SOCIO-ECONOMIC ACHIEVEMENTS OF THE LUNUGAMVEHERA IRRIGATION SETTLEMENT: A COMPARATIVE STUDY

by
L. K. W. Wijayaratne and Mangala De Zoysa
Department of Agric. Economics
Faculty of Agriculture
University of Ruhuna
Mapalana

ABSTRACT

Irrigation settlements in Sri Lanka draws thousands years of history with glory and prosperity of the nation based on agriculture. Those settlements were established with due consideration of availability of water, natural environment and topography in addition to the socio-economic requirements of the settlers. The Lunugamvehera settlement under the Kirindi Oya Irrigation Settlement Project was commenced in 1979 with the aim of sustainable food supply, generation of employment and equity distribution of income among the land less poor. Nearly after two decades, a comparative analysis of socio-economic status of the settlement with a nearby traditional village has become a practical significant in order to evaluate the success of the settlement.

In addition to the secondary data, primary data were collected for the study through an in-depth field survey of informants randomly selected from Lunugamvehera settlement and the adjoining Koholankala traditional village. The paper examines the existing institutional setting in the settlement that attempts to uplift the socio-economic status of the settlers. Empirical evidence revealed the facts that there are significant differences of socio-economic status in terms of Education, Health, Agriculture, Employment, and Income and income distribution between the two locations. Further, the main factors particularly irrigation policy that influenced for those discrepancies are discussed.

BACKGROUND

From the time the human civilization occurred, there had been gathering of people as social units. History of Sri Lanka provides information on settlements established under irrigation networks centered on large man-made water reservoirs, which claims a prominent place of the amalgamation of people particularly in the dry zone. In Sri Lanka, the Kirindi Oya Irrigation & Settlement Project (KOISP) which commenced in 1979 implemented a large scheme for settlement of the people in the southern region. The project emphasized the generation of employment, sustainable food supply and equity distribution of income among the poor settlers (Wanasighe, et. al., 1984).

The KOISP was initiated with constructing Lunugamvehera reservoir by crossing the Kirindi Oya, which begins, from Rawana Ella near Wellawaya. The capacity of the reservoir is 1,86,000 acre-feet that sufficient to provide water for the area of 455 square miles (11,174 square meters). Reservoir covers about 7,438 acres (3,011 hectares) of

agricultural lands and the dam is 3.25 miles (5.2 km.) in length. Crest level of the reservoir is 191 feet(57.3 meters) above the sea level. To release the water in excess, when the reservoir is full, there are 6 sluices each 50 × 16 ft. (15 x 4.8 meters) in dimension. Right Bank Canal (of Lunugamvehera reservoir is 22 miles (35.2 km.) whereas Left Bank Canal (LBC) is 16 miles (25.6 meters). The land under cultivation using the water distributed by the reservoir is estimated as 25,826 acres (10,455 hectares) (ARTI, 1994).

The present study has been conducted nearly after two decades of the commencement of the KOISP. In fact, it is quite meaningful and is of practical significance for such a study to be conducted to investigate the merits and demerits of the project and at the same time to propose suitable solutions in order to avoid the shortcomings, if any, on behalf of the settlers.

To understand the socio-economic achievements of the settlement project, a comparison of the data and information was done with a traditional border village that was not subjected to the settlement. The selected village: Koholankala where the population is around 1136 belongs to 315 families. The population in Lunugamvehera is 28,353 which is very large compared to that in Koholankala. Hence, disproportionate stratified random sampling technique was adopted for field data collection. Secondary data were also collected from many institutes and organizations such as Divisional Secretary's offices at Lunugamvehera and Hambantota; schools, resident project manager's office of Irrigation Management Division at Lunugamvehera, Grama Niladari officers, etc.

The study is indeed a comparison of socio-economic achievements as the impacts of different water management strategies in the settlement and a traditional village. During the study it was projected that almost all the problems in Lunugamvehera settlement area were based on some kind of problems related to water. The paper attempts to discuss these problems as found through the empirical study.

