Chapter 3

ECONOMIC AND SOCIAL INFRASTRUCTURE

3.1 Overview

Economic and social infrastructure development is essential for creating new avenues for investment, improving accessibility across regions and opening new markets. It would generate new employment opportunities and finally, support sustainable economic growth. The strategy adopted by Sri Lanka for economic and social infrastructure development throughout its post-independence history has been for the public sector to provide basic essential services, through direct budgetary allocation or foreign donor support. This appears to be the policy thrust in the current period as well. Accordingly, the government has launched a multi-focused programme of infrastructure development as highlighted in the Ten-Year Horizon Development Framework 2006-2016 and in government's Randora programme. These programmes have been designed in order to develop a regionally balanced network of economic infrastructure with investments channelled through the Consolidated Fund, private and foreign direct investments and Public Private Partnerships (PPP). While the currently proposed investment programme in infrastructure is laudable, the basic issues relating to economic and social infrastructure development need to be addressed urgently so as to generate quality as well as sustainable economic growth with a proper balance in the macroeconomy. The issue has been the non-adjustment of prices in the transport, petroleum and power sectors to reflect their rising costs and thereby eliminating the unproductive direct and indirect subsidies, which has caused a major macroeconomic imbalance in recent years. In this sense, the recent adjustment of petroleum prices could be viewed as a move taken in the right direction. But, it is also necessary to eliminate all other unproductive and untargeted subsidy elements and free budgetary resources for other productive investments.

The Randora programme provides the basis for infrastructure development within the Ten-Year Horizon Development Framework 2006-2016. Roads, energy, water supply and sanitation, ports and aviation, transport and rural infrastructure development are the main areas focused under the economic infrastructure development of the Randora programme. The implementation of the infrastructure programme is to take place at both the national and regional levels. The national level projects comprise the development of the Southern Expressway, Colombo-Kandy Expressway and Colombo Outer Circular Road, the development of Norochcholai coal power plant and Upper Kotmale hydropower plant, large scale water supply and sanitation projects especially in Jaffna and Ampara districts and major aviation and port development projects such as Colombo port expansion and Hambantota port development projects. "Maga Neguma" (Development of roads) and "Gama Neguma" (Development of villages) programmes are implemented at the regional level to facilitate rural infrastructure development in the country to enable the country to achieve economic development that is regionally balanced.

Greater attention needs to be paid to the development of the social infrastructure, including education and health services. Despite the fact that Sri Lanka has achieved a relatively higher rank in human development, there is an untapped potential in these two sectors to contribute to a faster economic growth in the country. These also underline the need for new thinking and strategies, especially in relating to the production, delivery, pricing and value-recording of the services concerned. Such improvements, once initiated, should be vigorously and rigorously followed, as an urgent national policy. Both sectors have significant opportunities for further investment and bring them in line with the global platform where Sri Lanka could be a "value-adding producer" of these services in the global market.

Table 3.1 Government Investment in Infrastructure

Year	Economic Services		Social Services		Total	
	Rs. bn.	% of GDP (a)	Rs. bn.	% of GDP (a)	Rs. bn.	% of GDP (a)
1998	44.7	4.4	15.5	1.5	60.2	5.9
1999	44.9	4.1	17.5	1.6	62.4	5.6
2000	54.7	4.4	16.5	1.3	71.1	5.7
2001	54.9	3.9	14.6	1.0	69.5	4.9
2002	51.7	3.4	15.7	1.0	67.4	4.3
2003	58.7	3.2	19.2	1.1	77.9	4.3
2004	61.3	2.9	29.0	1.4	90.3	4.3
2005	77.5	3.2	60.4 (b)	2.5	137.9	5.6
2006	106.8	3.6	48.4	1.6	155.2	5.3
2007 (c)	141.2	3.9	55.0	1.5	196.2	5.5

(a) From 2003, data are based on estimates compiled by the Department of Census and Statistics
(b) Inclusive of Tsunami related capital expenditure
(c) Provisional

Sources: Ministry of Finance and Planning
Central Bank of Sri Lanka

The development of economic infrastructure through PPP has been identified as a key development strategy, so as to relieve the budget of the burden of financing. Several infrastructure development projects such as those pertaining to ports, power, airports and road development have been identified for implementation under the PPP strategy. The growing budget constraints of the government highlight the importance of the active role that the private sector should play in implementing and managing infrastructure projects. While non-commercial risks, such as political and environment, are borne by the government, the skills of the private sector in managing commercial risks are harnessed under PPP.

Infrastructure services showed mixed performance in 2007. A rapid growth was seen in the telecommunications industry due to increased competition with the introduction of Code Division Multiple Access (CDMA) technology and the entry of a new private operator to the industry. Port services grew at a significant rate, benefiting from productivity improvements and the healthy growth in international trade. However, the energy sector continued to suffer from high oil prices in international markets. The electricity sector, which depends heavily on thermal power generation, suffered from oil price hikes, causing severe cash flow imbalances to the monopoly producer, Ceylon Electricity Board (CEB). The delay in the implementation of a cost reflective tariff system and low cost power generation projects, and the unfavourable power purchase agreements with the Independent Power Producers (IPP) were the main causes for the weak financial position of CEB. In the petroleum sector, though oil prices reached historically high levels in 2007, the adjustment of domestic petroleum prices helped reduce imbalances in the financial position of Ceylon Petroleum Corporation (CPC). Meanwhile, preliminary work relating to oil exploration in the Mannar basin was initiated with the calling for international bids from prospective investors cum oil exploring entities in late 2007. Passenger transportation registered a moderate growth in 2007. The civil aviation sector registered only a marginal growth due to negative growth registered in the tourism sector. The construction of houses expanded rapidly, benefiting from the growing housing market and

government intervention. Both private and public investments in the health sector increased further. With respect to ensuring quality, the establishment of the Private Health Service Regulatory Council is an encouraging development. Efforts were made to further streamline the Samurdhi programme with a view to rationalizing the entry and exit systems.

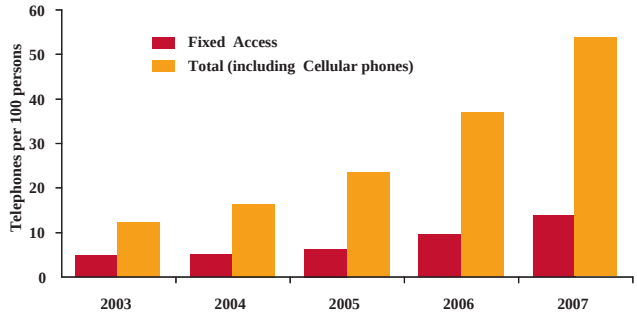
3.2 Economic Infrastructure Policies, Institutional Framework and Performance

Communications Services

The growth momentum in the telecommunications sector continued in 2007, largely supported by a further expansion in the coverage, introduction of advanced technology and value added services, increased competition and affordability, and higher investments. The subscriber network of the telecommunications sector grew by 47 per cent in 2007, following the 58 per cent growth in 2006. Fixed access telephone connections expanded by 46 per cent during the year, largely due to an expansion of the wireless network with CDMA technology. The mobile telephones network increased by 48 per cent in 2007, compared to the previous year. Mobile telephone penetration (mobile connections as a per cent of total population) increased significantly to 40 per cent in 2007 from 27 per cent in 2006. With these developments, the telephone density (telephones per 100 persons), including cellular phones, increased to 54 in 2007 from 37 at end 2006. Subscribers of Internet and email services also increased substantially by 56 per cent to 202,348 in 2007. This rapid growth in communications foretells future economic development by reducing the transaction costs on basic information and data transfers.

The rapid growth in the telecommunications sector was facilitated by healthy competition. The telecommunications sector presently consists of 4 fixed line operators, 5 mobile operators, 33 external gateway operators and 29 Internet service providers. The Telecommunications Regulatory Commission of Sri Lanka (TRC) licensed a mobile operator to provide fixed lines in 2007. TRC has also licensed a fifth mobile operator in 2007. With the increased competition, operators have reduced their charges, while adding new services and improving quality and coverage. Sri Lanka Telecom (SLT) has revised its tariff and introduced a new time based tariff structure from November 2007. The subscriber levy on the usage of mobile phones was increased up to 10 per cent in 2007 and extended to cover wireless phones also with effect from 2008.

Chart 3.1 Telephone Density



Several new telecommunications projects were implemented in 2007 to improve the capacity, technology, coverage and efficiency of the service. SLT allocated Rs. 9.25 billion as capital investment in 2007 for infrastructure development and other related enhancements. Out of the total allocation, 67 per cent was utilized during the year. SLT established a wholly owned subsidiary company in Hong Kong under the name "SLT Hong Kong Limited" with the aim of making it an important point of presence in SLT's endeavour to connect Asia with the rest of the world through Sri Lanka. Internet Protocol (IP) transit, Internet Protocol

Table 3.2 Growth of Telecommunications and Postal Services

Item	2006	2007 (a)	Growth Rate (%) 2006	Growth Rate (%) 2007 (a)
1 Telecommunications services				
1.1 Fixed access services				
Wireline in service (No.) ('000)	910 (b)	932	-1.0	2.4
Wireless access (No.) ('000)	974	1,810	199.8	85.8
Telephone density (Telephones per 100 persons)	9.5	13.7	50.8	44.2
1.2 Other services				
Cellular phones ('000)	5,412	7,983	61.0	47.5
Public pay phones	7,561	8,526	20.3	12.8
Internet & e-mail ('000)	130	202	13.0	55.7
2 Postal service				
Delivery areas (No)	6,729	6,729	0.0	0.0
Post offices (No)	4,727	4,737	0.5	0.2
Public	4,043	4,053	0.0	0.2
Private	684	684	3.2	0.0
Area served by a post office (Sq.km)	13.8	13.8	-0.7	0.0
Population served by a post office	4,167	4,252	1.6	2.0
Letters per inhabitant	24	23	-4.0	-4.2

(a) Provisional
(b) Wirelines declined in 2006 due to shift of some subscribers to CDMA

Sources: Sri Lanka Telecom Ltd.
Telecommunications Regulatory Commission of Sri Lanka
Department of Posts

Virtual Private Network (IPVPN) and international voice traffic transit services are some of the key services provided to global telecom operators and corporations in Hong Kong through this venture. A submarine cable with Dhiraagu of Maldives was commissioned for service in 2007. With the increasing demand for high-speed data services outside Colombo, the Metro Ethernet network was expanded to regions covering major cities in the country. Private sector operators of telecommunications facilities also invested significantly for expansion of their services.

