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Land Settlement aud Urban Development in the Dry Zone

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Since the inception of the land settlement programme in the Dry Zone[1] in the 1930s, a very large extent of land has been distributed amongst colonists under the major colonization programmes. In 1978, there were eighty five such schemes and the total extent of land alienated amounted to nearly 700,000 acres, of which sixty percent was classified as irrigable land and the remainder as unirrigable land.[2] In 1945 the acreage under paddy in the dry zone amounted to 205,000 acres; by 1970 this had increased to 678,000 acres.

The basic objective of the colonization programme has been to provide irrigation water for the production of paddy on family farms. Colonization policy, therefore, was until very recently designed to bring into higher and better use water and related land resources in the dry zone and not develop regional economies. The main aim has been to integrate the use of resources and not the different sectors of the regional economy. Agricultural development therefore has been given priority; urban growth has been considered separately and not as being complementary and interrelated to agricultural development. This paper attempts to examine the patterns of urban development in the colonized areas with the intention of focussing attention on the need to integrate urban development and agricultural development in settlement schemes. The need to give adequate attention to such integration has become all the more urgent because of the accelerated Mahaweli Development Programme which attempts to increase the productivity of approximately 150,000 acres of existing agricultural land and to bring into productive use approximately 330,000 acres of land that have hitherto remained uncultivated.

1. The Dry Zone as defined here includes the districts of Jaffna, Vavuniya, Mannar, Puttalam, Anuradhapura, Trincomalee, Polonnaruwa, Batticaloa, Amparai, Moneragala and Hambantota.

2. Land Commissioner's Department.

Patterns of Urban Development in the Dry Zone 1946–1971

One of the significant developments in the Dry Zone within the past three decades has been the rapid increase in population. Between 1946 and 1971, the total population in the area increased by approximately 1·6 million, an increase of 120% compared to 79% for the wet zone. Furthermore, the Dry Zone accounted for 27% of the total increase in the island's population during this period as compared to 15% for the period between 1911 and 1946. The expansion that took place during this period has been due in part to the natural increase brought about by the reduction in mortality and the increase in the birth rate achieved as a result of the eradication of malaria and in part to the transfer of population from the densely populated areas in the Wet Zone to the colonization schemes that were started in the different districts.[3]

The increase in population has been accompanied by an increase in the urban population. In 1946, the dry zone had an urban population of nearly 150,000 and by 1971 this had increased to approximately 588,000. This recorded increase of almost 440,000 represented 28% of the increase in the island's urban population during this period.

It is necessary to point out that the recorded increase of 0·44 million does not of course represent the real increase in the urban population of the Dry Zone during this period. A part of the increase represents the growth in population in the three main types of urban areas as defined by the Ministry of Local Government and adopted by the Department of Census and Statistics i.e. municipal councils, urban councils and town councils. The balance represents the increase due to the elevation of certain village councils to town council status after 1953. In 1953 the Dry Zone had an urban population of 172,000 and by 1963 this had increased to 386,000. Of this increase of 214,000, 59% was due to the addition of new areas into the urban category, after 1953. Likewise of the increase of 201,000 persons that took place between 1963 and 1971, only 46% represented the expansion at the urban centres that existed in 1963. The remaining 54% was accounted for by the new town councils created during this period.

It is noteworthy that the increase in urban population in the dry zone since 1946 has been relatively low in comparison to the spectacular increase in the total population. This is particularly true of those districts that have benefited most from the colonization programme, i.e. Anuradhapura, Polonnaruwa, Trincomalee, Batticaloa and Amparai. By

3. ESCAP, Comparative Study of Population Growth and Agricultural Change-Case Study of Sri Lanka, Asian Population Studies No. 23 D Bangkok, 1775.

1971, these five districts had 77% of all the settlers who had been allocated land in the Dry Zone, 82% of the alienated lowland and 73% of the alienated highland. The opening up of this land for agricultural development inevitably led to a large influx of migrants from different parts of the country, especially the wet zone.[4] These districts had a net in-migration of 72,518 between 1946 and 1953; 94,981 between 1953 and 1963 and 47,347 between 1963 and 1971. Partly because of this migration and partly because of the natural increase the total population in these districts increased by approximately 851,000 between 1956 and 1971. This represented 48% of the total increase in population in the Dry Zone during this period.

Although the total population in these districts increased substantially after 1946, the increase in urban population has been much less. In 1946, these districts had an urban population of nearly 58,000; by 1971 this had increased to a little over 230,000. This recorded increase of 172,000 represented only 39·2% of the total increase of the urban population of the dry zone during this period. Furthermore, a part of this increase was due to definitional changes. For instance, between 1963 and 1971 the urban population in these districts increased by nearly 79,000. Of this increase, only 50% was accounted for by the increase in population at the urban centres that existed in 1963; the remaining 50% represented the addition of new areas into the urban category after 1963. Thus while the total population of these five districts increased by almost 330,000 between 1963 and 1971, the corresponding increase in urban population was less than 40,000.

