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Policy Research in the Area of Agricultural Land

RESEARCH CONSULTANTS

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AGRICULTURE SECTOR MODERNIZATION PROJECT

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Acronyms

AER	Agroecological Region
ALZ	Agricultural Land Zone
ARPA	Agricultural Research and Production Assistants
ASC	Agrarian Services Centers
ASMP	Agriculture Sector Modernization Project
CPA	Centre for Policy Alternatives
DLUPO	District Land Use Planning Officer
DSD	Divisional Secretariat Division
FAO	Food and Agriculture Organization
FSMP	Forestry Sector Master Plan of Sri Lanka
GND	Grama Niladhari Division
LCGD	Land Commissioner General Department
LDN TSP	Land Degradation Neutrality Target Setting Program
LDO	Land Development Ordinance
LRC	Land Reform Commission
LUPPD	Land Use Policy Planning Department
MOA	Memorandum of Agreement
MOPAM	Ministry of Public Administration and Management
NFP	National Focal Point
NPPD	National Physical Planning Department
OECD	Organization for Economic Co-operation and Development
OFC	Other Filed Crops
PMU	Program Management Unit
RPC	Regional plantation companies
SEAMEO	Southeast Asian Ministers of Education Organization
SGD	Survey General's Department
SLO	State Land Ordinance
SOC	Soil Organic Carbon
SPC	State Plantations Corporation
UNDP	United Nations Development Programme

EXECUTIVE SUMMARY

The objective of the consultancy is to carry out in-depth policy research in the area of agricultural land, to identify knowledge gaps, policy and regulatory inconsistencies in the area of agricultural lands to amend institutional and regulatory framework governing agricultural lands to improve agricultural productivity and thereby to make the agriculture sector more competitive, responsive to the market demand, sustainable and resilient. The approaches adopted included, Comprehensive survey of farmer households followed by stakeholder workshops; Spatial analysis of agricultural lands; Review of existing land policies of Sri Lanka and other countries, and Econometric analysis. The intended tasks as per the TOR have been accomplished. However, there was a limitation in identifying the lands that are not presently used for agriculture but have agricultural potential. The potential agricultural lands according to Agroecological Regions (AER) were categorized and maps were created for each AER to ensure detailed representation of land capability classes. The maps of lands under different government institutes were not available except the Mahaweli Authority and Department of Wildlife Conservation. Thus, this limitation of information is beyond the control of the consultancy team.

Many government institutions in Sri Lanka hold the responsibilities for managing state lands, and this leads to the duplication of work and waste of resources. The exact responsibilities and activities should be clearly stated as individual tasks, and these should be assigned specifically in a hierarchical manner starting from the relevant ministry to the DSD level. It is necessary to introduce a centralized computerized database management system in all the relevant government departments to minimize human errors, avoid duplication of work, and increase the efficiency of the workflow. Institutions must be equipped with the requisite hardware and technical knowhow to enable them to develop a sound land information system that would facilitate decision-making on land policy.

Land information should be public information to attract investments in agriculture. Right now, there is no such public portal or place, a potential investor could obtain information on, where and the extent of State land available for lease and rent. The land surveying and title registration process is also inefficient mainly due to the lack of capacity of the Survey General's Department.

The land markets in Sri Lanka are not functioning properly due to a weak land market information system, absence of secure titles, and asymmetric information flow. Land transactions are restricted in various ways by the Agrarian Development Act and the Land Development Ordinance. However, the land rental markets are operational, and rural agrarian households are more involved in rental transactions. The productivity of these transacted lands is high due to the efficient use of land, water, and labor by the cultivator who also possesses capital and uses advanced technology. Therefore the intervention of the state in regulating the rental market should be minimal while its role should be limited to acting as a facilitator and a provider of support services and infrastructure. The amendments to the relevant acts should ensure the legitimacy of these transactions.

Productivity of the land can be raised by increasing the land size. Larger land plots will facilitate the access of farm machinery to the land and this will eventually lead to an increase in the productivity of the land. Rather than granting several small plots of land to farmers, it would be advisable to grant them larger land plots. When granting the lands greater attention should be paid to the location of the land. Priority should be given to the agricultural lands that are located near settlement schemes. Attention should be paid to the infrastructure facilities such as the provision of access to irrigation water and roads.

Provision of land titles should be tied to stipulating the minimum extent of land to avoid undesirable fragmentation; such a measure will also stimulate the agricultural land markets. The countermeasures should be taken to avoid negative consequences when issuing freehold titles. The grants should be given only to the efficient producers after assessing their productivity and efficient usage of lands. This assessment helps to minimize the negative effects of granting lands to settlers

and landholders who do not use their lands efficiently, eventually leading to further fragmentation of land. In any case, a subdivision of an allotment should be constrained to a minimum of one-acre extent for lowlands and ¼ acre for highlands. As mentioned earlier, there should be measures to manage the negative social consequences of land titling such as giving loans to settlers who had mortgaged their lands to settle the previous mortgage commitments.

The arable state lands should be alienated based on the sustainability of the activities proposed by the enterprising farmers instead of just keeping them idle The leasing of large tracts of land to private firms can improve the productivity of the land through economies of scale while also enabling those firms to support peasant farmers by providing employment opportunities. Programs and support services should be offered to both small and big cultivators to enhance their capabilities to improve the productivity of the land.

Tenants should be protected from being marginalized, whether socially or politically. The policy must be formulated to enable the continuation of farming activities by tenants without any disruption or if that is not possible an alternative way of generating income should be arranged for them in case they become involved in lawsuits arising from their informal transactions.

The fragmentation of land should be discouraged by not allowing shared inheritance of land. The fragmentation of land by partitioning among the family members should be restricted by imposing a minimum land extent for the divided plots.

The rural youth may move away from farming and they may use these inherited lands for settlement purposes that lead to land fragmentation. It is advisable for the state to introduce and launch affordable housing schemes in the form of housing clusters or flats for the rural youth, who come from the lower strata of society. This will be a good solution for the numerous and diverse problems that arise between the state and the grantees during the land alienation process at the tail-ends. Therefore, it is important to create an attractive landscape for future generations so they can live without suffering the burden of having to spend a lifetime trying to solve

their housing problem. Stipulating a minimum lot size to avoid fragmentation of land into impracticably small sizes is also recommended.

Overall the agriculture land policy should be need-driven and more market-oriented while ensuring the rights of the poor. In order to address the challenges related to agricultural land use in Sri Lanka, a holistic approach is needed while enhancing institutional efficiency and reducing transaction costs.

PREFACE

The World Bank granted a Credit from the IDA to achieve required modernizations through differentiated strategies by establishing the Agriculture Sector Modernization Project (ASMP). The Project Management Unit of the Ministry of Agriculture oversees the following sub-components of the ASMP project. The sub-components under MOA/PMU are Farmer Training and Capacity Building, Modern Agriculture Technology parks, Production and Market Infrastructure, and Analytical and Policy Advisory Support. In achieving Analytical and Policy Advisory Support, policy researches were devised on key important areas related to local agriculture. One of them is policy research in the area of agricultural land in Sri Lanka.

(a) Objectives of the Consultancy

To carry out in-depth policy research in the area of agricultural land, to identify knowledge gaps, policy and regulatory inconsistencies in the area of agricultural lands to amend institutional and regulatory framework governing agricultural lands to improve agricultural productivity and thereby to make the agriculture sector more competitive, responsive to the market demand, sustainable and resilient.

(b) Scope of the Consultancy

Policy research in the area of agricultural land should cover a quantitative analysis of the relationship between land and farm productivity vs fragmentation and property rights to land, and an assessment of effects of various land regulations and policies on land use pattern using a multi-sector equilibrium model. The research should be completed within one year (12 calendar months) and recommendations should be made on policy reforms, new policy formulations, or strategies to address the identified issues. Findings/progress of the research should be presented at the Annual Policy Conference that will be organized by the ASMP by end of the project.

(c) Tasks of the Assignment

Subject to any specific directives given by the Steering Committee, Project Director, and the relevant Specialists, the service provider shall: Assess the government lands suitable for agricultural purposes, available under different authorities (e.g.; Land Reclamation Commission, Forest Department, Dept. of Wildlife Conservation, Mahaweli Authority of Sri Lanka, Ministry of Plantation Industries, etc.) and classify them according to the Soil Map of Sri Lanka and the geographical regions; Classify farm households of the country by geographical regions and by crops; Compare and contrast the land policies adopted by the neighboring countries to identify success stories; Conduct a detailed analysis of the existing land tenure system in Sri Lanka highlighting land leasing system, property rights of farm households, and accessibility of private sector to agricultural lands with a comprehensive description of the current regulatory system and formal and informal institutions governing de-juror and de-facto property rights to agricultural lands; Conduct a critical review of all Policies/Regulations related to agricultural lands and make suggestions /recommendations for necessary amendments or proposals of new Policies; Assess the impact of key policy changes on agricultural land use and land productivity using econometric and simulation models; Provide a list of suggestions /recommendations for necessary amendments or propose new policies paying special attention to policy instruments that the Government could use to implement the proposed policy changes to improve agriculture sector competitiveness & sustainability, and the implementing authorities (Relevant Ministries, Departments or other Organization) and the procedure to be followed, to make policy changes/policy formulation a reality; Compile the details of ongoing projects by other organizations on agricultural lands eg: Land Degradation project by UNDP, land titling project (*Bim-Saviya*); and Present the results/progress of the research at the policy conference, which is to be organized by the ASMP at the end of 2018.

(d) About the Consultant

The University of Peradeniya is the first university in Sri Lanka, which was established in 1942. The Faculty of Agriculture is one of the first Faculties to be

established. The Faculty of Agriculture at the University of Peradeniya is the first agriculture faculty in Sri Lanka. Being the pioneers in the field of study, the Faculty has championed teaching and research in the agriculture field ever since.

The consultant organization, Department of Agricultural Economics and Business Management is one of the two social science departments of the Faculty of Agriculture of the University of Peradeniya. (The other is a department of Agricultural Extension). At present, there are 10 permanent academic staff members of the Department specialized in Economics/Agricultural Economics/Business Management with Ph.D. degrees in the area of Economics, Agricultural Economics, and Business Management. The project is administered by the Agribusiness Centre which is the outreach arm of the Faculty of Agriculture of the University of Peradeniya established in 1998.

(e) Organization and Staffing

The project team consisted of five key experts including the team leader. The team leader is an Agricultural and Resource Economist cum Econometrician. The other key experts comprise an agricultural economist, an agricultural scientist, a land-use expert, and a sociologist. Three agricultural economists with PhDs served as non-key experts.

(f) Organization of the Report

Section 1 gives a brief overview of land-related matters in Sri Lanka. It summarizes the present issues of land and the project goals. Section 2 consists of the methods of the project organized by each task identified in the ToR. Section 3 discusses the results of each task and based on the results, recommendations and suggestions are given to new policy formulation or the development or amendment of existing policy.

1. Introduction

Sri Lanka is the 25th largest island in the world with a total area of 65,268 km^2 where 62,707 km^2 covered by the land and 2,905 km^2 covered by water. The coastline is 1340 km long and dozens of offshore islands account for the remaining 342 km^2 area. Arable lands in Sri Lanka cover 2.75 million hectares with 0.063 ha per person. The extent of arable lands accounts for 22.17% of the total land (FAO, 2018).

In terms of agricultural land usage, agricultural lands hold 2.81 million hectares, forest covers account for 2.13 million hectares and croplands cover 2.37 million hectares (FAO, 2018). The detailed usage of land in agriculture is indicated in Table 1-1.

Table 1-1: Land use in 2018

Land use		Extent (ha)	Percentage (%)
1.	Nonagricultural lands		
	Built up Areas	85,094	1.3
2.	Home Garden	1,192,925	18.18
3.	Plantation crops		
	a Tea	228,118	3.48
	b Abandoned Tea	5,855	0.09
	c Rubber	186,334	2.84
	d Abandoned Rubber	2,359	0.04
	e Coconut	208,368	3.18
4.	Paddy	983,550	14.99
5.	Abandoned paddy	40,356	0.62
6.	Palmyra	15,833	0.24
7.	Oil palm	8,781	0.13
8.	Cinnamon	21,015	0.32
9.	Other Feld Crops	57,041	0.87
10.	Mixed tree and Other perennials	82,228	1.25
11.	Sparsely used Croplands/Chena	307,311	4.68
12.	Forestlands		
	a Forests	1,848,548	28.17
	b Forest Plantations	68,103	1.04
	c Scrubs	599,787	9.14
13.	Water Bodies	374,553	5.71
14.	Other (Marsh, mangroves & Streams etc.)	85,442	1.30
15.	Balance Area*	159,399	2.43
	Total	6,561,000	100.00

**Note: (Rocky area, sandy area, Unutilized lands & Bare lands, etc.)*
Source: Land Use and Policy planning Department and Ministry of Lands and Land Development

1.1 Extent and Size of Agricultural Lands in Sri Lanka

By 1946, the total extent of agricultural lands in Sri Lanka was 1.73 million ha and the per capita agricultural land was 3.85 persons per ha. The total extent of agricultural lands increased to 1.89 million ha in 1962 and the per capita agricultural land became 5.54 persons per ha illustrating an increase in population per unit of agricultural land (Census of Agriculture, 1962). Figure 1.1 shows how the extent of agricultural lands changed during 1961-2016 period. Agricultural lands as a fraction of total extent of lands in the country which amounts to 6,27 million ha changed from 37.2% in 1970 to 43.7% in 2016 (World Development Indicators, 2020). Even though land area under agriculture has increased, the size of a holding has decreased over time as shown in Tables 1.2 and 1.3. The number of agricultural holdings of less than 50 acres (20.23 ha) has increased several folds since 1962 (Table 1.2).

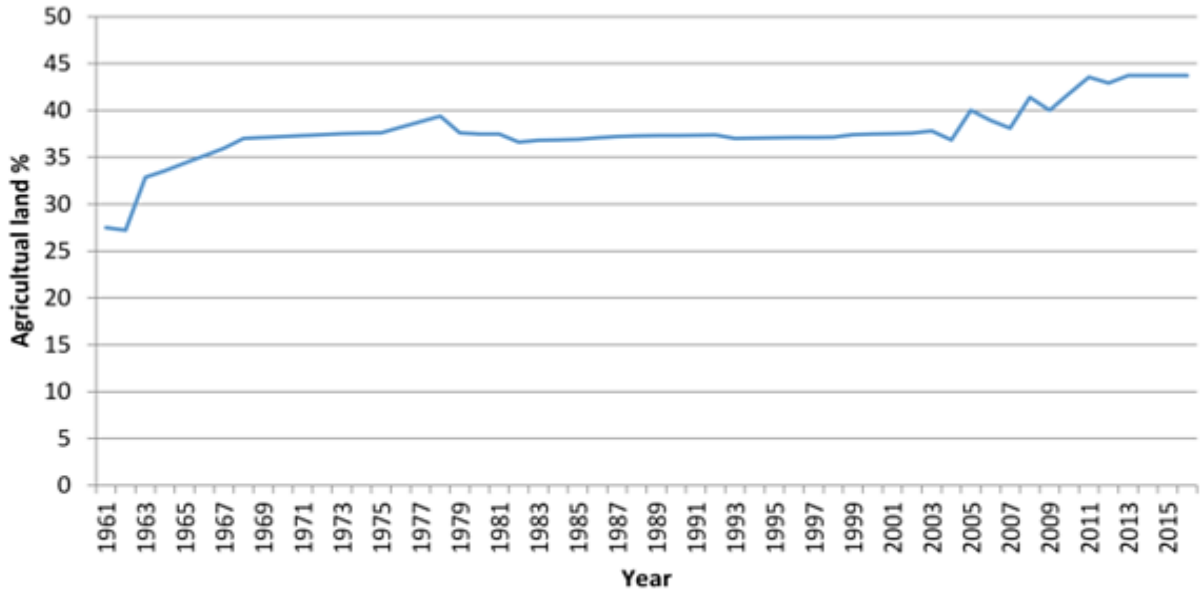

Figure 1-1: Agricultural Lands as a percentage of land area (Source: World Development Indicators (Downloaded on March 18, 2020)

Table 1-2: Number and area of total agriculture land holdings

Year	Number of holdings	Extent (ha)	Average extent pe holding (calculated) (ha)	Source
1982	1,800,000	1,973,652	1.10	Economic Census (2013/2014)
2002	3,253,000	1,941,277	0.59	Economic Census (2013/2014)
2014	4,353,000	2,283,641	0.52	Economic Census (2013/2014)

Table 1-3: Number and area of agriculture land holdings below 50 acres (20.23 ha)

Year	Number of holdings	Extent (ha)	Average extent per holding (ha)	Source
1946	849,527	1,140,387	1.34	Agriculture Census (1962)
1962	1,168,214	1,265,040	1.08	Agriculture Census (1962)
2002	3,211,245	1,556,444	0.49	Economic Census (2013/2014)
2014	4,294,767	1879472	0.44	Economic Census (2013/2014)

According to the Agricultural Household Survey conducted in 2016/2017 by the Department of Census and Statistics, there are 2.1 million farm households. The average household size is 3.8 persons making the total farming population of 8.1 million. Of this population, 36.1% are agriculture operators, 26% are contributing to agricultural activities and 37.9% are not contributing to agricultural activities as far as people above 15 years old are concerned.

Land is one of the most important resources of a country as its use shapes a country's socio-economic and ecological environments. Land administration is vital to the efficiency and effective use of lands. In this context, land administrative arrangements in Sri Lanka are elaborate with many Laws and Acts governing different facets of land administration viz, land settlements, ownership, consolidation, alienation, acquisition and land tenure and use intertwined with traditions and cultures. According to ownership, land in Sri Lanka could be classified as State lands and private lands. Even though debatable a popular claim is that state owned land comprises about 80% of the land in the country.