Postal services further expanded, despite the challenges posed by the rapid developments in information and communication technology, with a better alternative of e-mail based communication. The post office network, including private agency post offices expanded further in 2007. The total number of post offices increased to 4,737 by end 2007. The average population served by a post office was 4,252 in 2007. Several new services, such as providing certain banking facilities, insurance services and selling pre-paid phone cards through post offices were introduced in 2007. However, the future of the postal services will largely depend on the use of modern technology to reduce costs, enhance delivery and diversify its services.

The Department of Posts (DOP) continued to report operating losses despite revision of postal charges. Postal charges were revised upward with effect from 27 April, 2007 to cover a part of the increased expenditure. DOP has also implemented a programme for cost management under which it expects to reduce its operating cost by 10 per cent, with a view of further strengthening its financial situation. However, the operating loss of DOP amounted to Rs. 3,797 million in 2007, exerting a heavy burden on the government budget. The extensive postal network could be used more efficiently to provide various services in a commercially viable manner, making the postal department an income generating source for the government, without being a burden on the budget. DOP certainly provides a valuable service to the nation, but unless it becomes a self-financing venture, it cannot become a "value adding" service.

Energy

Continuing high oil prices in the international markets have been a major challenge faced by the economy in the past few years. The high dependence on petroleum products for electricity generation, transportation and industrial production, in the presence of escalating oil prices, has made the Sri Lankan economy vulnerable to oil price shocks. The average import price of crude oil (c & f) increased sharply by about 10.5 per cent to an average of US dollars 71.96 a barrel in 2007 and continued its increasing trend even in 2008. This highlights the importance of adopting a multi-faceted strategy to address the issue: developing alternative energy sources, including renewable energy, adopting energy conservation methods and taking measures for both macro and micro energy demand management.

Electricity

Electricity generation increased by 4.5 per cent to 9,814 GWh during the year. Hydropower generation decreased significantly in 2007 due to the low rainfall in catchment areas during the first few months of the year. The share of hydropower in the total electricity generation decreased to 40 per cent in 2007 from 49 per cent in 2006. The decrease in low cost hydropower generation by 687 GWh in 2007 adversely affected the financial position of CEB in the presence of escalating oil prices. Out of the total electricity generation, 60 per cent is from fossil fuel based power plants, which consume around 30 per cent of petroleum sales of the country.

Table 3.3 Power Sector Performance

Item	2006	2007 (a)	Growth Rate (%) 2006	Growth Rate (%) 2007 (a)
Installed capacity (MW)	2,434	2,443	1.0	0.4
Hydro	1,314	1,323	1.8	0.7
Thermal (b)	1,115	1,115	0.0	0.0
Wind	3	3	0.0	0.0
Units generated (GWh)	9,389	9,814	7.1	4.5
Hydro	4,635	3,948	34.2	-14.8
Thermal (b)	4,751	5,864	-10.6	23.4
Wind	2	2	0.0	0.0
Total sales by CEB (GWh)	7,832	8,276	8.0	5.7
Domestic and religious	2,622	2,771	7.3	5.7
Industrial	2,605	2,627	6.5	0.8
General purpose	1,395	1,626	11.2	16.6
Bulk sales to LECO	1,111	1,144	8.2	3.0
Street lighting	98	108	18.1	10.2
LECO sales (GWh)	1,044	1,100	7.3	5.4
Domestic and religious	484	499	4.3	3.1
Industrial	254	268	5.8	5.5
General purpose	279	303	14.3	8.6
Street lighting	27	30	8.0	11.1
Overall system loss of CEB (%)	16.6	15.6	-4.0	-6.1
Number of consumers ('000) (c)	4,065	4,307	6.9	6.0
o/w Domestic and religious	3,592	3,811	6.9	6.1
Industrial	40	41	5.3	2.5
General purpose	429	450	6.2	4.9

(a) Provisional
(b) Inclusive of Independent Power Producers (IPP)
(c) Inclusive of LECO consumers

Sources: Ceylon Electricity Board
Lanka Electricity Co. (Pvt) Ltd.

The sales of electricity, which exclude system loss out of the total generation, increased by 5.7 per cent to 8,276 GWh in 2007. Electricity demand growth has decelerated in recent years due largely to the slow growth in domestic and industrial sector demand which had to change its consumption pattern in line with the upward revision of electricity tariff. Electricity consumption in the general-purpose category and domestic sector grew by 16.6 per cent and 5.7 per cent, respectively, while electricity consumption in the industrial sector grew marginally in 2007. The system losses as a percentage of total generation declined further to 15.6 per cent in 2007. However, a system loss at this level is still relatively high and unaffordable for a loss-making venture. Hence, continuous action is needed to reduce this to a level on par with international best experiences.

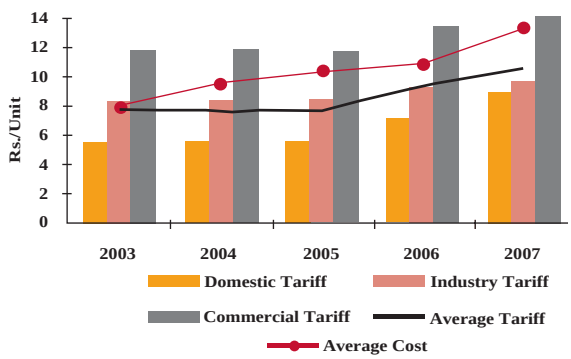
The electricity sector suffered from escalating oil prices as well as other institutional and structural weaknesses. CEB continued to depend highly on thermal power, mainly from the private sector, on unfavourable terms and conditions to meet the rising demand for electricity. In 2007, about 60 per cent of total electricity generation was from thermal power. In the meantime, delays in implementing low cost energy sources have led to high cost of power generation. The existing financial and institutional issues in the power generation by CEB remained without being addressed. However, several capacity expansion projects were in progress in 2007. The construction work of the 150 MW Upper Kotmale hydropower project and the first phase of the 300 MW Norochcholai coal power plant have continued in 2007. These two projects will be connected to the national grid by 2011. Another thermal power plant at Kerawalapitiya is expected to be commissioned its operation during the second half of 2008. The government is also planning to construct 4 medium scale hydropower plants, namely, Uma Oya, Ginganga, Broadland and Moragolla. Another coal power plant of 500 MW, in Trincomalee is under consideration.

Several changes were introduced to the electricity tariff in 2007. The Value Added Tax (VAT) of 15 per cent on electricity consumption was removed from January 2007. Given the current operating losses in CEB, these charges appear to bring adverse results on the budget. In addition to the removal of VAT, the industrial sector was benefited by the exemption of the payment of fuel adjustment charge of 20 per cent with effect from 2007. Though these measures would minimise the cost of living of domestic users, their long-term adverse effect on both CEB and the government budget would be significant: CEB would suffer from a lack of power conservation by public while the budget would be without its usual income sources. The average tariff in 2007 was Rs.10.58 per unit, whereas the average cost was Rs.13.48 per unit. The estimated average purchased cost of private power was Rs. 14.92 per unit in 2007. The need for a tariff adjustment has arisen in the light of high cost of power generation as a result of escalating oil prices. With the already high tariffs prevailing in the country, it is vital that the CEB expedites the implementation of low cost power projects and encourage the development of alternative renewable energy sources, urgently.

CEB's financial position further deteriorated in 2007. CEB's operating losses have increased to Rs. 15 billion, excluding indirect subsidies through lower fuel prices. If the CPC subsidies are internalized, the total operating loss would be Rs. 21 billion. CEB's short-term borrowings from commercial banks, payments in arrears to the CPC and IPP and other short-term liabilities amounted to Rs. 55 billion at end 2007. CEB's long-term loans amounted to Rs. 89 billion by end 2007. The financial position of CEB is therefore fragile and alarming. Since it is a state sector monopoly, its future solvency will largely fall on the taxpayers. However, the storng belief that CEB would be eventually bailed out by the taxpayers has also dialuted the incentive for CEB to improve and to introduce efficiency measures. If this state of affairs is allowed to continue, willingly or unwillingly, the nation will have to soon shoulder this burden as well.

Urgent action is needed for the conservation of energy and the development of renewable energy sources to deal with impact of present energy crisis. Sri Lanka Sustainable Energy Authority (SLSEA) was established in 2007 with a view to ensuring energy security, increasing indigenous energy generation and curbing the growth of unnecessary energy intensity in the economy. SLSEA has embarked on several initiatives to make the currently practised

Chart 3.2 **Average Tariff and Cost of Electricity**



Box 7

Conflicts of Public-Private Partnerships in Power Generation

The total electricity generation in Sri Lanka during 2007 amounted to 9,814 GWh, of which 3,873 GWh or approximately 40 per cent was generated by private sector power producers. The private sector power producers in Sri Lanka consist of Independent Power Producers (IPPs) and small-scale hydro power generating establishments. A major share of private sector electricity generation is from IPPs by way of thermal generation which amounts approximately to 90 per cent (3,528 GWh) of total private sector electricity generation. The IPPs in Sri Lanka were first introduced in December 1996 when there was a severe shortage of power as hydro power generation ability was limited due to a prolonged drought. At present, there are 10 IPPs in operation with a combined generation capacity of around 550 MW. They play a major role in the power sector by contributing about 1/3 of total electricity generation.

The most important step in any electricity utility restructuring, including the decision to obtain the service of IPPs, is to understand and articulate the goals of restructuring. Possible goals of introducing IPPs include;

- to attract outside capital to meet rapidly growing electricity needs without imposing large strains on public funds;
- to reduce electricity costs through competitive bidding process and more efficient operations; and
- to share the risks and returns between the private sector and the public sector.

However, in reviewing the performance of IPPs in Sri Lanka, it is observed that most of the goals listed above have not been fulfilled. Based on the perceived goals of engaging IPPs in a country, the major categories of risks of any private sector participant (IPPs) include,

- Currency risk- The risk that IPP operations or the value of investment will be affected by changes in the exchange rate. IPPs may attract foreign equity or borrow internationally for their investment. They may also have cost components in their operations like the maintenance of plant and machinery which are likely to vary with changes in the exchange rate. Hence, if their income is in domestic currency, they could be exposed to currency risks.
- Payment risk- Default by the purchaser of power, if the purchaser is to become financially weak.
- Political risk- The possibility that existing or future governments may change the rules of engagement.
- Management risk- IPPs may face an increased risk of losing their management oversight, if their participation were through minority equity ownership.
- Technology and Performance risk- The technology selected may not perform as originally expected.

