

4.5 Objectives and Strategy for Social Development

4.5.1 Major issues for social development in Southern Area

(1) Education

Sri Lanka's consistent investment in the education sector has led to high school enrollment ratios without gender disparity and higher literacy rate than in other developing countries with the comparable income levels. Further challenges in this sector, particularly related to Southern Area, are posed by the following.

Curricula are traditional, focusing on rote learning and clerk type skills and not relevant for the changing needs. The characteristics of G.C.E. O and A level examinations are to prepare for university education, which is for only about 2% of the age group. Students are unsuited to the needs of the market on one hand, and students tend to be influenced by those curricula on the other hand to have the preference for desk work jobs especially in public sector and not to recognize the importance of manufacturing and/or taking risks for business achievement.

The quality of teachers is inadequate. The percentage of qualified teachers is 71% nationally. In Southern Area this problem is more serious since the ratio of qualified teachers are lower than the national average in four districts of Hambantota, Ampara, Moneragala and Ratnapura. At present too many of the unemployed are absorbed in teaching without training. Teacher training is in poor quality and ineffective, with minimal coordination among institutions offering training.

The teacher deployment system does not make teachers available in areas where needed. Also the number of teachers in certain subjects are not adequate such as mathematics, science and English. There is a marked difference between the student to teacher ratio in Tamil medium schools and Sinhala medium schools. The national average ratio is 21 to 1 in Sinhala speaking schools and 29 to 1 in Tamil medium schools. In Southern Area, the ratios for Tamil medium schools are worse in Ampara (27 to 1), Moneragala (36 to 1) and Ratnapura (36 to 1) compared with the national average of 22 to 1.

Inaccessibility to school is a major issue in remote rural areas, caused partly by too few schools and partly by inadequate transport and roads, resulting in poor or non attendance by students and reluctance of trained teachers to accept assignment. Access to quality schools

is also unequal. National schools and type IAB schools are located generally in urban areas, receiving more resources.

School facilities are not adequate. School buildings are old and poor, and equipment are deficient, especially in remote areas. Many schools lack sufficient classrooms in Southern Area too, therefore they use one big hall for several classes without partition, which deters students concentrating and hearing the teacher's voice.

Repetition ratios in the Southern Area are higher than the national average except in Galle district.

Management capability is inadequate. The training of administrative personnel is not enough to catch up with the expansion of education system. In addition, following the constitutional amendment, certain responsibilities have been decentralized. Consequently management capability at each level is rather weak. Management of individual school is also inadequate.

Only about 2% of the age group enter universities in Sri Lanka, which is lower than Asian average of 8%. Many people stop education at year 11 (gross school enrollment ratio of year 9 to 11 is 84% and that of year 12 and 13 is only 28% in 1992). Besides, the entrance to university is limited, with only 9,800 students allowed in 1995.

(2) Health

Sri Lanka has achieved fairly good health services, such as easy access to health services, adequate service provisions free of cost to patients, and higher coverage of immunization of infants and women. Those have contributed to much higher health status of people in comparison with other developing countries with the similar income level. However there are some areas for improvement.

Preventive health care and curative health services are not effectively integrated. Health promotion and disease prevention activities are conducted without supportive linkage with the curative institutions. On the other hand hospitals provide mainly curative care without effective preventive and promotive components.

There is lack of a formal referral system which regulate the patients to different level of medical institutions according to their medical care needs. Therefore the hierarchical system of primary, secondary, and tertiary health institutions is not functioning well. People tend to bypass primary health institutions, which causes under-utilization of primary

institutions and overcrowd of higher level institutions. Secondary and tertiary level hospitals have to spend time and resources for the patients who can be treated in primary level institutions, undermining cost-effectiveness and the quality of care desired at higher level hospitals.

Quality and supply of health care services are inadequate. Especially primary level institutions suffer from insufficient manpower, equipment and facilities. This is one of the major reasons for people to go to higher level hospitals. Some health institutions in the Southern Area lack some basic equipment such as blood pressure measures and sterilizers as well as ambulances.

There is a geographical disparity of health care and status among regions. In Southern Area, Ampara, Matara and Moneragala districts have the worst indicators of maternal mortality rate, worse than the national average; Ratnapura district has higher infant mortality rate and neo-natal mortality rate than the national average and Southern Area. Some areas suffer from the lack of sufficient health care service. For instance, Hambantota district does not have an adequate high level hospital, causing the people to go to hospitals in Matara and Badulla resulting in worse health indicators in the latter districts.

Undernutrition is still prevalent in Sri Lanka especially among children and women. Southern Area has a high undernutrition rate as well. Pregnant women suffer from anemia and their undernutrition is the major cause of low birth children.

There are two patterns of mortality; while mortality from heart disease is increasing, there is still a large number of preventable deaths from diarrhea and infectious diseases caused by poor environmental sanitation. The number of inpatient morbidity rates for intestinal infections and malaria has increased as well as the number of hypertension, and heart disease.

Admission to medical universities is limited, and G.C.E. A/L holders have to wait for about two years for getting admission. Since course availability is also limited, they have to wait several months for starting the next course after they are admitted. After final examinations finish, the successful students have to wait long to get internship. As a result, long-waiting students lose their skills. Quality of nursing education is inadequate, because the number of trainers is not enough, teaching facilities are not enough, curricula and teaching methods have not met the changing needs of nursing services, and some other reasons. The education and training programs for different categories of health manpower lack in community orientation. Many health staff needs skills of primary health care and responsibilities concerning non-technical components.

Deployment of manpower is unequal among regions. Southern Area in general suffers from the shortage of medical officers and nurses. Moneragala district has no specialist such as general surgery and obstetricians, and Hambantota district has only two, while Galle district has 42 specialists and Colombo has 210 in 1993. Southern Area also lacks paramedical staff, especially preventive public health staff such as public health nurses and public health inspectors.

(3) Social welfare

Social welfare system

The welfare system has some basic weaknesses, the main one being inconsistency in eligibility criteria and implementation of criteria. The inconsistencies of eligibility criteria within and between programs, frequent misapplication of criteria for implementation purposes, and the difficulty of determining real household incomes result in uneven distribution of assistance, with some households receiving many kinds of assistance and other needy households receiving no assistance.

Welfare mentality

The fundamental approach to poverty seems to be one of "treating symptoms rather than curing and preventing the disease." This acts as a disincentive to self-reliance, creating what is called a dependency syndrome. This mentality may be largely responsible for the minimal number of households receiving JSP and JTF supports who have become self-supporting.

The issue is not to create more subsidy-based poverty alleviation programs, but rather, to create employment opportunities and give the poor the skills they need to benefit from these opportunities. Welfare subsidy programs undoubtedly are well-intended and they are easy to implement. However, they exacerbate poverty in the long term, resulting in wastes of limited resources of the Government. Moreover, recurrent costs constituting a large portion of the total welfare expenditure may be seen as an ineffective way to spend money, leading to political and social outrages.

(4) Technical and vocational education and training

The fundamental weakness of vocational training is that it has been supply rather than demand driven. Some courses are selected principally on the availability of instructors. Until recently, employers had no input into curricula or training standards. Consequently, many of the courses have not been relevant nor up to industry standards.

Administration for technical and vocational education and training is characterized by unclear responsibilities, poor coordination, low staff capacity, insufficient and unsystematic management of information, rigid and overly centralized decision-making, and inefficient resource allocation. There exist a profusion of government and private agencies offering ineffective and redundant training programs. The recent introduction of the Technical and Vocational Education Commission (TVEC) is intended to help overcome these weaknesses by consolidating responsibility for policy, strategy, program coordination, and distribution of resources.

Insufficient numbers of instructors, coupled with generally low technical and methodological proficiency, have produced substandard training quality. Technical colleges have an instructor shortage of some 50%. Few instructors in any training institute use modern teaching methods, upgrade their own subject knowledge, or develop new skill areas.

High quality training alone does not guarantee that trainees will secure employment. A successful training system incorporates services that productively link training system institutions, trainees and employers. The current system lacks essential services such as counseling and placement, information dissemination, and comprehensive testing and certification.

A Woman's Charter, adopted in March 1993, guarantees equal opportunity in both the public and the private sectors, including access to all educational facilities and benefits. The TVET system, however, harbours an inherent bias by discouraging women from non-traditional skill training. The Government has yet to introduce a remedial strategy to deal with gender equity in training.

4.5.2 Objectives and strategy for social development

(1) Overall objectives

The overall objective of the human resource development and social services programs and projects is to create an environment favorable for people to enjoy high quality of life conditions. Many factors collectively influence quality of life. Thus, the programs and projects incorporate equitable and sustainable sources and levels of income for both males and females, supported by workable systems providing competent occupational training, health care, education, natural resource management and, where necessary, financial assistance, as well as community participation in planning and implementation of development projects.

(2) Sector objectives

Health care

Health care programs and projects will help ensure that the goals and targets of the "Health Services for All by 2000" are achieved. The main task is to provide appropriate and adequate health care coverage to all localities. Enhancement of health care coverage will emphasize primary health care in the early development stages, followed by upgrading of secondary and tertiary services.

Education

The overall objective of general education is to develop future human resources to meet increasingly more diversifying needs arising in different sectors from the Southern Area development as well as to develop individuals potentials and meet their needs. In addition to quality in the traditional formal subjects, the education system will have to introduce many new concepts and behaviors that will promote entrepreneurship and participation in team work, networking, adaptability, sound value judging, risk taking, and decision making skills.

Technical and vocational education and training

The overall objective of human resources development is to build a foundation for a training system and labour force that can adapt quickly to a changing economic and occupational structure envisioned by the Southern Area development. Specifically aimed at is a training system distinguished by:

- streamlined and clear coordination,
- labour market commitment,
- flexible programs responsive to performance feedback, and
- quality training.

Women's issues

The ultimate goal should be to mainstream gender issues into planning and implementation in all sectors. Hence, women's development and social issues are considered within the relevant sector. While most services, in principle, treat women as equals, there are many hidden biases in service delivery. Consequently, development in the early stages would use a targeted approach, by explicitly requiring equal or more than equal participation in all programs and projects and setting quotas for female participation. A auxiliary objective will be to assure that women are not negatively affected by development projects and programs.

Support to the especially needy

The best approach to alleviating poverty is to remove its causes. None the less, some individuals and groups (for example, the elderly, children without families, and the physically or mentally handicapped) will need support of one kind or another. The twin goals will be to develop efficient programs with a clear division of responsibilities to identify persons who need assistance and to provide the most effective kind of assistance.

Community involvement

The main objectives are to support development's effectiveness by assuring that ordinary people are involved in the planning, implementation, and evaluation of projects and programs, to minimize negative and enhance positive impacts, and to assure that people continue to accrue benefits from development even after external assistance decreases or ceases completely.

4.5.3 Strategy for social development

The main strategy for raising quality of life to enable people to take advantage of, as well as to be partners in, the development of Southern Area is to provide quality human resource development and social services on an equitable basis. Subsector strategy follows.

Health

The strategy consists of the following:

- establishment of a network of district level health institutions and facilities to effectively link preventive and curative health care;
- development of a formal referral system to maintain quality of care and improve efficient use of resources and specialties at all levels, supported by dissemination of information on facilities to motivate people to use the appropriate level of service;
- strengthening of quality, supply and deployment of health care staff, with high priority on under-served areas (e.g. some categories of medical staff for Hambantota and Moneragala districts) and provision of incentives to staff in remote areas;
- upgrading of health care institutions, including provision of equipment and competent staff (e.g. district hospitals in Hambantota and Moneragala and the General Hospital in Matara);

- community mobilization to support reduction of preventable diseases and health awareness, in collaboration with NGOs for health promotion, prevention of diseases, and decisions on kinds of health care facilities needed;
- research and development of services for the use of indigenous medicine, utilizing local resources;
- encouragement of the private sector to expand and diversify health care services, to reduce the burden on government budget and staff;
- upgrading of management capacity for service delivery, including data management and information sharing at divisional, district, provincial, and national levels for better planning and monitoring and evaluation of system performance; and
- research into health effects of factors such as migration and the impact of development activities (e.g. irrigation and sugar plantations in Moneragala and Hambantota districts).