Smallholdings that have the extent of land less than two acres comprise 90% of holdings and two-thirds of the total cultivated land in Sri Lanka. Co-ownership of land is common in irrigation settlements where State lands were alienated under settlement schemes. Further, it follows a restricted tenure system introduced in an attempt to maintain viable farm units without subdivision. However, this leads to inefficiency in land use. Two-thirds of the privately owned land is farmed by owner cultivators themselves. About 27% of farmers in Sri Lanka are landless and for those who own land, 42.4% own less than 0.4 ha (FAO, 2018). A decrease in land size by 45-60% over 30 years after establishing land settlements has been observed in Sri Lanka (Mapa et al, 2002; Wickramaarachchi, and Weerahewa, 2018). Such

smallholders as separate economic and decision-making entities have difficulties in engaging meaningfully in commercial agriculture owing to their poor access to capital, technology, value chains, and markets and inability to exploit economies of scale.

In the absence of land zoning agricultural lands are fast being converted to residential, commercial, or industrial uses. Malfunctioning land markets and weaknesses in the regulatory framework that led to non-viable holding sizes have negative implications on agricultural productivity. Moreover, a large number of Policies, Acts, and Laws regulate land management under several institutes which leads to poor coordination among the institutes in the implementation and regulation activities. One famous belief is about land ownership in Sri Lanka is that most of the land is owned by the State. It is important to investigate this claim. It is often alluded to as the main drawback for productive investments in lands in Sri Lanka. Before commenting on the presence or absence of this causality, it is important to delve into this claim of State ownership of land.

Land degradation has arisen as a serious issue in Sri Lanka in recent decades. The agriculture sector lost its potential productivity due to land degradation where soil fertility issues lead to unproductive and limited use of lands in the Dry Zone. A significant percentage of lands was categorized under severe erodible conditions and both of these categories are not suitable for any land use in terms of sustainable productivity.

Land encroachment is another main issue highlighted in the literature. However, it is not a new phenomenon as it was experienced from the British colonial era. For example, according to the survey carried out in 1979 around six percent of State land was under encroachment of various forms. Settlement schemes, irrigation facilities, and other economic issues attract the encroachers to State lands.

When regulations are not conducive for land consolidation, fragmentation is unavoidable with the growth of rural populations. Smallholdings are generally not economical for commercial cultivation of crops and hence the degree of fragmentation influence the choice of crops cultivated by farmers. Fragmented lands

are detrimental to conservation and subjected to degradation constraining agricultural development.

In Sri Lanka, a land floor was imposed to prohibit the disposal of a portion of State alienated land, which is less in extent than the prescribed minimum unit of the subdivision. However, it is not uncommon to observe that land is informally divided among children. Even though the land transactions are controlled by several policies, illegal transactions continue to happen. The most popular informal transaction methods are leasing on fixed produce (vee Badu), leasing on cash, and mortgaging. The other methods are purchasing without legal documents, fragmenting, and jointly managing. The common reasons for informal land transactions are the shortage of family labor for cultivating the land and the difficulty of cultivating because legally entrusted parties living far away from the land. It may be the choice of the sector to invest in, the crops to cultivate, or to leave the land fallow which ultimately has implications on the sustainable management of lands. For agricultural lands, the type of crop grown will determine the food security of the country, foreign exchange earnings, and living standards of people and hence overall economic development of the country.

Government regulations governing lands, among other things, largely determine the land use pattern of any country either directly or indirectly. Such regulations could be in the form of Acts, Ordinances, and Laws and Policies. Acts are a proposal to make a new law is produced by the legislature in terms of a Bill. Once the Bill has been passed by the legislature, it is sent to the President for approval. By receiving his assent, it becomes an Act. An Act is a law that is made by the legislature like Parliament or State Legislative Assembly. Laws are imposed at times when the legislature is not in session and there is a need to make legislation (Act) in an emergency. In such cases, the government refers a proposal to the President, and if they approve of them, it becomes a Law. It can be seen as a temporary Law till its expiry or till it is repealed or it is approved by the legislature. Legally, a Law is the equivalent of an Act; but is not passed by the legislature. The Ordinances are similar to Acts where these are implemented during the British Era. Public policy is a set of decisions by governments and other political actors to influence, change, or frame a

problem or issue that has been recognized in the political realm by policymakers and/or the wider public.

Sri Lanka has a long history of land policy, which has been subjected to systematic analysis and several amendments. Some regulations impose direct restrictions on the use of a particular land while some others indirectly influence the use by altering the incentives. However, these policies or amendments have not adequately addressed land-use pattern changes which threaten the sustainability and economics of agriculture. Not only that these policies have not adequately addressed the problem, but also, they have created a different set of issues that were not there before reforms (Gunawardhana, 1981). Among many, conflicts between State-led-policy instruments and market-led-changes occurring in the rural area which works against policy interests, inefficient implementation of policies, absence or inadequate supportive infrastructure for better realization of policy outcome is major reasons for failures (Samarathunga and Marawila, 2006; Herath, 2006, Perera, 2010). It is therefore timely to discuss the ways, existing land policies and land instruments can be amended or introduce new policies/ instruments to achieve high agricultural productivity. In this regard, this study was conducted to achieve the following objectives related to agricultural land issues in Sri Lanka.

1.2 Objectives

The following are the objectives of the agricultural land policy research undertaken by this project.

- To assess the government lands suitable for agricultural purposes, available under different authorities and classify them according to the soil map of Sri Lanka and the geographical regions.
- To classify farm households of the country by geographical regions and by crops
- To compare and contrast the land policies adopted by the neighboring countries to identify success stories

- To conduct a detailed analysis of the existing land tenure system in Sri Lanka highlighting land leasing system, property rights of farm households, and accessibility of private sector to agricultural lands with a comprehensive description on the current regulatory system and formal and informal institutions governing de-juror and de-facto property rights to agricultural lands.

- To compile the details of ongoing projects by other organizations on agricultural lands

- To conduct a critical review of all policies/regulations related to agricultural lands

- To assess the impact of key policy changes on agricultural land use and land productivity using econometric and simulation models.

- To provide a list of suggestions /recommendations for necessary amendments or propose new policies paying special attention to policy instruments that the government could use to implement the proposed policy changes to improve agriculture sector competitiveness and sustainability, and the implementing authorities and the procedure to be followed, to make policy changes/policy formulation a reality.

2. Methodology

2.1 Introduction

This section presents a group of techniques and methods employed in this study for sampling, data collection, and data analysis. Each subsection of this section explains the methodology used to attain the results for the specific objective.

2.2 Method for Assessing and Classifying the Government Lands Suitable for Agricultural Purposes

This task was completed through spatial analysis of soil information and climatic information and assessing the lands that are not presently used for agriculture but having an agricultural potential. The land use/land cover map developed by the Land Use Policy Planning Department (LUPPD), Sri Lanka was used to identify the distribution of scrub lands and under-utilized lands and those were considered as agriculturally potential lands. It should be noted that the team did not consider the forest lands agriculturally for their agricultural suitability considering the importance of maintaining the forest cover of Sri Lanka. Maps showing boundaries of government lands is not available except the land areas belong to Wildlife Department and Mahaweli Authority. This was the main obstacle faced by the team in accomplishing the task. Having mentioned that, scrub and underutilized lands were assessed their agricultural suitability by considering the distribution of soil series obtained from the Soil series map of Sri Lanka. Further, the distribution of agroecological regions were considered to identify climatic suitability and identify suitable crops. GIS tools were used for spatial analysis. The team suggest the verification of the ownership of these lands.

Land capability classes represent the degree of the natural fertility of soils for crop cultivation. Six land capability classes were identified as Class I: Excellent, Class II: Very suitable, Class III: Suitable, Class IV: Moderately suitable, Class V: Slightly suitable Class VI: Unsuitable.

When moving from class I to class VI, the level of management intervention is increased. For example, lands belonging to class 1 do not require soil improvements to use for crop cultivation, and lands belonging to class II require little management intervention such as marginal increase of soil organic matter content to improve the soil before crop cultivation is practiced. However, none of the lands (scrub or under-utilized lands) were found under the class I (excellent capability) category. In modernization work, choice of lands for crop cultivation needs to be followed in the same order, i.e., priority should be given to use lands belong to class II than the class III.

Soil characteristics namely, soil profile development, soil texture, soil depth, drainage, base saturation, and the development stage of the A horizon were considered and a rating system was adapted to identify land capability classes. Using this information, land capability classes for annual and perennial crops were identified. The database of soil profiles of soil series was prepared and then used to extract soil information needed for the land capability classes. (Detail information on calculation of land capability classes are provided in Annex 1 – Annex 7).

Agriculturally potential lands were categorized according to Agroecological Region (AER) and maps were created for each AER to ensure detailed representation of land capability classes. Moreover, the team used the CropRec crop selection tool (http://nrmc.lk/NRMC/) developed by the Natural Resource Management Centre to choose the most suitable crops for each AER. Please note that these maps were developed using GIS tools and the team is ready to provide digital copies of these maps upon request.

2.3 Method for Classifying Agricultural Households

A household is considered to be an agricultural household when at least one member of the household is operating a holding (farming household) or when the household head, reference person, or main income earner is economically active in agriculture (OECD, a glossary of statistical terms). Farm household slightly differs from the definition of agricultural households in that, farm household means one or

more persons sharing a single residence on a farm where the primary occupation of the household is the operation of the farm premises. It is difficult to get information about farm households in Sri Lanka as the Department of Census and Statistics of Agriculture uses agricultural households for classifications. Further, it can be argued that the concept of a farm household is less prevent in Sri Lanka due to smallholding sizes and land fragmentation. Therefore, for classifying the households based on crops and geographical region, agricultural households are considered.

In this context, agricultural households were classified based on the farming system they belong to. Secondary data from existing literature and expert opinion were pursued to identify the farming systems present in Sri Lanka.

2.4 Method for Reviewing Land Policies Adopted by the Neighboring Countries

Desk research was employed through reviewing secondary data and existing literature to compare the policies adopted by the neighboring countries to capture the successful land policies and regulations implemented by them.

2.5 Method for Assessing the Land Tenure System in Sri Lanka

Desk research was conducted through reviewing secondary data and existing literature to conduct a detailed analysis of the existing land tenure system in Sri Lanka by highlighting land leasing system, property rights of farm households, and accessibility of private sector to agricultural lands with a comprehensive description on the current regulatory system and formal and informal institutions governing de-juror and de-facto property rights to agricultural lands.

2.6 Method for Compiling the Ongoing Projects on Agricultural Lands

Compiling the details of ongoing projects by other organizations on agricultural lands for example land degradation project by UNDP and Bim Saviya was completed by extracting information from documentary research.

2.7 Method for Reviewing Existing Policies/Regulations Related to Agricultural Lands

Out of the many Policies, Acts, and Laws which governs agricultural lands in Sri Lanka, important policies are selected via content analysis based on their agriculture-related content and land-related content such as ownership, transfer, and sale. The latest amendments of Acts/Laws were chosen for the analysis. Acts were analyzed on, adverse effects for the development of the agricultural sector and duplicity and complexity. The content analysis was done with Nvivo software wherein in the initial stage all land-related Acts and Laws were selected and coded for agriculture, land ownership, land sales, and land transfer (Refer Table 3-47 for Acts/Laws considered in the analysis). The Acts/Laws which had more than 10% agricultural content were selected and classified as high agricultural content, medium agricultural content, and agricultural content. The non-overlapping content of codes was ensured by Pearson correlation, Jaccard's index, and Sorensen's Correlation value. The frequency of each code was analyzed for each Law and Act with the category related to agricultural content. The relationship between Acts/Laws was analyzed by word similarity and code similarity through Pearson correlation, Jaccard's index, and Sorensen's Correlation value. The Acts/Laws which have the highest amount of content related to all codes and come under the highest content of agriculture category were chosen and the selected Acts/Laws were reviewed by consulting land-related stakeholder institutes and literature. The loopholes and inefficiencies in the Acts/Laws were critiqued taking court cases as examples.

2.8 Method for Assessing the Impact of Key Land-Related Policy Changes

To measure the impact of a policy change, a policy has to be in effect for some time. Further, there should be with policy and without policy scenarios with data available for both scenarios. To compare the two scenarios to discern the policy impact everything else except the policy change should be the same or has been affecting the subject same way under both scenarios. Since the Policies/Acts/Laws are erected nationally, a location which can be used as a control is not available. Though less ideal, another way to study the impact of an Act/Law is to compare the outcome before and after implementing it. Identification of policy effect using secondary data

is econometrically challenging as there are many policies erected within short term intervals. Further, the real outcome is masked by weather conditions that prevail in a particular year.

We studied the paddy sector to identify the impact of important policies on agricultural productivity as it is the most important agricultural crop in Sri Lanka in terms of resource allocation and as it is the staple food crop. Another reason is that, secondary data are mostly available for the paddy sector and there are important policy changes that concerned the paddy lands.

The above objective was tried to achieve using primary and secondary data. Two primary surveys were carried out for the Agricultural Research and Production Assistants (ARPA) and Farmers. The questionnaires were designed for the primary data collection and translated into Sinhalese (Annexure 8 and 10) and Tamil (Annexure 9 and 11).

In the ARPA survey, perception of APRAs on changes brought about by the Acts/Laws assessed. In a cross-sectional survey, policy effect cannot be assessed when the policies concerned are implemented nationally. Therefore, it was assumed that certain policy changes would affect the effort exerted by farmers for farming activities and thereby affect the productivity. Since effort is difficult to measure, some proxy variables are used. Thus, the effect of policies on paddy productivity was estimated econometrically.

2.8.1Sampling Framework and Data Collection from Agricultural Research and Production Assistants (ARPA) and Farmer Surveys

In selecting the sample, attention was paid to cover all Agroclimatic regions of the country. Therefore, districts that represent two or more Agroclimatic regions were selected to achieve greater coverage for the sample as indicated in Table 2-1. Jaffna district was also purposively selected to represent the Northern part of the country. Therefore, seven districts were identified to conduct the primary survey for both farmers and ARPAs. The below table depicts the district selection strategy and the selected samples.

Table 2-1: Identification of Districts

District	Dry Zone	Intermediate Zone	Wet Zone	Included in the Sample
Ampara	X	X		No
Anuradhapura	X	X		**Yes**
Badulla	X	X		No
Gampaha		X	X	No
Hambantota	X	X	X	**Yes**
Jaffna	X			**Yes**
Kandy		X	X	No
Kurunegala	X	X	X	**Yes**
Matale	X	X	X	**Yes**
Matara		X	X	No
Monaragala	X	X		No
Nuwara Eliya		X	X	**Yes**
Polonnaruwa	X	X		No
Puttalam	X	X		No
Rathnapura	X	X	X	**Yes**

DSDs were selected randomly inside the selected districts. The Agrarian Services Centers (ASC) of each selected DSD were obtained from the Natural Resources Management Center website. Two ASCs from each DSD were randomly selected from the list (Table 2-2). Each district office of the Agrarian Development Centers was contacted, and permission was obtained to get the help of the Development Officers of the ASCs and the ARPA for the survey. The ARPAs of respective ASCs were visited in order to obtain the basic information on the farming systems practiced in their service areas. Meanwhile, the questionnaires which were developed for ARPA were distributed and data was gathered.

Two or more ASCs were purposively selected based on the most prominent farming systems prevalent in those areas and the number of people engaged in farming. The selection criteria of the GNDs were based on whether the area had lowland or highland, irrigation method used (rainfed, major or minor), settlement type (Purana or Mahaweli), crop cultivation (intercropping or monocropping), or livestock rearing system (intensive farming, or free-range) and scale of operation (small or medium).

Table 2-2: Selection of ASCs

District office	DSD	ASCs
Anuradhapura	Kekirawa	Kekirawa Maradankadawala
	Palagala	Adiyagala Palagala
Hambantota	Agunakolapelessa	Agunakolapelessa Udayala
	Ambalantota	Lunama
Kurunegala	Ibbagamuwa	Ibbagamuwa Melsiripura
	Polpithigama	Moragollagama Rambe
Matale	Dambulla	Alugolla/Naula Kongahawela
	Yatawatta	Walawela Yatawatta
Nuwara Eliya	Hanguranketa	Bulughapitiya Karalliyadda
	Walapane	Nildandahinna Ragala
Rathnapura	Kalawana	Elapatha Kalawana
	Kuruwita	Kiriella Kuruwita
Jaffna	Kopay	Puthur Urumpirai
	Chawakachcheri	Chawakachcheri

ARPA's survey was carried out to identify the issues related to agricultural land policies as perceived by the ARPAs. The research team developed a conceptual framework based on the information gathered through key informant discussions and from existing literature. Based on the conceptual framework few hypotheses were derived. The identified hypotheses are given below. The questionnaire for the ARPA's survey was designed based on these hypotheses. The derived hypothesizes are,

- Land fragmentation (small land parcels) causes a change in land use (from cultivation to other purposes)
- On average, the per-unit value of small land plots is less than the per-unit value of large land plots
- Because of restrictions imposed on agricultural land sales, unproductive (less suitable) lands are used for agriculture
- Because of restrictions imposed on agricultural land sales, the lands are abandoned
- Agricultural lands are undervalued

- There is illegal encroachment of public land/forest land for agricultural purposes
- There are some unused (for any specific purpose) public lands which can be used for agricultural purpose
- Not having grazing land is a problem for livestock rearing
- There are disputes over the management of common grazing land
- Some of the paddy lands should be allowed to grow other crops
- Some farmers in your service area informally sell Swarna Bhoomi/Jaya Bhoomi lands to others
- Communal based land management (e.g. Thattumaruwa) are suitable in the Sri Lankan context rather than an individualized system to manage agricultural land
- If paddy is not productive in a particular land, owners should be allowed to use it for other crops.
- It is good to allow farmers to fill their paddy lands if those are not suitable for any agricultural practices
- Land consolidation is required to achieve high productivity in agricultural land
- Owners should have the freedom to sell agricultural land for any purpose
- Owners should be allowed to sell agricultural land to any person

Those hypotheses were verified by obtaining the perception of ARPAs. The ARPAs were instructed to provide answers based on knowledge on their respective service areas. These officers were identified as a reliable source to obtain details about issues related to agricultural land and to identify the perceived weaknesses and strengths of land-related policies which are relevant to their work. The data collected from ARPAs were analyzed using descriptive statistics. The descriptive statistics were used to identify the perception about agricultural land-related issues and verify the hypotheses developed based on the information gathered through key informant discussions and literature review.