The pricing formula based on which the purchase price of power is determined should reflect the extent of risk taken by IPPs and the purchaser, i.e., Ceylon Electricity Board (CEB). However, in Sri Lanka, IPPs' pricing formula and terms and conditions in Power Purchase Agreements (PPAs) are not compatible with the extent to which IPPs carry aforesaid risks, as explained below.

- The IPPs in Sri Lanka are not exposed to the currency risk as some IPP cost components relating to payments in foreign exchange such as equipment and repair costs, and cost of foreign capital are denominated in foreign currency. In fact, under existing operational arrangements, CEB absorbs the currency risk involved.
- The non-payment for power purchases by the CEB is practically not possible under existing IPP operational arrangements and any delay in payment is penalized by a late payment charge. In addition, there is an implicit government guarantee as the CEB is a state owned enterprise. Moreover, the Treasury provides a guarantee for the repayment of loans raised by the IPPs and all loans including interest payment are included in the capacity charge which is paid by the CEB irrespective of whether CEB purchases power or not from the IPPs. Any default/ breakdown that may arise from major forces of catastrophically high magnitude events such as natural disasters, civil commotions and riots, acts of terrorism are also covered by an insurance cover for which the premium is paid by the CEB. Therefore, there is no default risk faced by the IPPs.
- As a policy and redress available under the judicial system, any alteration of existing IPP agreements without the consent of all parties involved is impossible.
- The management control of the IPPs in Sri Lanka rests with IPPs either in full or in a majority stake. Therefore, there is no risk of IPPs losing their management oversight.

- The technology and performance risk fully rests with IPPs. This is because, IPPs have the unquestionable right to choose the type of technology and modus operandi in order to minimize the risk.

Therefore, the existing PPAs transfer all possible risks to the public sector, while IPPs enjoy a guaranteed profit plus healthy margins through overestimated cost components. There are several deficiencies in the existing PPAs which generate excessive profits over and above the guaranteed return to the IPPs at a cost to the general public. Major deficiencies are summarized below.

- IPP operations in Sri Lanka are contracted to reflect the relationship between IPPs and CEB in the form of a producer-customer which is a wrong concept. Preferably, the contracts should have been designed to reflect CEB's role as a partner in the project. A major share of the project cost (70 per cent) is serviced by the CEB by way of guaranteed capacity charges backed by a government guarantee. Therefore, CEB should have retained the ownership equivalent to at least up to 70 per cent of the asset value. Accordingly, the maximum asset value to be owned by the IPPs should be limited to 30 per cent or to their equity contribution to the total commercial value of the asset. However, the existing PPAs gives away 100 per cent ownership of the asset to the IPPs.
- The power plants could be constructed on the basis of "turn-key" projects, where the IPPs will receive the plants ready to operate, or on the basis of "greenfield" projects, where the construction work is undertaken by a third party with relevant expertise in power plant construction. However, in Sri Lanka, the Civil construction work of the project is also undertaken by the IPPs without any competitive or tender based bidding process, resulting in a substantially overestimation of costs generating huge profits to IPPs even before the project commence commercial operations.
- All financing costs are paid by the CEB at rates which are well above the normal market rates. Interest payments have also been overestimated by adding SWAP margins on top of commercial interest rates.
- Insurance premiums are quoted through a non-competitive basis at very much above the market rates. In an event of a claim, the benefit goes to IPPs whereas the premium is paid by the CEB.
- Working Capital mainly for buffer fuel, which is added to the initial project cost and recovered by the IPPs after the commencement of commercial operations, are never returned to the CEB.
- Fuel transport rates are well above the market rates. Sometimes they are three times the rate paid by the Ceylon Petroleum Corporation (CPC) to the private sector operators.

The IPPs enjoy above benefits despite their equity contribution being only 30 per cent of the capital cost, while the general public eventually pay for the losses incurred by the CEB due to deficiencies in PPAs. On a broader scale, if these overstated costs are reassessed at 2007 market prices for the total 550 MW thermal power plants operated by IPPs, a substantial amount could be saved in many different forms. It has been estimated that the annual cost of the above unfavourable conditions would be around Rs. 3 billion.

In addition, by giving away the 70 per cent ownership of the asset value, CEB would not only lose its share of annual profits, but also the asset value at the end of the contract period. The loss of profit to the CEB for the total 550 MW thermal power plants operated by IPPs is estimated at approximately Rs. 3 billion per annum for 70 per cent of project cost serviced by the CEB. Therefore, if the unfavourable terms and conditions are addressed, CEB could save approximately Rs. 6 billion per annum.

Further, the loss of 70 per cent of asset value at the end of project life, at current market prices for a 100 MW thermal power plant operated by IPPs is estimated at Rs. 7 billion. If the 70 per cent of asset value is adjusted for the total capacity of power plants operated by IPPs, the CEB could save a substantially high amount through retained assets at the end of project period.

These disadvantageous contracts and arrangements of IPPs reflect serious faults in existing PPAs which have significantly contributed to the losses of CEB and high electricity prices. Unless these deficiencies are rectified, the contracting of cheaper sources of energy, including coal power, may not bring about desired cost reductions in electricity generation in Sri Lanka. Public –Private Partnerships in power generation can bring desirable benefits only if such partnerships are based on an open competitive bidding process based on PPAs with a proper risk/ return sharing basis. While the original contracts would have been entered into between the IPPs and CEB having taken into account the urgency of the specific situation in the country at that time, it is now necessary to re-visit the contracts and revise the conditions so as to provide equal benefits to both the supplier and the buyer.

voluntary measures mandatory for energy conservation. Under this programme, phasing out of inefficient lighting practices, use of energy efficiency building codes and mandatory energy management will be enforced. However, it should be noted that the conservation of energy and the use of energy productively for economic development cannot be affirmed through marginal and micro measures only. A sustainable energy policy will have to be based on a consistently adopted pricing system of energy while forcing energy producers to minimise costs by removing subsidy elements. These are essential features of a new energy policy to reduce Sri Lanka's energy costs to a level compatible with competitor countries and to maintain comparative advantage in production.

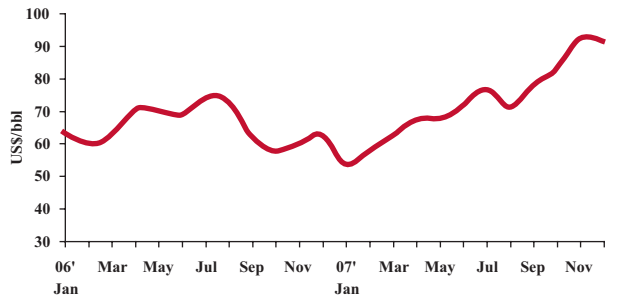
The regulation of electricity sector is to be brought under the Public Utilities Commission of Sri Lanka (PUCSL). The modified draft of the Sri Lanka Electricity Bill has been granted cabinet approval and it proposes to assign the regulatory reforms in the power sector to PUCSL. Accordingly, the regulatory powers held by the Minister in charge of Power are expected to be transferred to the new authority. Under the Sri Lanka Electricity Bill, functional business units of CEB are separated as independent business units in which the accounts and operations can be separated from the rest of the institution. This will enable the comparison of the performance of each functional business unit with others in the CEB.

Petroleum

International oil prices remained high and reached a record high level of US dollars 97 a barrel (Brent) in December 2007. The supply and demand fundamentals, as well as geo-political developments and speculation have affected oil prices to increase. Limited OPEC and non-OPEC supply growth, low OPEC spare production capacity, tightness in global commercial inventories and worldwide refining bottlenecks have been the main supply side drivers of oil price movements. Even with increased prices, continued high demand for petroleum products mainly in China, India and USA, exerted demand pressure in the oil markets. The average international crude oil price (Brent) remained at US dollars 72.40 per barrel, while average price of crude imported by CPC stood at US dollars 71.96 per barrel in 2007.

The petroleum prices in Sri Lanka were revised upward in line with the international oil prices during 2007. Accordingly, prices of petrol (90 octane), kerosene and diesel were raised by 27 per cent, 42 per cent and 25 per cent, respectively, to Rs. 117.00,

Chart 3.3 International Crude Oil (Brent) Prices (Monthly Average) 2006/2007



Rs. 68.00 and Rs. 75.00 per litre, respectively, in 2007. The 15 per cent VAT on petrol imports was reduced to 5 per cent with effect from January 2008 to ease the pressure on consumers. This measure is however, inconsistent with the overall goal of energy conservation through an economically set price structure. The growth of consumption of petroleum products decelerated in 2007, responding to the price hike in the year. Kerosene consumption registered a negative growth responding to the substantial price increase.The government provided a kerosene subsidy only to targeted low income groups by providing an additional grant for kerosene to Samurdhi recipients.

The CPC has implemented several measures to reduce the cost of its oil purchases. The hedging of oil purchases against price volatility was continued in 2007. CPC entered into 6 hedging agreements during the year and has gained Rs. 209 million as risk mitigating income during the year. The construction of a pipeline between Kolonnawa and Muthurajawela oil tank farm has been initiated to improve the efficiency of delivery of refined oil. A refinery expansion project has also been planned at an approximate cost of US dollars 700 million, with a view to further reducing the cost of import of refined petroleum products. Further, the refinery at Sapugaskanda, which was built more than four decades ago, needs urgent modernization to increase its efficiency. The government of Iran has agreed to provide financial and technical support for this purpose.

