as a study example in the education of water managers. PUB has won the prestigious 2007 Stockholm Industry Water Award.

PUB website: www.pub.gov.sg

BOX 5.4**PPP in Urban Water Supply**

Tamil Nadu has emerged as fore runner in attracting PPP in urban water supply sector. At 42%, it is the highly urbanised state in the country. The state has already commissioned the “Tirupur Water Supply and Sewerage project” at a cost of Rs.1,023 crore. The cost per kilo litre of water at estimate stage is Rs.30 which is high due to recovery of the sewerage capital cost, operating expenses and capital cost. The next project on PPP is 100 MLD desalination project for Chennai Water Supply.

5.44. The large number of institutional issues in water supply sector discussed during the formulation of 10th Plan are still valid. The rationale of financing water supply schemes fully or partly as grant, inability of the ULB’s to raise funds due to low tariff recovery, their weak financial position preventing any augmentation efforts, tossing around the responsibility of water supply from the state level utility to local bodies/Panchayats with large liabilities etc are continuing.

5.45. Despite the large grants by Twelfth Finance Commission for local bodies to maintain the water supply systems, things have yet to improve a lot on the ground. Overlapping of responsibilities between various institutions like ULB’s, State level agencies and Departments dilutes the accountability and responsibility to the customers.

Tariff and Operation and Maintenance (O&M)

5.46. Evolving realistic water tariff so as to discourage excessive use of treated/potable water is one of the important management tool for demand management. Not much has been done on this important aspect in many urban local bodies in the country except a few larger cities which have undertaken some measures by way of installing water meters for consumers. The major reason for slow progress in this regard is that good quality meters are not available on a large scale since the meter manufacturing facility is vested with small-scale industries at present, which do not

have the capacity to produce meters on a large scale.

5.47. Poor O&M due to inadequate financial resources is one of the primary reasons for low sustainability and equity in water supply. The responsibility of operation, maintenance and revenue collection is generally vested with the elected urban local body (ULB), while the specialised bodies are not able to raise the water tariff without the approval of the provincial Governments. The local bodies generally receive grant assistance ranging from 10% to 60% for capital works on water supply and sanitation from the State Government. Usually, they do not receive any grant assistance for operation and maintenance (O&M) of water supply and sewerage. Municipal bodies in many parts of the country suffer from inadequate resources. Assessment of demand and ‘willingness to pay’ by the communities, would help to arrive at a basis for pricing water management services and to clarify the scope for adopting ‘full cost recovery’ policies to achieve financial sustainability.

Eleventh Five Year Plan Programmes for Urban Water Supply

5.48. With a view to provide 100% water supply accessibility to the entire urban population by end of XI plan in 2012, it has been estimated that Rs.53,666 crore is required. With a view to provide reform linked infrastructure facilities in the urban areas, the GoI has launched the two new programmes namely—

- (i) **Jawaharlal Nehru National Urban Renewal Mission (JNNURM)** covering 63 cities with population above one million as per 2001 census including 35 metro cities and other State capitals and culturally important towns.
- (ii) **Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT)** for the remaining 5098 towns having population less than one million to cover all the towns as per 2001 census, irrespective of the population criteria.

5.49. JNNURM is envisaged for implementation over 7 years period starting from 2005 to 2012 with a tentative out lay of

Rs.1,00,000 crore, which includes contribution of Rs.50,000 crore to be made by the States and ULBs. Water supply and sanitation is accorded priority under the programme and is likely to receive 40% of plan funds. It is important to tap the other sources like higher Central and State Sector Outlays, institutional financing, PPP and external assistance.

5.50. Sea water desalination as emerged has alternative option for water supply augmentation in coastal areas. Many research institutes have embarked upon this programme for producing cheap water from the abundant source. While the Chennai Desalination Plan of 100 MLD is large version being tried with PPP mode by the Government of Tamil Nadu, Central institutes like BARC and NIOT have already established desalination plants at various places (*See Box 5.5*). The research needs to be advanced to bring down the cost of water produced from such systems.

BOX5.5

Sea Water Desalination Initiative by National Institute of Ocean Technology, Chennai Pure Water at Six Paise per litre

The National Institute of Ocean Technology (NIOT) Chennai has succeeded in putting together and operating a desalination system with a capacity of 1 million litres a day. The quality of water is tested and found to above international standards. For instance, the total dissolved solids was found to be less than 10 parts per million (PPM) as against international standard of 500 ppm. The system which works on the principle of flash evaporation, works on mounted barge off shore, drawing water from sea at different levels to accomplish the task. The technology involved was turning surface sea water into vapour in a vacuum chamber and then condensing the vapour using the cold water drawn from the sea itself from a depth of 600 m. For transporting the one million litre water from off shore barge to the shore, specially designed water bags of special material were made that could hold and carry 2 lakh litres and could be towed to shore using small fishing boats. The NIOT, would now focus on desalination plant with 10 MLD with the help of private sector. The water costs 6 paise per litre. The NIOT has already installed one lakh litre desalination plant at Lakshadweep Island during 2006.

The Way Forward

5.51. The Eleventh Five Year Plan will address the issues faced by the sector and to achieve the goal of universal water supply coverage and sustainability as follows:

Priority for Drinking water

- While designing and constructing multi purpose dams/reservoirs, adequate care would be taken to reserve/apportion sufficient quantity of water for domestic use in the urban areas. Keeping in view the National Water Policy, top most priority would be given by the State Govts. to the drinking water supply needs of cities and towns from the available water sources. This needs to be operationalised by all States in the form of State Water Policy as desired in National Water Policy, 2002.
- Under JNNURM and UIDSSMT programmes, special attention will be given to towns and cities affected by surface and ground water contamination due to the presence of chemicals such as iron, manganese, fluoride, salinity, arsenic, pesticides etc. in excess of the prescribed limits. Such drought prone and water shortage areas as well as the cities and towns having water quality problems would be given top priority in the selection process by State Governments/ULBs.

Maintenance of Assets

- Adequate thrust may be given to the O&M of the assets created for their optimal and efficient use by evolving suitable strategy and creating adequate infrastructure facilities within State Departments/concerned ULBs.
- Computerised MIS is a must for developing a strong data base at local, State and Central levels on Urban Water Supply and Sanitation sector for decision making, planning and mid course corrections from time to time. In most States, elaborate computerised MIS is not in place. It is recommended that MIS Cells may be created with central funding at State and Central levels for exchanging information and to develop good data base for the sector.

Metering of Water for Volumetric Change

- Telescopic water tariff/user charges should be formulated and levied to discourage excessive use of water while providing a basic quantity of water at a low tariff. Metering of water supplies should be made mandatory in a phased manner with a view to conserve water as well as to generate revenue on a realistic basis.
- The ULBs need to be given greater autonomy in respect of fixing tax rates; user charges etc. and also ensure regular revision of such rates. 74th Constitutional Amendment needs to be implemented in its entirety. There is a need for regulatory regime in water supply and sanitation sector to enthuse confidence among the private players.

Reducing Waste and Promoting Conservation

- Intensive leak detection and rectification programme should receive priority. Severe penalties should be levied on those found responsible for leakage and wastage of water. ULBs may be asked to enact necessary changes in the Municipal Acts.
- To reduce wastage of water, adoption of low volume flushing cisterns, waste not taps etc. should be adopted so as to minimise the need for fresh water. Ministry/TCPO may take up the matter with the States and ULBs to promote usage of such cisterns so as to conserve fresh water. CPWD may also widely use such cisterns in the buildings constructed by them.

Augmenting Availability

- It must be made mandatory to install rain water harvesting systems in both public and private buildings including industrial and commercial establishments so as to conserve water. The ULBs should make it a point not to approve building plans having no provision for such systems. It is also equally important to ensure proper implementation of the approved system by the builders.
- The State Govts. and ULBs may implement schemes for artificial recharge of ground water as per techniques

developed by the Central Ground Water Board (CGWB).

Water Quality

- Water quality surveillance and monitoring should be given top most priority by the State Govts./ULBs so as to ensure prevention and control of water borne diseases. For this purpose, water quality testing laboratories have to be set up in every city and town backed by qualified personnel to handle such laboratories and where such labs already exist, they should be strengthened with equipment, chemicals, manpower etc., if necessary.

Finance

- Efforts should be made to step up the quantum of funds through institutional financing, foreign direct investment, assistance from bilateral, multi-lateral agencies, newly launched Pooled Finance Development Scheme (PFDs), tax free municipal bonds, MPLAD funds etc. apart from involving private entrepreneurs.