2.8.2 Sampling Framework and Data Collection from Farmers' Survey

The selection of ASCs for data collection for the farmer survey is the same as that explained for the ARPA's survey. From the 26 ASCs selected, the number of respondent farmers was decided as follows. A sample size of 1400 was decided as

adequate to capture the farming diversity of the country. The total sample of 1400 was distributed among the selected districts based on the number of agricultural holdings of each district (Table 2-3). In each district, two DSDs were selected using the total number of farmers engaged in crop cultivation and livestock keeping (Table 2-4). From each selected farming system at least 30 farmers were randomly selected from the list of farmers obtained from the ASCs from each district.

Table 2-3: Selection of sample size

District	Number of agricultural Households	Sample size
Anuradhapura	179,809	266
Hambantota	104,352	155
Kurunegala	288,816	428
Nuwara Eliya	84,404	125
Matale	72,591	108
Rathnapura	171,303	254
Jaffna	43,466	64

Table 2-4: Selected DSDs

District	Sample size	Selected DSDs	
Anuradhapura	266	Kekirawa	Palagama
Hambantota	155	Ambalanthota	Angunakolapelessa
Kurunegala	428	Polpithigama	Ibbagamuwa
Nuwara Eliya	125	Hanguranketha	Walapane
Matale	108	Dambulla	Yatawaththa
Rathnapura	254	Kuruwita	Kalawana
Jaffna	64	Kopay	Chawakachcheri

2.8.3 Data Analysis

An econometric model was estimated to test the following hypotheses to understand the impact of land-related policies and regulation on paddy productivity.

- Higher land size lowers the productivity
- Higher the land fragmentation higher the productivity
- Higher effort lowers the productivity

Paddy productivity is defined as the paddy output per unit of land per cultivation season. Crop productivity is a function of per unit agricultural inputs used, climate, and effort. Agricultural inputs for paddy productivity include fertilizer, water/irrigation, labor, machinery, and management or effort. The farmer effort is not directly measurable and hence proxies are usually used as measures for effort. It is hypothesized that when farmers wish to change the land use, they exert less effort

on paddy cultivation. Further, if the land is not owned and/or operated under a share tenure, the effort exhorted could be less than when the land is owned. There are some lands with restrictions imposed on transferability. For example, lands alienated under land grants are not allowed to be sold. It is interesting to know if such regulations/restrictions have an effect on paddy land productivity.

3. Results and Discussion

The chapter consists of the findings, interpretation of each analysis carried out to achieve the objectives of this study and limitations.

3.1 Assessment and Classification of the Government Lands Suitable for Agricultural Purposes

This work considered all underutilized and scrub lands distributed across Sri Lanka and subsequently assessed their suitability of agricultural crop production by performing land capability classification. The results are summarized in the map presented in Figure 3-0 showing the identified land capability classes of scrub lands and underutilized lands distributed across agroecological regions of Sri Lanka. For better readability and usability of these results, land capability of information and suitable crop types information are provided for each agro-ecological region in the subsequent sections of this report.

Figures 3-1 shows the area of land under the Mahaweli Authority and the Department of Wildlife Conservation. The Figure 3.2 shows the underutilized and scrub lands in the area belonged to the said two authorities and their land suitability classes.

Following sections explain the agricultural suitability of scrub and underutilized lands within each AER, their spatial distributions and extents of each Land Capability Classes. Further, choices of different crops for these lands are also listed to be used in modernization efforts. However, it should be noted that field visits and on-site soil observations are recommended before selecting the crops and identifying sustainable soil management and soil conservation practices.

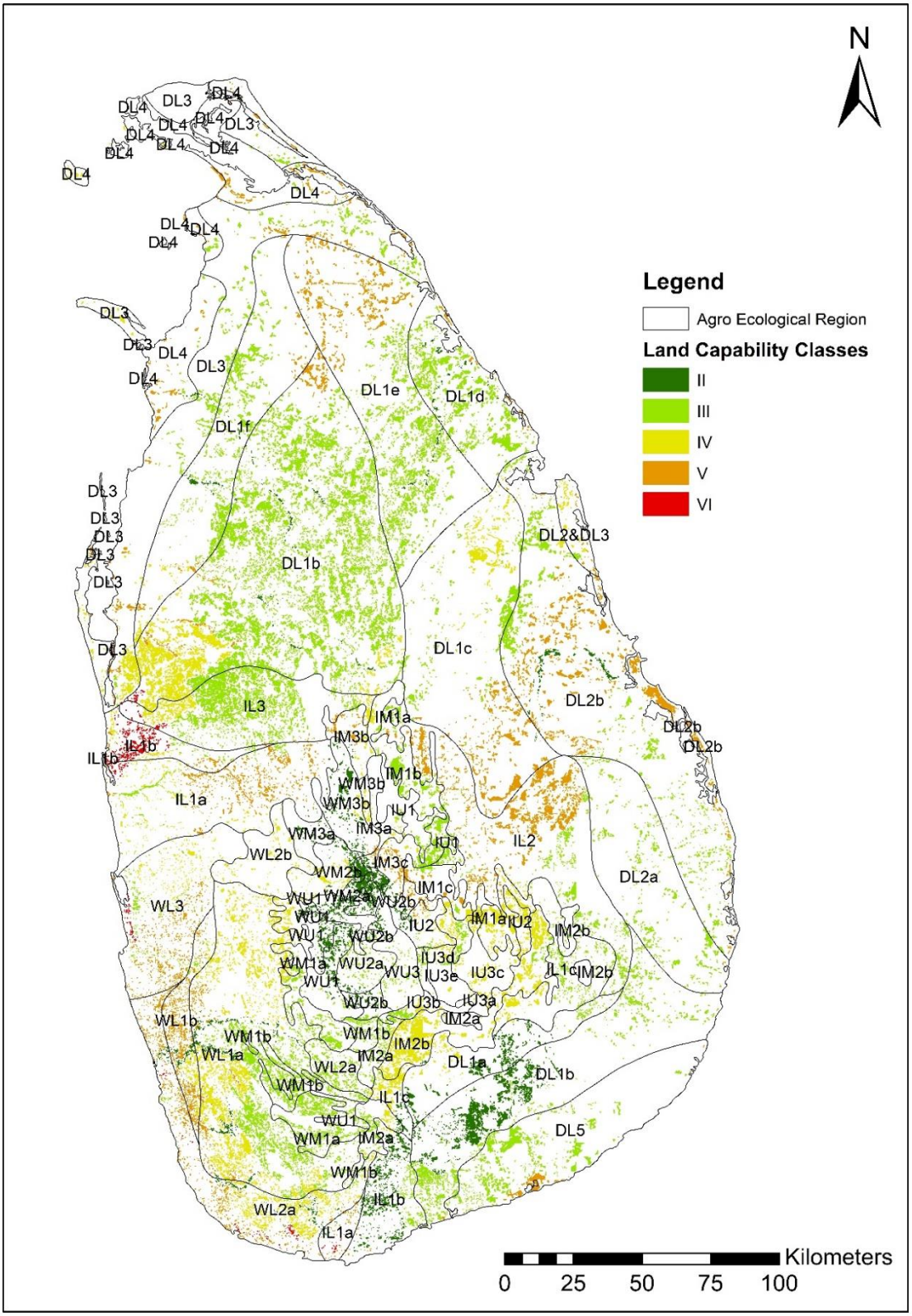

Figure 3-1: Land Capability Classes for agriculture of scrub and underutilized land by AERs in Sri Lands

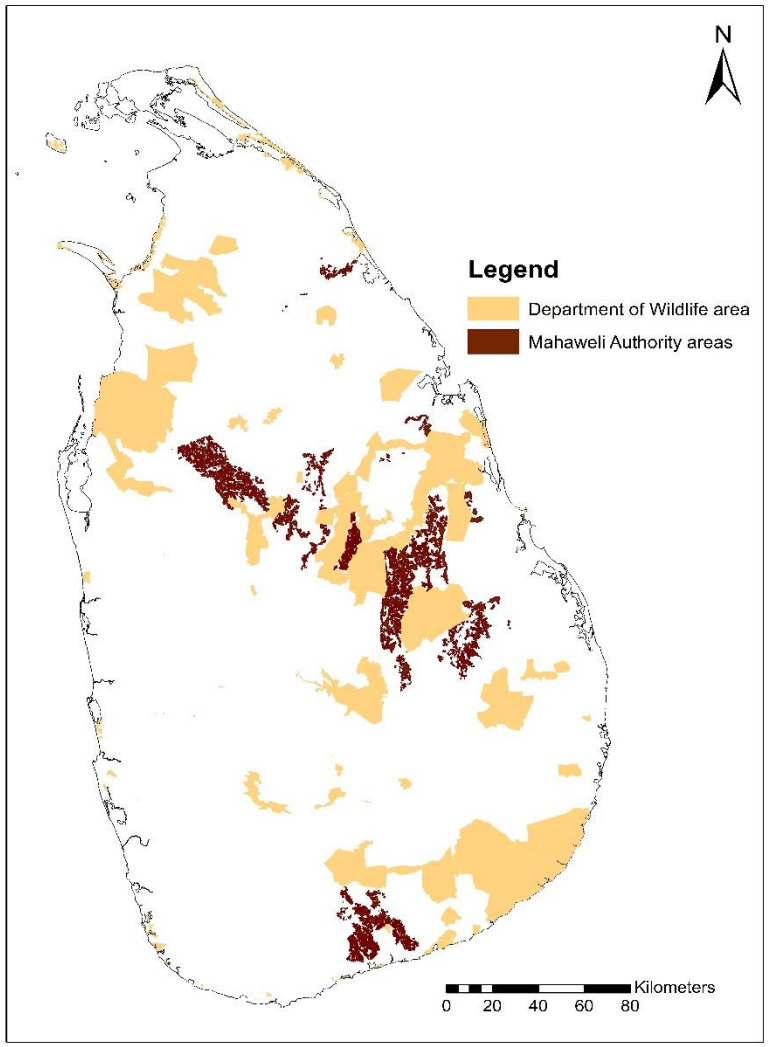

Figure 3-3: Government owned lands

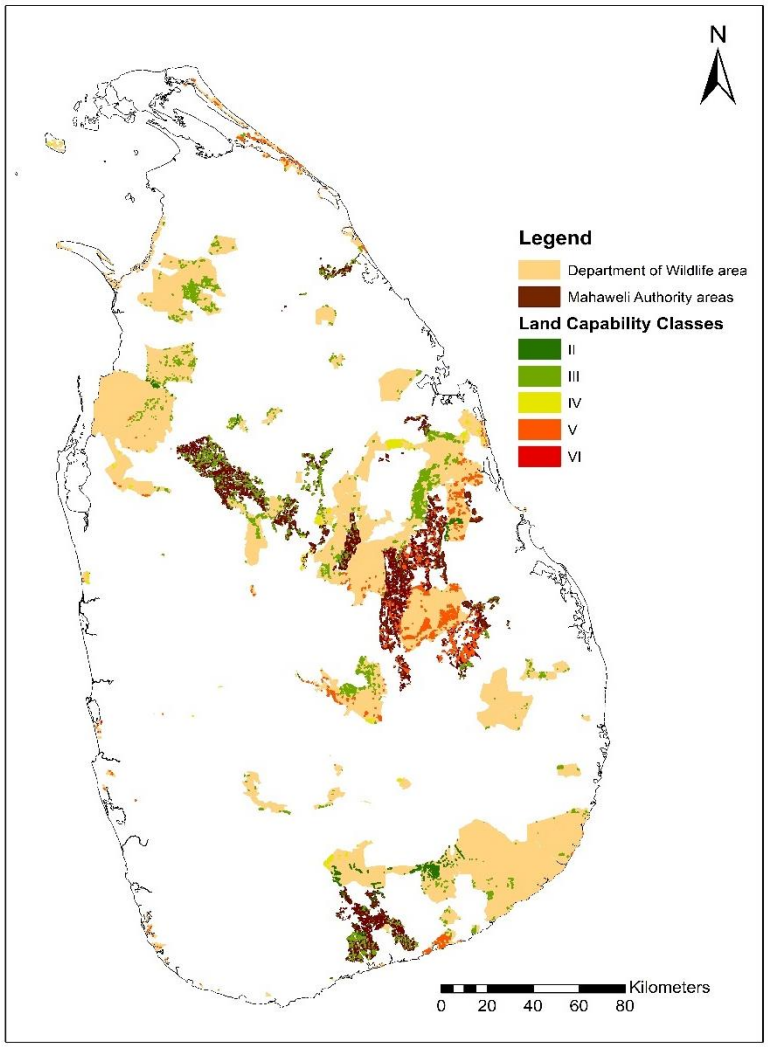

Figure 3-2: Land capability classes for agriculture of scrub and underutilized lands distributed across AERs of Sri Lanka

3.1.1 Land Capability of scrub and underutilized distributed in DL1a

The agro-ecological region DL1a spans over Badulla, Monaragala, and Rathnapura Districts. The annual rainfall of DL1a is >1100 mm. The major soil series of this AER is the *Walawe* soil series. When unutilized scrub lands and underutilized lands are considered, 2800 ha of land are very suitable (Class II) for the crops mentioned in the Table 3.1 below. Further, 200 ha of land are suitable (Class III) and 1000 ha area of lands are moderately suitable (Class IV) for the crops mentioned below. Please refer Figure 3-4 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-1: Crop Recommendation DL1a

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Monaragala	Chili	Chili	Green gram	Rice	Gingerly	Chili		Rice
	Brinjal	Red onion	Cowpea	Chili	Pigeon pea	Big onion		Chili
Badulla	Green gram		Groundnut	Capsicum		Red onion		Big onion
	Groundnut		Soybean	Cowpea		Capsicum		Red onion
Rathnapura	Maize			Green gram		Tomato		Gherkin
	Cowpea			Groundnut		Okra		Cowpea
	Cassava			Soybean				Green gram
	Cotton							Groundnut
	Cucurbits							Soybean
	Kurakkan							Sweet potato
	Pigeon pea							
	Sweet potato							

3.1.2 Land Capability of scrub and underutilized distributed in DL1b

AER DL1b is distributed in Ampara, Monaragala, Hambanthota, Rathnapura, Anuradapura, Polonnaruwa, Vavuniya, Matale, Kurunegala and Puttalam Districts. The annual rainfall of DL1b >900 mm is received in this AER. The major soil series of AER DL1b are Madawachchiya, Siyambalanduwa and Ranna soil series. When unutilized scrub lands and underutilized lands are considered, 9000 ha of land are very suitable (class II) for the crops mentioned in Table 3.2. Further, 53 000 ha of lands are suitable (class III), 17 000 ha of lands are moderately suitable (class IV), 2600 ha of lands are slightly suitable (class V) and 130 ha of lands are unsuitable for the crop mentioned below. Please refer Figure 3-5 and Figure 3-6 for the maps

showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-2: Crop Recommendation DL1b

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Ampara	Chili	Chili		Rice	Gingerly			Rice
Anuradhapura	Brinjal	Red onion		Chili	Pigeon pea			Chili
	Green gram			Capsicum				Big onion
Hambantota	Groundnut			Cowpea				Red onion
Kurunegala	Maize			Green gram				Gherkin
Matale	Cassava			Groundnut				Cowpea
Monaragala	Cotton			Soybean				Green gram
Polonnaruwa	Cucurbits							Groundnut
Puttalam	Kurakkan							Soybean
Rathnapura	Pigeon pea							Sweet potato
Vavuniya	Sweet potato							

3.1.3 Land Capability of scrub and underutilized distributed in DL1c

The agro-ecological region DL1c is distributed over Ampara, Badulla, Anuradhapura, Polonnaruwa, Matale and Trincomalee Districts. The annual rainfall of DL1c is >900 mm. The major soil series of this AER is the Ulhitiya soil series. When unutilized scrub lands and underutilized lands are considered, 10-ha of land are very suitable (class II) for the crops mentioned in Table 3-3. Further, 6500 ha of lands are suitable (class III), 4300 ha of lands are moderately suitable (class IV) and 8500 ha of lands are slightly suitable (class V) for the crops mentioned below. Please refer Figure 3-7 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-3: Crop Recommendation DL1c