Several steps have been taken by the government for the exploration of oil in the Mannar Basin. The oil exploration site has been divided into 8 blocks and the government has conducted investor awareness programmes and international road shows. Two blocks have been reserved for China and India. International tenders were called for 3 exploration blocks in September 2007 and the final award of the contracts would be made in the near future. If

Table 3.4 Petroleum Sector Performance

Item	2006	2007(a)	Growth Rate (%) 2006	Growth Rate (%) 2007 (a)
Quantity imported (Mt '000)				
Crude oil	2,146	1,931	6.9	-10.0
Refined products (b)	1,926	2,200	5.7	14.2
L.P. gas	158	152	6.0	-3.8
Domestic L.P. gas production (Mt '000)	15	16	15.4	6.7
Value of imports (c&f)				
Crude oil (Rs. mn)	107,160	114,150	37.9	6.5
(US dollars mn)	1,028	1,011	33.0	-1.7
Refined products (Rs. mn)	114,822	151,141	29.4	31.6
(US dollars mn)	1,078	1,351	22.2	25.3
L.P. gas (Rs. mn.)	9,426	11,462	24.5	21.6
(US dollars mn)	108	127	44.0	17.6
Average price of crude oil (c&f)				
(Rs./barrel)	6,748	7,988	28.8	18.4
(US dollars/barrel)	65.11	71.96	24.9	10.5
Quantity of exports (Mt '000) (c)	162	102	-1.2	-37.0
Value of exports (Rs. mn.)	11,143	8,265	55.7	-25.8
(US dollars mn.)	85	75	18.3	-10.7
Local sales (Mt '000)	3,553	3,802	-6.6	7.0
Petrol (90 Octane)	454	487	-13.7	7.3
Petrol (95 Octane)	24	31	4.3	29.2
Auto diesel	1,633	1,752	-12.3	7.3
Super diesel	9	14	-47.1	55.6
Kerosene	206	168	-18.3	-18.4
Furnace oil	912	986	-11.1	8.1
Avtur	255	267	18.1	4.7
Naphtha	60	97	-66.9	61.7
L.P. gas	170	180	3.0	5.9
Local Price (at period end) (Rs./litre)				
Petrol (90 Octane)	92.00	117.00	15.0	27.2
Petrol (95 Octane)	95.00	120.00	14.5	26.3
Auto diesel	60.00	75.00	20.0	25.0
Super diesel	65.30	80.30	18.1	23.0
Kerosene	48.00	68.00	57.4	41.7
Furnace Oil				
500 Seconds	46.30	54.30	39.0	17.3
800 Seconds	45.80	53.90	39.6	17.7
1,000 Seconds	44.40	52.70	41.4	18.7
1,500 Seconds	43.30	51.70	42.9	19.4
3,500 Seconds	41.00	46.65	46.4	13.8
L.P. Gas (Rs./kg)				
Shell gas	76.80	105.40	20.6	37.2
Laugfs gas	72.72	97.12	10.9	33.6

(a) Provisional
(b) Imports by Ceylon Petroleum Corporation (CPC), Lanka IOC Ltd. and Lanka Marine Services (pvt.) Ltd.
(c) As reported by CPC

Sources: Ceylon Petroleum Corporation
Lanka IOC Ltd.
Lanka Marine Services (Pvt.) Ltd.
Shell Gas Lanka Ltd
Laugfs Lanka Gas (Pvt) Ltd.

successful, that would generate enormous economic and social benefits to Sri Lanka.

Transportation

Transportation system plays an important role in successful implementation of all development activities. The transportation system of Sri Lanka is dominated by road transport, which accounts for about 85 per cent of the passenger miles by all modes of public transport. Government's plan has been to improve accessibility to the whole areas of the country through an efficent and convenient transportation system.

Road Transportation

Road Development

The government has given priority to develop national and rural roads in its infrastructure development agenda. The government has launched several road development projects to improve mobility, connectivity, and opening access to market, thereby reducing regional disparities. The improvement of urban-rural connectivity will reduce urbanization and improve economic efficiency through reduced traffic congestion in metropolitan areas.

Sri Lanka has an extensive road network; the total length of road network is about 117,093 km comprising 11,902 km of national highways (classes A and B), 16,532 km of provincial roads (classes C and D), 64,659 km of rural roads (class E) and 24,000 km of roads belonging to estates and state agencies. The road density of the country is 1.6 km per square km and it is relatively higher than the road density in the South Asian region. However, the main deficiencies prevailing in the road network are capacity reduction due to intense roadside development, particularly in towns and urban areas, poor riding qualities of road surface, weak and narrow bridges and issues relating to traffic management.

Several road development projects were continued in 2007. The construction of the Southern Expressway was in progress in 2007. The funds for the construction of the road section from Kottawa to Kurundugahahethekma and section from Kurundugahahethekma to Godagama have been already secured from bilateral and multilateral loans.The Colombo Outer Circular Road, linking seven high priority trunk roads is planned to be constructed as a four-lane access controlled road, which can be widened up to six-lanes in the future. The land acquisition for the project is underway. The construction work of the first section from Kottawa to Kaduwela commenced in 2007. The land acquisition for the construction of the Colombo-Katunayake Expressway which encompasses a 25 km, four-lane expressway from Colombo to Katunayake airport with 5 flyovers, has been finalized. The initiatives have been taken to construct the Colombo-Kandy Expressway, a 100 km four-lane expressway between Colombo and Kandy with connection to the Outer Circular Road at Kadawata. Steps have also been taken to rehabilitate and improve 280 kms of A and B type roads in the national highway network in the country. The reconstruction of Tsunami affected roads which focuses on rehabilitation of 1,173 kms of national roads and 25 major bridges on these national roads in the

Southern and Eastern parts of the country was in progress in 2007. A new highway bridge at Manampitiya across the Mahaweli river was constructed and opened for traffic in October 2007. Under the Road Network Improvement Project, rehabilitation of 311 kms of roads and 77 bridges were in progress in 2007.

Seventeen flyovers are proposed to be constructed to avoid traffic congestion in the city of Colombo and its suburbs. Out of 17, the construction of flyovers at Gampaha, Pannipitiya, Orugodawatta and Kelaniya Railway crossing were in progress in 2007. The construction of proposed flyovers should be expedited to minimise the traffic congestion in Colombo and suburbs to save energy and time.

Development of rural roads under "Maga Neguma" programme continued in 2007. Under this programme, 6,190 projects were started in 2007. Under "Maga Neguma" programme most of the rural roads are surfaced with concrete which need less maintenance. During the year around 1,202 kms of rural roads were rehabilitated at a cost of Rs. 2,422 million.

Road Passenger Transportation

With various new initiatives, public passenger transportation showed some improvement in 2007. The average number of buses operated per day by Sri Lanka Transport Board (SLTB) increased by 9 per cent to 4,127. The average number of buses operated by the private sector however decreased by 2 per cent in 2007. The total operated kilometres and passenger kilometres of SLTB increased by 16 per cent and 15 per cent, respectively, during the year. Meanwhile, the new registrations of motor vehicles in 2007 decreased marginally. The registration of passenger buses too decreased by 21 per cent in 2007.

Several projects were launched in 2007 to address the existing issues in the sector. Inadequate and poor quality of service, increasing number of accidents and weak enforcement of regulations were some of the continuing key issues in the bus passenger transport service. Several programmes have been launched to address these issues. As 35 per cent of total private buses were over 10 years old, a Re-fleet Subsidy project was implemented in 2007. The objective of this project is to improve the quality of bus service by replacing old buses with new buses and to strengthen the rural transport services. The "Nisi Seriya" night time bus service, "Sisu Seriya" school bus service and "Gemi Seriya" to provide transport facilities in uneconomic, remote areas were continued.

Bus fares were revised from July 2007. As per the national bus fares policy, passenger bus fares were increased by an average rate of 17.5 per cent, mainly to compensate the increases in fuel prices. A committee has been appointed by the National Transport Commission (NTC) to recalibrate the bus operation cost index with a view to make fare revision more realistic.

The financial position of SLTB continued to be weak. The revenue of SLTB for the year 2007 increased by 21 per cent to Rs. 15,036 million mainly due to increased bus fares. As operating cost also increased by 14 per cent during the year, the operating loss amounted to Rs. 1,966 million compared to Rs.2,542 million in the previous year. The government grants to SLTB as bus-season subsidy, uneconomic route subsidy and other school bus projects amounted to Rs. 358 million in 2007.

Railway Transportation

The performance of Sri Lanka Railways (SLR) did not show a significant improvement in 2007. Passenger transportation increased by 4.5 per cent, while goods transportation increased by 6.3 per cent during this period. The railway network of Sri Lanka consists of 1,640 kilometres, but operates only 1,200 kilometres due to the closure of several sections in the North and the East. SLR contributes around 6 per cent to total passenger transport and 1 per cent to goods transport in the country which are insignificant, compared with the performance of the national transportation sector.

Several programmes are being implemented to address urgent issues in the rail transportation. Major issues in the railway sector are weak integration with road transportation, obsolete signalling and communication systems, dilapidated railway infrastructure, shortages of sleepers, engines and coaches, low quality carriages, issues relating to safety, reliability and punctuality, lack of flexible pricing policy and lack of ancillary services. To address some of these issues, the government has decided to import 15 diesel multiple units and 100 carriages to improve the railway operations. 75 carriages at a cost of Rs. 30 million each were purchased in 2007. New diesel multiple units are expected to be in service in 2008. Steps have also been taken to purchase 3 railway engines to streamline fuel transport.

It has been planned to expand the railway network. Initiatives have been taken to construct 420 kilometres of new railway lines between Matara and Kataragama (112 km), from Kurunegala up to

Table 3.5 Salient Features of the Transport Sector

Item	2006	2007 (a)	Growth Rate(%) 2006	Growth Rate(%) 2007 (a)
1 New registration of motor vehicles (No.)	300,522	297,892	30.9	-0.9
Buses	3,346	2,637	61.7	-21.2
Private cars	27,578	22,603	59.6	-18.0
Three wheelers	64,466	43,068	56.9	-33.2
Dual purpose vehicles	7,245	5,193	5.8	-28.3
Motor cycles	156,626	182,508	19.8	16.5
Goods transport vehicles	20,436	18,408	43.3	-9.9
Land vehicles	20,825	23,475	19.5	12.7
2 Sri Lanka Railways				
Operated kilometers ('000)	7,800	8,800	3.0	12.8
Passenger kilometers (mn)	4,311	4,767 (b)	-1.1	10.6
Freight ton kilometers (mn)	138	135 (b)	2.2	-2.2
Total revenue (Rs.mn)	2,491	2,999	27.2	20.4
Current expenditure (Rs.mn)	6,473	7,297	18.5	12.7
Operating loss (Rs.mn)	3,981	4,297 (b)	13.6	7.9
3 Sri Lanka Transport Board				
Operated kilometers (mn)	262	305	1.3	16.2
Passenger kilometers (mn)	12,871	14,769	1.6	14.7
Total revenue (Rs.mn)	12,379	15,036	23.5	21.5
Operating expenditure (Rs.mn)	14,921	17,001	16.5	13.9
Operating loss (Rs.mn)	2,542	1,966	3.6	-22.7
4 SriLankan Airlines				
Hours flown	67,255	69,184	5.6	2.9
Passenger kilometers flown (mn)	9,356	9,841	9.5	5.2
Passenger load factor (%)	76	79	2.8	3.8
Weight load factor (%)	59	60	1.7	1.6
Freight (Mt. '000)	98	98	8.9	0.0
Employment (no.)	5,362	5,213	-0.3	-2.8

(a) Provisional
(b) Estimates

Sources: Department of Motor Traffic
Sri Lanka Railways
National Transport Commission
Civil Aviation Authority of Sri Lanka
SriLankan Airlines

Habarana via Dambulla (80 km), extending the Kelani Valley line up to Hambantota via Padukka, Ratnapura, Embilipitiya (210 km) and Horana to Panadura (18 km). The construction of several railway bridges under a bilateral credit facility was completed in 2007, enhancing safety of the passengers and increasing its efficiency. This credit facility has been extended to construct several other bridges at Nilwala, Bentota, Unawatuna, Kataluwa and Midigama. The private sector participation has been called upon to renovate railway stations and develop selected stations as service centres.

