

**ECONOMIC, SOCIAL, AND ENVIRONMENTAL
DETERMINANTS OF COLONISED POVERTY IN SRI LANKA:
EVIDENCE FROM HURULUWEWA AGRICULTURE
COLONISATION SCHEME IN ANURADHAPURA DISTRICT**

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1. INTRODUCTION

The centre of any development process is the human being, and their well-being is the ultimate goal of development. Rodgers (1995) noted that the pattern of development might have exclusion built into them. This has created a new debate in development literature – development and marginalisation or exclusion. Sen (2000), who made an influential contribution to the topic of social exclusion, explains marginalisation and deprivation as unintended results of the development process or policy decisions. By considering this exclusion of grassroots from the development process, the World Bank emphasised the need for attacking poverty by the world releasing its World Development Report in 2000 (World Bank 2000). Furthermore, the United Nations established to eradicate poverty and hunger, and no poverty as first goals of the Millennium Development Goals (MDGs) in 2000 and Sustainable Development Goals (SDGs) in 2015, respectively.

Even though Sri Lanka recently shifted to an upper-middle-income category, still, one-fourth of the population are the beneficiaries of the major poverty alleviation program – *Samurdhi* program. It indicates that the pattern of the country's development process has excluded a large fraction of the population or benefits have not trickled down to the grassroots. The development process or policy decisions have excluded different social layers, and among them, the farming community is recognised as a typically

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marginalised and vulnerable group, precisely due to the stagnation of these economies for several decades.

The modernisation or transformation of agriculture in the dry zone of Sri Lanka started since independence. It accelerated with the acceptance of the technological package of the *Green Revolution* to make rational the farming in changing economic, social, technological, environmental, cultural, and institutional settings. Agriculture in the dry zone of the country centred mainly on the large-scale irrigation settlement schemes – mostly referred to as *agriculture colonisation schemes*. According to records of the Department of Land Commissioner (2006), there are more than 110 agricultural colonisation schemes with over one million settled people. The aims of establishing the irrigation settlement schemes were to protect peasant farmers as a group, provide lands for land-hunger poor people, reduce the population pressure in the wet zone, develop scarcely populated dry zone, develop industries, promote exports, and increase the food production, particularly rice production, in the country (Farmer, 1957; Chandrasiri, 2010). Ultimately, it was expected to uplift the living standard of the people in the settlement schemes.

At present, the challenging issue in the agriculture colonisation schemes is the marginalisation or exclusion of the fraction of its population by the modernisation or transformation process. It implies that the process has not resulted to flow the benefits adequately to grow the farm household economies in the schemes like other agriculture regions. Conducting a political economy perspective analysis, Gunaruwan & Yasoda (2018) revealed that real income of paddy farmers (except the period between 1971 and 1977) has deteriorated even if the cost of production has not increased in real terms. It indicates the economic marginalisation of the paddy farming community in the country. The World Bank (2003) and Denning (2017) stated that the highest incidence of poverty is reported in the regions where agriculture is the households' main activity.

According to Tudawe (2010), one of the reasons for less effectiveness of poverty alleviation programmes in the country is non-differentiation of type of poverty. Notably, the state intervention in poverty alleviation has not adequately considered the various kinds of poverty, which requires different intervention mechanisms. Even though many studies report the high incidence of poverty in agriculture-based regions of the country, only a limited number of studies is available, which attempted to explore the nature and determinants of poverty in major agriculture settlement schemes. Thus, the key research question to be answered by this investigation is to why a part of settled families have become poor along with the agriculture transformation process even though all initial settlers were given an economically and socially equal position at the early stage of settlement.

In this backdrop, this study's primary objective is to explore the nature and determinants of colonised poverty in the agriculture settlement schemes in Sri Lanka to broaden the understanding of nature of poverty in agriculture colonisation schemes where economic and social transformation occurred for many decades. In this connection, the study will 1) identify the characteristics of poor in the agriculture colonisation schemes, 2) identify the economic, social, and environmental root causes of poverty in the agriculture colonisation schemes, and 3) explore the nature of root causes and evolution of poverty in the context of the agricultural colony to facilitating for the framework for action.

2. LITERATURE REVIEW

There is no unique, accepted definition of poverty due to its multidimensional nature. Sri Lanka, as a developing country, has implemented various kinds of poverty alleviation programmes since independence. The literature highlights different types of causes of poverty among the agrarian communities in the country.

