RURAL-URBAN LINKAGES IN A RESOURCE FRONTIER REGION: THE CASE OF SORONG, IRIAN JAYA, INDONESIA*

By:
R. Bijanta**

ABSTRACT

Sorong district is a part the resource frontier areas of Indonesia, located in Irian Jaya Province. The district is endowed with abundant natural resources, comprising oil, forest, lands, fish and other marine resources. But most of these resources remain idle, due to the lack of capable human resources to utilize them. Consequently, the district is strongly depending on food supply from other provinces for many years. Only small portion of the foodstuff is produced locally in the trans-migration settlements. This situation is reflecting a great opportunity to initiate agricultural development in the district to satisfy local demands for foodstuffs and at the same time facilitating rural-urban linkages.

The research is addressing the following issues: (1), providing an overview of the basis for rural-urban linkages in a resource frontier region of Sorong; (2), understanding the existing linkages connecting urban centers and their rural hinterlands and (3), identifying policy implication of the existing patterns and nature of rural-urban linkages in the district.

This paper is written on the basis of a research conducted in 1998, combining secondary data analysis, household survey and rapid rural appraisal. A review of secondary materials in forms of regional development plans, statistics and reports has been made to give an overview of the basis for rural-urban linkages in the district as well as to describe the existing patterns of rural-urban linkages and to identify their policy implications. Field observation, rapid rural appraisal and household survey have been conducted to facilitate better understanding of various issues related to rural-urban linkages at micro level.

There is an ample potential basis for rural-urban in the district under study. The negative balance of production and consumption of staple foodstuffs in one side

---

* Part of the urban contribution to a report on Poverty Alleviation through Rural-Urban Linkages (PAURL), sponsored by the United Nations Development Program (UNDP) and the National Planning Agency of the Republic of Indonesia (BAPPENAS) 1998. A copy of this report goes to Dr. Amorinrie Ahsan, Senior Director of the Center for Regional Development Planning Studies, Gadjah Mada University who gives great opportunity to publish the research possible.

** Lecturer in the Faculty of Geography, and Deputy Director of the Centre for Regional Development Planning Studies, Gadjah Mada University (URPPA, Yogyakarta).
and the availability of potential lands for food crops in the other shows that there is a sufficient space to adopt a rural-urban linkage strategy. If the existing deficit in food production can be fulfilled by the hinterlands through an appropriate agricultural development strategy, rural-urban linkages will naturally materialize. In developing the agricultural sector in the district, improvement of the existing road networks is an urgent prerequisite. The sequential nature of connectivity among various parts of the district gives a substantial disincentive to farmers as it is shown by the great discrepancies between farm gate price and the market price for various agricultural commodities. Under the existing level of skills and knowledge of the local people in farming, the implementation of an agricultural development strategy via transmigration program is the only feasible option. But this should take into consideration the participation of local population who are culturally not familiar with settled farming as practiced by trans-migrants population.

INTRODUCTION

Since the 1970s a growth strategy has been implemented by the new order government at the expense of trans-regional equity, widening the gap in development between Western and Eastern Indonesia. Eastern Indonesian regions are characterized by abundant natural resources, relatively low population density, lack of infrastructure and to some areas also less favorable physical and climatic conditions. Greater parts of the regions are comprising small islands, making inter-regional interaction limited and more expensive cost for infrastructure development. This makes any efforts to bring economic development unfeasible due to the unavailability of basic infrastructures. Moreover, the lack of population agglomeration has led to an insufficient threshold for service provisions by the government or business initialization by private organizations. The disparities in development of the Eastern and Western Indonesia have been the concern of the Indonesian government only in the last decade. Moreover, only very recently the Indonesian Government has given greater attention to forms of incentives and disincentives in investment geared toward the economic development of these lagging behind regions. Among important efforts to stimulate investment in the regions are executed in forms of the declaration of new development authorities (Daerah Otonom), areas of integrated economic development (Kawasan Pengembangan Ekonomi Verbuka: KAPET) and the development of progressive areas (Kawasan Ambang- KALeL). Addressed to attract investment in some selected areas. At present there is no information on the levels of investment attained and economic growth achieved under implementation of such policies. But under the present economic crisis and unfavorable political conditions in the eastern part of Indonesia there is a considerable doubt whether the level of investment has increased substantially. Thus there is also a question whether such a strategy can help in developing the economy and at the same time alleviating poverty in these regions.
Strengthening rural-urban integration is considered as one of the possible strategies to improve rural economy via exports of the surplus of rural production. In the case of Sorong District (Fig. 1) it is very important to consider the present problem of food deficit in the same district in one side and the possibility to produce foodstuff in the other to stimulate rural-urban trade and hence rural-urban linkages. Thus it is important to assess the possibility to improve the living conditions in the district through rural-urban linkages.

OBJECTIVES

This paper is specifically aimed at (1), providing an overview of the basis for rural-urban linkages as a resource frontier region of Sorong District (2), understanding the existing linkages connecting urban centers and their rural hinterlands and (3), identifying policy implication of the existing patterns and name of rural-urban linkages in the district.

RESEARCH METHODS

Existing researches on rural-urban linkages have been dealing with issues such as modelling, measurement and empirical tests of various hypotheses related to the growth likelihood controversy under various levels and spatial coverage of analysis. The level of observation is ranging from household to community sub-counties, utilizing analytical tools ranging from rather subjective and intuitive speculations to an advance regression analysis.

This study combines research methods ranging from secondary data analysis, household surveys and field observations. To some extent qualitative information on various issues are also obtained from local government officers, local traders, farmers and entrepreneurs. In order to draw a general picture on the district, an assessment of its relative position in the context of the province a comparison is going to be made. Detailed research methods employed in the study are given as follows.