The financial position of SLR has further weakened in 2007. The total revenue increased to Rs. 2,999 million, but current expenditure increased faster to Rs. 7,297 million, resulting in a large operating loss, which increased by 8 per cent to Rs. 4,297 million in 2007. SLR has not adjusted its fares since August 2005, even though the diesel price has since increased by 50 per cent. Hence, it is necessary to introduce a cost recovery and flexible pricing policy, including pricing of season tickets, as the loss of SLR is a direct burden on the taxpayers.

A comprehensive strategic plan for SLR is urgently needed to address the above problems and to enhance mass transportation to support energy and space savings in the wake of rising oil prices. Modernising railway infrastructure, possible electrification of rail tracks, constructing a dedicated railway service to the Katunayake airport, developing an Inter-model transport system connecting sea ports, airports and other road bound transport systems and facilitating freight transportation by rail should be given priority in the strategic plan.

SLR and SLTB own a large number of commercially valuable properties in major cities. These properties can be developed to provide better services to the public through PPP thereby reducing the burden of such developments to the state.

Civil Aviation

The performance of the civil aviation sector was hindered by the slow down in the tourism sector due to the security situation. A total of 5 million air passengers were served at the Bandaranaike International Airport (BIA) in 2007, a 4 per cent increase over the number of passengers in 2006. However, air freight has decreased by 6 per cent during the year. The share of the national carrier, SriLankan Airlines, in passenger and freight operations was 64 per cent and 62 per cent, respectively, in 2007. The domestic air passenger transportation reflected a significant recovery and passenger kilometres grew by three fold during 2007.

Several steps have been taken to further develop the civil aviation sector in the country. Mihin Lanka (Pvt.) Ltd., a budget airline, fully owned by the government, commenced its operations in 2007. However, it is necessary to maintain this airline on a commercially viable basis through a well-prepared business plan comparable with those of the other budget airlines in the region, so as to avoid it from becoming an additional burden to the budget. Meanwhile, operations of SriLankan Airlines further extended its services to cover 54 destinations in 28 countries across the globe. Sri Lanka participated in two bilateral air services negotiations with China and Australia. The Phase II, Stage I of the Bandaranaike International Airport Development Project (BIADP) has been completed and preliminary work for Phase II, Stage II was commenced in 2007. The completion of this project enables BIA to serve 12 million passengers per annum. Initial steps have been taken to construct a second international airport at Weerawila. To produce the competent personnel for the sector a four-year Honours degree course on Transportation and

Logistics Management was introduced by the University of Moratuwa.

Port Services

Port services showed a significant growth in 2007. The total cargo handling recorded a 9 per cent growth in 2007 compared to 2006. The port of Colombo recorded the highest ever annual container throughput in its history in 2007. It has increased by 10 per cent to 3.4 million Twenty-foot Equivalent container Units (TEUs), while total ship arrivals has increased by 5 per cent to 4,710. The healthy export and import growth during the year and productivity improvements through increasing berth and yard capacity, replacing old cranes with modern ones and introduction of a new terminal management system have supported these developments.

Recognising the important contribution of the port sector to the economy and to meet the growing competition for port services in the region, necessary steps have been taken to implement several port development projects. The construction of the Colombo Port Expansion Project (CPEP) has been given priority, as capacity limitations at the port could lead to loss of its market share in transshipment. The CPEP includes construction of a breakwater sufficient to accommodate three terminals, dredging, establishment of a new marine operations centre, relocation of a submarine oil pipeline etc. After completion of the project, it is expected to increase the current container handling capacity up to 5.7 million TEUs by 2010 and further to 8.1 million TEUs by 2015.

Several regional port development projects were also in progress in 2007. The Galle port development by constructing an outer breakwater to facilitate the berth of large vessels and a new multi-purpose terminal to meet the future demand and to reallocate bulk cargo handling from the port of Colombo, commenced with a loan provided under a bilateral arrangement. The new terminal will help to reduce the waiting time of vessels, and will cater to large vessels. Furthermore, the project will greatly facilitate the Southern area development plan, which is presently being implemented. Basic infrastructure facilities required for the new Hambantota Sea Port Development project are being provided. As the international shipping routes fall closer to the Hambantota port, the port is expected to be more competitive on cargo handling as well as the supply of other ancillary services. The first phase of the project is expected to commence by 2010. At the same time, the Oluvil Port Development Project was also in progress in 2007.

Chart 3.4 Volume of Container Handling and Transshipment

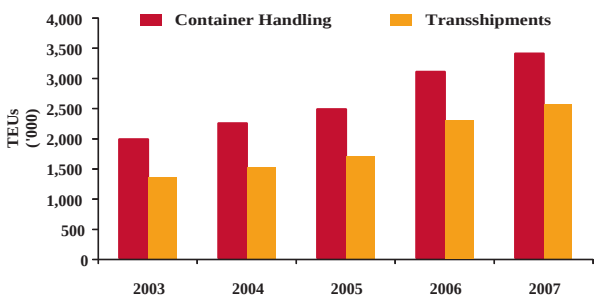


Table 3.6 Performance of Ports Services

Item	2006	2007 (a)	Growth Rate (%) 2006	Growth Rate (%) 2007 (a)
1 Vessels arrived (No.)	4,469	4,710	8.0	5.4
Colombo	4,228	4,326	7.6	2.3
Galle	100	87	-12.3	-13.0
Trincomalee	141	297	46.9	110.6
2 Total cargo handled (Mt '000)	42,661	46,344	14.4	8.6
Colombo	39,428	43,502	14.2	10.3
Galle	735	627	12.2	-14.7
Trincomalee	2,498	2,215	17.7	-11.3
3 Total container traffic (TEUs '000)	3,079	3,381	25.4	9.8
4 Transshipment container (TEUs '000)	2,330	2,608	35.8	11.9
5 Employment (no.) (b)	13,660	13,667	1.0	0.1
Colombo	12,382	12,470	1.4	0.7
Galle	615	577	-1.1	-6.2
Trincomalee	663	620	-3.6	-6.5

(a) Provisional
(b) Only for Sri Lanka Ports Authority
TEUs = Twenty-foot equivalent container units

Sources: Sri Lanka Ports Authority
South Asia Gateway Terminals Ltd.

Water Supply and Irrigation

As water is a basic need for human life, every human being should have the right to access to safe drinking water. The investments made on the supply of safe drinking water and adequate sanitation facilities would cut down expenditure on health, as water-borne diseases lead to most of the health complications. In recognition of the importance of providing safe drinking water and adequate sanitation facilities, a seperate Ministry for water supply and drainage was formed in 2007. The total budgetary allocation for this sector amounted to Rs. 27,330 million in 2007.

Table 3.7 Water Supply by National Water Supply & Drainage Board

Item	2006	2007 (a)	Gtrowth Rate (%) 2006	Gtrowth Rate (%) 2007 (a)
Total number of water supply schemes	291	301	1.0	3.4
Total number of new connections given during the year	81,773	89,313	23.7	9.2
Total number of connections (as at end year)	989,385	1,078,698	9.0	9.0
Total water production (Mn. Cu. Mtr.)	396	425	3.4	7.3
Non-Revenue Water (%)				
Greater Colombo	37.1	37.9 (b)	3.5	2.2
Regions	29.9	26.6 (b)	-3.3	-11.2

(a) Provisional
(b) Estimates

Source: National Water Supply & Dranage Board

Sri Lanka has achieved relatively a higher standard in supply of drinking water compared to many developing countries, but several key issues continue to remain. As at present, around 85 per cent of the population has access to safe drinking water, of which 32 per cent had access to pipe borne water. The key issue in the water sector is the high level of Non-Revenue Water due to leakages, illegal connections, metering errors and un-metered wayside stand posts. Non-Revenue Water amounted to 37.9 per cent in the Greater Colombo area while it was 26.6 per cent in the regions outside the Greater Colombo area, indicating the need for urgent action to reduce the losses.

Several water supply projects were implemented during 2007 to improve the capacity, quality and water distribution. Kalu Ganga Water Supply Scheme Phase I Stage I, Rehabilitation and Augmentation of Labugama-Kalatuwawa Water Treatment Plant, Augmentation of Negombo Water Supply Scheme, Greater Kurunegala Water Supply and Sanitation Project, Rehabilitation and Augmentation of Kirindi Oya Water Supply Scheme are some of such projects, which received special attention. The construction work of the Greater Kandy Water Supply Augmentation Project (Phase I Stage I) was completed by the National Water Supply and Drainage Board (NWS&DB) and Phase I Stage II of the project was commenced. The Towns South of Kandy Water Supply Project was commenced in 2007. The construction of Nuwara Eliya District Group Water Supply Project, which covers water supply for Ginigathhena, Hatton, Maskeliya, Ragala, etc., also commenced in 2007 and will be completed by February 2009. Several other projects, namely Greater Galle Water Supply Augmentation Scheme Stage I, Improvements to Water Supply Schemes in Matara District, Hikkaduwa Coastal Zone Waste Management Project, Towns North of Colombo Water Supply Scheme Stage I were completed in 2007.

The drafting of legislation to strengthen the regulatory framework for water supply and sanitation by the PUCSL was started in 2007, with the support of ADB. The main objective of this technical assistance was to develop regulations for the water sector within the framework of the PUCSL Act to facilitate credible and independent, autonomous, accountable and transparent regulations for the NWS&DB. With the introduction of regulation for the water services industry, PUCSL will take the responsibility for tariff and financial regulation, technical regulation and customer service regulation of the NWS&DB. Within this environment, NWS&DB will be able to improve its operational and financial efficiency, while providing a high quality customer service.

The irrigation sector contributes substantially to the economy, through increasing the productivity in the agriculture sector. However, key issues such as inadequate maintenance, lack of modernization of water allocation systems and inadequate investment continue to exist in the irrigation sector. The absense of an appropriate system to value the water supplied through irrigation systems has led for extensive wastage of water. The government is implementing several mega irrigation projects to increase supply of irrigation water. The construction of Moragahakanda reservoir project and Rambukkan Oya project were commenced in 2007.