Education

The strategy is a multi-faceted one, with the following foci:

- develop a rational framework and longer term plans at the national level;
- revise curricula and teaching methods to emphasize problem solving and creative learning, with concentration on linguistic skills, mathematics, and the sciences;
- introduce/strengthen new courses for design and research skills, entrepreneurship, environmental awareness and others;
- improve teacher training, teaching quality, and equitable deployment of teachers;
- upgrade some school facilities and equipment;
- improve distribution of and access to educational institutions;
- expand informal education system for school drop outs and others who are unable to attend formal courses; and

- create efficient administrative and management systems.

Technical and vocational education and training

1) TVET rationalization coordination

Aggressive policy making and intensive integration will be essential for training to adjust to a changing economic environment. TVEC's role as the policy and coordination body makes it an ideal "umbrella organization" to streamline and coordinate system components. The strategy for Southern Area supports the national TVEC with a regional committee, supported by vocational training and development committees (VTDCs). This team will catalyze the process regionally, as well as assure that regional initiatives conform to national ones.

The tasks of the regional committee will be mainly tactical, with strong emphasis on coordination and cooperation. It will coordinate programmes that respond to skill requirements and are gender equitable. It will assure that suitable curricula are developed for existing and new training courses. It will promote rational distribution of institutional responsibility for particular skill sectors and objectives. It will guarantee that training quality meets industry standard and is internationally recognized.

2) Market orientation

Technical and vocational training in Southern Area will produce sufficient numbers of workers who, in a reasonable amount of time, are competent in the skill sectors required by a changing labour market. To do so, the strategy gives end users (employers) the major role in developing and regulating training delivery. The following processes will be critical to ensuring market orientation:

- continuous private sector input on skill requirements, course content, and training standards;
- flexible process to promptly incorporate recommendations; and
- employer evaluation of training and skill performance, as well as efficient ways to use the information.

End users will be involved in two basic ways: vocational training and development committees and employer initiated training.

3) Support services

Though no central agency currently offers comprehensive counselling and placement services, a government supported service is likely to be required for some time because of the large numbers of unemployed people with limited financial resources. The regional TVEC will develop a counselling and placement section. VTDCs and training institutions will help develop counselling and placement centres in each district capital. Establishment of additional centres will follow development of business and industry.

Pre-training counselling is most effectively accomplished in secondary schools. Career counselling in secondary schools, however, is new and has only moderate coverage. The regional TVEC, with its close links to employers through the VTDC and EIT programmes, will offer some pre-training services at its counselling and placement centres, and cooperate with secondary school counselling services. Typical services would include aptitude testing, student visits to businesses and industries, information on available training courses and institutions, entrance requirements, course particulars, and employment opportunities in skill sectors. Information will also be disseminated to schools and other agencies, including the National Youth Services Council and religious and sports organizations.

Employment counselling and placement will provide basic services, including registration of trainees and listings of available employment opportunities. The regional centre will maintain information on local, as well as national and international job opportunities. Centres, in collaboration with VTDCs, will hold job fairs and use other creative ways to circulate information on job openings, such as newsletters, circulars, posters, and radio/TV announcements. NGOs and employment consultants will assist by providing training in skills such as job search and work habits, effective verbal communications, resume preparation, networking, confidence building, work ethics, decision-making and problem solving, and team work.

4) Capacity building for high quality training

Inadequate numbers and low capacity levels are endemic at all levels of the technical and vocational training system. Low capacity, in fact, is identified by the system's own staff as the single most critical issue. High quality training delivery is facilitated by effective support structures. Thus, capacity building will focus initially on (1) strengthening staff of the regional TVEC and NITE, the Vocational Training and Development Committees, and employer initiated training projects and (2) creating a cadre of master trainers and programme managers who, in turn, will train other staff.

Capacity building for the regional TVEC committee will collaborate with on-going projects, such as the institutional strengthening supported by UNDP/ILO, the Swiss Foundation, and GTZ. Capacity building programmes will be required also for staff of other support agencies, such as DTET and NITE.

An intensive training programme will expand expertise in planning and curricula development, and develop relatively new skill areas such as counselling and placement, and monitoring and evaluation. Foreign consultants and courses at national and foreign institutes will provide much of the initial, and some periodic training in skills relatively undeveloped in Sri Lanka. Attention will shift for the longer term to creating a cadre of specialized staff, with a corporate structure for greater management flexibility in planning, curricula development, monitoring and evaluation, and counselling and placement. These specialists would train others, as well as work on a permanent or contract basis for public or private agencies.

Vocational Training and Development Committee members will participate in workshops and seminars to help them fully appreciate their roles and responsibilities, as well as the benefits employers can derive from the Councils' work. Training, probably through workshops and seminars, will be made available to business and industry management in subjects such as assessing training needs, identifying appropriate delivery mechanisms, defining training standards, preparing proposals and costs, and evaluating training results.

The weaknesses of the NITE staff, responsible for training instructors, are a major constraint to providing quality instructors. Precipitating factors are a combination of insufficient preparation and minimal incentive to achieve excellence. A vigorous training programme to build NITE's capacity to prepare curricula and train instructors will raise instructor quality to a certain extent.

Poverty alleviation

The main strategy will be to link welfare programs with development activities. Projects and programs will focus on helping the Samurdhi and other relevant on-going projects to refine the qualifications for welfare assistance, and to develop community based endeavors to overcome poverty of the majority and to assist those who will need support for the longer term.

Community resource management

The main strategy will concentrate on the exploitation of resources within their environmental capacity, efficient use of resources, and income generation to stop dependence on non or slowly renewable resources, such as forests. Sustainable wood production will be pursued, while at the same time, emphasis will be placed on the non-consumptive value of resources, such as eco tourism and increasing the environmental value of forest biodiversity, soil conservation, and water resource management. Essential activities will include:

- raising awareness of the importance of natural resource management for the community's own benefit;
- facilitating community resource management through technical assistance and participation in formulating plans; and
- promoting conservation-based income generation activities, such as eco-tourism and production of non-wood forest products.

Community participation

The participatory approach used for developing the Master Plan will assist in defining a mechanism for community participation in design, implementation, and monitoring of final projects. This mechanism will involve communities, NGOs, private sector and government officials. Special attention will be paid to disadvantaged groups.

4.5.4 Institutional frameworks for social development

(1) Education

The Ministry of Education and Higher Education is responsible for policy formulation, planning, implementation, and provision of appropriate resources for all levels of general education, teachers education and training. In addition to the Ministry level divisions, there are three other major departments: Examinations, Educational Publications, and National Institute of Education.

Administration of education within provinces was given to the provincial ministries of education, after the education sector was somewhat decentralized by Constitutional Amendments in 1987. In the newest change of administrative structure, in each district an additional provincial director of education comes under the provincial director of education. In each district, three to four zonal offices administer the education of about 150 schools

representing two to four divisions, as well as divisional offices which administer education for about 40 schools.

The role of the zonal office is to supervise curriculum implementation and maintain standards. In addition, zonal offices are being given more administrative responsibility recently to overcome ineffectiveness of sub-provincial education system, while in divisions' level there are field officers and master teachers who visit schools to identify the problems and needs of each school.

(2) Health

The Ministry of Health is the prime agency responsible for people's health. Formal health services are composed of three levels organizations: national, provincial and divisional. The Ministry has overall responsibility for health care, including policy formulation, macro planning, running teaching and special hospitals, and organizing education and training.

Provincial health services are administered by the Provincial Minister of Health. Provincial Director of Health Services (PDHS) is responsible for management and development of health services in the province. It consists of three services: field services, technical / administrative services, and patient care institutions like provincial hospitals. Under PDHS, Deputy Provincial Director of Health Services (DPDHS), supervises health service of each district

Each DPDHS area is divided into Health Unit Areas, with a Divisional Director of Health Services (DDHS) administering mainly preventive services in the area of 130 to 500 km², with populations ranging from 60,000 to 100,000 persons. DDHS is responsible for provision of health care to the community at the divisional level and also has administrative authority on the curative institutions which include District hospitals and lower levels of institutions. However, DDHS is a relatively new position and is not well functioning as expected. Therefore some districts are taking back administrative power of DDHS to the district level.

Following the devolution, the local staff of preventive public health services who are involved in control of certain special diseases like malaria and filaria have come under the administration of the DDHS, while those involved with control of disease like rabies, tuberculosis, STD, and leprosy have come under the Provincial Director of Health Services.

(3) Technical and vocational education and training

Future directions

The Government is in the process of rationalizing HRD coordination and responsibilities for technical and vocational education and training. The process will consolidate several institutions, possibly under one ministry. In October 1995, the Ministry of Labor proposed its plan for rationalization of vocation education and training. The plan calls for vocational and technical education to be integrated under the Ministry of Labor and Vocational Training. Thus, in addition to its existing sub-agencies, the Ministry would acquire the National Apprentice and Industrial Training Authority (NAITA) and a proposed Skills Development Fund (SDF). The SDF would represent the major link between skills training and the private sector, concentrating on supporting on-the-job training.

Recommendations

A strong regulatory body and a cohesive training plan with clearly articulated responsibilities will be crucial for preparing skilled workers to meet the needs of expanded employment opportunities. At present, it would seem to be difficult to coordinate training solely under one Ministry. Yet, the Ministry of Labor and Vocational Training has acquired considerable force, largely under TVEC which has the authority to plan and regulate all occupational training. Government line agencies and private institutions, however, tend to ignore TVEC rules and strategies. TVEC should be given the power to penalize violators, perhaps by depriving them of the right to offer vocational training for some period of time.

Preparation of an effective training plan will require substantial sensitivity to human and employment conditions in particular areas. Southern Area possesses some unique human characteristics and development opportunities. Concentration on its development will alter its employment conditions rapidly and dramatically. TVEC should establish a regional section in the South, with permanent knowledgeable staff to support its planning and regulatory functions.

4.6 Issues and Strategy for Infrastructure

4.6.1 Water facilities

(1) Issues for water resources development and management in Southern Area

Southern Area as a whole has relatively rich endowments of water resources, but their distribution both geographically and seasonally makes effective usage difficult. Flooding and saline intrusion into river estuaries are major problems in the wet zone, and the dry zone suffers from water shortages. Flooding tends to be aggravated by deforestation and other inadequate land management. Mis-management of water resources causes land problems such as the acid sulphate soil in the Nilwala Ganga downstreams and the soil salinity buildup in some areas in Hambantota.

Many of these and other problems are imminent. Short-term solutions, however, would not necessarily produce desirable outcomes. They may create new problems which would demand additional resources for solutions. Such a piecemeal approach should be avoided especially when water resources development and management must be undertaken with limited financial resources.

Most water and land related problems are inter-related. A comprehensive or holistic approach should be taken for solving them effectively and at the least costs. Especially, comprehensive watershed management by a river basin approach has particular relevance to water and related land problems in Southern Area. Such an approach should emphasize water sources cultivation through proper management of upper catchment areas and enhancement of soil moisture retention capacities rather than just effective river flow regulations and water storage efficiency. This would contribute to maintaining/enhancing land productivity, low flow augmentation and control of soil salinity buildup, which are all essential for water and land management in the dry zone.

The holistic river basin approach would allow proper attention to be paid to environmental and social aspects. It would help to conserve and in some cases effectively utilize unique features of Southern Area including physical features such as lagoons and estuary, fauna and flora, and traditional irrigation eco-systems. Unlike short term measures meeting immediate needs of local people, effects of measures formulated by the holistic river basin approach may be more difficult to appreciate. Planning by the holistic river basin approach should involve more intensive dialogues with local people and communities as well as local governments.

(2) Aims of holistic river basin approach

The holistic river basin approach aims at achieving a better water balance by river basin. Application of this approach to the Southern Area development would involve the following:

- 1) Protection and improvement of upper catchment areas to improve overall water availability;
- 2) In-basin development and management to improve water availability for specific uses such as:
 - rehabilitation of existing irrigation and drainage facilities, and improvement of their management and operation;
 - prevention of saline intrusion and other quality problems of surface water;
 - improvement of groundwater quality;
 - conjunctive use of surface water and groundwater for water supply to growing population;
 - installation of localized water use facilities; and
 - flood protection and storage of flood waters for effective use.
- 3) Revitalization of traditional tank/anicut systems for use in conjunction with modern irrigation facilities;
- 4) Preservation of unique aquatic eco-system present in existing wetland areas; and
- 5) Provision of additional water supplies for river basins that may face water shortages by limited trans-basin diversion schemes.