1. Secondary Data Analysis

Secondary data analysis is employed to discuss various topics on population and migration, employment, economic structure, export, infrastructure, aggregate provincial expenditure pattern, production and consumption of staple foods and marketing of agricultural commodities. Data are derived from various reports and compilations as issued by the national as well as local government of Sorong District. Among the most important sources of secondary are Indonesian Statistical Pocket Book (Buku Saku Statistik Indonesia), Sorong District in Figures (Kabupaten Sorong Dalam Angka), Main Data for Development Planning (Data Pokok Pembangunan), and Annual Reports (Laporan Tahunan) from various institutions at district level. A special report on inter-provincial migration is available at the Population Research Center,
2. Field Observation and Rapid Rural Appraisal

In order to obtain an insight into various issues related to the study of rural-urban linkages within the district of Soreng an observation to various parts of the district had been made. To some extent a rapid rural appraisal with unstructured interview has been conducted in various sites, covering trans-migrants, fishermen, agricultural commodity traders as well as non-agricultural entrepreneurs. Various assumptions and ideas learnt from the desk studies are further tested in the field in order to arrive at a conclusion concerning role and potential contribution of rural-urban linkages in the development of the district. In order to arrive at a more complete picture on the dynamics of rural-urban linkages in the district of Soreng, this study covers the basis for rural-urban linkages (e.g., production, export and employment) and their underlying factors in both rural and urban areas simultaneously. At the same time a proper attention should be given to the rural-urban interaction in terms of physical linkages, economic linkages, service delivery linkages as well as population mobility.

THEORETICAL BACKGROUND

Rapid agricultural growth has been suggested as an alternative development strategy for less developed countries (Mollier, 1970). Based largely on evidence from Asia, Kybur and Mollier argued that a development strategy focused on small farms will generate rapid, equitable and geographically dispersed growth, because of labour intensive linkages with the rural non-farm economy (Haggblade et al., 1989). This is deemed superior to either an industry-led import substitution strategies or to export-led growth strategies, especially in the context of an unfavourable environment for expanded global trade and finance. Agricultural growth is considered to provide direct as well as indirect stimuli to the setting up of new activities through linkages effects, thereby facilitating industrialization in addition to directly addressing the twin problems of poverty and unemployment (Ballam, 1979).

It was Mollier (1976) who put agriculture as the main focus of the rural development strategy and argued that rapid growth in agricultural production, through effects of linkages with non-agricultural production, can stimulate expansion of productive and employment intensive small and medium industries. The logic is this increased in food production, based on cost decreasing green revolution technology results in a large size national income. If this income accrues to relatively large farmers, who do not spend the...
entire additional amount of food grains consumption on capital or import intensive commodities, the demand for local non-agricultural goods and services will be stimulated. Thus the increasing demand for various goods and services in rural areas creates a favourable environment for the growth of rural non-farm activities.

Growth of such non-agricultural consumption expenditure was seen as the main driving force behind rural economic diversification and thus rural-urban linkages. However, he also envisaged the possibilities of productive investment in agricultural surpluses by large commercial farmers to take advantage of the rural non-agricultural investment opportunities that were created by increased demand (Melzer, 1970). Also in line with this view is White (1986) who asserts that the agricultural income gained by medium and large farm households in rural areas will be followed by a higher expenditure on better quality food and non-food materials which are most likely produced in rural areas and thus leading to the growth of rural non-farm sector. Islam (1986) also suggests that an important precondition for a sustained growth of non-agricultural activities capable of generating attractive returns would be a dynamic and egalitarian agricultural sector. The linkage mechanism for mutually reinforcing growth of the two sectors will not work to its fullest extent unless agricultural growth is sufficiently egalitarian.

Researches (Haggblade et al, 1989; Evans, 1992; Reardon et al, 1992) and discussions (Hazel and Slade, 1987; Harris, 1987; Hart, 1989) on rural diversification commonly disaggregate growth linkages from agricultural in to three types of linkages namely (1) backward linkages or the residuals of demand from the agricultural sector for intermediate or capital goods (2) forward linkages, or the residuals of demand from agricultural products to agro-processing industry, and (3) consumption linkages, emanating from the expenditure of income got from the market surplus.

Empirical evidence from Asia and Africa as shown in the work of Haggblade et al, (1989) reveal that agricultural growth linkages in Asia are by various measures greater than those in Africa. African rainfall patterns and the geology of its river basins preclude cost effective irrigation on a scale as large as in Asia. Hence backward linkages into pump supply, canal construction and maintenance, all currently available in Asian countries, are simply unavailable in Africa. Furthermore, higher population density in Asia also supports a viable scale of business activities. In addition, African consumption patterns seem less diversified into non-foods than those in Asia.

In the Muda Region of Malaysia where a multi-million dollar irrigation scheme has been implemented and large agricultural subsidies have been invested, agricultural growth was not followed by a sustained regional growth and diversification (Hart, 1989). Panis and Stewart (1993), comparing Taiwan and The Philippines, found that growth linkages from agricultural in the former are much larger than the latter. In Taiwan land and rural incomes are much more equally distributed. This is likely to lead to greater agricultural to rural non-agricultural linkages, since for any given income level, a more equal distribution tends to be associated with less expenditure on urban and imported consumer goods, while the agricultural technology used by small farms in
a unimodal land distribution is also likely to be produced locally. Household consumption patterns further support this hypothesis.