3.3 Social Infrastructure Policies, Institutional Framework and Performance

Sri Lanka has achieved a remarkable progress in social indicators as reflected in low maternal and infant mortality, higher primary school enrolment, gender equality in education and higher literacy. Sri Lanka has ranked 99 out of 177 countries in 2005 in Human Development Index (HDI), in the latest Human Development Report 2007/08. However, Sri Lanka has not yet reaped its fullest potential in the sphere of health and education to reach the internationally competitive levels. Education and health services have an untapped potential to enter the global market by enhancing the relevancy, quality and accessibility, as Sri Lanka has a comparative advantage in these areas.

Health

Over the years Sri Lanka has accomplished some of the health goals stated in the Health Master Plan and reasonable improvements in the health status of its people. In achieving these goals, the Ministry of Healthcare and Nutrition has initiated a number of programmes of health development through its network of institutions. However, one of the main issues faced by the health sector is the imbalance in human resources, particularly in view of acute shortage of specialists in the rural areas to provide the required services to people. To address these issues, the Ministry has taken some measures to provide human resources to less privileged areas.

The government continues to support its long standing-policy of providing universal health services free of charge to its people, at all government health institutions. In 2007, the total health budget increased by 18 per cent to Rs. 69 billion which was about 1.9 per cent of GDP. There are 619 government hospitals with 66,866 beds in the country, which accounts to 3 beds per 1,000 persons. There were 11,442 qualified doctors in the state health sector, a doctor for every 1,749 persons and 22,088 qualified nurses, a nurse for every 906 persons. Over the years, the government has allowed the steady growth of the private sector, while increasingly focusing on its own facilities to low income groups. However, the government has an overall responsibility to ensure that patients are protected and get the value for money. Accordingly, the Private Health Services Regulatory Council was established, which was vested with regulatory powers to regulate the private sector health service providers.

A re-emergence of certain communicable diseases and a rising trend of non-communicable diseases threaten the achievements in the health sector. Health Ministry has actively engaged in taking measures to eradicate communicable diseases such as Dengue Haemorrhage fever, tuberculosis and HIV/AIDS. Health Ministry recently launched an immunization programme for Hepatitis Influenza B epidemic. However, further actions need to be taken to educate the public on prevention. At the same time, primary and curative care follow-up activities with screening of diseases and work towards patient and family-centred promotion and prevention should be in place. In recent years, the incidence of non-communicable diseases is seen increasingly. Among non-communicable diseases, mental disorders occupy a significant place. Mortality due to non-communicable diseases such as heart diseases, strokes and cancer is increasing. At the same time, certain emerging diseases and conditions such as accidents, suicides and homicides too show a clearly increasing trend.

Table 3.8 Salient Features of Health Services

Item	2006	2007 (a)
Government		
Hospitals (practicing Western medicine) (No.)	604	619
No. of beds	62,749	66,866
Central dispensaries (No.)	397	387
Total no. of doctors	10,526	11,442
Total no. of Assistant Medical Practitioners	1,274	1,244
Total no. of nurses	20,912	22,088
Total no. of attendants	7,129	7,201
Total government health expenditure (Rs.bn)	58.0	68.7
Current expenditure (Rs.bn)	44.1	51.7
Capital expenditure (Rs.bn)	14.0	17.0
Private		
Hospitals (practicing Western medicine) (No.)	208	212
No. of beds	8,000	8,500
Total no. of Ayurvedic doctors (b)	18,213	18,651

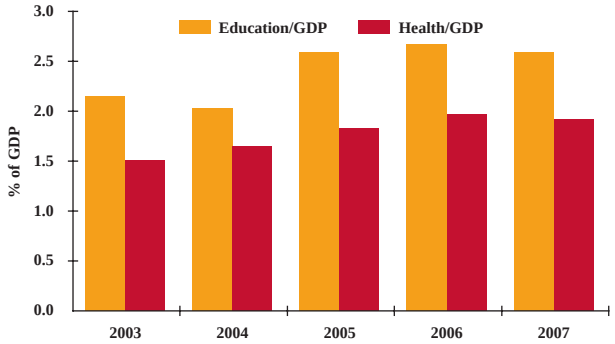
(a) Provisional
(b) Registered with the Department of Ayurvedic Commisioner

Sources: Ministry of Healthcare and Nutrition
Ministry of Finance and Planning
Central Bank of Sri Lanka

Providing a high standard of health facilities free of charge has become a challenging task over the years due to budgetary constraints. The increasing cost of providing other services such as controlling the emerging and re-emerging diseases and promoting preventive healthcare facilities have increased the budgetary allocation. It has been reported that a significant quantity of medicine provided by the government hospitals free of charge is not administered by the patients properly and is wasted as they do not know the economic value or the cost of such medicines. Hence, it is important to educate the public of the economic value of free health services provided by the government and make it voluntary for high income groups who obtain public health services to pay full or part of the costs incurred by the government when they are treated at public health institutions. Funds generated through this exercise can be utilized to upgrade the quality of the existing health services.

Over the years, the state sector health care institutions have emerged as quality service providers when compared with the private sector health care institutions. It is the medical and technical staff attached to state hospitals that basically serve in the private hospitals. Taking this reputation into account, the base hospitals in the state sector could run fee-levying wards where patients in an upper

Chart 3.5 Government Expenditure on Health and Education



category of income could receive quality treatment. This would enable the state sector hospitals to recover a part of their costs and operate them in competition with the private sector.

Several health projects were in progress in 2007. The basic nurses training certificate course has been upgraded to a diploma course and the Ministry has worked towards its target of training 15,000 nurses during 2005-2007. In addition to the internal funds, to mobilize foreign funds and assistance, the Ministry of Healthcare and Nutrition has entered into Memorandums of Understanding with donor agencies such as World Health Organization (WHO), United Nations Children's Fund (UNICEF), Japanese International Cooperation Agency (JICA) etc. to implement various health projects.

Education

Sri Lanka has been ranked high on the achievements in education in terms of high literacy rate, high levels of primary school enrolment as well as gender parity in access to education and achievements, when compared to other countries in the region. The policy of providing education free of charge from grade one to university level, sufficiently high school density and other welfare programmes such as free textbooks, implemented for decades have contributed to these achievements. Though Sri Lanka has achieved remarkable standards in education, there are several weaknesses, which should be addressed through a coordinated and continuing reform agenda. The need for further improving secondary school achievements, below average performance in competitive subjects like Mathematics and Science, low competence in English, poor exposure to information technology, unequal distribution of available resources are some of the major issues faced by the general education sector.

The government continued the Education Sector Development Framework and Programme (ESDF), which has four over-arching goals: increasing equitable access to basic and secondary education, improving education quality, enhancing the economic efficiency and equity of resource allocation and distribution and strengthening governance and service delivery. The ESDF is implemented as a five year rolling plan, and has a strategic focus on enhancing learning outcomes, especially in skills development. A total of 22,000 unemployed graduates were recruited to the teaching service under the Graduate Employment Scheme. These recruits were granted basic training for 21 days to adjust them for classroom teaching from the education faculties of universities. Though this could be viewed as an urgent measure, it is necessary to train these teachers properly in order to maintain the long-term sustainability and quality of the public school system. Teacher development programmes and upgrading of teachers' training colleges were continued in 2007. With the active contribution of the National Institute of Education, the Teachers' College curricula

Table 3.9 Salient Features of General and University Education

Item	2006	2007 (a)
1. General Education		
a. Total number of schools	10,461	10,429
Government schools	9,714	9,678
o/w National schools	327	328
Other schools	747	751
Private	93	93
Pirivena	654	658
b. Students ('000)	4,001	4,098
c. New admissions ('000) (b)	322	335
d. Teachers ('000)	217	219
e. Student/Teacher ratio (government schools)	19	19
f. Total govt. expenditure on education (Rs. bn) (c)	78.3	92.5
Current	61.1	72.6
Capital	17.2	19.9
2. University Education		
a. Universities	15	15
b. Students (d)	65,206	66,996
c. Lecturers	4,016	4,304
d. Number Graduating (d)	11,713	n.a.
Arts and Oriental studies	4,405	n.a.
Commerce & Management studies	2,198	n.a.
Law	327	n.a.
Engineering	809	n.a.
Medicine	896	n.a.
Science	2,348	n.a.
Other	730	n.a.
e. New admissions for first degrees (d)	16,585	17,196

(a) Provisional
(b) Government schools only
(c) Includes government expenditure on higher education
(d) In all Universities, excluding the Open University of Sri Lanka

Sources: Ministry of Education
University Grants Commision
Ministry of Finance and Planning
Central Bank of Sri Lanka

Box 8

Higher Education in Sri Lanka – The Way Forward

The university education system in Sri Lanka, which is very largely a state owned monopoly, now comprises 15 universities operating under the University Act No. 16 of 1978 and 16 undergraduate and postgraduate degree awarding institutions come under the purview of the University Grants Commission (UGC). UGC set up under the University Act, is solely responsible for planning and coordinating of university education, selecting of students for state universities, allocating public funds to higher education institutions and maintaining academic standards in state universities. Admission to university education in Sri Lanka is extremely competitive, and not more than 14 per cent of those who qualify for university education could gain admission to a university.

Outside the UGC system, a large number of private institutions, on collaboration with foreign universities, have been given Board of Investment approval, too offer degree programmes in Sri Lanka. They cater to those who are unable to enter a state university in Sri Lanka or afford to finance university education abroad. The education standards and quality of these institutions are not assured by any regulatory authority in Sri Lanka. Reports on some of these institutions indicate that they are affiliated to dubious institutions abroad.

Foreign universities in developed countries and in some developing countries such as India, Nepal, Bangladesh and China serve as a " safety valve" for Sri Lankan students who cannot gain admission to a local university. This type of private investment in human capital investment is efficient in terms of economics, since it is demand driven and made only after a careful analysis of private returns to education. This is in contrast to a basically supply driven public university education where students follow courses that are offered to them and are not on the basis of future private returns. The inevitable corollary is that the foreign graduates get picked up by employers, leaving a vast array of local graduates unemployed, making it necessary for the government to employ them eventually as the "employer of last resort".

The existing higher education system in the country faces serious problems due both to its quantitative and qualitative limitations. Quantitative limitations arise due to the limited capacity in universities to accommodate all those aspiring for the university education. Qualitative limitations are two-fold: viability of the system to produce graduates in fields needed by the economy, and failure to ensure quality assurance in the degree programmes to be on par with those offered by reputed international universities. Some of the key problems include lack of focus on knowledge, skills and attitudes; absence of a consistent overall policy for university education; inadequate coordination and linkages among public, private and non-governmental stakeholders; inadequate linkages between university education and Technical and Vocational Education and Training (TVET); low quality and irrelevance to meet local needs and failure to be on par with international standards; paucity of research work; lack of private sector participation; and frequent disruption of university activities due to short sighted political goals of some of the students.