(3) Strategy by subsector

Irrigation

Strategy for irrigation water supply in Southern Area has a few components. First, critical river basins need to be identified where serious water shortages are foreseen due to large irrigation water use and potentials. Second, irrigation requirements need to be satisfied for higher economic returns such as high value field crops under supplemental irrigation,

increased cropping intensities and new land development for agri-business. Third, traditional irrigation systems should be restored/rehabilitated for new and traditional farming operations.

Water supply

Implementation of the proposed Southern Area development, will result in substantial growth in demand for both municipal and industrial water supply. There is also a significant suppressed demand for piped water supply in Southern Area due to insufficient capacity in the existing water supply systems. Thus high priority should be placed in increasing capacity in piped networks.

There are generally ample surface water resources for water supply, especially in the more densely populated areas of the southwest. Groundwater reserves in Southern Area are not well proven and, such groundwater resources that have been developed, have been found to be of generally poor quality. It is therefore recommended that the strategy should be to utilize surface water resources as far as possible except in those areas where surface resources are scarce and the cost of providing long carrier pipelines would make groundwater development more economical.

Problems exist with saline intrusion into river estuaries which affect river intakes at certain times of year. It has been suggested that gated barrages could be constructed on the affected rivers to alleviate the problem. However such barriers can have an adverse impact on river eco-systems and fisheries. A better long term strategy is to increase river flow during the dry season by storing the excess water during the wet season for regulated release subsequently in combination with the improvement of the upper catchment areas and water use control in the midstream areas.

Flood protection

Certain rivers in the wet zone experience flooding at certain times of year and a number of flood protection schemes have been built to try to alleviate the problems of flooding. However these schemes have not all been that successful and in certain cases have actually made matters worse. For example in the Nilwala basin, the construction of flood protection bunds has tended to increase flooding in the river flood plain due to the inevitable narrowing of the flood channel and the draining of previous wetland areas has caused acidification of soils. Also bund construction has obstructed the original irrigation channels. As a result consideration is being made to return some of the lands to their original wetland state and to restore the obstructed irrigation channels.

The lessons learnt from this recent experience indicate that the best strategy is not to interfere with the natural regime of rivers and to avoid developing wetland areas for agriculture.

Wetland preservation

Wetlands have been affected not only by flood protection schemes but also by salt water exclusion schemes in an attempt to improve agricultural yields in wetlands affected by saline intrusion. These schemes also have not been particularly successful and many have fallen into disuse. A good strategy would be to demarcate those aquatic eco-systems of special scientific interest as wetland reserves and allow marginal wetland areas, not suitable for agriculture, to be released for other development.

Hydropower

The proposed Southern Area development will increase the energy needs of the south. There is also a need to transfer water to river basins where serious water shortages exist. The strategy therefore is to identify river diversion projects that could have hydropower potential and to promote multi-purpose projects wherever feasible to meet the combined needs of water and energy for Southern Area.

4.6.2 Transportation

(1) Constraints to transport development

Lack of transport policy and priorities

Importance of the transport sector for the Nation's socio-economic development has been increasingly recognized, but the Government does not have comprehensive policies and coherent strategy for transport development except the promotion of private sector participation. Considering the existing transport system in Sri Lanka, government supports are still vital for initiating transport developments and guiding transport operations.

Basic issues related to public resources allocation to and within the transport sector have not been clarified. Both the road and the railway sub-sectors suffer from shortages of funds, but priorities are not all clear. The Government has allocated to the sector 16% of the total budget for 1995-99, a significant increase from the 2% allocation in 1979. At present, a priority is on the road maintenance, but the allocation is not sufficient even to cover all national roads.

Unorganized transport administration

The transport administration in Sri Lanka is dispersed among a number of ministries and agencies. The Ministry of Finance and the Ministry of Plan Implementation, Ethnic Affairs and National Integration are responsible respectively for planning and funding for investment programs, while implementing agencies by mode are under different ministries.

After the devolution in 1990, provincial councils and local governments are responsible for maintenance and improvement of provincial (class C and D) and local (class E) roads. Each provincial council has a responsibility of issuing permits for private bus routes within the province. However, they suffer from insufficient financial and staff capacities.

Constraints in road subsector

The road density in Southern Area is reasonable in comparison with the national average, but road conditions have been deteriorated due to poor maintenance. Most roads constructed many years ago do not satisfy current load conditions with heavy axle load.

Although the road transport accounts for more than 90% shares for both passenger and freight transport, the traffic volume is still very low. Major national highways carry 1000 vehicles to 5000 vehicles per day, and others smaller than 1000 vehicles per day.

Constraints in railway subsector

The Sri Lanka Railways (SLR) in general face problems of old railway tracks, signalling systems, locomotives and rolling stocks, which cannot be easily replaced due to financial difficulty. Its coast line is more viable with the patronage of 687.4 million passenger kilometers or 26% of the SLR total in 1991.

Constraints in port subsector

Functional division is not clear between the port of Colombo and other major ports including the Galle port. The existing plan for Galle port development was prepared on the assumption that the Colombo port could not be developed beyond the existing breakwaters. It needs to be reviewed in the light of on-going study for the expansion of the Colombo port as well as development needs and potentials in Southern Area.

Constraints in aviation subsector

Policies for domestic air transport have not been established. The Katunayake international airport will be improved to facilitate transfer of passengers between international and domestic flights, but associated improvements of domestic airport facilities would involve

policy decisions related to international and domestic tourism and industrial development. The Koggala and the Weerawila airfields are currently controlled by the Sri Lanka air force, constraining the full operation for civilian uses.

(2) Strategy for transport development

To improve the road network as the prime mode of transportation for Southern Area, improved road transport administration would be a prerequisite. More financial and staff resources need to be allocated to local governments especially at the provincial and the district levels. For the maintenance and repair of rural roads, participation of local communities and people should be encouraged. This should be supported by the provision of basic equipment and technical guidance to be organized at the division level. At the same time, financial resources of governments at different levels should be developed by introducing user charges, gasoline taxes, licence fees, import levies and toll road system. Provincial councils may be allowed to levy some of them, and the Government may introduce specific purpose taxes pegged to the transport sector.

Traffic law enforcement, including enhancement of drivers' discipline, should be part of adaptation to motorization. Traffic law and regulations may need to be streamlined, and some transport institutions restructured. For instance, RDA may be restructured if toll roads should be introduced. A new organization may be established for planning, design, construction and operation of toll roads. It may be a parastatal vested with power to issue bonds to raise fund for toll road construction.

Road transport

The Government should take initiatives to improve the road transport industry. Reorganization of "peoplized" bus companies into 11 regional bus companies has already been proposed to improve the financial performance of this industry through scale economy and sharing of personnel, spare parts and other resources. The bus fare structure needs to be improved introducing differential pricing in combination with government subsidies. Private bus companies should also be reorganized to improve services.

Railways

A clear policy needs to be established for roles and functions of the railway network as part of the transport system to support various socio-economic activities. The point of such a policy is how to combine social advantages of the rail transport with the inevitable motorization trend. SLR should be reorganized into more business oriented companies as

already proposed, but guidance by the Government would be necessary to ensure the railway system should continue to serve some social functions.

Air transport

Domestic air transport should become supplemental but integral part of the overall transport system in Sri Lanka. Domestic airport facilities should be selectively improved on the basis of careful assessment of international tourism and export-oriented industry potentials.

Galle port

A more realistic development plan for the Galle port should be prepared as a matter of urgency. It should be a stage-wise development plan. First, the Galle port would be developed as a regional port possibly with a supplemental transshipment function catering to a limited number of shipping companies or consortia. The breakwater can be designed with a minimum length yet serving as the initial stage of full-scale development. The second stage development of the Galle port would depend on the increase in total container traffic calling at ports in Sri Lanka, performance of the Galle port after its first stage development, and physical and logistic links between the Colombo port and the Galle port as well as the development plan for the Colombo port in preparation.

Private sector participation

Participation of the private sector should be encouraged particularly in the road transport subsector. The Government should give incentives to private operators in the forms of tax exemption, lower tax on spare parts, finance at lower interest rates, and increased and differential fare structure.

The maintenance and improvement of national roads has been carried out by the Road Construction and Development Company, a parastatal organization established in 1987 under the Road Development Authority. The capacity of the company is not sufficient for the bulk of demand for the road construction industry. Private contractors should be supported particularly for the maintenance and repair of provincial and local roads.

Coordination

Coordination among transport agencies need to be much improved to ensure better allocation of limited resources for investment priority, modal mix, pricing and sound competition. As a prerequisite, a comprehensive national transport policy should be prepared by an inter-agency task force.

4.6.3 Telecommunications

(1) Constraints to telecommunications development

The telecommunications sector in Sri Lanka, led by the Sri Lanka Telecom Corporation (SLT) operates nationally, and thus the telecommunications development in Southern Area faces basically the same constraints that the sector as a whole faces. These are telephone line shortages, low service quality and ineffective operational management as well as inefficient management of the telecommunications sector itself.

Telephone line shortages

Under the National Telecommunications Policy, the Government aims among others at the elimination of the waiting list for telephones by 1998, and the provision of telephone, telegraph and facsimile services to all villages also by 1998. To meet these requirements, SLT has been expanding its network, adding 386,600 lines by 1998 to the existing 180,000 lines. The number of direct exchange lines increased to 180,724 nationally by the end of 1994, but the number of waiters increased more rapidly to reach 186,245 as of the end of 1994.

The number of waiting subscribers is comparatively large in Southern Area, 1.65 times of the number of direct exchange lines as compared to 1.03 times nationally. Direct exchange lines and waiters by district in Southern Area as of 1995 are summarized.

District	Direct exchange lines	Waiting Subscribers
Galle	3,393	6,307
Matara	1,830	6,908
Hambantota	2,793	2,311
Moneragala	626	444
Ratnapura	2,634	3,091
Ampara	475	380
Total	11,751	19,441

Low service quality

Telephone service quality is indicated by the call completion rate, fault rate and clearance time of faults. Statistics for 1990-1994 indicate that the call completion rate in Sri Lanka was 28%, which may be compared with 30% in the Philippines, 39% in Indonesia, 50% in Malaysia, 55% in Thailand, 70% in Singapore and 84% in Japan. The fault rate is high in

Sri Lanka at 28%, much higher than the rates in Malaysia (6.5%), Thailand (4.3%), Indonesia (4.2%), Singapore (1.1%), and Japan (0.5%). The rate of faults cleared within 24 hours is 55% in Sri Lanka. The service quality in Southern Area is even lower than the national average.

Ineffective operational management

SLT had in 1994 55% technical staff of all the staff, consisting of 12% technicians and 43% skilled workers. The technical level of skilled workers is not sufficient for the maintenance of digitalized and computerized facilities. Training facilities are insufficient, and overseas training or training by foreign instructors is limited by budget constraints.

Inefficient telecom sector management

The telecommunications sector suffers from insufficient facilities for radio monitoring and radio frequency spectrum management as well as shortages of technical staff. The situation will become more acute when mobile telephone services are introduced. Introduction of new technology calls for re-design of the overall network.

(2) Targets for telecommunications development

The JICA Telecom Master Plan Study has set the following targets for direct exchange lines (DEL) supply to the year 2015.

Year	1994	2000	2005	2015
Expressed demand	367,000	680,000	980,000	1,670,000
DEL supply volume	181,000	667,000	980,000	1,670,000
No. DEL/100 inhabitants	1.0	305	5.0	7.8

Demand for ordinary telephone services will be fulfilled 100% by the year 2001. In addition, integrated services digital network (ISDN) and intelligent network (IN) for high speed data transmission are proposed by the Study. Targets for improving service quality have also been set, and the number of staff to be required to improve operational efficiency has been projected by the Study.

(3) Strategy for telecommunications development in Southern Area

Telecommunication services not only support economic activities but also facilitate the provision of health, education and other socio-cultural services. Thus telecommunication

services should be considered as part of basic services, and aim at universal coverages. This is in line with the national telecommunications aim to provide telephone lines to all villages by the year 2001. Specific approaches to different sectors are described.

Education

Telecommunications development should support the expansion of education opportunities for children even in remote rural areas, and the improvement of quality of education. Initially, a computer system should be set up in selected primary, secondary and collegiate schools in Southern Area for model application. The computers are connected each other via public telephone network. An education center equipped with a database will be established to transmit improved curricula and programs. The network can be used also to train teachers. As the telephone coverage is completed by 2001, the system will be expanded to other villages.