By contemplating on the various trade policy reforms, Tilakaratna & Jayanetti (2005) attempted to analyse the impact of trade liberalisation on poverty and welfare of households by giving special attention to rice and potato sectors in Sri Lanka using both descriptive and analytical models. It revealed that the district level analysis had confirmed the welfare gains of trade liberalisation for all districts, except two major rice-producing districts – *Ampara* and *Polonnaruwa*. The study indicated mixed effects of the policy on the rural sector due to dependency on whether the households in the area/district are net producers or net consumers of rice. Reviewing the existing literature, Ranathunga (2016) revealed adverse effects of agricultural trade liberalisation on small-scale farmers in developing countries. However, the large-scale farmers, particularly in developed countries, would have a chance to obtain the positive gains of agriculture trade liberalisation. It means the policy reforms adversely influence rural producers. This literature evidence is consistent with the findings of Tilakaratna and Jayanetti (2005); they report fewer gains of trade reforms by the farmers in *Ampara* and *Polonnaruwa* districts, two leading rice-producing areas of the country. The study emphasised the need for country-specific or sector-specific studies to identify the effects on particular groups.

Rupasena et al. (2008) revealed that seasonal price variation of farmer produce at the retail market has declined during the post-liberalisation era and stability of paddy retail process has improved with economic liberalisation. The study emphasises the need for a policy focus on a supply management approach through storage at the farm level to minimise the seasonal price variation at the producer level. However, Prasanna and Ranathilake (2018) argued that the nature

of the paddy marketing structure primarily determines the farm-gate price of paddy, and noted the oligopsony nature of the marketing structure in the paddy sector. As a result, the retail price of rice does not closely reflect the farm-level marketing characteristics because of the increased role of middle-men in the paddy marketing channel.

Further, Gunaruwan & Yasoda (2018) confirmed deteriorating real value of the Guaranteed Price Scheme (GPS) over the decades indicating the declining economic status of paddy farmers in the country, specifically, farmers in main paddy producing areas. This declining trend of farm-gate price could be observed explicitly in the post-liberalisation period.

Lack of new technology adaptation by the small resource-poor farmers is also recognised as a cause of poverty among the farming communities. Mendola (2007) studied the relationship between agriculture technology adaptation and poverty reduction in rural Bangladesh and detected a positive impact of High Yielding Varieties (HYVs) on household well-being. Analysis of gain over different strata of farm size showed less gain of technology adoption to near-landless, which are insufficient to move out of poverty. The study emphasises the need for the inclusion of poverty dimensions into agriculture research priority settings.

By studying the determinants of adoption of improved seed varieties in Tanzania and Uganda, Kinuthia & Mabaya (2017) confirmed the potential of improved seed varieties in enhancing the welfare status of farmers rural households. Omilola (2009) explored the impact of new agricultural technology on poverty reduction in Nigeria, and confirmed the positive effects of technology adoption on income, particularly in irrigated farming systems. Specifically, poor in technology, adopters have shown better condition in a slight reduction of poverty headcount levels. However, the study emphasises the need for consolidating the technical improvement of farmers in Africa, such as increasing access to markets, education, and land.

After analysing the degree of farmers commercial orientation by using 897 poor dry zone farmers in Sri Lanka, Kodithuwakku & Hemachandra (2006) stated that farmers pay less attention to start cultivation on a specific time to gain marketing advantages. Prasanna (2018) revealed that the nature of the paddy marketing structure – oligopsony market structure – has opened the window for traders to grab the farmer produce at a low price at the harvesting time. This resulted in low earnings of paddy farmers in the dry zone of Sri Lanka.

In terms of irrigation management, Shantha & Hassan (2011) who conducted a study in the Mahaweli Irrigation Project, revealed a high incidence of poverty in tail end farmers compared to head end farmers. The study also revealed the over-utilisation of water by head end farmers as the main factor of income inequality. Examining the impacts of climate change on farmers in the

irrigated area in Trincomalee district, Sugirtharan et al. (2017) noted that climate change is the main cause of the poverty and low productivity level of farming. Prasanna (2018) emphasised that drought experienced by the North Central Province in 2013/14 had adversely affected in reducing farmer income at a significant level.

3. RESEARCH METHODOLOGY

3.1 Study area

The *Huruluwewa* Agriculture Colonization Scheme (HACS) was selected to generate evidence for this study due to the following reasons:

- 1) According to agriculture statistics, the HACS is one of the leading agriculture settlement schemes, established in the late 1950s in the North Central Province in Sri Lanka. The *Huruluwewa* reservoir was built by King Mahasen (275-301 AD). The tank was rehabilitated by the British period in 1934 and developed as an agricultural colony in the late 1950s (Loeve et al., 2003). Originally 3,800 families were settled, and 8,936 acres were distributed among the settlers for paddy and highland farming (Loeve et al., 2003).
- 2) Currently, the second and third generations of settled families are engaged in farming in the scheme. All farmer families were in the same economic and social conditions at the initial stage of the process because selecting colonisers for the scheme based on standard criteria such as landless youth and low income, and traditional villages in the area. The selected colonisers were given the equal size of land - 3 acres - *mud-land*, mainly for paddy farming, and 0.5 acres of upland with a built house. In addition, settlers in both banks were settled in the same year. Required social and agricultural organisation systems were also established in the scheme with necessary training.
- 3) Herath et al. (2013) reported that most dry zone farmers are close to the poverty line and are dependent on subsidies.