The relatively slow rate of urban expansion in those districts that benefited most from the colonization programme is brought out even more clearly when we examine the pattern of urban development in the dry zone between 1963 and 1971. As mentioned earlier the urban population during this period increased by 201,000 and of this 92,370 represented the increase at the urban centres that were in existence in 1963. The relative share of the different districts in this increase is given in Table I. It can be seen that the districts of Anuradhapura, Polonnaruwa, Trincomalee, Batticaloa and Amparai, which had the major share of the colonists, and the alienated land accounted for only 42·5% of the increase that took place. On the other hand Jaffna which had only 9·4% of the colonists, 8·3% of the alienated lowland and 11·0% of the alienated highland by 1971 accounted for 31·1% of the increase. Similarly the districts of

4. ESCAP, Population of Sri Lanka, Country Monograph Series No. 4 Bangkok, 1976.

Vavuniya, Mannar, Puttalam, Hambantota and Moneragala which had 13·5% of the colonists, 9·7% of the alienated lowland and 16·2% of the alienated highland accounted for 26·4% of the increase.

TABLE 1

DRY ZONE DISTRICTS

Increase of population between 1963 and 1971 at Urban Centres that existed in 1963 and the Relative Share of Each District in the total increase for the Dry Zone

District	Increase of population at centres that existed in 1963	Percentage share of Increase in the dry zone
Anuradhapura ..	6,061	6·6
Polonnaruwa ..	3,640	3·9
Trincomalee ..	4,440	4·8
Batticaloa ..	21,574	23·4
Amparai ..	3,474	3·8
Jaffna ..	28,750	31·1
Vavuniya ..	9,427	10·2
Mannar ..	2,164	2·3
Puttalam ..	9,177	9·9
Hambantota ..	2,890	3·1
Moneragala ..	774	0·9
TOTAL	92,371	100·0

Source: Department of Census and Statistics and Ministry of Local Government.

The relatively slow rate of urban expansion in the five districts that were the major beneficiaries of the colonization programme is also reflected in the geographic distribution of urban places in the dry zone. Despite their large share of the colonists and alienated land and a significant share of the increase in the total population, these districts had in 1971 only 1 of the 2 municipal councils in the dry zone, 2 of the 10 urban councils and 10 of the 31 town councils. Thus with 47% of the land area in the dry zone, and 42% of its population in 1971, these five districts accounted for only 30% of all the urban places in the dry zone in that year.

It can be seen therefore that despite the large scale agricultural development programmes that have been started in different parts of the dry zone the expansion in urban population has been relatively slow.

One would have expected that the demand for goods and services from a large population engaged in a type of agriculture very different from that practised in the purana villages, would have led to a higher level of urban expansion and a more uniform distribution of urban places especially in those areas that have benefited most from the colonization programme. Clearly this type of development has not taken place. The reasons for this will be examined in the following section.

The planning and development of urban centres in colonization schemes

Prior to the initiation of the colonization programme the major elements of the urban network in the dry zone consisted of (1) the port of Trincomalee (2) a few administrative centres that served as dissemination points of colonial policy e.g. Anuradhapura and Hambantota and (3) several relatively small service centres that catered to the needs of a sparse and economically poor population e.g. Kekirawa. This network was inadequate to meet the needs of a large farming population partly because the towns were irregularly distributed and hence often located at points away from the colonized areas and partly because many of them lacked the ability to provide the settlers with the range of services they needed not only for the pursuance of their economic activities but also for their day to day living.

Because of the then existing network of urban centres those in charge of the colonization programme at the time decided to establish a network of service centres in each of the colonization schemes through a hierarchical system of civic centres and townships. The civic centres and townships were designed according to certain criteria and these have been outlined by Blok in a paper presented to the Engineering Association of Ceylon in 1953.[5] Land for civic centres was reserved in relation to the needs of individual communities each comprising one hundred and fifty unirrigable highland units. It was assumed that a community would have approximately one thousand people consisting of a farm population of seven hundred and fifty persons (at an average of five persons per unit) and (b) a floating population of two hundred and fifty persons. The civic cenrre was designed to provide health, social and miscellaneous services to a community, and a reservation of 20 acres was considered adequate to cover all of these services. The township representing a higher level service centre was designed to cater to five communities comprising approximately 5000 persons. Sixty acres were to be reserved for each township, and

5. Blok, M.A. Irrigation Planning, The Engineering Association of Ceylon 1953.

within this reservation land was allocated for a variety of higher level services that included a cottage hospital, a council hall, park, rice-mill, co-operative store, marketing centre, school, places of worship, revenue office, shops and artisans' workplaces.

In keeping with this policy, land for civic centres and townships has been reserved in almost all of the colonization schemes that have been started. This may be illustrated by taking a brief look at two of the major colonization schemes in the dry zone (a) the Parakrama Samudra Scheme and (b) the Uda Walawe Scheme.