One of the major problems of the university education in Sri Lanka is the mismatch between the supply and the demand. The country has a supply driven university education system with insignificant relevance to labour market and economic requirements. About 32 per cent of the students admitted to local universities study social sciences and humanities and a significant proportion of such graduates find it difficult to obtain productive employment; they remain unemployed or underemployed for a long period of time leading to frustration and creating social problems. Financial or resource constraints also limit the improvement of university education. Given the high burden on the budget, other competing needs often get priority for public goods allocation, leaving university education static in terms of GDP which presently stands at 0.5 per cent. Hence, universities will have to find alternative funding sources to supplement the funding by the government.

The university education system in Sri Lanka continues to function within a government control regulatory framework. The system is highly centralized. There is an urgent need for introducing a market oriented efficient mechanism to the existing university education system. At the same time, it needs a quality assurance rating system as well to help parents and students to make informed choices regarding university education. To compel universities to upgrade and maintain quality, government grading could be based on the quality rating obtained by universities. Such a competitive environment is necessary to promote academic and research excellence of universities.

Funding is one of the major obstacles since the university education solely depends on government funds. Given the growing fiscal constraints, alternative sources of funding for higher education need to be explored. In this respect,

cost-sharing mechanisms to generate additional funds would be useful. All students could be provided with a statement, which indicates the value of the courses offered by the university. Those who can afford may then contribute full or part of the value, on an entirely voluntary basis. A students' loans scheme could also be arranged to facilitate these efforts. However, such innovations would be constrained by the existing administrative and financial regulations at university level. Overall, the existing administrative system needs to be reformed without compromising academic standards, quality, responsibility and examination integrity. Though universities already enjoy a considerable autonomy, time consuming administrative procedures result in inefficiency and lower revenue that could be generated through consultancy, research activities, and study programmes.

Entrepreneurial orientation at the university education is another potential avenue for alternative funding as well as for attracting foreign students at least from South Asian countries. Sri Lanka can grasp examples from India, Bangladesh and Pakistan in this context. Though the Sri Lankan economy is open to foreign direct investments, the education sector is lagging behind and investment opportunities in the sector are implicitly restricted.

All state funded universities could, in addition to training their own internal students, accredit other institutions to deliver their courses and prepare the students to face their approved evaluation criteria to obtain a degree, which is permitted by University Act No.16 of 1978. The concept "University for All" requires all the state universities to actively engage in training both internal and external students. It would help universities to expand their outreach and universalize access to higher education. Meanwhile, it is necessary to impress upon the internal students that the introduction of external degrees and off-campus students is not privatization of universities or higher education but a creation of Public Private partnership (PPP) to safeguard the fundamental right of all students who pass the advanced level to pursue higher studies.

Increasing private investments in the university education could produce greater benefits including enhanced access to university education. While it would increase the resource mobilization to the university education, it would also help improve the quality of education with the increased competitiveness. Creating a favourable environment for private investment in university education requires developing new legislation, regulations and accreditation policies. The government could seek alternative methods to encourage private investment in university education such as establishment of private degree awarding colleges/institutions in selected disciplines with quality maintained at high standards, establishment of affiliated university colleges, provision of infrastructure facilities, establishment of joint or collaborative degrees, scholarships and research programmes with public universities, etc. In the meantime, the existing university education system could be improved with proposed and ongoing reforms targeted at quality improvement, expanding the availability of opportunities for university education, and creating a more competitive environment as well.

are being revised and a professional development programme was implemented for the academic staff in teachers' colleges. A systematic scheme has been prepared by the Ministry of Education for balancing of teacher resources in the country-wide school network.

The tertiary education system has not been sufficently geared up to face the challenges of a dynamic, market-oriented economy. In particular, the existing university education system in Sri Lanka has not kept pace with the developments in other sectors and remained far behind the world standards. Though there is a significant development in the vocational training programmes they are also mostly supply driven, rather than focusing on the labour demand of the public and private sectors.

Higher education sector continued to suffer from inherited weaknesses. In addition to the low quality and low standards of higher education, the system has been able to cater to only 14 per cent of the qualified students. This has resulted in a large number of unsuccessful students with ability to pay making use of higher education facilities in foreign countries. The private sector investments in human development in this manner is an encouraging sign. Unlike the public sector supply driven human development, private investments in this sector would be made after a careful assessment of the demand, rate of return on education and future employability of graduates both in Sri Lanka and abroad. When they are employed abroad, since their families stay back at home, there will be a continuous flow of private remittances to the country, thereby easing the gap in the current account of the balance of payments. However, Sri Lanka should also harness its comparative advantage in education by permitting private institutions to invest in building human capital through enhancing opportunities for higher education.

The quality assurance of such institutions would basically be made by parents who pay for the services by subjecting them to market discipline. To facilitate it, an internationally comparable rating system through private initiative could be promoted.

The university admission procedure is more biased towards social sciences and humanities. Considering the supply side of the state universities, about 32 per cent of the students admitted to local universities study social sciences and humanities and a substantial proportion of such graduates find it difficult to obtain productive employment; they remain unemployed or underemployed for a long period aggravating the problem of educated unemployment and frustration and social problems of various sorts. With respect to graduate unemployment, one of the major problems in Sri Lanka is the mismatch between supply and demand. The country has a supply driven education system with little relevance to labour market conditions and to entrepreneurial culture.

Since the education service is provided free of charge from grade 1 to the university level, students are not aware of the expenditure incurred by the government on them. It is important to create awareness among university students, at the time of both enrolling and graduating about the financial value of their university education in terms of the value of the education provided by the government, with a view to induce them to strive for academic excellence and a reasonable return on investment.

Housing and Urban Development

The Ten-Year Horizon Development Framework emphasises the importance of sheltering the nation through an adoption of new parameters based on criteria such as population density, land suitability and environmental sustainability. Therefore, housing development should take into account the changing lifestyle of people, demand for amenities, nature of livelihood and other determinants. Adoption of vertical development approach in urban areas and retaining dispersal developments in rural areas is needed. The participation of both the public and private sector is also equally important for the smooth implementation of housing programmes, while minimising cross-cutting issues. Meanwhile, the development strategy of the housing sector highlights the need of a well functioning mortgage finance system including a secondary mortgage market, which can cater to the housing needs of the public.

Several key issues remained as challenges for the development of the housing sector. A lack of coordination and consistence between facilitating agencies is one of the bottlenecks faced by the housing sector. The shortage of suitable lands for residential purpose in urban areas, rapid escalation of the value of lands in major cities and suburbs, blocking out and selling lands by private developers without proper utilities, poor maintenance of urban housing schemes and burden on the government to maintain them and a lack of skilled labour in the construction sector constrainted the development of the housing sector.

The Urban Development Authority (UDA) initiated several mega projects throughout the country with special attention to the backward regions of the country. In 2007, major projects implemented included the Greater Hambantota Development, Greater Dambulla Development, Greater Galle Development, Trincomalee Metro Development would act as catalysts for urban development in these regions while facilitating the rural development of the surrounding areas. Total expenditure on urban development projects amounted to Rs. 984 billion in 2007.

Poverty Alleviation: Safety Nets Vs Safety Ropes

There is a widespread consensus on the importance of safety nets as a key component of a public poverty reduction strategy. Safety nets comprise policy and programme instruments such as general food subsidies, targeted income transfers, school feeding and small scale funds. They are designed to reduce poverty and to protect the income entitlements of vulnerable groups. Sri Lanka enjoys the most extensive social protection programme in South Asia and Samurdhi is the main safety net programme implemented by the government. While safety nets are important to prevent the poor from facing greater depths, they should be accompanied by safety ropes, to help them to cross the poverty line within a given period of time. In the absence of such

Chart 3.6 Samurdhi Recipients and Expenditure

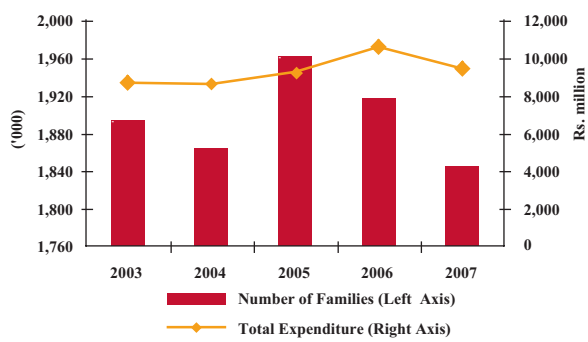


Table 3.10

Samurdhi Welfare Programme
Number of Beneficiary Families and Value of Grants[a]

Year	Income Supplementary Programme		Dry Ration Programme		Nutrition Programme			
	Number of Families (b)	Value (Rs.mn.)	Number of Families (b)	Value (Rs.mn.)	Number of Families (b)		Value (Rs.mn.)	
					Rs. 500	Rs. 200	Rs. 500	Rs. 200
2002	1,887,237	8,637	145,777	1,453	-	83,171	-	200
2003	1,892,842	8,658	222,652	1,228	-	90,866	-	218
2004	1,864,058	8,593	155,048	2,226	-	103,967	-	250
2005	1,960,664	9,244	98,223	1,142	-	122,186	-	293
2006	1,916,594	10,570	122,269	1,359	47,126	139,085	283	334
2007 (c)	1,844,660	9,423	105,105	1,234	43,334	58,686	260	141 (d)

(a) Number of families decreased in 2007 due to improvement in targeting and increase in income levels.
(b) As at end year
(c) Provisional
(d) As per information available as at 15.03.2008

Source : Department of the Commissioner Genaral of Samurdhi

safety ropes, the poor will continue to remain poor due to moral hazard practices by them and so called immoral hazard practices by others who would like to exploit pains of poor to their advantages.

Samurdhi programme was streamlined further in 2007 and the total allocation for the Samurdhi programme was Rs. 9,600 million in 2007. The programme was streamlined with the help of a new selection procedure named "Janasbaha". Under the new selection process only the deserving beneficiaries were selected for Samurdhi relief with the recommendation of representatives from respective villages. Previously about 40 per cent of the population enjoyed Samurdhi relief though the existing poverty level is around 15.2 per cent (As per Household Income and Expenditure Survey - 2006/07 conducted by the Department of Census and Statistics). The new selection process targeting the needy groups has reduced the number to an estimated 38 per cent of the population indicating the need for improving the targeting. Given the continued high budgetary cost of the Samurdhi programme, it is necessary to link the poor to the properly designed safety ropes programmes to enable them to exit poverty and thereby become responsible citizens in the mainstream socio-economic political life. It is time now to re-visit the Samurdhi programme with improving it on the basis of the ultimate goal of eradicating poverty.