3.2 Research approach, sampling, and data collection in the field

This study attempts to explore the nature and determinants of colonised poverty in the agriculture colonisation schemes in Sri Lanka. Due to the evolutionary nature of the research subject, the study adopted a qualitative exploratory technique in gathering and analysing of field data. Thus, the study uses an inductive research approach.

In this connection, first, we defined the phenomenon to be studied, establishing the research questions to be answered by the survey. This was based on the extensive experience of the setting of the agriculture colonisation schemes in Sri Lanka. As this study was a part of a major research project funded by the Rajarata University of Sri Lanka, the researchers were well aware of the evolutionary nature of the issues prevailing in the agriculture colonisation schemes in Sri Lanka. Thus, depending on the field experience at different research stages, we noticed three scenarios of farm households' movements from their initial socioeconomic status – (A) households with improving socioeconomic status over time, (B) households with just maintaining their initial socioeconomic status over time, and (C) households with declining socioeconomic status over time.

Figure 1 illustrates the phenomenon's hypothetical explanation. Thus, we formulated the research question to be answered by this study as 'what are the root causes of moving fraction of settled farm households towards the below-the-poverty line, even when all were given equal conditions at the initial stage of settlement?'

Second, one case was analysed to determine whether the hypothesis was related to the particular case. Third, criteria were established to define the study population for sampling. In this connection, we defined the study population as the households who are the beneficiaries of the main poverty alleviation programme – *Samurdhi* programme. Of this study population, 40 typical cases in both left bank (D2 and D4)- and right bank (D2 and D4) of the HACS were selected for qualitative in-depth interviews. A well-trained graduate was employed in conducting qualitative interviews in the field, and each interview took place for 45 to 60 minutes. Interviews were recorded and transcribed. The interpretive thematic analytical approach was used for analysing the collected qualitative data.

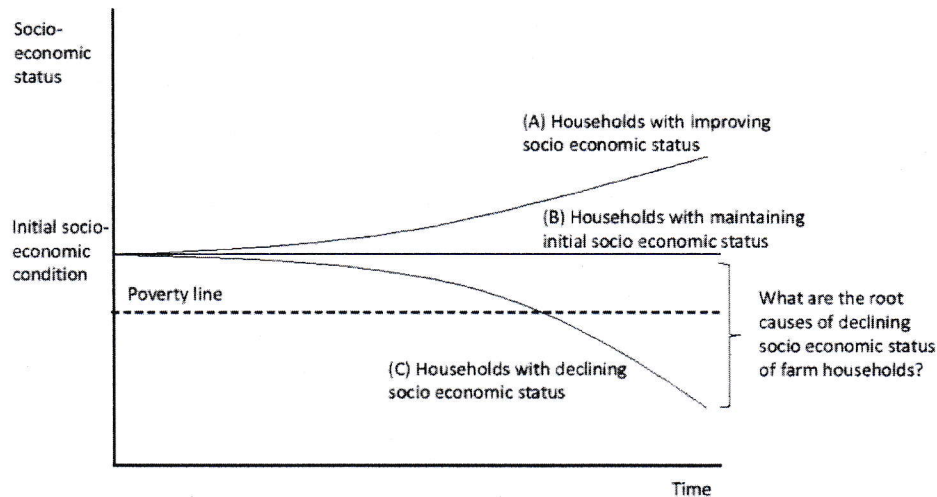


Figure 1: Hypothetical explanation of the phenomenon

4. RESULTS AND DISCUSSION

1.1 Descriptive statistics of the interviewed sample

The study held 40 in-depth discussions to recognise the nature and identify economic, social, and environmental determinants of the colonised poverty in the HACS. According to the socio-demographic profile of the selected households in the survey, all the chosen household members for the interview had more than 40 years of experience in the Colonisation Scheme including farming, and 24 (60%) of them were the second generation of the scheme. All of them (including parents of the second generation) have been settled with establishing similar socioeconomic conditions like other settled families who are above the poverty level in the scheme. Thus, selected families for the in-depth interviews are typical as they have rich experiences in the evolutionary nature of the problems (root causes) concerned by the study.

Table 1 provides a summary of classified root causes used in the thematic analysis in the study. It showed that agriculture marketing issue and land-related issue as a chronic problem which caused colonised poverty. Family issues in children's married life, conflicts on social and farming matters, drug usage, widowhood, child-out migration, and youths' less interest of continuing with agriculture are among the social determinants of poverty. Natural disasters and canal problems were noted as environmental determinants of colonized poverty.

