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URBAN-RURAL INTERACTIONS AND ROLE OF PLANNED SMALL TOWNSHIPS IN NORTH CENTRAL PROVINCE, SRI LANKA: AN EMPIRICAL INVESTIGATION OF URBAN FUNCTIONS FOR RURAL DEVELOPMENT APPROACH

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Abstract

Whether a settlement may urban or rural it performs different roles as commercial, administrative centre for surrounding regions. Settlements act as central places representing a particular tier of the settlement hierarchy. The roles of planned small townships on regional development and the interactions between those settlements and the periphery have been studied by many geographers in Asia, Africa and Latin America. These centers are at the lower order of urban hierarchy, and they have been planned purposefully in many countries based on Urban Functions for Rural Development Approach (UFRD) to accelerate the development of backward areas. Since these centers trickle down innovation & modernization to rural neighborhoods the roles of these centers are diverse. In order to achieve fruitful results of settlement planning most effective and rational spatial and location planning strategy is essential to promote these small centers within well-articulated, integrated and balanced urban hierarchy. Based on this perspective main objective of the study was evaluating the multiple roles of planned small townships in North Central Province (NCP) for the development of their neighborhoods. Thus, Thambuttegama was selected as the study area. Demarcating the sphere of influence of selected functions and assess the existing functional structure of the township were among other specific objectives. The primary data on commercial and non-governmental functions of the township was collected through a structured questionnaire, field survey and through informal interviews. Secondary data and other related information were gathered from official statistics, other published materials, unpublished reports and internal records. Variations of the linkages and urban functions in spatial and temporal dimensions have been shown as maps, spider graphs using GIS based tools such as overlay, buffering through the study.

Key words: Development, GIS, Hierarchy, Neighborhoods

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INTRODUCTION

Although the role played by small centers has been subjected of a deal of controversy during the last few decades, especially in developing countries, empirical studies have proven that these centers had played a decisive role in regional development of many parts of the world (Nelson ,1996). Small towns, especially in developing countries are playing successful role as bridges in urban & rural development. Small towns are numerically dominated but, have dispersed over a wide area in the periphery of Sri Lanka which covers the hinterland of Colombo Metropolitan Region (CMR). In fact, these small towns are only towns available to serve a large and growing population in less developed areas. During the last few decades, incipient small towns have emerged spontaneously at road junctions while a large number of small towns has been established by the state in land settlement schemes, especially in Mahaweli development programme (Wanasinghe, 2003).These small towns are the lower tiers of the central place hierarchy, that perform the growth impulses through various linkages such as economic, social, communication, capital & human resources between urban and rural neighborhoods. Their functions include collection, processing & sale of agricultural and other local production to areas outside the region; the provision of (a) agricultural inputs such as fertilizers, seeds & equipment (b) consumer goods purchased from larger urban centers (c) basic health, educational, administrative and other services and (d) specialized infrastructure facilities (Wanasinghe, 2003). After the commencement of settlement development activities small and medium urban centers were developed for the space in Mahaweli system H and C. Settlement development

policies for small and rural centers have been implemented in many African, Asian and Latin American countries based on Urban Functions for Rural Development Approach which adopted as a bottom- up strategy to develop rural areas using low order settlements in developing countries. For the criticisms on UFRD approach, it is necessary to post- evaluate the approach aid with the planned township as advocated in Christaller's Central place theory. Prior to the initiation of colonization programme in dry zone most small centers irregularly distributed and planned (Nelson, 1996). A new phase of urbanization in the dry zone commenced after the inauguration of the Mahaweli programme with upgrading old urban places and the establishing new townships. The settlement structure consisted of townships, Area centers, village centers and hamlet centers. The new townships were referred as planned towns (Nelson, 1996). As a planned township Tambuttegama was emerged as the lower intermediate in Anuradhapura District. Before the commencement of settlement development activities, the place had been the junction town linked with the Northern railway and the road network of the North Central Province. Its trade and commercial activities formed linear pattern along the main road from Kurunegala to Anuradhapura, especially the railway linkage from Colombo to Anuradhapura provided it with a further advantage (Nelson, 2002). Then, evaluate the multiple roles of planned township on present social, economic background will be useful in an intra-regional level future planning and policy decisions.

Most townships of the Mahaweli system H have not succeeded as they planned in attracting consumers outside and providing the basic needs that have been planned and those that have been provided. (Nelson,

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2002). But Tambuttegama has reached a higher level in the central place hierarchy when compared to other planned townships in system H. So, in view of the fact that Tambuttegama has been selected as the study area in order to get a clear picture regarding the linkages between township and surrounding.

LITERATURE REVIEW

The study on "Land settlement and urban Development in dry zone" Silva has revealed the role of colonization and Mahaweli development programme to develop dry zone townships. In this study Silva has shown the causes of slow development of civic centers and townships in settlement scheme as the failure to co – ordinate urban growth and agricultural development. Here, Silva is concerned with health, co–operative and education functions within the dry zone environs. In his descriptive study Silva especially was concerned with the urban development in Mahaweli development areas. Many townships within the system H has failed to cater to the surrounding region due to lack of facilities aiding the educational, medical and postal facilities. Accordingly, there was a wide gap between the facilities that have been planned and those that have been provided.

Nelson examines the spacing and functional characteristics of each service centers of Mahaweli System H and C in the study on "an appraisal of the central place theory to settlement planning in an agrarian peasant economy". When planning future central place systems greater attention should be devoted to the transport linkages at the lower level of the transport network (Nelson,1996).

Gunawardena and Nelson analyzed the effectiveness of the service delivery system and the growth of Mahaweli townships mainly focused in the system H and C. They evaluate the role of government sponsored service functions such as education, health and postal services for surrounding regions based on field survey addressing the spatial distribution patterns of those functions. Most new towns as Galnewa, Tambuttegama commercial, industrial and service functions have not reached expected level of growth (Gunawardena,1988).

Razzaq evaluates the growth patterns of periodic central places in Hambantota and also the spatial development of existing *pola* system in relation to road network using nearest neighbor index which were calculated through questionnaires, interviews and secondary data. The patterns of development of periodic central places are affected by the physical and cultural features of the region. The study reveals that growth of periodic central places in this district is of recent origin and display a great potential for spatial development in the future (Razzaq, 1990).

Wanasinghe has analyzed pre and post situation of urban system in Mahaweli system H including Galnewa & Tambuttegama townships. Townships have not succeeded in providing non-farm employment opportunities to excess labor in rural areas. Not all the townships are of the same population size and they have not grown at the same rate (Wanasinghe, 1987).

