

5.3 Southern Area Development Scenario with Phasing

The alternative for the Southern Area development to the year 2015 was defined conceptually by combining for the different phases the three distinct alternatives (Section 3.3). Sequence of activities to develop and events to take place over the planning period are described here by phase as the development scenario for Southern Area. The planning period is divided into the three phases: Phase I for 1997-2000, Phase II for 2001-2010, and Phase III for 2011-2015. Expected performance of Southern Area in each phase is described.

5.3.1 Phase I : 1997-2000

(1) Characterization

The Southern Area development during this phase will be characterized by activities of the indigenous resource based development. Some innovations will have to be introduced already to prepare for the subsequent development, although their contribution to growth during this phase will be limited. Selected elements of the other two types of activities will also be introduced in limited sectors and locations.

Firm determination and commitment by the Government constitute a prerequisite as well as wide acceptance by the public for such a strong government initiative. Development planning and administration need to be streamlined in line with the devolution policy of the Government and the establishment of the Southern Development Authority (SDA). People will be re-motivated and better organized for the innovations and the revitalization of traditional/indigenous systems.

The economic growth during this phase will be necessarily modest. However, some visible outcomes will have to be produced in the forms of a large number of employment opportunities generated, key facilities newly established, and institutionalized mechanism for enhanced participation of local people and communities.

(2) Socio-economy

Agriculture

On-going efforts to improve the productivity of traditional crops will be continued, including rehabilitation of small irrigation schemes for paddy, tea replanting, increased fertilizer use

for rubber, and coconut inter-cropping. Sugarcane area will be expanded in Moneragala district. In parallel, innovations need to be introduced. They include cashew expansion in Hambantota district aiming at a complete cycle processing in the subsequent stage, rehabilitation of home gardens to convert them into commercially viable production systems (e.g. multi-storey farming), small holder integrated farming combining crop cultivation with livestock raising (including buffalo and goat) in the backyard, and paddy-based mixed farming.

Most important for the innovations is to organize small farmers into more efficient and credible actors for procurement of input and marketing of output as well as production of diversified crops. For this, a sort of value development to motivate small farmers may be necessary as well as provision of extension and market information. Clarification of land tenure relationships may be another prerequisite in some cases.

Another important direction for agricultural development in this phase is to revitalize and effectively use traditional/indigenous systems. Some forms of integrated farming (e.g. crop-fish combination using seasonal tanks) may benefit from traditional management systems for land and water resources. Indigenous social systems may be effectively used to organize small farmers. The ancient irrigation eco-system with tanks and contour canals may be re-established in some areas to enhance land productivity.

Inland fishery should be revitalized with stocking of fingerlings and other supports to regain the peak production in the past. A marine fisheries resources survey will be conducted to establish a solid base for the development of marine fisheries subsequently. Environmentally sound and sustainable methods (less intensive) of prawn farming should be established through thorough research and environmental impact assessment.

Industry

A steady growth of industry during this phase will be supported mainly by expansion of existing industries in garments, handicraft, agro-processing and various other industries. Improvement of processing and diversification of products for higher value-added should be attempted for some existing industries. They may include rice products, tea packaging, cinnamon processing, citronella oil, sugar and ceramics industries.

New processing industries may be initiated in a limited scale. Among them are cashew for cashew apple wine/vinegar and industrial oil from shells, chillies and other spices, fish fillet

and frozen fish. Leather tanneries will establish in Hambantota and already planned with new state-of-art production lines and common wastewater treatment facilities.

More viable small and medium sized industries will be supported by separate industrial areas to be established at selected urban centers. On-going support measures will be provided in a package for coherence and comprehensiveness together with basic infrastructure and common service facilities. Support measures cover credit and other financing instruments, and administrative reforms as well as strengthened producer organizations for joint procurement and marketing. Common service facilities may include waste treatment or recycling facilities, showrooms, and welfare facilities for employees.

Services

Consumers-oriented services will grow steadily along with increase in income levels. Non-industrial services will grow also at a modest rate such as trucking and various business services. Improvement of marketing facilities, telecommunications and other infrastructure facilities will support the growth of these services.

New types of service activities will emerge to a limited extent. Initial efforts will be made to establish trading houses by private-public partnership. Financial services will expand their scope to cover long-term credits and equity finance as well as credits for smallholders. Specialized service activities may be established in a few selected locations related to education, health care and tourism.

Coverage of tourism services will expand steadily from Galle further along the coast and in and around Hambantota. More established tourism services along the southwestern coast will further upgrade their quality with better conference and communication facilities and a wider range of sporting opportunities.

(3) Spatial development

Given limited financial and manpower resources, improvement of spatial structure of Southern Area during this phase will have to concentrate in limited areas having higher potentials or strategic importance as well as areas facing imminent problems. Access to Southern Area from Colombo will be improved first to and through Galle. Urban infrastructure of those urban centers where specialized functions will be respectively strengthened will be selectively improved. Those urban centers include Matara, Hambantota, Embilipitiya, Tissamaharama and Suriyawewa as well as Galle.

In anticipation of clear urban hierarchy with functional divisions to be established in steps, land use plans will be prepared/updated for those urban centers at higher tiers of the expected hierarchical structure. Capacity building for urban planning will be initiated through such land use planning first for a few selected urban centers. The efforts will be replicated subsequently for other urban centers.

To improve rural access on a broad base for various imminent purposes, a new approach will be initiated. Local people and communities will be encouraged to participate in the maintenance and repair of rural roads with the support by provision of basic equipment and technical guidance.

(4) Human development

The inception phase will introduce formal community involvement in planning and implementing projects, concentrated initially in rural areas where people have fewer avenues for making themselves heard. NGO networks will be established to strengthen the twin concepts of community rights and responsibilities.

Systems for services delivery in occupational training, health, education, and financial assistance to the needy will be rationalized. In human resource development, a regional commission under the Tertiary and Vocational Education Commission will be established, supported by a Center of Excellence in Vocational and Technical Education. Training will concentrate on the needs of existing enterprises. Courses will be improved through sound monitoring and evaluation systems, counselling and placement centers, and upgrading of instructors' skills and facilities and equipment.

The focus of community enterprise development will shift from mobilization to practical viable business ventures. Community resource management will reduce chena cultivation, awareness programs will protect flora and fauna, and both will contribute to creating sustainable income sources.

Education will become more relevant by updating teachers' ability to instill creative thinking and decision making skills. Teachers will be more equitably deployed. Physical infrastructure and equipment will be evaluated and upgraded.

A master plan for health will define an orderly continuum from preventative to curative care and a workable referral system to assure that it remains orderly. Emphasis will be on

preventing disease, through community health education, and improving the nutritional status of women and children. Poverty alleviation will shift from welfare to income generation.

5.3.2 Phase II : 2001-2010

(1) Characterization

The economic growth will accelerate during this phase, supported increasingly by activities of the external resources/market driven development. The growth may over-shoot and taper off toward the end of the phase. Roles of the Government will be to maintain stable and open policies and to make investments into key infrastructure facilities to support private investments.

This phase will see active transformation of physical and socio-economic structures of Southern Area. In addition to further improvement of access from Colombo, intra-regional links will be strengthened. More viable linkages between factory-type industries in major urban centers and indigenous socio-economic activities will be established.

(2) Socio-economy

Agriculture

New crops and innovative production schemes initiated during Phase I will be expanded. This will also broaden the base for various agro-processing and related services. Contract farming/outgrower systems between agri-business enterprises and organized farmers will become common setups to support the rapid expansion. Also, an alternative system will be introduced for newly established crops to allow farmers' organizations to own, manage and operate post-harvest facilities for storage, processing and marketing.

Paddy-based mixed farming will result in higher yields for paddy as well as production of a variety of crops. A few crops cultivated under home garden-based multi-storey farming will attain a prominence of export products with or without processing.

Livestock raising in the backyard for integrated farming will become a common practice of smallholders. Other forms of integrated farming will establish. They may include such combinations as poultry-fish-maize/pulses, bee keeping-horticulture, and goat-tree crops.

Inland fisheries will fully establish as small but essential part of economic activities for rural communities. Its production will attain sustainable levels of growth to meet self-sufficiency. Marine fisheries will establish as a main stream economic activities for coastal communities. Processing and export of excess production will be supported by a marine fisheries complex to be established.

Industry

New agro-processing industries will establish in a full scale based on the expanded raw materials production. Secondary processing for higher value-added products will become more and more common to produce condiments, cosmetics and pharmaceuticals. Examples of such products include essential oils from citronella and lemongrass, cashew wine, industrial oils from cashew shells and castor, cardamom-based condiments and medicines, and pharmaceuticals and other industrial products from oleo resin of pine trees.

Another set of new industries will be established, as power supply capacity expands with the installation of major thermal power within Southern Area. Existing salt manufacturing and limestone deposits will provide a basis for electro-chemical industry to produce a wide range of products such as caustic soda, chlorine-based products, fertilizer and insecticides. Coconut shells may also be used to produce carbon electrodes along the same line.

Leather products, cashew oil, livestock and feed industries will form an industrial cluster. Cashew oil will improve the quality of leather products; goat skins will upgrade the raw materials base for leather products industry. Other activities will also be linked to the cluster such as poultry, fisheries and handicraft industries.

As the access from Colombo and urban infrastructure in major urban centers are improved, an increasing number of footloose type industries and those subcontracting to Colombo-based industries will establish in Southern Area. Two prime examples of these are electronics and engineering industries. A special development program has been proposed for the electronics. The engineering industry is of linkage type for the growing domestic industry, but will also provide a range of consumer products for the national market. These two subsectors will be main sources of employment generation and a driving force for the high economic growth during this phase.

Services

Non-industrial services will expand, including transport, wholesale and export services, not only for factory-type industries but for small and medium sized industries as well. For the

latter, wholesalers will serve effectively as a market coordinator, transport industry will enable small lot consignments, and exporters will provide administrative as well as financial services.

Excess production in agriculture and fisheries will induce the development of new types of transport and marketing services. Trading houses initiated during Phase I will expand their services to cover a full range of production, processing and export/marketing. Transport services with refrigerated trucks will be established for fresh vegetables and fruits, and fresh fish and fish products.

Tourism will offer another set of opportunities to diversify the service sector. A variety of man-made tourism attractions will establish such as aquarium, tourist farm and fish pond restaurant.

(3) Spatial development

Intra-regional links will be strengthened in steps during this phase. A new intra-regional artery linking Matara, Embilipitiya, Tanamalwila, Wellawaya and Moneragala will be fully established as a high grade road during early part of the phase, and other links between urban centers at higher tiers of the hierarchy will be improved subsequently.

The spatial development centering on a few major urban centers during Phase I will be transformed gradually into a more spatially balanced one, as a clear hierarchical structure of urban centers is established with functional division among major urban centers. A few major urban centers will form clusters together with neighbouring centers having complementary functions for better overall delivery of urban services.

Galle itself will become an international city with multiple functions not only with the port and other upgraded urban facilities but also with higher order urban functions with amenities. The latter functions include international trade and banking, conference, communications and international tourism, support services for marine fisheries and maritime transport, and advanced education and health services.

Land use plans for all the urban centers at the upper tiers will be prepared. A wireless telecommunications network will be established to cover even the remotest villages to provide extension and market information and to effect better social services delivery.

(4) Human development

Innovative approaches, such as telecommunication systems, will help respond to development benefits and demands. Occupational training will meet employment needs with more advanced technical training through cooperative ventures with international institutions and industries. "Distance" training will be introduced to non-urban areas using a telecommunications system.

Formal education will expand its accent on decision making and risk taking. Secondary school curricula will be strong in the science, technology, and linguistic (local and foreign) subjects. "Distance" education, using a telecommunications system, will be initiated in remote areas.

Health care and research will focus on the effects of development on health conditions. Private hospitals will be promoted, traditional Ayurvedic practices will be supported, and a telecommunication system will be introduced to all health care facilities.

NGOs will develop regional networks to support community participation. Community resource management will focus on multiple use of forests and increased productivity of wood based industries and eco-tourism.

5.3.3 Phase III - 2011-2015

(1) Characterization

This is the phase for sustainable development to be supported increasingly by activities of the support industry/services oriented development. This type of activities developed over time will provide viable linkages between rural-based activities and various urban activities linked in turn with other regions or even other countries.

The development will be supported by the strong private sector, while the Government will play only facilitative roles. The private sector will participate actively in the provision of some infrastructure and social services, including private schools.

Southern Area will establish high images and respectable positions in the international society for outward oriented services on the one hand, and internal coherence on the other,

with well preserved natural areas of high bio-diversity and traditional communities coexisting with one another.

(2) Socio-economy

Agriculture

Intensive agricultural land use will be well established under multi-storey farming, integrated farming and paddy-based mixed farming. Another characteristics of Southern Area agriculture will be full utilization of primary products through complete cycle processing, integration and utilization of wastes and by-products.

Direct export of high value products will become increasingly common. Products include cut flowers and office plants, fresh/chilled vegetables and raw (sashimi) fish.

More post-harvest facilities will be owned, managed and operated by organized farmers. Their activities will extend further to joint procurement of agricultural input, and self-financing for investments into land productivity enhancement.

The marine fisheries complex established in Phase II will expand its research and training functions linked with other international institutes overseas.

Industry

Agro-based industries established in Phase II will further expand and diversify production lines. Expansion will cover both the range of products and the extent of industrial deepening. In addition to simple processing, specialized products of food industry, leather, rubber and tea will be established in international markets.

Engineering industries will serve both the growing industrial base and the national consumer goods market. The growth in population and incomes and the large size of the regional market will support large consumer goods and construction subsectors. Related employment in manufacture of construction materials, including tiles and bricks and sanitary ware, will expand significantly.

More footloose industries and those subcontracting to Colombo-based industries will establish in Southern Area. Specialized national market and export oriented industries will be fully integrated with the industries in Metro Colombo. Linkage industries producing input for export products will become a major source of employment and income for Southern Area.

Services

More specialized services will be established to make Southern Area a world leader in respective fields. They include environmental education, bio-diversity research, eco-tourism and indigenous medical care. The southwestern coast strongly linked with Colombo will become an international conference center.

International trade related services will develop in the Galle port area such as offshore banking and international communications. Various international sports and cultural events may also be featured in this area having a cosmopolitan atmosphere.

Rural services delivery will be supported by further improvement of the wireless telecommunications network owned exclusively by the private sector and operated by the participation of local communities. The network coverage will expand from extension and market information to social events, community activities, and resources and opportunities available, allowing also two-way communications.

(3) Spatial development

Inter-regional links will be much strengthened during this phase. The establishment of the Embilipitiya/Hambantota access will change the image of Southern Area not only by shortening the travel time but also by showing along the route productive rural areas, and well developed urban centers as well as varied and well preserved landscape. Links to the east coast will be established through Moneragala. The Galle port will serve for inter-regional trade. Regular air links will be established to both the Weerawila and the Koggala airports not only from Colombo but also directly from other regions.

Road links will be established for all the rural service centers. Strong hierarchical structure of urban centers will be formed with functional division not only to complement different urban centers but also to serve better their rural hinterlands collectively.

(4) Human development

The groundwork for community participation, as well as for efficient service delivery in occupational training, education, and health care will have been accomplished. Formal education will respond to the changing patterns of the economy through emphasis on G.C.E. advanced and university education. Occupational training will be formally linked with

regional, national, and international enterprises, and will have an efficient placement network and monitoring systems.

Health care will focus on the more complex diseases that will result from an aging population. A regional branch of a national insurance scheme will be introduced to help manage escalating health care costs. Poverty will be greatly reduced, and welfare replaced by income generating activities that match abilities.

Communities will be organized and have horizontal links with other communities. NGOs will be administratively and technically sound, and will work as partners with communities to reduce dependency on external resources for development activities.

Table 5.1 Potential Landuse of Southern Area

Potential land use classes	Galle		Matara		Hambantota		Moneragala		Ratnapura		Ampara		Total	
	ha	%	ha	%	ha	%	ha	%	ha	%	ha	%	ha	%
a Protected forest land	16,689	10.35	6,606	5.05	60,684	23.13	100,220	24.71	3,179	5.59	27,697	33.10	215,075	19.54
b Production forest land	10,483	6.50	12,296	9.40	13,394	5.11	3,091	0.76	2,759	4.85	33,388	39.90	75,411	6.85
c Prime agricultural lowlands (only agriculture)	7,128	4.42	4,879	3.73		0.00		0.00		0.00		0.00	12,007	1.09
d Prime agricultural lowlands (agriculture and pasture)	0	0.00	813	0.62	29,109	11.10	41,637	10.27	746	1.31	5,922	7.08	78,227	7.11
e Prime agricultural uplands	0	0.00	0	0.00	80,638	30.74	163,197	40.24	19,288	33.90	7,995	9.55	271,118	24.63
f Marginal agricultural lowlands	3,058	1.90	3,933	3.01	6,769	2.58		0.00		0.00	1,860	2.22	15,620	1.42
g Marginal agricultural uplands	121,777	75.52	102,301	78.20	54,580	20.81	12,504	3.08	28,872	50.74		0.00	320,034	29.08
h Unsuitable for agricultural use	2,118	1.31		0.00	17,138	6.53	84,959	20.95	2,055	3.61	6,819	8.15	113,089	10.28
Total	161,253	100.00	130,828	100.00	262,512	100.00	405,608	100.00	56,899	100.00	83,681	100.00	1,100,581	100.00

Source: JICA Study Team

Table 5.2 Criteria Adopted in Determining Soil and Land Potential

Suitability class	Limitations Degree	Characteristics
1 or 2	Minor	Slopes averaging 6 to 10%. Moderate nutritional deficiencies. Periodic Flooding. Other minor shortcomings
3	Serious	Slopes averaging 10 to 20%. Laterite or abundant gravel in subsoil. Acute nutritional deficiencies. High alkalinity or salinity. Poorly structured soils within 100 cm of surface. Very sandy excessively draining soils. Poor drainage
4	Very Serious	Slopes averaging > 20%. Severely eroded soils. Soil very thin : < 30 cm. Saltwater impregnation. Very poorly drained soils.
5,6	Extreme	No soil or soil too thin or too patchy. Dominated by rock surfaces and outcrops, boulders or gravel.