Table 1: Summary of root causes of colonised poverty in the scheme

Root cause	Classification	Number of cases	Percentage
Economics	a. Agricultural marketing issues	12	35
	b. Land related issues	2	
Social and cultural	a. Issues in children's married life	4	47.5
	b. Conflicts	2	
	c. Drug addiction	3	
	d. Widow	1	
	e. Children out-migration	7	
	f. Less interest of young to continue with farming	2	
Environmental	a. Natural disasters	9	25
	b. Cannel problem	1	

1.2 Root Cause Analysis (RCA) on colonised poverty

4.2.1 Economic Causes

As presented in Table 1, 35% of poor farm households reported crop marketing and land-related issues as economic causes of their poverty in the scheme. The nature of the problems reveals inadequate consideration of prominent agricultural theories in addressing the problems in agriculture production and marketing. This is because of direct associations of these problems with the agricultural marketing system, extension network, and land ownership.

For instance, first, the nature of case 5 revealed the lag effect of agriculture production and commodity price movement, which explain largely in microeconomic theory – Cobb-web Theory. It explains that farmers receive better prices in some seasons. It is evident that this is mainly because of the supply shortage in the season. However, farmers predict that favourable marketing condition will continue, which contradicts the theory.

Therefore case 5 farm household attempts to obtain a loan to build a house based on the positive gain of marketing of existing season harvest. According to Cobb-wed theory, the aggregate supply of paddy will increase in next season, resulting in excess supply in the market, and thereby declining the market price. The story of case 5 revealed the failure of agriculture commodity supply management (mainly paddy) as the root cause of chronic poverty status of the agriculture colonisation schemes.

Case 5: 'In some seasons, we receive a better price. Then we attempt to build our house, even obtaining a loan as well. Then, next season we did not obtain a better price, making a loss in farming. Then we can't pay the bank loan. Likewise, if we did not receive a better price for several seasons, we cannot move out of low income. This is what we experience for several decades'.

Second, 12 case studies revealed the marketing-related issues, which is an unsolved problem for many decades in the scheme. Many studies have noted that the existing paddy marketing structure does not support to derive sufficient income to farm households even to cover the cost of production (Prasanna, 2018). These studies have noted the issues related to paddy marketing system as the core reason for low earnings of paddy farmers in the agriculture colonisation schemes. Particularly, the weakened financial status of farmers at the harvesting time and decision to start new cultivation season soon after the harvesting has resulted for releasing the farmer product to traders (largely middlemen) at a low price. Case 6, 16, and 23 revealed the nature of this problem.

Case 6: 'We are not receiving a better price for our produce. This is an unsolved issue for many years. Other commodities' prices are determined by the producer, but our product prices are determined by traders. So, middlemen take benefits from our produce'.

Case 16: 'We do paddy and Chena cultivation. We do farming since we were settled here. We grow corn at Chena, but expenditure is increasing season to season. Last season we bought a pack of corn seed for Rs. 6,200, but this time it was Rs. 7,500. This is same for prices of pesticides and herbicides. But traders do not increase the price of corn. Every season we sell it for Rs. 40 to Rs. 50 per kg'.

Case 23: 'Harvesting machinery that we use are from the outside this region. Thus, we have to pay rent selling our harvest, whatever the price, soon after harvesting. Thus, we are on the same level. Name of this machine is 'Bhuthaya', it is like a Bhuthaya because harvest also vanishes when it returned from the field. Hired workers earn more than us'.

Debt crisis among the poor farm households due to unsolved agriculture marketing problem for many years has been noted in 12 cases, representing 35% of sampled interviews. This is mainly due to the increasing cost of production in farming, pressurising economic environment of farm households to release its products at a low price at the harvesting period, and ineffectiveness of the agricultural commodity supply management strategies at the farm level. Case 1 and 24 provide typical evidence on this matter.

Case 1: *'This time too, we grew one acre of cucumber. If we receive a good price, it is good; if not, we will not be able to pay the debt'.*

Case 2: *'We fell into a very disastrous condition during last season cultivating pumpkin. We grew those by borrowing seeds, fertilizer, and other agrochemicals. Many times, we returned from Dambulla without selling our harvest. In some days, we didn't get income even to pay the transportation cost. We sold them at Rs. 5 to 6 per kg. We don't have an alternative income source. We do farming using our own money and borrowings from money lenders in the local settings. We are experiencing this pattern for many seasons. So how do we move out of poverty?'*

It also revealed less effective extension networks in field management. Specifically, coordination in providing field-level information such as suitable crops, appropriate periods to grow crops to gain marketing gains, and marketing-related information are lacking. This could be observed in all cases identified in economic-related causes. It has resulted in increased uncertainty in price and production among the farmers, aggravating these households' poverty situation.