Health care

A computers and communications network should be established in Southern Area to support the referral system linking health facilities at different levels. The network will allow sharing medical data and information. It will be used for consultation between doctors and medical staff. An emergency life saving network will also be incorporated to cover remote rural villages.

Environment

The protection and management of environment and natural resources will be facilitated by a telecommunication network. Sharing basic information is a prerequisite for better communications between government agencies, environmentalists, business sector and local communities. Such a network with a database will provide a common base for environmental impact assessment, and strengthen the monitoring function. It will be used also for broad based environmental education to enhance public awareness.

Tourism

Tourism information is lacking particularly at tourism sites in Southern Area. Each hotel should have a terminal equipment connected to the Ceylon Tourist Board to transmit and receive up-to-date tourism information covering access, accommodations, local events, wildlife, landscape and security.

Other sectors

Telecommunications development will support other sectors and economic activities. Information to be provided will cover among others extension and marketing for agriculture, investment opportunities and available incentives for industry, and meteorology and marketing for fishery.

4.6.4 Power and energy

(1) Characteristics of energy situations in Southern Area

Electricity consumption

The less developed status of Southern Area is observed in its energy use. The electricity consumption in Southern Area was only 10.4% of the total national consumption in 1994, much smaller than its population share. Per capita electricity consumption was 143 kWh in Southern Area, as compared with the national average of 200 kWh, both in 1994. The electricity consumption in Southern Area, however, has been growing at high rates (9.1% during 1993-94).

Energy sources and supply

Southern Area has very limited energy sources. In addition to the existing hydropower plant of 6 MW at Udawalawe, only the Gin Ganga hydropower plant at Deniyaya in Matara is programmed for commissioning in 2008. Southern Area is provided electricity from the national grid through five substations at Matugama, Galle, Deniyaya, Embilipitiya and Balangoda for Southern province and Ratnapura and three substations at Deniyaya, Badulla and Inginiyagala for Moneragala and Ampara districts.

Electrification

The ratio of electrified households was 32% in Southern Area as of December 1994, lower than the national average 41.4%. The ratio varies among districts: 47.4 in Galle, 43.7% in Matara, 23.5% in Hambantota, 15.2% in Ampara, 12.4% in Moneragala and 29.0% in Ratnapura.

In Ratnapura district, 30% of households are located far from the national grid so that electrification by non-conventional energy is more economical than the extension of distribution lines. In Moneragala district, a minimum number of 30 consumers are required for each quarter mile coverage by low voltage lines to justify the high capital and operation costs. This requirement is not satisfied by many remote villages.

Solar energy

In Moneragala district, a solar power system has been installed at eight rural maternity clinics, nine school/temples, nine community/training centers, and 14 domestic and other users. The system consists of solar panel, control box, charging indicator and battery.

A solar water supply pumping system is installed in Moneragala district at 13 schools and community centers to supply drinking water. The system consists of solar panel, inverter, bore hole, water pump, flow switch, water tank, overflow control and water pipes.

(2) Objectives for energy development

Energy development in Southern Area should aim at the following.

- 1) To enhance the per capita electricity consumption and the ratio of electrified households in each district at least upto the current national level in order to uplift the living level of people in Southern Area and to support the income generating activities in rural areas;
- 2) To develop more than two major electric power projects using available energy resources within Southern Area to support higher industrialization/urbanization and anticipating that the demand for electricity may increase at about 12%; and
- 3) To provide the energy for basic human needs (light, fan, refrigerator, drinking water and TV) in rural areas having no access to electricity supplied by the national grid, utilizing the non-conventional energy sources.

(3) Strategy for energy development in Southern Area

Extension of distribution network

Extension of distribution lines should be accelerated to realize 100% village electrification. Priority should be given to division capitals in Moneragala, Ratnapura and Ampara district still deprived of electricity.

Electricity consumption in Southern province is expanding rapidly (9.2% during 1993-94), and even higher growth is expected with the Southern Area development program. To cope with this situation, the Distribution System Efficiency Improvement Program in Southern province should be promptly implemented by CEB.

Development of major energy sources

Options for power development within Southern Area are: the 12 MW wind power plant in Hambantota district, the Gin Ganga hydropower plant, the oil thermal associated with the second oil refinery in Hambantota district, the proposed coal thermal planned at Mawella, and the Uma Oya multi-purpose project. The wind power plant should be implemented as a pilot scheme to secure a future option.

Other power schemes may involve serious social and environmental issues. The oil thermal plant is subject to a national policy to establish the second oil refinery for security reasons. In the absence of such a policy, the coal thermal power may be a better option on economic ground. The location should be carefully decided from environmental and social points of view.

The Uma Oya multi-purpose project will open up a new horizon in the dry zone of Southern Area. A comprehensive feasibility study should be undertaken urgently, including a comparative study of alternative diversion routes, environmental inventory and impact assessment of all the related river basins, and examination of water use options. Strong government initiatives would be indispensable for better planning and early implementation of the Uma Oya as well as the Gin Ganga schemes.

Non-conventional energy

Possible sources of non-conventional energy in Southern Area are bio-mass energy, mini-hydro and solar energy. The bio-mass consumption in Southern Area is higher than the national average of 70%. Bio-mass is used mainly for cooking. In addition a significant demand for heat energy for the tea industry and brick making is also currently satisfied by this source. Bio-mass supplies are adequate to cater to the demand until the year 2000, but shortages may occur locally. In the short term a program for the introduction of efficient fuel wood stoves should be expanded for the domestic sector, and tea plantations should be encouraged to provide for their own fuel wood crops to service their individual requirements. In the long term, use of bio-mass may be expanded including cassava, sugarcane by-products, lucaena and other energy crop.

As mention above, wind energy can be considered as a future renewable sources for grid connected power generation together with major hydropower. The viability of the systems to utilize different non-conventional energy sources needs to be examined.

Solar energy application may be expanded for various uses as demonstrated by "Project for the Installation of Solar Power in Rural Villages of Uva Province", if people are guided properly. Solar water heaters can be introduced first to public facilities such as hospitals, schools and hotels. The use can be expanded to other purposes such as cleaning of public markets and fishery facilities, industrial process heat and domestic uses. Photo voltaic technology can be applied to rural electrification in general, and for pumping water, electric fencing against wild animals, and telecommunication purposes in particular.

4.6.5 Urban system

(1) Constraints to urban development

The proportion of urban population in Southern Area varies from 14 to 34% depending on the definition adopted. Both proportions are low in comparison with the ratio of labor force employed in industry and services. This low level of urban population is partly a reflection of the dominance by Colombo that contains a very large share of the urban population in the Country. It is also affected by the pattern of settlements in the region. Local governments have had virtually no ability to lead urban growth in a spatially desirable manner. Similarly, their powers in controlling urban growth are very limited.

Inability to lead development

A major prerequisite to lead development is provision of infrastructure in advance of urbanization. This poses major problems when even the existing urban households do not have access to necessary infrastructure. In Galle, only 44% of households in the Municipal Council area have access to pipe borne water supply. Though slightly better, the situation is similar in Matara and Hambantota. Central sewerage systems covering the whole urban area do not exist in any settlement with the population relying on private latrines.

Paved urban roads with sidewalks are rare even in the central urban areas. The conditions of urban roads is noted to be unsatisfactory. As a result, the urban population build their homes along the national roads, using these roads not only for urban access but also as sidewalks.

Inappropriate forms of local governments

The present poor state of infrastructure is partly a result of limited resources available for investment. It is however also heavily affected by the inappropriate administrative systems. Out of 45 larger settlements that may be considered "urban", only one (Galle) is managed as a Municipal Council and six have Urban Councils. All the rest are administered as

Pradeshiya Sabha (earlier known as Town Council and Village Council). The latter is essentially an extension of the central/provincial government and is more suited to rural areas.

The number and size of urban areas increases over time. In Sri Lanka the Government has taken the reverse pattern in conferring the urban status. The Pradeshiya Sabha Act of 1987 reduced the number of settlements conferred urban status from 134 to 51. There has been no changes in administrative boundaries of settlements over the last 35 years and there appear to be no administrative mechanism for either redefining the settlement boundaries or administratively creating a new urban center.

Lack of urban development controls

Controls per se are not very effective in the absence of ability to lead development and by themselves normally result in emergence of illegal settlements. Nonetheless, some degree of control has to be introduced to realize permissible locations within a settlement, densities, type of development and land use in general. In Sri Lanka, the legal framework for this confers this responsibility in the Central Government. Local development plans have not been prepared even for the large centers and there is no possibility to control the pattern of urban growth.

Limited funds for local infrastructure

The weak tax base, and limited funds allocated by the Central Government for investment have created a large backlog of infrastructure investments, even at the extremely low level of urbanization observed in Southern Area. The resource requirements of physical and social infrastructure need to be met through a combination of new revenue generation and transfers from the Central Government under the new policy of devolution.

(2) Urban development base

Southern Area already has a network of settlements to which further urban growth could be channelled. Some of the major centers where this growth will be channelled are described.

Galle

The district center of Galle is the main urban center in Southern Area in terms of business and administration. Galle is the capital city of Southern province and accommodates many regional sub-offices of national agencies and a major hospital. Galle and surrounding areas and towns enjoy placement of the governmental development emphasis in industrialization, utilizing the advantage offered by the port, railway and a nearby airstrip. In addition to its food processing and indigenous light industries including jewellery making, a cement plant

was installed in Galle. An Export Promotion Zone was established in Koggala 5 km west from the city center, too. Furthermore, industrial estate schemes and installation of an additional cement plant are planned for areas in its vicinity.

Galle is expected to play a central role in industrialization of Southern Area. For that purpose, intensive infrastructure investment including rehabilitation of the existing one in the Galle city area and targeted surrounding areas is indispensable.

Matara

Matara has been developed as a trade center connecting its hinterland with Colombo. Matara people are well known as business people in the Country. Its service coverage is extended beyond the district boundary. At the same time, Matara is the district capital and the administrative capital of the area. It accommodates a base hospital and all the district offices of the Central Government. Existence of the Ruhunu University magnifies its popularity as an educational center.

Enhancement of existing characteristics as the trade center and associating agro-processing industrial development seem to be a fitting strategy for Matara. Private investment facilities may support the tourism development and upgrade the role of the regional trade center.

Hambantota

Hambantota is the district capital and accommodates most of the district administrative and health activities. Its main economic activity is salt industry. Fisheries is a well established economic activity as well. Potential of tourism development is high since the Bundala National Park is located in its vicinity and it is bestowed with long beautiful beaches. Furthermore, the Yala National Park and several attractive archaeological sites are located within accessible distances from the town. With the in-migration into the vicinity region due to the Kirindi Oya project, commercial and service needs in the region are increasing. There are some development schemes newly proposed such as an oil refinery project, a coal thermal power plant scheme, a lagoon prawn culturing, and caustic soda manufacturing.

Hambantota has high potential for development. It is expected to become eventually a regional development center to lead development of Southern Area. To avoid the piecemeal development, it is essential to establish a development strategy and plan the development of the town to become a regional center. Analysis of existing functions in Southern Area indicates that Hambantota is relatively less developed in terms of educational and health facilities. The district center also does not have many administrative functions available in

Galle and Matara. Hambantota is thus likely to have many of the new administrative agencies and social services in the region.

Embilipitiya

Embilipitiya is a rapidly developing urban center due to the evolution of the Uda Walawe development project, and the gem trade developing around the town of Ratnapura. It has become a de-facto growth center and further growth is expected parallel to the progress of the project. Considering the present and proposed transportation network and its bordering location between the dry zone and the wet zone, Embilipitiya is an appropriate urban center to become a primary inland regional center, together with Sooriyawewa.

Further to the necessity of planned development and investments in infrastructure and social service facilities, promotion of private agro-industry investments is desirable for the regional development.

(3) Strategy for urban development in Southern Area

Regional centers

Two factors are considered to be central in formulating a national urban growth strategy for Sri Lanka. Both are valid for Southern Area as well. These are: 1) to create urban centers capable of functioning as economically viable entities, and 2) to guide and coordinate economic and infrastructure development in respect of crucial urban centers.