Source: JICA Study Team

Table 5.3 Crop Suitability of Different Soil Units

Soil No.	Soil Type	Terrain	AREA (ha)	AREA (%)	CROP OR LAND USE OPTIONS										
					a: LOWLAND PADDY	b: LOWLAND - OTHER FIELD CROPS	c: VEGETABLES, LEGUMES, CEREALS, ROOTCROPS	d: RAINFED UPLAND CROPS	e: TEA	f: RUBBER	g: COCONUT	h: CINNAMON	i: OTHER PERENNIAL CROPS, TREE CROPS, FRUIT TREES	j: PASTURE	k: FORESTRY & WILDLIFE
SOILS OF THE DRY ZONE AND SEMI-DRY INTERMEDIATE ZONE															
1	Reddish Brown Earths and Low Humic Gley Soils	U	232,879	21.16		1	1							1	
2	Reddish Brown Earths and Solodized Solonch	U	130,436	11.85		1	1							1	
4	U Reddish Brown Earths and Immature Brown Loams	R, H & U	61,749	5.61			3	3							S
6	Red Yellow Latosols	F to U	1,191	0.11		4	4							4	S S
10	Alluvial Soils of variable Drainage and Terrain	F	118,585	10.77	1	1									S S
11	Regosols on Recent Beach & Dune Sands	F	21,541	1.96							3			3	S S
99	Reddish Brown Earths with Large amount of Gravel in Sub-Soil	U	40,328	3.66			4								S S S
SOILS OF THE WET ZONE AND SEMI-WET INTERMEDIATE ZONE															
12	Red Yellow Podzolic Soils & Mountain Regosols	M	4,803	0.44											S
13	Red Yellow Podzolic Soils, steeply dissected	H & R	189,790	17.24						3				3	S
15	Red Yellow Podzolic (RYP) Soils with soft or hard laterite	R & U	57,361	5.21			3			3	3			3	S
17	RYP with semi-prominent A1 Horizon	H & R	19,272	1.75			3								S S
20	Bog & Half Bog soils	F	30,418	2.76	4		4								
22	Alluvial Soils of Variable Drainage and Terrain	F	12,689	1.15	1		1								
23	Regosols on Recent Beach Sands	F	5,738	0.52							3			3	S
MISCELLANEOUS LAND UNITS															
24	Rock Knob Plains and Eroded Lands	M	125,650	11.42											
25	Erosional Remnants	M	32,376	2.94											
50	WATER BODIES	F	15,767	1.43											
TOTAL			1,100,576	100.00											

NOTES:

1. CLASSES 24 and 25 HAVE EXTREME LIMITATIONS FOR ANY LANDUSE (AGRICULTURAL SUITABILITY 6) & CLASS 50 IS WATER BODIES AND HENCE IS NOT SUITABLE FOR ANY OTHER LAND USE
2. ONLY AGRICULTURAL CROP GROUPS ARE GIVEN A SUITABILITY RATING BASED ON NO. OF LIMITATIONS
3. SOIL SUITABILITY RATINGS ARE AS FOLLOWS:
 - MINOR LIMITATIONS : 1 OR 2
 - SERIOUS LIMITATIONS : 3
 - VERY SERIOUS LIMITATIONS : 4
 - EXTREME LIMITATIONS : 5 OR 6
4. TERRAIN CLASSES ARE AS FOLLOWS:
 - U UNDULATING
 - R ROLLING
 - H HILLY
 - S STEEP
 - F FLAT
 - M MOUNTAIN

Source: JICA Study Team

Table 5.4 Land Use Zoning Criteria for Deriving Proposed Land Use

POTENTIAL LANDUSE	a. Potential forest land	b. Production forest land	c. Prime agricultural lowlands (only agriculture)	d. Prime agricultural lowlands (agriculture and pasture)	e. Prime agricultural uplands	f. Marginal agricultural lowlands	g. Marginal agricultural uplands	h. Unsuitable for agricultural use
EXISTING LANDUSE								
A. Built up land and associated non-agricultural land	1	2	6	6	6	6	6	6
B. Homesteads	1	2	3a	3a	4a	8	5a	8
C. Trees and other perennial crops	1	2	3a	3a	4a	8	5a	8
D. Paddy cropland	1	2	3a	3a	4a	8	5a	8
E. Sparsely used land and other cropland	1	2	3b	3b	4b	8	5b	8
F. Dense forests	1	2	1	1	1	1	1	1
G. Open forests and plantations	1	2	3b	3b	4b	8	5b	8
H. Scrubland and grassland	1	2	3b	3b	4b	8	5b	8
I. Water bodies and wetlands	7	7	7	7	7	7	7	7
J. Barren land	1	2	8	8	8	8	8	8

PROPOSED LANDUSE

- | | |
|---|--|
| 1. Protection forests | 5a Marginal agricultural uplands - Intensification |
| 2. Production forests | 5b Marginal agricultural uplands - Diversification |
| 3a. Prime agricultural lowlands - Intensification | 6. Urban/ industrial use |
| 4a. Prime agricultural uplands - Intensification | 7. Water bodies and wetlands |
| 3b. Prime agricultural lowlands - Diversification | 8. Non-productive areas |
| 4b. Prime agricultural uplands - Diversification | |

Source: JICA Study Team

Table 5.5 Proposed Land Use for Southern Area

	Galle		Matara		Hambantota		Moneragala		Ratnapura		Ampara		Total	
	ha	%	ha	%	ha	%	ha	%	ha	%	ha	%	ha	%
1 Protection forests	21,411	13.37	11,197	8.62	59,065	22.59	171,183	42.55	4,377	7.80	34,398	41.11	301,631	27.58
2 Production forests	10,473	6.54	12,278	9.45	12,902	4.93	3,076	0.76	2,746	4.89	33,293	39.79	74,768	6.84
3a Prime agricultural lowlands - Intensification	5,709	3.56	5,077	3.91	17,743	6.78	8,362	2.08	618	1.10	876	1.05	38,385	3.51
3b Prime agricultural lowlands - Diversification	1,170	0.73	371	0.29	9,452	3.61	22,614	5.62	72	0.13	2,608	3.12	36,287	3.32
4a Prime agricultural uplands - Intensification	0	0.00	0	0.00	27,791	10.63	23,281	5.79	11,500	20.49	421	0.50	62,993	5.76
4b Prime agricultural uplands - Diversification	0	0.00	0	0.00	48,264	18.46	99,224	24.66	7,005	12.48	3,392	4.05	157,885	14.43
5a Marginal agricultural uplands - Intensification	96,212	60.06	81,365	62.61	36,108	13.81	2,482	0.62	9,079	16.18	0	0.00	225,246	20.59
5b Marginal agricultural uplands - Diversification	15,635	9.76	13,159	10.13	15,726	6.01	7,809	1.94	16,932	30.17	0	0.00	69,261	6.33
6 Urban/ industrial use	704	0.44	572	0.44	1,050	0.40	241	0.06	25	0.04	0	0.00	2,592	0.24
7 Water bodies and wetlands	4,332	2.70	2,558	1.97	13,268	5.07	11,053	2.75	1,804	3.21	2,722	3.25	35,737	3.27
8 Non-productive areas	4,555	2.84	3,385	2.60	20,151	7.71	53,008	13.18	1,966	3.50	5,964	7.13	89,029	8.14
Total	160,201	100.00	129,962	100.00	261,520	100	402,333	100	56,124	100	83,674	100	1,093,814	100

Source: GIS analysis of the JICA Study Team

Table 5.6 Southern Development Area Water Balance
Existing Irrigation Areas
Current Cropping Pattern

Basin No.	Name of River basin	Catchment Area (km ²)	Mean Annual Rainfall (mm)	Volume of Precipitation (Mm ³)	Runoff Coefficient (%)	Mean Basin Runoff (Mm ³)	80% Probable Runoff (Mm ³)	Gross Irrigation Demand (Mm ³)	Irrigation Return Flows (Mm ³)	Net Irrigation Demand (Mm ³)	Municipal Water Demand (Mm ³)	Industrial Water Demand (Mm ³)	Total Water Demand (Mm ³)	1995 Without Project Case			
														Trans Basin Diversion (Mm ³)	Gross Basin Yield (Mm ³)	Net Basin Deficit (Mm ³)	
4	Bentara Ganga	714	3615	2591	78.0%	2013.3	1305.1	34.4	0.0	34.4	2.07	0.02	36.5	0.0	1305.1	1268.6	0.0
5	Madu Ganga	73	3006	219	59.4%	130.3	74.7	71.4	0.0	71.4	1.26	0.00	72.6	0.0	74.7	2.0	0.0
6	Madampe Lake	93	3019	281	59.3%	168.2	96.6	3.4	0.0	3.4	1.48	0.04	4.9	0.0	96.6	91.7	0.0
7	Telwatta Ganga	57	2926	167	56.8%	94.7	53.3	0.0	0.0	0.0	1.28	0.00	1.3	0.0	53.3	52.0	0.0
8	Ratgama Lake	27	2869	77	55.0%	42.6	23.7	1.3	0.0	1.3	0.72	0.00	2.0	0.0	23.7	21.7	0.0
9	Gin Ganga	900	3397	3057	72.3%	2210.4	1373.2	64.7	0.0	64.7	10.72	0.24	75.7	0.0	1373.2	1297.5	0.0
10	Koggala Lake	91	2852	260	54.5%	141.4	78.3	7.3	0.0	7.3	1.45	0.05	8.8	0.0	78.3	69.6	0.0
11	Pohwatte Ganga	254	2784	707	53.9%	381.1	207.8	94.8	0.0	94.8	4.12	0.05	98.9	0.0	207.8	108.9	0.0
12	Niwala Ganga	992	2799	2777	56.2%	1560.5	853.7	243.3	0.0	243.3	9.17	0.20	252.7	-20.0	833.7	581.0	0.0
13	Seenimodara Oya	60	1598	92	15.4%	14.2	5.6	17.7	0.0	17.7	1.93	0.02	19.6	0.0	5.6	0.0	14.1
14	Kirama Oya	251	1795	451	22.8%	102.7	43.4	77.2	0.0	77.2	2.20	0.06	79.5	0.0	43.4	0.0	36.1
15	Rekawa Oya	88	1430	126	15.0%	18.9	7.1	4.0	0.0	4.0	0.82	0.02	4.8	0.0	7.1	2.3	0.0
16	Urubokka Oya	343	1624	557	19.4%	108.1	43.4	104.6	20.9	83.7	2.33	0.00	86.0	20.0	63.4	0.0	22.6
17	Kachchigala	226	1368	309	15.0%	46.4	17.1	7.9	0.0	7.9	1.10	0.01	9.0	0.0	17.1	8.1	0.0
18	Walawe Ganga	2539	1861	4725	28.6%	1351.4	942.0	1041.8	208.4	833.4	4.76	32.40	870.6	0.0	942.0	71.4	0.0
19	Karagan Oya	59	1171	69	15.0%	10.4	3.6	1.8	0.0	1.8	0.18	0.06	2.0	0.0	3.6	1.5	0.0
20	Malala Oya	439	1274	559	15.0%	83.9	30.0	62.9	0.0	62.9	1.10	0.02	64.0	0.0	30.0	0.0	34.0
21	Embilika Oya	89	1100	98	15.0%	14.7	4.9	0.0	0.0	0.0	0.24	0.00	0.2	0.0	4.9	4.7	0.0
22	Kinidi Oya	1203	1587	1909	23.2%	442.9	241.0	374.4	37.4	337.0	1.51	0.06	338.5	0.0	241.0	0.0	97.5
23	Bambawe Oya	101	979	99	15.0%	14.8	4.8	0.0	0.0	0.0	0.17	0.01	0.2	0.0	4.8	4.6	0.0
24	Mahealiwa Oya	33	876	29	15.0%	4.3	1.3	0.0	0.0	0.0	0.06	0.00	0.1	0.0	1.3	1.3	0.0
25	Butawe Oya	62	935	58	15.0%	8.7	2.7	0.0	0.0	0.0	0.11	0.00	0.1	0.0	2.7	2.6	0.0
26	Menik Ganga	1289	1568	2021	22.3%	450.7	177.8	64.7	0.0	64.7	0.87	0.10	65.6	0.0	177.8	112.1	0.0
27	Katupila Ara	97	976	95	15.0%	14.2	4.6	0.0	0.0	0.0	0.14	0.00	0.1	0.0	4.6	4.4	0.0
28	Kurunda Ara	149	1124	167	15.0%	25.1	8.5	0.0	0.0	0.0	0.18	0.00	0.2	0.0	8.5	8.3	0.0
29	Nambagas Ara	108	1133	122	15.0%	18.4	6.2	0.0	0.0	0.0	0.15	0.00	0.2	0.0	6.2	6.1	0.0
30	Karambe Ara	53	1082	57	15.0%	8.6	2.9	0.5	0.0	0.5	0.09	0.00	0.6	0.0	2.9	2.3	0.0
31	Kumbukkan Oya	1192	1883	2245	28.6%	641.9	278.3	38.9	0.0	38.9	1.18	0.00	40.1	0.0	278.3	238.2	0.0
32	Bagura Oya	159	1459	232	15.0%	34.8	13.3	0.0	0.0	0.0	0.03	0.00	0.0	0.0	13.3	13.2	0.0
33	Ginkula Oya	31	1428	44	15.0%	6.6	2.5	0.0	0.0	0.0	0.00	0.00	0.0	0.0	2.5	2.5	0.0
34	Helawa Ara	53	1540	82	15.0%	12.2	4.8	0.0	0.0	0.0	0.01	0.00	0.0	0.0	4.8	4.8	0.0
35	Wila Oya	474	1755	832	18.8%	156.4	65.3	17.2	0.0	17.2	0.25	0.00	17.5	0.0	65.3	47.8	0.0
36	Heda Oya	596	2008	1197	28.2%	337.5	151.5	26.5	0.0	26.5	0.27	0.00	26.7	0.0	151.5	124.8	0.0
37	Karanda Oya	420	1874	787	23.4%	184.2	79.6	0.9	0.0	0.9	0.10	0.01	1.0	0.0	79.6	78.6	0.0
	ALL BASINS	13315	2034	27088	40.1%	10854.6	6208.6	2361.4	266.7	2094.7	52.04	33.37	2180.1	0.0	6208.6	4232.7	204.3

Ta 5.7

Southern Development Area Water Balance
Maximum Potential Lowland Development
Proposed Future Cropping Pattern

2015
Without Project Case

Basin No.	Name of River basin	Catchment Area (km ²)	Mean Annual Rainfall (mm)	Volume of Precipitation (Mm ³)	Runoff Coefficient (%)	Mean Basin Runoff (Mm ³)	80% Probable Runoff (Mm ³)	Gross Irrigation Demand (Mm ³)	Irrigation Return Flows (Mm ³)	Net Irrigation Demand (Mm ³)	Municipal Water Demand (Mm ³)	Industrial Water Demand (Mm ³)	Total Water Demand (Mm ³)	Trans Basin Diversion (Mm ³)	Gross Basin Yield (Mm ³)	Net Basin Surplus (Mm ³)	Net Basin Deficit (Mm ³)
4	Benara Ganga	714	3615	2581	78.0%	2013.3	1305.1	35.7	0.0	35.7	2.83	0.02	38.6	0.0	1305.1	1266.5	0.0
5	Madu Ganga	73	3006	219	59.4%	130.3	74.7	73.5	0.0	73.5	2.03	0.00	75.5	0.0	74.7	0.0	0.9
6	Madampe Lake	93	3019	281	59.9%	168.2	96.6	3.5	0.0	3.5	2.42	0.04	6.0	0.0	96.6	90.6	0.0
7	Telwatta Ganga	57	2926	167	56.8%	94.7	53.3	0.0	0.0	0.0	2.25	0.01	2.3	0.0	53.3	51.1	0.0
8	Ratgama Lake	27	2869	77	55.0%	42.6	23.7	1.3	0.0	1.3	1.21	0.00	2.5	0.0	23.7	21.1	0.0
9	Gin Ganga	900	3397	3057	72.3%	2210.4	1373.2	67.2	0.0	67.2	22.54	0.26	90.0	0.0	1373.2	1283.1	0.0
10	Koggala Lake	91	2852	260	54.5%	141.4	78.3	7.5	0.0	7.5	3.03	0.05	10.5	0.0	78.3	67.8	0.0
11	Polvatte Ganga	254	2764	707	53.9%	381.1	207.8	97.2	0.0	97.2	7.48	0.06	104.8	0.0	207.8	103.0	0.0
12	Nilwala Ganga	992	2799	2777	56.2%	1560.5	853.7	246.0	0.0	246.0	15.80	0.21	262.0	-20.0	853.7	571.7	0.0
13	Seemodara Oya	60	1538	92	15.4%	14.2	5.6	24.6	0.0	24.6	3.25	0.02	27.9	0.0	5.6	0.0	22.3
14	Kirama Oya	251	1795	451	22.8%	102.7	43.4	106.2	0.0	106.2	3.36	0.07	109.7	0.0	43.4	0.0	66.2
15	Rekawa Oya	88	1430	126	15.0%	18.9	7.1	8.1	0.0	8.1	1.40	0.02	9.5	0.0	7.1	0.0	2.4
16	Urubokka Oya	343	1624	557	19.4%	108.1	43.4	173.4	34.7	138.7	3.66	0.00	142.4	20.0	63.4	0.0	79.0
17	Kachigala	226	1368	309	15.0%	46.4	17.1	21.3	0.0	21.3	1.83	0.01	23.2	0.0	17.1	0.0	6.0
18	Walawe Ganga	2539	1881	4725	28.6%	1351.4	942.0	1125.2	225.0	900.2	9.11	41.20	950.5	0.0	942.0	0.0	8.5
19	Karagan Oya	59	1171	69	15.0%	10.4	3.6	4.3	0.0	4.3	0.47	0.06	4.8	0.0	3.6	0.0	1.2
20	Malala Oya	439	1274	559	15.0%	83.9	30.0	185.4	0.0	185.4	2.35	0.02	187.7	0.0	30.0	0.0	157.7
21	Embilikala Oya	89	1100	98	14.7%	14.7	4.9	23.3	0.0	23.3	0.52	0.00	23.8	0.0	4.9	0.0	18.9
22	Kirindi Oya	1203	1587	1909	23.2%	442.9	241.0	428.5	42.9	385.7	2.71	0.06	388.4	0.0	241.0	0.0	147.4
23	Bambawe Oya	101	979	99	15.0%	14.8	4.8	0.0	0.0	0.0	0.39	0.01	0.4	0.0	4.8	4.4	0.0
24	Mahasiwa Oya	33	876	29	15.0%	4.3	1.3	0.0	0.0	0.0	0.14	0.00	0.1	0.0	1.3	1.2	0.0
25	Buzawe Oya	62	935	58	15.0%	8.7	2.7	0.0	0.0	0.0	0.26	0.00	0.3	0.0	2.7	2.5	0.0
26	Menik Ganga	1289	1568	2021	22.3%	450.7	177.8	259.7	0.0	259.7	1.59	0.11	261.4	0.0	177.8	0.0	83.6
27	Kaupila Ara	97	976	95	15.0%	14.2	4.6	0.0	0.0	0.0	0.34	0.00	0.3	0.0	4.6	4.2	0.0
28	Kurunda Ara	149	1124	167	15.0%	25.1	8.5	0.0	0.0	0.0	0.44	0.00	0.4	0.0	8.5	8.1	0.0
29	Nambagas Ara	108	1133	122	15.0%	18.4	6.2	0.0	0.0	0.0	0.36	0.00	0.4	0.0	6.2	5.9	0.0
30	Karambe Ara	53	1082	57	15.0%	8.6	2.9	0.6	0.0	0.6	0.23	0.00	0.8	0.0	2.9	2.1	0.0
31	Kumbukkan Oya	1192	1883	2245	28.6%	641.9	278.3	133.4	0.0	133.4	2.37	0.00	135.8	0.0	278.3	142.5	0.0
32	Bagura Oya	159	1459	232	15.0%	34.8	13.3	0.0	0.0	0.0	0.05	0.00	0.0	0.0	13.3	13.2	0.0
33	Girikula Oya	31	1428	44	15.0%	6.6	2.5	0.0	0.0	0.0	0.01	0.00	0.0	0.0	2.5	2.5	0.0
34	Helawa Ara	53	1540	82	15.0%	12.2	4.8	0.0	0.0	0.0	0.01	0.00	0.0	0.0	4.8	4.8	0.0
35	Wila Oya	474	1755	832	18.8%	156.4	65.3	46.1	0.0	46.1	0.39	0.00	46.5	0.0	65.3	18.9	0.0
36	Heda Oya	596	2008	1197	28.2%	337.5	151.5	64.6	0.0	64.6	0.42	0.00	65.0	0.0	151.5	86.5	0.0
37	Karandara Oya	420	1874	787	23.4%	184.2	79.6	2.9	0.0	2.9	0.15	0.01	3.0	0.0	79.6	76.6	0.0
ALL BASINS		13315	2034	27088	40.1%	10854.6	6208.6	3139.5	302.6	2094.7	95.39	42.25	2180.1	0.0	6208.6	3828.3	594.2