Samurdhi Authority of Sri Lanka has launched several programmes for community development and capacity building. "The Jathika Saviya Gam Pubudu Livelihood Development Programme" and "Jathika Saviya Gama Neguma Awareness Programme" etc. were continued in 2007. These programmes had focused on rural development to upgrade the living standards of the poor families and infrastructure development at village level. The allocation for Economic Infrastructure and Rural Development programme was Rs. 1,127 million in 2007.

Environment

A sustainable economic growth with minimum damages to environment should be a national priority. As most economic activities could have environmental implications, it is important to strike a balance between economic development and environment protection. Though there is a wide range of policies, laws and regulations in place, there are some weaknesses in the enforcement. As a control method, fiscal and financial instruments are widely used in many countries. In recent years, Sri Lanka also has taken some initiatives to use economic instruments such as taxes in managing the environment.

Strategic Environmental Assessment (SEA), which is a sustainability assessment of a proposed policy, a programme or a plan, is a tool effectively used worldwide to assess consequences of a proposed policy or a development project and to incorporate their findings to such policies. The Central Environment Authority (CEA) in Sri Lanka also has taken action to prepare SEA in assessing the environmental impact of major development projects such as Trincomalee Development Plan. The CEA has issued orders prohibiting manufacture or use of polythene or any other polythene product of 20 microns or below in thickness with effect from 1st January 2007. Management of solid waste, especially Municipal solid waste is a growing problem in urban areas of Sri Lanka mainly due to absence of a proper management system. The CEA has developed a set of technical guidelines on solid waste management for the local

authorities, investors and other stakeholders. The Non Government Forum was held in 2007 to implement a coordinated network to obtain their active participation in environmental management and protection. Meanwhile, the CEA has launched public awareness programmes for various target groups to obtain their participation in environment conservation.

The Budget 2008 proposed to introduce an Environment Conservation Levy Act to promote environment conservation. The CEA has been vested with the powers to impose and collect the Environment Conservation Levy. Individual businesses or items considered as harmful to the environment will be subjected to the Environment Conservation Levy. Provisions are available in the Act to impose the levy on any item or business, which is considered as harmful to the environment. Some of such items are, electric and electronic equipment, batteries, asbestos etc. Green Cess on plastic products has already been imposed in Sri Lanka and it is proposed to extend the Green Cess to other identified products. Green surcharge is proposed to be imposed on environmentally unfriendly products, which have environment friendly alternatives.

Box 9 Carbon Trading

"Carbon Trading" is an international market set up to tackle global warming by trading the reductions of emissions of greenhouse gases (GHGs) at competitive prices.[1] The greenhouse effect is one of Earth's natural processes that helps to regulate the temperature of our planet[2]. However, an atmospheric imbalance, in the form of an over-concentration of GHGs, would have disastrous consequences on the ecosystem, including human beings, as the earth would be warmer and the sea level would rise. The higher level of human activity from around the 18th Century, particularly, the generation of electricity through the combustion of fossil fuels, such as coal, oil and natural gases, releases the carbon that has been stored in them over the years. This has raised the concentration of GHGs in the atmosphere, particularly carbon dioxide (CO_2), to 360 particles per million (ppm) from 280 ppm recorded in the Pre-Industrial Era. This has led to global warming, which in turn, has led to changes in the Earth's climate. If the present trend continues, by 2100, the Earth's average temperature could rise by about 1.5 – 5.0 degrees Celsius, as a result of which, the sea level may rise by as much as 1 metre, submerging almost 3 per cent of the world's land area. As a result, the global community has considered climate change as a serious issue affecting human beings.[3] In view of this, the United Nations adopted the United Nations Framework Convention on Climate Change (UNFCCC) in 1992, to stabilize the anthropogenic greenhouse gases at a level that will not have adverse impacts. Under the UNFCCC, the Kyoto Protocol[4] was adopted in 1997 to cut 5.2 per cent of overall GHG emissions of industrialized countries and created "Carbon Trading" as an economic instrument to cut back on the production of GHGs, which in turn, is expected to reduce global warming.

How is Carbon Trading done?

Under the Kyoto Protocol, 39 developed countries were given various emissions reductions targets: i.e., USA - 7 per cent, Europe – 8 per cent, Japan – 6 per cent, etc. from their 1990 levels of emissions. They could reduce their emissions levels through International Emissions Trading, Joint Implementation, or Clean Development Mechanism (CDM). Among them, CDM is the only mechanism relevant to developing countries like Sri Lanka.[5] CDM involves the implementation of a project that reduces emissions or absorbs CO_2 from the atmosphere, by an entity in a developing country. The emissions reductions are then

[1] As sunlight passes through the Earth's atmosphere, its energy is captured by the Earth's surface, land, water, and biosphere and re-emitted back into the atmosphere. While much of this energy passes back into space, some of it is absorbed by water vapour and certain other gases in the atmosphere, such as carbon dioxide, ozone, nitrous oxide, and methane. These gases, which prevent heat from escaping back into space, are called the greenhouse gases, (named after "greenhouses", which are artificial enclosures which enable the maintenance of temperatures required for vegetation in cold climates), because they heat up our world.

[2] The rise in temperature that the Earth experiences because of the GHGs is called the Greenhouse Effect. Without these gases, the Earth's average temperature is estimated to be about 60 degrees Farenheit (approximately 35 degrees Celsius) colder (Environmental Protection Agency, USA).

[3] The 2007/2008 Human Development Report (HDR) has identified climate change as the most important human development challenge of the 21st Century. It argues that climate change poses many challenges including the effective management of the environment in the Earth, initiating deep and early cuts in GHGs emissions and undertaking prompt and strong collective action based on shared values and a shared vision.

[4] The Kyoto Protocol is an outcome of a meeting held in Kyoto, Japan in 1997 to discuss the causes and consequences of climate change and methods by which these issues could be addressed.

[5] International Emissions Trading involves developed countries wherein those with surpluses of carbon credits trade with those that are in deficit. Joint Implementation enables developed countries with relatively high costs of domestic GHG reduction, to set up projects in other developed countries that have relatively lower costs, such that the GHG reductions of the project in the latter are counted towards the emissions reductions of the former.

measured and bundled together as carbon credits. Each 10,000 tons of CO_2 that is saved makes up one carbon credit. These carbon credits are then sold to entities in developed countries for them to meet their emissions reduction targets.

- **Buyers:** Any entity, typically the government, business or individual in the 39 developed countries, which are required to abide by the emissions targets. This includes entities in the developed countries which may be facing various constraints to reducing GHG emissions, which may be better off purchasing the carbon credits earned by sellers of carbon credits in developing countries.
- **Sellers:** These are the entities that deliberately reduce GHG emissions in developing countries. This could be achieved through the implementation of renewable energy projects instead of those that promote the combustion of fossil fuels. For example, implementation of projects that are fuelled by wind power, hydropower, biomass, etc. would result in the accumulation of carbon credits.

Ideally, all firms in the 39 developed countries should cut emissions by the specified amount. However, in reality, the companies face different constraints which would make it more difficult and costlier for some of the companies to commit to their emissions reduction goals. Due to the nature of their activities, some may find it much easier to lower emissions by even more than the legally binding level, at a relatively lower cost. Those who cannot reduce their emissions more cheaply could purchase carbon credits from those who implement carbon reducing projects in developing countries, at a cost which is less than what they would have had to spend in order to comply with their emissions targets. This would entail a win-win solution to an environmental problem as the overall emissions are cut, whilst total cost would be reduced. However, problems of complexity, monitoring, enforcement, and potential disputes in the initial allocation methods and cap are often cited as constraints for emissions trading.

How Sri Lanka can benefit from Carbon Trading?

Sri Lanka's national emissions limitation commitment for 2008-2012 period is less than 1 ton per capita, which is lower than the world average of 4 tons per capita.[6] In developed countries such as the United States, the limitation commitment is 20 tons per capita. This vast difference creates a market which offers a significant potential for Sri Lanka to benefit from carbon trading activities.

[6] Environmental Management Consultants

Power generation is one of the main sources of CO_2 emissions. It accounts for four in every ten tons of CO_2 dispatched to earth's atmosphere. For example, a single megawatt renewable energy power plant using bio-mass, is capable of saving up to about 5,000 tons of carbon dioxide per year; i.e., every kilowatt hour of electricity generated by the renewable energy power plant can save up to 0.63 kg of CO_2 in Sri Lanka.[7] Currently, each carbon ton that is saved, fetches about 15 to 20 euros (US dollars 20 to 27) in the international market. By implementing pollution control technology, Sri Lanka's industries could reduce CO_2 emissions further. As such, carbon trading could turn out to be a new income source for the country. Budget 2008 has indicated that Sri Lanka could reduce around 3 million tons of CO_2 emissions per year, which could be a valuable source of foreign exchange earnings for the country. Power generation (hydro, wind, solar), biomass, energy conservation, transportation, municipal solid waste disposal and forestry are the major areas that have been identified as potential areas that could benefit from CDM in Sri Lanka.

However, Sri Lanka is still in the initial stage of CDM project implementation compared to many other developing countries. There are only a very few CDM projects registered from Sri Lanka which includes mini hydro power projects and renewable energy projects that are selling their carbon credits to developed countries[8] .

A Carbon Fund for Sri Lanka

As Sri Lanka is a small country, the CDM projects are relatively small. These small projects are not attractive to the international buyers. However, when pooled or bundled together, this risk could be mitigated. Thus, the setting up of a Carbon Fund for Sri Lanka, as proposed in Budget 2008, would encourage and facilitate Sri Lankan industrialists to undertake emission reduction projects. The Carbon Fund would be a part of the proactive strategy to be implemented by the government to reap benefits from this source. It will provide overall support for the country to enter into the global CDM market through the provision of financial and technical assistance.

[7] Ministry of Environment and Natural Resources

[8] Under the present arrangements, project proposals must be sent to the Ministry of Environment and Natural Resources which submits them to the Executive Board of the CDM (EB/CDM). Once the projects are approved, the operational activities of the project are audited by independent firms certified by the UNFCCC Executive Board, to verify the quantity of carbon reductions, using internationally accepted methodologies. These audit firms would report back to the EB/CDM, based on which the EB/CDM issues carbon certificates to the local companies. The local companies could then go through one of several environmental consulting firms or approach the Carbon Fund to sell its carbon credits to the developed countries which wish to purchase them.