Human Resources

- Trained technical human resources are must for successful implementation and maintenance of various water supply and sanitation schemes. However, in some States as well on in many ULBs the water utilities do not have adequate trained technical personnel, due to which the sector is affected badly. Under the circumstances, the PHE training programme of the Ministry of UD has to be toned up further with adequate funds to enable CPHEEO to impart training to the various technical personnel of the State Govts./ULBs on a variety of technical subjects and management aspects.

Rural Sanitation

5.52. Sanitation is to be seen as a basic need, as basic as drinking water or food. A sanitary toilet within or near home, provides privacy and dignity to women. Mahatma Gandhi emphasized the link between sanitation and health as a key goal for our society.

5.53. Sanitation coverage, which ought to be a way of life to safeguard health, is inadequate

in our country. In fact, problems like open defecation continue to remain the only form of sanitation for the majority of the population in rural areas. The practice of open defecation in India is due to a combination of factors—the most prominent of them being the traditional behavioral pattern and lack of awareness of the people about the associated health hazards.

5.54. Recognizing the link between healthy environment and sanitation, the Millennium Development Goals (MDGs) stipulate, inter alia, halving, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation. The Total Sanitation Campaign (TSC) programme, the flagship programme of the Government, has set an ambitious target, beyond the MDG's and aims to achieve universal sanitation coverage in the country by the end of the Eleventh Plan.

Performance Review of Rural Sanitation Sector TSC in Tenth Plan

5.55. The TSC is being implemented in 578 districts of 30 States/UTs with support from the Central Government and the respective State/UT Governments. Against a target of 10.85 crore individual household toilets, the toilets reported completed is about 2.89 crore up to Jan 2007. In addition, about 3.12 lakh school toilets, 8900 sanitary complex for women and 99150 balwadi toilets have been constructed. The approved outlay for the programme in the Tenth Plan was Rs 955 crore and the anticipated financial utilization is about Rs 2000 crores. The Eleventh Five Year Plan targets to complete 7.29 crore individual toilets for achieving universal sanitation coverage in rural areas.

Major Issues in Rural Sanitation Coverage

5.56. The current programme emphasis on construction of household toilets though laudable, needs to reorient itself to a vigorous Information and Education Campaign mode to bring about a change in mind set. The evaluation study of the programme has shown that 20% of the toilets are not used or used for other purposes like storage. The super structure for the toilet, the one that guarantees privacy and dignity, was provided funds under the programme starting only in March 2006.

5.57. The issue of convergence of the programme with health awareness received a boost only after the launch of National Rural Health Mission. While it was introduced earlier at school level, at the community level it was expanded later. However school programme had a cascading effect on the individual household and children helped to change attitudes. The awareness is now picking up and the programme needs to capitalize on this for increasing the sanitation coverage. Lack of priority for the programme by many states leading to inadequate provision of funds for the state share for the TSC, lack of emphasis on personal communication on sanitation at village level and inadequate capacity building at grass root level are some of the common issues seen across the states which hinder expansion of sanitation coverage.

Eleventh Plan Priorities

5.58. While the hardware part of the programme for assisting the states in providing the various types of sanitation would continue, the focus now should be more on changing behaviour patterns. The Nirmal Gram Puraskar (described later) has brought a sea change in the attitudes of the community and it is promoting a healthy competition among the Panchayats for achieving total sanitation. Low cost technology options for constructing the toilets should be tried and community should be given freedom to choose the various options. The focus on school sanitation needs to continue. In addition, solid waste management in villages should be the next focus area. Ten per cent of the TSC funds are earmarked for this purpose already. Adequate funding for the programme would have to be provided so that the momentum generated is not lost.

IEC & Nirmal Gram Puraskar – Success Stories

5.59. To add vigour to the TSC, in June 2003, Government of India initiated an incentive scheme for fully sanitized and open defecation free Gram Panchayats, Blocks, and Districts called the 'Nirmal Gram Puraskar'. The incentive pattern is based on population

criteria. The Nirmal Gram Puraskar is given to the following:

- a) Gram Panchayats, Blocks and Districts, which achieve 100% sanitation coverage in terms of 100% sanitation coverage of individual house holds, 100% school sanitation coverage, making the village, block, district free from open defecation and with clean environment.
- (b) Organizations, which have been the driving force for effecting full sanitation coverage in the respective geographical area.

5.60. The incentive scheme has caught on like wild fire and the number of Panchayats who have received this Puraskar is steadily going up. From a mere 40 village/block panchayats from six states which received the award in 2005, in the year 2007, the number of awardees have gone up to 4959 from 22 states. Maharashtra which got 13 awards in 2005, received 1974 awards in 2007 a significant achievement followed by Gujarat with 576 awards. *Box 5.6* highlights the efforts of Suravadi Panchayat in this area.

BOX 5.6

How Suravadi Panchayat in Phaltan Block, in Satara District of Maharashtra Won the Nirmal Gram Puraskar (NGP)

This Panchayat which has a population of 2,891 people has 412 households out of which 112 are BPL households. The Panchayat has a village primary school, an anganwadi Centre and a Primary Health Centre five km away.

Main Challenges faced by the villagers

There was no community toilet facility in the village. Men, women and children used to defecate in the open. Out of 47 individual toilets 34 were not in use (used only for other purpose). Village was always highly stinking, no drainage, many ill with diseases like Jaundice, Flu, Cholera etc. Several village meetings were held for stoppage of open defecation. It looked like a Herculean task in the beginning, as people were not coming forward for construction of Toilets.

Things began to change when Sant Gadge Baba Gram Swachhata Abhiyan started in year 2000 and motivational campaign and meetings were organized by Panchayat. The school teachers and students were involved in this campaign. Sanitation campaign started with making a 28-seater complex and few individual units. Persons still going for open defecation were penalized with no distribution of Wheat & Kerosene from fair price shop. It was also decided to give Rs.500 to every family to construct its own latrine. Construction of toilets geared up slowly but taken up in later stages by community participation.

The Gram Panchayat and youth group of the same village monitored the sanitation programme. Everybody is using toilets in village today. Recognition of community is shown by painting all houses in pink colour. With the campaign, people also gained knowledge on bio-gas plants and about conservation of sources. The scheme was also linked with and benefited through other rural developmental schemes like Yaswant Gram Samruddhi Yojana.

To sustain the programme women and children get regular knowledge on cleanliness through school. Extra classes have been organized for students on promotion of sanitation and hygiene activities in the schools. The village now has a better school facility and the Panchayat is fully involved, as it had initiated this campaign. There is a feeling of pride with their becoming the first village in the entire State to get the NGP award.

Present sanitation status in the village is as follows:

Number of Households:	412
Status of Toilets:	100% using toilets
	Comm. Comp. (28 users)
	10 Gobar gas plants linked to toilets

Beyond Nirmal Gram-Monitoring for Sustainability

5.61. Once the Village, Block or District Panchayat has received the Puraskar, there is a responsibility thrust on them, to maintain the Nirmal Gram status. The sustainability features mentioned in the Maharashtra success story on sanitation are worth emulating. Specially, community involvement with women and children would sustain the Nirmal Gram status. Such grams have to move now to the next stage of sustained solid waste management and proper street drainages.

5.62. The Way Forward

- Open defecation free status is the basic objective of the programme. The sanitation campaign should focus on creating awareness about the importance of sanitation among people with special emphasis on children. Awareness can spread rapidly from children to parents to community which will create demand for sanitation. The software component of the programme like IEC, NGP will receive more priority.
- Once individual or community toilets are provided demand for water would increase.
- Rural sanitation has to be promoted on low water, low-cost and eco-sanitation models without causing further stress on water resources. Such systems will be actively promoted, encouraged, incentivised and rewarded.
- As an incentive mechanism, the Nirmal Grams should be provided funds under Accelerated Rural Water Supply Programme (ARWSP) for higher service levels from 40 lpcd to 55-60 lpcd per capita. This should be with commitment for meeting the O&M cost from the society.
- Specific policy directives for sanitation campaigns to include special needs of women, adolescent girls, infants, disabled and the aged will be given.
- Sufficient focus of rural sanitation should be laid on the needs of disaster prone areas such as hills, mountains, coastal areas, etc.
- The investments required in training, skill development for production of low-water,

low-cost sanitation appurtenances suitable for rural areas and training of self-groups of women, youth, etc. as masons and mistries for embarking on large-scale simple toilet construction activities throughout the country will be made available. The community should be encouraged to avail soft micro credits from the Self-Help Groups and for which a separate revolving fund should be provided.