Case 11 revealed the nature of land issues faced by the farm households and how it becomes a poverty cause in the scheme. The initial settlers in the scheme received 2.5 acres of mud-land and 0.5 acres of upland. At present, the second and third generations of initial settlers are engaged in farming and living in uplands. The state land was allocated for the agricultural colonisation schemes under the Land Development Ordinance (LDO) in 1935. The ordinance established regulatory provisions with limitations, preventing transfer, mortgage, sale, or sub-division of holdings.

The provision of minimum sub-division of holdings has resulted for informal land fragmentation in the scheme due to the pressure of second and third generations of the scheme. This informal land fragmentation has adversely affected farm productivity and resulted in less agricultural income. Thus, the increasing number of generations in the scheme has made pressure on existing land allocated for the settlers at the initial stage, leading for less income. The field observation revealed no adequate off-farm income opportunities for second and third generations of the schemes, which has further aggravated the poverty situation in the scheme.

Case 11: *'We were given a small land (one bushel) for paddy farming by our mother. It is not enough even for meals and daily expenses. So, we both went for Kulee weda (hired labour). My husband still does Kulee weda for survival'.*

4.2.2. Social and cultural causes

Social and cultural causes can influence in many ways on poverty in colonised schemes. As presented in Table 1, social and cultural related root causes were reported by the 47.5% of interviewed samples, which increase the severity of the poverty in colonised schemes. According to the study findings, issues in children's married life, drug addiction, widowhood, conflicts, children out-migration, and less interest of young to continue in farming are the various domains of socially and culturally constructed poverty in this region.

First, the poor visionary targets of children's family life were recognised as a cause of adding four families into the poverty group. All reported four cases on this matter reported that their children stayed with them after getting married, and without involving in any economic activity. They have created additional financial burden to these families, pushing them into poverty. The nature of these cases indicated the issues related to the planning stage of the colonisation schemes – specifically the livelihood opportunities for the second and third generation of the settler families given the context of limited land – and lack of institutional intervention in training the second and third generation in off-farm income-generating activities in the region or outside the area.

Case 1: 'Our eldest daughter got married arbitrarily without our permission. Then, she was less than 18 years. Now they are living at our home with her baby. The married children even do not have a job'.

Case 2: 'We spent a large amount of money for our elder son's education. But he did not do well. He is not doing any job and stays here with his wife'.

Second, respondents of the observed cases reported conflicts have adversely affected their family functioning. Especially, the correlation between conflicts and poverty has reduced economic growth and the productivity of households by adding physical functional restrictions for its family members. Their primary income-generating source has collapsed because of weakening physical power, and even engaging in agricultural activities has become a challenge. However, this study disclosed specific cases to realise the impact of conflicts on poverty.

Case 3: 'In 2008, there was a conflict, and the brother was hospitalised due to a firing. Though he got cured, he could not engage in agricultural activities'.

This statement highlights that extension networks are not suitably effective to empower people who do not have sufficient functional capacity to engage in agriculture, and also how they influence the poverty growth in this scheme.

Case 12: 'Because of the land issues, in 2008 he fought with his brothers. Thus, the court ordered to pay two lakhs for brother. Therefore, he had to pay two lakhs as compensation. He collected that amount by pawning one-and-a-half acres of his land'.

As the case 12 elucidated, internal family conflicts can be influenced by poverty in different ways. Particularly, a great majority of peasants come from low-income families. However, to generate money, people have to sell or pawn their lands, which eventually bring economic crisis towards the family.

Third, drug abuse is an overly complex individual behaviour with various implications to several areas such as family functions, individual functions, and employment status. The recognised cases of the study obviously emphasise that drug addiction has impacted on incapable financial maintenance and unsystematic maintaining the income source. Unfortunately, it confines savings and alternative income generations towards the family economic growth. Besides, spending a large amount of money to obtain daily dose ultimately cause to experience absolute poverty.

Case 12: 'With their works, we cannot develop. Every evening, he spends money on alcohol. In addition, there are fights with residents. I have to go to the police with children'.

Case 33: 'My husband often used alcohol those days. He did not like to engage in paddy cultivation. I worked in the paddy, and he used that money to take alcohol. In 2005, he quarrelled with me and committed suicide by taking poison'.

As a result of this abusive consumption, the study found that future succeeds, and investments are gradually declining from their lives, creating sociological constraints such as the culture of poverty (Oscar Lewis, 1966) in terms of improper money circulation within the domestic setting, unhealthy personal aspirations, psychological discomfort among family members, and demotivation to achieve development. However, long-term drug abuse has developed an economic burden, especially on women who play a significant role in the domestic sphere. As the study found, in terms of gender, females experienced social and cultural suffering due to drug addiction of male partners. Therefore, the division of labour within the family has been challenged in terms of generating financial resources to the family.