Mahadev has formulated an operational approach to the delimitation of city region. To identify functional link between city and hinterland Mahadev use empirical-cum-intuitive method. Immediate contact zone of Mysore has demarcated using criteria such as vegetable supply, traffic flow and telephone linkage (Mahadev,1972).
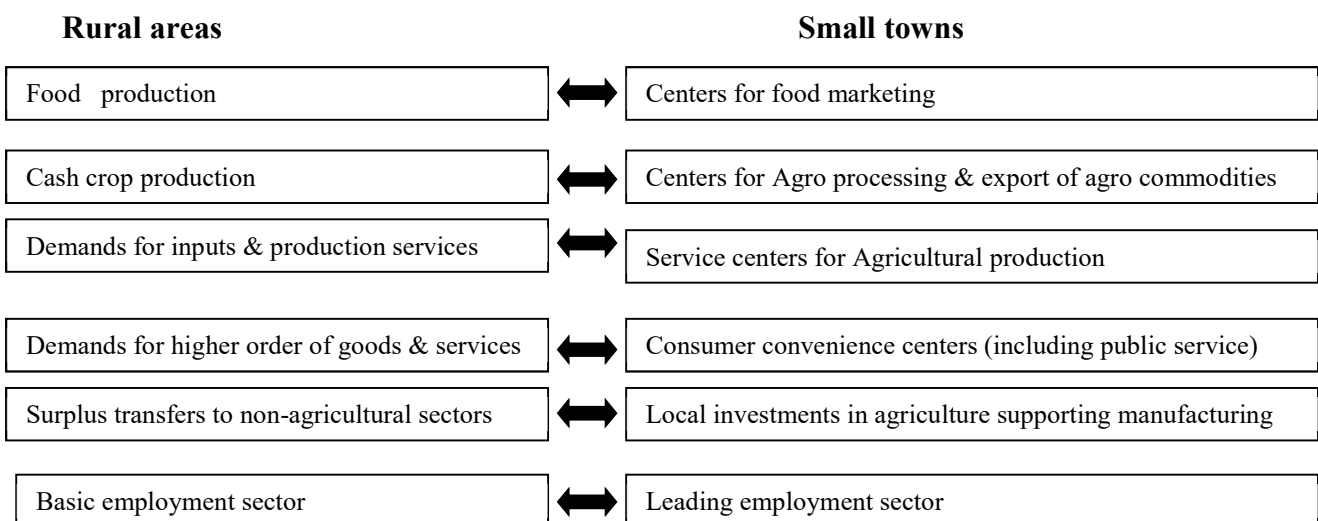
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THEORETICAL FRAMEWORK

The study intends to apply central place theory and UFRD approach in the study. Most settlement planning strategies in agrarian environs basically depend on Christaller's central place theory (Berry, 1967). Also, the role of small towns on regional development as considered at the point of HABITAT advocated Rural –Urban Linkage development approach that stressed the need of symbiotic relationship between both entities. Most of urban & regional planning literature has revolved that theory & related aspects. Central place theory has been adopted in the settlement planning efforts in many developing countries. The theory has attempted to identify the principles underlying the location of central places, interaction between those places, nature of interactions, functional characteristics of each central places (Balasundarampillai, 1980).

In the pre-Mahaweli colonization schemes towns and townships had been largely unplanned. Spatial organization of those towns has been determined by the spatial pattern of irrigation cannel network. This situation has implied the problem of easy access for settlers. The adoption of the principles drawn from the central place theory was intended to overcome the foregoing problems. The accelerated Mahaweli development programme adopted four tier hierarchy consisting of hamlet centers, village centers, area centers and townships represented different order of central places.

By UN HABITAT similar to UFRD has accepted and introduced the Rural-Urban Linkage Development Approach (RULDA). It has now recognized that there is an economic, social and functional interdependence between urban and rural areas. Two-way process which occur between Urban and rural areas. Following spatial and sectoral flows and linkages between rural and small centers are considered to be the basis for balanced and equitable regional development which is economically, socially and environmentally viable.

Figure 1: Linkages between Rural areas and small towns(Douglass,1998)

Source: Wanasinghe (1987)

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IMPORTANCE OF THE RESEARCH

As a developing country in Sri Lanka spatial imbalances in providing goods and services to consumers can be identified in micro and macro level (Karunanayake, 2003). To overcome these issues optimum location of service centers are essential. Based on these reasons the study has two potential advantages; firstly, it may be useful to understand the existing spatial structure of Tambuttegama township. Secondary it can be used as a comprehensive planning tool which comprises of spatial aspects of urban functions and sectoral components of the land use of the township. Thus, aid with the study more relevant location planning strategy can be developed especially focusing settlement planning and delivery system. Efficiency & equity of social & economic services evaluate through assessing existing delivery system for neighborhoods. On the other hand, the study can be used to understand the nature of existing service functions and their influence on surrounding region. Hence, the study will pave the way to policy makers for prepare & develop detailed and comprehensive relocation policy based on service functions, infrastructures, non-farm employment not only Tambuttegama also other service centers in Sri Lanka.

Hypothesis

Planned small townships diffuse the economic & social impulses to surrounding region.

Research questions

The study tried to find answers to following questions;

I. What are the economic and functional roles of Tambuttegama township in regional setting?

II. What are the growth trends of the township as an emerging small town in regional urban hierarchy?

III. What are the linkages between township and rural neighborhoods?

RESEARCH OBJECTIVES

Main objective of the research was evaluating economic, social and functional role of Tambuttegama township. In line with this, following were specific objectives;

I. Identifying linkages between the township & rural neighborhoods

II. Demarcating sphere of influence of the township

III. Measuring functional growth & diversity of the township

Study area

Tambuttegama is situated in the North central province of Sri Lanka, 30 km away from Anuradhapura. It is bounded on the Talawa township in North, Galnewa and Eppawala townships in East by Kala oya in South and also Rajanganaya tank in West. It comprises a total land area of 20.2 Square kilometers, covering 06 *Grama Niladari* divisions as Tambuttegama, Musalpitiya, Nallanchiya, JayAsirigama, Thammennagama and Weheragala which covering 15 villages. According to 2012 census 2012 population of the study area were 12312.