- There is a need to have a monitoring system for the villages, which got the Nirmal Gram Puraskar award so that the success obtained is sustained. Community monitoring with women and children would be the primary choice. A close monitoring mechanism to oversee the coverage of BPL household and in SC/ST household also should be put in place at every state level.
- Schools provided with sanitation facilities should have a separate rain water harvesting system to meet the water requirement for the sanitation purposes.
- The Nirmal Gram Puraskar model of recognizing and rewarding entire village panchayats and PRIs which has been able to bring about total sanitation in many villages through awareness, peer pressure and local competitive spirit amongst the PRIs will continue to be promoted.
- Segregation of degradable and non-degradable solid waste, black and grey liquid wastewater and holistic environmental protection and cleanliness through rural sanitation, solid and liquid waste programmes will be promoted as the next area of focus.
- Decentralised sanitation solid and liquid waste management as business models under various employment and self-employment programmes with appropriate incentives will be encouraged.

Urban Sanitation Including Solid Waste Management

5.63. The major issues in urban sanitation are how to expand sewerage and sanitation facility to cover all the people in all cities and towns; how to find resources to do that; how to create awareness about the importance of sanitation

and solid waste management; how to prepare and execute plans that keep up with growing population; and how to finance the operation and maintenance costs of the facilities created?

Status of Urban Sanitation and Solid Waste Disposal

5.64. On the basis of information furnished by the State agencies in charge of Urban Water Supply and Sanitation Sector, about 91% of the urban population has got access to water supply and 63% to sewerage and sanitation facilities (47% from sewer and 53% from low cost sanitation) as on 31.3.2004. However, adequacy, equitable distribution and per-capita provision of these basic services may not be as per prescribed norms in most of the cities. For instance, the poor, particularly those living in slums and squatter settlements, are generally deprived of these basic facilities.

5.65. As per assessment made by the Central Pollution Control Board (CPCB) on the status of wastewater generation and treatment in Class I cities and Class-II towns during 2003-04 (*Table 2*), about 26,254 MLD of wastewater is generated in 921 Class I cities and Class II towns in India (housing more than 70% of urban population). The wastewater treatment capacity developed so far is about 7044 MLD – accounting for 27% of waste water generated in these two classes of urban centers.

Table 5.2: *Status of WS, Wastewater Generation and Treatment in Class I Cities/Class II Towns in 2003-04*

Parameters	Class I Cities	Class II Towns	Total
Number (as per 2001 census)	423	498	921
Population (millions)	187	37.5	224.5
Water Supply (MLD)	29782	3035	32817
Water Supply (lpcd)	160	81	146
Wastewater generated (MLD)	23826	2428	26054
Wastewater generation (lpcd)	127	65	116
Wastewater treated (MLD)	6955 (29%)	89 (3.67%)	7044 (27%)
Wastewater untreated (MLD)	16871 (71%)	2339 (96.33%)	19210 (73%)

5.66. The pollution effect of sanitation is enormous. Three fourth of the surface water resources are polluted and 80% of the pollution is due to sewage alone. Poor sanitation conditions particularly in slums, are often linked to outbreaks of cholera and gastro-enteritis. Water borne diseases are major cause of mortality throughout India and impose a huge burden in terms of loss of life and productivity. Water and sanitation diseases are responsible for 60% of the environmental health burden. The single major cause of this burden of disease is diarrhea, which disproportionately affects the children under the age of five.

5.67. It is estimated that about 1,15,000 MT of Municipal Solid Waste is generated daily in the country. Per capita waste generation in cities varies from 0.2 kg to 0.6 kg per day depending upon the size of population. An assessment has been made that per capita waste generation is increasing by about 1.3% per year. With growth of urban population ranging between 3 to 3.5% per annum, the annual increase in overall quantity of solid waste generated in the cities is assessed at about 5%. The collection efficiency ranges between 70 to 90% in major metro cities, whereas in several smaller cities it is below 50%. It has been estimated that the Urban Local Bodies spend about Rs.500 to Rs.1500 per tonne on solid waste collection, transportation, treatment and disposal. About 60-70% of this amount is spent on street sweeping, 20-30% on transportation and less than 5% on final disposal of waste, which shows that hardly any attention is given to scientific and safe disposal of waste. Landfill sites have not yet been identified by many municipalities and in several municipalities, the landfill sites have been exhausted and the respective local bodies do not have resources to acquire new land. Due to lack of disposal sites, even the collection efficiency gets affected.

5.68. Solid Waste Management (SWM) is a part of public health and sanitation, and according to Indian Constitution, it falls under State list. Since this activity is non-exclusive, non-rival and essential, the responsibility for providing the service lies within the public

domain. As this activity is of local nature, it is entrusted to the Urban Local Bodies. The Urban Local Body undertakes the task of solid waste service delivery, with its own staff, equipment and funds. In a few cases, part of the said work is contracted out to private enterprises. The management of municipal solid waste is one of the most important obligatory functions of the urban local bodies, which is closely associated with urban environmental conditions. The 74th constitutional amendment gives constitutional recognition for local self government institutions specifying the powers and responsibilities.

5.69. Very few Urban Local Bodies in the country have prepared long term action plans for effective Solid Waste Management in their respective cities. For obtaining a long term economic solution, planning of the system on long term sustainable basis is very essential. The Ministry of Environment & Forests, Government of India has notified Municipal Solid Waste (Management & Handling) Rules, 2000 to tackle this problem. Increase in quantity of municipal solid waste generation with increase in the urban population is quite obvious. Efforts towards waste recycle; reuse and resource recovery for reduction in waste and adoption of more advanced technological measures for effective and economical disposal of municipal solid waste is need of the hour.

5.70. There has been no major effort in the past to create community awareness, either about the likely perils due to poor waste management or the simple steps that every citizen can take, which will help in reducing waste generation and promote effective management of solid waste generated. The degree of community sensitization and public awareness is low.

5.71. Since in most of our cities there are many unauthorised housing colonies which are not provided sewerage facilities, their waste go untreated polluting the water bodies in which it is drained. Cities need to treat the sewage from the entire city.

5.72. Growing urbanisation has made storm water draining systems inadequate increasing

the frequency of flooding of cities like Mumbai.

Performance Review of the Sector in X Plan

5.73. The Tenth Plan targeted a coverage of providing sewerage and sanitation facilities to 75% of the population from 57% at the beginning of the Plan. An investment requirement of Rs 23,157 crore was worked out for sanitation and Rs 2,322 crore for solid waste management. There was no scheme at the beginning of Tenth Plan to assist the states in the sanitation sector and the Tenth Plan recommended an enhanced scope for the Accelerated Urban Water Supply Programme (AUWSP) to include sanitation. With the launch of Jawaharlal Nehru National Urban Renewal Mission and Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT), the AUWSP programme is subsumed in UIDSSMT and the scheme now includes funding for sanitation also.

5.74. Central Scheme of Solid Waste Management & Drainage in air field towns was also launched in the Tenth Plan. Bird hits are among the major causes of air crashes in our country leading to the loss of costly Defence Aircrafts and loss of invaluable lives of pilots. An Inter-Ministerial Joint Sub-Group constituted by the Ministry of Defence recommended to provide proper sanitation facilities, including Solid Waste Management and Drainage to overcome the bird menace in the following 10 towns having airfields of Indian Air Force at Gwalior (M.P.), Ambala (Haryana), Hindon (U.P.), Jodhpur (Raj.), Tezpur (Assam), Dundigal (AP), Sirsa (Haryana), Adampur (Punj.), Pune (MS), Bareilly (U.P.).

5.75. All the schemes are under execution and are at different stages of execution and were expected to be completed in the Tenth Plan itself, but have not been completed.

Eleventh Five Year Plan Targets for Urban Sanitation

5.76. The target fixed for urban sanitation is 100% population coverage with 70% by sewerage facility and 30% by low cost sanitation. In solid waste management, 100% population is proposed to be covered with appropriate solid waste management. It has

been estimated that the fund requirement for these programmes is Rs. 53,168 crore for sanitation and Rs. 2,212 crore for solid waste management.

5.77. While funds to the tune of Rs. 40,000 crore would be available from the JNNURM for water supply and sanitation, at this stage it would be difficult to predict the availability for sanitation and solid waste management separately. External assistance could be tapped and States/Union Territories should increase their outlays in their regular budget for these programmes. Some amount of contribution by beneficiaries is desirable as it reflects their need. Leverage of funds through PPP should also be used.

5.78. The importance of effective administration and citizen cooperation in solid waste management cannot be overestimated. The case of Surat shows what these can be accomplished (*See Box 5.7*).