The Parakrama Samudra scheme located in the Polonnaruwa District was started in the early 1950s to provide irrigation to approximately 16,000 acres of paddy land. The unirrigable area within the scheme covers an area of approximately 11,500 acres and this land has been divided into homestead gardens with reservations for civic centres, parks, roads and forests. The entire extent of land coming within the scheme has been subdivided into 19 blocks (referred to as B.O.P.s) based on local variations in topography and drainage and in 14 of these land has been allocated for the provision of civic amenities. Of these 14, eleven have been provided with land for a single centre, one with 2 centres and two with 3 centres each. The extents provided varied from one B.O.P. to another. Of the 19 reservations, eleven are below 20 acres, five between 20 and 40 acres and three over 40 acres. With the exception of one B.O.P. where one of the three reservations has been made in the centre of the paddy tract, in all of the others the reservations have been made in the unirrigable areas. Where the highland lots are grouped together in a single tract the reservations have usually been made at the periphery of the highland area but in others where the lots are distributed among several tracts the reservations have been made at the periphery of the largest tract. In two of the reservations the extent of land that should be devoted to each type of activity has been indicated and the locational pattern for these activities specified, but in the other centres no attempt has been made to work out the land use patterns,

The Uda Walawe Scheme located in the south-east part of the island was started in the late 1950s with the primary objective of irrigating 63,000 acres of paddy land. Of this 28,500 acres fall within the right bank area and 34,500 acres within the left bank area. Much of the development up to date has taken place in the right bank area where the total extent of land has been divided into 19 tracts. Within eaeh tract the unirrigable

land has been subdivided into homestead lots and the irrigable land into allotments for the the cultivation of paddy and subsidiary crops such as cotton and sugar-cane.

As in the Parakrama Samudra scheme plans have been drawn up to develop the necessary social and economic infrastructure through a network of village centres and townships. Fourteen village centres have been established, the areal extents varying from 80 acres to a little over 250 acres. Within each centre land has been demarcated for a variety of uses such as primary schools, branch dispensaries, co-operative stores, sub-post offices, paddy and fertilizer stores and also for the erection of living quarters for those who would be managing these different institutions. In addition to these village centres four higher order service centres referred to as satellite townships have been planned at Embilipitiya, Angunukolapalessa, Timbolketiya and Suriyawewa. These townships were expected to emerge as the major urban centres serving the needs of the local population. Once developed Embilipitiya was expected to have a population of over 20,000, Angunukolapalessa 10,000 – 12,000, Timbolketiya 8,000 and Suriyawewa 10,000.

The civic or village centres and townships in the colonization schemes were designed as location points for the services needed by the farming population. It was expected that these centres would eventually emerge as viable urban centres serving the needs of the local population. But these expectations have failed to materialize. Thus Gunawardena, Silva and Dias have stated that within the Parakrama Samudra scheme (1) the planned civic centres had failed to develop (2) some of the basic needs of the local population were being met by several small service centres that had sprung up at locations away from the civic centre reservations and (3) these service centres did not provide the quantum and range of services needed by the local population.[6]

The pattern of development in the Uda Walawe Scheme has been very much the same. In the village centres that have been demarcated some of the planned services, such as markets and commercial institutions are totally absent while others such as tractor sheds and dispensaries have not been uniformly provided. Even in the case of the four townships that have been planned the record of progress has been slower than anticipated. In the new town of Embilipitiya for example which was designed as the major urban centre project area, land has been demarcated for a variety of

6. (Miss) K. A. Gunawardena, "Service Centres in the Parakrama Samudra Scheme" Modernization of Peasant Agriculture, Report No. 6.

economic and social institutions and services. But today most of the establishments catering to the needs of the local population are not located in the new town but at old service centres along the main road. Even in the other townships i. e. Uda Walawe, Suriyawewa and Angunukolapalessa, except for a few community services that have been provided, implementation up to date has been limited to the demarcation of land for the location of various social and economic institutions and residential quarters.

Effects of the Slow Development of Civic Centres and Townships on the Local Population

Because of the failure to co-ordinate urban growth and agricultural development in the different settlement schemes the range of facilities needed by the farming population has not been fully provided. The type of agriculture that developed in these areas created a demand for a much wider and larger range of agricultural inputs and marketing and storage facilities than what was available at the start of the colonization programme. The network of co-operative stores that was established in these areas was expected to meet this demand, but partly because of their irregular distribution and partly because of certain inherent weaknesses in the system, basic ingredients such as improved seeds, fertilizer, agrochemicals and marketing and storage facilities have often been lacking in most areas.[7]

Deficiencies also exist in the health and education facilities that have been provided. A network of schools and health centres (including rural hospitals, peripheral units, maternity homes and central dispensaries) has been established, but the facilities, staff and the services provided appear to be inadequate in comparison with those in the wet zone districts. This can be seen from Tables II and III which give the distribution of certain educational and health facilities in some selected districts in the dry zone and the wet zone.

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7. Summary Report of the Socio-Economic Survey of Nine Colonization schemes in Ceylon 1967-68, Part I - Highlights of Findings: Comparative Analysis. Agricultural Economics Research Unit, Faculty of Agriculture, University of Ceylon, Peradeniya, 1969.