Table 5.8 Ranking of Urban Centers in Southern Area

Rank	No.	Name	Final Rank	Point	Population	Administration	Commercial & Services	Manufacturing	Soc & Recr Service	Health Service	Education	Infra & Comm
1	11	Galle	1	8.00	1	1	1	1	1	1	1	1
2	22	Matara	1	7.50	2	1	1	1	1	1	1	1
3	45	Embilipitiya	2	3.50	3	3	2	2	2	2	3	2
4	34	Hambantota	2	3.33	3	2	2	3	2	3	3	2
5	21	Weligama	2	3.25	3	4	2	3	2	3	2	2
6	38	Tissamaharama	2	2.92	3	4	2	4	2	3	4	2
7	24	Tangalle	3	2.78	4	2	3	4	4	5	2	2
8	23	Dickwella	3	2.70	4	4	2	3	3	3	5	2
9	42	Wellawaya	3	2.70	5	3	3	4	2	2	4	3
10	14	Habaraduwa/ A'gama	3	2.67	2	4	3	3	3	4	3	3
11	43	Monragala	3	2.62	4	2	3	3	3	3	3	5
12	7	Ambalangoda	3	2.45	3	4	4	4	2	5	3	3
13	3	Elpitiya	3	2.37	3	3	3	5	3	3	4	4
14	25	Beliatta	3	2.33	3	4	3	4	3	4	4	3
15	26	Walasmulla	3	2.32	5	3	3	3	3	4	3	5
16	8	Watugedara	3	2.28	5	4	4	2	4	3	4	4
17	9	Hikkaduwa	3	2.28	3	4	3	4	3	5	4	3
18	15	Akuressa	3	2.23	3	5	3	3	4	4	5	3
19	20	Kamburupitiya	4	2.17	3	4	3	4	4	4	4	4
20	18	Hakmana	4	2.15	4	4	4	5	5	3	3	3
21	12	Akmeemana	4	2.12	3	4	4	3	5	4	4	4
22	36	Ambalantota	4	2.12	4	4	3	4	3	5	4	4
23	31	Sooriyawewa	4	2.10	5	4	3	3	5	3	4	5
24	16	Morawaka	4	2.07	4	4	4	3	5	3	4	5
25	29	Angunakolapellessa	4	2.07	5	4	3	4	4	3	4	5
26	1	Bentota	4	2.03	4	4	4	4	3	5	4	4
27	10	Dodanduwa	4	2.02	4	5	5	4	3	4	5	3
28	33	Wecraketiya	4	1.98	5	4	4	4	4	5	3	4
29	40	Buttala	4	1.98	5	4	3	4	4	5	4	4
30	5	Kosgoda	4	1.97	5	5	5	3	3	5	4	4
31	6	Balapitiya	5	1.93	4	5	4	5	4	5	4	3
32	17	Deniyaya	5	1.93	4	3	4	5	4	5	4	5
33	28	Katuwana	5	1.93	5	5	4	3	4	4	4	5
34	37	Middeniya	5	1.93	5	4	3	4	5	4	4	5
35	39	Kataragama	5	1.93	5	4	4	5	3	4	5	4
36	35	Lunugamwehera	5	1.90	5	4	4	4	4	4	5	4
37	4	Badddegama	5	1.83	4	3	5	4	5	5	5	5
38	2	Uragasmanhandiya	5	1.80	4	5	4	4	4	5	5	5
39	13	Neluwa	5	1.80	5	4	5	4	5	4	5	4
40	27	Kirama	5	1.70	5	5	5	4	5	4	5	5
41	30	Hungama	5	1.70	5	5	4	4	5	5	5	5
42	41	Tanamalwila	5	1.70	5	5	4	5	5	4	5	5
43	44	Siyambalanduwa	5	1.70	5	5	5	4	5	5	4	5
44	19	Urubokka	5	1.65	4	5	5	5	5	5	5	5
45	32	Ranna	5	1.65	5	5	5	5	5	5	5	4

Table 5.9 Estimated GDP Share of Southern Area and Sri Lanka GDP

(Unit : %, Rs million in constant 1982 prices)

	1990 Share of	1990 Share of	GDP Sri Lanka	GDP Sri Lanka	GRDP Southern
	Southern Province	Southern Area	-1994	-1995	Area (1995)
1 Agriculture	11.58	13.16	32,593	34,223	4,658
2 Mining	7.21	8.47	3,915	4,150	352
3 Manufacturing	4.69	5.51	31,418	33,931	1,870
4 Construction	9.10	10.69	11,024	1,685	1,249
5 Electricity & Gas	10.40	12.22	2,335	2,475	302
6 Trade & Tourism	8.13	9.55	34,667	36,747	3,509
7 Transport & Comm.	8.51	10.00	17,823	18,892	1,889
8 Banking, Insurance & R. Estate	7.84	9.21	8,785	9,312	858
9 Private Services	11.03	12.96	9,861	10,453	1,355
10 Government Services	11.66	13.70	6,848	7,259	994
Total	8.49	9.98	159,269	169,127	17,036

Table 5.10 Regional Income and Employment in Southern Area in 1995 and Expected Growth under Three Alternatives

	GRDP (million Rs in 1982 prices)	Employment	GRDP Growth Rates under Alternatives		
			I	II	III
Agriculture	4,658	353,379	4.79	2.35	2.96
Traditional	2,194		3.0	1.5	1.5
Non-traditional	2,464		6.0	3.0	4.0
Industry	3,773	161,204	6.54	11.24	8.42
Factory Type	3,052		7.0	12.0	9.0
Micro/Cottage	721		4.0	6.0	5.0
Services	8,605	279,527	6.65	8.78	9.46
Trade, Tourism	3,509		7.0	9.0	10.0
Banking, Insurance	858		8.0	11.0	11.0
Transport, Comm.	1,889		6.0	8.0	8.0
Others	2,349		6.0	8.0	9.0
Total	17,036	794,110	6.17	8.40	8.03

Table 5.11 Income and Employment Estimates under Selected Alternatives for Southern Area

	1995		2015	
	Distribution of GRDP	Employment	GRDP (1982 prices)	Distribution of GRDP
Agriculture	27.3	44.5	8,900	11.7
Traditional	12.9		3,207	4.2
Non-traditional	14.5		5,693	7.5
Industry	22.1	20.3	22,069	29.0
Factory Type	17.9		20,101	26.5
Micro/Cottage	4.2		1,969	2.6
Services	90.5	35.2	45,008	59.2
Trade, Tourism	20.6		19,720	26.0
Banking, Insurance	5.0		6,188	8.1
Transport, Comm.	11.1		8,118	10.7
Others	13.8		10,981	14.5
Total	100.0	100.0	75,977	100.0

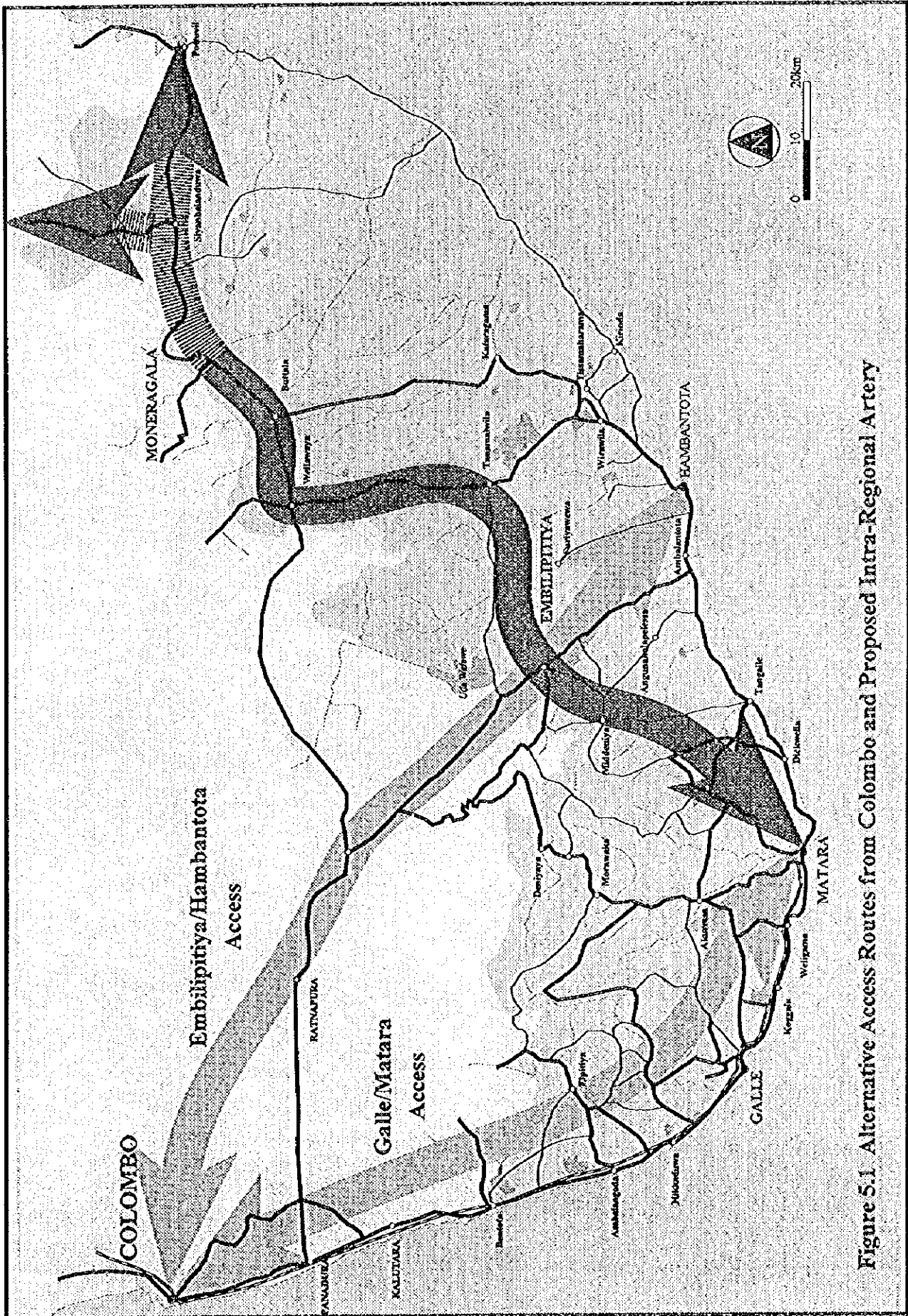


Figure 5.1 Alternative Access Routes from Colombo and Proposed Intra-Regional Artery

Figure 5.2 Land Use Potential of Southern Area

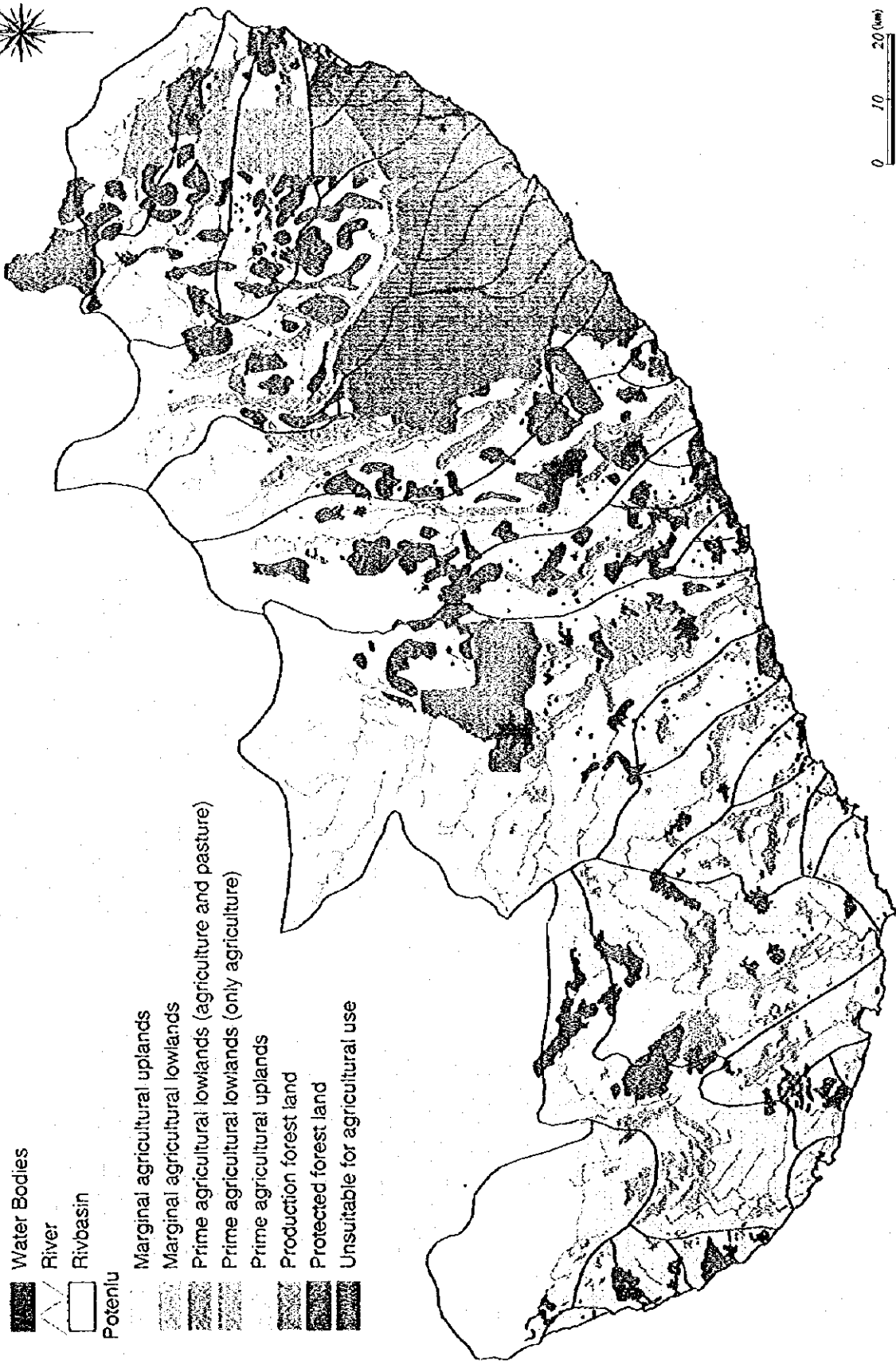


Figure 5.3 Urban/Industrial Land Potential in Southern Area

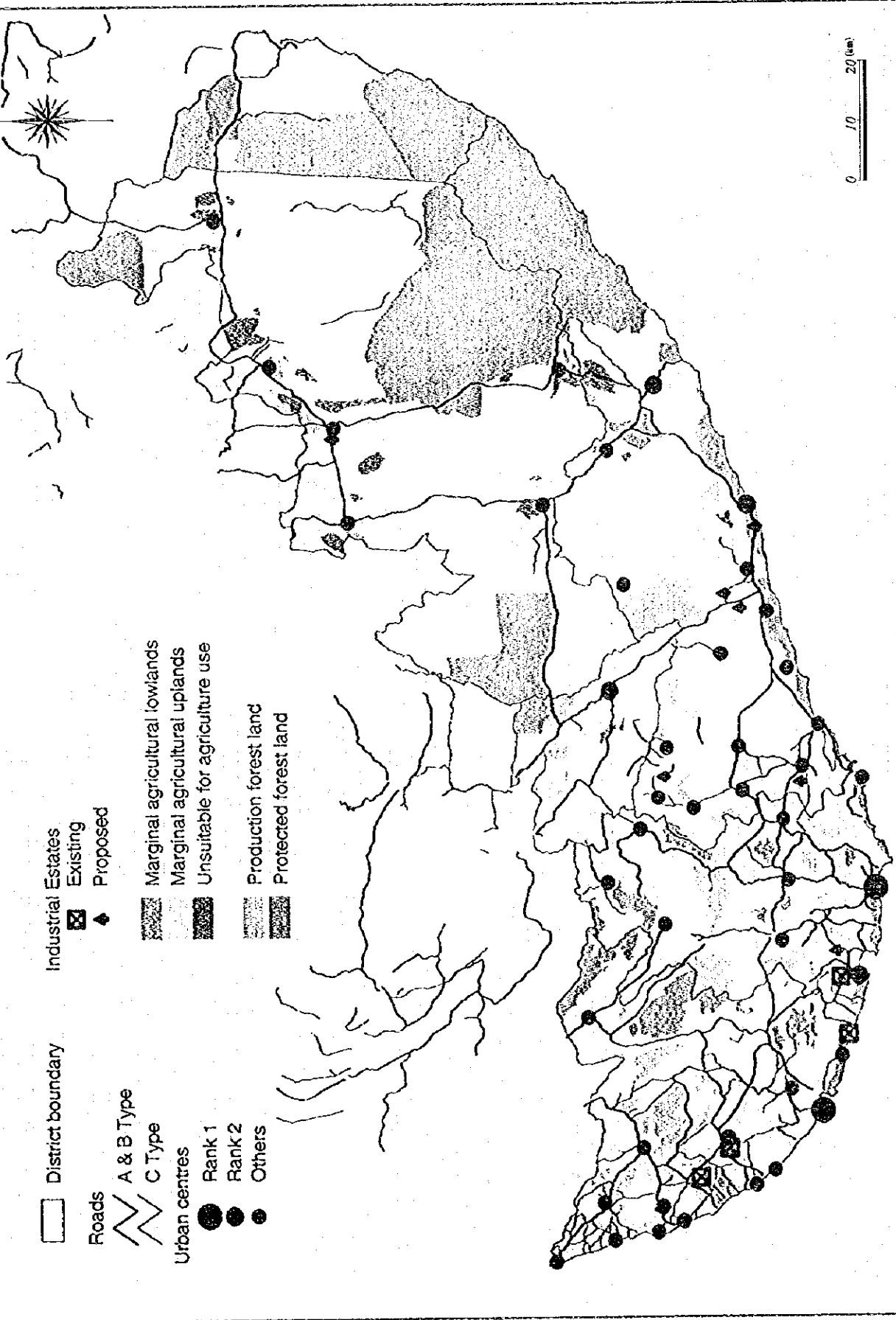
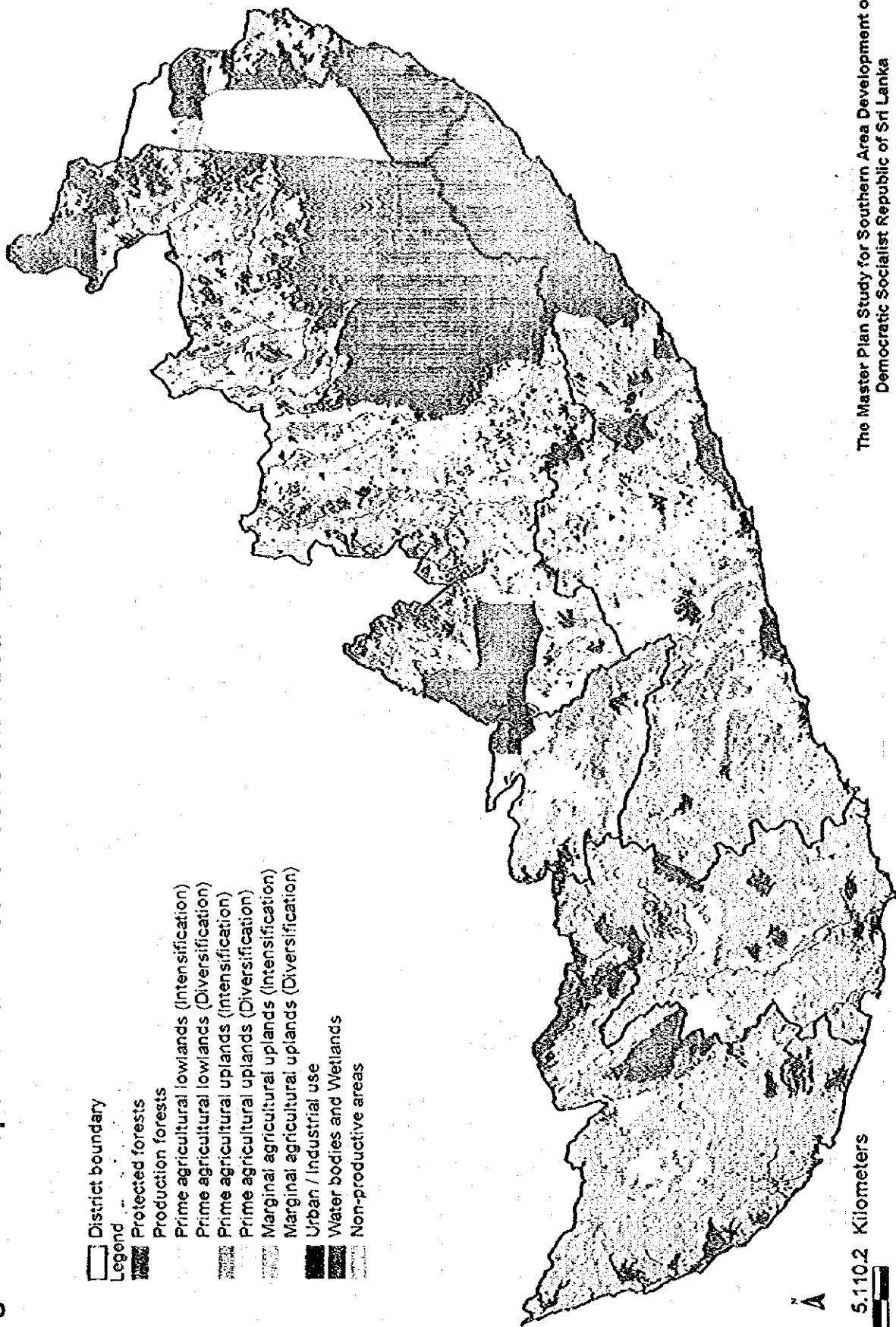