AGRICULTURAL DEVELOPMENT

The settlers in Lunugamvehera are predominantly paddy farmers. Almost all of them (88%) cultivate paddy on the land holdings larger than 2 acres (0.81 hectares). Further, 90% of the settlers also cultivate upland crops on the land holdings less than 1 acre (0.40 hectares) that were distributed by the project among the each settler. The lands cultivated by 96% settlers are their own lands while only 4% are tenants. Type of possession of land is almost the same both in Lunugamvehera and Koholankala where farmers having the land of their own. Land tenancy is experienced in Lunugamvehera while land encroachment could be observed in Koholankala, at very low levels. In Koholankala, 88% of the villagers have their own lands inherited from their parents. The rest 12% of the villagers have encroached lands form the government forest. Holding sizes larger than 2 acres (0.81 hectares) are cultivated with paddy by 56% of the villagers while 44% cultivate paddy on smallholdings less than 1 acre (0.40 hectares). In addition to paddy 86% of the villagers cultivate upland crops on more than 1 acre (0.40 hectares) of lands that are larger in extent compared to Lunugamvehera.

Under the low rainfall conditions prevailing in the area, the farmers in both Lunugamvehera and Koholankala cultivate paddy only for one season per year. Hence, the land used efficiency is very low in Lunugamvehera compared to Koholankala where there are large extent lands are cultivated with paddy under irrigation water supplied from Lunugamvehera reservoir. Paddy farmers in Koholankala are mainly depend on the seasonal rainfall except the few farmers who receive some water from Maha Aluthgam Ara. Evidently, the inappropriate water management policies and strategies of the settlement have further resulted with low productivity and low incomes from their paddy lands. In the occasions of not having sufficient water, water is first supplied to the Tissa area as it was promised and then supplies the water either to left or right-bank depending on the availability. If the water is supplied to the left bank, canals of right-bank are closed and same as for the supply of water to the right-bank. In some areas under the KOISP, sugar cane cultivation is prominent. In these cases, motors are operated throughout 24 hrs to obtain water illegally from the water channels. Even the reservation areas and riverbanks which are under the sugarcane cultivation could be observed in the area. Therefore the duty of water received form the Lunugamvehera reservoir is lower than it was predicted. Apparently, the duty of water in Lunugamvehera reservoir is not sufficient to irrigate the KOISP where 26,058 acres (10,550 hectares) of paddy lands and other field crops are cultivated.

The government policy direct towards the rehabilitation and improvement of irrigation schemes through cropping intensities (IIMI, 1995). It has been proved that the possibility of growing other field crops successfully in large potion of KOISP even during the low rainfall seasons (Weerakoon, 1993). The average cropping intensity of irrigation schemes in Sri Lanka has been estimated as 130%. Even though the KOISP is highly vulnerable for water deficit conditions, only 10% of the farmers have adopted both crop diversification and crop rotation, 20% have adopted only crop diversification and 10% have adopted only crop rotation as the remedial measures. The "Samurdhi Program" has constructed Agro-wells with 1.5 –3.5 meters in diameter and 3-6 meters in depth at different locations of the settlement to provide the farmers with water for their field crops. In addition to the traditional paddy cultivation, farmers in Koholankala are intensively cultivating their highland with wide range of field crops. As they have considerable extent of highlands, they are equally concerned about both paddy and field crops in order to secure their stable income flows. Crop diversification and crop rotation in upland cultivation are seen higher in Koholankala than in Lunugamvehera. According to the respondents, 36% of the farmers have adopted both crop diversification and crop rotation while 42% have adopted only crop diversification keeping their incomes comparatively at higher level. These conditions have paved the way for better condition in Koholankala, especially in relation to agriculture and economy, than in Lunugamvehera. Unlike in Lunugamvehera, home gardening is also popular in Koholankala.

It is noteworthy that 16% of the settlers in Lunugamvehera utilize only their family labor while a considerable number of families (24%) utilize only paid labor for their agricultural activities. As an attempt to reduce the cost of production and to cope with

diverse requirements, 32% of the families in Koholankala utilize only their family labor for the agricultural purposes. Only a very few families (8%) utilize only the paid labor for the purpose.

Occasionally the settlers in Lunugamvehera are engaged in rearing of buffaloes. Apart from paddy cultivation, few settlers have adopted upland crops such as banana, sugar cane, chilies, green-gram, cowpea, groundnut, maize, red-onion and vegetable. Indeed, the upland cultivation has become an appropriate solution for the deficiency of water for paddy cultivation. Considering the duty of water needed for one acre (0.40 hectares) to be cultivated, evidently, upland crop cultivation needs even less than half of the amount required by a paddy. Further, they are reluctant to cultivate field crops due to their failure to protect the crops while residing at a distance average of 1 km.