There is an additional consideration for the development of the urban system in Southern Area. At the moment all activities that require a minimum efficient size of over 100,000 have to locate in Colombo as there are no alternative centers. This leads to unnecessary concentration in Colombo and probably creates diseconomies of scale. The Master Plan aims to promote the growth of one or two large urban centers in Southern Area with a view to creating an alternative to Colombo in locating economic activities.

Galle appears as the alternative location to Colombo in Southern Area. Interestingly, it is possible to pursue an alternative strategy with Galle and Matara playing similar roles. Galle is positioned to capture export and port oriented functions. Matara, on the other hand, has a very strong hinterland and competes with Galle in most activities. A direct and efficient connection with Colombo via the Southern Highway will strengthen the relative position of Matara. It is recommended to concentrate development activities in Galle initially while Matara becomes an equally important center in the medium term.

Urban administration

The urban population of Southern Area is considerably higher than the statistical figure of 14% based on administrative definitions. With the present system of administration, three quarters of urban inhabitants are administered through administrative forms designed for villages. A prerequisite for any urban development strategy is to provide a new definition and administrative form for the urban areas.

This administrative restructuring would call for a review of financial status of the Urban Administrative Units (UAUs) consisting of Municipal Councils and Urban Councils as well as their relationships with Provincial Councils (PCs) under the devolution policy. UAUs at present have three major revenue sources: 1) their own sources which are taxes and charges, 2) revenue and capital grants from PCs, and 3) loans, most of which are from the Local Loan Development Fund. Their financial base needs to be broadened along with their jurisdictions to meet local needs of respective urban centers.

Urban hierarchy

The government policy calls for selective support of centers with high growth potential. The analysis of the existing structure points to a lack of a hierarchical structure. Further selectivity is thus needed in identifying centers where infrastructure projects will be executed and where new administrative functions can be located.

The studies of the present urban structure in Southern Area show that there are two centers of national importance (Galle and Matara). Hambantota is noted to be at the same level as Embilipitiya, Weligama and Kataragama. For strategic reasons to promote growth poles which can counter the influence of Colombo, it is advisable to concentrate selected functions in Hambantota. The urban growth strategy will thus call for support of the three district centers to be developed as urban centers of national importance. The hierarchical structure of urban centers should be clearly established accordingly.

Population distribution

Practically, all of the growth in the population of Southern Area will occur in urban centers. This follows from the expected economic structure where employment in services and industry is expected to expand while the absolute number of people employed in agriculture remains unchanged. Most of this incremental population will be channelled to the largest urban centers in Southern Area.

A few rural service centers will be chosen for support. These will be in areas where access to alternative large centers is difficult and potentials are high for development of rural services and processing of primary agricultural products.

Urban planning

In anticipation of forthcoming urbanization and establishment of clear urban hierarchy with functional division, land use plans will be prepared/updated in steps starting from those urban centers at higher tiers. The initial planning should be conducted in such a way that urban planning and administrative capacity will be enhanced for Southern Area as a whole supported by the Urban Development Authority and the newly established Southern Development Authority. Such efforts will be replicated for other urban centers.

Figure 4.1 Problem Structure of the Southern Area in Sri Lanka

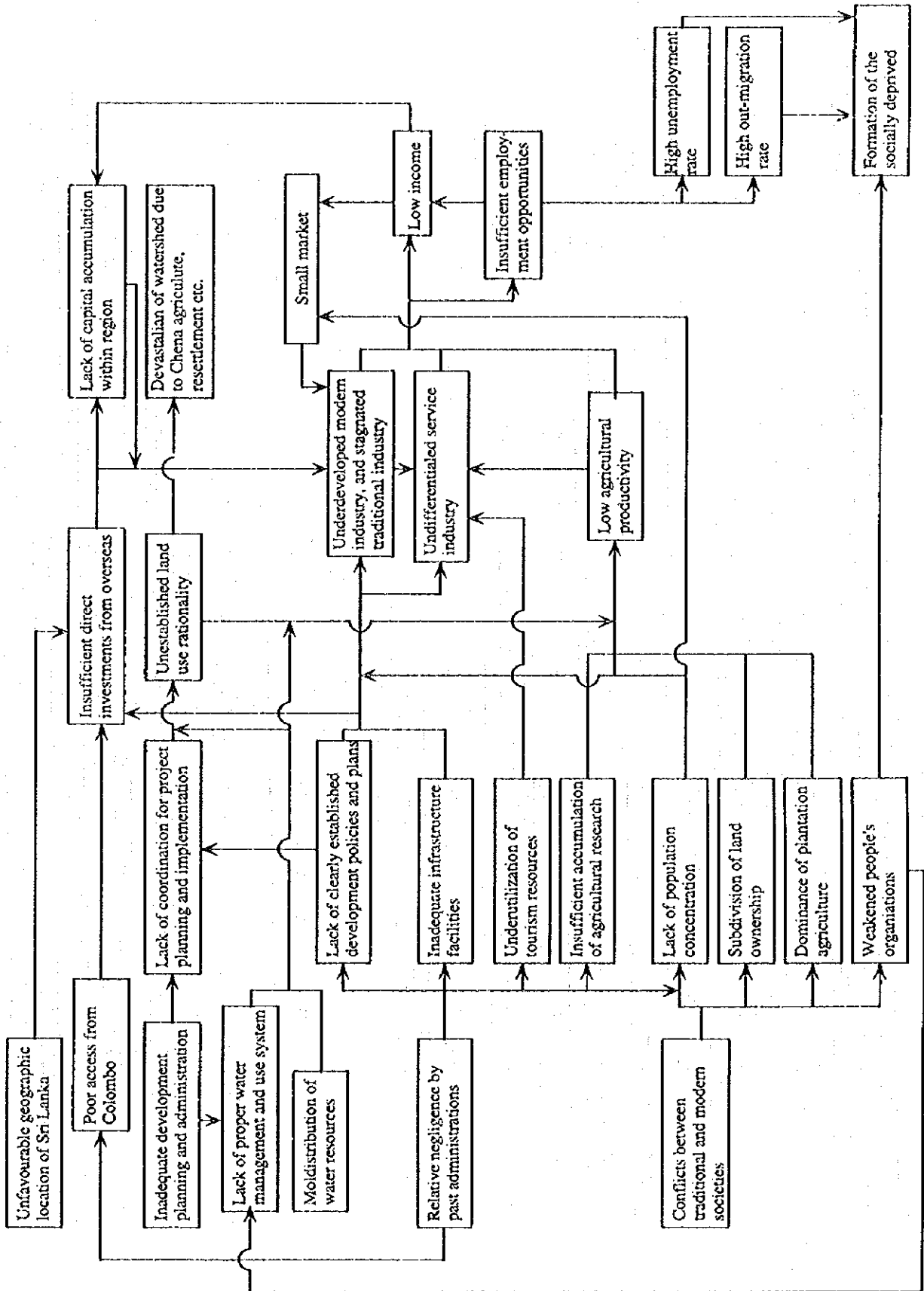
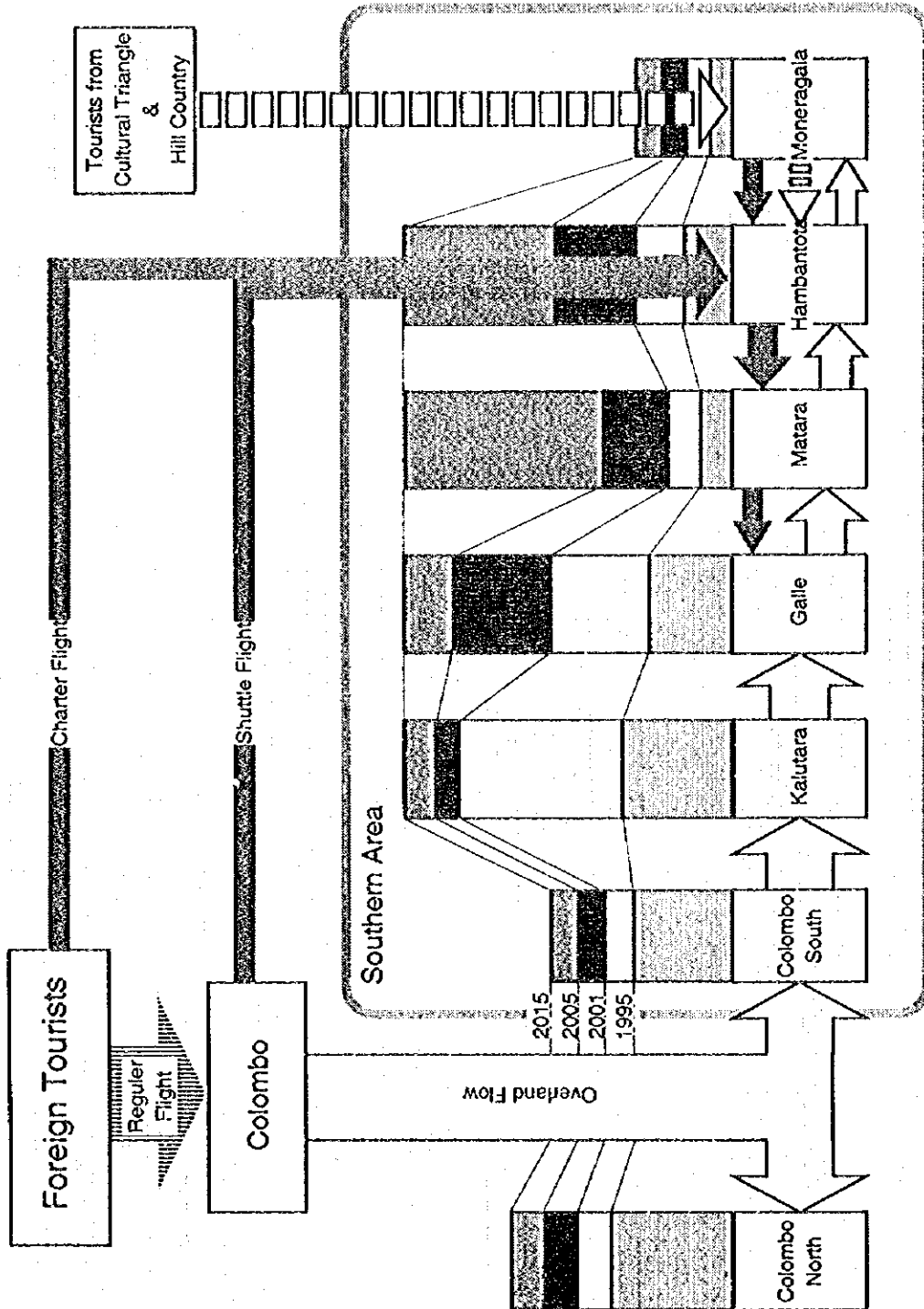
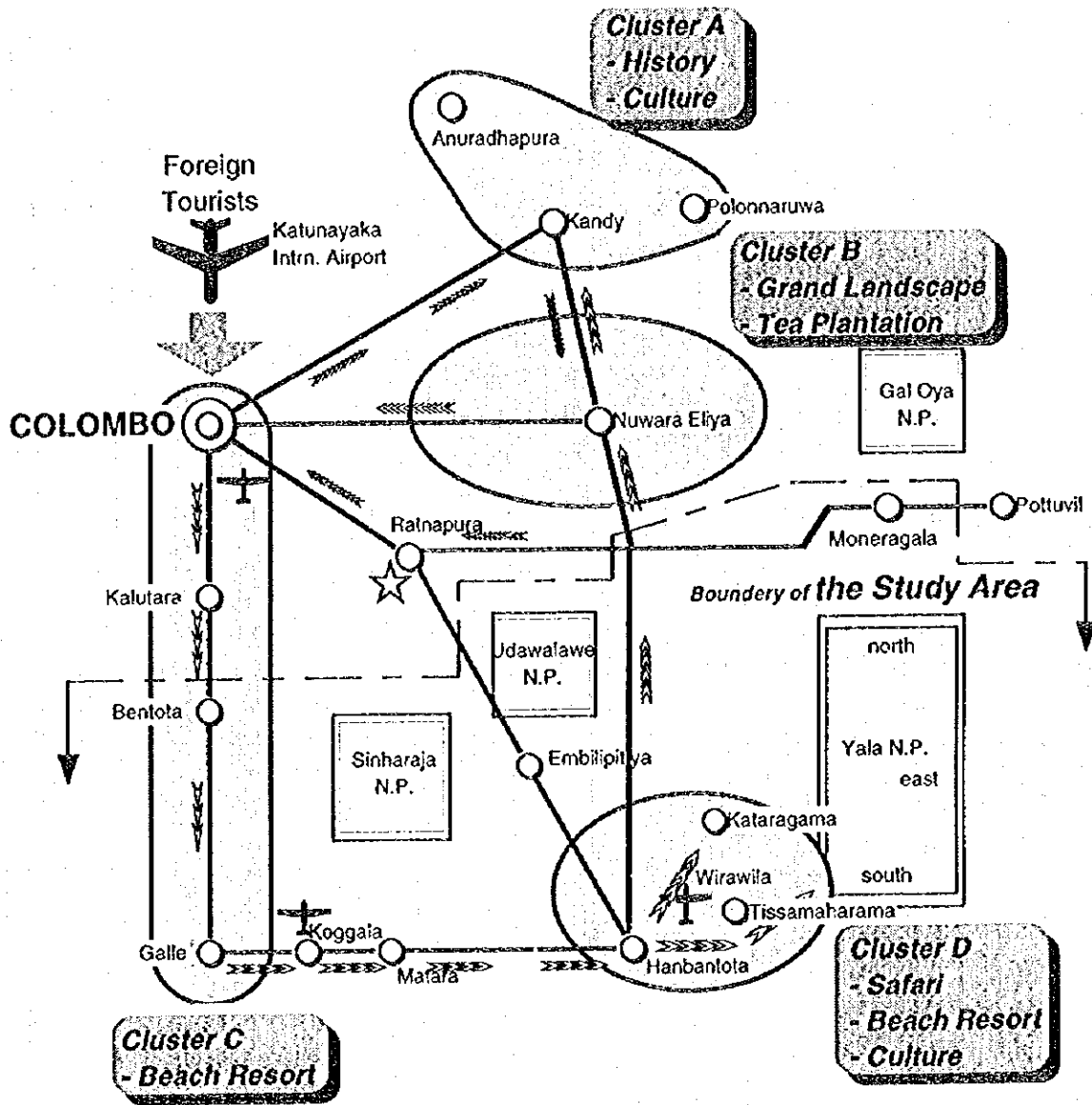