Figure 5.4 Proposed Land Use for Southern Area in 2015



- District boundary
- Legend
- ▨ Protected forests
- ▨ Production forests
- ▨ Prime agricultural lowlands (Intensification)
- ▨ Prime agricultural lowlands (Diversification)
- ▨ Prime agricultural uplands (Intensification)
- ▨ Prime agricultural uplands (Diversification)
- ▨ Marginal agricultural uplands (Intensification)
- ▨ Marginal agricultural uplands (Diversification)
- ▨ Urban / Industrial use
- ▨ Water bodies and Wetlands
- ▨ Non-productive areas

0 5.110.2 Kilometers

Source : JICA Study

The Master Plan Study for Southern Area Development of Democratic Socialist Republic of Sri Lanka

Japan International Cooperation Agency

Figure 5.5 Water Balance at Present with Existing Irrigation Areas and Cropping Patterns

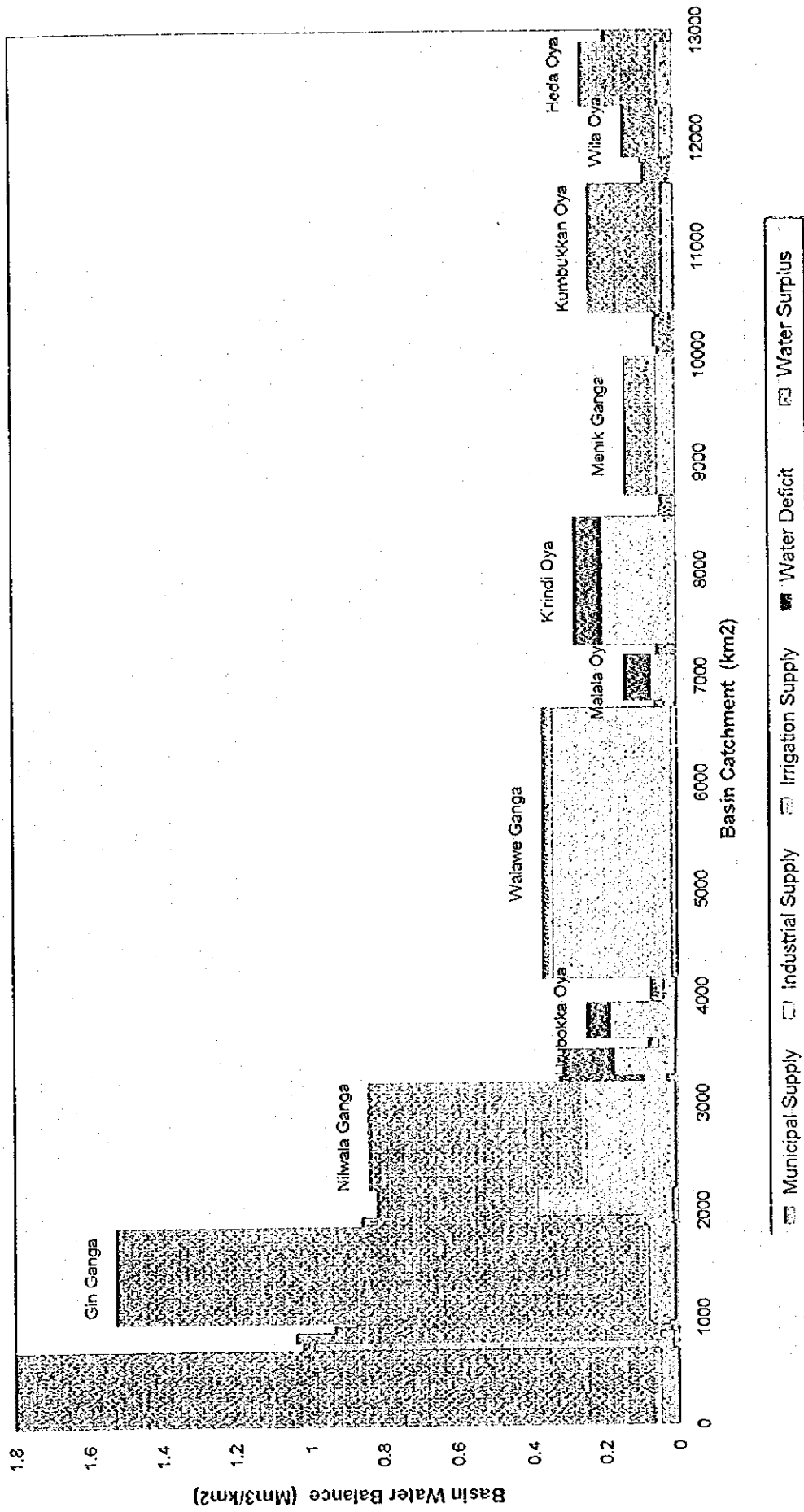


Figure 5.6 Water Balance in 2015 (without Project) with Maximum Potential Lowland Development and Proposed Cropping Patterns

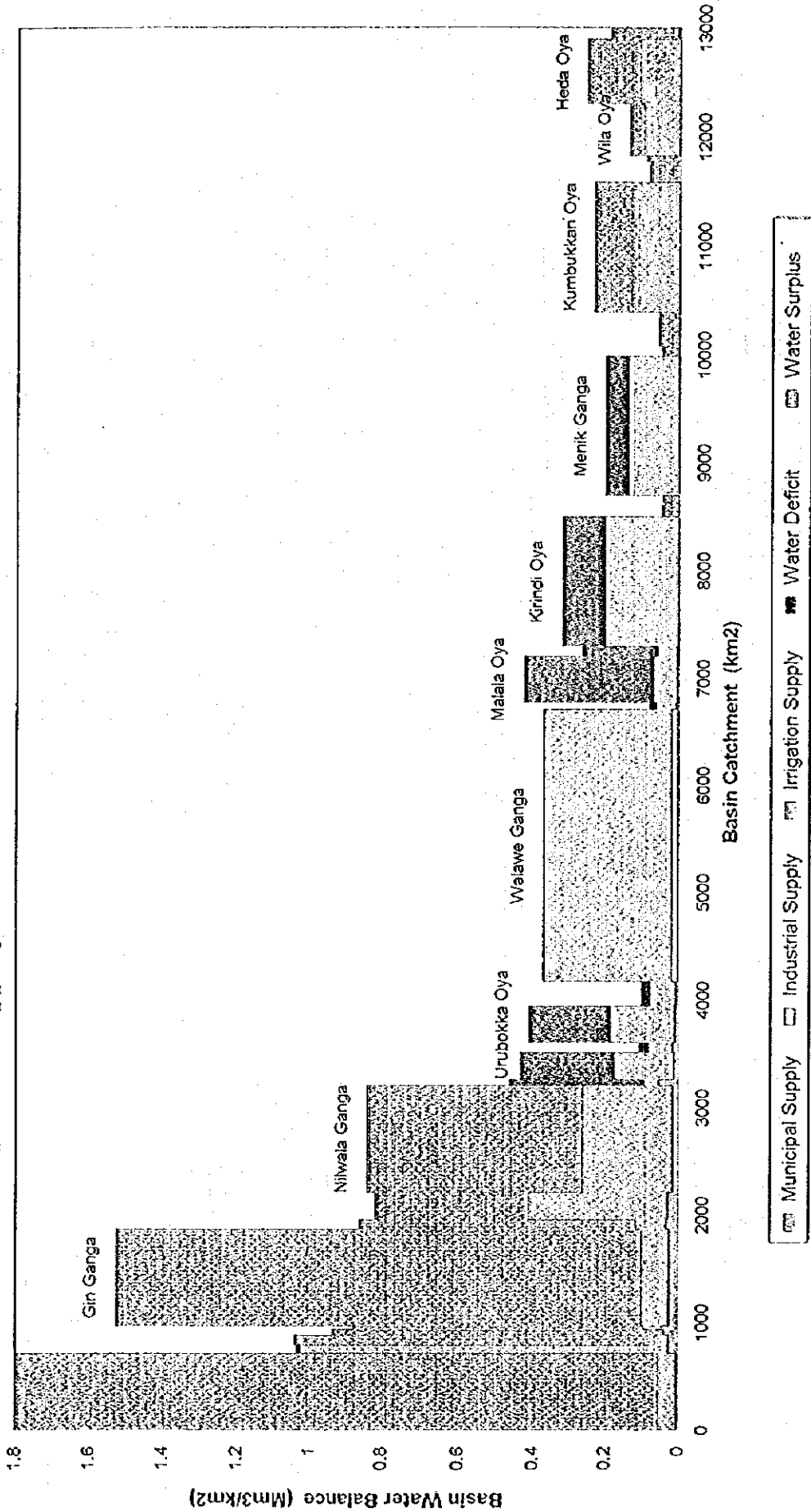


Figure 5.7 Existing Hierarchical Structure of Urban Centers

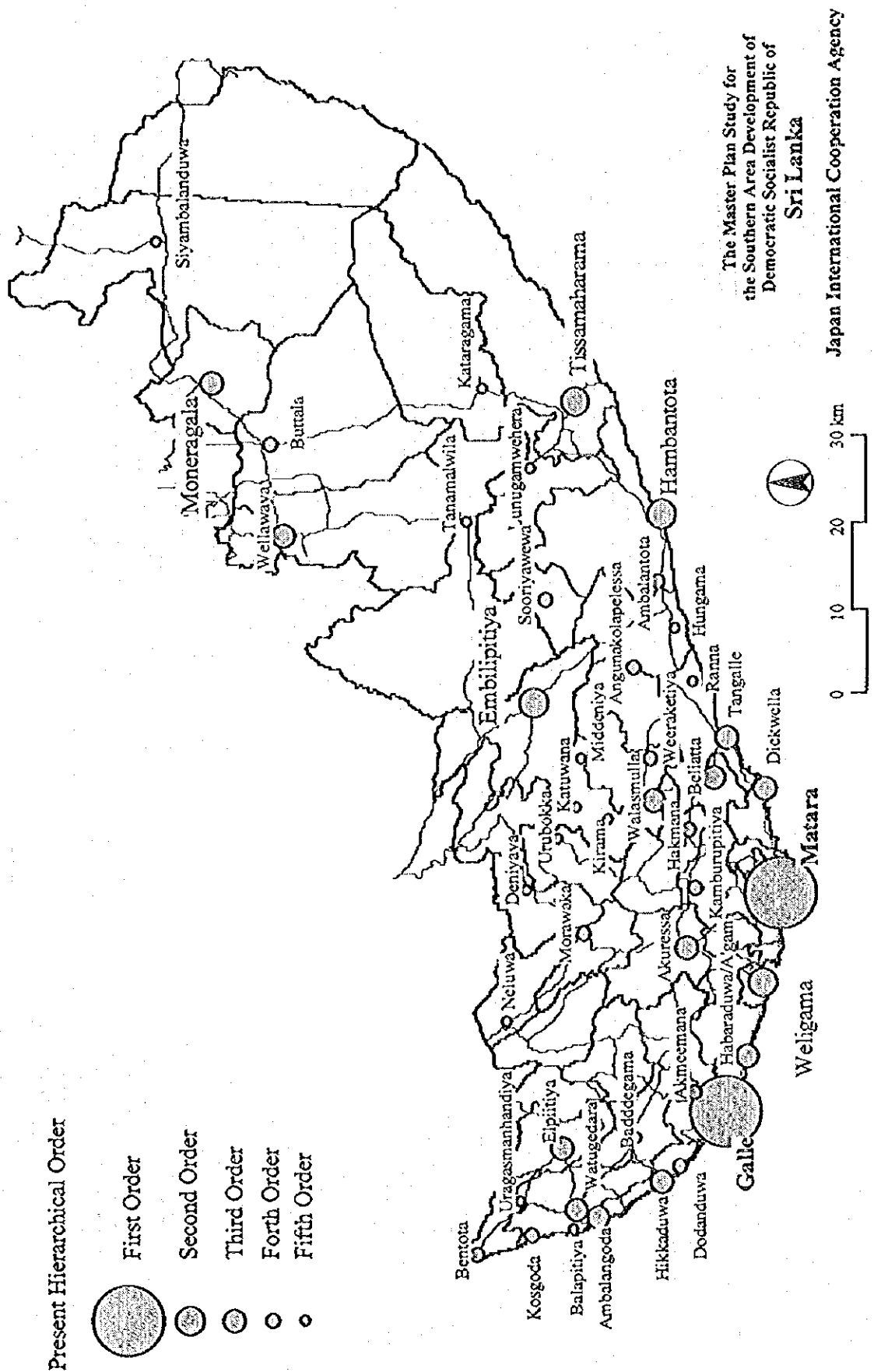


Figure 5.8 Strategic Urban Clusters

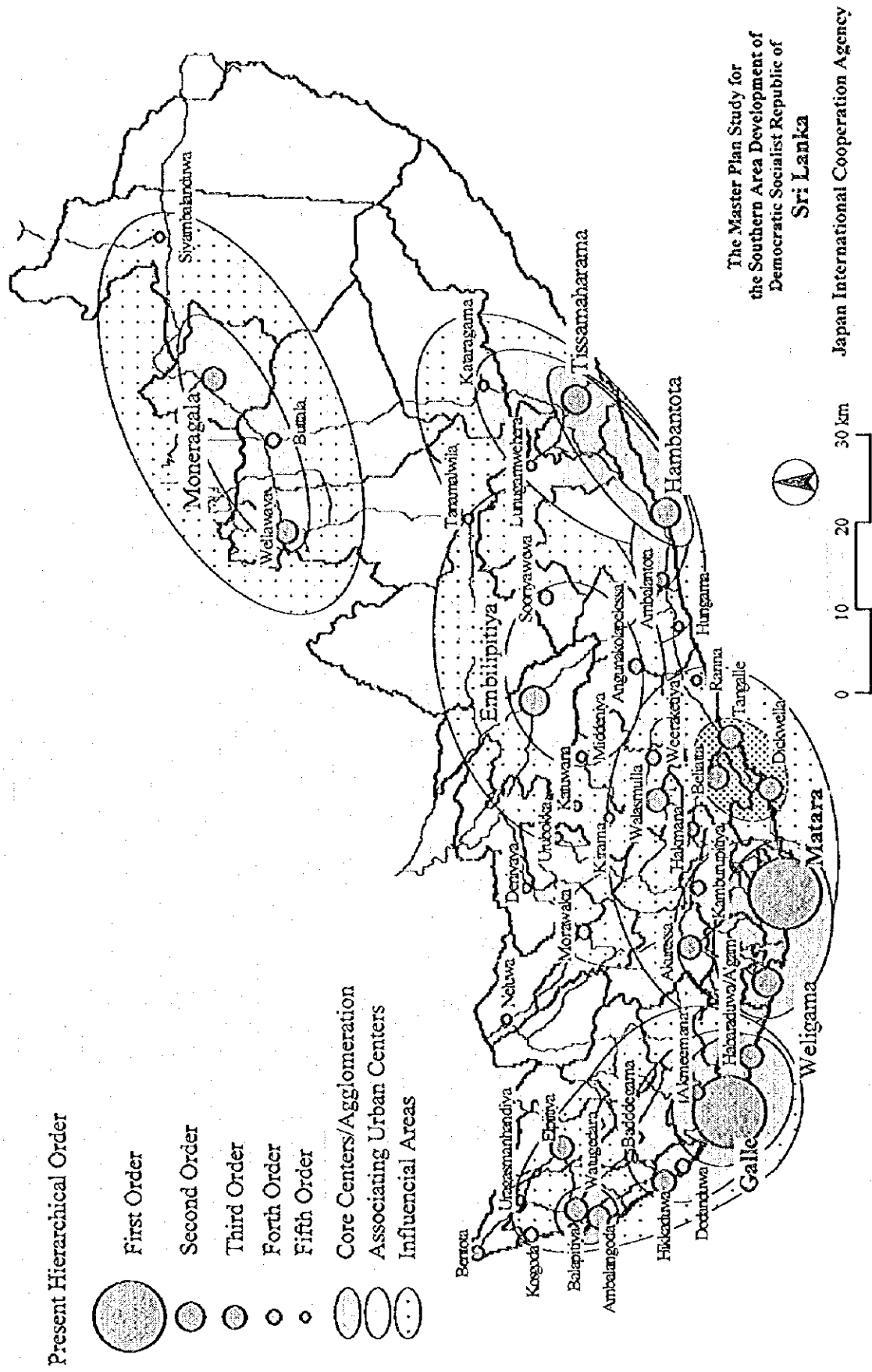
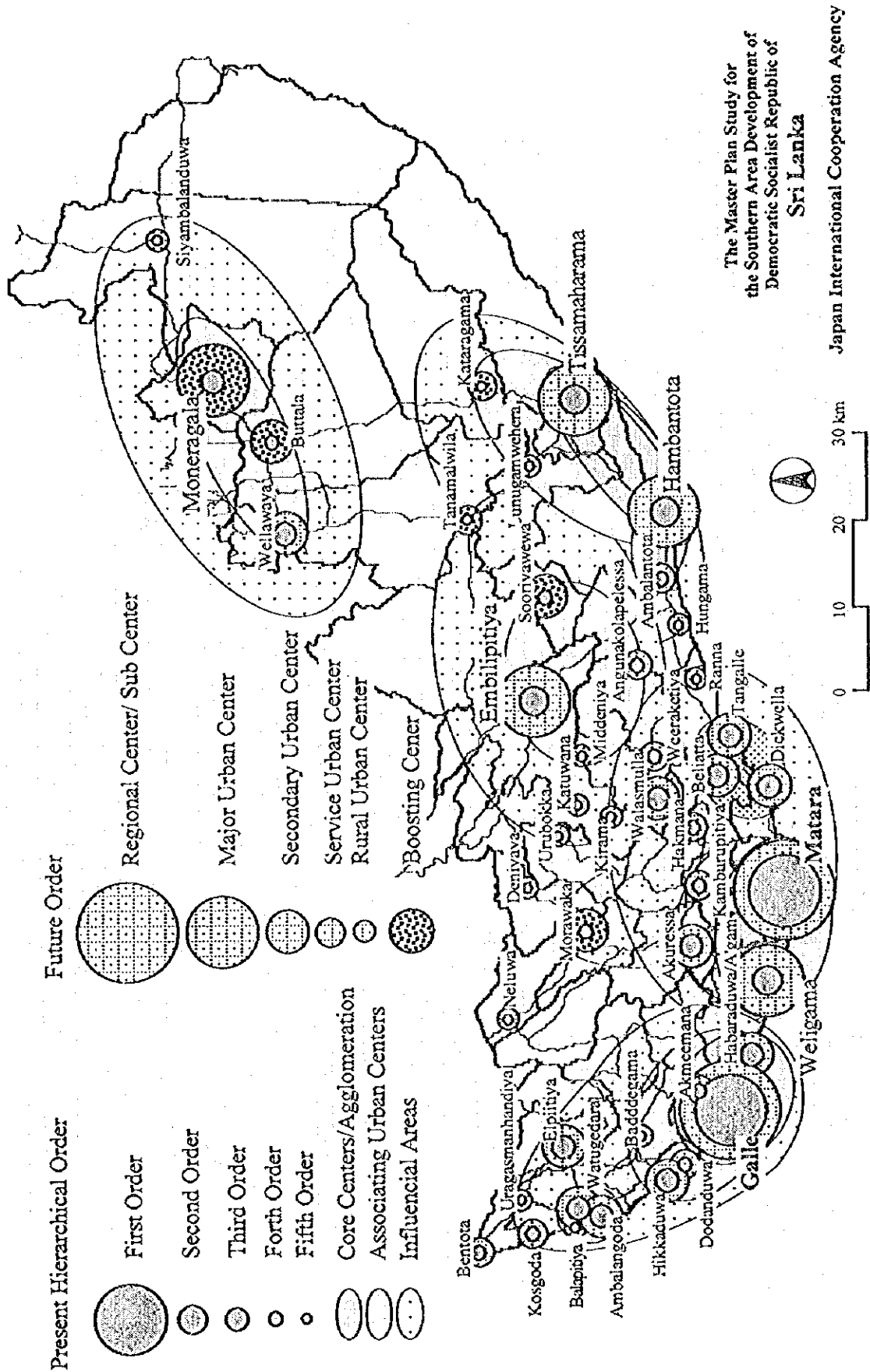


Figure 5.9 Proposed Future Hierarchy of Urban Centers



CHAPTER 6

Chapter 6

DEVELOPMENT PROJECTS AND PROGRAMS

The Southern Area development to the year 2015 would be supported by a set of projects/programs and related institutional measures constituting the Master Plan. Institutional measures are presented in Section 2.2 related to development administration and also in Chapter 4 by sector. This chapter presents projects and programs. Some projects/programs have been taken from existing plans and programs of sector agencies. Others have been newly formulated through the master planning by cooperative efforts of officials and experts of the Central Government agencies, local governments and other institutes, selected NGOs and the JICA Study Team.