Figure 2: Location of Study Area

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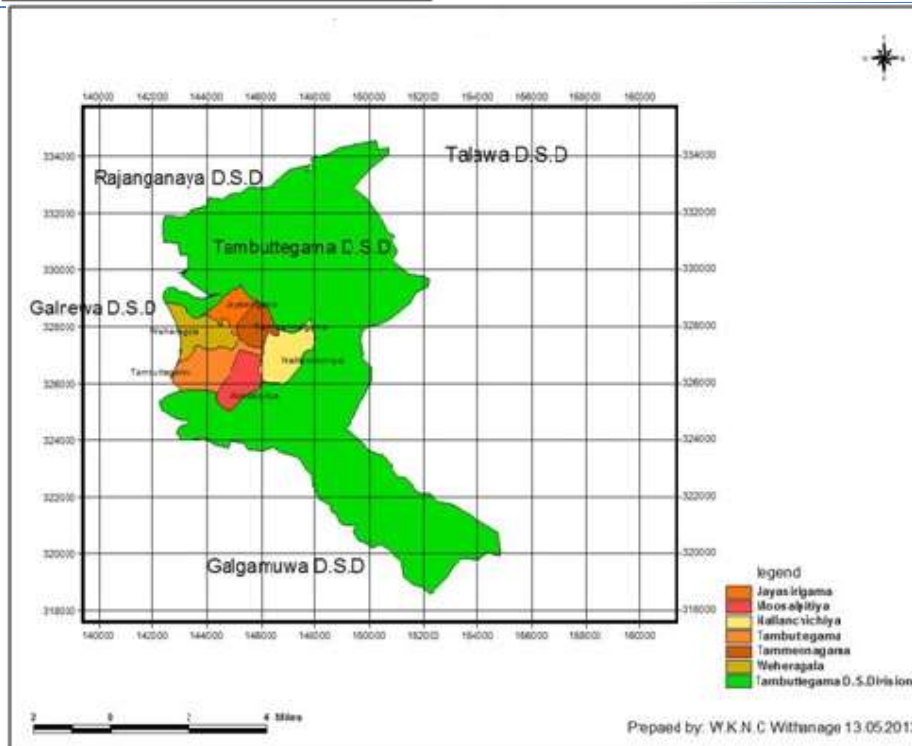
METHODOLOGY

Data collection

Service seekers such as school pupils, patients, daily consumers, public servants survey was done based on multi-stage random sampling. The survey was carried out in the form of interviews. The interview adopted the structured questionnaire to elicit information on consumer hinterlands, purchasing goods & services, mode of transportation, distance, number of visits and time involved etc. Useful statistical data and other related information were collected through official statistics, other published materials, unpublished reports and internal records from Divisional Secretariat, Mahaweli Authority, Urban Development Authority, National Physical Planning Department and Provincial Planning Department.

Sampling

The desired sample size is 420, which was 70 from school pupils (randomly), 100 public servants, 50 indoor patients, 100 retailers & wholesalers and also 100 farmers. Random selection process was used in order to ensure that the selected respondents represent the entire population and bias will be prevented. Types of trade and commercial outlets were categorized through random sampling. In this manner a detailed questionnaire was used to collect basic information of enterprises and nature of travelling and mode of transportation, buying and selling.

Data analysis

After obtaining first- hand information through above sources data were processed as per-coding, coding, editing, and tabulation. Various statistical techniques and methods were applied using Excel. Spatial patterns of functions and related aspects of the centre in its regional setting were
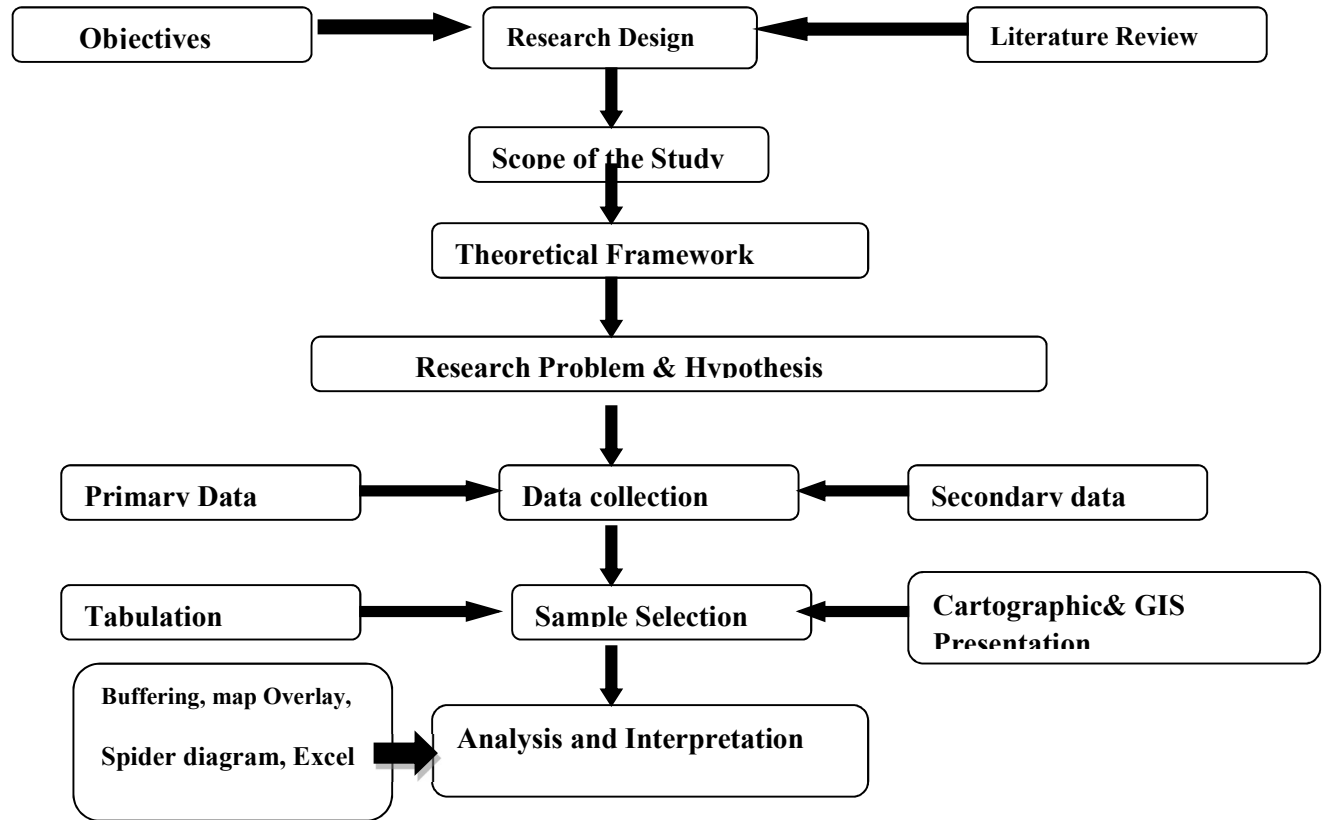
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analyzed using GIS. Sphere of influence of township was demarcated through flow maps, density maps assist with GIS. The Sequence of the study has shown in Figure 3.

Figure 3: Methodological flowchart of the study

RESULTS AND DISCUSSION

Morphological growth of township

As a planned township, the commercial land use of Tambuttegama has changed dramatically over the past three decades due to geo economic and other socio-economic factors. Morphology is shaped by infrastructure facilities and supra-structure within the township. With introducing various land use regulations and amendments in collaboration with UDA, many changes in land use have taken place within urban wards in the past two decades (Figure 4 (a), (b). Large extent of land is occupied by reservation and the second greatest extent amounting up to 19% has been allocated for the central facilities while the third greatest extent of land was allocated for mixed use zone comprise of 69.5 hectares out of the total 357.8 hectares. At the early stages the two functional nodes of the township were at Rajanganaya and Rajina Junction. But over

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past three decades liner development within the urban area has indicated quite a significant trend that stretches along Rajanganaya junction and through other roads.