Figure 4.2 Conceptual Chart of Tourism Development in Southern Area



Source : JICA Study Team

Figure 4.3 Tourist Circuit and Resources Cluster for Southern Area



LEGEND

- | | | | |
|--|----------------------------------|--|---|
| | Major Road & Urban Centre | | Place of Gem Mining |
| | Local Airport | | Major Flow of Oriental Tourists |
| | Tourism Resources Cluster in Use | | Major Flow of Euro/American Tourists |
| | | | Optional Flow of Euro/American Tourists |

Source : JICA Study Team

CHAPTER 5

Chapter 5

SOUTHERN AREA DEVELOPMENT FRAMEWORKS AND SCENARIO

5.1 Spatial Frameworks for Southern Area Development

A spatial development framework for the Southern Area regional development is prescribed by several factors. They include three basic factors: (1) distribution of settlements (points or nodes), (2) transportation networks (lines or arcs), and (3) land use and potential (area). Distribution of water resources is another important factor particularly in Southern Area as well as the Galle port. Each of these factors is described.

5.1.1 Artery network and growth centers

(1) Basic requirements of spatial framework

Existing spatial development patterns of Southern Area are characterized by dispersed population distribution without well developed urban centers, strong physical link with Colombo mainly by the coastal road, and poor access to most areas. These conditions make marketing of rural products and delivery of social services difficult and costly.

Given these conditions, the following seem to be the basic requirements for spatial development of Southern Area:

- 1) to strengthen links with Colombo to expand markets and improve comparative advantage of Southern Area for location of industrial and other activities, and
- 2) to serve rural areas better for marketing of agro-products including processing and improved provision of various social services.

(2) Components of spatial framework

To satisfy the basic requirements outlined above, the following are conceived as components constituting the spatial framework for regional development of Southern Area (Figure 5.1):

- 1) Establishment of two main access routes from Colombo: the Galle/Matara access and the Embilipitiya/Hambantota access;

- 2) Establishment of a strong intra-regional artery or intra-regional spinal road linking Galle, Matara, Embilipitiya, Tanamalwila, Wellawaya and Moneragala; and
- 3) Strengthening of the growth center of Embilipitiya at the major cross roads between the intra-regional artery and the Embilipitiya/Hambantota access.

The Galle/Matara access has been much talked about in the form of the Alternative Southern Highway extending from Colombo to Galle and to reach Matara. For the long-term development of Southern Area, the Embilipitiya/Hambantota access needs to be established.

The proposed alignment of the new intra-regional artery would improve the access to rural areas as well as the access to the southeast dry zone. Probably 90% of the rural area, except the Yala National Park, would fall within one-hour time distance from this future artery. This would help also the future Galle port to serve import/export needs of the interior.

The Embilipitiya area at the cross roads between the proposed intra-regional artery and the Embilipitiya/Hambantota access has several promising factors for a future growth center. It is centrally located in Southern Area. As it is generally in the intermediate zone, it may benefit from both the wet and the dry zones for supply of agricultural products for processing. It would have two local market outlets of Galle-Matara and Hambantota-Ambalantota. A few promising industries have been proposed, and a new tourism resource and the Walawe left bank development are nearby.

5.1.2 Land suitability and proposed land use

(1) Land suitability

The suitability of all available land for forestry and agricultural use (including pasture) has been evaluated using a GIS by a process of successive evaluation of soil and land data. Mineral land use potential is assessed based on the mineral resources inventories prepared by the Geological Survey and Mines Bureau (GSMB).

Forestry potential

The 1992 forest cover prepared by the Forest Department (FD) was used in conjunction with the forest reserve and wildlife reserve boundary coverages to determine the four land use potential categories enumerated upon in the National Forestry Master Plan (NFMP).

Land Use Classification for Forest and Protected Areas

Class	Land Use Purpose	Activities Allowed	Area in Southern Area
I	Strict protection for biodiversity, soils and water and historical, cultural, religions and esthetic values	Research	Sinharaja Forest Reserve Yala Strict Nature Reserve
II	Conservation with Non-extractive uses	Scientific research Regulated nature-based tourism Controlled collection of NWFPs	National Parks Sanctuaries Conservation Forests
III	Forests for multiple uses buffer zones to protect Class I and Class II forests	Sustainable wood production NWFPs	Other Forest Reserves for production
IV	Forest plantations and agroforestry systems in state lands		Other Forest Reserves for production

Figure 5.2 and Table 5.1 present forestry land use potentials for Southern Area.

The area classified under protected forest lands occupies 215,000 ha or 19.5% of the Southern Area land. Moneragala (100,000 ha or 24.7%), Hambantota (60,680 ha or 23.17%), and Ampara (27,700 or 33.1%) districts have large areas under this category. Production forest lands constitute 6.9% (75,400 ha) of Southern Area with large areas in Ampara (33,390 ha or 40%) and Matara (12,300 ha or 9.4%) districts.

Although most of natural forests are either in protected areas or forest reserves (47% in protected areas and 16% in production forests), large percentage of natural forest (37%) is still not zoned. These forests are mainly found in dry monsoon forests in Moneragala and Ampara districts. Moreover, large forest areas in Galle, Matara and Hambantota (total area 12,000 ha) districts are also not covered in productive or protected areas. Appropriate management policies for these forests need to be indicated. In protected areas 60% is covered by dense forest, while 19% is sparse open forest and 21% not forested. The protected areas without forest cover are mainly in Moneragala and Hambantota districts.

Agricultural potential

Soil map units which integrate information on soil type, terrain and broad ecological zone, were evaluated and classified in terms of their suitability for different land uses. Soil map

units suitable for agriculture were also given a suitability rating from 1 to 6 based on the number and severity of limitations for agricultural use (Table 5.2 and Table 5.3).

The following need to be noted:

- 1) Prime agricultural lands have a suitability rating of 1 or 2;
- 2) Marginal agricultural lands have a suitability rating of 3 or 4;
- 3) Lands unsuitable for agriculture have a suitability rating of 5 or 6; these also would include existing water bodies, miscellaneous lands and mountain areas;
- 4) Lowlands are soil map units having the following terrain types: flat terrain, undulating terrain, undulating and rolling terrain and rolling terrain; these are areas that in general have slopes varying between 0 to 10%, or are areas adjacent to the sea or river beds having a maximum elevation of about 60 m;
- 5) Uplands are soil map units with the terrain classes hilly and rolling terrain (slope between 4% to 30%) or rolling, hilly and steep terrain (slope between 30% to 60%). The elevation of Uplands varies from 60 to 300 m; and
- 6) Mountain areas have slopes greater than 60% and/or have elevations greater than 300m.

Results of the agricultural potential analysis are summarized in Table 5.4. and Figure 5.2. Prime agricultural lowlands in Galle and Matara districts have limitations for integrated crop livestock development due to the very high rainfall and no dry period. Prime agricultural lowlands in Hambantota, Ratnapura, Moneragala and Ampara districts within Southern Area are suitable for agricultural and pasture use (crop livestock integrated system). These constitute 7.1% (78,200 ha) of Southern Area with large areas in Hambantota (29,000 ha; 11.1%), Moneragala (41,600 ha; 10.3%) and Ampara (5,900 ha; 7.1%) districts.

Prime agricultural uplands found in the southeast dry zone constitute a quarter of Southern Area (271,000 ha). Hambantota (80,600 ha), Moneragala (163,000 ha; 40.2%) and Ratnapura (19,300 ha; 34%) districts have significant areas under this category. These lands have significant potential for exploitation if water resources can be developed for suitable irrigation schemes. Marginal agricultural lowlands constitute 1.4% (15,600 ha) of Southern Area and are low lying coastal areas along Galle, Matara and western part of Hambantota districts.

Marginal agricultural uplands constitute 29% (320,000 ha) of Southern Area and are primarily in the wet and the intermediate zones. These large areas in Galle (121,000 ha; 75.5%), Matara (102,000 ha; 78.2%) and Hambantota (54,580 ha; 20.8%) districts are being used intensively for cultivation of perennial crops. However, their intrinsic limitations should be recognized as significant yield and productivity increases are difficult without entailing higher input costs to overcome the limitations (mainly soil related).

Urban and industrial potential

The following criteria were used to identify potential areas for urban and industrial use.

- (1) Protected areas (Class I and II forests), water bodies and wetlands are excluded.
- (2) Prime agricultural lands are excluded.
- (3) All areas within 4 km of Class A roads or 2 km of Class B roads, or within 10 km of rank 1 urban centers, or 5 km of rank 2 urban centers are included.

Figure 5.3 presents the results. Prime agricultural lands in the dry zone region of Moneragala and Hambantota districts are also potential lands as water availability for agriculture is a major limitation there.

- (2) Proposed land use

Strategy

The strategy for the Southern Area development calls for combination of favorable elements of three alternative development scenarios: the indigenous resource based scenario, the external /market driven scenario and the support services oriented scenario. With respect to land use these translate into the following.

- 1) Identifying areas for different kinds of land use on a rational basis. This includes areas to be set aside for protection and conservation, agriculture, industrialization/urbanization and so on based on a study of existing and potential land use.
- 2) Promotion of multi-storey farming and integrated farming land utilization types (LUTs) under both irrigated and rainfed conditions rather than mono-cropping systems in uplands to intensify and diversify agricultural produce linked up to agroindustry development as well as soil conservation. Home gardens can be diverted to multi-storey farming.

- 3) Promotion of paddy based mixed farming to enhance agricultural productivity as well as for crop diversification.
- 4) Establishment of integrated farming systems for crop diversification and to combine and to improve crop -livestock link up.
- 5) Promotion of selected high value commercial crops for local agro-processing and establishment of agro-industries like condiments, pharmaceuticals, cosmetics etc.
- 6) Promotion of multi-storey farming as well as agro-forestry systems in productive forest lands found to be of prime agricultural suitability.
- 7) Restrict large forest plantations to existing state forest plantation area and promote various forms of social forestry for local people benefit and involvement in forest protection activities.