Conflict theory, introduced by Karl Marx (Jonathan H, Turner, 1975), can clarify this further. As the conflict theory claims, the economy is the most critical part of society that determines every aspect of human life. It could be either capital or material resources. His clarification of two classes (Capitalists and Working-class) often differentiate the division of labour in society. As a result, capitalists who own the means of production often oppress workers who sell

their labour. For instance, case 12 and case 33 explain their males are addicted to alcohol and thus, they have to go to police stations because of the conflicts. It says that peasants who are addicted to drug abuse have become victims of drug distributors' monopoly and the nature of exploitation among peasants. Therefore, these cases revealed that declining human investments and non-systematic individual drug consumption strengthen the evolution of the poverty chain.

Fourth, this study reflects a tangible picture of the widowhood concerning the poverty in the colonised scheme.

Case 7: 'Our son was born seven years after the marriage. But his father did not come to see us. Our parents helped us to survive. I went back to our colony house and stayed with our parents. I worked as a labourer and engaged in agricultural activities to survive'.

Case 7 reveals that most women householders are widowed and subjected to psychological crises. Loss of one spouse will bring difficulties to survive, and therefore, widowhood has created total or partial economic and physical dependency. Further, it highlights widows with different oppressions such as loneliness, life risks, number of children, being a breadwinner of the family, lack of regular income, and distress have major grievances of their life course. This study further identified that association of the widowhood and poverty might result due to early and later life deprivation because separation from the husband has impacted to alter the living location, income source, emotional well-being, and the marital status.

The social exclusion theory can be applied here to recognise how culture brings challenges to the widows by its nature. Mainly, as case 7 highlighted, respondent's self-perception of their economic vulnerability and the standards of living in terms of place, providing essential goods, and employment status reflect uncertainty throughout their life cycle. It emphasises a lack of social extension programmes to empower widows who do not have initial courage to become independent by being female householders. Hence, they are more vulnerable to be a marginalised and excluded group in society.

Fifth, it is essential to look at the out-migration of children and its influence on their poverty status. For example, many children migrations could be identified in this rural area result in socio-cultural effects. According to the study findings, many rural children belong to the lower-income group and frequently fluctuating under the circumstances in agriculture-related employment activities. Therefore, it is reasonable to realise that a great majority of migrant families do not have secured permanent income and thus, they use migration relatively as a survival strategy.

Case 20: 'Son and daughter went away after their marriages. I am living in this home with my husband's elder sister. She did not get married, and I am looking after her. Paddy was leasing, and through that, I am providing money for my medication and other expenses. Younger son will tell that he may come to settle here; but, not sure. He lives with his wife's family. Now, both of us live here'.

Case 25: 'I cannot do paddy cultivation now. I am sick. Paddy has leased now. We stay at this house until we die and then they can do whatever they like. This is my father's house. I built two new rooms as I can. Children come and go. They give money for medicine, but they do not like to stay here'.

Case 33: 'Daughters sometimes come to see me. Elder daughter has two children now. They do not like to settle here. I can stay here until my death'.

When considering the development, not only physical development but also psychological development is significant to discuss. Most grandparents have experienced emotional isolation every day, which may cause them poor mental health. Most parents feel an inferiority complex as a result of their children's migrations, which, brings emotional distress. Even though many programmes and policy implementations have attempted to develop physical or material well-being of the people, insufficient attention to building up the emotional well-being of the needy people is still not addressed by relevant authorities. Therefore, in terms of psychological well-being, a great majority of elders are suffering from emotional poverty though they have sufficient amount of money for their monthly expenses.

The centre-periphery model interprets the difference between central areas where the market forces determine the economy and have a high organic composition and the peripheral regions where the organic composition is low. The economy is determined by the non-market forces such as kinship and patron-client relations. As cases 20, 25, and 33 explain, children have no interest in permanently settling in this region. After their marriages, they have separated from native places and settled in different areas. Hence regional disparities highly impact on peasants' lives. Lack of accessibilities for human needs and lack of opportunities in the rural sector eventually result in internal migrations. Hence, the gap between the centre and periphery will upgrade gradually, which may help increase the rural level poverty ratio in terms of social, economic, and cultural domains.

Sixth, youth participation in agricultural activities has widespread advantages in social and economic development. However, this study emphasises that youth involvement in the agriculture industry is very low. Therefore, the future of the agricultural sector is in a dilemma for their parents, because unemployment of their children again brings additional economic hardships towards their families. However, social status, irrespective of income

differences, shortage of vocational or professional training, and the education system regarding agriculture has limited pathways for youth involvement in the livelihood sector.

Case 2: 'Though we have paddies, children do not like to engage in agriculture. Though it is difficult, both of us work alone'.

Case 7: 'This child is now 25 years old. He does not like to do any job, even paddy cultivation'.

As case 7 and case 2 explains, a great majority of young people show less interest in farming. Since young generations are reluctant to engage in agriculture, the sector would collapse after their parents. However, the lack of agricultural knowledge and long-term experience of profit declining are significant obstacles for youth. Especially, the need to have more manual labour, which takes more time to complete the cultivation, had become a significant challenge for young people. This has created unnecessary fear to start rice cultivation. Besides, frustration and hopelessness experienced by young generation due to market issues and land issues have negatively affected their agricultural perception.