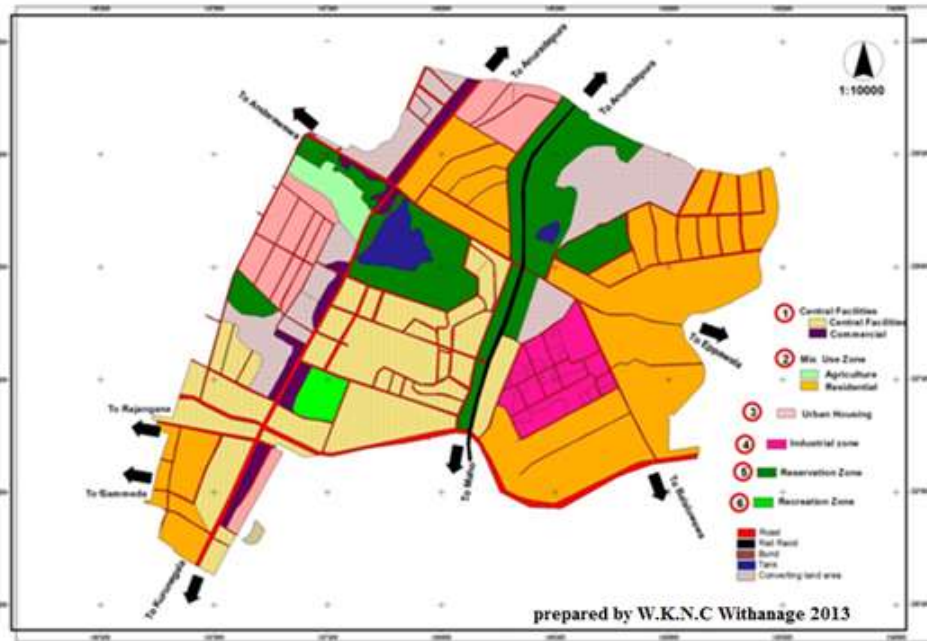Figure 4 (a): Land use zoning of Tambuttegama township 1982
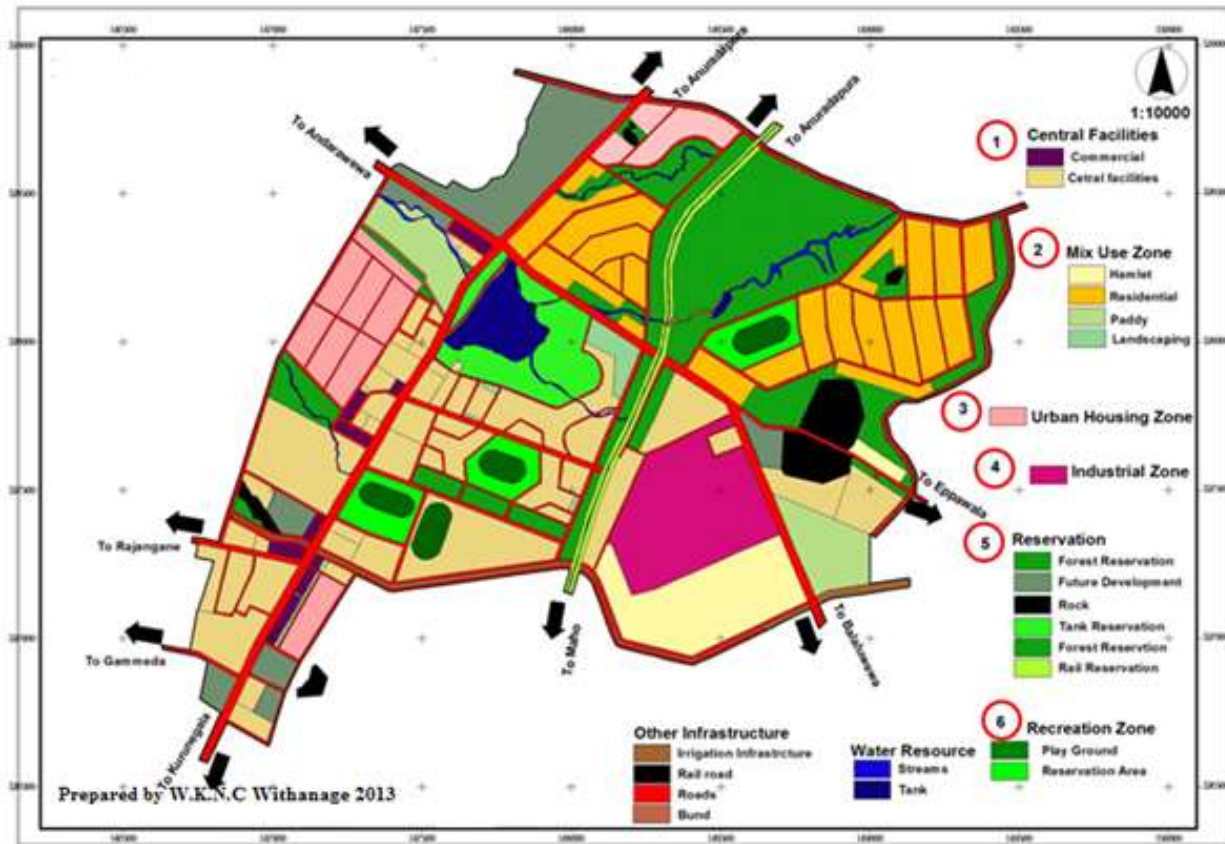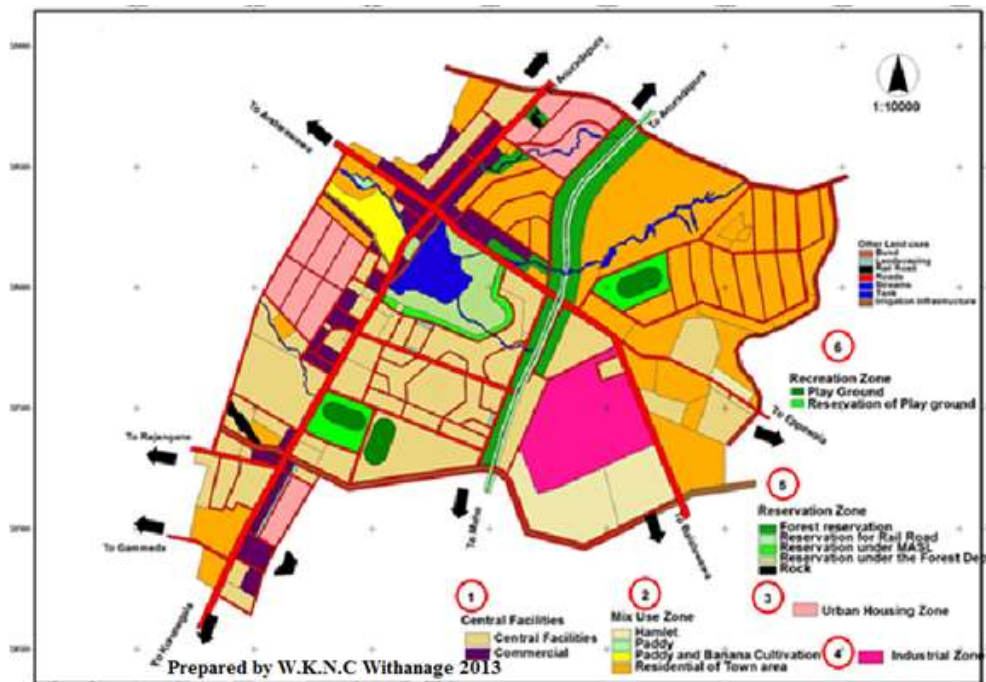