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Ampara	Chilli	Chilli	Green gram	Rice	Gingerly	Chilli	Cowpea	Rice
Polonnaruwa	Red onion	Red onion	Cowpea			Big onion	Groundnut	Chilli
Trincomalee	Green gram	Tomato	Groundnut			Red onion	Gingerly	Big onion
Anuradhapura	Cowpea	Capsicum	Soybean			Cucurbits		Red onion
Badulla	Soybean	Groundnut				Capsicum		Beat
Matale	Maize					Tomato		Capsicum
	Tobacco					Green gram		Soybean
	Black gram							Tomato
	Cassava							Brinjal
	Cotton							
	Cucurbits							
	Kurakkan							
	Ground nut							
	Mustard							

3.1.4 Land Capability of scrub and underutilized distributed in DL1d

The agro-ecological region DL1d is distributed over Anuradhapura, Mullaitivu, and Trincomalee districts. The annual rainfall of DL1d is >900 mm. The major soil series of this AER are Negombo and Madawachchiya, soil series. When unutilized scrub lands and underutilized lands are considered, 350 ha area of land are very suitable (class II) for the crops mentioned in Table 3-4. Further, 11 300 ha of lands are suitable (class III) and 400 ha of lands are slightly suitable (class V) for the crops mentioned in the said Table. Please refer Figure 3-8 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-4: Crop Recommendation DL1d

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Trincomalee	Chili	Chili	Rice	Rice		Chili		Rice
Mullaitivu	Green gram	Red onion				Big onion		Cowpea
Anuradhapura	Cowpea	Tomato				Red onion		Green gram
	Maize	Capsicum				Tomato		
	Cassava	Tomato				Capsicum		
	Kurakkan	Brinjal				Brinjal		
	Sweet potato					Tobacco		
						Cucurbits		

3.1.5 Land Capability of scrub and underutilized distributed in DL1e

The agro-ecological region DL1e is distributed over Anuradhapura, Polonnaruwa, Vavuniya and Mullaitivu Districts. The annual rainfall of DL1e is >900 mm. The major soil series of this AER is the Madawachchiya soil series. When unutilized scrub lands and underutilized lands are considered, 135 ha of land are very suitable (class II) for the crops mentioned in Table 3-5. Further, 12 200 ha of lands are suitable (class III), 1 ha of lands are moderately suitable (class IV) and 5600 ha of lands are slightly suitable (class V) for the crops mentioned below. Please refer Figure 3-9 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-5: Crop Recommendation DL1e

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Anuradhapura Mullaitivu Vavuniya Polonnaruwa	Chili Green gram Black gram Groundnut	Chili Red onion Brinjal Cucurbits Okra	Green gram Cowpea Groundnut Soybean	Rice	Gingerly	Chili Big onion Red onion Cucurbits Capsicum Tomato Green gram	Cowpea Groundnut Gingerly	Rice Chili Big onion Red onion Beat Capsicum Soybean Tomato Brinjal

3.1.6 Land Capability of scrub and underutilized distributed in DL1f

The agro-ecological region DL1f is distributed over Anuradhapura, Kilinochchi, Mannar, Mullaitivu, Vavuniya, and Puttalam Districts. The annual rainfall of DL1f is >800 mm. The major soil series of this AER are Madawachchiya and Tonigala soil series. When unutilized scrub lands and underutilized lands are considered, 300 ha of land is very suitable (class II) for the crops mentioned in Table 3-6. Further, 7000 ha of lands are suitable (class III), 750 ha of lands are moderately suitable (class IV), and 900 ha of lands are slightly suitable (class V) for the crops mentioned below. Please refer Figure 3-10 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-6: Crop Recommendation DL1f

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Anuradhapura Mannar Mullaitivu Kilinochchi Vavuniya Puttalam	Green gram Cowpea Black gram Brinjal Cassava Maize Cucurbits Kurakkan Ground nut Mustard Pigeon pea	Chili Red onion Tomato Capsicum Brinjal Beat Cucurbits Cabbage Okra	Green gram Cowpea Groundnut Soybean	Rice	Gingerly Pigeon pea	Chili Big onion Red onion Tomato Capsicum Brinjal Cucurbits Cabbage Okra	Gingerly	Rice Cowpea Green gram

3.1.7 Land Capability of scrub and underutilized distributed in DL2a

The agro-ecological region is distributed over Ampara, Monaragala, and Batticaloa Districts. The annual rainfall of DL2a is >1300 mm. The major soil series of this AER are Siyambalanduwa and Gal Oya soil series. When unutilized scrub lands and underutilized lands are considered, 5600 ha of land are suitable (class III) for the crops mentioned in Table 3-7. Further, 50 ha of land are slightly suitable (class V) for the crops mentioned below. Please refer Figure 3-11 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-7: Crop Recommendation DL2a

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Ampara Monaragala Batticaloa	Cassava Cowpea Ground nut Maize Brinjal Green gram Cucumber Kurakkan Okra		Rice	Rice Sugarcane				Rice Chili Sugarcane Black gram Cowpea Green gram

3.1.8 Land Capability of scrub and underutilized distributed in DL2b

The agro-ecological region DL2b is distributed over Ampara, Batticaloa, Trincomalee and Polonnaruwa Districts. The annual rainfall of DL2b is >1100 mm. The major soil

series of this AER is the Gal Oya, Siyambalanduwa and Negombo soil series. When unutilized scrub lands and underutilized lands are considered, 1400 ha of land are very suitable (class II) for crops mentioned in Table 3-8. Further, 12 100 ha of lands are suitable (class III), 260 ha of lands are moderately suitable (class IV) and 13600 ha of lands are slightly suitable (class V) for the crops mentioned below. Please refer Figure 3-12 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-8: Crop Recommendation DL2b

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Ampara Batticaloa Trincomalee Polonnaruwa	Chili Maize Green gram Cowpea Black gram Ground nut Tobacco Brinjal Cassava Kurakkan Cucurbits Okra	Sugarcane	Rice	Rice Sugarcane	Gingerly	Sugarcane		Rice Chili Sugarcane Black gram Cowpea Green gram Brinjal Cucurbits

3.1.9 Land Capability of scrub and underutilized distributed in DL3

The agro-ecological region DL3 is distributed over Anuradhapura, Vavuniya, Kilinochchi, Puttalam, Jaffna, Mannar, and Mullaitivu Districts. The annual Rainfall of DL3 is >800 mm. The major soil series of this AER are Negombo, Gambura and Colombuthurai soil series. When unutilized scrub lands and underutilized lands are considered, 17 ha of lands are very suitable (class II) for the crops mentioned in Table 3-9. Further, 5800 ha of lands are suitable (class III), 3000 ha of lands are moderately suitable (class IV), 2300 ha of lands are slightly suitable (class V) and 6 ha of lands are unsuitable for the crops mentioned below. Please refer Figure 3-13 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-9: Crop Recommendation DL3

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Jaffna Kilinochchi Mullaitivu Vavuniya Mannar Puttalam Anuradhapura	Black gram Cowpea Green gram Cassava Cucurbits	Chili Potato Beat Cabbage Capsicum Brinjal Cucurbits	Rice	Rice		Big onion Red onion Brinjal Cowpea Cucurbits Green gram Okra		Rice

3.1.10 Land Capability of scrub and underutilized distributed in DL4

The agro-ecological region DL4 is distributed over Jaffna, Mannar, Kilinochchi and Mullaitivu Districts. The annual rainfall of DL4 is >750 mm. The major soil series of this AER are Colombuthurai, Mampuri and Negombo soil series. When unutilized scrub lands and underutilized lands are considered, 40 ha of land are very suitable (class II) for the crops mentioned in Table 3-10. Further, 775 ha of lands are suitable (class III), 200 ha of lands are moderately suitable (class IV) and 1700 ha of lands are slightly suitable (class V) for the crops mentioned below. Please refer Figure 3-14 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-10: Crop Recommendation DL4

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Jaffna Mannar Kilinochchi Mullaitivu	Black gram Cowpea Green gram Cassava Groundnut Gingerly Maize	Chili Potato Beat Cabbage Capsicum Brinjal Cucurbits Okra	Rice	Rice	Gingerly	Big onion Red onion Brinjal Black gram Green gram Okra		Rice

3.1.11 Land Capability of scrub and underutilized distributed in DL5

The agro-ecological region DL5 is distributed over Ampara, Monaragala, and Hambanthota Districts. The annual rainfall of DL5 is >650 mm. The major soil series of this AER are Timbolketiya and Nonagama soil series. When unutilized scrub lands and underutilized lands are considered, 8900 ha of land are suitable (class III) for the crops mentioned in Table 3-14. Further, 1800 ha of land is slightly suitable (class V) for the crops mentioned below. Please refer Figure 3-15 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-11: Crop Recommendation DL5

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Hambanthota Monaragala Ampara	Chili Brinjal Green gram Groundnut Cucurbits Cowpea Gingerly Okra Soybean Kurakkan Pigeon pea Cotton Maize		Green gram Cowpea Groundnut Soybean	Rice	Pigeon pea	Chili Big onion Red onion Capsicum Brinjal Cowpea Soybean Green gram		Rice Chili Big onion Red onion Capsicum Brinjal Green gram Cowpea Soybean