TABLE II

Selected Education Facilities in the Districts of Anuradhapura, Polonnaruwa, Galle, Kandy and Kalutara, 1979

	Anuradha-pura	Polon-naruwa	Galle	Kandy	Kalutara
Total Population ..	388,770	163,653	735,173	1,187,925	729,514
Proportion of Schools With Grades					
1 – 5 ..	58·0 %	39·2 %	41·3 %	33·9 %	23·5 %
1 – 9 ..	31·0 %	46·6 %	35·8 %	42·5 %	58·3 %
1 – 10 ..	1·8 %	2·2 %	4·1 %	4·7 %	1·4 %
1 – 12 ..	9·2 %	12·0 %	18·8 %	18·9 %	16·8 %
Number of Schools .. (*i. e. Madhya Maha Vidyalayas and Maha Vidyalayas)*	44	19	109	125	73
Number of Schools with Laboratories ..	6	3	31	35	21

Source: Statistics Division, Ministry of Education

TABLE III

Selected Health Facilities in the Districts of Anuradhapura, Polonnaruwa, Galle, Kandy and Kalutara, 1979

	Anuradha-pura S. H. S. Division (Anuradha-pura and Trincomalee Districts)	Matale S. H. S. Division (Matale and Polon-naruwa Districts)	Galle S. H. S. Division	Kandy S. H. S. Division	Kalutara S. H. S. Division
Total Population (1979)	662,000	542,000	850,000	1,835,000	847,000
Number of Specialists in Hospitals ..	9	5	16	35	13
Number of Radiogra-phers in Hospitals ..	3	3	5	9	6

Source: Statistics Division, Ministry of Health.

The better schools and hospitals in many of the Dry Zone districts are often found in the larger urban centres. But owing to their location and owing to the poorly developed transportation facilities they are not

easily accessible to the bulk of the farming population in various settlement schemes. The maldistribution of the better educational and medical facilities is brought out clearly in Table IV which gives the locational pattern of the better equipped schools and medical centres in the Anuradhapura District.

TABLE IV

Distribution of Central Schools, Government Employed Medical Specialists, Dental Surgeons and Radiographers in Anuradhapura and Trincomalee Districts - 1979

Number	Central Schools	Medical Specialists	Dental Surgeons	Radio-graphers
Anuradhapura ..	1	4	1	1
Kekirawa ..	1	5	3	2
Trincomalee ..	1	–	1	–
Total in Anuradhapura and Trincomalee Districts ..	3	9	7	3

Source: Statistics Division – Ministry of Education
Statistics Division – Ministry of Health.

Since the plans for the civic centres and townships have not been fully implemented the present urban network in the dry zone, is not very different from that which existed before the implementation of the colonization programme. At that time the larger urban centres such as Anuradhapura, Batticaloa, Trincomalee and Polonnaruwa were mainly administrative cum service centres, whereas, the smaller centres such as Kekirawa and Hingurakgoda were essentially service centres catering not only to the needs of their hinterland population but also to transients. These centres have continued to perform these same functions and hence even today a substantial proportion of the gainfully employed in the urban areas are engaged in community, social and personal services and wholesale and retail trade (Table V).

A striking feature of the urban development in many of the Dry Zone districts is the small number of people employed in the manufacturing sector. The figures in Table V show that the proportion engaged in manufacturing activities was less than 10%. The relative unimportance of the manufacturing sector in the urban centres within the colonized areas is brought out even more clearly in Table VI which gives the number of registered business establishments in Kaduruwela, Embilipitiya and Kekirawa.

TABLE V

Employed Population Ten Years and over in Urban Areas in Anuradhapura, Batticaloa, Trincomalee and Polonnaruwa Districts Classified by Major Industry Division - 1971

	Proportion Employed in Industry Division			
	Anuradhapura	Batticaloa	Trincomalee	Polonnaruwa
Total Employed ..	12,406	17,369	18,673	6,174
Community, Social and Personal Services ..	33·6	22·9	24·5	25·5
Agriculture, Hunting, Forestry and Fishing ..	12·3	22·6	26·4	24·3
Wholesale and retail trade and restaurants and hotels ..	18·7	21·4	16·8	20·6
Manufacturing ..	6·9	13·9	0·4	7·9
Transport, Storage and Communications ..	10·4	5·8	13·4	5·5
Others ..				

Source: Department of Census and Statistics – Census of Population – 1971, Vol. 1 – Parts, 11, 17, 18.

TABLE VI

Registered Business Establishments in Kaduruwela, Embilipitiya and Kekirawa Classified According to Industry Division

	Proportion of Registered Establishments in		
	Kaduruwela 1970	Embilipitiya 1976	Kekirawa 1978
Total Number of Establishments ..	131	299	329
Community, Social and Personal Services ..	15·27	16·05	13·07
Wholesale and Retail Trade ..	70·99	67·89	75·38
Manufacturing ..	13·74	16·05	11·25
Others ..	—	—	0·30

Source: Town Councils of Polonnaruwa, Embilipitiya and Kekirawa.

It can be seen that nearly 85% of the establishments in each of these centres belonged to the wholesale and retail trade, and community, social and personal services. Furthermore, of the establishments that have been classified as manufacturing establishments, the majority consists of rice and grinding mills, bakeries, printing presses, blacksmiths and welding and lathe works where the total number of people employed per establishment is very small. Thus of the 48 registered manufacturing establishments in Embilipitiya in 1976, 50% were rice mills and 20% bakeries. Likewise, of the 37 registered manufacturing establishments in Kekirawa in 1978, 34% consisted of rice, grinding and oil mills, 20% welding and lathe works and 30% bakeries and printing works.