Land utilization types (LUTs)

LUTs are a set of conditions for a kind of land use, which are conducive for optimal sustained production. The key attributes of the LUTs are produce, capital use, power source, size of holding, infrastructure requirements, technical knowledge of the land users and the technology employed. Several LUTs are proposed for Southern Area like upland multi-storey farming, upland integrated or mixed cropping system, lowland paddy based mixed farming, lowland integrated farming and production forest agroforestry system. Improved practices with regard to soil conservation, substitution of fertilizers and agro-chemicals by organic manure, placement of mineral fertilizers in narrow subsurface bands, integrated pest management, marketing and delivery of advisory services, are all aspects that need to be given careful attention in implementing these LUTs.

Proposed land use zoning

An overlay of the potential land use (forest and agriculture) coverage with existing land use coverage was done and the proposed land use was derived through reclassification into the various proposed LUTs (Table 5.4).

The proposed land use is given in Table 5.5 and Figure 5.4. The following features are incorporated.

- (1) Water bodies and wetlands are the same in existing and proposed land use.
- (2) Proposed protected forests include all protected forest lands identified in the land use potential map, having any existing land use other than water bodies and wetlands, and all dense forest cover areas in existing land use having potential land use other than production forest lands. The rationale behind this is that all existing remaining dense forest areas should be conserved or protected for future use, considering the scale of deforestation that has already occurred in Southern Area.
- (3) Proposed production forests are all production forest lands identified in the land use potential map having any existing land use class other than water bodies and wetlands.
- (4) Proposed agricultural lands are first identified into two broad groups. The first group (proposed intensive use) includes areas which are presently being intensively cultivated or used (groups 3a, 4a and 5a), while the second group (proposed diversified use) includes areas which are presently under-utilized or which are presently sparsely used (groups 3b, 4b and 5b). The latter is potential land remaining after determination of water bodies and wetlands, protection forests, production forests and non-productive areas, where land at present is sparsely used as well as other cropland, open forests and plantations. The former includes all remaining potential agricultural lands having existing land use as homesteads, trees and other perennial crops or paddy. The two broad proposed agricultural land use groups are further classified into prime or marginal agricultural lands, and in terms of whether they are lowland or uplands.
- (5) Marginal agricultural lowlands are all along the coastline. These are classified under un-productive areas in the proposed land use due to the environmental sensitiveness of their ecosystems.

5.1.3 Water balance

- (1) Present water balance

Surface water resources

As many of the basins have ungauged catchments, runoff in those basins has been estimated by deriving runoff coefficients by correlation with rainfall. This method has produced lower runoff figures for the SEDZ compared with those assumed in the Water Resources Inventory. However the revised runoff figures compare well with the measured flows from those basins with good flow records and produce a lower runoff for Kirindi Oya which

is in line with what has been experienced recently. It is therefore felt this method produces a more consistent, as well as conservative, assessment of runoff in the region as a whole.

The 80% reliable unregulated runoff from basins has been estimated by time series analysis of available flow records to determine the 80% reliable monthly flows. The 80% reliable yield from reservoirs has been assessed by reservoir simulation modelling.

Present water balance

Estimated basin runoff is compared with all known present water demands within each basin (Table 5.6). Results are illustrated in Figure 5.5.

There is a large water surplus in the wet zone particularly from the Bentara Ganga to the Nilwala Ganga basins. However land constraints prevent full in-basin utilization of this surplus. These basins therefore present an obvious source of water for diversion to the dry zone, albeit at a high cost.

The Walawe Ganga has a modest surplus indicating this basin is reaching its full in-basin development potential. However, it should be realized that although a basin may possess an overall surplus, there may well be local areas of shortages within the basin.

The Kirindi Oya basin is currently experiencing a serious water shortage. Noticeable shortages exist in the Malala Oya, Urubokka Oya and Kirama Oya basins.

There are useful surpluses along the eastern side of the SEDZ, from the Menik Ganga on towards the Heda Oya and the Karanda Oya. This indicates potential for further in-basin development within these basins.

(2) Future water balance

Demand projection

Irrigation water requirements have been developed using FAO methods and criteria published by the Irrigation Department. These derived requirements were then checked with actual irrigation duties for the Walawe and the Kirindi Oya schemes. Future irrigation demands for 2005 were derived using anticipated future cropping patterns, intensities and future development areas. With this demand model any combination of cropping pattern, intensity of future development area can be investigated.

A similar demand model has been developed for assessing future projected municipal water demands. Demand projections have been made by taking the urban and rural population projections according to the socio-economic framework (subsection 5.2.2) together with other criteria such as per capita consumption for house connections, standpipes and wells. These criteria have been combined with predicted increased service coverage by piped supplies and house connections. Using the given population projections and assuming an increased service coverage by piped supplies of 1% per annum, this could result in municipal water demands doubling over the next 20 years, with Galle district experiencing the highest growth.

Future water balance

The water balance in 2015 without any major water resources development is given in Table 5.7 together with future water demand projections. This includes provision of municipal and industrial supplies to meet the demand projected for 2015 and future irrigation water requirements. The latter consist of irrigation requirements for the existing 92,200 ha as estimated in Southern Area, areas for planned irrigation schemes, and an additional area of prime agricultural lands identified in 24,900 ha for further development.

As seen from Figure 5.6 the water shortages in the Urubokka Oya, Kirama Oya, Malala Oya and Kirindi Oya will aggravate, and additional shortages will occur in a few other basins including the Menik Ganga. A gross deficit will be 595 million m³ annually.

5.1.4 Urban hierarchy

The hierarchical structure of urban centers has been analyzed by another urban sector study for Southern Area conducted separately under the UNDP technical cooperation. The study collected extensive data on existing facilities of 45 major urban centers. Using the same data in a different way, the existing hierarchy of urban centers has been analyzed, and a desirable hierarchy is indicated for the Southern Area development.

(1) Existing hierarchy

The detailed data on existing urban facilities are categorized into seven classes of functions : administration, commercial and services, manufacturing, social and recreation, health services, education, transport and communication. Urban centers are ranked into five levels using these functions and population: level 1 for the highest and level 5 for the lowest.

The total score is calculated by adding the inverse of each ranking. Thus the maximum score is 8.0, and the minimum 1.6.

As shown in Table 5.8, the urban center ranked the highest is Galle (with the maximum score 8.0), followed closely by Matara (7.5). Other urban centers ranked high are Embilipitiya (3.5), Hambantota (3.33), Weligama (3.25), and Tissamaharama (2.92). Additional 12 urban centers have the score over 2.2, and further 12 urban centers over 1.95. The hierarchical structure based on this is illustrated in Figure 5.7.

(2) Strategic clustering

To strengthen the hierarchical structure of urban centers in Southern Area with clear functional division, some functions of larger urban centers should be selectively enhanced. In view of relatively small size of any existing urban center, clusters of urban centers are defined based on strategic considerations to enhance various urban functions in a complementary manner within and between clusters.

Urban clusters

The following urban clusters are defined (Figure 5.8).

- 1.0 Galle cluster
 - 1.1 Urban centers within agglomeration
 - 1.1.1 Habaraduwa/Koggala/Ahangama
 - 1.1.2 Akmeemana
 - 1.2 Associating urban centers
 - 1.2.1 Hikkaduwa/Dodanduwa
 - 1.2.2 Baddegama
 - 1.3 Ambalangoda - influenced urban center
 - 1.3.1 Urban centers within agglomeration : Watugedara, Balapitiya
 - 1.3.2 Associating urban centers : Kosgoda, Uragasmanhandiya

- 2.0 Matara cluster
 - 2.1 Urban center within agglomeration
 - 2.1.1 Weligama
 - 2.2 Associating urban centers
 - 2.2.1 Akuressa
 - 2.2.2 Kamburupitiya

- 2.3 Tangalle – influenced urban center
 - 2.3.1 Associating urban centers : Beliatta, Dickwella

- 3.0 Embilipitiya cluster
 - 3.1 Associating urban centers
 - 3.1.1 Sooriyawewa
 - 3.1.2 Angunakolapelessa
 - 3.1.3 Middeniya

- 4.0 Hambantota - Tissamaharama cluster
 - 4.1 Urban center within agglomeration
 - 4.1.1 Ambalantota
 - 4.2 Associating urban centers
 - 4.2.1 Kataragama
 - 4.2.2 Lunugamwehera

- 5.0 Moneragala cluster
 - 5.1 Associating urban centers
 - 5.1.1 Buttala
 - 5.1.2 Wellawaya

Characterization

Galle is the regional center and expected to become a national development pole and an international city. Matara is the regional sub-center and expected to serve as a regional commercial and services center including human resources development. Embilipitiya has a prospect to become a regional agro-processing and agro-services center and also a regional tourism sub-center. Hambantota and Tissamaharama together are expected to develop into another development pole and a new tourism gateway.

(3) Future urban hierarchy

The same analytical framework has been used to examine desirable urban hierarchy in the future. Ranking of some urban centers has been upgraded selectively in accordance with the characterization and prospects indicated above. A proposed urban hierarchy is illustrated in Figure 5.9. In this future hierarchy, a few urban centers - Moneragala, Buttala, Tanamalwila and Sooriyawewa - along the proposed intra-regional artery are upgraded as boosting centers together with Kataragama and Morawaka.

5.2 Socio-Economic Frameworks for Southern Area Development

5.2.1 Regional income levels and projections

Regional income and projections

The most up-to-date information on gross regional domestic product (GRDP) is for 1990. Information is available on the shares of Southern province by broad sector. The available information on growth of national GDP is combined with the 1990 shares of Southern Area to arrive at the following estimates of GDP per capita in 1995 in constant 1975 prices (further details are given in Table 5.9)

(Unit Rs. in constant 1975 prices)	
	GDP or GRDP per capita 1995
Sri Lanka	3,839
Southern Area	2,590
Regional/national income ratio	67.5%

The growth rate of national GDP per capita is derived from an assumed population growth rate of 1.0% and GDP growth rate of 6% per annum during the next 20 years. The Southern Area GRDP per capita is based on detailed calculations discussed below.

First, the regional income by each of the three broad sectors is broken into its major components. Different growth rates are assumed for each of these components. These growth rates vary for the three regional development alternatives (Table 5.10). Under the selected alternative, the GRDP is estimated to grow at 7.8% per annum over the planning period (Table 5.11). With a population growth rate of 1.2% per annum, the GRDP per capita will grow at 6.5% per annum.

The sectoral composition will also change significantly. The share of agriculture is projected to decline substantially (Table 5.10) in terms of GRDP, but with a less pronounced decline in employment. Over half of the incremental growth of both jobs and regional income will come from the services. Particularly large expansion is expected in specialized services in tourism, banking and transport/ communication.

5.2.2 Population and employment estimates

Population, labor force and unemployment

Estimates of the size of labor force and employment vary depending on sources of information. Two separate estimates of the present size of labor force are available for Sri Lanka. One is provided by the Department of Census and Statistics and the other by the Central Bank. These are given below. Of these, the Central Bank estimates seem to be more reasonable.

	1991	1994	Implied participation ratio
Dept. of Census and Statistics			
Population (000)	17,259.2	17,751.0	
Labor force (000)	7,454.0	7,681	43.3
Central Bank			
Population (000)	17,259.2	17,751.0	
Labor force (000)	7,575.7	6,873	38.7

The only source of information for the labor force and employment in Southern Area is the 1994 demographic survey. This survey also provides information on unemployment. The available information from this for Southern Area in 1994 is summarized below.

	Population	Labor force	No. of employed	Unemployment rate
Galle	953,815	353,420	290,585	17.8
Matara	754,044	272,224	220,507	19.0
Hambantota	518,366	168,796	141,427	16.2
Rest of Southern Area	392,474	134,495	118,463	11.9
Total Southern Area	2,618,699	928,935	770,982	17.0

The reported employment of 770,982 workers in Southern Area in 1994 is roughly consistent with the national estimate provided by the Central Bank. The demographic survey indicates that the proportion of population in the labor force was 38.5% for the Country in 1994. Corresponding figures are 36.5% for Southern Area and 38% for Colombo.

After adjustment for the slightly lower proportion of population in the labor force, the estimated labor force in Southern Area would have been almost identical to the estimated

labor force of 929,000 and the reported number of unemployed at 158,000 (17% of the labor force).

Sectoral distribution of the work force

The most recent source of information on sectoral distribution of the work force is the 1992 labor force survey. The results of this survey for the three major districts are given below. The coverage of this survey excludes those not living in households (barracks, hostels, etc.). As such the total work force (685,295) is less than the independent estimate given above.