A total of 143 projects and programs are included in a long list of projects/programs. Inclusion in the long list does not necessarily imply priority. The list contains a few projects that are mutually exclusive, and selection among them would be subject to studies proposed in the Master Plan.

Of all the projects/programs listed herein, anchor projects/programs have been earmarked. These are the projects/programs that characterize the Southern Area development due to (1) strategic importance to transform the spatial and the socio-economic structure of Southern Area, and/or (2) comprehensive coverage of a wide range of people to improve their living conditions as well as consistency with the development objectives and scenario for Southern Area (Table 6.1 and 6.2).

6.1 Anchor Projects

Out of the long list of projects/programs, 27 projects/programs have been selected as anchor projects. Seven of them are key infrastructure projects that are instrumental in strategic transformation of the spatial and the socio-economic structure of Southern Area. Other anchor projects would support more directly the social, environmental and economic objectives of the Southern Area development (Table 6.1). They are outlined. Profiles of these projects/programs are found in Project Report.

6.1.1 Strategic infrastructure

The following are anchor projects in this category:

- (SA-1) Galle Port Development;
- (SA-2) Southern Highway;
- (SA-3) Intra-Regional Artery Road Establishment;
- (SA-4) Coast Line Improvement and Upgrading;
- (SA-5) Uma Oya Multi-Purpose Development;
- (SA-6) Airfield Upgrading; and
- (SA-7) Coal Thermal Power Plant.

The Galle Port Development will be instrumental in transforming the economic structure of Southern Area and changing patterns and expanding scope of flow of goods and movement of people. It will be developed in stages. In the first stage, the Galle port will be developed as a regional port serving mainly inter-regional trade, fishery and tourism.

The Southern Highway will establish a much shorter and stronger link between Colombo and Galle/Matara. Together with the Galle port, it will contribute to improving comparative advantages of the Galle - Matara area for industrial and related services location. It may enhance the potential for the Galle port to function as a supplement transshipment port linked with the Colombo port.

The Intra-Regional Artery Road Establishment will provide shorter and faster links between Matara, Embilipitiya, Tanamalwila, Wellawaya, and Moneragala. It will improve the access to rural areas as well as the SEDZ.

The Coast Line Improvement and Upgrading will extend the on-going efforts to improve the coast line of SLR. Improved signalling and new rolling stocks will safeguard the lines potentials as a fast commuter train and a luxurious tourism coach.

The Uma Oya Multi-Purpose Development will be reformulated for several purposes. It may help to solve existing and foreseen water shortages in the Kirindi Oya, Malala Oya and even Walawe Ganga basins, and generate electricity for supply to the most power-deprived area in the South.

The Airfield Upgrading will upgrade the existing airfields at Koggala and Weerawila to facilitate tourists travelling to and from the South, following recommendations by an UNDP study. The Weerawila airport may be further upgraded subsequently.

The Coal Thermal Power Plan will be established most likely somewhere between Matara and Tangalle. Location will be determined from social and environmental points of view as well as on economic ground. It will provide a much needed base load power plant for more reliable and stable power supply in Sri Lanka and particularly in Southern Area.

6.1.2 Economic development

The following six projects are included:

- (SA-8) Paddy-Based Mixed Farming;
- (SA-9) Home Gardens-Based Multi-Storey Farming;
- (SA-10) Small Holder Integrated Farming;
- (SA-11) Marine Fisheries Complex Development;
- (SA-12) Gin-Nilwala Integrated River Basin Development;
- (SA-13) Industrial Districts for Small and Medium Sized Industries; and
- (SA-14) Comprehensive Market Information Radio Program.

The Paddy-Based Mixed Farming will be implemented mainly in existing paddy lands. It will diversify crops without sacrificing paddy production. Paddy yields will actually increase as a result of improved farm practice and better soil management.

The Home Gardens-Based Multi-Storey Farming will strengthen the cultivation of a few selected crops in traditional home gardens depending on agro-ecological conditions of different areas. Provision of extension, input supply and other supports will be combined with the traditional management system.

The Small Holder Integrated Farming will combine livestock raising by small holders in the backyard with cultivation of various crops for risk reduction and complementary effects. Crop residues can be used to feed animals, and animal wastes may be used as organic fertilizer. Goat and buffalo may be encouraged.

The Marine Fisheries Complex Development will support the establishment of marine fisheries as a main stream economic activities for coastal communities in Southern Area.

Complex facilities for storage, preservation, processing and marketing of fish and fish products will be provided as well as support measures for related industries and services.

The Gin-Nilwala Integrated River Basin Development may be implemented over the planning period, following a comprehensive river basin study in Phase I. The study will address many inter-related issues such as flooding during the wet season, water shortages during the dry season, acidification of soil, saline intrusion and watershed management as well as transbasin diversion opportunities.

The Industrial Districts for Small and Medium Sized Industries will be established at selected urban centers. Those SMIs to be established in the Districts will be provided with a package of support measures as well as common service facilities.

The Comprehensive Market Information Radio Program will provide market information including Colombo price levels and their trends widely to producers in Southern Area. With such information, they can better bargain with traders, adjust their supplies, and plan for their future production.

6.1.3 Social development

Anchor projects in the social development category consist not only of those directly related to social services and training but also of others supporting them indirectly. The following six projects are included:

- (SA-15) District Vocational Training Center;
- (SA-16) Community Enterprises Service Centers;
- (SA-17) Secondary Education Development (extension);
- (SA-18) Health Referral System Development;
- (SA-19) Touristic Herbal Garden and Health Center; and
- (SA-20) Rural Road Improvement Program.

The District Vocational Training Centers will produce workers proficient in the kinds of skills required by an expanded and diversified industrial base. In addition to quality training, formal links with the private sector will help assure effective placement.

The Community Enterprise Service Centers will promote sustainable income by creating partnerships between communities, non-governmental organizations and private investors.

This joint venture will provide continuous support to selected communities that demonstrate some organizational capacity.

The Secondary Education Development will extend the on-going Asian Development Bank project. Its second stage will introduce new curricula, supported by teacher training and provision of facilities and equipment.

The Health Referral System will develop technical and operational linkages between health care services to assure that continuity and quality of care will be improved and resources used efficiently.

The Touristic Herbal Garden and Health Center will diversify tourism resources and contribute to establishing high images of Sri Lanka and Southern Area as a world health center. It will help also to enhance awareness of local people for preventive health care and indigenous medicine.

The Rural Road Development Program will introduce a new approach to improve and maintain rural roads based on a broad participation of local people and communities supported by provision of basic equipment and technical guidance. This will meet various imminent needs for rural road repair and maintenance including social services delivery.

6.1.4 Environmental development

The environmental development category contains projects to improve environmental quality and to support better management of natural resources (e.g. database). They consist of the following:

- (SA-21) GIS-Oriented Regional Information System Establishment;
- (SA-22) Environmental Fund for Southern Area;
- (SA-23) Environmental Monitoring and Animating Center;
- (SA-24) Integrated Management of Coastal Resources;
- (SA-25) Multiple-Use Forest Management;
- (SA-26) Eco-Tourism Development; and
- (SA-27) Appropriate Toilet Facilities for Households.

The GIS-Oriented Regional Information System Establishment will provide an inventory of natural resources and map data as well as a wide range of socio-economic data necessary for planning and management of regional development and resource utilization. The database

will be expanded in steps to include data necessary for investment decisions and data on wise use of resources.

The Environmental Fund for Southern Area will provide grants or soft loans to support private sector activities for environmental protection and rehabilitation. It may cover EIA, installation of pollution control device and activities of environmental NGOs.

The Environmental Monitoring and Animator Center will introduce a simple monitoring system and analysis laboratory to be used by environmental animators. Training on monitoring and analysis techniques and environmental education to local government officials, EIA experts, students, NGOs and local people will be provided at the center.

The Integrated Management of Coastal Resources will enhance the institutional capacity for coastal resources management. Initially, a Coastal and Lagoon Environmental Education and Research (CLEER) center will be established near the Rekawa lagoon to provide a field laboratory for related research and education.

The Multiple-Use Forest Management will promote sustainable production of wood and non-wood forest products (NWFPs) in multiple-use forests. Local organizations will be identified/established and trained for forest management and production of NWFPs.

The Eco-Tourism Development will develop tourism activities in the Kanneliya, Dadiyagala and Nakiyadeniya (KDN) forest complex with participation of local communities. Management plans will be prepared, emphasizing both economic and conservation aspects of tourism activities. The project will serve as a model case of eco-tourism, that may be applicable to other areas as well.

The Appropriate Toilet Facilities for Households will be implemented over the long term to improve toilet facilities for households covering Southern Area as a whole. A water sealed toilet with a septic tank will be installed as a minimum requirement for sanitation.

6.2 Special Program for Participatory Development

The Master Plan for Southern Area Development has been prepared by a hybrid approach effecting participatory (bottom-up) planning within the top-down mechanism as reported in Chapter 2. In particular, based on the in-depth participatory social survey, pilot projects for participatory development have been formulated for three selected DS divisions through local consultation facilitated by NGOs.

These projects should be implemented in the nearest future either independently or as the initial component of other larger projects/programs. They are listed below by division, together with related projects/programs.

Hikkaduwa

- (1) Integrated Fisheries Organization (SA-11 Marine Fisheries Complex Development);
- (2) Center for Tourism Development (TO-13 Tourism Promotion Program); and
- (3) Vocational Training-Guidance-Counselling (SO-16 Counselling Placement Centers).

Kamburupitiya

- (4) Self-Employment Promotion (SO-18 Technical Training and Commercial Center);
- (5) Crop Diversification and Productivity Enhancement (SA-8 Paddy-Based Mixed Farming; SA-9 Home Garden-Based Multi-Story Farming);
- (6) Employment Motivation; and
- (7) Revitalization of Handloom Industry.

Tanamalwila

- (8) Tanks Renovation for Drinking Water and Agriculture (AG-7 Abandoned Tanks Renovation);
- (9) Improved Farming System (SA-9 Home Garden-Based Multi-Story Farming; SA-10 Small Holder Integrated Farming); and
- (10) Crop-Animal Conflicts Minimization (SA-10 Small Holder Integrated Farming; EN-20 Multiple Use Development of Protected Areas).

Profiles of these projects are contained in Project Report. The participatory procedure used to develop these project proposals is described in Participatory Development Report.

6.3 Local Projects and Programs

A total of 115 projects and programs have been defined here as local projects and programs. Most of them would have limited effects as compared with the anchor projects/programs, but nevertheless they would be important in supporting daily activities of local people in smaller areas. They are listed by sector. Their profiles are contained in Project Report.

6.3.1 Agriculture

The following 10 projects/programs are proposed:

- (AG-1) Seed Paddy Production and Supply System Improvement,
- (AG-2) Tea Small Holdings Sector Improvement,
- (AG-3) Sugar Plantation Development,
- (AG-4) Strengthening of Cattle and Buffalo Breeding Program,
- (AG-5) Beef Processing and Marketing Development,
- (AG-6) Irrigation System Rehabilitation and Development
- (AG-7) Abandoned Tanks Renovation,
- (AG-8) Private Sector Irrigated Agriculture Development,
- (AG-9) Enhancement of Training and Research Facilities in Faculty of Agriculture, University of Ruhuna, and
- (AG-10) Alternative Irrigation Techniques Pilot Project.

The Seed Paddy Production and Supply System Improvement and the Tea Small Holdings Sector Improvement would expand on-going efforts to enhance productivity of the respective traditional crops. The former would expand the availability of certified seed paddy to farmers in Southern Area. The latter would improve marketing facilities and land tenure of small holders, and train members of the Tea Small Holders Development Societies.

The Sugar Plantation Development, the Beef Processing and Marketing Development, and the Private Sector Agricultural Development are expected to be implemented with the private sector initiative. They would be supported respectively by the Department of Plantation Industries, local governments, and the Irrigation Department and the Land Commissioner as well as SDA.

The Strengthening of Cattle and Buffalo Breeding Program aims at breeds improvement to increase livestock (milk) productivity through artificial insemination, heat synchronization, improved heifers supply and other support measures.

The Irrigation System Rehabilitation and Development would continue the on-going rehabilitation of existing irrigation schemes for a total area of 20,000 ha, and develop additional irrigation schemes. The latter consist of 19 in-basin irrigation development projects for total expansion of 8,000 ha.

The Abandoned Tanks Renovation is also continuation and expansion of on-going efforts. The Irrigation Department has identified 21 schemes having a total command area of 2,400 ha in Moneragala district, and six schemes with 2,000 ha in Ampara.

The Enhancement of Training and Research Facilities in Faculty of Agriculture, University of Ruhuna would improve the facilities and expand the capacities of the Faculty of Agriculture not only for teaching but also for applied research and out-reach programs. The research may cover requirements of the private sector.

The Alternative Irrigation Techniques Pilot Project would support the private sector to adapt non-conventional irrigation techniques such as the use of pipes for water delivery and drip irrigation. A subsidy scheme would apply to initial capital investments.

6.3.2 Fishery

In addition to the Marine Fisheries Complex Development proposed as an anchor project the following four projects/programs are proposed:

- (FI-1) Inland Fisheries Re-Establishment,
- (FI-2) Prawn farming,,
- (FI-3) Strengthening of Faculty of Fisheries Science in the University of Ruhuna, and
- (FI-4) Improvement of Fish Markets.

The Inland Fisheries Re-Establishment is a program to provide a comprehensive package of measures to support inland fisheries to attain the self-sufficiency level of fish production for rural populace. Support measures include rehabilitation and upgrading of existing facilities at Udawalawe and Muruthawela, and the establishment of fingerlings stocking and rearing system using various water bodies.

The Prawn Farming would be implemented by the private sector supported by MFAR and NARA as well as SDA. Environmentally sustainable (semi-intensive) farming practices would be encouraged.

The Strengthening of the Faculty of Fisheries at the University of Ruhuna would provide improved facilities for marine and inland fisheries research and hydro-biological studies at the University. Research and study results would be useful for improving fishery practices, and graduates would support fishery and aquaculture development in Southern Area.

The Improvement of Fish Markets would be implemented by local governments. Fish stalls in retail markets and road-side stands would be improved selectively based on a survey.

6.3.3 Industry

Industrial development in Southern Area would be supported by an anchor project, the Industrial Districts for Small and Medium Sized Industries, and four other projects:

- (IN-1) Integrated Urban Industrial Development,
- (IN-2) Credit for Manufacturing Enterprises,
- (IN-3) Improved Availability of Manufacturing Input, and
- (IN-4) Training and Technology Institute.

The Integrated Urban Industrial Development would build on industrial districts and develop them as tools for supporting regional growth centers. The strong linkages and agglomeration economies will increase the multipliers in incomes and employment.

The Credit for Manufacturing Enterprises will augment available credit finance for manufacturing enterprises, supplementing the available funding at real interest rates of no more than 2 to 3%. This is an interim measure to balance distortions created by the large public sector borrowing requirements.

The Improved Availability of Manufacturing Input will alleviate the impact of high import duties and procedural problems preventing small and medium sized industries from access to production input at world prices. This is similar to the advanced technology program of the Ministry of Industrial Development, and will allow small firms the same privileges as presently granted by BOI to large companies.

The Training and Technology Institute will be joint public private sector effort to support new industries and products/processes to be introduced in Southern Area. Likely new product groups where major expansions may be possible are electronics, leather goods, and products of clay and kaoline. The institute will address all issues related to selected product groups, including training, technology transfer, and central facilities for control/testing.

6.3.4 Tourism

The Eco-Tourism Development and the Touristic Herbal Garden and Health Center would be implemented as anchor projects. The following 12 additional projects are proposed:

- (TO-1) Galle Fortified City Conservation,
- (TO-2) Hambantota Hotel Construction,
- (TO-3) Hotel School,
- (TO-4) Unawatuna Bay Resort Development,
- (TO-5) Arugama Bay North/South Resort Development,
- (TO-6) Tissamaharama Archaeological Excavation with Gateway Facilities Complex,
- (TO-7) Marine Archaeological Museum,
- (TO-8) Sinharaja Forest Visitor Center,
- (TO-9) Arts and Handicraft Center,
- (TO-10) National Oceanarium and Indian Ocean Institute,
- (TO-11) Walawe Spa Resort Development,
- (TO-12) Research Institute of Birds,
- (TO-13) Tourism Promotion Program, and
- (TO-14) Internet Tourism Information Center.

Most projects would be implemented by the private sector supported by CTB and SDA. Implementation of the Galle Fortified City Conservation, the Tissamaharama Archaeological Excavation, and the Marine Archaeological Museum would be supported also by the Ministry of Cultural Affairs, Department of Archaeology and the respective local governments.

The Sinharaja Forest Visitor Center would be implemented by the Forestry Department in cooperation with CTB and the Department of Wildlife Conservation to provide tourist stop facilities on the top of the hill in Deniyaya. The Arts and Handicraft Center would be established in Galle, Weligama or Matara to exhibit production process as well as products and also local folklore performance and other attractions.

The National Oceanarium and Indian Ocean Institute and the Research Institute of Birds would be established as national institutes, capitalizing on favourable location and resources of Southern Area.

The Tourism Promotion Program will support all the proposed and other tourism activities in Southern Area. Providing soft factors for tourism such as hospitality quality services and informaton, it will help to expedite the implementation of proposed projects. The Internet Tourism Information Center may be a national project but implemented first for Southern Area.

6.3.5 Trade and other services

The Comprehensive Market Information Radio Program would be implemented as an anchor. In addition, the following three projects are proposed:

- (SE-1) Venture Capital Company for the Southern Area Development,
- (SE-2) Producers' *Pola* Improvement, and
- (SE-3) Research on Introduction of Corrugated Paper Boxes for Agricultural Packaging.

The Venture Capital Company for the Southern Area Development would provide medium to long-term equity finance exclusively to investors in Southern Area. The company will hold limited stake of an investee company typically for two to five years. It will also participate in the management providing technical as well as managerial support services.

The Producers' *Pola* Improvement will bring the pola under respective municipalities' ownership and management for upgrading and maintenance. It will provide/improve physical facilities, including access roads, parking lots, ground pavement, permanent sheds, water outlets, drainage, toilets, pay phones and offices.

The Research on Introduction of Corrugated Paper Boxes for Agricultural Packaging will prepare for the wide use of this new packaging method to reduce wastage of agricultural produce during transportation.