Similar conclusions to those of Malaviya and Philippps has been drawn in the study of Harris (1987). She concludes that non-farm economy in the agrarian regions studied is led by more than rice and more than agriculture. In particular, an examination of employment and incomes in non-rural, industrial and government activity reveals not only a massive concentration but also the existence of sizable economic sectors where income and demand for income elastic goods are relatively high. The process identified as crucial factors to explain the existing patterns of non-farm economy are as follows: (1) the invariable growth of the non-local home and national market, (2) growing regional integration in terms of commodity flows, (3) increasing velocity of interaction especially amongst large farms, banks and financiers, (4) imbalances in financial flows suggestive of a flow of agricultural surplus to the urban/commercial/agricultural economy, (5) the search by industrial capital for low costs of production and profit of off the costs (on transport, transactions and information) of a non-metropolitan location against the cheapness of rural labor and (6) state support to this pattern of development stability by taxing commerce to pay for support services such as infrastructure, electricity, utilities and subsidies on loans.

A more recent study by Harris (1991) in Arni of South India concludes that the economic diversification that has occurred can only be partially be explained in relation to agricultural growth, and that rural inequality accounts for the existence of mechanisms which promote the external flow of resource and inhibit localized, labor intensive production. The linkage mechanism is significant but it is not working to its fullest extent. No further asserts that there is not enough evidence that Arni business people invest in such a way that the town functions as postulated by Friedman's model. In this context growth linkage effects of the recent agricultural growth have been weakened and the extent of diversification is correspondingly limited.

Regions fail to develop primarily because they are poorly connected to the mainstream of the economy. Rural areas with weak links to urban areas are handicapped in competing in regional, national and international markets. This undermines incentives to produce, invest, raise productivity, diversify production or engage in new activities. Deregulating incomes in their hinterland means limited demand for the products and services of urban areas. A rural-urban linkage strategy to planning and development needs to break this cycle by creating rural-urban interaction and creating instead a mutually supportive sequence of production and exchange between rural and urban areas within a region (Figure 3).

In Soreng District where agriculture and fishing are the primary economic activities, this can start with improving access for rural producers to out side markets allowing them mainly to expand sales, diversify production, and shift to higher value commodities. Expanded production leads to increased rural incomes which is in turn on production inputs and consumer goods and services, most of which purchased in small
towns and larger regional center nearby. Since a substantial part of this spending tends to accrue within the region, it creates more opportunities for non-farm jobs and new businesses, some of which may also spew out side markets. The additional income accruing to urban households in turn creates a further round of demand for inputs and foods, much of them are produced in rural hinterlands.

The model has been empirically tested in a Kenyan small town and its hinterland (Evans, 1995). The conclusions of the study are summarized as follows: (1) the entire cycle of mutually reinforcing linkages hinges on a vigorous export base to provide the driving force behind the local economy, (2) small towns play a vital role in supporting the growth of agricultural production and rural incomes, (3) a vibrant agricultural sector spurs the proliferation of non-farm activities and the diversification of the urban economy, (4) small towns can absorb rural population, and such will have an impact on the concentration of population in large cities, (5) the virtuous circle chain and effect can however be undermined by macro-economic policies, which interfere with rural-urban exchange.

![Diagram](source: Evans, 1992 and 1998)

Figure 2. Virtuous Circle Model of Rural-urban Development
RESULTS AND DISCUSSION

1. Contextual Basis for Rural-Urban Linkages

1.1. Production and Employment

Oil production and export dominate Soreng’s economy, although its share of Gross Regional Domestic Product (GRDP) has continually been decreasing. In 1991 mining sector contributed 53.8 percent of real GRDP (at 1983 constant prices) and 49.6 percent in 1993. However, using 1997 prices the sector only produced 31 percent of real GRDP in 1996. Soreng is the center of oil production in the eastern part of Indonesia. It is also important to note that oil is the most important export commodity from the district, followed by processed woods and fish products (Kementerian Statistik Kebangsaan Soreng, 1995, 1996 and 1997).

The other sectors with a tremendous growth in the Soreng’s economy are agriculture and timber processing industry. Using the 1983 based figure, in 1991 agricultural sector contributed only 15.9 percent of GRDP. Adjusted to 1997 based figure, agricultural sector shares 24.7 percent to the district’s economy. Apart from the important contribution of fish products, other agricultural commodities such as cocoa, copra and cloves also contribute an increasingly important share to the export value from the district. This marked increase has been facilitated by the increase of population, especially through trans-migration program. Manufacturing industry has shown a rather rapid increase in the 1991-1996 period.

Employment in Soreng is dominated by agricultural sector. Some 60 percent of the active labor forces are employed in agricultural activities. There has been a tremendous increase only within a very short period from 40,715 in 1990 to 56,971 persons in 1995 (Kementerian Statistik Kebangsaan Soreng, 1995, 1996 and 1997). This is partly due to the greater index of migrants either spontaneously or through trans-migration. Two distinct types of agricultural economy in Soreng can be observed; i.e. traditional and modern types of activities in the field of fishing, farming and forest gathering. Local populations mainly carry out the traditional types of agricultural while migrants undertake the modern ones. These differences in economic activities lead to a disparity in welfare condition between local population and migrants.

Other sectors with greater share of employment are public and personal service, wholesale, retail, trade, hotel and restaurants and manufacturing. In 1995 these sectors of economic activities contributed some 12.8 percent, 12.3 percent and 8.1 percent respectively to the total employment in the district. These economic sectors had been able to grow at a rather rapid pace. The last two sectors had grown close to 50 percent within 5 years. The high growth rates of employment in the modern sector of the Soreng’s economy are also attributable to the more favorable climate for investment and more stable socio-political condition attained in the district during the period of 1990-1995. Under the present national economic crisis and local socio-political
instability since 1998 there has been a doubt whether such a growth of modern sector could be attained.