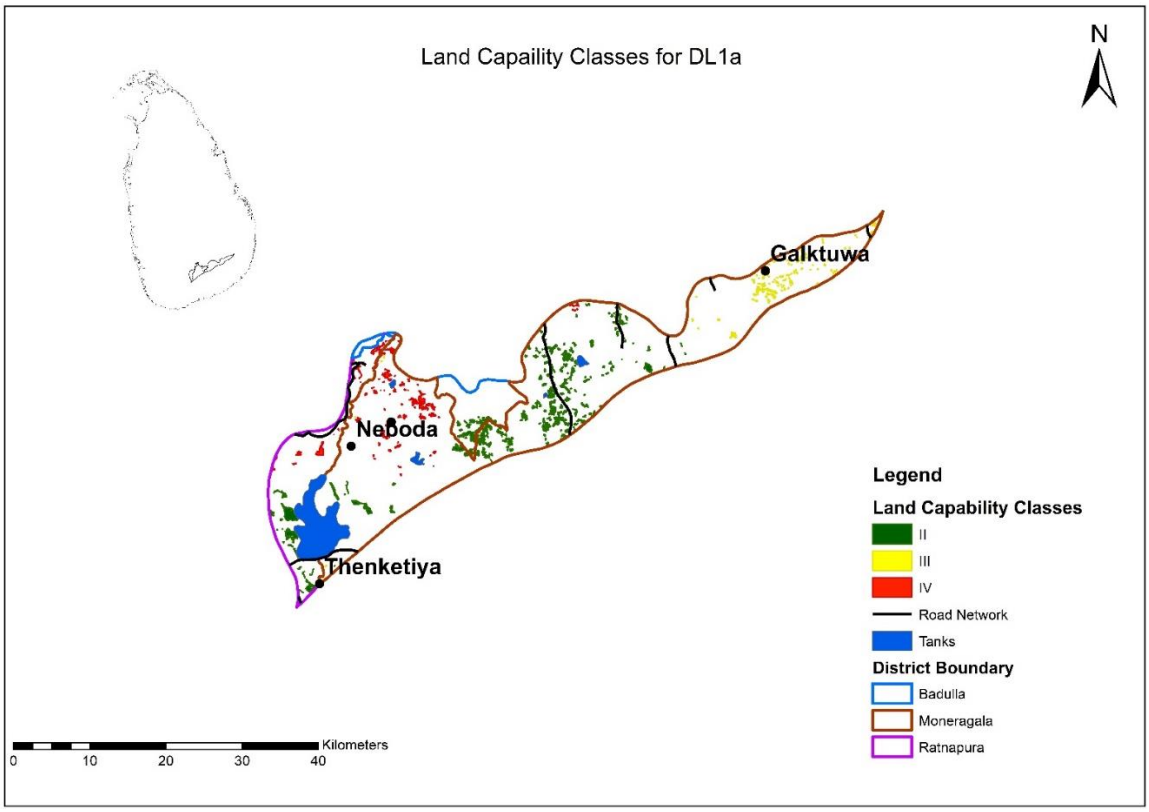

Figure 3-4: Land capability classes for DL1a

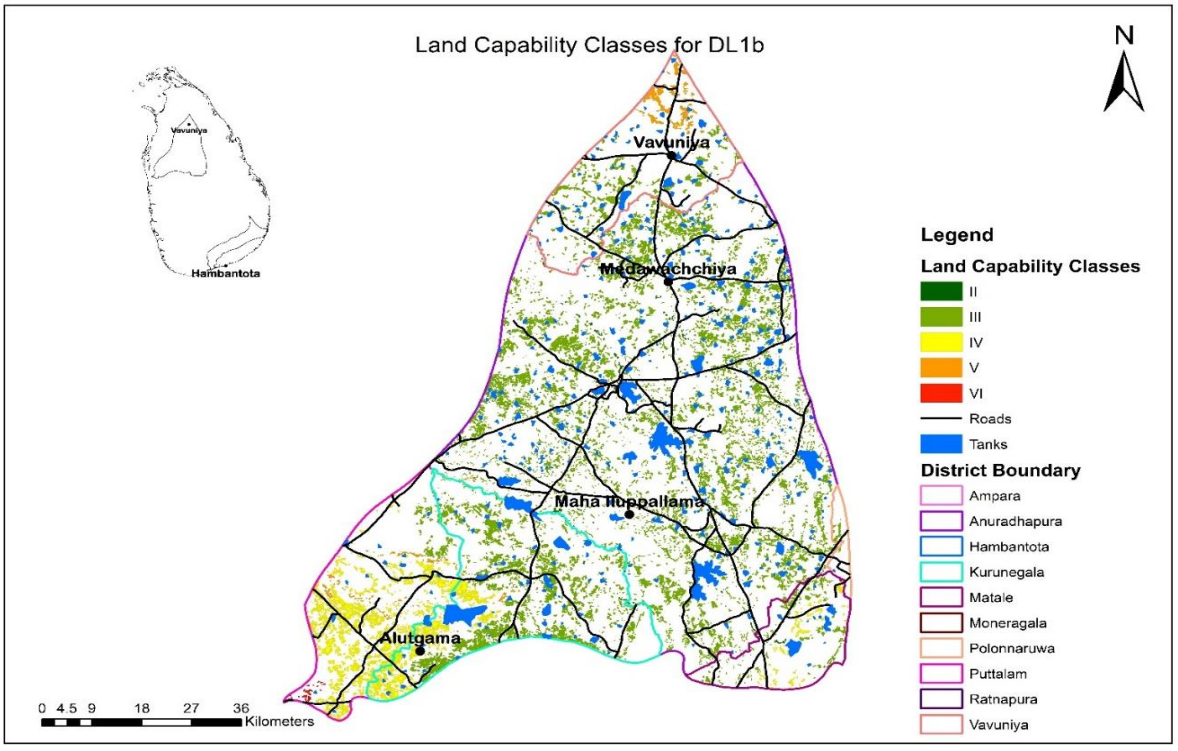

Figure 3-5: Land capability classes for DL1b

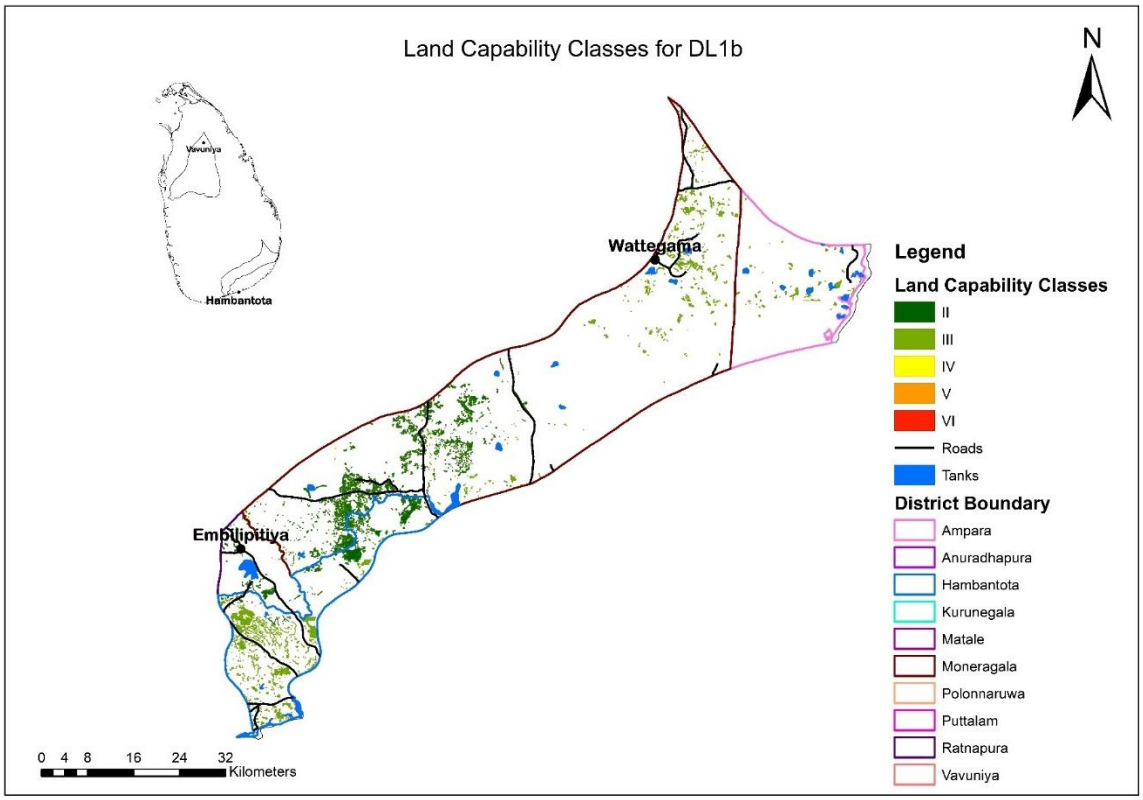

Figure 3-6: Land capability classes for DL1b

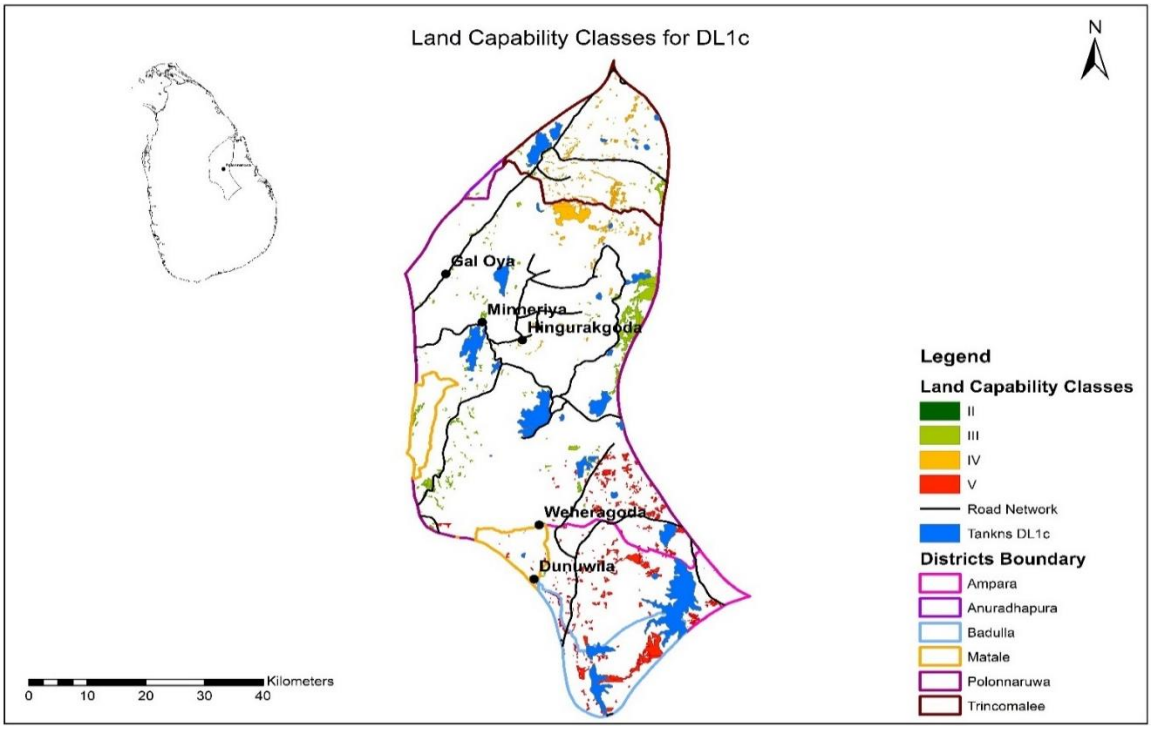

Figure 3-7: Land capability classes for DL1c

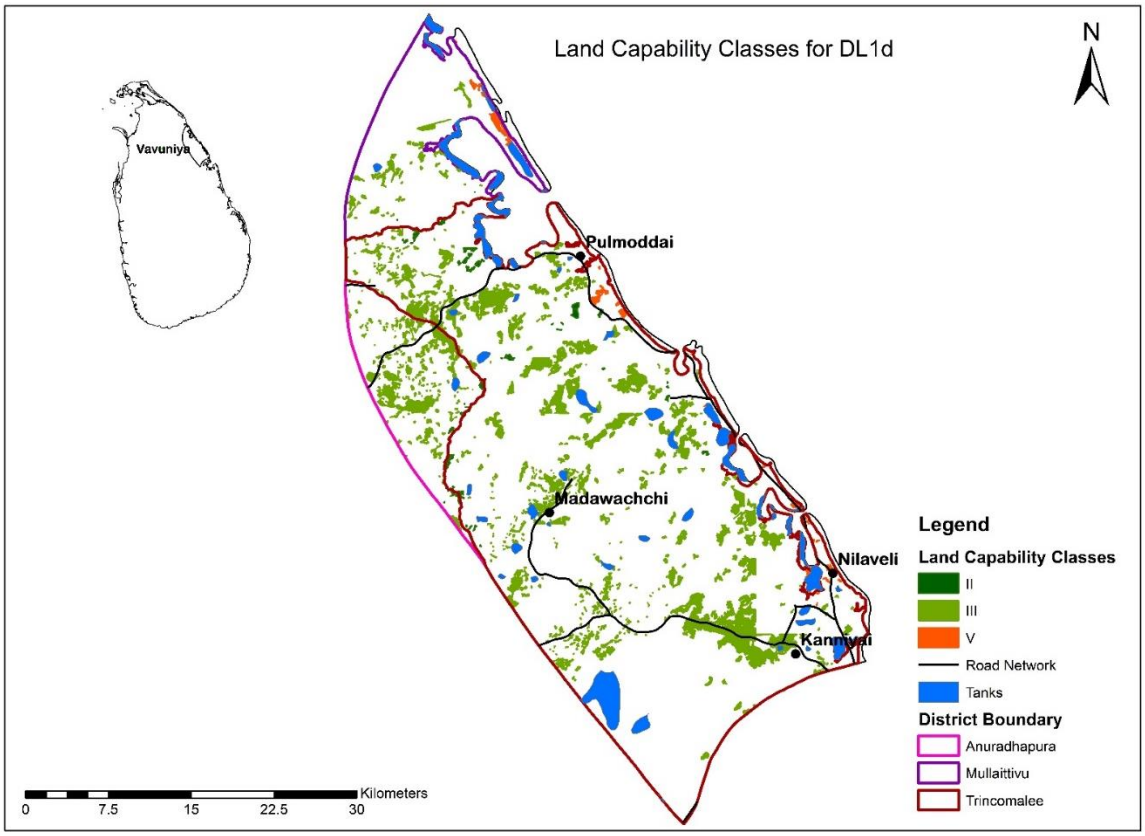

Figure 3-8: Land capability classes for DL1d

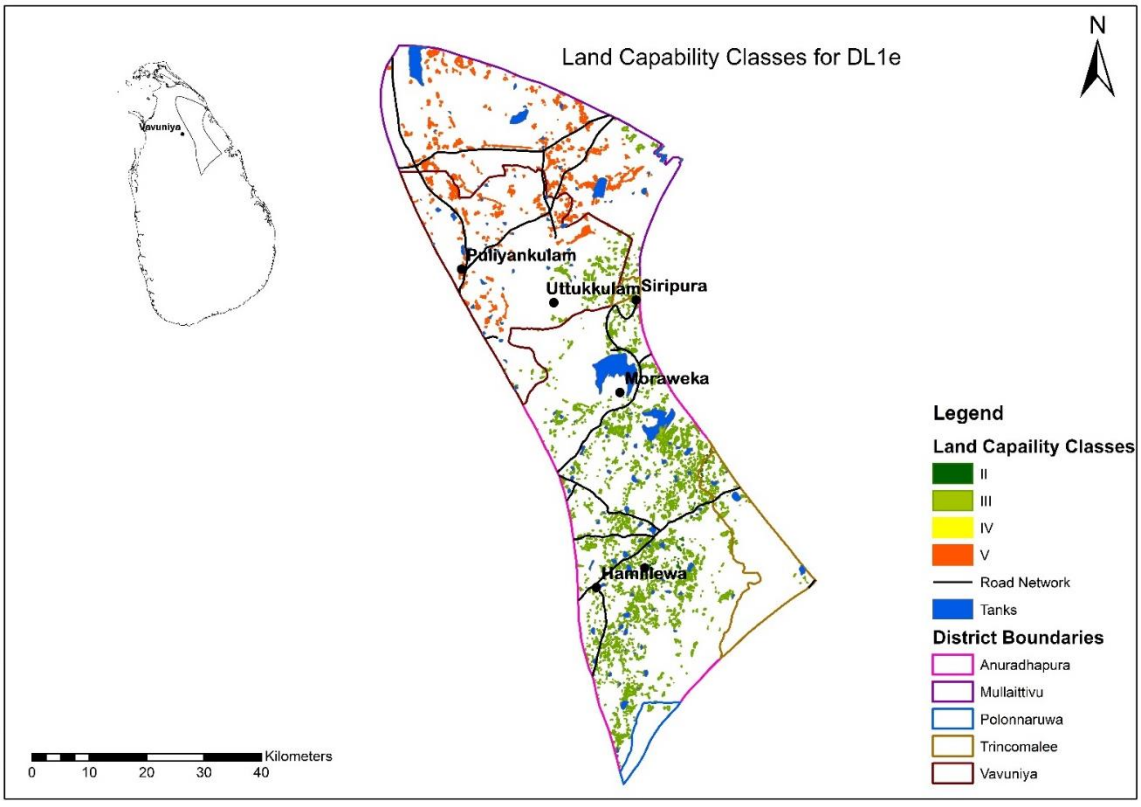

Figure 3-9: Land capability classes for DL1e

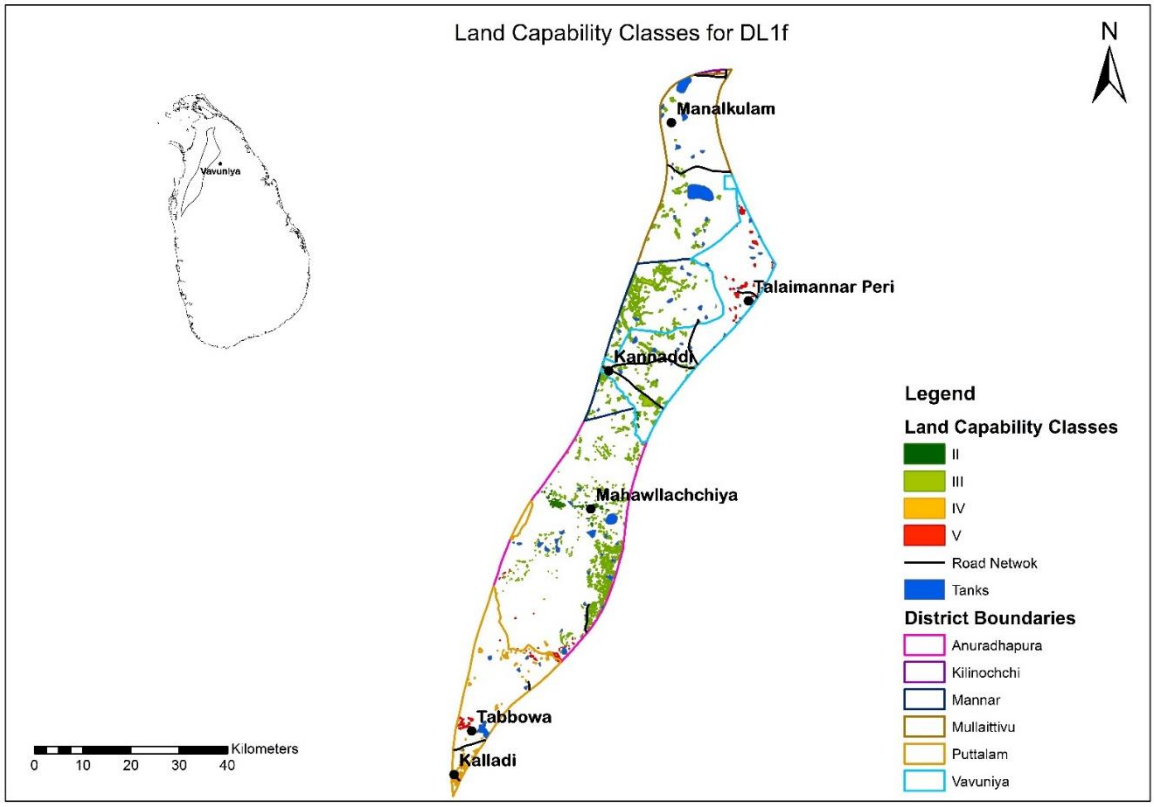

Figure 3-10: Land capability classes for DL1f

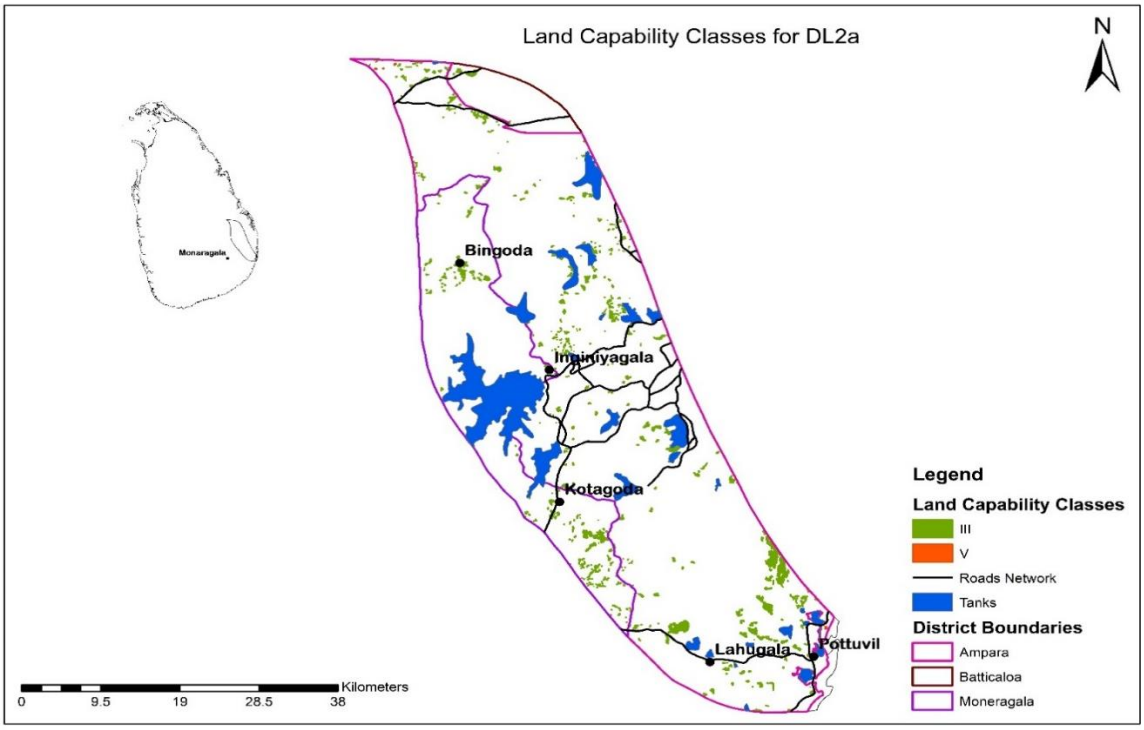

Figure 3-11: Land capability classes for DL2a

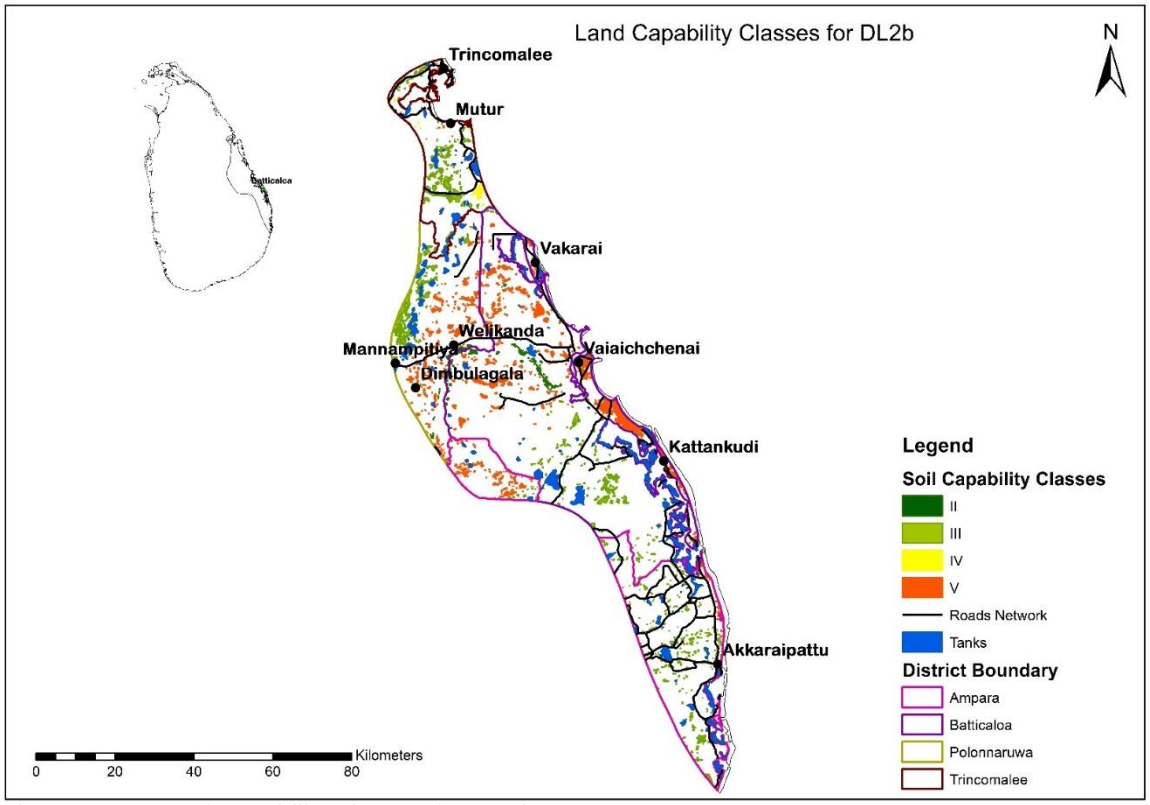

Figure 3-12: Land capability classes for DL2b

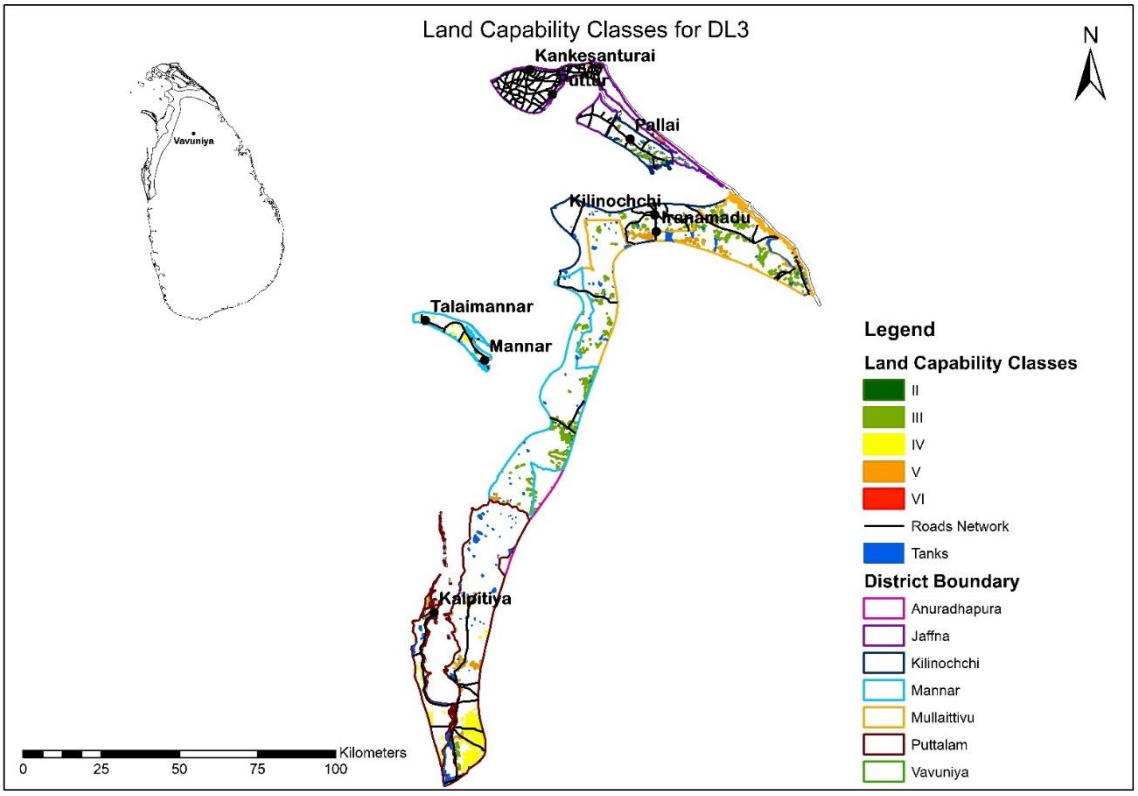

Figure 3-13: Land capability classes for DL3

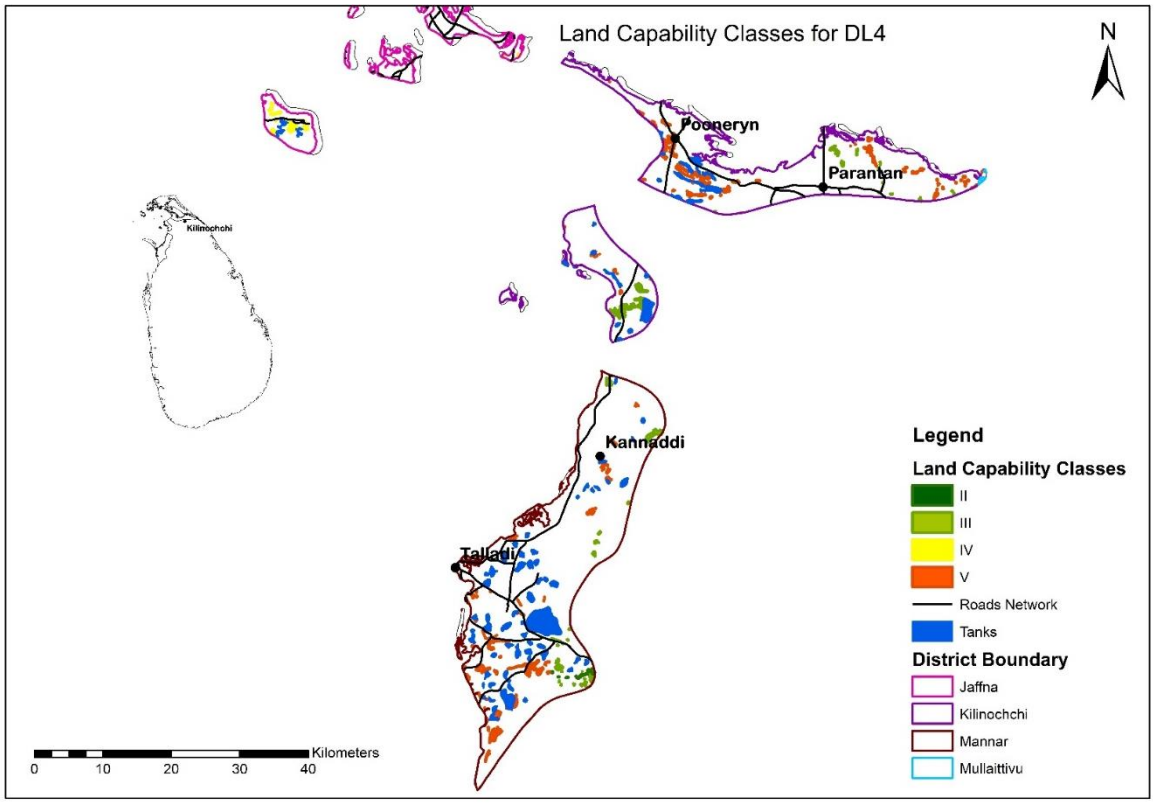

Figure 3-14: Land capability classes for DL4

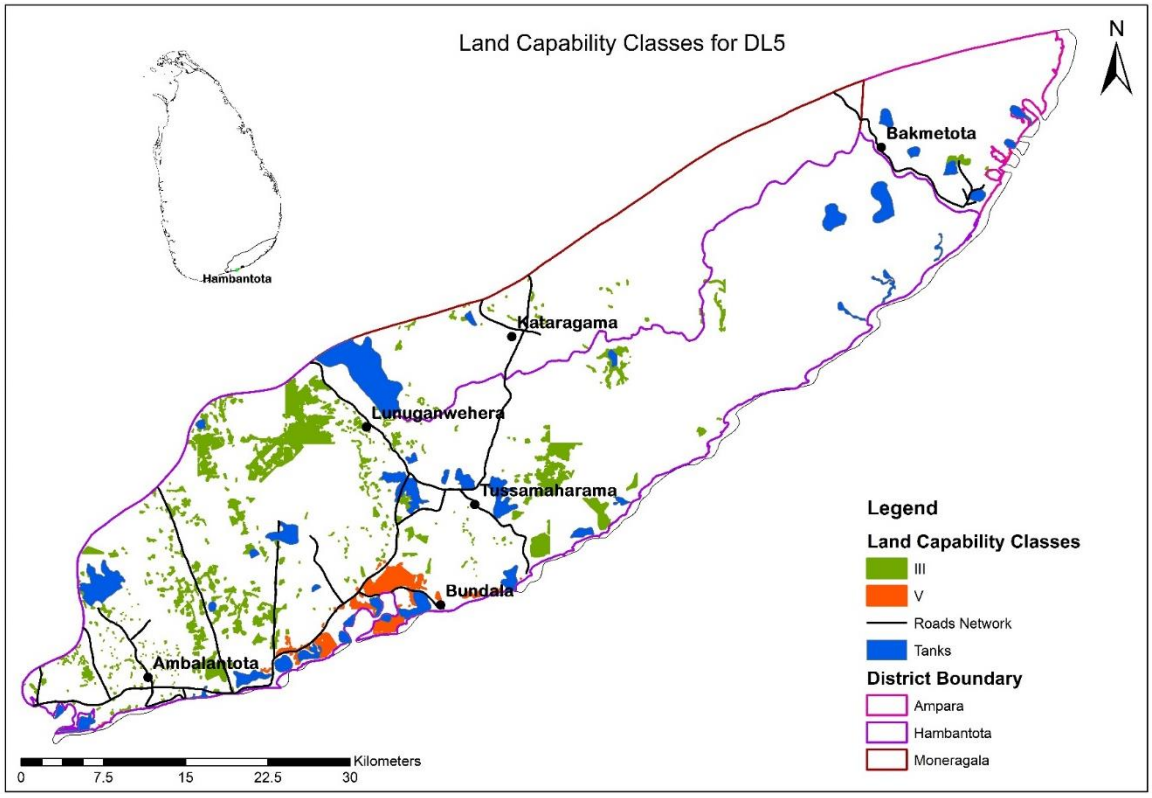

Figure 3-15: Land capability classes for DL5

3.1.12 Land Capability of scrub and underutilized distributed in IL1a

The agro-ecological region IL1a is distributed over Hambanthota, Matara districts, and Matale, Kurunegala, Puttalam, Kandy, Kegalle and Gampaha Districts. The annual rainfall of IL1a is >1400 mm. The major soil series of this AER are Madawachchiya, Negombo and Boralu soil series. When unutilized scrub lands and underutilized lands are considered, 900 ha of land are very suitable (class II) for the crops mentioned in Table 3-12. Further, 23 00 ha of lands are suitable (class III), 17 00 ha of lands are moderately suitable (class IV), 9600 ha of lands are slightly suitable (class V) and 130 ha of lands are unsuitable for the crops mentioned below. Please refer Figure 3-16 and Figure 3-17 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands

Table 3-12: Crop Recommendation IL1a

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Kandy Kurunegala Kegalle Matale Gampaha Matara Puttalam Hambantota	Brinjal Cassava Cucurbits Okra Sweet potato Leafy Vegetable		Rice	Rice	Gingelly Sweet potato Turmeric Inala Kiri ala		Rice Cowpea Green gram	Rice

3.1.13 Land Capability of scrub and underutilized distributed in IL1b

The agro-ecological region IL1b is distributed over Matara, Hambanthota, Rathnapura districts, Kurunegala and Puttalam Districts. The annual rainfall of IL1b is >1100 mm. The major soil series of this AER are Negombo, Boralu and Ranna soil series. When unutilized scrub lands and underutilized lands are considered, 3500 ha of land is very suitable (class II) for the crops mentioned in Table 3-13. Further, 9 00 ha of lands are suitable (class III), 400 ha of lands are moderately suitable (class IV), 300 ha of lands are slightly suitable (class V) and 1600 ha of lands are unsuitable for the crops mentioned below. Please refer Figure 3-18 and Figure 3-19 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands

Table 3-13: Crop Recommendation IL1b

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Hambanthota Matara Rathnapura Kurunegala Puttalam	Brinjal Tomato Okra Cucurbits Radish		Rice	Rice	Gingelly Chili Cowpea Green gram		Rice	Rice Green Chili Brinjal Okra Cucurbits Okra

3.1.14 Land Capability of scrub and underutilized distributed in IL1c

The agro-ecological region IL1c is distributed over Badulla, Monaragala and Rathnapura Districts. The annual rainfall in IL1c is >1300 mm. The major soil series of this AER are Badulla and Walawe soil series. When unutilized scrub lands and underutilized lands are considered, 360 ha of land are very suitable (class II) for the crops mentioned in Table 3-14. Further, 1400 ha of lands are suitable (Class III), 3400 ha area of lands are moderately suitable (class IV) for the crops mentioned in below Table. Please refer Figure 3-20 and Figure 3-21 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands

Table 3-14: Crop Recommendation IL1c

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Monaragala Rathnapura Badulla	Chili Maize Green gram Brinjal Cowpea Groundnut Cassava Cotton Cucurbits Sweet potato	Capsicum Tomato	Rice	Rice	Gingelly Cowpea Green gram	Chili Big onion Red onion Cowpea Green gram	Cowpea Green gram	Rice Chili Big onion Red onion Cowpea Green gram

3.1.15 Land Capability of scrub and underutilized distributed in IL2

The agro-ecological region IL2 is distributed over Ampara, Monaragala, Badulla, Polonnaruwa, Matale, Kandy, and Nuwara-Eliya Districts. The annual rainfall of IL2 is >1600 mm. The major soil series of this AER are Ulhitiya and Siyambalanduwa soil series. When unutilized scrub lands and underutilized lands are considered, 4 ha area of land are very suitable (class II) for the crops mentioned in Table 3-15. Further, 4300 ha of lands are suitable (Class III), 300 ha of lands are moderately suitable (class IV) and 15500 ha of lands are slightly suitable (class V) for the crops mentioned below. Please refer Figure 3-22 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands

Table 3-15: Crop Recommendation IL2

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Ampara Badulla Monaragala Matale Kandy Nuwara Eliya Polonnaruwa	Chili Maize Tobacco Black gram Green gram Cowpea Soya bean Cassava Cucurbits Brinjal Pigeon pea Sweet potato	Chili Capsicum		Rice Chili	Pigeon pea	Chili Big onion Red onion Gherkin		Rice Chili Big onion Red onion Gherkin Soybean Green gram Brinjal Cucurbits Okra

3.1.16 Land Capability of scrub and underutilized distributed in IL3

The agro-ecological region IL3 is distributed over and Anuradapura, Matale, Kurunegala, and Puttalam Districts. The annual rainfall of IL3 is >1100 mm. The major soil series of this AER are Madawachchiya, Ukuwela and Kiruwana soil series. When unutilized scrub lands and underutilized lands are considered, 11700 ha of land is suitable (class III) for the crops mentioned in Table 3-16. Further, 2200 ha of lands are moderately suitable (class IV), 150 ha of lands are slightly suitable (class V) and 200 ha of lands are unsuitable for the crops mentioned below. Please refer

Figure 3-23 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-16: Crop Recommendation IL3

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Kurunegala Matale Puttalam Anuradhapura	Chili Brinjal Green gram Groundnut Maize Cowpea Cassava Cotton Cucurbits Kurakkan Pigeon pea Sweet potato	Chili Red onion	Green gram Cowpea Groundnut Soybean	Rice Chili Capsicum Cowpea Green gram Groundnut Soybean	Gingelly Pigeon pea	Chili Big onion Red onion Capsicum Tomato Okra		Rice Chili Big onion Red onion Gherkin Cowpea Green gram Groundnut Soybean Sweet potato

3.1.17 Land Capability of scrub and underutilized distributed in IM1a

The agro-ecological region IM1a is distributed over Badulla, Monaragala and Nuwara-Eliya Districts. The annual rainfall of DL1b is >2000 mm. The major soil series of this AER are Ulhitiya and Badulla soil series. When unutilized scrub lands and underutilized lands are considered, 50 ha of land are very suitable (class II) for the crops mentioned in Table 3-17. Further, 1000 ha of lands are suitable (Class III), 5 000 ha of lands are moderately suitable (class IV) and 450 ha of lands are slightly suitable (class V) for the crops mentioned below. Please refer Figure 3-24 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-17: Crop Recommendation IM1a

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Badulla Monaragala Nuwara Eliya	Chili Maize Tobacco Green gram Groundnut Cowpea Brinjal Cassava Cotton Cucurbits Kurakkan Pigeon pea Sweet potato	Chili Red onion	Green gram Cowpea Groundnut Soybean	Rice Chili Capsicum Cowpea Green gram Groundnut Soybean	Gingelly pigeon pea	Chili Big onion Red onion Capsicum Tomato Okra		Rice Chili Big onion Red onion Gherkin Cowpea Green gram Groundnut Soybean Sweet potato

3.1.18 Land Capability of scrub and underutilized distributed in IM1b

The agroecological region IM1b is distributed over Kandy, Matale and Polonnaruwa Districts. The annual rainfall of IM1b is >2000 mm. The major soil series of this AER are Ukuwela and Ulhitiya soil series. When unutilized scrub lands and underutilized lands are considered, 6200 ha of land are suitable (class III) for the crops mentioned in Table 3-18. Further, 360 ha of lands are moderately suitable (class IV) and 190 ha of lands are slightly suitable (class V) for the crops mentioned below. Please refer Figure 3-25 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-18: Crop Recommendation IM1b

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Kandy Matale	Bean Tomato Brinjal Green Chili Spring onion		Rice	Rice			Cucurbits Tomato	Rice Beans Big onion Capsicum Tomato Brinjal Okra Spring onion Green chili Beet Cabbage

3.1.19 Land Capability of scrub and underutilized distributed in IM1c

The agro-ecological region IM1c is distributed over Badulla, Kandy and Nuwara-Eliya Districts. The annual rainfall of IM1c is >1300 mm. The major soil series of this AER are Badulla, Walimada and Ragala soil series. When unutilized scrub lands and underutilized lands are considered, 950 ha of land is suitable (class II) for the crops mentioned in Table 3-19. Further, 770 ha of lands are moderately suitable (class IV) and 1500 ha of lands are slightly suitable (class V) for the crops mentioned below. Please refer Figure 3-26 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-19: Crop Recommendation IM1c