The study found out that a lack of awareness about agriculture has created job insecurity and job uncertainty among youth. Because youngsters believe that engaging in the agricultural sector is wasting their time, and less motivation shows their discouragement to continue with farming. The younger generation's dependency mentality restricts them getting experience in the agricultural sector. Therefore, their families' economic status declines day-by-day. Also, the lack of technical skills in maintaining labour in the paddy field and insufficient entrepreneurial skills are some additional constraints faced by youth to perform in agriculture.

4.2.3. Environmental Determinants of Colonised Poverty

According to Table 1, 25% of poor households have testified that environmental issues are among the root causes of their poverty. Scarcity of water for cultivation, sandy soils in paddy fields, floods, and human-elephant conflict were among the main causes of environmental issues related to their poverty status.

Case 10: 'There was a seven-year drought when Mahaweli water was not supplied. It was somewhere in the 1960s. There was no source of income at that time. We all went for daily paid work. Then there was another three-year drought'.

These poor people fall below the poverty level due to recurrent droughts. Though the Mahaweli project provided water to the irrigation schemes, the drought hazard has not been sufficiently addressed.

Case 5 reveals, *'If one Kanna (Season) was successful, the next was unsuccessful due to lack of rainfall'*. This indicates that although the scheme is provided with irrigation water, the success of cultivation largely depends upon rainfall. Some cases report that the partial loss of yield was due to lack of rainfall (e.g., case 34). Case 15 directly expressed that *'income is lost due to reduced rainfall'*. Accordingly, the variability of rainfall and drought in the meaning of *'lack of expected rainfall'* is one of the major environmental root cause affecting colonised poverty.

The statement of Case 32, *'Water is provided early to people below (tail end). But it rains to everyone simultaneously'*. Irrigation management has decided to supply water to the tail end earlier than the other as the tail end suffers most. Due to construction failure in the scheme, the tail end at track 6 of the left bank (LB) canal receives a little water. Moreover, LB at the start is located three feet above the same of RB (Right Bank). The Farmers in the head end are not satisfied with this measure as they have another problem related to water scarcity. Case 26 expresses *'a new canal has been laid to drain spill water, and therefore, now the water supplied to the paddy fields quickly drains to the canal'*. The situation was further evident from several other cases. For example, as per Case 23, *'paddy fields are covered with sand. Water does not hold'*. This may lead to dry-out of fields before the next turn of water supply.

According to the information provided by several informants, the reason for soils to become sandy is the severe flood in 1957, which resulted in breaching the dam and washing away the fertile topsoil. All these statements are related to water. However, there are three main causes that triggered this water problem: 1) Construction failure, 2) Water management issue, and 3) Soil property of the paddy fields. Non-availability of appropriate long-term weather forecast also leads to crop failure. It was also reported by several respondents. Another environmental issue mentioned by respondents is the human-elephant conflict, which reduces yield, particularly, corn grown in highlands, which receive no compensation.

The major issue of availability of water as an environmental determinant of colonised poverty is directly related to recent climate change which resulted in increased occurrence and severity of the drought. This situation is aggravated by the inability to supply sufficient water by irrigation and water management failure, which overlooks crop failures. Accordingly, there are environmental causes creating poverty such as climate change, maintaining poverty such as loss of soil fertility, and aggravating poverty, such as crop failure, due to flood and human-elephant conflict.

Spatial variation of environmental conditions within the system aggravates poverty of people in a particular locality. For example, LB track 6, which is the tail end, is deprived of water supply due to construction failure. In addition to its

nature as the tail end, the last portion of the canal has not been laid as planned and drafted in the command area's Block out Plan. The canal in the field has a shortcut to the end though the plan shows a different layout. This ill-construction made settlers of the track 6 ever poor. They expect sufficient water supply during each season and get disappointed. The people have constructed many agro wells to make the maximum use of their lands. However, this construction failure is reflected in the poverty level in the tail end water users in the LB canal.

The capacity of Huruluwewa and the extent of the command area has been generally designed on the 75% probability amount of the area rainfall (Personal communication with CR Panabokke). This means 25 years out of 100 is expected to be under the water stress. This is one of the 'planned determinants' of colonised poverty. Further, the command area has been expanded during the last many years by more than 3,000 acres due to encroachments. The encroachers are mostly the second and third generations of the settlers. Colonisation schemes had no plan for the livelihood of next generations of the settlers and the management of development in the colonies later were unable to plan diversified livelihoods. The water scarcity, therefore, is both an environmental as well as a planning issue—these root causes are interlinked.