EMPLOYMENT OPPORTUNITIES

Almost all the people in both Lunugamvehera and Koholankala are farmers as their main source of income. Especially settlers in Lunugamvehera are farmers purposively selected for agricultural settlement. Hardly find any settlers who are engaged in other occupation except a very few (5%) as unskilled daily paid labors working in agriculture within the settlement. Though the people in Koholankala are engage in farming, 18% have some other employment opportunities as main occupations. Some of them are employed in the government and private sector as teachers, staff officers, clerks, mechanics etc. in the village and nearby urban centers. Others such as merchants, masons, carpenters etc. are working in the village and outside the village as well.

On the contrary, the villages in Lunugamvehera are strictly dependents on paddy cultivation. Therefore, as usual, when there is a shortage or lack of water, a crop failure is approached and consequently there appears a want in income. Indeed, it is very hard for them to find even labor works as the problem is common to a very large number of settlers. In most instances, the government has to provide them with aids and subsidies merely for their survival.

Throughout the generations, the villagers in Koholankala have upgraded their educational level and have exposed to the societies outside their village. Many better-off villagers usually send their children to the reputed schools in urban cities for the higher studies. Therefore, even though there are no enough employment opportunities available in the village, they have the opportunities to find employment in the else where particularly in the urban centers through the personal contacts. However, the settlers in Lunugamvehera are farmers and land-less labors selected from the poor families about 20 years ago. They have not yet being able to upgrade their educational level or skills to find employment other than farming. On the other hand, with the rapid increase of population, fragmentation of lands and worsening of land man ratio, a category of land-less labor are being gradually emerged within the settlement. Lack of agro-based industries or any vocational training programs within the settlement may further leads to the unrest particularly among the youth of the settlement.

INCOME AND INCOME DISTRIBUTIONS

Income levels of farmers and their families can also be taken into account in determining the socio-economic condition of the settlement scheme. Majority 56% of the farm families in Lunugamvehera settlement earn around Rs. 5,000 ~ 20,000; 20% earn less than Rs. 5,000 and only 24% of the settlers are able to earn more than Rs. 20,000 per annum. Most of the settlers (82%) are frustrated that their total incomes are equal or less than the total requirement for annual expenditure. On the other hand, 32% of the respondents are experiencing with fluctuating incomes, 42% are experiencing with decreasing incomes while only 26% are experiencing with increasing income through the successive years. As the settlers in Lunugamvehera are mainly depend on subsistence agriculture, they are not in a position to reinvest in their agriculture. Therefore, it is hard to see any improvement of their income levels through the successive years. Fragile farming systems dominating by paddy cultivation is highly dependent on the supply of water. Lack of water and problems of water management in the settlement directly affect not only the income but also the survival of a large number of settlers. Hence, the government very often has to bear a burden of providing the settlers in Lunugamvehera with drought relief subsidies.

Compared to the Lunugamvehera settlement, villagers in Koholankala have favorable incomes and also an equitable income distribution. According to the study, 78% of the farm families are earning more than Rs. 20,000 per annum. Under the rural setting, the total expenditures of 64% of the villagers are less than their total incomes. They have different sources of income from farming and non-farm occupations as well. Therefore, they are fewer dependents on agriculture to some extent and also less susceptible for the adverse farming conditions emerged through water management problems. Further, the adoption of diversified farming systems by farmers and availability of supporting services established for long period in Koholankala have attributed to the higher incomes and stable income flows. Moreover, 74% of the villagers in Koholankala are experiencing with increasing in incomes through success years. In response to the higher incomes and household savings, the farmers are intended to reinvest in their farming as a profitable enterprise.

EDUCATIONAL STATUS

As it was found during the study, people in Lunugamvehera is lower in educational level than those of Koholankala. The settlers selected for Lunugamvehera were mainly farmers and land-less labors who have invariably with low educational levels. Only 52% of the respondents have secondary education while 12% are illiterate. There are 20 primary schools and 5 secondary schools in Lunugamvehera project area. According Wanasinghe et. al, (1983), the literacy rate in the settlement has been increased from 85.5 percent in 1981 to 95.7 percent in 1994 also narrowing the gap of educational levels between male and female. However, the study revealed that 6.4% of their family member are still illiterate and 50% are school droppers from the primary level. Among the many reasons, poor family income, family labor requirement for agriculture and lack of family counseling to encourage the children to go to schools have become prominent. Low

facilities available at schools and the facilities being not in the standard for higher education as expected by the students is also discourage their higher education. As a solution, some of the children are attending the schools outside Lunugamvehera. Commonly, lack of employment opportunities in government or private sector at their vicinity has not created a favorable environment for the children to continue their studies.