The most dominant export non-oil commodities from Sorong consist of processed fish such as frozen shrimp, frozen tuna and various fish stews as well as processed wood commodities such as plywood and block-wood. A longitudinal observation from 1993 to 1997 reveals that the value and volume of fish exports has experienced a slow growing tendency with a small fluctuation. Fishing activities are strongly dictated by the weather condition, and thus some uncertainties are involved. As long as the modern fishing is concerned, a growing tendency of export value is still very evident. The value of fish export from 1976 to 1995 shows a growing trend. Considering the fact that only one fifth of the fishing plant is now in operation and favorable international market for fish exports, increasing the amount of catch can be a viable solution to economic development and poverty alleviation in the district if the participation of local fishermen could be ensured.

1.2. Population Growth and Migration

As a part of the frontier region of Indonesia, Sorong is among the least populated one. Under its given topographic constraints population are unevenly distributed among topographic units. Traditionally settlements are scattered at the lowland and upper slopes in each sub-district, following the availability of water and some stable lands. In 1955 was inhabited by 236,525 persons or 12 percent of the province population. At the same time the population growth rate was 3 percent per annum (Kantor Statistik Kabupaten Sorong, 1995, 1996 and 1997). This figure is higher than that of the whole province (3.5 percent per annum) (BPS, 1996). This rapid population growth is mainly obtained through migration gain rather than natural increase. Population in the district is primarily concentrated along the western coast along the corridor of Sorong - Segit.

A considerable number of population increase in the province is contributed by a great number of inter-provincial migrations. Sorong District has gained some 12,000 inter-provincial migrants until 1990 (Sawarto, 1992). It is also important to note that intra-provincial migration in Sorong is most probably greater than that inter-provincial one. As a matter of fact, the great majority of fishermen in the district are intra-provincial migrants from Bisk and Serui, on the southern coast of Irina jaya. This pattern of fishermen mobility has been well established for many decades. Thus in Sorong high level of population growth rate is closely associated with migration rather than natural increase. This also can be seen from the greater sex ratio of the population. Sex ratio to almost all age groups are greater than 130, pointing to the presence of more male rather than female population in the respective age group. This indicates a special form of population movement; i.e. trans-migration and to some extent also spontaneous migration of Buginese families from Sulawesi. From 1994 to 1996 more than 10,000 trans-migrants had been placed in various resettlement projects.
in the district. This contributed a considerable number of populations to the district. Considering the fact that until 1950 Sorong District had gained some 12,000 migrants it can be estimated that until 1958 closer to 35,000 inhabitants of the district are migrants.

The presence of migrant population seems to be associated with the hub of modern economic activities. This is also reflected in the structure and growth of production and employment in the district. Modern economic sectors tend to grow well above the provincial average figure. This is due to the smallness of the modern sectors that a small change can give a substantial growth. But as migrants are very active groups by educational attainment and skills, in many cases they can access better-paid employment in modern sectors or establish their own business in either form of modern activities.

1.3. Growth in Urban Centers and Rural Areas

Urbanization in the province has gained its pace mainly in the districts of Merateka, Jayi Wileya, Panial, Yapen Wapen and Manokwari. These districts show urbanization rates from 5.4 to 10.6 percent per annum, above the rate of urban population growth at provincial level (5.1 percent per annum) (BPS, 1996). This marked increase in urbanization is not only due to the net gain in population dynamics, but in some areas this is also simply caused by a reorganization of administrative units. Some parts of sub-districts, which were formerly considered as rural areas, have been reclassified into urban ones in the most recent census.

It is surprising that under the highest investment level in the province, Sorong District falls into the category of districts with a lower level of urbanization rate. This fact leads to an interpretation that the current investment flows in to the district are not directed toward a labor intensive and urban located activities, but rather capital-intensive activities in rural areas. Activities related to fish smoking, oil mining and refinery, timber and other area product processing are among typical sectors representing such economic investment.

The growth of urban population in the districts is close to the growth of its rural population, i.e. 3.7 and 3.8 percent per annum respectively, highlighting the important contribution of the trans-migration program. Population growth rate in the urban areas of the district is strongly associated with spontaneous migrants working in the modern economic sectors. Among important modern sector in the urban areas of Sorong are related to trade, hotel and restaurants as well as other services. The majority of service sector growth in the district town is associated with the presence of numerous nightclubs, bars and other amusement centers. While in the rural areas gain of population is obtained via trans-migration program and to a lesser extent also from intra-provincial migration.

Transmigration settlements have been established in the sub-district of Aimus, Kintano, Ayamaru, Segun, Monowen and Waigeo, occupying some 538,000 hectares.
of lands in 1998. At present in the district of Inawasan, Makbon, Moraid, Sawagup, Wagai Utara, Wagai Selatan and Mirsol some trans-migration settlements are under construction. This is reflecting a strong political will of the central government to relocate trans-migrants in the eastern provinces of Indonesia, including Irian Jaya. Local government of Sorong has responded to this development by establishing a local office of trans-migration affairs (Balai Transmigrasi) as a part of the implementation of decentralization policy.

1.6. Infrastructure and Services in Support of Production and Trade

Sorong Town as a district capital is also the most important service center for the whole district. This is shown by the great variety of services offered by the town. Observation on 18 types of service offered by the district and sub-district capitals reveals that Sorong Town is the host of the great majority of higher order functions. Higher order services such as piped water supply, electricity power plants, telecommunication services, universities, general hospitals and a central post office are located in the town. At present the town is also the only center in the district with more than 100,000 inhabitants. Sorong provides higher and medium order services not only to the population of the town, but also to the population of the surrounding sub-districts such as Wagai, Samate, Sawagup, Makbon, Moraid, Aimas, Sawaloni, Sept, Barera and Sawai. These sub-district towns also form a relatively independent cluster of services in the western part of the district, as parts of the main roads to the region are seasonally unapproachable by motor vehicles.