6.3.6 Water and sanitation

The following 20 projects are proposed:

- (WS-1) Weli Oya Diversion,
- (WS-2) Mau Ara Diversion,
- (WS-3) Menik Ganga Diversion,,
- (WS-4) Menik Ganga-Kumbukkan Oya Integrated Development,
- (WS-5) Aparekka Reservoir Development,
- (WS-6) Greater Galle Water Supply Improvement,
- (WS-7) Matara Water Supply Improvement,
- (WS-8) Hambantota Water Supply Improvement,
- (WS-9) Water Supply to Lunuganwehera Villages,
- (WS-10) Improvements to Beliatta Water Supply,
- (WS-11) Walasmulla-Weeraketiya Water Supply,
- (WS-12) Kirinda Water Supply,
- (WS-13) Gate Dams for Prevention of Salinity Intrusion to Rivers,
- (WS-14) Treatment Facilities for High Fluoride and Iron Contents in Water,
- (WS-15) Setting up of Rain Water Collector Tanks for Schools, Hospitals and Houses,
- (WS-16) Piped Sewerage Systems with Treatment and Inland Disposal Facilities for Moneragala,
- (WS-17) Piped Sewerage Systems for Major Coastal Urban Centers,
- (WS-18) Innovative Sewerage Systems Pilot Installation,
- (WS-19) Accumulated Sludge Treatment for Septic Tanks, and
- (WS-20) Groundwater Development.

Several trans-basin water diversion schemes proposed in the past were reviewed through the water balance analysis (subsection 5.1.3). Some schemes have been reformulated (Figure 6.1). Of these alternative proposals for transbasin diversion, the Uma Oya diversion and the Gin-Nilwala scheme will be taken up by anchor projects. The Weli Oya Diversion, the Mau Ara Diversion, and the Menik Ganga Diversion may be implemented in stages as part of overall water resources development for Southern Area. The Menik Ganga-Kumbukkan Oya Integrated Development would be implemented as a long term option, based on a further study.

The Aparekka Reservoir Development in the Nilwala basin may be implemented separately from the overall Gin-Nilwala Integrated River Basin Development.

Seven projects are proposed to expand water supply capabilities for urban centers and rural areas. The Greater Galle Water Supply Improvement would constitute an essential condition for the Galle international city and thus be prioritized. Water treatment and delivery facilities would be expanded, and the reticulation of the existing water supply system improved.

The Gate Dams for Prevention of Salinity Intrusion to Rivers would offer a short-term measure to assure continued water supply to major urban centers. Priority may be given to Bentara Ganga. The Treatment Facilities for High Fluoride and Iron Contents in Water would address to water quality problems associated with municipal water supply. The Setting up of Rain Water Collector Tanks for Schools, Hospitals and Houses would offer an alternative low cost water supply in the dry zone.

Four projects are proposed to improve sewage treatment and disposal. Sewer systems for urban centers in Southern Area would be improved in steps through the Piped Sewerage Systems with Treatment and Inland Disposal Facilities for Moneragala, the Piped Sewerage Systems for Major Coastal Urban Centers, and the Innovative Sewerage Systems Pilot Installation. The Accumulated Sludge Treatment for Septic Tanks would contribute to improving rural sanitation by maintaining septic tanks active in purification process. Periodical removal of sludge from septic tanks and a central treatment are two major facilities of the project

The Groundwater Development would start with a systematic assessment of groundwater resources in Southern Area to utilize this source more effectively for water supply in urban and rural areas.

6.3.7 Transportation

The following seven additional projects are proposed:

- (TR-1) Bypass Roads,
- (TR-2) Rehabilitation and Maintenance of National Highways,
- (TR-3) New Road Construction,
- (TR-4) Provincial Road Rehabilitation,
- (TR-5) Bus Terminal Improvement,
- (TR-6) Community Based Transport Services, and
- (TR-7) Commercial Distribution Center.

The four road projects as proposed will cover national and provincial road systems together with the two anchor projects: the Alternative Southern Highway and the Intra-Regional Artery Establishment. Rural roads will be covered by another anchor project : the Rural Road Improvement.

The Bypass Roads would divert inter-regional traffic flows and mitigate traffic problems in major urban centers of Southern Area. The Rehabilitation and Maintenance of National Highway would continue and expand on-going efforts. The New Road Construction would cover two routes: interchange of the Southern Highway - Akuressa - Deiyandara - Middeniya - Embilipitiya - Tanamalwila - Kataragama, and Galle - Nagoda - Pitigala - Ratnapura. The Provincial Road Rehabilitation would improve all roads of class C and class D to ensure accessibility from villages to market centers. Appropriate road design and standard maintenance procedure will be established.

The Bus Terminal Improvement would provide bus parking, passenger shelter, toilet and information center at existing or new bus terminals in major urban centers. The Rural Transport Services would allow community organizations to operate transport services for passengers and goods.

The Commercial Distribution Center would establish a truck terminal with storage and market facilities to improve truck industry operation. The center may be located in Matara and/or Embilipitiya.

6.3.8 Telecommunications

The following three projects are proposed:

- (TL-1) Establishment of Galle Information Community,
- (TL-2) Digital Wireless Local Loop System to Rural Service Centers, and
- (TL-3) Integrated Services Social Network.

The Establishment of Galle Information Community would be implemented as an essential part of efforts to make Galle an international city. Using the backbone network connecting Galle, Matara, Hambantota, Moneragala and Ratnapura to be established by Sri Lanka Telecom in 1997, a theme park with a satellite earth station would be established in Galle with 40 ha.

The Digital Wireless Local Loop System to Rural Service Centers would be established by selected private sector enterprises to offer wireless telecommunications services in different parts of Southern Area.

The Integrated Services Social Network would be implemented as a breakthrough to meet a wide range of communication requirements in public and social organizations by establishing computers and communications networks linking them.

6.3.9 Energy

The following five projects are additionally proposed:

- (EG-1) Distribution Efficiency Improvement,
- (EG-2) Extension of 33 kV Distribution Lines,
- (EG-3) Expansion of Distribution Network,
- (EG-4) Solar Power/Solar Water Supply Systems, and
- (EG-5) Wind Power Plant.

The Distribution Efficiency Improvement has been proposed by Southern province and CEB to operate the entire 33 kV and 11 kV distribution network of Southern Area on minimal loss criteria. The Extension of 33 kV Distribution Lines would electrify 19 villages in Buttala, Wellawaya and Siyambalanduwa divisions, the most electricity-deprived part of Southern Area. The Expansion of Distribution Network will cover Kolonne and Embilipitiya divisions.

The Solar Power/Solar Water Supply Systems will serve rural areas of Southern Area. Solar power systems would be installed at rural maternity clinics, schools, temples, and community and training centers. Solar water supply systems would be installed at schools and community centers.

The Wind Power Plant would be installed in salterns with 12 MW in the vicinity of Bundala National Park. CEB is in the process of reviewing proposals submitted by private investors.

6.3.10 Urban system

The following four projects/programs are proposed:

- (UR-1) Local Development Planning Capability Improvement,
- (UR-2) Sites and Services,
- (UR-3) Urban Administration Restructuring, and
- (UR-4) Galle Downtown Redevelopment.

The Local Development Planning Capability Improvement will initiate a practice of integrated greater area urban planning centered on the larger urban centers in Southern Area. To guide urban expansion in adjoining areas, delineation of a larger area for urban planning is recommended along with instrumentation of required legal and administrative arrangements at the local level for plan preparation and implementation.

The Sites and Services will create developed urban lots in locations where the local government proposed to lead development. Land will be acquired for large tracks at a time, and allocated to various purposes after development at prices lower than market prices.

The Urban Administration Restructuring will first analyze the legal and administrative powers of different urban administration forms: municipal and urban councils, and Pradeshiya Sabha. It will provide detailed descriptions of tasks to be undertaken by each, matching with their financial and other resources.

The Galle Downtown Redevelopment aims at transforming Galle into an international city. The proposed relocation of the railway station and a new bus terminal will provide for the initial development.

6.3.11 Environment

In addition to anchor projects, 20 projects/programs are proposed:

- (EN-1) Wetland Conservation and Management,
- (EN-2) Environmental Rehabilitation of the Nilwala and Nupe Canals,
- (EN-3) Coastal Belt Protection,
- (EN-4) Soil Resources Inventory at Scale 1:50,000 for Southern Area,
- (EN-5) World Bio-Diversity Research Institute,

- (EN-6) Wastewater Treatment for Fishery Communities,
- (EN-7) Promotion and Extension of Efficient Fuelwood-Stoves in Rural Areas,
- (EN-8) Solid Waste Disposal Management,
- (EN-9) Gem-Mining Regulation and Health Project,
- (EN-10) Functional Improvement of National Parks,
- (EN-11) Cooperative Planting Promotion,
- (EN-12) Integrated Watershed Management,
- (EN-13) Wood-based Industry Improvement Project,
- (EN-14) Environmental Wise-Use Research and Training Center,
- (EN-15) Wet-Zone Forest Management through Community Participation,
- (EN-16) General Conservation Center for Forest-cum-Wildlife Reserve Area,
- (EN-17) Ecological Management of Soil Erosion and Minor Tanks in the SEDZ,
- (EN-18) Biological and Environmental Zoning,
- (EN-19) Commercial Forestry Promotion, and
- (EN-20) Multi-use Development of Protected Areas.

These projects collectively cover all the different aspects of environment. Six projects cover all types of lands including wetland, coastal land, upper catchment, National Parks and conservation areas: the Wetland Conservation and Management, the Coastal Belt Protection, the Functional Improvement of National Parks, the Integrated Watershed Management, the General Conservation Center for Forest-cum-Wildlife Reserve Area, and the Ecological Management of Soil Erosion and Minor Tanks in the SEDZ.

Six projects contribute to reducing environmental loads or enhancing regenerating capacities of the environment : the Environmental Rehabilitation of the Nilwala and Nupe Canals, the Wastewater Treatment for Fishery Communities, the Promotion and Extension of Efficient Fuelwood-Stoves in Rural Areas, the Solid Waste Disposal Management, the Gem-Mining Regulation and Health Project, and the Wood-based Industry Improvement Project.

Two projects will create basic data for environmental management : the Soil Resources Inventory and the Biological and Environmental Zoning. Two other projects will promote advanced and applied research : the World Bio-Diversity Research Institute, and the Environmental Wise-Use Research and Training Center.

Two projects will support the community participation in environmental management : the Cooperative Planting Promotion, and the Wet-Zone Forest Management through Community Participation.

Two other projects will provide economic incentives to environmental protection : the Commercial Forestry Promotion, and the Multi-use Development of Protected Areas.

6.3.12 Social development

In addition to anchor projects, 19 projects/programs are proposed:

- (SO-1) Education Resource Center,
- (SO-2) Expansion of Secondary Schools (type IAB),
- (SO-3) Non-formal Education Program,
- (SO-4) Establishing Faculty of Engineering in Ruhuna University,
- (SO-5) Pilot Project of Study on Budget Allocation on Education Sector in Southern Area,
- (SO-6) Master Plan of Health Development if Southern Area,
- (SO-7) Nutrition Campaign,
- (SO-8) Hospital Improvement Program,
- (SO-10) Basic Training Center for Para-medical Health Personnel,
- (SO-11) In-service Training for Health Personnel,
- (SO-12) Integrated Malaria Control and Prevention Program,
- (SO-13) Inter-disciplinary Research Program for Dry Zone Areas,
- (SO-14) Social Issues Research Project,
- (SO-15) Southern Area Vocational Education Commission (SAVEC),
- (SO-16) Counseling Placement Centers,
- (SO-17) Employer Initiated Training,
- (SO-18) Technical Training and Commercial Centers, and
- (SO-19) Master Trainer and Program Manager.

The Educational Resource Center Project will establish an educational resource center in a primary and a secondary school in each division, focusing on primary and secondary school teachers' training and providing counseling and career guidance for secondary school students. The Expansion of Secondary Schools (type IAB) will focus on deploying type IAB schools in under-served areas. The Non-formal Education Program will be for school leavers, and focus on numeracy and English. The Establishing Faculty of Engineering in Ruhuna University is expected to create engineers who will be required according to the progress of development projects in Southern Area.

The Pilot Project of Study on Budget Allocation for Education Sector in Southern Area will study on the decentralized provincial budget allocation. It will study the current budget allocation and propose an efficient way of future allocation, and other.

The Master Plan of Health Development for Southern Area will reflect the needs of different areas. It will include re-categorization of health institutions and will investigate the need for upgrading them. It will also identify measures to promote use of indigenous medicine, participation of the private sector, strengthening of management capacity and health financing.

The Nutrition Campaign Program will accelerate the national level endeavor in Southern Area by providing the necessary facilities, manpower, and transportation. The Hospitals Improvement Program will focus initially on the base hospitals in Hambantota, Embilipitiya and Moneragala, Matara Provincial Hospital, and Kalapitiya and Mahamodara Teaching Hospitals. The Basic Training Center for Para-medical Health Personnel will be established in the Karapitiya teaching hospital to serve Southern Area.

The In-Service Staff Training of Health Personnel will strengthen training for all categories of health personnel in primary health institutions. This includes the provision of the necessary equipment for training. The Community Oriented Health Education and Training Program for Community Health Workers will promote community participation in health promotion and preventive health care, together with training for field health workers.

The Integrated Malaria Control and Prevention program will be conducted in Moneragala and Hambantota districts. The Inter-disciplinary Research Program of Dry Zone Areas and the Social Issues Research Project will investigate area specific health related problems and the impact of development activities on health.

The Southern Area Vocation Education Commission (SAVEC) aims at regionally streamlined management of technical and vocational education and training. It will perform planning and coordination, program development, and monitoring and evaluation.

Three projects are proposed to make vocational training more responsive to supply and demand. These are the Counselling Placement Centers, Employer Initiated Training, and Technical Training and Commercial Centers. The Master Trainer and Program Manager aims to increase effectively training capacity at institution and delivery levels.

6.4 Indicative Investment Schedule

(1) Estimate of investment requirements

The amount of public and private investments necessary to attain the projected GRDP is estimated based on the GDP growth and investment of the Country in the recent past as well as the estimated GRDP growth for Southern Area. The concept of incremental capital output ratio (ICOR) is used for the estimate.

ICOR is the ratio between the amount of investment and the amount of GDP or GRDP increase. The smaller ICOR is, the more efficient the investment is. Sri Lanka's national ICOR is estimated by using the data in recent years, and ICOR for Southern Area is determined by adjusting the national ICOR to reflect less developed economies of Southern Area and the expected growth.

The estimated Southern Area ICOR and required investments for 1995-2015 are summarized in Table 6.3. During the planning period, the Southern Area ICOR is expected to improve from 5.5 in 1995 to 4.75 in 2015. The ratio of fixed capital formation to the GRDP in Southern Area is 35.8% in Phase I (1995-2000), 42.7% and 37.9% respectively in the first and the second half of Phase II (2001-2010), and 37.1% in Phase III (2011-2015).

Cummulative public investments for Southern Area are calculated to be Rs. 78.5 billion in Phase I, Rs. 195.5 billion in Phase II, and Rs. 106.3 billion in Phase III in 1995 prices.

(2) Indicative investment schedule

The amount of public investments that may be allocated to projects and programs in Southern Area is determined based on the above estimate. The cumulative public investments for Southern Area are US\$ 830 million in Phase I (1997-2000), US\$ 3,620 million in Phase II (2001-2010), and US\$ 1,970 million in Phase III (2011-2015).

Crude estimates of investment costs are made for all the projects and programs proposed in the Master Plan. They are allocated to different phases in due consideration of the development phasing for Southern Area presented in Section 5.3 within the projected public investments availability. For those projects and programs of which the implementation is subject to the results of studies recommended by the Master Plan, only indicative allocations are made.

An indicative investment schedule thus prepared is given in Table 6.4. Public investment requirements for the Southern Area development, calculated from the indicative investment

schedule, are US\$ 687 million during Phase I, US\$ 2,793 million during Phase II, and US\$ 1,146 million during Phase III. Requirements for Phase II and Phase III do not include costs of additional projects to be formulated through studies during Phase I.

The total public investment requirements for all the proposed projects and programs account for 82% of the estimated public investment allocation for Phase I and 77% for Phase II. Taking account of other regular programs to be implemented by sector agencies, the investment budget is already tight for these phase, especially for Phase II where implementation of additional projects is implied without costing. This means that some projects may be deferred for implementation or their scale reduced, if all the proposed projects and programs should be implemented by the public sector.

Implementation of all the proposed projects and programs as scheduled would call for increased resources mobilization in the private sector. Some projects are expected to be implemented by the private sector, such as industrial estates, telecommunications projects, urban projects, and even some projects of social services.

Table 6.1 Development Objectives and Anchor Projects of Southern Area Master Plan

Objectives	Alternatives			Southern Area Alternative	Anchor Projects	
	I	II	III		Object-specific	Strategic Infrastructure
<u>Social</u> To create a sufficient number of high earning employment opportunities for growing and increasingly more educated labour force	△	⊙	○	○	(SA-15) District Vocational Center (SA-16) Community Enterprises Service Center (SA-17) Secondary Education Development (SA-18) Health Referral System (SA-19) Touristic Herbal Garden and Health Center (SA-20) Rural Road Improvement	(SA-1) Galle Port Development (SA-2) Southern Highway (SA-3) Intra-Regional Artery Road Establishment (SA-4) Coast Line Improvement and Upgrading (SA-5) Uma Oya Multipurpose Development (SA-6) Airfields Upgrading (SA-7) Coal Thermal Power Plant
<u>Environmental</u> to preserve/enhance the unique natural and socio-cultural resources of sufficient diversity as a sustainable basis for various socio-economic activities	⊙	△	△	○	(SA-21) GIS-oriented RIS (SA-22) Environmental Fund (SA-23) Environmental Monitoring and Animation Center (SA-24) Integrated Management of Coastal Resources (SA-25) Multiple Use Forest (SA-26) Eco-Tourism (SA-27) Appropriate Toilet Facilities	
<u>Economic</u> To contribute to realizing open and competitive economies of Sri Lanka within the freetrade regime	△	○	○	○	(SA-8) Paddy-based Mixed Farming (SA-9) Home Garden-based Multi Storey Farming (SA-10) Small Holder Integrated Farming (SA-11) Marine Fisheries Complex (SA-12) Gin-Nilwala Integrated River Basin Development (SA-13) Industrial District for SMIs (SA-14) Comprehensive Market Information	