BOX 5.7

Success in Solid Waste Management : The case of Surat

The outbreak of plague-like disease in Surat, in 1994, brought solid waste to the public's attention. The contrast between the scrupulously clean Indian homes and the heaps of rubbish and filth commonly found in the urban public spaces, was much discussed in the newspapers of the day. Urban filth was deemed to be bad for both public health and the urban economy.

Accordingly, the situation created an intense political will to clean up the city. Money and professional management was mobilized on a PSP/PPP basis and there was a major cleaning of the urban areas. Today, Surat is one of the cleanest cities in India, indicating how rapidly and effectively this can be achieved if political will and the organization are present.

5.79. Initiatives Required in Eleventh Five Year Plan

- Recycling and reuse of sewage after the desired degree of treatment (depending upon the end use) for various non-potable

purposes should be encouraged. Industries and commercial establishments must be persuaded to adopt reuse of treated sewage and recycle treated trade effluents to the extent possible in order to cut down the fresh water demand. Moreover, incentives in the form of rebate on water cess, concessions in customs and excise duty on equipment and machinery, tax holiday etc., should be considered by GOI for agencies dealing with planning, developing operating such reuse treatment plants as well as users of treated sewage and trade effluents. Similarly for dense urban neighbourhoods, decentralised waste treatment systems which are cheaper and reduce the distance that the sewage is transported form a viable alternative to large treatment plants.

- Targeted subsidy may be made available to SC and ST and other disadvantaged groups living in urban slums on taking house service connections for water supply/sewerage, metering, construction of latrine and subsidized water rates etc. and accordingly adequate funds may be earmarked for the purpose so as to avoid any possible diversion of funds by the State Governments/ULBs. At the same time internal ear-marking of funds for the urban slums under JNNURM/UIDSSMT schemes should be made mandatory. It is also very much necessary to monitor the physical and financial progress of the implementation of such programmes on a regular basis by the funding agencies so as to ensure fulfillment of the envisaged objectives.
- Comprehensive storm water drainage system has to be provided in all the cities and towns based on need, in order to avoid water logging in residential areas/flooding of streets during monsoon period.
- There is a need to have a National Centre for Water Excellence, which looks at especially the drinking water and sanitation sector in rural and urban water areas.
- We need to find a way to provide sewerage facilities to unauthorised housing colonies without giving them a right to the land by implication.

Solid Waste Management (SWM)

- Urban waste management by ULBs is already under stress because of paucity of resources and inadequacies of the system. Unless concerted efforts are made to improve the flow of resources to Solid Waste Management and build up systems which incorporate the basic requirements of a proper waste management practice, the problem of urban waste will be further aggravated and cause environmental health problems.
- It is recommended that all the cities and towns have to be provided with appropriate Solid Waste Management facilities giving due emphasis to the magnitude of the problem.
- Soil fertility is being badly affected by excessive use of chemical fertilizers and inadequate use of organic fertilizers. Large quantities of urban waste can be a useful solution to this problem. Compulsory production of compost from urban solid waste in cities and towns and promotion of application of this organic manure in agriculture and horticulture should be implemented, as this may have a significant positive impact on soil fertility.
- The Report of the Inter Ministerial Task Force on the “Integrated Plant Nutrient Management using city compost” constituted by the Ministry of Urban Development in March, 2005 as per the directive of Hon’ble Supreme Court of India has recommended technical, financial, qualitative, marketing and sustainability aspects of utilization of Municipal Solid Waste for compost purpose. Recommendations of the Task Force need to be implemented through provision of various fiscal incentives/concessions.
- Quality standards for compost will have to be prescribed by Bureau of Indian Standards (BIS) at the earliest. At the same time, it should be made mandatory that compost sold in the market should clearly indicate the exact chemical composition (NPK etc) on the bags for the benefit of users.
- To the extent possible materials such as metal, glass, plastic, rubber, tin and paper

available in the municipal waste must be recycled back as they have adequate salvage value. Inorganic and inert material such as sand, grit, stones, bricks, concrete, rubble, etc. may also be used for making low cost bricks, road material, aggregates, etc. As such, efforts should be made to reuse the same and enough incentives in the form of tax concessions, subsidies etc. may be given to the entrepreneurs dealing with such materials/processes.

- Our cities are littered with uncollected solid waste and no public place or street is free of litter. Though much recycling takes place by rag pickers and waste collectors, a lot is left to be disposed off. To keep cities clean, citizen involvement is essential, to sort waste at source and minimize waste that needs to be collected and disposed. A programme should be implemented to obtain citizens’ cooperation. NGOs should be encouraged to provide organizational support and identity to the rag pickers so that better recycling occurs. Adequate land should be earmarked/allotted at the planning stage itself by the respective ULBs for setting up of sanitary land fills; compost plants and other processing units including provision for future expansion.
- Awareness campaigns on various aspects of water quality, importance of safe drinking water, its handling and storage, water conservation in homes, use of sanitary toilets, separate storage of dry and wet garbage and its hygienic disposal, vector control, personal hygiene etc. should be mounted.

PPP in Urban Sanitation and Solid Waste Management

5.80. Though privatization of water supply and sanitation sector could not make significant progress as of now, there is substantial potential and urgent need for the same in near future. By and large, the tariff rates being charged from the consumers are very low and there is a general reluctance for enhancing the same. Under the circumstances, without aiming at full cost recovery, privatization cannot be a successful

proposition. It is felt that it would be easier and convenient to introduce privatization in new areas where the private companies will have a free hand to take up the task of planning, designing, execution, operation and maintenance, billing and collection including tapping of raw water from the selected source either on BOO or BOOT basis. The successful award of Chennai service contract for operation and maintenance of 61 sewage pumping stations in the city and Rajkot and Surat example of contracting out a number of municipal services to private firms as well as community groups are a few examples to infuse confidence in private entrepreneurs.

5.81. There were some public concerns on PPP projects in the water supply sector in the country because of which the projects were either stalled or dropped. If community could be involved in PPP projects there would be more acceptability to such projects. PPP can be redesigned as Public Private Community Partnership (PPCP) to overcome the hurdle.

Clean Living Conditions

Introduction

5.82. Achievement of health objectives involves much more than curative or preventive medical care. Many of the communicable diseases in India can be prevented through a combination of health and non-health interventions. We need a comprehensive approach which encompasses individual health care, public health, sanitation, clean drinking water, access to food and knowledge about hygiene and feeding practice etc. A direct relationship exists between water, sanitation and health. Safe drinking water and sanitation are critical determinants, which directly contribute nearly 70-80 per cent in reducing the burden of communicable diseases. Inadequate provision of safe drinking water, improper disposal of human waste and lack of adequate systems for disposal of sewage and solid wastes leads to unhealthy and unhygienic conditions. This coupled with overall ignorance of personal and environmental hygiene are the main causes of a large number of water borne diseases in the country.

Clean Water Supply

5.83. The water supply and sanitation sector will face enormous challenges over the coming decades. In India, the groundwater is consumed directly, without any sort of treatment and disinfection. Its quality is therefore a cause of concern. The national objectives of reducing morbidity and mortality largely depend on the reduction of diarrhoea and jaundice etc. In fact, no water supply and sanitation programme can be successful if water-related illnesses are not reduced. It is a matter of concern that despite the progress made with water supply, the level of water-related illnesses continues to be high. Approximately 10 million cases of diarrhoea, more than 7.2 lakh typhoid cases and 1.5 lakh viral hepatitis cases occur every year (**Annexure 5.1**) a majority of them are contributed by unclean water supply and poor sanitation. Micro level studies revealed that availability of clean water; sanitation and hygiene interventions reduce diarrhoeal disease on average by between one-quarter and one-third.

5.84. Causes of contamination of water are indiscriminate use of chemical fertilizers and chemicals, poor hygienic environment of the water sources, improper disposal of sewage and solid waste, pollution from untreated industrial effluents and over-exploitation leading to quality degradation. Thus, the supply of additional quantity of water by itself does not ensure good health; proper handling of water and prevention of contamination are also equally important.

Sanitation

5.85. Sanitation covers the whole range of activities including human waste disposal, liquid and solid wastes from household and industrial waste. Lack of drains and the presence of ditches create unsanitary conditions, which contaminate water, breed mosquitoes and cause water-borne diseases. Malaria, typhoid, jaundice, cholera, dengue and diarrhoea are all connected to unsanitary conditions (**Details at Annexure 5.2**). Chikungunya fever has emerged as an epidemic outbreak after more than three decades. These diseases can be prevented by

appropriate sanitation system. Unfortunately, access to sanitation facilities continues to be grossly inadequate.