Koholankala as an traditional village for centuries has developed social and economic status that encourage their younger generations to moves together with socio-economic advances of the country. Not only the 78% of the farmers, 88% of their family members are having high educational qualifications above the secondary level. The favorable income levels of the families have influenced the parents greatly to send their children for higher studies at reputed schools in nearby urban cities. The school children are not allowed to work in their farms during the school hours. Further, the educated parents in the village make effort and wish that their children become salary earners in government or private sector employment other than become a farmer.

HEALTH AND NUTRITIONAL CONDITIONS

The number of families earns income sufficient to secure their health and nutritional conditions are lower in Lunugamvehera than that of Koholankala. About 60% of the farm families responded in Koholankala earn income from agriculture and other occupations sufficient to provide nutrition requirements of their families. However the settlers in Lunugamvehera have no other alternative but agriculture which provide sufficient income only for 38% of the farm families to cater their nutritional requirements. It has been revealed that 14% of the families in Lunugamvehera are presently suffering from nutritional deficiencies. The government has launched a social welfare program to distribute "Three Posha" a nutritious food among those families with free of charge. It could be observed that the poor educational levels particularly of mothers have further aggravated the nutrient deficiencies among the children. Many mothers interrogated have no enough knowledge about the minimum nutritional requirement for their children.

There is no much difference regarding the health conditions in both Lunugamvehera and Koholankala. After commencement of the KOISP, 1 hospital and 2 dispensaries have been established to improve the health facilities of the settlers in Lunugamvehera settlement. They can easily reach the hospital within the distance of average 5-km. As there is no hospital, the villagers in Koholankala have to travel average of 10 km. to reach a hospital in Hambantota. Occasional outbreaks especially of malaria is experienced in 22% of the families in Lunugamvehera which is little more (18%) than that in Koholankala.

Evidently, in addition to the hospital many investments have been done by the government and non-government organizations to improve the health and sanitary facilities in Lunugamvehera. With the irrigation difficulties, lack of drinking water in the area also has become a severe problem face by the settlers. From the settlers 98% receive drinking water through pie-bone water supply schemes. The Water Resource Board together with World Vision Aid Program have constructed more than 200 tube wells to

provide potable water especially in Mattala, Ranawaranawa & in right bank areas. Poor quality of the water obtain from tube-wells are not utilized as potable water but utilized for other household purposes. The KOISP has constructed 37 dug wells and also supplied pipe-born water for selected areas to solve the problems related to drinking water. The settlers however, utilize the drinking water for other purposes particularly agriculture. Supply of drinking water is not being considered as a problem in Koholankala. As an equal source, 46% of the families obtain their drinking water from wells that are considered as uncontaminated and protected sources by the villagers.

Existing lavatory facilities which is an another key factor indicate the hygiene, is in poor condition in Lunugamvehera. Lavatory facilities mainly water-sealed toilets are available for 86 percent farm families in Koholankala. In Lunugamvehera, 44 percent of the settlers still use poorly constructed and unhygienic pit toilets, which required a little amount of water. Unhygienic lavatory facilities and poor quality drinking water supply are the main causal factors for epidemic of infectious diseases in the settlement.

INFRASTRUCTURE DEVELOPMENT

Post-harvesting problems such as fungal and insect pest damages are common in both Lunugamvehera and Koholankala. However the post harvest problems and marketing problems are prevailing in Lunugamvehera are much more severe and complicated than in Koholankala. Evidently, comparative low income from their agricultural products in Lunugamvehera is mainly caused by post harvest problems and marketing problems. The establishment of 25 co-operative shops and sales center (weekly fairs) by the KOISP emphasized the provision of marketing facilities for the products of the settlers. The study revealed that 48% of the respondents in Lunugamvehera face the problems related to the marketing of their products. On the other hand, almost all the farmers produce homogeneous products that are abundantly supply to the market during the harvesting season. Amount and frequency of supplying irrigation water in the settlement is the key determinant of the agricultural production. Therefore, the existing inefficient and poorly developed marketing structure with traditional marketing technologies has no sufficient capacity to absorb their products effectively. Further malpractices unfair transactions of the traders have also led to poor performances of the marketing system. In Koholankala, only 22% of the farmers face problems related to marketing of their products. Long-term experiences and diversity and stability of their product supply have developed market led production systems.

To minimize the risk and uncertainty in farming 32% of the farmers in Lunugamvehera have obtain crop insurance policy from the Crop Insurance Board. According to them, the main risk and uncertainty prevailing in the area is the amount and frequency of distribution of water throughout the settlement by the KOISP authorities. Additionally, 16% of the settlers have obtained input subsidies from government aid programs. The farmers in Koholankala are neither crop insurance holders nor the recipients of government aid programs. They invest their own resources in agriculture at own risk and uncertainty with the aim of promoting their agriculture.