⊙ High contribution

○ Reasonable contribution

△ Modest contribution

Table 6.2 Development Scenario for Southern Area with Phasing - A Summary

	Phase I (~2000)	Phase II (2001-2010)	Phase III (2011-2015)
Characterization	<ul style="list-style-type: none"> Indigenous resources based development Initiation of innovations with respect economic activities and management organizations Strong government initiative Growth rate ~ 6% p.a. 	<ul style="list-style-type: none"> External resource/market driven development Transformation of spatial and economic structures Stable and open macro policies by the Government Growth rate 8.5% p.a. 	<ul style="list-style-type: none"> Support industry/services oriented development Strong private sector, facilitative government roles High images and respectable positions of Southern Area for outward oriented services Growth rate ~ 8% p.a.
Socio-economy (Typical activities)	<p><u>Agriculture</u></p> <ul style="list-style-type: none"> Continuation of on-going efforts to improve traditional crops Expansion of sugarcane and cashew Initiation of mixed, multi-storey and integrated farming Revitalization of inland fishery <p><u>Industry</u></p> <ul style="list-style-type: none"> Expansion of existing industries - e.g. garments, handicraft and agro-processing Initiation of new processing industries - e.g. leather, cashew Improvement of processing for higher value products <p><u>Services</u></p> <ul style="list-style-type: none"> Steady growth of consumer-oriented services Initiation of specialized services - e.g. higher education, Ayurvedic medical care, eco-tourism Further tourism development along southwestern coast and around Hambantota 	<p><u>Agriculture</u></p> <ul style="list-style-type: none"> Expansion of new crops and innovative production systems Diversification of integrated farming Marine fisheries as a main stream economic activity <p><u>Industry</u></p> <ul style="list-style-type: none"> New agro-processing in full scale Secondary processing for high value-added products - condiments, cosmetics and pharmaceuticals Foot loose industries and subcontracting industries to Colombo-based industries <p><u>Services</u></p> <ul style="list-style-type: none"> Expansion of non-industrial services - transport, wholesale, export services New types of transport and marketing services - refrigerated trucking, trading house Tourism with a variety of man-made attractions 	<p><u>Agriculture</u></p> <ul style="list-style-type: none"> Intensive agriculture Full utilization of primary products through complete cycle processing and recycling Direct export of cutflower, office plants, vegetables and fish <p><u>Industry</u></p> <ul style="list-style-type: none"> Products diversification and industrial deepening Engineering and other linkage industries as a main source of employment and income Integration with Colombo-based industries <p><u>Services</u></p> <ul style="list-style-type: none"> More specialized services - environmental education, bio-diversity research, eco-tourism, indigenous medical care International trade-related services in Galle Rural services delivery by wireless telecommunications network
Spatial development	<ul style="list-style-type: none"> Access improvement from Colombo to and through Galle Selective improvement of urban infrastructure - Galle, Matara, Hambantota, Embilipitiya, Tissamaharama and Suriyawewa Initiation of intra-regional artery 	<ul style="list-style-type: none"> Intra-regional artery as a high grade road Galle established as an international city Improvement of urban infrastructure in secondary towns 	<ul style="list-style-type: none"> Inter-regional links by the Galle port, highways and air Strong urban hierarchy Road links for all rural service centers
Human development	<ul style="list-style-type: none"> Formal community involvement in planning and development Improvement of delivery systems for health and education Streamlining of vocational and technical education and training 	<ul style="list-style-type: none"> "Distance" education and training Private hospitals NGO network to support community participation 	<ul style="list-style-type: none"> Formal education responsive to industry needs Occupational training linked with enterprises, placement network and monitoring systems Refocused health care for aging population NGOs as sound partners with communities for self-reliant development

Source : Section 5.3

Table 6.3
Projected GDP and Southern Area GRDP, and Required Investment for 1995-2015 Period

(Rs. Millions, at 1982 Constant Prices)

	Year	1995	2000	2005	2010	2015
		1995-2000	2000-2005	2005-2010	2010-2015	1995-2015
National	GDP	169,127	221,042	302,847	414,927	581,956
	GDP Increase	51,915	81,805	112,080	167,029	412,829
	ICOR (National)	5	4.8	4.5	4.5	4.825
	Cumulative Gross Fixed Capital Formation	284,905	342,060	409,024	459,732	2,107,671
	Average GFCF	56,981	68,412	81,805	91,946	105,384
Southern Area	Southern Area GDP	17,036	19,142	21,508	24,744	29,147
	Southern Area GDP Increase	2,106	2,366	3,236	4,403	58,940
	ICOR (Southern Area)	5.5	5.5	5.5	5	4.75
	Cumulative Southern Area Gross Fixed Cap. Formation	36,770	46,511	58,653	66,356	287,821
	Average Southern Area GFCF	7,354	9,302	11,731	13,271	14391.026
	Average National GFCF/GDP Ratio (%) (1)	28.50%	32.50%	31.68%	31.50%	31.05%
	Average Southern Area GFCF/GDP Ratio (%) (2)	35.79%	42.67%	37.92%	32.00%	37.09%
	(2) / (1)	12.91%	13.60%	14.34%	14.43%	13.66%
Assumptions	Public / Total Investment (National)	50%	45%	40%	40%	43%
	Private / Total Investment (National)	50%	55%	60%	60%	57%
	Public / Total Investment (Southern Area)	60%	55%	50%	45%	51%
	Private / Total Investment (Southern Area)	40%	45%	50%	55%	49%
	Cumulative Public Investment (National)(3)	142,452	153,927	163,610	183,893	643,882
	Cumulative Private Investment (National)(4)	142,452	188,133	245,414	275,839	851,839
	Cumulative Public Investment (Southern Area) (5)	22,062	25,581	29,327	29,860	106,830
	(5) / (3)	15%	17%	18%	16%	17%
	Cumulative Private Investment (Southern Area)(6)	14,708	20,930	29,327	36,496	101,460
	(6) / (4)	10%	11%	12%	13%	12%

Source: JICA Study Team

Table 6.4 Indicative Investment Schedule for Southern Area Development

(Unit: US\$ million)

I. Anchor Projects				Investment ²		
Code No.	Project/Program Title	Agencies	Status ¹	Phase I (1997-2000)	Phase II (2001-2010)	Phase III (2011-2015)
SA-1	Galle Port Development	SLPA, private	R	50	240	250
SA-2	Southern Highway	RDA	P	30	270	
SA-3	Intra-Regional Artery Road Establish	RDA	N	10	40	
SA-4	Coast Line Improvement	SLR	P	30	120	210
SA-5	Uma Oya Multipurpose Dev't	CEB, ID, SDA	R	20	330	
SA-6	Air Field Upgrading	DCA, AAS	P	10	20	40
SA-7	Coal Thermal Power Plant	CEB	P	50	500	
SA-8	Paddy-based Mixed Farming	DCA, ID	N	5	20	20
SA-9	Home Garden-based Multi-storey	DOA, DEA, cashew corp	N	10	20	20
SA-10	Small Holder Integrated Farming	DAPH, DOA, DEA	N	8	20	20
SA-11	Marine Fisheries Complex	CFHC, private	N	10	10	
SA-12	Gin-Nilwala Integrated River Basin	SDA	N	5	*	*
SA-13	Industrial Districts for SMEs	IDB, RISC, private	N	1	1	1
SA-14	Comprehensive Market Information	ARTI, SLBC	N	1		
SA-15	District Vocational Training Center	RVEC, VTA	N	5	10	5
SA-16	Community Enterprise Service Centers	NGOs	N	1	2	1
SA-17	Secondary Education Development	MOE	R	30	15	
SA-18	Health Referral System	MOH	N	5	10	
SA-19	Touristic Herbal Garden and Health C.	Private	N	-	-	-
SA-20	Rural Road Improvement	LGs	N	3	3	2
SA-21	GIS-Oriented Regional Information S.	SDA	N	5		
SA-22	Environmental Fund	SDA, CB, PCAF, NGOs	N	15	10	
SA-23	Environmental Monitoring and Animation	LGs	N	4	5	
SA-24	Integrated Management of Coastal Res.	SDA	N	10	10	
SA-25	Multiple Use Forest Management	FD, NGOs	N	2	3	
SA-26	Eco-Tourism Development	CTB, FD, NGOs	N	1	1	1
SA-27	Appropriate Toilet Facilities	MHCPU	N	2	2	2
Total Anchor Projects				323	1662	572
2. Special Program for Participatory Development		NGO/CBOs, LGU	N	*		
3. Local Projects/Programs				Investment ²		
Code No.	Project/Program Title	Agencies	Status ¹	Phase I	Phase II	Phase III
Agriculture						
AG-1	Seed Paddy Production and Supply	DOA, LGs	N	5	5	
AG-2	Tea Small Holdings Sector Improve.	TSHDA, inter-agency	P	2	3	
AG-3	Sugar Plantations Development	Private	N	-	-	-
AG-4	Strengthening of Cattle and Buffalo Breed	DAPH	N	4	3	
AG-5	Beef Processing and Marketing	Private	N	-	-	-
AG-6	Irrigation System Rehabilitation/Dev't	ID, inter-agency	P	7	30	20
AG-7	Abandoned Tanks Renovation	ID	P	8	20	10
AG-8	Private Sector's Irrigated Agriculture	Private	N	-	-	-
AG-9	Enhancement of Training and Research	Univ. of Ruhuna	N	5		
AG-10	Alternative Irrigation Techniques	SDA, FOs	N	1	2	
Sub-total				33	63	30
Fishery						
FI-1	Inland Fisheries Re-Establishment	MFAR, Private	N	5	5	
FI-2	Prawn Farming	Private	P	-	-	-
FI-3	Strengthening of Faculty of Fisheries	Univ. of Ruhuna	N	3	3	
FI-4	Improvement of Fish Markets	LGs	N	2	5	
Sub-total				10	13	0
Industry						
IN-1	Integrated Urban Industrial Dev't	SDA	N	5	10	5
IN-2	Training and Technology Institute	Inter-agency	N	2	3	3
IN-3	Credit for Manufacturing Enterprises	NDB, DFCC	N	10	10	10
IN-4	Improved Availability of Manuf. Input	CD, BOI	N	1	1	1
Sub-total				18	24	19

(to continue)

(Unit: US\$ million)

Code No.	Project/Program Title	Agencies	Status ¹	Investment ²		
				Phase I	Phase II	Phase III
Tourism						
TO-1	Galle Fortified City Conservation	LG, CTB	P	1	1	1
TO-2	Hambantota Hotel Construction	Private	N	-	-	-
TO-3	Hotel School	CTB	P	2	1	-
TO-4	Unawatuna Bay Resort Dev't	Private	P	-	-	-
TO-5	Arugama Bay North/South Resort	Private, CTB	P	1	1	-
TO-6	Tissamaharama Archeological Excavation	UDA, CTB, LG	P	1	3	-
TO-7	Marine Archeological Museum	MCA	N	1	2	1
TO-8	Sinharaja Forest Visitor Center	FD, DWLC, CTB	N	1	-	-
TO-9	Arts and Handicraft Center	MCA, LG	N	2	-	-
TO-10	National Oceanarium and Indian Ocean	MFAR, MCA	N	1	2	3
TO-11	Walawe Spa Resort Development	Private, CTB	N	-	-	-
TO-12	Research Institutes of Birds	DWLC	N	1	2	-
TO-13	Tourism Promotion Program	MMTA, CTB	N	1	1	-
TO-14	Internet Tourism Information	CTB	N	1	1	-
	Sub-total			12	14	5
Trade and other services						
SE-1	Venture Capital Company	SDA	P	5	4	-
SE-2	Producers' Pola Improvement	LGs	N	2	1	-
SE-3	Research on Introduction of Corrugated	NPC, HARTI	N	1	-	-
	Sub-total			8	5	0
Water and sanitation						
WS-1	Weli Oya Diversion	ID	P	-	*	-
WS-2	Mau Ara Diversion	ID	P	-	*	-
WS-3	Menik Ganga Diversion	ID	P	8	-	-
WS-4	Menik Ganga-Kumbukkan Oya Integrated	ID/SDA	P	3	*	*
WS-5	Aparekka Reservoir Development	ID, SDA	P	2	*	*
WS-6	Greater Galle Water Supply	NWSDB	R	15	45	40
WS-7	Matara Water Supply Improvement	NWSDB	P	10	30	30
WS-8	Hambantota Water Supply	NWSDB	P	10	40	25
WS-9	Water Supply to Lunugamvehera Villages	NWSDB	P	2	-	-
WS-10	Improvement of Beliatta Water Supply	NWSDB	P	1	-	-
WS-11	Walasmulla Weeraketiya Water Supply	NWSDB	P	4	10	-
WS-12	Kirinda Water Supply	NWSDB	P	2	-	-
WS-13	Gate Dams for Prevention of Salinity	NWSDB	N	2	5	*
WS-14	Treatment Facilities for High Fluoride	NWSDB	N	1	1	2
WS-15	Setting Up of Rain Water Collectors	MHC	N	2	3	2
WS-16	Piped Sewerage Systems (Moneragala)	NWSDB	N	1	3	5
WS-17	Piped Sewerage Systems for Coastal	NWSDB	N	3	5	10
WS-18	Innovative Sewerage Systems	NWSDB	N	1	5	-
WS-19	Accumulated Sludge Treatment	NWSDB	N	-	3	-
WS-20	Groundwater Development	WRB	N	3	*	*
	Sub-total			70	150	114
Transportation						
TR-1	By pass Roads	RDA	P	5	20	-
TR-2	Rehabilitation and Maintenance of National Roads	RDA	R	35	245	95
TR-3	New Road Construction	RDA	P	25	330	220
TR-4	Provincial Road Rehabilitation	Prov. RDA	P	10	17	-
TR-5	Bus Terminal Improvement	LG	N	2	2	-
TR-6	Rural Transport Services	LG, Private	N	2	2	-
TR-7	Commercial Distribution Center	MTEWA	N	5	5	-
	Sub-total			79	601	315
Telecommunications						
TL-1	Establishment of Galle Information Center	MOI	N	10	40	-
TL-2	Digital Wireless Local Loop System	MPT	N	5	5	-
TL-3	Integrated Services Social Network	MPIEANI	N	-	10	-
	Sub-total			15	55	0
Energy						
EG-1	Distribution Efficiency Improvement	CEB	P	3	-	-
EG-2	Extension of 33 kv Distribution Lines	CEB	P	2	-	-
EG-3	Expansion of Distribution Network	CEB	P	7	2	-
EG-4	Solar Power/Solar Water Supply Systems	NHDA	P	2	5	3
EG-5	Wind Power Plant	CEB, Private	P	5	10	-
	Sub-total			19	17	3

(to continue)

(Unit: US\$ million)

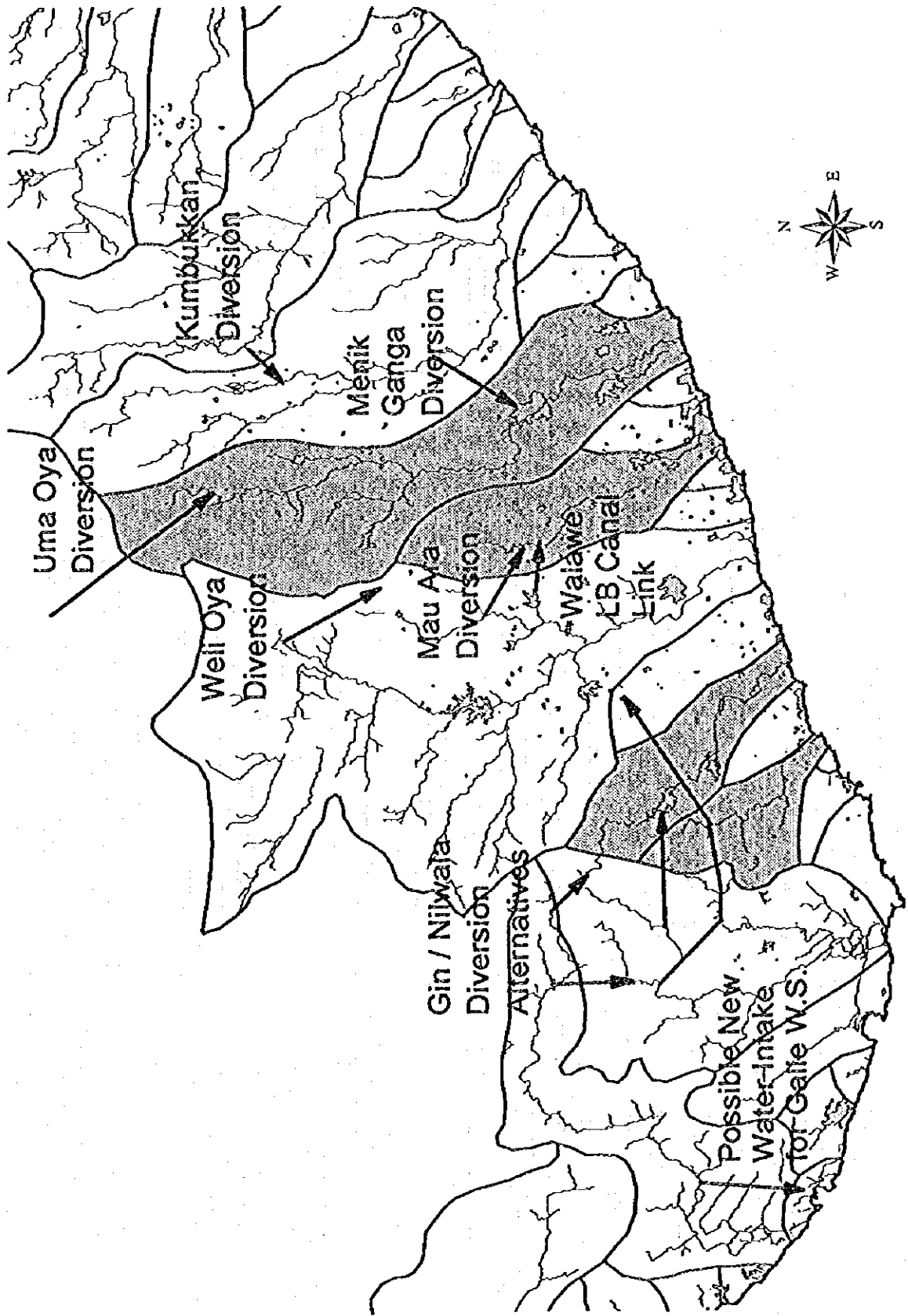
Code No	Project/Program Title	Agencies	Status ¹	Investment ²		
				Phase I	Phase II	Phase III
Urban System						
UR-1	Local Development Planning Capability	LGs	N	8	15	10
UR-2	Sites and Services	SDA, UDA, LGs	N	5	10	10
UR-3	Urban Administration Re-structuring	MPIEANI	N	1	1	
UR-4	Galle Downtown Redevelopment	SDA, UDA, LGs	N	5	10	
	Sub-total			19	36	20
				280	97	50
					5	6
Environment						
EN-1	Wetland Conservation and Management	CBA, DWLC, NGOs	R		5	
EN-2	Environmental Rehabilitation of Nilwala/Nupe	Inter-agency	P	1	2	
EN-3	Coastal Belt Protection	CCD	N	1	2	
EN-4	Soil Resources Inventory	ID	N	2		
EN-5	World Bio-diversity Research Institute	DWLC, Private	N		5	3
EN-6	Wastewater Treatment for Fishery Commn.	DFAR	P	1	3	
EN-7	Promotion/Expansion of Effit Fuelwood Stores	CEB, FD, NGOs	N	1	2	
EN-8	Solid Waste Disposal Management	LGs, NGOs	N	2	6	3
EN-9	Gem-mining Regulation and Health	NGJA, HD, FD	R	1	2	1
EN-10	National Parks Functional Improvement	DWLC, FD, CTB	N	3	5	3
EN-11	Cooperative Planting Promotion	AD, FD	N	1	2	
EN-12	Integrated Watershed Management	FD, NGOs	N	3	6	4
EN-13	Wood-based Industry Improvement	FD, STC, Private			3	3
EN-14	Environmental Wise Use Research		N	2	4	1
EN-15	Wet Zone Forest Management		P	1	1	1
EN-16	General Conservation Center for Forest/WL		N	3	6	
EN-17	Ecological Management of Soil Erosion		N	2	4	2
EN-18	Biological and Environmental Zoning		N	2	3	
EN-19	Commercial Forestry Promotion	FD, Private	P	-	-	-
EN-20	Multi-use Development on Protected Areas		N	1	1	
	Sub-total			27	62	22
Social Development						
SO-1	Educational Resource Center		N	1	1	
SO-2	Expansion of Secondary Schools (IAB)	MOE		1	1	1
SO-3	Non-Formal Education	MOE		1	1	1
SO-4	Establishing Faculty of Engineering	Univ. of Ruhuna	N	2	18	
SO-5	Pilot Project of Study on Budget alloc.			1		
SO-6	Master Plan for Health Development	MOH	N	1		
SO-7	Nutrition Campaign	MOH		1	1	
SO-8	Hospital Improvement	LGs		5	45	30
SO-9	Basic Training Center for Para-medical	MOH		8	2	
SO-10	In-Service Training for Health Personnel			1		
SO-11	Community Oriented Health Education	HIEB		1		
SO-12	Integrated Malaria Control and Prevention	MOH		2		
SO-13	Inter-disciplinary Research		N	1		
SO-14	Social Issues Research	MOH, CENWOR	N	1		
SO-15	Southern Area Vocational Education Comm	TVEC	N	11	6	5
SO-16	Counselling Placement Center	RVEC	N	5	3	2
SO-17	Employer Initiated Training	RVEC	N	4	8	4
SO-18	Technical Training and Commercial Centers	RVEC	N	3	2	1
SO-19	Master Trainer and Program Manager		N	4	3	2
	Sub-total			54	91	46
Total Local Projects/Programs				364	1131	574
Grand Total				687	2793	1146
				(82%)	(77%)	(58%)