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Badulla Nuwara Eliya Kandy	Tobacco Bean Capsicum Maize Brinjal Cucurbits Okra		Rice	Rice				Rice Chili Big onion Red onion Soya bean Cowpea Green gram Bean Brinjal Cucurbits Okra Capsicum

3.1.20 Land Capability of scrub and underutilized distributed in IM2a

The agro-ecological region IM2a is distributed over Badulla, Rathnapura, Matara, and Hambantota. The annual rainfall of IM2a is >1800 mm. The major soil series of this AER is the Malaboda soil series. When unutilized scrub lands and underutilized lands are considered, 100 ha of land are very suitable (class II) for the crops mentioned in Table 3-20. Further, 1500 ha of lands are suitable (Class III) and 700 ha of lands are moderately suitable (class IV) for the crops mentioned below. Please refer Figure 3-27 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-20: Crop Recommendation IM2a

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Badulla Rathnapura Matara Hambantota	Chili	Chili	Rice	Rice	Rice	Chili	Gingerly	Rice
	Maize	Cowpea	Chili		Green gram	Big onion	Horse gram	Chili
	Tobacco	Soya bean	Cowpea		Horse gram	Red onion		Big onion
	Cucurbits	Spring onion	Soya bean		Sweet potato	Brinjal		Red onion
	Brinjal		Spring onion			Green gram		Cowpea
	Cowpea					Soya bean		Green gram
	Green gram					Cucurbits		Soybean
	Kurakkan							Cucurbits Okra

3.1.21 Land Capability of scrub and underutilized distributed in IM2b

The agro-ecological region IM2b is distributed over Badulla, Monaragala, and Rathnapura Districts. The annual rainfall of IM2b is >1600 mm. The major soil series of this AER are Badulla, Walawe and Madaboda soil series. When unutilized scrub lands and underutilized lands are considered, 60 ha of land is very suitable (class II) for the crops mentioned in Table 3-21. Further, 1100 ha of lands are suitable (Class III), 16 000 ha of lands are moderately suitable (class IV) for the crops mentioned below. Please refer Figure 3-28 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-21: Crop Recommendation IM2b

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Badulla Monaragala Rathnapura	Chili	Chili	Rice	Rice	Cowpea	Chili	Gingerly	Rice
	Maize	Cowpea	Chili		Green gram	Big onion	Horse gram	Chili
	Tobacco	Soybean	Cowpea		Horse gram	Red onion		Big onion
	Brinjal	Spring onion	Soybean		Sweet potato	Brinjal		Red onion
	Green gram		Spring onion			Green gram		Cowpea
	Cowpea					Soybean		Green gram
	Cucurbits					Cucurbits		Soybean
	Kurakkan							Cucurbits Okra

3.1.22 Land Capability of scrub and underutilized distributed in IM3a

The agro-ecological region IM3a is distributed over Kandy and Matale Districts. The annual rainfall of IM3a is >1400 mm. The major soil series of this AER are Ukuwela and Akurana soil series. When unutilized scrub lands and underutilized lands are considered, 100 ha of land are very suitable (class II) for the crops mentioned in Table 3-22. Further, 500 ha of lands are moderately suitable (class IV) and 60 ha of lands are slightly suitable (class V) for the crops mentioned below. Please refer Figure 3-29 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-22: Crop Recommendation IM3a

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Kandy Matale	Bean Beat Capsicum Tomato Tobacco Brinjal Bushitao Cabbage Cucurbits Knolkhol Okra Radish		Rice	Rice				Rice Bean Capsicum Tomato Brinjal Bushitao Cabbage Cucurbits Okra Green Chili Radish Sweet potato

3.1.23 Land Capability of scrub and underutilized distributed in IM3b

The agro-ecological region IM3b is distributed over Kurunegala and Matale Districts. The annual rainfall of IM3b is >1200 mm. The major soil series of this AER are Ukuwela and Aluthnuwara soil series. When unutilized scrub lands and underutilized lands are considered, 40 ha of land are very suitable (class II) for the crops mentioned in Table 3-23. Further, 70 ha of lands are suitable (Class III), 320 ha of lands are moderately suitable (class IV) and 800 ha of lands are slightly suitable (class V) for the crops mentioned below. Please refer Figure 3-30 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-23: Crop Recommendation IM3b

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Kurunegala Matale	Bean Tomato Brinjal Green chili Spring onion		Rice	Rice			Circuits Tomato	Rice Bean Big onion Tomato Capsicum Brinjal Bushitao Spring onion Green chili Okra Beat Cabbage

3.1.24 Land Capability of scrub and underutilized distributed in IM3c

The agro-ecological region IM3c is distributed over Kandy and Nuwara Eliya Districts. The annual rainfall of IM3c is >1100 mm. The major soil series of this AER are Hunnasgiriya and Wegala soil series. When unutilized scrub lands and underutilized lands are considered, 500 ha of land are very suitable (class II) for the crops mentioned in Table 3-24. Further, 1800 ha of lands are suitable (Class III), 220 ha of lands are moderately suitable (class IV) and 1200 ha of lands are slightly suitable (class V) for the crops mentioned below. Please refer Figure 3-31 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-24: Crop Recommendation IM3c

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Kandy Nuwara Eliya	Bean Tomato Tobacco Beat Carrot Brinjal Green chili Spring onion Cassava Cucurbits Kurakkan Radish	Rice	Rice	Rice		Brinjal Chili Spring onion	Rice	Rice Bean Tobacco Tomato Beat Carrot Chili Okra Spring onion Cabbage Radish Sweet potato

3.1.25 Land Capability of scrub and underutilized distributed in IU1

The agro-ecological region IU1 is distributed over Kandy and Matale districts. The annual Rainfall of IU1 is >2400 mm. The major soil series of this AER are Hunnasgiriiya and Wegala soil series. When unutilized scrub lands and underutilized lands are considered, a 1300 ha area of land is suitable (class III) for the crops mentioned in Table 3-25. Further, a 20-ha area of land is moderately suitable (class IV) for the crops mentioned below. A large area of this AER is covered by erosion remnants that were unsuitable for agriculture. Please refer Figure 3-32 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-25: Crop Recommendation IU1

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Kandy Matale	Potato Cabbage Carrot		Rice	Rice				Rice Capsicum Tomato Beat Carrot Knolkhol Radish

3.1.26 Land Capability of scrub and underutilized distributed in IU2

The agro-ecological region IU2 is distributed over Badulla, Monaragala, Nuwara Eliya, and Kandy Districts. The annual rainfall of IU2 is >2100 mm. The major soil series of this AER are Badulla, Nuwara Eliya and Ragala soil series. When unutilized scrub lands and underutilized lands are considered, 2100 ha of land are very suitable (class II) for the crops mentioned in Table 3-26. Further, 100 ha of lands are suitable (Class III), 1500 ha of lands are moderately suitable (class IV), 140 ha lands are slightly suitable (class V) for the crops mentioned below. Please refer Figure 3-33 and Figure 3-34 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-26: Crop Recommendation IU2

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Badulla Nuwara Eliya Kandy Monaragala	Potato Tomato Tobacco Beet Carrot Been Lettuce Leek Cassava Cabbage Brinjal Radish		Rice	Rice	Tomato Beet Bean Carrot Leek Lettuce Cabbage Brinjal Radish Knolkhol	Potato	Bean Horse gram Kurakkan Sweet potato	Rice Tobacco Tomato Bean Beet Cabbage Green Chili Knolkhol Brinjal Cucurbits Radish Okra

3.1.27 Land Capability of scrub and underutilized distributed in IU3a

The agro-ecological region IU3a is distributed over Badulla and Monaragala Districts. The annual rainfall of IU3a is >1900 mm. The major soil series of this AER are Badulla and Mahawalatenna soil series. Crop recommendations were not found for IU3a. Please refer Figure 3-35 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

3.1.28 Land Capability of scrub and underutilized distributed in IU3b

The agro-ecological region IU3b is distributed over Badulla, Nuwara Eliya, and Rathnapura Districts. The annual rainfall of IU3b is >1700 mm. The major soil series of this AER are Malaboda, Nuwara Eliya, Maskeliya soil series. Crop recommendations were not found for IU3b. Please refer Figure 3-36 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

3.1.29 Land Capability of scrub and underutilized distributed in IU3c

The agro-ecological region IU3c is distributed over Badulla and Monaragala Districts. The annual rainfall of DL1b is >1600 mm. The major soil series of this AER are Badulla, Walimada and Bandarawela soil series. When unutilized scrub lands and

underutilized lands are considered, 20 ha of land are suitable (class III) for crops mentioned in Table 3-27. Further, 1300 ha of land are moderately suitable (class IV) for the crops mentioned below. Please refer Figure 3-37 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands

Table 3-27: Crop Recommendation IU3c

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Badulla Monaragala	Bean Cabbage Capsicum Knolkhol Radish Tobacco	Bean Cabbage Capsicum Knolkhol	Rice Chili Bean Cabbage Red onion Carrot	Rice	Gingelly Horse gram	Tomato Capsicum Cabbage Knolkhol	Bean Knolkhol Radish	Rice Chili Tomato Red onion Capsicum Beet Brinjal Cucurbits Knolkhol

3.1.30 Land Capability of scrub and underutilized distributed in IU3d

The agro-ecological region IU3d is distributed over Badulla and Nuwara-Eliya Districts. The annual rainfall of IU3d is >1300 mm. The major soil series of this AER is Nuwara Eliya and Bandarawela soil series. Crop recommendations were not found for IU3d. Please refer Figure 3-38 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

3.1.31 Land Capability of scrub and underutilized distributed in IU3e

The agro-ecological region IU3e is distributed in Badulla District. The annual rainfall of DL1b is >1400 mm. The major soil series of this AER are Badulla, Walimada and Bandarawela soil series. When unutilized scrub lands and underutilized lands are considered, 130 ha of land are suitable (class III) for the crops mentioned in Table 3-28. Further, 300 ha of land is moderately suitable (class IV) for the crops mentioned below. Please refer Figure 3-39 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-28: Crop Recommendation IU3e

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Badulla Nuwara Eliya	Potato Tomato Bean Cabbage Carrot Brinjal Beet Capsicum Knolkhol Leek Radish	Potato Tomato Bean Beet Capsicum Cabbage Leek	Rice Potato Bean Cabbage Garlic Tomato	Rice Potato Bean Cabbage Tomato Beet Capsicum Knolkhol Lettuce	Cassava Horse gram Sweet potato	Potato Bean Cabbage Carrot Knolkhol Tomato Garlic		Bean Cabbage Potato Brinjal Beet Carrot Green Chili Leek Tomato Cucurbits Radish Garlic