The second cluster of service areas can be observed independently in the southeastern part, placing Teminabuan as the second most important center in the district. It offers 11 out of 18 functions under consideration. Teminabuan provides some medium order services to the population of Teminabuan, Inawasan, Aitinyu, Kidam sub-district areas as well as to small parts of Aimas and Sawai. Considering the fact that this town is inhabited by only 11,000 people, it is important to note that Teminabuan plays its central role in service provision in the south eastern part of the district. This is obtained partly due to the seasonal possibility of direct contact to Sorong Town as the main service center.

From a cost-benefit analysis between the availability of services and some economic indicators at sub-district level it can be observed that the availability of services is strongly associated with the production of staple foods and commercial crops but weakly related to the growth of non-agricultural production. This is shown by a strong and very strongly significant relationship (r = 0.65) between the numbers of services offered by sub-district centers and the production of clove (r: 0.4571); rice (r: 0.7828); and vegetables (r: 0.6335).

The strong relationship between the number of services offered and agricultural production is an indication of limited interregional transportation supports. This forces people in every sub-district to produce various commodities for subsistence.
and thus there is a strong association between the presence of agricultural production activities, service costs and population agglomeration. Inter-regional exchanges of agricultural commodities are rather limited, as settlements tend to be independent or self-sufficient in various agricultural commodities. Within the limited support and linkages to the urban markets, the existing volume of agricultural production tend to be small and homogenous; thus inter-regional competition in agricultural production is the rule rather than exception. Inter-regional complementarities in agricultural production is simply absent, as every settlement tends to produce its subsistence crops for domestic consumption due to the lack of transportation networks.

The number of small-scale industries in the district in 1997 was 617 units of establishment or more 96 percent of the total number of processing industries (Kantor Perindustrian Kabupaten Sragen, 1997). Whereas the rest fall in to the categories of medium and large-scale industries, mainly consist of forest product and fish processing activities. Five categories of small-scale industries can be distinguished, i.e. food processing, clothing, foot wear and leather goods; chemicals and building materials; metal works and other handicrafts.

Apart from its small in size, another important characteristics of the existing small-scale industries are their strong backward linkages with the local agricultural sector. The greatest number of small-scale industries in the district is processing of forest products i.e. 96 units, followed by agricultural commodity processing 49 units and fish processing 35 units (Kantor Perindustrian Kabupaten Sragen, 1997). The rest of small-scale industries do not show strong backward linkages with the agriculture sector, but to some extent forward linkages with agricultural sector can be detected in the case of metal works producing farm implements. Consumption linkages from agricultural sector comprise the largest part of linkages performed by the small-scale industries. This means that income generated in agricultural sector stimulates the growth and development of small-scale industries. But as the existing production in agricultural sector is strongly dictated by the lack and low quality of basic infrastructure, these potential linkages will not materialize as long as roads and irrigation systems are not fulfilled.

Assessment on the provision of infrastructure and facilities for trade at this level of observation is rather superficial in nature. In fact, under the present population size and given settlement patterns provision of infrastructure and facilities for trade and production always face the problem of inaccessibility due to the limited population thresholds and long distance to travel for goods and services. Furthermore, the limited surplus of production in the district is strongly susceptible to the unavailability of skilled human resources to cultivate the available lands rather than the unavailability of services. Government officers reported the lack of all-weather roads to some agricultural areas has hampered the marketing of commodities and thus hindered the potential of rural-urban linkages.
The excessive damage of the rural roads to the agricultural production areas is widespread. In 1998 only 50 percent or near 800 kilometers of the roads in the area are in a good condition, the rest are damaged or heavily damaged. Under the pretext of regional revenue, maintenance and rehabilitation of such roads are only possible with the assistance of provincial or national government. It seems that to establish rural-urban linkages in the district, provision of infrastructure, namely roads, is the most fundamental prerequisite followed by the provision services to production and trade. In the short and medium terms of development, river and sea transport systems seem to the most viable as they are relatively cheaper than that of road transport systems.

2. Rural-urban Linkages within the District

This part of analysis describes rural-urban linkages associated with production and trade within the district. Among important issues to deal with are linkages related to household consumption, labor linkages, capital linkages, agricultural marketing linkages, transportation linkages and linkages between the main cities and their hinterlands. In drawing the analysis various types of linkages, secondary data will be supplemented by a set of primary data resulted from a household survey in Sorong Town and its surroundings.

2.1. Trade Linkages Associated with Household Consumption

Expenditure for food consumption in rural areas of Indonesia comprises 63.6 percent of the total household expenditure (BPS, 1997). Less than third of the expenditure goes to non-food consumption, such as housing, clothing, footwear, durable goods, taxes and premium as well as parties and ceremonies. In urban areas the expenditure pattern is somewhat different from what is observed in the rural area. The total expenditure on food and non-food consumption is fairly equal, i.e. 49.8 percent and 50.2 percent respectively. This reflects a strong potential linkage from the agricultural sector, especially in food production and the consumption of the households, not only in urban areas but also in rural areas. Thus any efforts to improve rural-urban linkages for poverty alleviation should take in to account the importance of food production in rural areas. Food production activities may generate various types of linkages, such as forward linkages to the production of farm production inputs, tools and machinery, backward linkages to trade and processing of agricultural products and consumption linkages to consumption of food-stuffs in both rural and urban areas.