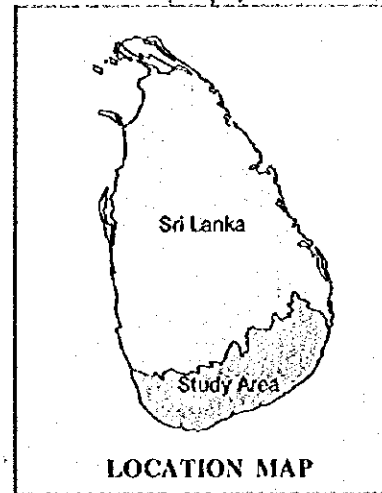
Notes 1: P- planned by sector agencies, N- newly formulated, R- revised/expanded

2: * - costs depending on study outcomes

Source: JICA Study Team

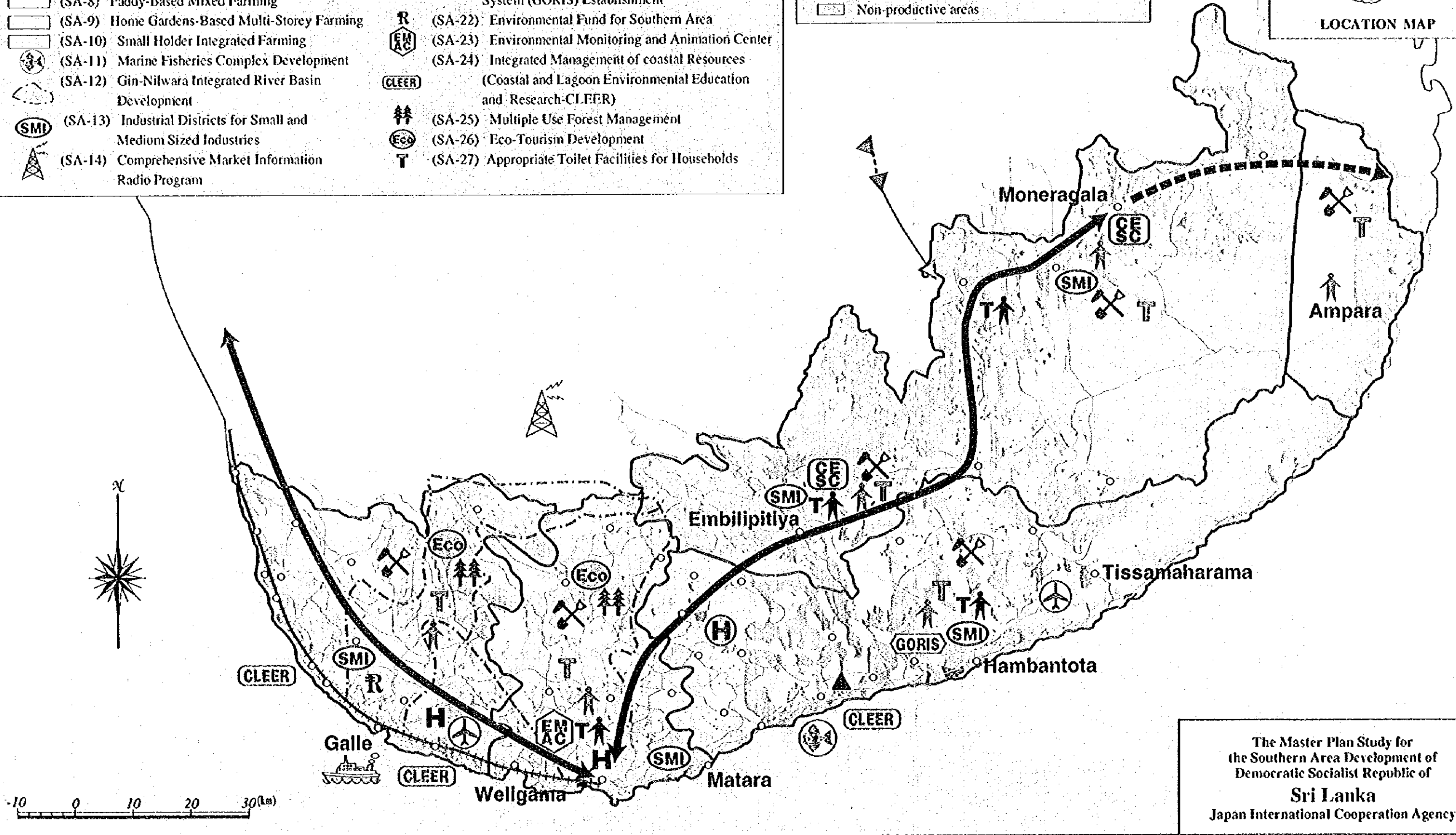
Figure 6.1 Alternative Proposals for Trans-Basin Diversions





ANCHOR PROJECTS		Legend	
	(SA-1) Galle Port Development		(SA-15) District Vocational Training Center
	(SA-2) Alternative Southern Highway		(SA-16) Community Enterprises Service Centers
	(SA-3) Intra-Regional Artery Road Establishment		(SA-17) Secondary Education Development (extension)
	(SA-4) Coast Line Improvement and Upgrading		(SA-18) Health Referral System Development
	(SA-5) Uma Oya Multi-Purpose Development		(SA-19) Touristic Herbal Garden and Health Center
	(SA-6) Airfield Upgrading		(SA-20) Rural Road Improvement
	(SA-7) Coal Thermal Power Plant		(SA-21) GIS-Oriented Regional Information System (GORIS) Establishment
	(SA-8) Paddy-Based Mixed Farming		(SA-22) Environmental Fund for Southern Area
	(SA-9) Home Gardens-Based Multi-Storey Farming		(SA-23) Environmental Monitoring and Animation Center
	(SA-10) Small Holder Integrated Farming		(SA-24) Integrated Management of coastal Resources
	(SA-11) Marine Fisheries Complex Development		(CLEER) (Coastal and Lagoon Environmental Education and Research-CLEER)
	(SA-12) Gin-Nilwara Integrated River Basin Development		
	(SA-13) Industrial Districts for Small and Medium Sized Industries		(SA-25) Multiple Use Forest Management
	(SA-14) Comprehensive Market Information Radio Program		(SA-26) Eco-Tourism Development
			(SA-27) Appropriate Toilet Facilities for Households

Legend	
	Protected forests
	Production forests
	Prime agricultural lowlands (Intensification)
	Prime agricultural lowlands (Diversification)
	Prime agricultural uplands (Intensification)
	Prime agricultural uplands (Diversification)
	Marginal agricultural uplands (Intensification)
	Marginal agricultural uplands (Diversification)
	Urban/Industrial use
	Water bodies and Wetlands
	Non-productive areas



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ANCHOR PROJECTS

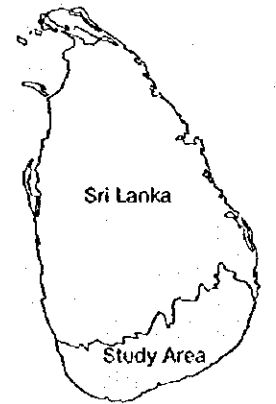
- (SA-1) Galle Port Development
- (SA-2) Alternative Southern Highway
- (SA-3) Intra-Regional Artery Road Establishment
- (SA-4) Coast Line Improvement and Upgrading
- (SA-5) Uma Oya Multi-Purpose Development
- (SA-6) Airfield Upgrading
- (SA-7) Coal Thermal Power Plant
- (SA-8) Paddy-Based Mixed Farming
- (SA-9) Home Gardens-Based Multi-Storey Farming
- (SA-10) Small Holder Integrated Farming
- (SA-11) Marine Fisheries Complex Development
- (SA-12) Gin-Nilwara Integrated River Basin Development
- (SA-13) Industrial Districts for Small and Medium Sized Industries
- (SA-14) Comprehensive Market Information Radio Program

Legend

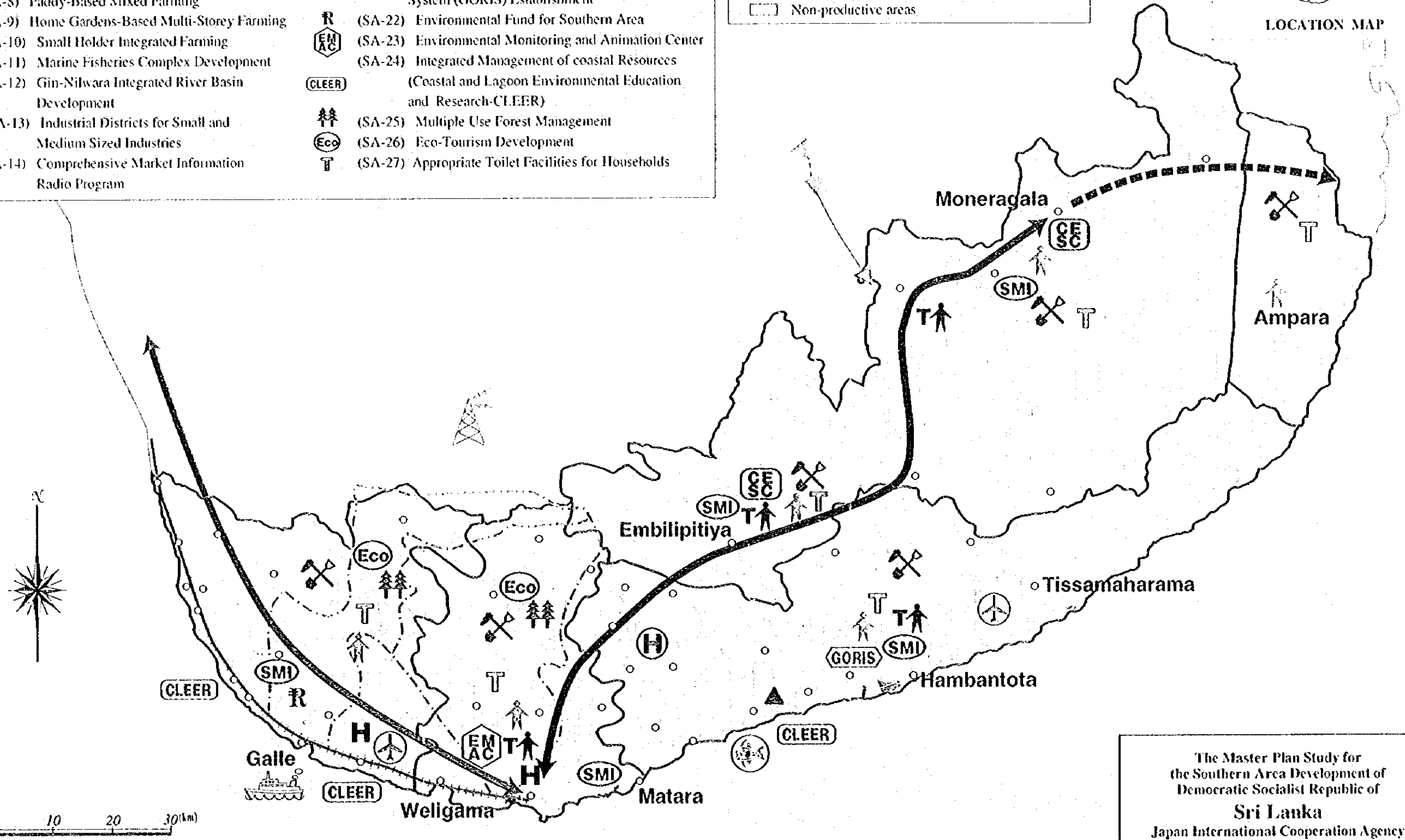
- (SA-15) District Vocational Training Center
- (SA-16) Community Enterprises Service Centers
- (SA-17) Secondary Education Development (extension)
- (SA-18) Health Referral System Development
- (SA-19) Touristic Herbal Garden and Health Center
- (SA-20) Rural Road Improvement
- (SA-21) GIS-Oriented Regional Information System (GORIS) Establishment
- (SA-22) Environmental Fund for Southern Area
- (SA-23) Environmental Monitoring and Animation Center
- (SA-24) Integrated Management of coastal Resources
- (CLEER) (Coastal and Lagoon Environmental Education and Research-CLEER)
- (SA-25) Multiple Use Forest Management
- (SA-26) Eco-Tourism Development
- (SA-27) Appropriate Toilet Facilities for Households

Legend

- Protected forests
- Production forests
- Prime agricultural lowlands (Intensification)
- Prime agricultural lowlands (Diversification)
- Prime agricultural uplands (Intensification)
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LOCATION MAP



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CHAPTER 7

Chapter 7

ACTION PLAN

Activities to be undertaken subsequent to the completion of the Master Plan for the Southern Area development are (1) adoption and promotion of the Master Plan, (2) restructuring/strengthening of implementing arrangements with SDA, and (3) further development of individual projects and programs and implementation of identified priority projects. These activities are described.

7.1 Master Plan Adoption and Promotion

The bulk of development projects and programs proposed by the Master Plan can be implemented or further developed within the competence and policies of relevant sector agencies. However, the coordination of various development efforts by many agencies and timely implementation of anchor projects will have to be assured. For this purpose, Master Plan proposals will have to be discussed among related agencies, sector concerns and conflicts resolved, and the Master Plan should be formally adopted, if necessary with addenda. SDA should take the initiative in this coordination and conflict resolution process.

In parallel with these procedures the Master plan proposals should be disseminated widely to facilitate implementation through further cultivating public acceptance. The following will be particularly effective:

- (1) implementation of orientation seminars to convey the Master Plan proposals to a wide range of people such as politicians, local government officials, NGO's, environmentalists and researchers as well as general public,
- (2) preparation of publicity materials such as brochures and videos,
- (3) drafting of promotion materials for selected priority projects/programs,
- (4) launching of a series of TV programs combining video presentation, plan schematics and commentaries by various people, and
- (5) organization of international donors meeting and investment promotion seminars by public-private cooperation.

7.2 Re-structuring of Implementing Arrangements

Implementing arrangements for development projects/programs in Southern Area should be re-structured/strengthened, centering around SDA. For private investment projects, SDA should be active in close cooperation with BOI and provincial ministries. The Master Plan will provide SDA with a tool to guide private sector investors as to promising socio-economic activities, favourable locations and other factors affecting their investment decisions.

For inter-agency and inter-provincial projects, SDA should take the initiative for project development in consultation with related agencies and local governments. Implementation of project components by sector agencies and local governments should be coordinated by SDA. Monitoring and evaluation will also be conducted by SDA in collaboration with local governments and local communities.

Other bulk of development projects and programs will continue to be initiated and implemented by sector agencies. For these projects/programs, SDA's roles should be confined to planning, coordination, and monitoring and evaluation in the light of the Master Plan.

To perform these functions, a clear organizational structure of SDA needs to be established as proposed in Section 2.2. SDA should have its own technical staff to fulfill the planning and coordination functions effectively.

7.3 Project Development and Implementation

Most projects and programs proposed by the Master Plan are expected to be initiated during Phase I, as they have been formulated to address immediate needs of the region or to anticipate desirable changes in the more distant future. Many projects and programs are composite ones comprising also study components to develop more individual projects or schemes. Priority projects or schemes identified by the Master Plan should be implemented in the immediate future, while additional projects or schemes should be developed through such studies for subsequent implementation under the common concepts and strategy.

7.3.1 Anchor projects

Immediate actions to be taken for all the anchor projects are summarized in Table 7.1. Five projects would need feasibility studies in the immediate future : The Galle Port Development (as a regional part), Uma Oya Multipurpose Development, Home Garden-based Multistorey Farming, Small Holder Integrated Farming, and Eco-Tourism Development. A feasibility study for the Galle Port may be conducted by a private shipping consortium. A feasibility study for Eco-Tourism will involve local participation. For the Gin-Nilwala Integrated River Basin Development, master planning should be conducted first.

Private sector involvement is expected for the Galle Port Development, Industrial Districts for Small and Medium Sized Industries, and Touristic Herbal Garden and Health Center. Some more projects may be implemented in part by the private sector to reduce the public sector resource requirements. Implementation of some infrastructure projects may be expedited, if additional resources are mobilized in the private sector to implement them on the BOO/BOT basis.

Local participation is important for further development and implementation of all the projects. In particular, local communities supported by NGOs should be the implementing agencies for the Community Enterprises Service Centers, Rural Road Improvement Program, Multiple Use Forest Management, and Eco-Tourism Development.

7.3.2 Special program

The special program for participatory development should be implemented in the nearest future. Some projects may be further developed by extending the efforts during the master planning, involving concerned local communities and NGOs supported by local governments. Those projects to be implemented as the initial components of other larger

government projects/programs should be budgeted immediately through the relevant line ministry with the support of SDA.

7.3.3 Local projects/programs

Most local projects and programs are expected to be implemented by relevant sector agencies. For most of them, further project development including feasibility studies and design can be conducted also by the sector agencies.

Local projects include some private investment projects. Their inclusion in the Master Plan signifies that they are in line with the vision and the scenario for the Southern Area development. Most of them have some innovative nature, and strong support by SDA is expected for their promotion. They include:

- Sugar Plantation Development,
- Beef Processing and Marketing,
- Private Sector's Irrigated Agriculture,
- Prawn Farming,
- Hambantota Hotel Construction,
- Unawatuna Bay Resort Development,
- Arugama Bay North/South Resort,
- Walawe Spa Resort Development,
- Venture Capital Company,
- Galle Information Community, and
- Galle Downtown Development.

Table 7.1 Immediate Actions to Be Taken for Anchor Projects

Code No.	Project	Immediate Actions
SA-1	Galle Port Development	• F/S as a regional port by SLPA or shipping consortium
SA-2	Southern Highway	• Initial implementation as planned
SA-3	Intra-Regional Artery Road Establishment	• Continual improvement by section
SA-4	Coast Line Improvement	• Further improvements-signalling, bridges, rolling stock
SA-5	Uma Oya Multipurpose Development	• Comprehensive F/S with environmental inventory, and impact assessment
SA-6	Airfield Upgrading	• Detailed design for Weerawila airfield
SA-7	Coal Thermal Power Plant	• Site selection from environmental point of view
SA-8	Paddy-based Mixed Farming	• Pilot implementation with innovative production systems
SA-9	Home Garden-based Multi-storey Farming	• F/S to identify promising crop cycles and sites for pilot implementation
SA-10	Small Holder Integrated Farming	• F/S to identify viable integrated farming systems and sites for pilot implementation
SA-11	Marine Fisheries Complex	• Fishery resources inventory and upgrading of the Tangalle Regional Fishery Training Center
SA-12	Gin-Nilwala Integrated River Basin	• Master planning
SA-13	Industrial Districts for SMIs	• Invitation for private sector application to form manufacturers' associations
SA-14	Comprehensive Market Information	• Coordination setup and program design
SA-15	District Vocational Training Center	• Program development by RVEC
SA-16	Community Enterprises Service Centers	• Program development by NGO consortia
SA-17	Secondary Education Development	• Preparation of scope of work for extension of on-going program
SA-18	Health Referral System	• System design for pilot development
SA-19	Touristic Herbal Garden and Health Center	• Promotion for implementation by private sector
SA-20	Rural Road Improvement Program	• Program design for training and support system
SA-21	GIS-Oriented Regional Information System	• Continuous buildup on existing RIS and training for GIS experts
SA-22	Environmental Fund	• Financial appraisal and implementing arrangement
SA-23	Environmental Monitoring and Animating	• Planning for the center and monitoring system design
SA-24	Integrated Management of Coastal Resources	• Design for a CLEER center
SA-25	Multiple Use Forest Management	• Resource inventory and formulation of management plan with local participation
SA-26	Eco-Tourism Development	• F/S with local participation
SA-27	Appropriate Toilet Facilities	• Preparation of a long-term program and establishment of a subsidy scheme

Source : JICA Study Team

JICA