5.86. Census 2001 indicates that of the 200 million dwelling units across the country, only some 40 million dwelling units have a toilet inside the house. Only 61 per cent households in urban areas and 17 per cent households in rural areas have access to improved sanitation¹. While households having bathroom facility within the house is abysmally low in rural areas and urban areas in the poor performing States, the position in respect of connectivity for waste water outlet is even more alarming. While closed drainage is available in the urban areas at least in the developed States, a large percentage of bathrooms across all States in the country have no drainage system particularly in the rural areas. This percentage is as high as 73.88 in Orissa, 72.69 in Assam and 71.81 in Chhattisgarh. The non-availability of toilets within the house is as high in Bihar (71.94 per cent), Chhattisgarh (76.78 per cent) and in Jharkhand (73.03 per cent). In urban areas, the percentage of households not having toilet is marked in the case of Goa (15.26), Maharashtra (17.75), Chandigarh (17.83), Delhi (19.58) and Tamil Nadu (14.84)². Top priority needs to be accorded to improving sanitary conditions and ensuring a clean microenvironment at home and at the workplace, which must now include factories, coalmines, quarries and roads. The Total Sanitation Campaign aims to eliminate the practice of open defecation completely by 2012.

Environmental Pollution

5.87. Serious environmental health problems affect millions of people who suffer from respiratory and other diseases caused or exacerbated by biological and chemical agents, both indoors and outdoors. Millions are exposed to unnecessary chemical and physical hazards in their home, workplace, or wider environment. Concern about the health effects of the high levels of air pollution observed in many mega cities is growing;

moreover, it is likely that this problem will continue to grow because countries are trapped in the trade-offs of economic growth and environmental protection. Population in urban areas are at risk of suffering adverse health effects due to rising problems of severe air and water pollution.

5.88. Cooking and heating with solid fuels on open fires or traditional stoves results in high levels of indoor air pollution. Indoor smoke contains a range of health-damaging pollutants, such as small particles and carbon monoxide..

5.89. Indian women spend nearly 60% of their reproductive life in either pregnancy or breast-feeding³. Most of the women keep their children in the kitchen when they are cooking, thereby exposing the children to the pollutants too. This, combined with malnutrition may retard growth and lead to smaller lungs and a greater prevalence of chronic bronchitis. There is an urgent need for the implementation of control programs to reduce levels of particulate and other pollutant emissions. To be effective, these programs should include the participation of the different stakeholders and initiate activities to identify and characterize air pollution problems, as well to estimate potential health impacts. A full understanding of the problem and its potential consequences for the local setting is essential for effectively targeting interventions to reduce the harmful impacts of air pollution.

5.90. Monitoring of air and water quality is crucial for devising programmes and policies related to pollution management. Establishing a reasonably adequate monitoring network with contemporary technology will be given priority. Ways of linking treatment of sewage and industrial effluents to the urban and industrial development planning need to be worked out. The goal should be to ensure that by the end of the Eleventh Plan no untreated sewage or effluent flows into rivers from cities and towns.

¹ Census of India 2001, Registrar General of India

² Census of India 2001, Registrar General of India

³ Kotwal, A. Environment and Health. In Text Book of Preventive & Social Medicine, Second Edition (Eds: Gupta O.P and Ghai O.P) 2007, C.B.S Publishers, New Delhi

Strategies during the Eleventh Five Year Plan

5.91. In order to achieve 100 per cent coverage of clean water and sanitation in rural areas, rural sanitation programme will be linked with the National Rural Health Mission. The strategies include:

- Convergence of health care, hygiene, sanitation and drinking water at the village level
- Participation of stake holders at all levels, from planning, design and location to implementation and management of the projects
- Institution water quality monitoring and surveillance systems by involving PRIs, community, NGOs and other civil society organizations
- Increased attention to IEC campaign

5.92. Efforts will be made to launch a Sarva Swasthya Abhiyan in the county that will

cover the primary health care, safe drinking water and sanitation in urban areas.

Eleventh Five Year Plan Recommended Outlays

5.93. The full coverage of rural drinking water supply is to be achieved by March 2009. and 100 % sanitation coverage by the end of Eleventh Plan (2012) with mass awareness and Nirmal Gram Puraskar. The Eleventh Plan Central sector **GBS for rural water supply and sanitation** is Rs.41,826 crore (at 2006-07 prices) and Rs.47,306 crore (at current prices) (**including Rs 6000 crore for Nirmal Gram Puraskar**) and this provision will draw matching provision in the State Plan to the tune of Rs. 49,000 crore. Thus the total outlays in the Eleventh Five Year Plan for Rural Water Supply & Sanitation sector would be close to Rs. 1,00,000 crore. The total outlay for Urban Water Supply and Sanitation sector would be Rs. 75,000 crore.

Annexure 5.1

Cases & Deaths due to Water borne diseases in various States

States	Diarrhoeal Disease (2006)		Viral Hepatitis (2006)		Typhoid (2006)	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
Andhra Pradesh	1215659	124	17846	28	135550	12
Arunachal Pradesh	32032	30	553	6	9098	23
Assam	..	..	..	..	..	..
Bihar	..	..	..	..	..	..
Chhattisgarh	95202	13	1491	2	21474	6
Goa	7631	0	15	0	68	0
Gujarat	382056	4	9396	16	7290	0
Haryana	285342	42	3983	11	5688	4
Himachal Pradesh	347055	28	835	11	26327	5
Jammu & Kashmir	519317	32	5882	0	42369	0
Jharkhand	14752	1	51	0	4707	284
Karnataka	939221	1279	14980	24	96147	5
Kerala	475510	4	7018	6	6219	2
Madhya Pradesh	318935	88	2499	9	28654	29
Maharashtra	695723	93	43215	131	39663	8
Manipur	13614	17	346	0	2421	2
Meghalaya	178260	33	294	2	6709	1
Mizoram	18063	20	546	11	1392	2
Nagaland	9176	0	112	0	2328	0
Orissa	373748	40	2687	38	15387	9
Punjab	182451	64	3829	17	17008	3
Rajasthan	318169	21	3869	78	14084	131
Sikkim	51433	8	290	2	428	2
Tamil Nadu	116062	12	4523	0	36973	0
Tripura	150750	47	2520	14	18547	19
Uttarakhand	94746	6	3381	0	15020	2
Uttar Pradesh	284709	55	3716	6	42648	13
West Bengal	2622968	964	7433	205	110835	70
A. & N. Islands	22752	2	213	4	3055	0
Chandigarh	..	..	-	-	..	..
D & N Haveli	74661	4	126	3	646	0
Daman & Diu	109	0	3	0	33	0
Delhi	94398	85	4080	42	13774	18
Lakshadweep	7316	0	86	0	6	0
Puducherry	137443	8	615	7	1936	1
Total	1,00,79,263	3,124	1,46,433	673	7,26,484	651

Source: Ministry of Health & Family Welfare, GOI, 2006

Note .. means not reported

Burden of Major Communicable Diseases in Various States

States	Malaria(2005)		TB(2006)		ARI	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
Andhra Pradesh	39099	0	142057	1184	2465743	434
Arunachal Pradesh	31215	0	1593	38	43426	1
Assam	67885	113	..	..	..	..
Bihar	2733	1	..	..	..	..
Chhattisgarh	187950	3	8689	12	132276	25
Goa	3747	1	2228	0	25559	0
Gujarat	179023	54	41730	238	833339	17
Haryana	33262	0	29900	227	1269205	178
Himachal Pradesh	129	0	14705	140	1545057	161
Jammu & Kashmir	268	0	2346	28	383069	0
Jharkhand	193144	21	15516	5	23470	1
Karnataka	83181	26	76687	745	2544300	196
Kerala	2554	6	13840	181	7897043	165
Madhya Pradesh	104317	44	18866	132	478278	180
Maharashtra	47608	104	52998	795	657432	192
Manipur	1844	3	482	20	12602	1
Meghalaya	16816	41	1900	29	304097	25
Mizoram	10741	74	936	28	41018	26
Nagaland	2987	0	838	0	11792	0
Orissa	396573	255	11443	178	768445	69
Punjab	1883	0	20612	106	601038	66
Rajasthan	52286	22	71180	695	1299772	126
Sikkim	69	0	2155	36	65304	7
Tamil Nadu	39678	0	28979	73	380708	220
Tripura	18008	20	971	27	279702	98
Uttarakhand	1242	0	3522	8	130683	11
Uttar Pradesh	105303	0	109898	161	502869	81
West Bengal	185964	175	89276	820	2020983	894
A. & N. Islands	3954	0	2898	10	32405	13
Chandigarh	432	0	..	..	..	..
D & N Haveli	1166	0	1544	36	118461	0
Daman & Diu	104	0	25	3	0	0
Delhi	1133	0	13544	993	323392	276
Lakshadweep	0	0	39	0	32093	0
Puducherry	44	0	7738	125	584161	1
Total	18,16,342	963	7,89,135	7073	2,58,07,722	3467