In Sorong District, establishing rural-urban linkages via food production can be a visible solution to both poverty alleviation and food deficit problems in the district. At present there is an estimate that 50 percent of the demand for foodstuffs are imported from Merauke and North Sulawesi (Kementerian PUPR, 1997). Another report says that in terms of carbohydrate the contribution of agricultural sector in the district to the total demand for foodstuffs is less than 40 percent. Further observation on
the balance of protein production and consumption shows a great deficit in meat and a small surplus of eggs. Sorong District is an importer of various foodstuffs, such as rice, wheat flour, cooking oil, soybeans, sugar and other beans. Parts of the imported foodstuffs are re-exported to other parts of the district. This part is simply to fulfill the demand for foodstuffs of the areas out side the reach of road transport from Sorong; such as sub-districts in the northern coast, south western coast or some other small islands in the north and west.

From the discussion it is clear that in enhancing rural-urban linkages for poverty alleviation in the district, agricultural development should come first. Under the present population growth rate and low farming skill of the local population it is impossible to expect their participation in food production. Farmers joining transmigration program should be pioneers in food production. As food crop cultivation in the district in the long run can also be addressed to solve famine in the province, transmigration should be seen as the main viable alternative. This leaves another problem i.e. the participation of local people in development.

At present food production activities in Sorong are mainly carried out in the trans-migration settlements. The settlements produce commodities such as rice, sweet potatoes, cassava, groundnut, green beans, vegetables and fruits. Cattle and poultry are also raised in a rather intensive way. At present some 500 tons of rice, 330 tons of maize, 100 tons of cassava and some 20,000 chickens are produced annually (Kantor Perdagangan Kabupaten Sorong, 1986). Few settlements are reporting no surpluses of agricultural commodities due to immature crops or crop failures in the near future. New production of agricultural commodities can be expected from newly established settlements, but the amount will not be sufficient to fulfill present food deficit.

Rice production is much less than that of imported one. This is reflecting a strong dependency on the supply of foodstuffs from other parts of Indonesia. The strong tendency of rice deficit in the district shows an increasing number of migrants whose carbohydrate source is mainly rice and/or an increasing number of local populations who have changed their diet to rice as staple food. If the second group of rice consumer in the district is mainly local people who cannot produce the commodity by themselves, the situation of food shortage in the district in the near future is really worrying.

2.2. Labor Linkages

The economy of the district is strongly associated with agricultural, mining and forest exploitation. The existing modern economic activities are also related to the processing of the primary product such as oil, wood, fish and other agricultural commodities as well as trade and service provisions. Under the existing economic structure, its traditional type of economy and its growing population determine employment problems. In the period of 1990-1995 population growth was close to 4 percent per annum, or doubling within 22 years. Within the same period the group of population in working ages and the labor force grow respectively by 3.4 and 9.2 percent.
The unemployment participation rate was rather low (37.5 percent). This means that only 57 persons of 160 over 10 years of age can be classified as labor-force (working and/or seeking for jobs).

The relatively lower level of unemployment participation rate indicates a high incidence of unemployment of family workers and school dropouts, mainly in communities with traditional type of economy such as fishing, farming and forest gathering in the district. The growing labor force is often trapped in a mismatch between the available employment and skills required. It is reported by the manpower office that in 1996 there were 74 job vacancies in manufacturing industry and insurance and 3 job vacancies in 1995 could not be fulfilled due to the absence of eligible applicants. But at the same time one can also see the greatest portion of job seekers cannot be placed due to the unavailability of vacations. From 1994 to 1997 the number of placement by the manpower office is ranging from 15 to 25 percent of the registered job seekers. Thus the great majority of job seekers remain unemployed due to the lack of vocational skills.

The available vocational training comprises some senior high schools majoring on construction, mechanical engineering, accounting, and agricultural extension. Apart from these high schools, local office of the manpower department and other private institutions also provide vocational training in the district. The latter provides short entry courses on mechanics, computer typing, electronics, carpentry and construction, agriculture, hotels and bartending, as well as tourism. These short entry courses are mainly designed to give job seekers with a vocational skill, after an accomplishment of junior or senior high school.

2.3. Capital Linkages

Among the potential roles played by urban centers in rural development is their contribution in service provision, leading to the growth of economic activities in rural areas via a financial assistance. In the context of capital shortage, such assistance can be a very crucial prerequisite for rural development and poverty alleviation through a provision of credit and technical assistance to rural producers. Banks and cooperatives are among the most common financial services encountered in the district. Five state banks are operated in the district town, i.e. Bank SNI, Bank Rakyat Indonesia (BRI), Bank Muamalat, and Bank Pembangunan Daerah (BPD). Some private banks also run their branch offices in the district, like Danamon, Bank Internasional Indonesia (BII), Bank Dagang Negara (BDN) and BHI.

Whereas cooperatives are found in almost all sub-district towns, excluding Wagis Subatom and Sawoi. The most common cooperatives are village cooperative units (KUDs), normally providing various services such as for borrowing and saving, procurement of farm inputs and marketing of farm products. These kinds of cooperatives are established in all villages but they do not function properly as financial
institution for various reasons. Among the most important reasons for the bad performance of KUDs are (1) the lack of some of the members as a result of top-down policy in the establishment of such cooperatives; (2) the lack of skills and honesty among the people in the management; and (3) the presence of strong competitors from private business institutions.

Consolidating the existing economic structure, the role of financial assistance in rural areas can be very important in the provision of credit to farmers, small entrepreneurs and traders. Credit to farmers can be very helpful in the procurement of capital inputs such as tractors, trucks or animals for power and at the same time credit can be installed to purchase modern inputs. Thus in the context of low density of agricultural activities as observed in the district, credit can be a very crucial in improving the agricultural production and enhancing the growth of small scale business. Data from Bank Indonesia shows that in 1971/1972 in Sorong District an investment of some Rp 630,790 million has been invested for various projects. From 1991/1992 to 1997/1998 the district has been the main area for investment in the province, sharing some 40 to 56 percent of the province investment. At present some 37.4 percent of total investment in the province is located in the district. This investment is strongly associated with the presence of long run and capital intensive projects on mining, canning and processing of forest products. The picture of small-scale investment in Sorong District has been in line the above illustration. At beginning of the 1990s the portion of small investment in the district was close to 30 percent of the provinces' investment, but the figure is decreasing to 21 percent in 1997.