Source: Urban Development Authority (2012)

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Figure 4 (b): Land use zoning of Tambuttegama township 1992

Source:

Figure 4 (c): Land use zoning of Tambuttegama township 2013

Source:

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Table 1: Land use changes in Tambuttegama township, NCP 1982, 1992 & 2012

ID	Land use category	1982		1992		2012	
		Extent (ha)	%	Extent (ha)	%	Extent (ha)	%
01	Central Facilities	70.08	19	75.65	21	96.65	27
02	Mix Use Zone	69.5	19	112.95	32	111.64	31
03	Urban Housing	19.92	06	23.26	07	19.92	06
04	Industrial Zone	19.61	05.	19.60	05	19.60	05
05	Zone for Reservation	99.94	28	45.79	13	33.00	09
06	Recreation Zone	14.34	04	3.88	01	10.54	03
07	Other (Roads, water, irrigation infrastructure)	64.45	18	37.31	10	66.50	19
08	Converting lands	-	-	39.39	11	-	-
	Total Extent of Land (ha)	357.84	100	357.84	100	357.84	100

Source: Mahaweli Development Board, Mahaweli Economic Agency, GIS analysis (2013)

Before the commencement of the Accelerated Mahaweli Development programme (AMDP) and related settlement development activities, the township was a small junction linked with Northern railway line and the road network of NCP. In 1992 there were 255 trade outlets in the township and it has been increased to 495 by 2012 including 56 trade outlets within the Dedicated Economic Centre (Figure 3).

There is a high concentration of trade outlets near Rajina Junction and Rajanganaya Junction. Most vegetable and grain wholesellers, agrochemicals vendors and auto mobile outlets have been concentrated in the Rajanganaya junction while finance, banking and miscellaneous services and , specialized services have been concentrated around the Rajina junction.

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Figure 5: Layout of the Dedicated Economic Centre

Source: Field survey (2012)

The role of township as a marketing centre

Small towns are the main points of interface in establishing marketing linkages in Sri Lanka, especially for agricultural production. The township plays a decisive role as the marketing centre for agricultural commodities, especially after the establishment of Dedicated Economic Centre. Township is the principle collection and distribution centre of agricultural commodities such as paddy, lowland March, 2013 is depicted in the Figure 6.

vegetables and fruits in the Anuradhapura District. Arrival patterns of commodities such as paddy, lowland vegetables and fruits, were analyzed in the study. Tambuttegama is the main paddy collection centre in the NCP. During *Haha* season, the paddy marketing board collects the paddy from the farmers who come to the town centre from the villages and hamlets. Paddy stock collected through the stall that was set up in the township by the paddy marketing board in
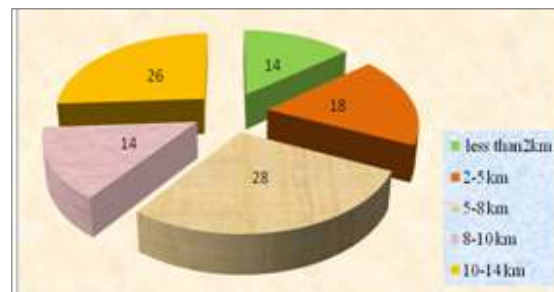
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Figure 6: Paddy collection in March 2013

Figure 7: Travel distance of selected paddy farmers

Source: Stock inventory, Sri Lanka Paddy Marketing Board, Tambuttagema, field survey (2012)

In the stock of paddy collected through the stall of the paddy marketing board, a significant trend of collecting paddy from villages outside of the township was displayed. In the survey, 50 farmers were interviewed and their arrival patterns could be depicted as in Figure 7. Majority of the paddy cultivators have come to the township from distant locations. 68% out of the 50 farmers who faced the interview had come from distances far than 5 km from the township. Only 14% of the farmers had come from areas within a radius of 2 km from the township. According to the survey, 32% of the paddy cultivators are living within a radius of 3-5 km from the township. Most farmers represented villages within 20 km distance from the township. Out of those who faced the interviews, only 2 paddy cultivators had come from distances more than 20 km from the township. When considering the modes of travel utilized by the farmers, it is evident that most farmers uses hired lorries coming to the township and sell their products. This mode of transportation consists of 42% of the total and the second most popular mode was their own tractors. 20% of the farmers have opted for this mode. In the case of the perception of paddy cultivators on the township, 38% indicated that they believe that the township plays a more decisive role as a planned township

unlike ever before. 24% were of the opinion that township plays a mediocre role as a planned township in the system "H" in comparison to the Galnewa, Eppawala and Thalawa townships. 22% were of the view that township plays a secondary role in the North Central Province. Out of the 50 farmers interviewed, 8 farmers (16%) were of the opinion that the township was a failure as a marketing centre which caters to the surrounding villages. The perception of one of the paddy cultivators can be gleaned from the part of an interview quoted below.

I came from Kotmalpura located four kilometers from Tambuttegama. I came to Kotmalpura from Kotmale in the late 1980s as a new settler and settled down as a farmer. I grow paddy in the maha season and vegetables in the yala season. Today, I came here on a hired lorry to sell my harvest. As a planned township, Tambuttagama has developed rapidly like never before. The town has every service that one would need for day to day activities. I normally come to the township twice a week on Tuesdays and Saturdays to sell my vegetables to the Dedicated Economic Centre in Tambuttagama. And once a week I buy dry fish, betel & areconut and other durable goods which I need from here.

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A more decisive role in the District is played by Tambuttegama, not only in purchasing of paddy but also in vegetable retailing and wholesaling as well, especially after establishing the DDEC in Tambuttegama in 2005. Figure 8 shows the pattern of arrival of production such as vegetables, fruits and grains to the DDEC in 2012 in monthly averages.