The poorly developed manufacturing sector presumably reflects the inability of the urban centres in the colonized areas to provide employment opportunities to those moving out of agriculture. Although the colonization programme led to a large influx of migrants into the Dry Zone, there has been at the same time an outflow of people even from these districts that benefited most from the colonization programme. Thus during the five year period from 1966–70 alone, there was an outflow of nearly 21,000 persons from the districts of Anuradhapura, Polonnaruwa, Batticaloa, Trincomalee and Amparai. A part of this migration represented the movement of people from one district to another within the dry zone itself and a part the movement from the dry zone Districts to the wet zone (Table VII).

TABLE VII

Proportion of the Population Born in the Districts of Anuradhapura, Polonnaruwa, Batticaloa, Trincomalee, and Amparai Living outside the District of Birth

District of Birth	Total Living outside District of Birth	Proportion Living in		
		Other Dry Zone Districts	Colombo District	Wet Zone Districts other than Colombo
Anuradhapura ..	24,297	51·6	19·3	29·1
Polonnaruwa ..	8,279	53·8	13·2	33·0
Batticaloa ..	23,438	80·9	11·1	8·0
Trincomalee ..	13,628	69·3	17·4	13·3
Amparai ..	5,892	64·7	11·0	24·3
TOTAL ..	75,534	65·1	15·1	19·8

Source: Department of Census and Statistics – Census of Population 1971, Sri Lanka – General Report.

The figures show that approximately two thirds of the people who have moved out of these districts have stayed in the dry zone and of the remaining one third some have settled down in the Colombo district and the rest in other districts within the wet zone. It is significant that in the case of the Anuradhapura and Polonnaruwa districts which have had the highest number of in-migrants since 1946 and the largest extents of alienated land, nearly half the number of out-migrants had gone to Colombo and the other wet zone districts.

It is possible that some of the out-migrants who have remained in the dry zone moved into the towns located in the neighbouring districts, but the absence of data prevents a quantitative estimate of this movement. However it is more likely that the majority of these out-migrants represent those who settled down in other districts either as allottees under the various land settlement schemes or as encroachers on crownland. If the rural to urban movement had been of any significance, the different urban centres in these districts would have shown a substantial increase in population. But this has not been the case. If we take the five districts referred to earlier, the nine urban centres that were in existence in 1963, had increased their population only by 41,700 by 1971.[8] Of these nine centres, one (ie. Batticaloa) showed an increase of over 10,000 and three (ie Trincomalee, Eravur and Anuradhapura) an increase of between 5,000 and 10,000. It is very likely, therefore, that of the out-migrants from these districts who did not go in search of agricultural land elsewhere in the dry zone, the majority did not go to the local urban centres but moved into the wet zone in search of employment opportunities. It is also possible, that the increase in the urban population in these districts is more a reflection of natural growth and the influx of people from the wet zone and perhaps Jaffna district rather than an external rural to urban movement. In this connection it is noteworthy that of the 344,000 persons who were living in these districts in 1971 but born outside, 13% were from the Colombo district and 9% from the Jaffna district.

It is clear from the foregoing discussion that the policy of providing the necessary economic and social infrastructure in the different settlement schemes in the dry zone via a programme of civic centres has not been very successful. Some of the basic facilities needed by the farming population such as co-operatives, primary schools and dispensaries have been located at these centres but beyond that little attempt has been made to develop them into urban centres that would serve as markets for

8. The nine centres were Batticaloa, Eravur, Kaththankudi, Kalmunai, Samanthurai, Trincomalee, Anuradhapura, Kekirawa and Polonnaruwa.

agricultural commodities, as locational points for social services and much needed agricultural services and above all as centres providing employment opportunities to the nonagricultural population.

Urban Development and the Mahaweli Development Programme

The Mahaweli Development Programme is the latest and by far the largest of the settlement schemes started in Sri Lanka. The first area to be developed under this programme is Area 'H' located in the Kala Oya Basin covering an extent of approximately 70,000 acres. Plans have been drawn up to settle nearly 25,000 families in this area through a network of family farms, each farm comprising 2½ acres of irrigable land and ½ acre of unirrigable land. The necessary social and economic infrastructure needed by this farming population is to be supplied through a hierarchical system of service centres distributed within the settlement area.

Since the individual homesteads in each of the settlement blocks have been grouped into hamlets, the lowest level service centre envisaged is the hamlet centre, which is designed to cater to 100-125 families. Four to six hamlets comprising 500-700 families will be served by the next order village centre, and 5-6 of these clusters consisting of 3000-3600 families by the highest order township centre. Plans have also been drawn up, to provide the village centres and townships with a suitable industrial base. The smaller industries eg. textile weaving centres, small scale paddy and fibre processing mills and cottage industries will be located at the village centres while the larger industries such as textile mills, rice processing mills, and agro-based industries such as groundnut oil and straw ware manufacturing would be located at the township level.

In deciding to provide the necessary economic and social infrastructure through a hierarchical system of service centres those in charge of settlement planning in Area 'H' have in effect accepted a principle that had been adopted in the earlier settlement schemes. But having accepted the principle the Mahaweli planners have gone much farther ahead than in any of the other settlement schemes in determining not only the range of services that have to be provided but also their spatial distribution (Table VIII).

If the planned settlements are going to develop into viable agricultural communities it is very necessary that the farming population be supplied with all their necessities as early as possible. In all of the previous settlement schemes there has been a wide time gap between the settling of people and the provision of even the basic service facilities. Moreover, even after some of those facilities have been supplied it has taken a considerable amount of time for them to be developed to a satisfactory standard.