Although the value and portion of investment in the district are among the highest in the province, some worrying trends at household level deserve a special attention. It seems that most of these credits go to medium and large-scale business located in urban areas with a small or very limited linkages to rural areas. According to our household survey some of the households is reporting the use of credit in their economic activities. Most of the rural households perform only very limited modern farming that the demand for purchased inputs is very small and it can be fulfilled by their own cash. Thus there might be also a problem of the lack of willingness to produce more due to various disincentives as present in the district. The lack of infrastructure supports is among the stumbling block in large-scale agricultural production. Whereas non-farming activities are absent due to the lack of local demand for processed goods and services, and thus demand for such a financial assistance is simply very low.

A cross-check visit to a pewsahap in Sorong -where small traders and producers most probably obtain their capital- shows that there is very limited demand for such capital. In most of the cases those who borrow money from the Sorong pewsahap are migrants rather than local population. This gives further indication that the more viable economic activities in the district are mainly carried out by migrants.
Thus this is in line with our primary data, showing no borrowers from the local population.

2.4. Agricultural Marketing Linkages

As the only agglomeration of population in the district, Sorong Town forms the greatest market for agricultural commodities, which are mostly imported from other regions. This imported product is further distributed to center for the town and the rest of the district. Thus in the context of ruralurban linkage study in the district, agricultural marketing linkages prevail only in terms of trading of foodstuffs from various sub-districts to the district town and its marketing to final consumers. The central market of Sorong Town is the center for agricultural commodity marketing in the district. The market is dealing with agricultural commodities from northwestern part of the district such as Waigeo, Samane, Sempoor, Mabobo, Merdai, Aimus, Sairuwai, Segat, Beulie and Sawir. Farmers sell their products in traders at farm gates, and then in turn bigger traders will sell the products to the central market in Sorong. These distinct patterns of marketing channels can be identified as follows: (a) Farmer → Middleman I → Middleman II → Collector → Central Market; (b) Farmer → Middleman I → Collector → Central Market and (c) Farmer → Collector → Central Market.

Perishable commodities such as vegetables, fruit, red onion, and groundnuts are following those patterns of marketing channels. Distance from central market to farms seems to be a very decisive in determining the pattern performed by individual farmer. The longer the pattern, the lower price is obtained by the farmer as transportation costs are involved. In the vicinity of Sorong where agricultural areas are well connected to the market, farmers can attain a more favorable price. The price of milled rice in Aimus (04 km from Sorong) is Rp 1,800/kg; it increases to Rp 400/kg at some 22 percent at the consumer prices in the district town (Kantor Pertanigagas, Sorong, 1996). The same trend can be observed from the farm gate prices of selected commodity in various sub-districts under observation.

The farm gate prices of various agricultural commodities in district town are higher than that in the other parts of the district. To a lesser extent Segat, as the center for oil production and processing, offers a slightly higher farm gate price for some commodities. Whereas in Aimus and Beulie a relatively lower farm gate prices can be observed. There is a strong tendency that farmers residing in the areas surrounding the town cities in the district can mostly enjoy higher farm gate prices.

This is also supported by the fact that in such an area the marketing channel is very short and cost for marketing is considerably lower, thus farmers can obtain a greater profit margin. For copra, cocoa seed and rice grain a shorter pattern of marketing channel can generally be obtained as farmers have a stronger bargaining position for a higher price due to the durability of the product. It is important to note that plywood, copra and cocoa as the main commodities from the district are exported regularly to Ambon, Ujung Pandang, and Sinubar. At present 9 private companies
dealing with agricultural product marketing have been operated in the district town. Intra-district transport in agricultural commodities by the firms tends to grow fast as it can be seen from the increasing volume of exported commodities.

Under the given constraints of accessibility in the district, marketing agricultural products to the consumer takes a longer chain of trading, leading to higher price of products for the final consumers. Agricultural products from the market in Bauru, either imported or collected from the hinterlands, are further distributed to Tecajuba, Ayamaru, and Afistao in the hinterlands by means of motor transport in combination with surface and river transport systems. Other basic commodities such as cooking oil, kerosene, soap, detergent and other manufactured goods, experience the same channels of marketing. Three different levels of marketing can be distinguished as follows: (a) Grocery → Middleman I → Middleman II → Middleman III → Consumers, (b) Grocery → Middleman I → Middleman II → Consumers and (c) Grocery → Middleman I → Consumers.

2.5. Transportation Linkages

Sorong is the main gate of the Irian Jaya Province. This town is well served by air and sea transport, and connected to the rest of Indonesia. At present the town is connected by air transport services to various district towns in the province as well as to the capital province of Jayapura. Merpati flies the routes of Sorong to Manokwari, Biak, Jayapura and Manokwari, in a regular basis as a part of their nationwide network. Apart from these regular lines, Sorong is also connected to Rabaul, Rabing, and Serui by chartered flights.