Figure 8: Agricultural commodity Arrival to DDEC 2012

Figure 9: Travel distance of vegetable farmers
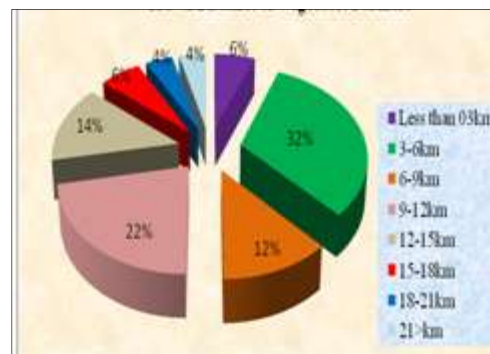
Source: Hector Kobbekaduwa Agrarian Research Institute (2012), Field Survey (2012)

According to the Figure 9, most vegetable cultivators are residing within the Tambuttagema DSD. As a percentage, it amounts to 74%. Out of the respondents only four cultivators had come to the DDEC from areas outside of the Tambuttegama DSD. This indicates that the township carries out a vital role in marketing, especially in marketing vegetables produced in the surrounding villages of a radius between 1km to 15 km including Eppawala and Talawa areas. According to the interview, 54% of the vegetable cultivators believe that the township plays a positive role as a middle order service centre in the Anuradhapura District. Out of the 50 respondents, only 18% were of the opinion that township has failed as a planned township in achieving the objectives set during the planning stage. Trade linkages operated in the township could be categorized as formal and informal trading. Retail and wholesale functions operate in the township which boomed with various trade functions after 1970s. Expansion of trade functions in the township can be depicted as Table 2.

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Table 2: Expansion trade functions in Tambuttegama township 1992, 2002, 2012

Category of Function	No of Outlets		
	1992	2002	2012
1.Trade oriented			
Miscellaneous	34	52	68
Paddy, chilies & green gram etc.	13	16	18
Textiles & readymade garments	6	14	16
Fertilizers & agro chemicals	12	16	21
Vegetable & fruit dealers	2	56	64
Building material & hardware	5	12	15
Fancy goods	8	14	17
Motor vehicles & spare parts	4	11	14
Ceramic, pottery & Glassware etc.	-	6	7
Footwear & shoes makers & repairs	-	6	9
Liquor shops	1	3	4
Meat stalls	-	2	2
Second hand cloth dealers	-	9	11
Tea dealers	-	4	6
Beetle, Arecanut & Tobacco dealers	-	4	12
2. Service oriented			
Hotels, restaurants, milk bars, bakeries etc.	28	58	72
Salons	10	12	16
Automobile engineers & Garages	10	12	17
Electrical goods Machines & repairs	11	14	17
Commercial banks and financial institutes	4	8	14
Repairing and vulcanizing	4	8	14
Pharmacies	4	6	10
Photographers & studios	4	7	7
Service & Filling stations	1	1	1
Private dispensaries & clinics	2	6	11
Video record bars	-	3	5
Laundries	-	-	1
Funeral services	1	1	1
Motorcycle repairing	1	3	6
Watch repairing	1	3	3
Cinema, theater & clubs	-	-	-
Private education & tuition classes	-	4	6
Lottery and betting centers	3	8	8
Real estate	-	2	4

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3. Indutry oriented			
Furniture, Wood & Wood carving	9	11	14
Jewelry & pawn brokers	2	6	9
Tyre rebuilding & repair	2	4	5
Grinding mills	-	3	7
Publishers, printers & Book shops	-	2	6
Agricultural equipment & machineries	-	4	13
Hood works	-	2	4
Opticians	1	3	6
Tailoring	10	12	12

Source: Wanasinghe (2005), Nelson (2002), field survey (2012)

Links between the farmers and township may vary extensively in terms of the types of commodities purchased. The settlers do not opt to travelling long distances to purchase items needed for their day- to- day requirements and they patronize the trade outlets and boutiques closest to them for purchasing such goods. The farmers in the surrounding villages have very strong links with the local boutique in purchasing many of their daily necessities such as food and other durable goods. The field data indicate that almost 79% of the settlers in the township and 42% settlers in villages are clients of the boutiques located in close proximity to their dwellings. When considering the density of the retail trade in the DSD, the highest density can be seen in the township. When retail density ratio of the G.N. Divisions is compared, the greatest population distribution ratios are demonstrated by the Tabuttegama, Weheragala and Jayasirigama GNDs. The lowest ratio is indicated by the above rural villages. People living in rural areas surrounding the township visit a *pola* (fair) at least once a week for purchasing consumer goods they need. Table 3 shows the percentage of settlers who visited the *pola* during the two week survey period. The variety visible from one hamlet to another has some relationship to (a) variations in the distance between the *pola* and the hamlet, (b) seasonal variation in the income.

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Table 3: Percentage of settlers who visited the Tambuttegama *pola*

Name of the Hamlet	No. of Farmers	%	Name of the *pola* visited	Distance (Km)
Botalayagama	1	2	Talawa	4
Telhiriyawa	2	4	Talawa	4
Maliyadevapura	1	2	Tabuttegama	3
Nallanchiya	2	4	Talawa	2.5
Eriyagama	3	6	Talawa	1.5
Pahalagama	2	4	Talawa	4
Mahabellankadawala	3	6	Tabuttegama	3.5
Jayasirigama	8	16	Tabuttegama	1.7
Tabuttegama	7	14	Tabuttegama	1.8
Musalpituya	9	18	Tabuttegama	1.3
Delnegama	6	12	Talawa	1.9
Weheragala	3	6	Tabuttegama	1.4
Total	50	100		

Source: Field survey, 2012

According to the survey data, 62% out of the 50 settlers interviewed patronized the Tambuttegama *pola* located within a distance of about 1-3.5 km. It is evident that the settlers patronized the *pola* that is closest to them in order to save time and cost of transportation when purchasing their daily needs. The *pola* plays a significant role as the local exchange centre as well as the market that facilitates inter-regional exchange of goods. Out of 50 respondent vendors, 24% were vegetable vendors and 18% were fruits vendors at the *pola*. It reveals that the basic operation of the *pola* depends on the supply of rural agricultural products which come from neighborhood areas near the township. The *pola* is managed by the local authority and 56 trade outlets of the DDEC have been leased out through tender procedure.

Role of township as an employment providing centre

Data was gathered during the field survey in order to examine whether township provides an important source of employment for hinterland population. In the survey, 100 public servants including officers at the Residential Project Manager's Office, Divisional Secretariat, Post Office, Central Collage and Primary Collage were interviewed and their place of residence can be depicted are as Table 4 and Figure 10.