Employed Population by Sector

	Agriculture		Industry		Service		Total	
	Number	%	Number	%	Number	%	Number	%
Galle	105,271	36.4	58,049	20.0	126,474	43.6	289,794	100
Matara	106,829	44.5	56,406	23.5	77,014	32.0	340,259	100
Hambantota	93,138	60.0	24,404	15.7	37,700	24.3	155,242	100
Total	305,248	44.5	138,859	20.3	241,188	35.2	685,295	100

Projected population and labor force

The Department of Census and Statistics provides detailed projections of population and labor force for the period up to the year 2031. Population and labor force projections are made independently and resulted in unreasonable implied participation rates for the year 2015. Only the population projection is taken from this study, but the labor force is estimated independently. The growth rate of population in Southern Area is calculated by taking a slightly higher rate than the national average as in the recent past. Employment is derived from the population taking into account the trend in participation rates. Results are summarized.

	Sri Lanka		Southern Area	
	1995	2015	1995	2015
Population	17,900	21,516	2,640,000	3,350,000
Labor Force	6,355	8,176	956,803	1,223,000
Employment	5,521	7,521	794,110	1,162,000
Unemployed (%)	13.1	8.0	17.0	5.0

The projections above imply population growth rates of 1.0% per annum for the Country and 1.2% per annum for Southern Area over the next 20 years. The proportion of

population in the labor force increases by a modest 2 percentage points for the Country (from 35.5% to 38%).

As with all the parameters, there are different estimates of sectoral composition of employment. For consistency, the figures reported by the Demographic Survey are applied to employed population to arrive at sectoral employment in 1995. The sectoral distribution of people employed in 1995 is based on the results of the labour force survey for the three districts (Galle, Matara and Hambantota) given above. Employment in agriculture is assumed to stay at the same level through 2015.

Sectoral Distribution of People Employed - Southern Area

	1995		2015	
	Number	%	%	Estimated number
Agriculture	353,379	44.5	30.4	353,000
Industry	161,204	20.3	24.2	281,000
Services	279,527	35.2	45.4	528,000
Total	794,110	100.0	100.0	1,162,000

5.2.3 Sectoral value-added and productivity

The growth rate of agricultural GDP is modest under all conceivable scenarios: around 3%. Higher growth rates than this are unrealistic in the light of modest development foreseen in irrigation and productivity. This low growth in agriculture, coupled with the assumption that the present agricultural labour force should be maintained, leads to a deterioration in the relative position of agricultural incomes as shown below.

The projected GRDP under a scenario representing the most likely conditions is summarized below. The table also presents the implied value added per worker and its growth rates over the planning period.

	1995			2015			Annual productivity growth %
	GRDP (Mil Rs.)	Employment (1000)	Value-added worker	GRDP (Mil Rs.)	Employment (1000)	Value-added per worker	
Agriculture	4,658	353.4	13,180	8,900	353	25,212	3.3
Industry	3,773	161.2	23,406	22,069	281	78,537	6.2
Services	8,605	279.5	30,787	45,008	528	85,242	5.2
Total	17,036	794.1	21,453	75,977	1,162	65,385	5.7

The growth in productivity is very high for all sectors. The attainment of these levels of productivity would require a major change in the composition within each sector. In agriculture, this growth in productivity requires less emphasis on plantation crops and large scale introduction of new crops and a large expansion in livestock, particularly poultry and dairy.

In industry, all growth would come from the factory sector. The projected growth in productivity is attainable. The actual growth could exceed this if the composition is diversified and garments become less dominant. The assumed productivity growth in services is modest and derives from the assumption that personnel services and trade will remain significant to absorb part of the expansion in the labor supply.

5.2.4 Detailed sectoral estimates

The macro framework derived above is compared with the likely growth in key production sectors: agriculture and industry. The purpose of this analysis is to assess the feasibility of the projected growth on the basis of detailed analysis of each sector.

(1) Agriculture

Crop value added

The value added of agricultural sector at present is calculated for the Southern Area from the available information on production, farmgate prices and input costs. The agricultural value-added in 2015 has been estimated consistently with the proposed agricultural land use. Results are given below for major crop categories. Slightly more than half of the increase in

crop value added is due to increase in yields and most of the rest is due to increase in area cultivated.

Agricultural Value Added in Southern Area

(Unit Rs. million in 1995 prices)

	1995	2015	Growth rate (% per annum)
Paddy	2,938	5,201	2.9
Plantation Crops	3,329	5,773	2.8
Minor ex.crops	1,969	3,226	2.5
Other crops	4,232	11,467	5.1
Total crops	12,468	25,667	3.7

The estimates for the end of the planning period take into account the likely yield changes and intensification in input use. In most cases yield projections are trend based. For the major crops, the projected yields are the best yields actually attained under farm conditions. In paddy, the yield is expected to increase from the present 2.6 tons/ha in wet zone to 4.5 tons/ha by the year 2015. The yield change in dry zone is from 3.8 tons/ha in 1995 to 5.5 tons/ha. For vegetables, the yields are projected to increase from 25 to 40 tons/ha while the sugarcane yield is assumed to remain at the 1995 level of 60 tons/ha.

Area cultivated

The increase in area cultivated is estimated separately for the wet, and the dry/intermediate zones. The increase is a result of intensification under the existing irrigation schemes and a moderate expansion in area irrigated. The expected growth in area cultivated is given below.

Area Cultivated in Southern Area

(Unit : ha)

	1995	2015	Growth rate (% per annum)
Wet zone	161,452	193,000	0.9
Dry and intermediate zones	179,267	274,967	2.2
Total	341,719	467,967	1.6

Agricultural value added

Separate estimates were undertaken for the other components of agriculture: fisheries, livestock and forestry. Fishery value added is estimated separately on the basis of output value and cost of purchased inputs. For livestock, which is a small component of the sectoral value added, the estimate is based on simplifying assumptions on share of value added in output. The total agricultural value added given below is approximately 70% of that calculated from the disaggregated national accounts. Most of the difference is believed to be due to exclusion of the minor commodities in the present analysis.

Agricultural Sector Value Added in Southern Area

(Unit : Rs. million)

	1995	2015	Annual growth rate
Crops	12,468	25,607	3.68
Livestock	603	1,420	4.38
Fishery/Forestry /others	6,481	10,213	2.30
Total agriculture	19,552	37,300	3.29

(2) Industry

The feasibility of the macro aggregates for the industrial sector is checked by converting the Master plan targets into employment generation in industry. The expected level of employment is divided into the factory employment and other components. This projected level of growth is compared with the past growth and employment generated under the two major incentive schemes. The targets are found to be modest in comparison with the past performance of the Country.

The investment requirements of the projected growth indicate that the expected expansion in manufacturing jobs is feasible under a combination of continuing foreign private investment in the Koggala EPZ and the new proposed estate in Hambantota, in combination with the region receiving a trend based share of domestic investment.

Employment

The total employment in Southern Area and the employment in manufacturing at present and in the year 2015 is projected as follows.

	1995	2015
Total Employment	794,111	1,162,000
Of which industry	161,000	281,000
(Manufacturing)	106,600	213,000

All of the incremental expansion in manufacturing employment will occur in formal sector enterprises. Some of these will be large enterprises producing for the national and international markets. Some will be small firms employing less than 10 workers.

The estimated distribution of the new enterprises by the size class is somehow arbitrary and is determined by comparison with the experiences of other countries whose performance Sri Lanka may emulate. The bulk of expansion is projected for the intermediate sized enterprises employing 10 to 100 workers. It is estimated that over half of the incremental employment will be in this type of firms. No growth is projected for the micro/cottage industry. The target composition is given below.

	1995	2015
Large factory type	15,000	50,000
Other formal sector	40,000	113,000
Micro/cottage industry	51,600	50,000

The expansion of 35,000 jobs in factory type employment will occur over a 20 year period. This is twice the total employment generated over a five year period under the 200 Garments Factory program and in the Koggala EPZ.

This growth in industry and the associated development of the service sector will provide enough jobs for all new entrants while reducing the number of unemployed from an estimated 160,000 in 1995 to 60,000 in 2015. The projected growth in employment over the master plan period of 2.1% per annum is sufficient to achieve the employment targets.

Subsector structure

In terms of sectoral distribution, product lines where rapid expansion is expected for the regional market are non-metallic mineral products, and fabricated metal products. Export and national market oriented industries are gems and jewelry, leather products, textiles and

above all garments. These will grow at higher rates than the regional market oriented industries.

The present composition of manufacturing output is very immature; food processing, textiles and chemicals (mostly petroleum) provide 90% of the value added. The share of fabricated metal products may increase from 5% in 1995 to 15% in 2015. A similar increase is possible in the non-metallic mineral products: from around 3% in 1995 to 10% of the manufacturing value added.

Garments will grow by over 12%. The Sri Lankan export quotas will be increased by 6% per annum under the GATT rules; in the past, Sri Lanka has been able to increase the value index by 6% per annum by shifting to higher value added products; and presently the Country is not fully utilizing its quotas. This makes growth rates of over 12% possible for the garments if the regional industries grow at the same rate as the national average.

The regional industrialization strategy calls for specialization in some new regional industries. Already, Southern Area is planned to have the only industrial district in the Country for leather tanning. This will be the base of an export oriented leather industry. The region can become the center of production for integrated circuits and consumer electronics if special training and promotional measures are undertaken as suggested by the Master Plan.

Some specific industries envisioned for Southern Area are fabricated metals (foundries and metal plating), consumer electronics, ceramics based on imported clay and kaolin, and ship repair workshop. Clay based products can be developed to serve the regional and national markets.

Industrial location

At present, half of the large factory type employment is located in the Koggala EPZ and the rest on free standing industrial plots. This trend is projected to continue. Two types of locations are envisioned for the intermediate sized firms. The relatively large ones that may create noise, fumes, and other environmental problems will be located in specialized industry districts. These should accommodate half of the projected growth of 73,000 workers. Others that have no adverse environmental impacts (bakeries, confectionery and other sugar products, small garment and leather products and similar firms) will locate in residential areas. Separate districts will not be needed, but their space requirements should be considered in plans for built up areas.

Agro-based industries will be developed in Hambantota and Matara districts while Galle becomes a center for large scale foot loose industries. The bulk of new investment in Southern Area will come from large Colombo based companies and foreign firms. For these, access to Colombo and social amenities will be important. Therefore, the location of these new industries should be channeled into a few selected centers in Southern Area. Galle is an ideal location .

The Cabinet has made a decision to establish an industrial estate in Hambantota district, similar to the one in Koggala. Agro-processing, livestock and production of agricultural machinery for the regional and national markets should be promoted in this estate.

Matara is a major industrial area similar to Galle in the level of development. The present programs for development of small industry districts do not take this into account to a sufficient degree. It is proposed that a number of relatively large districts should be developed in Matara, Dikwella, Welipitiya and Weligama divisions.

Land requirement

The industrial land requirements of the projected growth are modest. The additional employment to be created in large factories is estimated at 35,000 workers. This will require 175 acres. Of this, approximately half (90 acres) will be in planned industrial estates. The Koggala estate has 60 acres still to be developed. The new industrial estate approved for Mirijjawila (Hambantota) has 250 acres. These two will be able to accommodate all of the future requirements for large factories.

The bulk of new industrial land requirement is for small/ medium sized firms. The land requirement per worker is larger in these companies and they are expected to receive the bulk of incremental growth. Additional employment expected to be created in these companies will be 73,000. It is proposed to locate half of these in small industry districts. This will require developing close to 1000 acres of land representing an average of 50 acres every year over the planning period. The government agencies have plans to develop nine new small industry districts. These planned estates are sufficient to meet the needs in Galle and Hambantota districts. In Matara district, there are not plans to develop any. The Master Plan proposes to develop up to four relatively large estates in Matara district.

The required new industrial land is not unmanageable in comparison with the existing plans of government institutions: 358 acres in six proposed locations where the size of districts is finalized. The proposals are, however, very demanding in comparison with the actual

achievements of the government institutions. So far, they have been able to develop a total of only two acres in industrial districts in Southern Area.

Labour productivity

In addition to this growth in industrial employment, value added per worker employed in industry is projected to grow by 6.2% per annum. This is a modest target if the change targeted in the composition of manufacturing is realized. The shift from micro/cottage type employment to that in medium to large industries will result in even higher rates of productivity growth than the Master Plan macro framework assumptions.