TABLE VIII

Area "H" - Infrastructure Services Planned

SETTLEMENT LEVEL	ADMINIS-TRATIVE	COMMERCIAL	AGRICULTURAL	EDUCATIONAL	CULTURAL	HEALTH	OTHERS
Hamlet Centre 100—125 families (500—600 persons)		Co-operative Depot, Post Box Boutiques	Farmers organisation Representative	Primary School	Area to be reserved for Recreation, Religious & Community Activities	Mobile Dispensary	Cemetery (One for two hamlets)
Village Centre for 4—6 Hamlets 500—700 families (2500—3500 persons)	Grama Sevaka's office Range Office (one for every two clusters)	Branch Co-operative Society & Co-op. Depot Sub-Post Office (One for two clusters) Repair Shops Shops and Sunday Fair (Pola Grounds)	Fertilizer Store Paddy Store Tractor Repair Station Project Office (Cluster level)	Primary Educational Institution Junior Secondary School Play Ground	Community Centre Multipurpose Hall, Reading Room Library Play Cround etc. Archaeological & Architectural Ruins to be preserved. Religious Institutions Temple, Church Kovil, Mosque etc.	Public Health Midwife Dispensary (Visiting) (one for two clusters)	Bus Stops Parking Area Green Belts Cemetery Public Toilets
Township (5—6 Clusters or Villages 3000—3600 families) (15000—20000 persons)	Town Council Range & Regional Office Police Station	Multipurpose Co-operative Society Primary Co-operative Retail Depot. Post Office Banks, Central Market, Shops Repair Shops Filling Stations Cinemas	Agricultural Training Centre Sub-area farmers Committee Office Paddy Store Fertilizer Storea Agricultural Service Centre	Senior Secondary School & Play Ground Other Educational Institution Technical & Commercial	Community Centre Multipurpose Hall Library Play Ground Cinema etc. Religious Institutions Archaeo'ogical & Architectural Ruins to be preserved	Central Dispensary & Maternity Ward Public Health Centre, Hospitals (Peripheral Unit or Rural) (For type or distribution see F Studies)	Bus Stands (Main) Bus Stops Railway Station (If Passing through) Parking Lots Green Belts Public Toilets Cemetery & Crematorium

Source: Settlement Planning Division, Mahaveli Development Board.

In view of this past record the question is raised as to whether the plans drawn up for area 'H' can be implemented quickly and efficiently. The settlement programme in the area commenced about 3 years ago and since then about 50% of the blocks have been settled. Although there is a carefully prepared set of plans for these areas, there exists today a wide gap between the facilities that have been planned and those that have been provided. This is particularly true of the medical and educational facilities (Table IX).

TABLE IX

Educational Medical and Postal Facilities that have been planned for Blocks 301 - 311 and the Facilities that are available at present

	Planned[1] Facilities	Available[2] Facilities
EDUCATIONAL		
1. Junior Secondary School ..	42	9
2. Senior Secondary School ..	3	–
PUBLIC HEALTH		
1. Public Health Midwife ..	6	–
2. Public Health Inspector ..	3	–
3. Public Health Nurse ..	3	–
MEDICAL		
1. Central Dispensary ..	2	1
2. Central Dispensary and Maternity Home	1	–
POSTAL		
1. Post Box ..	14	
2. Sub - Post Office ..	5	2
3. Post Office ..	2	1

1. *Source*: Mahaweli Ganga Development Project I - Feasibility Study for Stage II, Vol. VII - Settlement Planning and Development.
2. *Source*: Community Development Division, Mahaweli Development Board, Galnewa

The delay in the provision of these facilities has already given rise to several problems in the area. Firstly in the absence of government sponsored medical facilities in the area farmers have had to rely on facilities located outside the project area. Thus for example in a study made of 250 farmers located in Blocks 302, 303, 304 in Maha 1977/78 it was found that of those who suffered from malaria, 70% had to travel out of the project area to obtain the necessary treatment.[9] Since the government medical

9. P. Silva, Miss J. Perera and W. N. Wilson — Man and the Biosphere. National Committee for Sri Lanka; Enviromental Studies Mahaweli Development Area; Socio - Economic Survey - Statistical Abstract (Interim Report No. 6)

institutions are located some distance away from their residences and the transport facilities are poor, the farmers have had to incur inconvenience and expenditure in making use of these services. Secondly, some of the farmers in the neighbouring Purana villages who have been allocated land within the project area have been reluctant to move in and occupy their homesteads because the facilities in their villages are considered to be superior to those that are presently available in the project area. In Blocks 302 and 303 for example, which were opened up for settlement over two yeas ago 13% of the farmers in the sample referred to earlier were still residing in their old villages at the end of of the 1978 Yala season.[10] Thirdly, the absence of suitable facilities has prevented some of the farmers who have moved in from other districts from establishing themselves in the area. In a study that is being done of 130 farmers in Block 306, preliminary observations have shown that nearly one third of the farmers have not brought their children of school-going age into the area because of the lack of proper educational facilities.[11] Fourthly, the delay in the implementation of plans for the setting up of boutiques at points away from the planned centres. By the end of 1978 there were approximately 50 tea boutiques and grocery stores located along major roads in Blocks 302, 303 and 304, and of these 75% had come into existence after 1975. Likewise there were 21 service establishments such as rice mills, barber saloons, bicycle repair shops and clinics also located along the main roads, and all of them had been established after 1975.