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Table 4: Employment structure of township

Figure 10: Travel patterns of Public servants
of township

G.N. Division	(a) Total No. of Employees	(b) Public Sector Employees	(b) as a % of (a)
Tambuttegama	880	133	12.4
Musalpitiya	572	120	11.3
Nallanchchiya	790	191	17.9
Jayasirigama	1106	90	8.5
Tammannagama	1225	386	36.2
Weheragala	1382	147	13.7
Total	**5955**	**1067**	

Source: Field survey, 2012
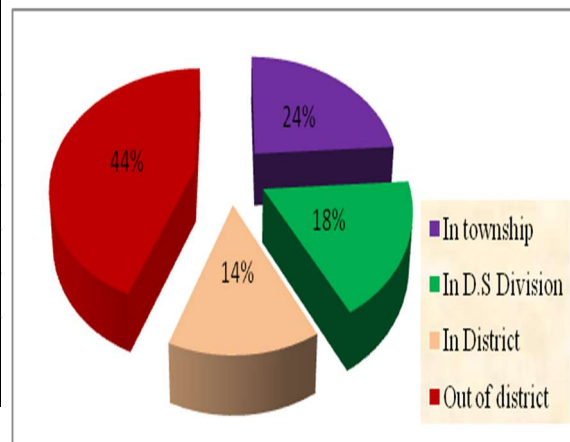
The survey revealed that out of the 100 public servants interviewed, 44% came to the township from areas outside of the District. 24% of the respondents were urban dwellers and 18% were residing within the Tambutegama DSD. It revealed that 56% of the total respondents were residents of the District. The arrival pattern of the public servants to the township from their places of residence can be illustrated as in Figure 11. The township has played a positive role in the employment providing to the surrounding region as a whole. According to the above table 36.2% of the public servants are residing in Tammannagama. When six urban wards are compared, the lowest percentage of government servants lived in Jayasirigama which recorded a percentage of 8.5%. Occupation structure of the township revealed that a large number of government servants are engaged in employments related to administration, education, health and transportation while many others were engaged in numerous private sector enterprises. A substantial proportion of these workers do not reside within the township.

Thus, a daily commuting of people to the township from rural areas which is beneficial for both the enterprises in the township and commuting workers alike, can be observed. This fact is substantiated by the survey on commuting patterns of the workers of the garment factory named Concord Manufacturing (pvt.) Ltd. As a sample, 75 female workers of the factory were interviewed and it revealed the result is as in Table 5.

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Figure 11: Travel patterns of public servants in township

Table 5: Travel distance of selected female workers in concord garment factory

Distance (km)	No. of workers	%
1-2Km	24	32
2-3km	17	22.2
3-5km	14	18.6
5-8km	12	16
8>km	8	10.2
Total	**75**	**100**

Source: Field survey, 2012

It indicates that 32% of the young female workers employed in the factory live within a radius of 2 kilometers from the factory while 68% travel from neighboring villages located within a radius of 2-8 kilometers from the township. It indicates the close interaction

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that the surrounding region has with the township as the employment providing centre for the unemployed youth as blue collar workers.

Role of township as a commercial and industrial centre

In all small townships of prime importance, the commercial activities are reflected by the relatively high percentage of private sector establishments devoted to retail and wholesale trade. The township processes 632 licensed enterprises of which 78.3% belong to this category. Significant feature of the private sector enterprises in the township is the proliferation of single owner operated micro enterprises. In 2013, only two of the establishments under survey had a labour force which exceeded 25 full time employees. 85% of all enterprises were operated by the proprietors themselves or by unpaid family laborers. 62% of all the enterprises above belong to the micro enterprise category. A unique feature in the distribution pattern of the enterprises is that only a small proportion is concentrated within the township. Owing to the raw material and market oriented nature of the industries, most of the processing activities are dispersed over a wider area. According survey 38% of the industries is concentrated in the township while 52% is dispersed over the hamlets and village centers.

Table 6: Growth of Industries in Township 1992-2012

Category	1992	2012	% increase
Owner proprietor only	154	234	34.1
Micro enterprises (1-4 workers)	87	163	46.6
Small enterprises (5-24 workers)	14	22	36.3
Medium scale (over 25 workers)	-	2	100
Total	**255**	**358**	

Source: Nelson (2002), UDA (2012)

When the places of permanent residence of retail and wholesale entrepreneurs of the township are considered, 32 out of 57 respondents came from locations outside of the District. 57% of the respondents reside in locations outside of the district in which the township is situated. It further reveals that a contribution of only 16% is made to the retail & wholesale enterprises by township dwellers. 76% persons are either settlers from other districts or other areas of the District. Only 8% are settlers within the particular D.S. Division.

Role of township as a centre for urban service provision

Urban services provided by the township can be divided into two categories; (a) town-serving function and (b) region-serving function which cater to the peripheral villages. The degree of government involvement in the provision of essential services and facilities is reflected in the multitude of public sector institutions which are available, i.e. administration, health, education, post, security and telecommunication services. Availability of different service functions in the township in

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spatial context can be depicted as Figure 12. Due to time constraints, several functions namely, education, health, transportation and finance were selected to measure the levels urban service provision by the township.

Figure 12 : Spatial distribution of urban functions in Tambuttegama township

Firstly under education it was observed that three state run schools operate in the urban areas namely, Tambuttegama central college, the primary school, and Nallanchchiya school. Out of a total of 424 teachers serving in the area, 35 % are serving in the three schools mentioned above. In the case of pupil distribution, the data revealed that out of a total of 8838 pupils, 43.2% are studying at the three schools mentioned above which are located within the township.70 students (1.8%) out of the total, information pertaining to their travel patterns was revealed. According to the table below, 49.9% of the pupils reside within a radius of 1-2 km from the school. It was revealed that these schools play a beneficial role in the lives of pupils residing in villages in the close proximity to the township. Out of the 70 pupils who participated in the survey, only 18.5% (13 pupils) came from a distance further than 8 kilometers from the schools under survey.

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Table 6: Travel distance of the respondent pupils

Distance (km)	No. of pupils	%
0-1Km	24	34.2
1-2km	11	15.7
3-5km	14	20
5-8km	9	12.8
8>km	13	18.5
Total	**70**	**100**

Source: Field survey, 2012

The situation prevalent in the health sector somewhat differ from education. As a planned township, the Tambuttegama town has one district hospital which treats patients coming from areas outside of the township. The survey revealed that the district hospital provides its services mainly to in-house patients and out- patients who come from areas within a radius of about 5 km from the hospital. This was evident from the 50 outdoor patients who were interviewed for the purpose of the survey. Permanent places of residence can be depicted in Figure 13 is as follow.

Figure 13: Travel distance of elected indoor patients in District Hospital, Tambuttegama
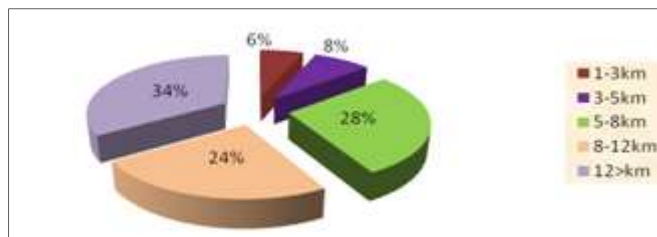
Source: Field Survey (2012)

Linkages between Tambuttegama Township & Rural neighborhoods

The link between settlers and the township is very well reflected through the financial sector. In order to meet their financial needs, the farmers who are living in the neighboring villages and hamlets maintain contacts with the commercial banks operated in township. By the end of year 2012, 14 branches of state and private sector banks had been established within the township. Farmers and other settlers of the township and the peripheral rural areas make use of the banks situated in

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the township for their credit needs. In order to study the nature of aggregate lending of agricultural loans to settlers, 25 loans granted by the Peoples bank and 25 loans granted by the bank of ceylon within the township by the end of 2012.