Source: Ministry of Health & Family Welfare, GOI, 2006

Note .. means not reported

Bharat Nirman and Flagship Programmes

Introduction

6.1 The development of rural India is an imperative for inclusive and *equitable* growth and to unlock huge potential of the population that is presently trapped in poverty with its associated deprivations. The analysis of incidence of poverty across Indian States indicates that poverty is very closely linked to the absence of social infrastructure. The Eleventh Finance Commission had constructed an index of infrastructure which included economic, social and administrative infrastructure indicators. These were (i) agriculture (ii) banking (ii) electricity (iii) transport (v) communication (vi) health and (viii) civil administration. If we juxtapose the index of infrastructure with incidence of poverty, we find that generally, States with high infrastructure index have low incidence of poverty. This is reflected in the table 6.1 below:

6.2 Creation of infrastructure, both physical and social, has been given a greater thrust in the Tenth Five Year Plan. The Eleventh Plan would build on the foundations laid by the Bharat Nirman Programme and other Flagship Programmes to provide

opportunities for improved living conditions as well as livelihoods.

6.3 This Chapter, organized in two sections, provides a brief write-up on Bharat Nirman and on Flagship Programmes for rural areas. The detailed discussion on the Schemes / Programmes is contained in different Chapters of the Plan Document.

Bharat Nirman

6.4 Government of India in recognition of the role played by infrastructure in poverty removal has taken up massive programmes for construction of rural infrastructure under different programmes in the past. The Government launched a time bound plan under Bharat Nirman in 2005 for implementation during the four-year period 2005-2009. The first half of the programme was in Tenth Plan and second half coincides with the first two years of Eleventh Plan period (2007-2012). The six components included under programme are irrigation, drinking water, electrification, roads, housing and rural telephony.

6.5 Physical targets have been set under each of the components. These are indicated in the table 6.2

Table 6.1
Table Index of Social and Economic Infrastructure

State	Index of Infrastructure	HCR(2004)
Andhra Pradesh	103.30	11.17
Assam	77.72	22.33
Bihar	81.33	42.14
Gujarat	124.31(5)	19.08
Haryana	137.54(4)	13.57
Karnataka	104.88	20.85
Kerala	178.68(2)	13.25
Madhya Pradesh	76.79	36.87
Maharashtra	112.80	29.58
Orissa	81.00	46.76
Punjab	187.51(1)	9.15
Rajasthan	75.86	18.71
Tamilnadu	149.10(3)	22.85
Uttar Pradesh	101.23	33.40
West Bengal	111.25	28.62

Table 6.2
Targets under Bharat Nirman

Component	Targets to be achieved by Year 2009
Irrigation	To create 10 million hectare of additional irrigation capacity.
Roads	To provide all weather roads to every habitation over a 1000 population and above (500 in hilly and tribal areas): remaining 66,802 habitations to be covered.
Electricity	To provide electricity to remaining 1, 25,000 villages and to 23 million households.
Housing	To construct 60 lakh houses
Drinking Water	To provide drinking water to 55,067 uncovered habitations by 2009. All habitations with failed sources and water quality problems will be <i>addressed</i> .
Telephone Connectivity	To connect remaining 66,822 villages with telephone by 2007.

Table 6.3
Irrigation Targets under Bharat Nirman

Unit in Million hectares

Components		2005-06	2006-07	2007-08	2008-09	Total
I	Major & Medium Irrigation					
	› Completion of on-going Projects	0.90	1.10	1.10	1.10	4.20
	› Extension, Renovation, Modernisation of Major & Medium Irrigation Projects	0.25	0.25	0.25	0.25	1.00
	Major & Medium Irrigation Total	1.15	1.35	1.35	1.35	5.20
II	Minor Irrigation					
	› Surface Water	0.25	0.25	0.25	0.25	1.00
	› Ground Water	0.45	0.75	0.80	0.80	2.80
	› Repair, Renovation & Restoration of Water bodies/ ERM of MI Schemes	0.05	0.05	0.45	0.45	1.00
	Minor Irrigation Total	0.75	1.05	1.50	1.50	4.80
	Grand Total	1.90	2.40	2.85	2.85	10.00

6.6 The investment proposed to be made is of the order of Rs.1,74,000 crore during the four year period. The effort under Bharat Nirman is to impart a sense of urgency to create rural infrastructure by setting time bound goals under various schemes which form part of Bharat Nirman. The Bharat Nirman imposes a responsibility on the State to create these facilities in a transparent and accountable manner.

Irrigation

6.7 Under Bharat Nirman the creation of average rate of irrigation potential creation is to be increased from 1.4 mha/annum (i.e. the average rate of creation from 1951-2002) to 2.5 mha/annum. With this objective, it is targeted to create 10 mha of irrigation potential through a combination of major and medium projects, minor irrigation and

restoration of water bodies. The year wise physical details are given in table 6.3.

6.8 The creation of additional irrigation potential of 4.30 mha was targeted in the first two years of the Bharat Nirman programme against which the achievement reported up to March 2007 is 2.587 mha which is about half of the target. Clearly the acceleration of potential creation has not been as targeted.

6.9 Eleventh Five Year Plan would target to create 16 mha potential. During the first two years of Eleventh Plan, it was proposed to create 5.7 mha irrigation potential through Bharat Nirman. This would call for higher outlays for irrigation from states, liberal assistance under Accelerated Irrigation Benefit Programme (which is now only a grant and available for surface minor irrigation schemes also) for completion of ongoing projects.

External assistance for restoration of lost potential by restoring tank irrigation would be utilized. Ground water potential would be utilised in the states where there is still scope for development. Close monitoring of the projects with remote sensing and completing the projects on a fixed cost turn key mode is required to achieve the Bharat Nirman targets. (Details on Irrigation sector in Chapter 2 Vol. III).

Roads

6.10 Rural connectivity is the key component of rural development and poverty alleviation in India. Rural roads provide accessibility for the rural habitations to market and other facility centres. In order to give a boost to rural connectivity, a rural roads programme, Pradhan Mantri Gram Sadak Yojana (PMGSY) was launched as a 100 per cent Centrally Sponsored Scheme in December 2000.

6.11 Bharat Nirman envisages a massive scaling up of the programme in terms of habitation connectivity coverage, construction targets and financial investment. To achieve the targets of Bharat Nirman, 1, 46,185 kms of rural roads are proposed to be constructed to benefit 66,802 unconnected eligible habitations in the country. It is also proposed to upgrade nearly 1.94 lakh km of the existing rural roads which are identified through routes of the core network. The physical progress at Bharat Nirman during its first two years i.e. 2005-2007 is given in table 6.4

6.12 The targets for new connectivity and upgradation for the remaining two years i.e. 2007-09 are as under:

- New Connectivity
 - No. of habitations to be covered under Bharat Nirman upto, 2009: 43,638 km
 - Length of the road : 95,510 km
- Upgradation
 - Length of Upgradation: 128,067 km

6.13 The main objective of the Eleventh Five Year Plan is achieving the Bharat Nirman targets by 2009. However, the physical targets set under the Bharat Nirman till the end of 2008-09 are found to be beyond the capacity of the States. Therefore, the left over targets of Bharat Nirman for 2007-09 will be completed only by end of the financial year 2009-10. In order to augment funding for meeting the targets of rural connectivity under Bharat Nirman, it is proposed to borrow Rs.16500 crore from National Bank for Agriculture and Rural Development (NABARD) by leveraging the cess accruals. This would, however, entail setting aside substantial amounts that would accrue from cess from 2009-10 onwards for repayment of the NABARD loan. The outlay for Central sector rural roads for the Eleventh Plan is Rs.43251.00 crore at current prices, excluding the borrowing from NABARD. (Detailed write-up in Chapter 9 – Vol. III).

Table 6.4

Physical Progress of Bharat Nirman during 2005-07

Status		2005-06		2006-07		2005-07		% Achiv.
		Target	Achiv.	Target	Achiv.	Target	Achiv.	
New Connectivity	Length (in kms)	15492.4	18053.7	35182.15	21422.85	50674.55	39476.55	77.90
	No. of Habitations	7034	5552	16130	8279	23164	13831	59.71
Upgradation	Length (in kms)	11394.4	3925.6	54669.26	46129.90	66063.66	50055.50	75.77

Drinking Water

6.14 Bharat Nirman envisages covering the 55,067 Not Covered habitations, covering the slipped back habitations from Not Covered to Partially Covered Status and providing safe drinking water to water quality affected habitations. During the first two and half years there is an impressive achievement (63%) in covering the slipped back habitations as they are relatively easier (involves restoring the defunct bore pumps, carrying out repairs to water supply pipelines and augmentation wherever required etc) to execute. The coverage of Not Covered habitations has also progressed well with 48% of the targeted habitations being covered. However, there is a huge shortfall in covering the quality affected habitations in which only 5% coverage is achieved.