Many respondents noted issues related to soils. The widespread soil type of the scheme is Reddish Brown Earths (RBE). This is a well-drained soil whereas paddy cultivation requires waterlogged conditions as in Low-Humic Clay (LHG) soils. LHG is found scattered across the command area, especially in locations where command areas of small Wewa system existed from ancient times. These spots are the best locations for paddy cultivation. RBE is suitable for other field crops (OFC). During the Maha season, which receives heavy rains, it is possible to grow rice in the whole command. However, in the Yala season, with low rainfall, only those locations with LHG are suitable to grow rice.

It also revealed that water in the command area is contaminated with various chemicals derived from the agrochemicals used by farmers for growing hybrid and high-yielding rice varieties. The contaminated water appears to be one of the sources of severe health problems among farming communities. The root cause is the dependency on highbred non-native high input cost varieties. Transfer into management practices with low agrochemical inputs is to be suggested to reduce soil and water contamination and related present and future health problems.

5. CONCLUDING REMARKS

Marginalisation or exclusion of a part of the settled population could be viewed today in the agriculture colonisation schemes even though initial conditions of all were at the almost same level at the settlement stage. This has resulted in cultivating a new culture of poverty in the agriculture colonisation

schemes, where the process of economic and social transformation is experienced for many decades. This study recognised this new dimension of poverty as a '*colonised poverty*' which is an enduring issue in the agriculture colonisation schemes in Sri Lanka. With this emerged issue in the schemes, the key research question answered by the study was why part of settled families in the agriculture colonisation schemes become poor along with agriculture transformation process even though all early settlers were given an economically and socially equal status at the initial stage of the settlement. Thus, this study aimed to explore the nature and economic, social, and environmental determinants of colonised poverty in the agriculture colonisation schemes in Sri Lanka.

The '*colonised poverty*' is an outcome of the long-term process of social and economic transformation with the modernisation principles; this study employed the qualitative exploratory approach to explore the research subject.

The root causes (poverty-creating determinants) revealed that marginalisation has continued in the scheme due to the multi-fabric nature of reasons. It revealed the long-term failure in addressing agriculture commodity marketing issue, inefficient agriculture extension network, and land-related issues. Particularly, the LDO in 1935 has resulted in the diminishing nature of economic returns of farming in the area. Those factors can be recognised as poverty-creating factors in the colonisation schemes.

Inadequate acknowledgement of lag effects of agriculture production and commodity price fluctuations in the planning of crop systems in the scheme has resulted in constricting the marketing benefits of farming. Moreover, the oligopolistic nature of the rice marketing channel has provided a space for traders to grab the farmer products at a low price during the harvesting period when the farmers are in severe financial hardship. Modern machinery usage cost, particularly at the harvesting time, has aggravated the marketing issue in the system. It revealed that extension network intervention into crop planning in the system is at a minimal level and thereby farmers have continued with traditional crop system in the area. The specific provisions of the LDO in 1935 concerning sub-division of allocated land and male bias provisions in case of transferring the land from initial settlers to their children have resulted in informal land fragmentation in the area.

In case of social factors, issues in children's married life, drug addiction, widowhood, conflicts, children out-migration, and less interest of young to continue with farming were recognised as visible social determinants associated with poverty in the scheme. However, the study revealed the root causes through in-depth analysis. In case of married children staying with parents revealed poor visionary targets of children, issues of the planning in the settlement schemes, specifically, inadequate acknowledgement, in designing livelihood opportunities

in farm and off-farm sectors at the planning stage of settlements, and inadequate livelihood training opportunities for second and third generations of the scheme in off-farm sector. The case of drug addiction has resulted in unsystematic nature of financial management at the household level.

The specific finding of the study about widow cases reveals that they are subjected to a psychological crisis as the situation increase their dependency on economic and physical aspects. It indicates a need for a social extension programme to empower widows in the schemes. Children out-migration was noted as another dimension of the poverty in the scheme as it leads to emotional isolation of parents. The parents, in this case of poverty analysis, show that they are suffering from emotional poverty. It further revealed that children out-migration had influenced by the lack of knowledge in farming activities and the long-term experience of declining profit in farming.

As for environmental reasons, three root causes were identified: colonised poverty such as climate change, construction failure, and management failure. The suggested strategy is diversification of crops based on field soil qualities and shifts to crops with low water requirements. It would be possible to expand the cultivation of high-valued traditional rice varieties with an organic approach.

All these facts indicated that root causes of colonised poverty links with chronic issues in the schemes experiencing through decades and problems at the planning stage of the settlements. These facts can be recognised as poverty-creating determinants in the scheme. Poverty maintaining and aggravating determinants mostly link with non-acknowledgement of basic theoretical principles in agriculture in the crop planning and cultivation systems, lack of administrative focus on providing training and necessary skills to farming communities and their dependents, and inattention to socially and economically marginalised groups by the field authorities.

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