Transportation function also plays a dominant role integrating township into regional economy and also daily commuting pattern and the access is highly determined by the transportation linkages of the township. Public transportation services are used by dwellers of urban areas as well as rural commuters in order to obtain various public services and other allied services as it is a low cost mode of transportation. There is strong bus route connectivity and a bus density in the township as the central node which connects Anuradhapura and Kurunegala. Bus density is higher in the road in which the main bus terminal is located. The survey revealed that 60 buses make transits stops in the township per day in their journey along the Anuradapura-Kurunegala road. Other rural areas such as Nochchiyagama and Palugaswewa indicate relatively lesser densities, i.e., only about 7-8 buses per day. Accordingly it is evident that inter regional bus service is well developed in comparison to the intra-regional bus services of the township.

Sphere of influence of the township

Due to the lack of health facilities in the D.S. Divisions, the patients from Rajanganaya, Talawa and Galnewa areas make use of this facility in order to obtain in-house medical treatment. Data gathered in the survey revealed that out of the 50 patients interviewed, 58% have come to the hospital from areas further than 8 kilometers or above from the location of the township. The sphere of influence of the health service is greater in comparison to other services such as education.

CONCLUSION

The township plays a stimulating role as an agent of modernizing the agricultural trends in the area and in rural development. It also performs urban services and other functions while enabling diffusion of prosperity to the rural poor. Therefore, the township today has become an essential element of the regional development.

The analysis of the functions carried out by the township indicates that it has played a vital role in providing education, health, financial, transportation and other services which are essential for the rural neighborhood. Therefore, settlers of the surrounding region have benefitted largely from the planned township. However, in some instances, access for the people of the surrounding areas to the township appears to have been restricted by lack of transportation facilities.

Currently it performs a multifunctional role as a planned township in comparison to other planned townships in the region such as Galnewa, Thalawa and Eppawala. In the provision of certain functions, the township has been successful in, serving not only Mahaweli project area but also the older colonization areas and traditional villages outside of the project area.

The existing "*pola*" of the township plays an important role in the integrating of rural areas with market economy of the township which would allow vendors of a wider spatial coverage of the neighborhood to reach the township. The dedicated economic centre has influenced to make various changes in the *pola* activities, especially to expand wholesale trading.

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Seasonal and weekly fluctuations in business activities are a regular feature of the township. There is a rapid increase of sales and customer attraction during the peak season of *maha,* especially in March and April.

It was observed that as a centre for the collection and distribution of agricultural produce, the township has played a beneficial role towards the rural and poorer farming and non-farming families. It denotes that seasonal poverty and low income of poorer groups of people have decreased in some degree.

The establishment of DDEC of the township has brought significant changes in the *pola* activity by undermining its role in wholesale trading. Consequently its principle function is now confined to redistribution of commodities through the retail trade which is characterized by an inward more than an outward movement of goods. However, due to the lack of agro processing enterprises in the township, a great volume of agricultural productions move to outer regions in the form of unprocessed goods.

Township appears to have failed to perform its duties as a centre for thev industry. The government's attempt to attract investors to the newly established industrial estate has not been successful. Furthermore, the township has not been able to achieve great success in providing employment opportunities in the non- farm sector to the rural unemployed communities, especially to the rural youth as most of industries prevalent in the township are micro scale or owner operated businesses.

Recommendations

Government has a role to play upgrading the existing industries and also to attract new entrepreneurs by providing funds and other physical facilities to encourage new agro based micro and medium scale industries in the industrial zone of the township.

Local Government has neglected to upgrade the existing bus stand of the township. Due to that, the bus terminals and other transportation linkages do not contribute sufficiently to the development of the township, especially in the public sector passenger bus service.

A policy which is based on integrated area development can be introduced in collaboration with UDA and NPPD. Urban and rural interdependency is essential for the development of the township and also to perform interactions between township and rural surrounding.

Vendors of the *pola* ground can be provided with more physical infrastructure by the state as it has been done in the case of the permanent vendors of DDEC. Provision of a permitted market place and parking facilities as well as the upgrading of the internal road network in the township with proper coordination with NWSDB, SLT, CEB and other institutes would be beneficial.

Irregular linear growth can be prevented and discouraged while cross road development and nodal development can be encouraged at the Rajina and Rajanganaya junctions.

As an agricultural marketing centre, the township has a high potential to develop agro based possessing industries in the township. In that sense, micro scale and middle scale industries should be promoted to join the industrial zone of the township.

Both rural and urban areas of the Tambuttegama Township can be incorporated not only in land use planning but also in the area development plans as

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well. Proper coordination will play a decisive role in here.

The linkages with the rural periphery of township has played a positive role to diffuse more benefits to the periphery. However, the township must perform its role in a wider area with more functional attractions and physical resources. Central government intervention for funds and decision making process is highly necessary to develop the township as a middle order central place in NCP.

REFERENCES

Balasundarampillai, P. (1980). The hierarchy of central places in the Trincomalee district of Sri Lanka, *South Asian Studies*, 2 (1), 33-45.

Berry, B.J.L. (1967,). Geography of market Centers and retail distribution. New Jersey, USA: Englewood Clifs.

Gunawardhana, R.S. Nelson, M.D.(1988), Some geographical attributes of trade centers in the Kandy District. *Modern Ceylon Studies*, 3,1-17.

Karunanayake, M.M. (2003). Rural-urban interface in Sri Lanka: studies in regional development, universiry of Sri Jayewerdenepura, Nugegoda. Tharangee prints.

Mahadew, P.D, Jayashanker, D.C. (1972), Concept of a city region: An approach with case study, *The Indian Geographical Journal* , 19, 47-56.

Nelson, M.D. (2002). Mahaweli programe and peasent settlement development in dry zone of Sri Lanka.university .of Peradeniya. Peradeniya.

Nelson, M.D. (1996), *An appraisal of the application of the central place theory to settlement planning in a Agrarian peasant economy: The service centers in the mahaweli development areas in Sri Lanka*, Unpublished PhD thesis, University of Peradeniya. Peradeniya,Sri Lanka.

Razzaaq, M.M.A.(1990), *Growth of periodic central places and spatial development in the hamantota District of southern Sri Lanka,* Unpublished M.A thesis,University of Colombo,Sri Lanka.

Silva W.P.T,(1979). Land settlement and urban development in the dry zone of Sri Lanka, *Sri Lanka Journal of Social Science,* 2 (1),55-76.

UDA, (2012), Urban development Plan-Tambuttegama urban area 2008-2018, North central province,Anuradhpura.

Wanasinghe, Y.A.D.S. (1987). A study of service centers and the evolving pattern of linkages in the Mahaweli development area, *Geo Journal*, 14 (2), 237-251.