6.15 Sustainability of water supply has become the focal point to avoid slipped back habitations. Convergence of various rural development programmes of Government(like NREGP, BRGF, Watershed development, restoration of water bodies etc.) need to be vigorously pursued supported by village level planning. The issue of water quality has assumed serious *proportions*. While providing water supply from surface water sources *and the conjunctive use of groundwater, surface water and rooftop rainwater harvesting* would be ideal, in-situ methods like dilution of chemical contaminants through augmented ground water recharge (aided through convergence of programmes), adopting cost effective scientific water quality treatments on an individual village basis would go a long way to improve coverage of water of water quality affected areas. (Detailed discussion in Chapter 5 – Vol. II).

Rural Electrification

6.16 The rural electrification targets are set to be achieved under Rajiv Gandhi Grameen Vidhyuthikaran Yojana. The twin objective of electrification of 1,25,000 villages and electrifying the 2.3 crore BPL households are proposed to be achieved under Bharat Nirman. During the first two years, the progress under both the objectives has registered an achievement of 34% and 6%

respectively. There are major shortfalls in this sector. Clearly there is a need for acceleration to achieve the target during the Eleventh Plan. Non availability of electrification materials due to sudden demand is also a contributing factor for under achievement. Rural electrification assumes additional significance since enormous groundwater potential in eastern and north eastern parts of the country could be tapped for minor irrigation development. Electrification should trigger economic activity for rural development. Fully operationalising the franchisee system for revenue collection and viable tariff are key to sustaining the power supply in rural areas. (Detailed write-up in Chapter 10 – Vol. III).

Housing

6.17 Bharat Nirman Programme has recognized and accorded due priority to the need to end shelterlessness. The programme has set a target to construct 60 lakh houses from 2005 to 2009. In the first two years of Bharat Nirman 28.69 lakh houses have been constructed. The housing programme of Bharat Nirman is being implemented in parallel with Indira Awaas Yojana (IAY) scheme. This scheme was launched as an independent and major housing scheme from 1st January 1996, to provide assistance for construction / upgradation of dwelling units to the Below Poverty Line (BPL) rural households.

6.18 For the Eleventh Plan the focus should be on targeting the poorest of the poor while targeting the remaining housing shortage with other interventions. Housing shortage for 2001 stands at 148.6 lakh houses and for 2007 at 159.5 lakh houses. Hence a target of constructing about 150 lakh houses under IAY needs to be fixed for the Eleventh Plan. This translates into an annual target of 30 lakh houses as against 15 lakh houses being constructed under IAY presently. The per unit cost is also proposed to be revised from the present level of Rs.25,000 in the plain areas and Rs.27,500 in the hilly and difficult areas. For more accurate targeting of beneficiaries, Permanent IAY Waitlists should be prepared, based on scores given to families, as part of BPL Census 2002. For this, the State Government need to be incentivised and

Panchayats have to be appropriately empowered. Houses built as part of IAY should be with smokeless chulhas and sanitary latrines. The title of the house site/ownership should be in the name of female member of the household. While IAY can focus on eliminating the backlog of houselessness and temporary and unserviceable houses in rural India, the States should take responsibility for addressing any emerging needs. With the help of certain feasible interventions, the prime objective of tackling shelterlessness can be achieved within the stipulated time. (Details Chapter II, Vol. III).

Rural Telephony

6.19 Under the Bharat Nirman Programme, 66,822 revenue villages not having telephone connectivity is to be provided with Village Public Telephone (VPT) facility. Out of these, 14,183 remotely located villages were to be provided VPTs through Digital Satellite Phone Terminals (DSPTs) while the remaining 52,639 villages were to be provided on any other technology. An estimated sum of Rs.451 crore is likely to be disbursed as subsidy support towards these VPTs. The entire funding is to be met out of the USO Fund. A total number of 48704 VPTs have been provided telephone connectivity and 18118 VPTs are likely to be provided by **June 2008**. It is important to improve the tele-density in rural areas and move to the next step of making every village a knowledge centre with telecommunication. For this high speed internet connection providing the necessary knowledge content relevant to the villages for the benefit of all sections of the society is required.

Flagship Programmes

6.20 The thrust of the Eleventh Five Year Plan is social inclusion coupled with provision of improved livelihood opportunities. This approach calls for renewed emphasis on education, health and other basic public facilities. Inadequate access to these essential services directly limits the welfare of large sections of our population, and also denies them the opportunity to share fully in the growth process. Indeed, inadequate attention to human resource development limits the

growth process itself. In the Tenth Plan, many Schemes were either launched or revamped and strengthened to provide education, health care, nutrition, sanitation and social security. Many of these programmes are implemented on an all India basis while some are implemented only in rural areas. Even the programmes that are implemented across the country tend to favour rural and backward areas in terms of resource allocation. These programmes, called **Flagship Programmes** forms the second strand for development of rural areas; the first being **Bharat Nirman** Programme. These are discussed in the following paragraphs:

- National Rural Employment Guarantee Programme (NREGA)
- National Rural Health Mission(NRHM)
- Integrated Child Development Services(ICDS)
- Sarva Shiksha Abhiyan(SSA)
- Mid Day Meal(MDM)
- Total Sanitation Campaign (TSC)
- National Social Assistance Programme(NSAP)
- Backward Regions Grant Fund(BRGF)

National Rural Employment Guarantee Programme (NREGA)

6.21 The National Rural Employment Guarantee Act (NREGA) has been enacted to reinforce the commitment towards livelihood security in rural areas. The Act was notified on 7th September, 2005. The significance of NREGA lies in the fact that it creates a Right based framework for wage employment programmes and makes the Government legally bound to provide employment to those who seek it. The NREGA marks a paradigm shift from the previous wage employment programmes by providing a statutory guarantee of wage employment and not being just a scheme. The objective of the NREGA is to enhance the livelihood security of the people in rural areas by guaranteeing 100 days of wage employment in a financial year to a rural household whose members volunteer to do unskilled manual work. The Act further aims at creating durable assets and strengthening the livelihood resource base of the rural poor. The choice of works suggested

in the Act address causes of chronic poverty like drought, deforestation, soil erosion, etc. so that the process of employment generation is on a sustainable basis. The experience with NREGA so far suggests that it is one of the main planks of rapid poverty reduction in the Eleventh five year plan.

6.22 Starting with 200 districts across the country in Phase –I during 2005-06, NREGA was extended to additional 130 districts in Phase-II during 2007-08. From 1st April, 2008 onwards the Act will cover the whole of rural area in the country. (Detailed discussion in Chapter 4, Vol. III)

National Rural Health Mission

6.23 The main aim of NRHM is to provide accessible, affordable, accountable, effective and reliable primary health care, especially to poor and vulnerable sections of the population. It also aims at bridging the gap in Rural Health Care through creation of a cadre of Accredited Social Health Activists (ASHA) and improves hospital care, decentralization of programme to district level to improve intra and inter-sectoral convergence and effective utilization of resources. The programme sets standards for rural health care and provides financial resources to meet these standards. The programme is under implementation in 18 States which have poor health infrastructure.

6.24 As per Rural Health Bulletin (2006), it is noted that the Sub-centres without regular water supply, electric supply and all-weather motorable approach roads are very large in Bihar, Chattisgarh, Maharashtra, Orissa, Uttar Pradesh, West Bengal and other States. Similar position is noted regarding facilities at Primary Health Centres also. Out of the six tasks to be completed under Bharat Nirman in a time bound manner, five (namely Electricity, All Weather Roads, Safe Drinking Water, Telephone and Rural Housing) have direct impact on the National Rural Health Mission. (Details in Chapter 2 – Vol. II).