At present the only airport operated in the district is Jeffman Airport, located in the sub-district of Salawi. This airport can accommodate Fokker 28 flights. Apart from this airport, three airstrips for Twin Otters are available at the mid-districts of Tomina and Sorong. In the future Sorong Airstrip is prepared to accommodate DC-9 flights. The number of air passengers at the Jeffman Airport has been decreasing substantially from 69,000 persons in 1991 to 50,000 persons in 1994, or some 1.2 percent per annum. The decreasing figure of passengers is also followed by sharp decrease in cargo, luggage and postal cargo. The decrease is strongly caused by the presence of cheaper means of transport i.e. the operation of four units of long-distance ships (Kusini, Rinjani, Ceremoni and Tanahpri), connecting Sorong to the rest of Indonesia (Kantor Pelabuhan Sorong, 1997).

The decreasing role of air transport in connecting Sorong to the rest of Indonesia seems to be systematically replaced by the role of sea transport. This is very evident from the marked increase in the number of ships entering Sorong from 1990-1994, with an annual growth rate of some 8 percent. The most notable increase has been experienced by the local and traditional people ships reflecting a more intense interaction and trade among various regions in the district and between the district and the rest of Irian Jaya and Moluccas. Apart from the local and traditional sea transport,
Sorong is also connected to Ambon, Ujungpangkah and Manado by regular national lines such as Rinjani (once in two weeks) and Uakan (once a week).

Interregional transport from Sorong to its hinterlands is basically served by motor transport, and to some extent also in combination with sea and river transport systems. Asphalted roads are connecting Sorong to Kaimana, Mokbars, Soaka, Ayanamar-Tamabaras, Aimas Sagat, Aimas I-II, Airabae—Ajax, etc as well as roads within the district town. Total length of asphalted road is approximately 207 km or some 7.5 percent of the total roads. As the road infrastructure is concentrated in the vicinity of the district town, public transport service is also limited to this area. To some extent public transportation is also available from Sorong to Malaka and from Sorong to Aitmir. This issue is very important in facilitating the mobility of people, goods and information from the town to its hinterlands.

CONCLUSIONS AND POLICY IMPLICATIONS

From the above discussion it can be concluded that in order to develop rural-urban linkages in the district some prerequisites are necessary for economic development and poverty alleviation. Among the most important issues are agricultural development, trans-migration and infrastructure provision.

Agricultural development in order to satisfy local demands (district in the medium terms and province in the long terms) can be one of the components in establishing rural-urban linkages. A systemic interaction between Sorong Town and its hinterlands can be encouraged if complementary trading activities can be established. Agricultural production in the hinterlands should be addressed to fulfill the local demand for food either in the rural or urban areas in the district as an import substitution. As a prerequisite for such a strategy, detailed investigation of land resource potentials should be conducted to identify the quality, availability, distribution and the legal status of the lands. This information is indispensably important for a successful land use and agricultural sector planning.

Trans-migration program can be the main core for such a strategy. Under the existing skill and knowledge of the local population, trans-migration is seen as the most viable solution. In the context of food shortage within the district and under the presence of local population as rice consumers rather than producers, increasing food production within the district is a necessity. Considering the fact that most local populations are not poor that the migrant ones, the program should address the twin problems of poverty and food shortage simultaneously. Experiences show that failures in dealing with the participation of local population in any agricultural resettlement projects often lead to the program failures not only in terms of improving agricultural production, but also in terms of social integration and local participation. Thus in the case of local people in Sorong, a special approach ( socio-cultural rather than
economic to the problems is deemed necessary. Changing their attitudes vis à vis education in its widest sense can be one solution for this problem.

Roads as an important infrastructure in the district are in a worrying condition, making any effort to link rural areas to the urban counterparts difficult. Investments in roads should be given the highest priority if poverty alleviation through rural-urban linkages is to be implemented. In developing road networks, a higher priority should be given to those connecting sub-districts with greater shares of agricultural products. This is important to stimulate farmers and other producers in rural areas to run their business in turn can be expected to follow the virtuous circle model of rural-urban development.

Regional development patterns in the district is mainly driven by a strong concentration of investment along the coastal areas and some spots in the inner parts of the district. Among important investment on the coastal areas are fish canning, timber processing, oil processing and some manufacturing industries in the surroundings of Sorong. Among the most important spots in the inner part of the district comprise trans-migration settlements, cocoa and clove plantation as well as forest logging.

The existing spatial patterns of regional development seem to be strongly associated with the concentration of basic infrastructure, mainly roads, population distribution and built up areas more especially on the western coast of the district. Subdistricts on the coast tend to be more developed rather than those in the inner parts. The existing regional development pattern has raised some issues on the spatial distribution of economic activities, distribution of wealth between local people and migrants as well as the danger of environmental degradation in various parts of the district. The heavy concentration of development on the coastal areas from Sorong to Segit has created a very strong imbalance in the existing regional development. This is further strengthened by the regional policy on the placement of an industrial park and progressive areas (Kawasan Industri) along this coast. It should be anticipated that the concentration of modern economic activities on the western coastal areas might neglect the rest of the district.

A greater investment in the inner parts of the district is found if forms of timber logging, tree crops plantations, oil mining and trans-migration resettlements. These activities are very closely related to the opening of some tropical forest in the district, thus they have a potential for degrading environmental in the district. The existing hunting grounds for the local people have been severely damaged by logging activities. This may lead to a protein deficiency in the near future if a proper measure is not taken. The new regional development policy should be directed toward various issues on environmental degradation, food and protein security promotion and protection of native population from the negative impacts of modern economic development. Increasing agricultural production by trans-migration resettlement in the most suitable areas should be the core strategy in such policy. The existing scheme of local people participation should be continued in order to ensure the transfer of farming
knowledge from the trans-migrants. Selection and motivation of the local people to join the program should be addressed properly as the existing experiences show that only small number of the local trans-migrants can succeed with the settled-type farming activities.

REFERENCES


I people to 1 show that the farming

Growth and Changes in Rural