The delay in the provision of some of the essential facilities and services has inevitably led to haphazard patterns of development quite contrary to what has been planned. Furthermore, it has forced the farmers to face several unexpected difficulties. It is essential therefore that all the planned facilities and services be provided as quickly as possible because as has been pointed out "any delay in the provision of the essential facilities and services would seriously jeopardize the smooth implementation and ultimately the success of the project."[12]

If we assume that the plans for the development of the different levels of service centres will be implemented quickly, the question is then raised, as to whether these centres would provide the type of urban development that is needed in the area. In order to answer this question

10. P. Silva, et. al. op. cit.

11. This study is being done by the author and two other colleagues under the Man and the Biosphere Programme sponsored by the National Science Council.

12. Mahaweli Ganga Development, Project I; Feasibility Study for Stage II; Vol. III – Settlement Planning and Development.

it is necessary first to find out what functions the urban centres in this area are expected to perform. These functions of course would depend to a large extent on the demand for various types of services and facilities from the different groups of people resident in the area.

The largest and the most important group would be the farmers and as far as they are concerned the service centres will have to perform three major functions. Firstly, since agriculture in the area is heavily dependent on a continuous flow of inputs such as improved seeds, fertilizers, pesticides, agricultural machinery and technical knowledge, the service centres will have to distribute these efficiently and economically through a network of co-operative stores, distribution centres and extension agencies. Secondly, because of the higher production in agriculture, these centres will have to meet the demand for a wide variety of services such as storage, finance, insurance and marketing. Thirdly, due to the higher incomes accruing from agriculture, they will also be called upon to provide a wide range of facilities such as schools, hospitals, banks, recreational centres and shops.

The second group would consist of those people who have not been able to obtain land for agricultural purposes. In the past persons within settlement areas who were not selected as allottees were able to move into other areas either legally as settlers or illegally as encroachers, But once the Mahaweli and the other settlement programmes are completed much of the land in the dry zone would be parcelled out and the land frontier would then cease to be a major source of accommodation, in which case the landless persons and those moving out of agriculture for other reasons will have to be provided with employment opportunities in the non-agricultural sector. Hence as far as these two groups of people are concerned, the main function of the service centres would be to provide off-farm employment opportunities.

The third group of people would be the professional workers, administrators and businessmen. These people would expect the service centre to be a place where they will find appropriate residential facilities and acceptable services and amenities. They cannot be sufficiently motivated unless the service centre provides them with the kind of environment that gives them an opportunity to exchange ideas with other people on the same level, special cultural and social facilities and other amenities of city life. In other words what they would be looking for in the service centre is the kind of environment that is usually found only in towns.

In addition to the functions outlined above, the service centres would also be called upon to play a role in preventing regional leakage. Hitherto, because of the uneven spatial development in the country much of the economic surplus from the newly settled areas has been transferred to Colombo and other urban areas in the wet zone. One way in which this surplus can be retained in the settlement areas is by the provision of suitable facilities and investment opportunities in the local service centres.

The hierarchical system of service centres planned for Area 'H' would no doubt look after the different needs of the farming population. In fact if the planned facilities are properly and quickly implemented they would provide the farmers and their dependants with economic, social and cultural services at least on a parity with similar centres in the wet zone. However, a great deal of further thought will have to be given to the structure and spatial distribution of these centres if they are also going to provide (a) adequate employment opportunities to the nonfarming population and the underemployed farming population, (b) a suitable physical environment to the professional workers, administrators and entrepreneurs and (c) an economic base that would reduce the leakage of the agricultural surplus.

In any settlement scheme, the demand for employment opportunities outside agriculture will come from two major groups of people (i) those who have not been able to obtain land and (2) the children of allottees who would be entering the labour force. Being young and to a certain extent educated their job aspirations would be such that they will be reluctant to become agricultural labourers even if there is an increase in the absorptive capacity of labour. At the same time the exhaustion of the land frontier would prevent them from becoming farmers themselves.

Besides these two groups there could also be a group of people released from agriculture and hence looking for employment opportunities. It is commonly argued that with continuous capital investment in land and the adoption of improved techniques there is inevitably a decrease in the demand for labour in agriculture, in which case off-farm employment opportunities will have to be supplied to these people as well. Even if we assume that there will be no such reduction in the absorption of labour in agriculture there could still be a demand for part-time employment opportunities outside agriculture. This is because paddy cultivation is not a full time occupation and the long slack season between planting and harvesting operations provides most paddy cultivators and agricultural labourers with an opportunity of obtaining some off-farm employment.

In most settlement schemes employment opportunities outside agriculture have been provided mainly by the tertiary sector. But since many of the planned services and facilities have not been implemented the employment opportunities provided by this sector have been somewhat limited. It is possible that with the implementation of the infrastructure programme in Area 'H' there could be an appreciable increase in the labour absorptive capacity of the tertiary sector. But even so, it seems very unlikely that this increase would provide employment opportunities to all those people not absorbed by agriculture.