Integrated Child Development Services (ICDS)

6.25 The Integrated Child Development Service (ICDS) Scheme is a child focused intervention to address the inter-related needs

of young children and pregnant and lactating mothers. The ultimate objective of the scheme is to reduce incidence of mortality, morbidity, malnutrition and school drop-outs and enhance the capability of the mother and family to look after the health, nutritional and development needs of the child. It is now a nation-wide programme, which aims at promoting health and nutritional requirements of children up to 6 years and expectant and nursing mothers. As on 31st March 2007, there are 6284 sanctioned projects and 10.53 lakh anganwadi centres in the country. Out of which, 5672 projects are operational through 7.8 lakh anganwadi centres servicing 7.05 crore beneficiaries comprising 5.81 crore children below 6 years and 1.23 crore pregnant and lactating mothers. The ICDS would one the major programmes for achieving the following goals:

- Raising of sex ratio girl child in the age group 0-6 from 927 in 2001 to 935 by 2011-12 and to 950 by 2016
 - Reducing infant mortality rate (IMR) to 28 and maternal mortality ratio (MMR) to 1 per 1000 live births.
 - Reducing malnutrition among children of age group 0-3 to half its present level and anemia among women and girls by 50% by the end of the Eleventh Plan.
- (Detailed discussion in Chapter 6 , Vol.- II)

Sarva Shiksha Abhiyan (SSA)

6.26 Sarva Shiksha Abhiyan (SSA) is the principal programme for universalization of elementary education. SSA aims to provide useful and relevant elementary education for all children in the 6-14 age-groups by 2010. The other significant objective is to bridge social, regional and gender gaps with the active participation of the community in the management of schools, besides focusing on elementary education of satisfactory quality with emphasis on education for life. SSA addresses the needs of about 20 crore children in more than 12.37 lakh habitations covering 10.42 lakh existing primary and upper primary schools (SES-2004-05, MHRD, 2007). SSA successfully ensured universal access to primary education. About 94% of Indian villages/habitations have access to schools

within a distance of 1 KM. In the remaining villages/habitations, alternative schooling arrangements have been made through Education Guarantee Scheme (EGS) and Alternative & Innovative Education (AIE) Centres.

6.27 As a result of SSA interventions between 2001-02 and 2004-05, **total enrolment** in primary classes has increased from 11.39 crore to 13.08 crore (14.84%) and in upper primary classes from 4.48 crore to 5.12 crore (14.29%). A remarkable feature has been the spurt in girls' enrolment in the corresponding period, from 5.03 crore to 6.11 crore in primary classes (21.47 %) and from 1.87 crore to 2.27 crore (21.39%) in upper primary classes. (Details in chapter 1 – Vol. II).

Mid-day Meal

6.28 Mid-day Meal Scheme launched in 1995, aims to give a boost to universalisation of primary education by increasing enrolment, retention and attendance and simultaneously impacting upon nutritional status of students in primary classes. The Scheme was revised in June, 2006, provides for 450 calories, 12 gram of protein and adequate quantities of micronutrients like iron, folic acid, vitamin-A to the children. The cooking cost has been enhanced to Rs.2.00 per child/ school day. All the States and Union Territories are providing cooked meal to the children in primary classes. The coverage of school children under the programme has risen to 12 crore in 9.5 lakhs primary schools /EGS centres during 2006-07. With a proposed investment of Rs.48,000 crore in the Eleventh Plan period, MDM is to be expanded in the Eleventh Plan to Upper Primary classes (VI-VIII) in 3479 Educationally Backward Blocks in 2007-08, and universalized at elementary level by 2008-09. MDM will thus reach out to an additional 3 crore children at upper primary stage reaching out to a total of about 15 crore children at primary and upper primary level in 2007-08 and about 18.0 crore children by 2008-09.

- The nutrition value of the MDM for upper primary children has been fixed as 700 calories, derived from at least 150 gms of

cereals and 20 gms of protein, with Central assistance for cooking cost going up to Rs.2.00 per child per school day (Re.0.50 from the States).

- Kitchen sheds to be built in 3.13 lakhs primary and 3.0 lakh upper primary schools @ Rs.60,000/unit and kitchen devices to be provided @Rs.5,000/school.
- The programme to be managed & implemented by the local community & PRIs, not contractor-driven.
- School health programme to be revived and best practices replicated. (Details in Chapter 1 – Vol. II).

National Social Assistance Programme (NSAP)

6.29 The National Social Assistance Programme (NSAP) is a Flagship Programme of the Government which aims to provide human security to the poor and the destitute. The programme was launched on 15 August 1995 as a wholly centrally funded program to give financial assistance to families with little or no regular means of subsistence living below the poverty line. NSAP presently consists of three components namely National Old Age Pension Scheme (NOAPS), National Family Benefit Scheme (NFBS) and Annapurna scheme. These schemes continued to be administered by the MoRD upto 2001-02 as CSS, until in 2002-03 these schemes were transferred to central assistance for State plans. The details of each component have been explained in the Chapter on Poverty Alleviation. Government of India has recently modified the criteria for grant of pension under NOAPS to all persons of 65 years or higher and belonging to a household Below the Poverty Line. With this modification the pension under NOAPS which was restricted to only destitutes will now be universalized and approximately 1.57 crore beneficiaries will be covered against the present coverage of around 87 lakh.

6.30 During the Eleventh Plan it is proposed to extend the NOAPS to all old persons above the age of 60 years (from the present 65 years) from among the BPL families with a minimum pension of Rs.400/- per month funded by the Centre and the States. The Annapurna Scheme, targeted to senior

citizens, who remained uncovered under NOAPS, can be discontinued soon after these beneficiaries are covered under the NOAPS. The scheme will include persons with severe/multiple disabilities from the below poverty line families and widows. The NFBS would continue during Eleventh Five Year Plan with support enhanced from Rs.10, 000 to Rs.25, 000/-. This amount will be sufficient for meeting the funeral charges and other incidental expenditure. To ensure smooth implementation and closer monitoring of the scheme, Advisory Committees comprising of professionals and voluntary organisations along with Technical support groups should be set up at Central, State and District levels. (Details in Chapter – Vol.III).

Total Sanitation Campaign (TSC)

6.31 Provision of sanitation facilities in rural areas has been highly inadequate. Many programmes were initiated in the past to expand coverage but with little success. In 1999 the DoDWS was launched “Total Sanitation Campaign” (TSC) which is a demand-responsive, community oriented low subsidy programme in a project mode. The performance of project mode TSC was very satisfactory and therefore from 2002-03, the entire CRSP has been converted into TSC. The objective of TSC was attaining 100% sanitation coverage in terms of household toilets, schools and Anganwadi toilets and also providing hygiene education to the people.

6.32 The target of Millennium Development Goal is to cover 100% Rural Sanitation by 2015. Under TSC the target is to achieve 100% coverage by the end of Eleventh Plan (2012). This programme also includes funds for Nirmal Gram Puraskar which has helped in accelerating the pace of implementation of TSC since its inception in 2005. The approach of Nirmal Gram Puraskar also helps in sustainability and maintenance of the sanitation programme. The outlay proposed for Eleventh Plan is Rs.7816 crore (Rs.6910 crore at 2006-07 prices). The allocation for AP 2007-08 is Rs.1060 crore. The physical target for Eleventh Plan is to cover 69 million households, 25769 sanitary complexes, 133,114 aganwadis, all the remaining schools (new schools will be

covered under Sarva Shiksha Abhiyan) and RSM/PCs (figures will be finalized after the receipt of revised proposals from the districts). (Details in Chapter 5 – Vol. II).

Backward Regions Grant Fund

6.33 The Backward Regions Grant Fund (BRGF) has replaced the Rashtriya Sam Vikas Yojana (RSVY) in order to provide a more participative approach through the involvement of Panchayati Raj Institutions. The spatial coverage was also expanded and it now covers 250 districts (RSVY covered 147 districts). The scheme aims to help converge and add value to other programmes like Bharat Nirman, National Rural Employment Guarantee Programme and other Flagship programmes which are explicitly designed to meet rural infrastructural needs, but which need supplementation to address critical gaps. It aims at catalyzing development in backward areas by: (a) filling infrastructure gaps; (b) promoting good governance and agrarian reforms; (c) converging, through supplementary infrastructure and capacity building, the substantial existing development inflows into these districts.

6.34 The scheme has two components, namely, (a) The Districts’ Component covering 250 districts which will be anchored on a well conceived, participatory district plan with schemes selected through peoples’ participation for which Panchayati Raj Institutions (PRIs) from the village upto the district level will be the authorities for planning and implementation; and (b) Special Plans for Bihar and the Kalahandi – Bolangir – Koraput (KBK) districts of Orissa. The Special Plan for Bihar had been formulated, in consultation with the State Government of Bihar, to bring about improvement in sectors such as power, road connectivity, irrigation, forestry and watershed development. The Special Plan for the KBK districts focuses on tackling the main problems of drought proofing, livelihood support, connectivity, health, education, etc., as per local priorities. (Details in Chapter 6, Vol. I).