Percentage of farmers obtains formal credit facilities for cultivation is negligible in Lunugamvehera. The reasons they pointed out were the difficulty in repaying, risk of low income in case of crop failure, low enthusiasm and unfamiliar circular procedures. In fact, the main reason for inability of obtaining loans is resulting of the negligence of repaying their previous formal loans. Even the farmers in Koholankala are reluctant to obtain formal credits because they consider it as an extra burden.

Condition of roads, bus service, communication facilities, electricity and conditions of houses, all are found to be at a lower level in Lunugamvehera compared to the respective of Koholankala. According to Wanasighe et. Al (1983), road network consisting homestead roads, feeder roads and linking roads have been constructed and improved in Lunugamvehera by the project. Presently, 96.3 percent of the households are accessible by a vehicle. Other infrastructure facilities such as transportation, electricity, communication etc. have yet to be developed in Lunugamvehera compared to Koholankala.

FARMER ORGANIZATIONS

The Kirindi Oya Management Committee comprised of 22 government officers and 30 farmer representatives selected from the settlement. Further, each Sub Project Committee (SPC) under the management committee is comprised of Distributory Canal (DC) organizations, farmer representatives and the government officers. Field canal organizations and farmers where the Field Canals (FC) that are nurtured by Distributory Canals (DC), are belonged to the sector which lies under Sub Project Committee (SPC).

When the water in the Lunugamvehera reservoir is at a low level, Distributory Canal (DC) is closed. From the distributory canals many Field Canals (FC) are fed. These field canals have been typically designed to discharge 28 liters of water per second (IIMI, 1994). As a result, it has been found that there are conveyance losses in distributing water through these field canals. Further the water distribution through the distributory canals is also not that satisfactory according to the farmers. Hence, the farmers have got use to obtain water from some other canals which leads to many quarrels among the settlers.

According to the respondents, 86% of the farmers in Lunugamvehera are members of the farmer organizations. However, they are not satisfied with the role that the organization is playing to perform its functions and responsibilities. Cultural and social disparities among the settles who came to the settlement form different locations often hinder their mutual understanding and the cooperation. Many landowners are not residing in the settlement. They mainly do farming through hired labor or the tenant farmers (De Zoysa, 1998). Although the farmer participation in the organizations is comparatively low (52%) in Koholankala, their strong cooperation could be observed. They are working together with mutual understanding to share water resources in faire manner as they have strong social obligations developed through generations.

Farmer organizations have not yet being developed to cater their supporting services such as marketing, credit, communication etc. both in settlement and the adjoining traditional village.

CONCLUTIONS

The socio-economic achievements of the Lunugamvehera settlement are far below compared to the achievements in the adjoining traditional village Koholankala.

Lack of sufficient water and poor water management policies have paved the way for almost all the socio-economic problems, which are encountered in the settlement.

The farmers in Koholankala, through their experiences over generations, have adopted farming systems and cropping patterns to cope with the prevailing conditions particularly the availability of water and agro-climatic environment. Further, their market led diversed production systems maximize their incomes from the agriculture.

In appropriate irrigation policies and inflexible attitudes of the settlers to adjust their cropping pattern suitable for the availability of water have resulted with uncertainty of production and poor income from their farming

Unlike in Koholankala, no opportunities have been developed in Lunugamvehera for other occupations other than farming. As the farming in occupation, the settlers have no skills or experiences for other occupations.

Low-income levels of the farm families that obtain from agriculture bound with water supply have paid poor attention by the settlers for the education, health and nutritional status of their families.

Social and cultural disparities and poor motivation of the settlers still prevent them taking collective decisions for sustainable resource management.

POLICY IMPLECATIONS

Attitudes and behaviors of the settlers have to be changed through multi-disciplinary extension and educational approach to adopt them farming systems with profitable cropping patterns compatible with the prevailing water availability and agro-climatic conditions.

Market driven production systems have to be established by encouraging the private sector involvement with efficient and faire marketing strategies.

The farmers have to be empowered through local institutional development to manage their own local resources particularly the water and land with environmental and social harmony.

Promotion of agro-based industries in the settlement may facilitate not only the value addition to their products but also the absorption of excess labor in farming, equitable distribution of income and prevent the land fragmentation due to the rapidly increase of the population.

Establishment of government sponsored social services and counseling program would play and immense role to educate and train the settlers and their families to upgrade their educational, hygienic and nutritional status.

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