Thus the only way in which employment opportunities can be further expanded is by developing the secondary sector. In doing so considerable attention will have to be paid not only to the kinds of industries that would be most suitable for the areas under discussion but also to the desired location for such industries. The latter consideration is of particular importance because unlike tertiary activities which can be uniformly distributed in village centres, industries will have to be located at the most appropriate locations. This implies policy measures that would enable the selection from amongst the village centres those centres that provide the greatest potential for industrial growth. Once selected these centres will have to be supplied with the kind of infrastructure needed to encourage the concentration of industrial investments.

In all settlement schemes there is a pressing need to mobilize skilled personnel for development work, and people of this calibre can be drawn in and retained within the area only if they can be given adequate services and the type of cultural atmosphere that will appeal to them. Hence all the necessary services and their locations should be carefully planned and such plans quickly implemented in order to provide the mechanism that would retain within the region the skilled personnel as well as the educated local population. By integrating the needed services in a few selected centres it will be possible to provide not only the professional workers, administrators and entrepreneurs but also the local population with services similar to those in urban areas. Furthermore the integration of these services through a few centres would also enable the establishment and maintenance of an improved and efficient set of services.

Once a group of selected village centres is developed as higher order service centres and located points for industry, they could play a major role in reducing regional leakage because of their potential of becoming nuclei for the future economic and social development of the surrounding areas. As the demand for food increases and the farmers are paid a viable

price for their produce the enhanced income would lead them to spend more on (a) better seeds, more fertilizer, agricultural implements, wells etc., (b) consumer goods such as clothes, radios and bicycles (c) education and health and (d) housing, recreational facilities etc. At the same time because of the social and cultural facilities that will be established at these centres the skilled personnel will find these areas more attractive to live in and this in turn would stimulate the demand for a variety of goods and services. Both kinds of spending could provide a wide range of new investment opportunities not only in the tertiary sector but also in the secondary sector.

What is needed is the re-structuring of the service centres to meet the needs of all the people residing in the newly settled areas. The village centre should be designed to provide the basic requirements of the farmers for the pursuit of their agricultural activities and day to day living and located along the main roads in relation to population and accessibility rather than to variations in topography. Village centres with the greatest potential for the location of secondary and tertiary activities should then be selected to function as "rural towns". These should be designed not only to provide higher order services for the farming population but also to provide non-farm employment opportunities, the kind of physical environment needed to attract and retain skilled personnel and a means of reducing regional leakage. In addition to these "rural towns" steps should also be taken to strengthen the facilities at the existing urban centres on the periphery of the settlement area. Many of these towns already possess the necessary urban infrastructure and hence all that is needed is some added investment that would enable them to develop into "regional centres". In fact these towns should be developed even before the settlers are brought in because of the need to provide the professional people and administrators who move into these areas at the very early stages of development with the amenities that would motivate them to stay in the area and get on with their job of work efficiently and punctually.

What is called for therefore is a strategy aimed at promoting urban development in the newly settled areas through a system of "rural towns". The present strategy of first developing the agricultural resources by providing the necessary physical infrastructure and then supplying the needs of the farming population over a period of time has to be replaced by one in which agricultural development and urban growth are considered complementary and interrelated and not as separate and competitive. It is only by developing viable urban centres that we will be able to eliminate

some of the very familiar but pressing problems in newly settled areas such as the need to (a) provide employment opportunities to the second generation, (b) attract professional people such as doctors and lawyers, (c) maintain the quality of the economic and social services that have been provided and (d) motivate those in charge of the development programmes to get themselves totally involved in the entire development process. Furthermore, as Hermansen has pointed out "Viewing regional communities as physical-spatial systems consisting of complex networks of nodes and flows that have to be functionally ordered, the physical planners usually fail to conceive the significance of urban areas as tools for modernization and poles of economic growth capable of transmitting impulses for growth and change throughout their spheres of influence. Too much emphasis is apt to be given to static design and location of physical facilities without sufficient attention to the self-perpetuating forces inherent in the process of economic growth that have to be accommodated. Therefore, it seems appropriate to call for a more dynamic physical planning which is less concerned with drawing up detailed static pictures of end situations, say, fifteen to twenty years ahead, and more concerned with the process of urban-industrial growth and the ways and means to control and direct this process."[13]

In conclusion it must be stressed that the integration of agricultural and urban development can best be achieved by adopting a regional approach to development. Hitherto in almost all of the settlement schemes the primary aim has been to develop the agricultural resources and to set up those supporting services needed for agricultural development. Agriculture is certainly the most important sector and should be given top priority in any land settlement programme in the Dry Zone. But as Andrade has pointed out agriculture cannot grow alone and a great deal of development outside agriculture is necessary to obtain optimal economic and social returns on the investment made within this sector.[14] The regional economy consists of several sectors and all of them should be considered together and integrated if there is going to be a balanced development of the region.

13. Tormod Hermansen, (1975) "Spatial organization and economic development. The scope and tasks of spatial planning" in *Regional Disaggregation of National Policies and Plans*, ed. A Kuklinski, United Nations Research Centre for Social Development, Geneva.

14. Preston Andrade, (1972) "The Growth Centre Concept" in *Readings on Micro-Level Planning and Rural Growth Centres* ed. L. K. Sen, National Institute of Community Development, Hydrabad,