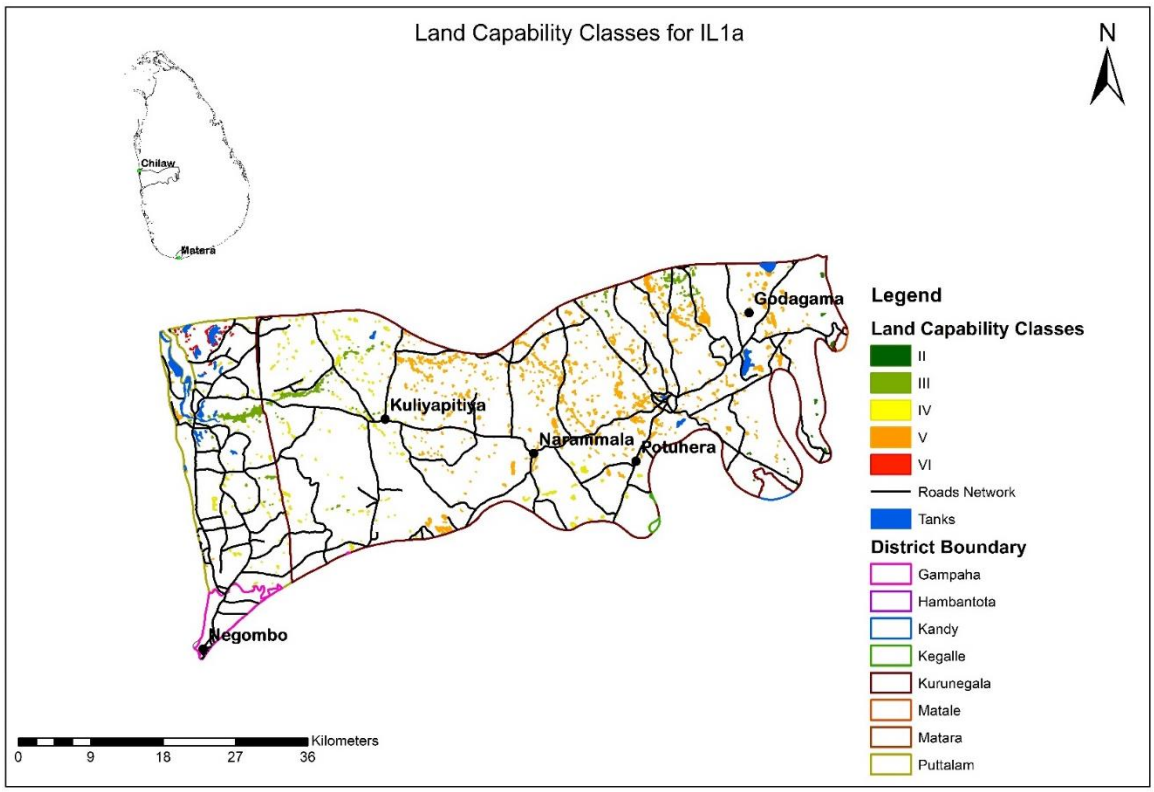

Figure 3-16: Land capability classes for IL1a

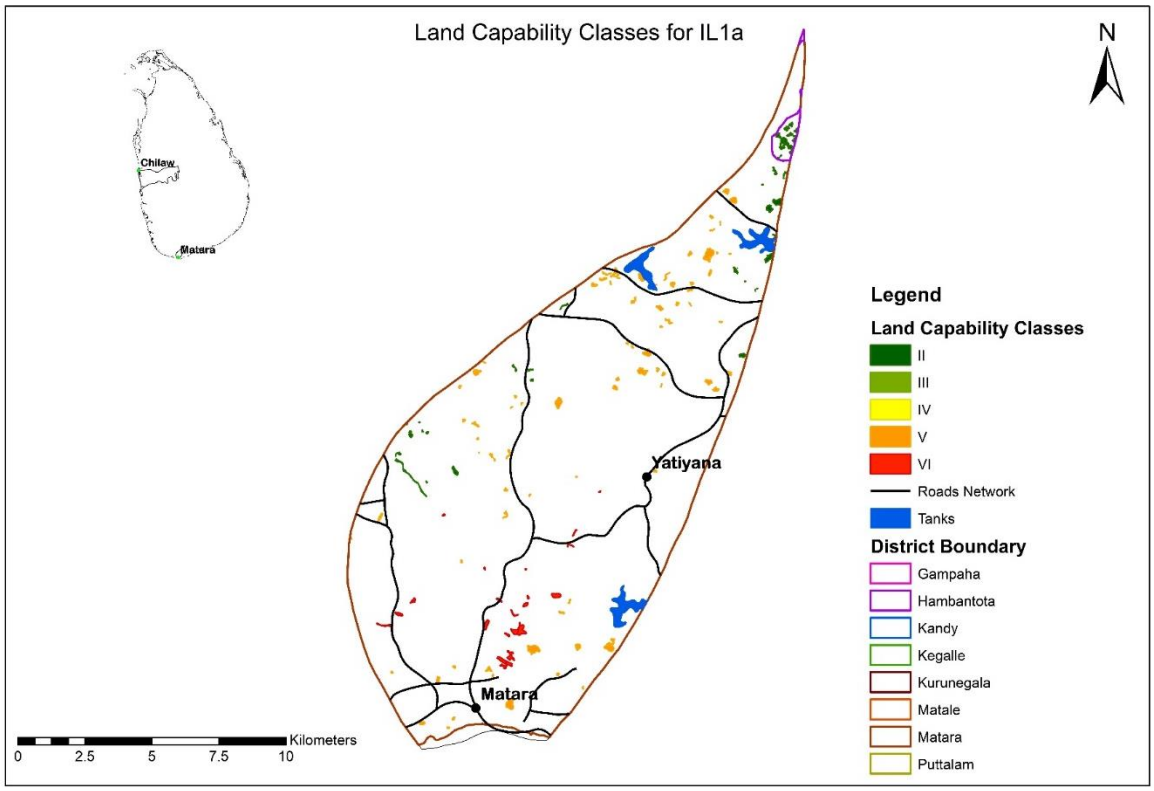

Figure 3-17: Land capability classes for IL1a

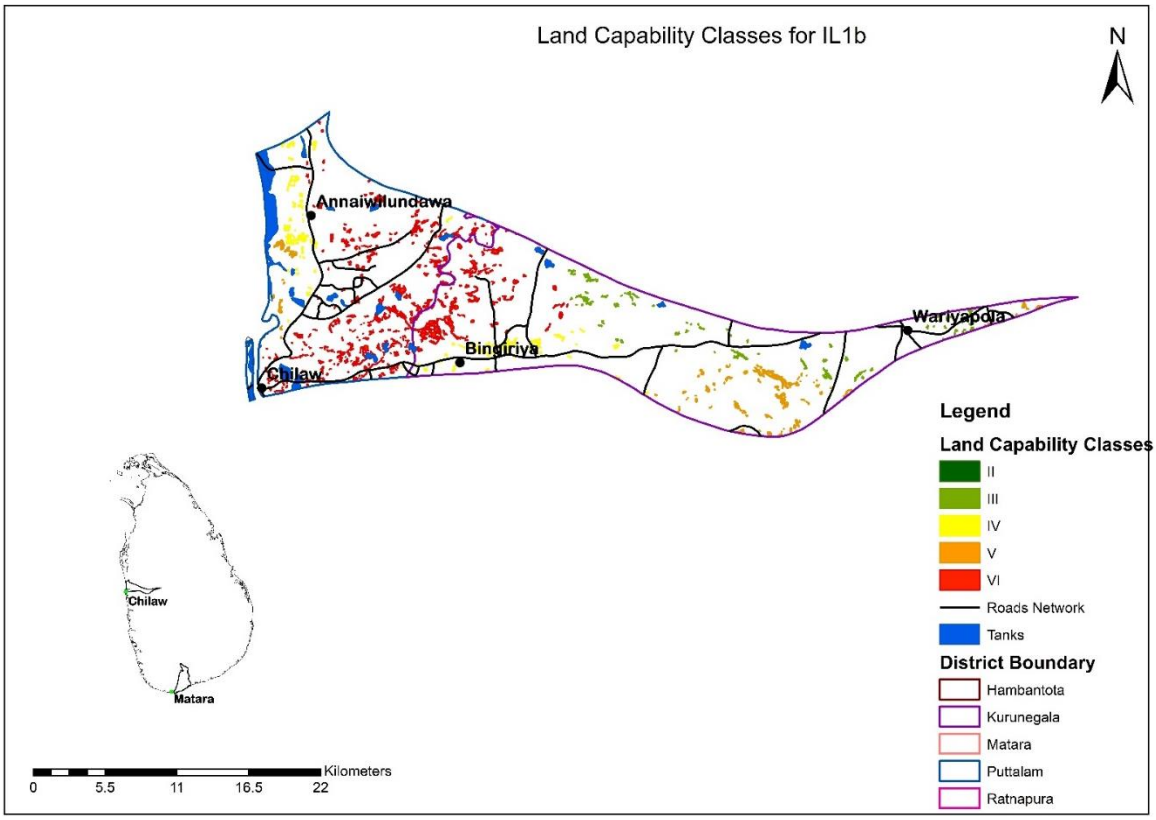

Figure 3-18: Land capability classes for IL1b

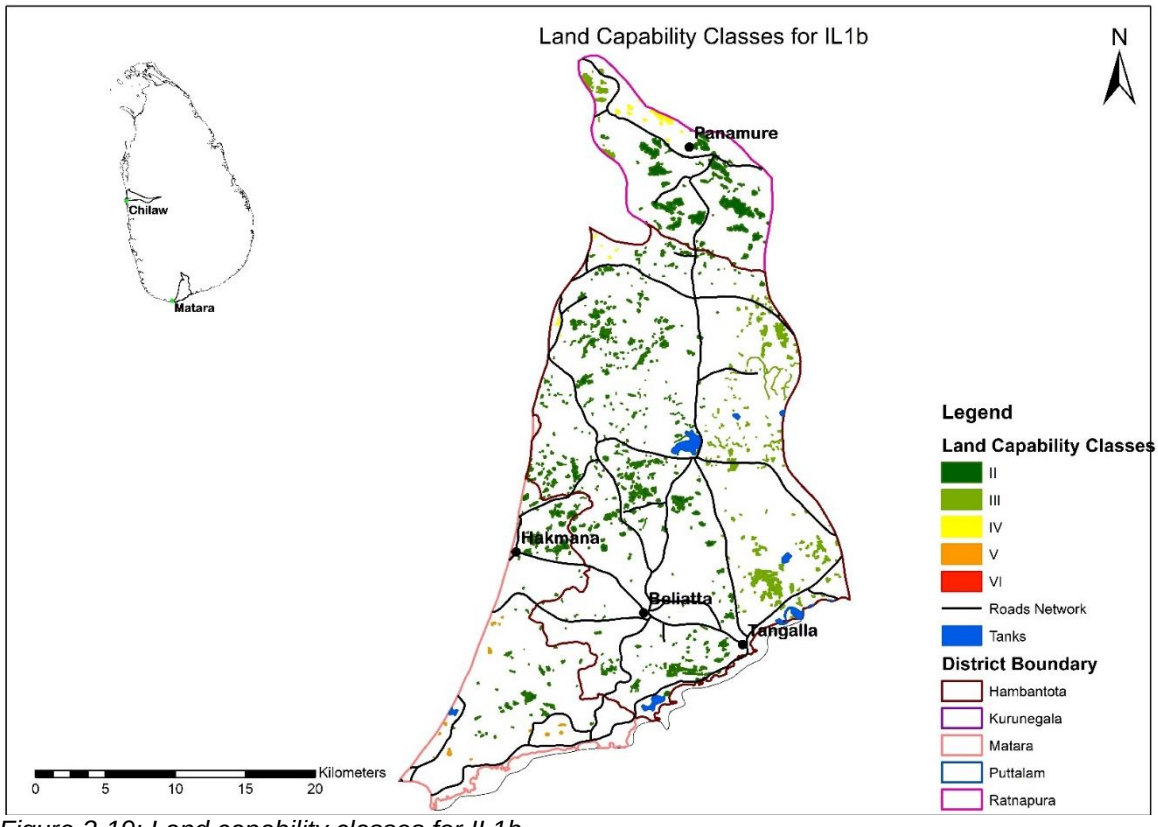

Figure 3-19: Land capability classes for IL1b

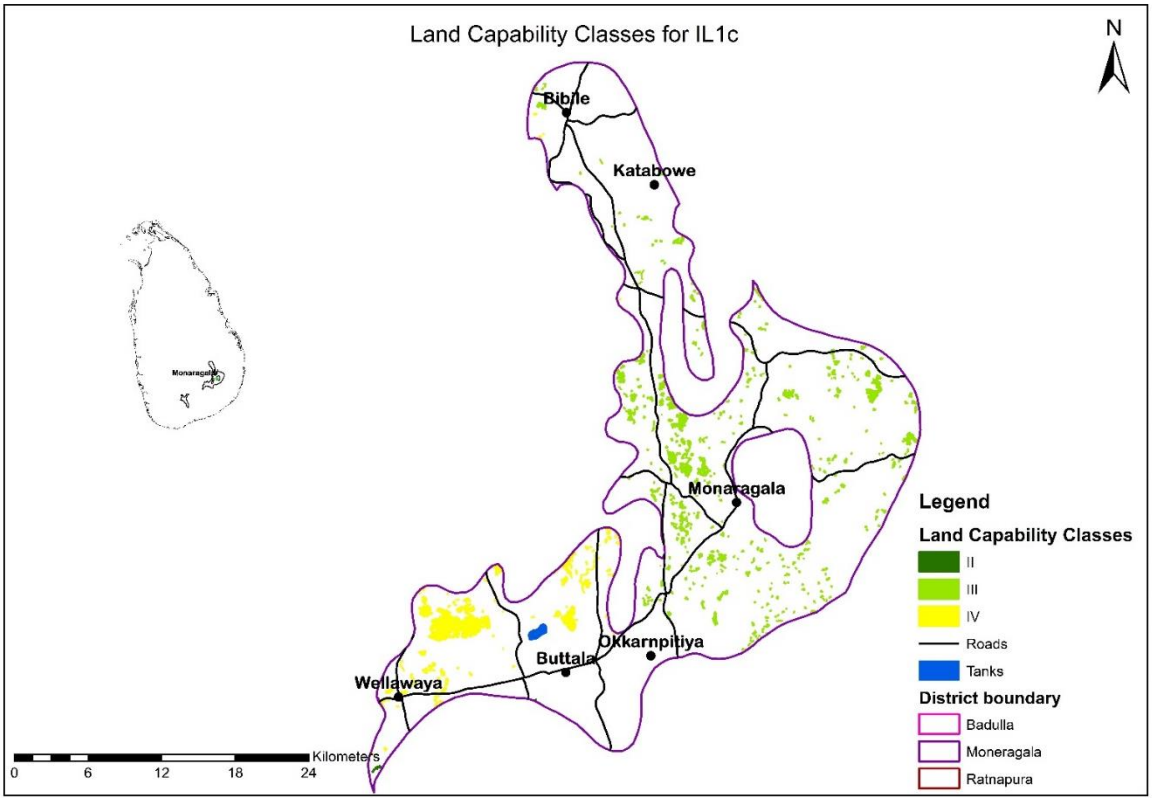

Figure 3-20: Land capability classes for IL1c

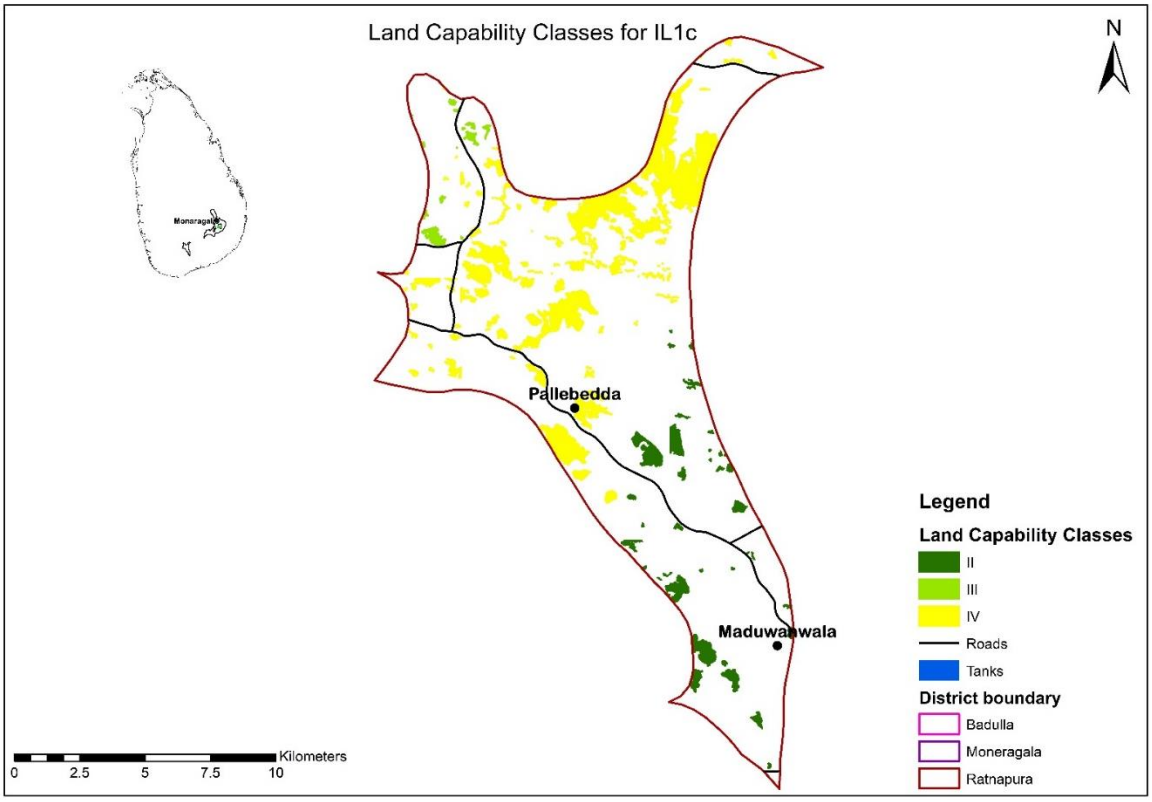

Figure 3-21: Land capability classes for IL1c

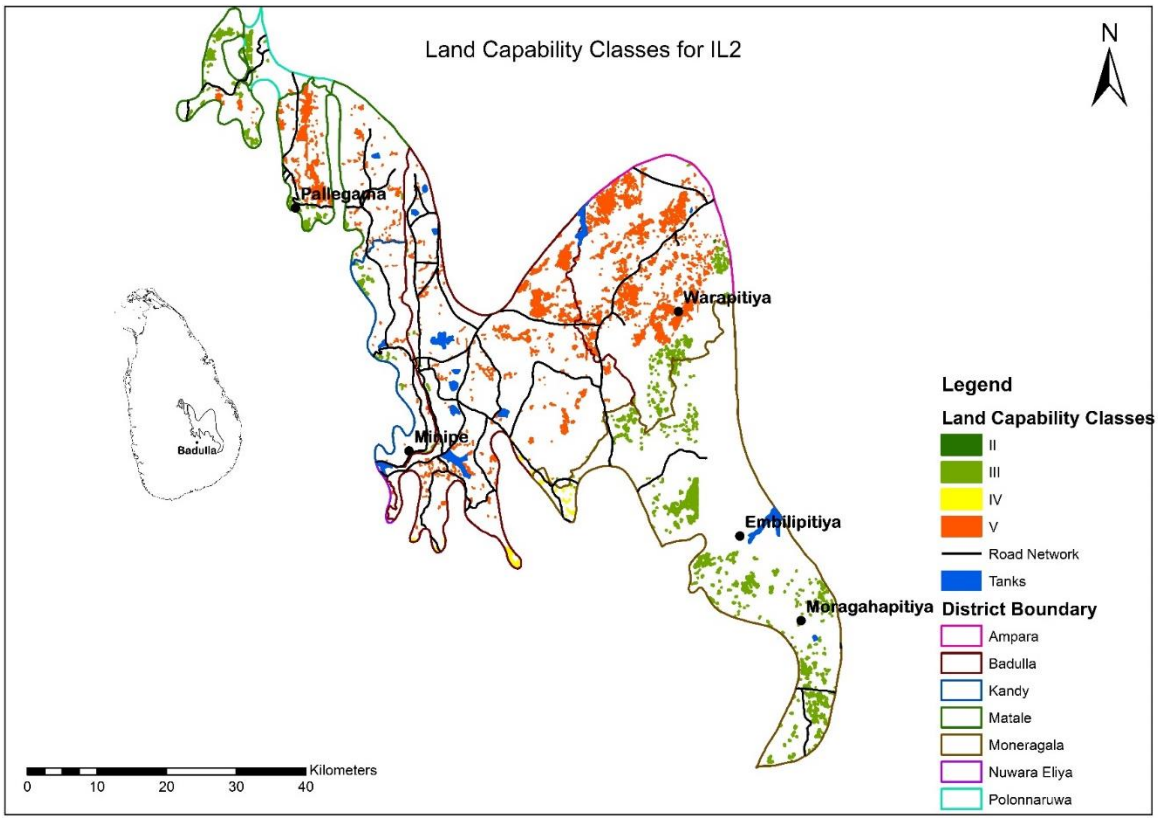

Figure 3-22: Land capability classes for IL2

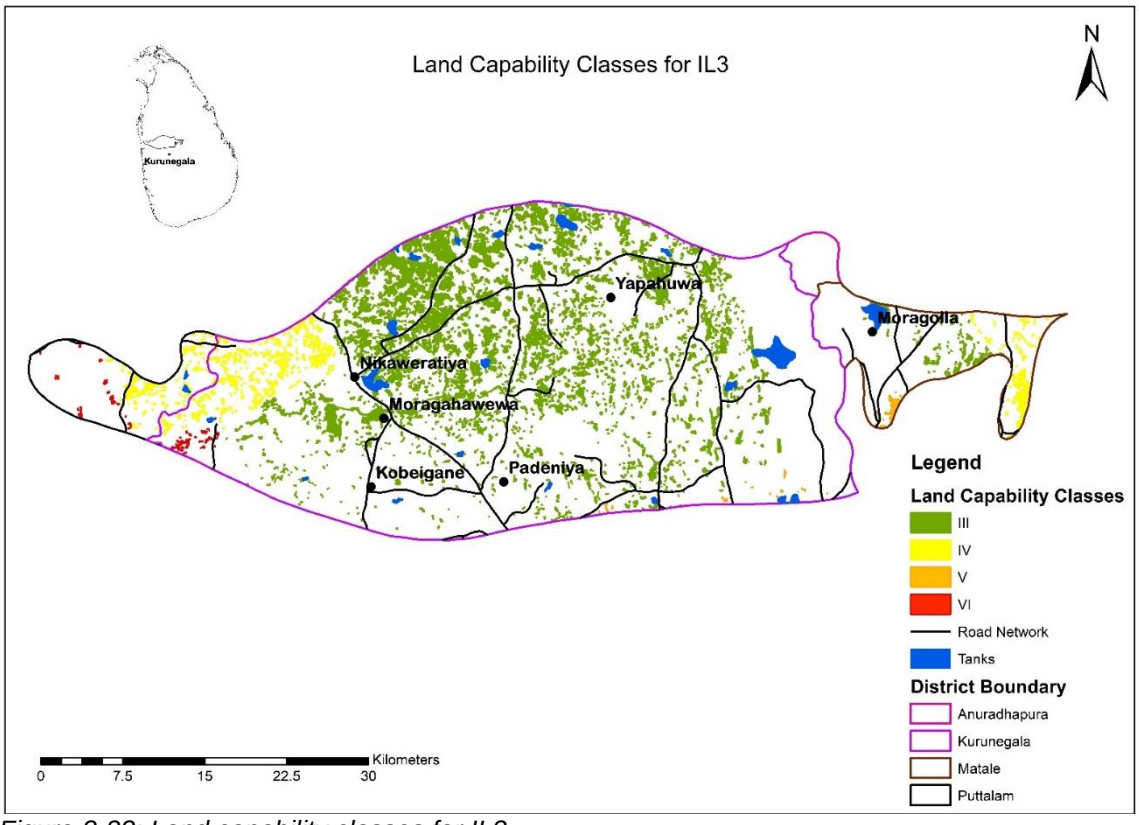

Figure 3-23: Land capability classes for IL3

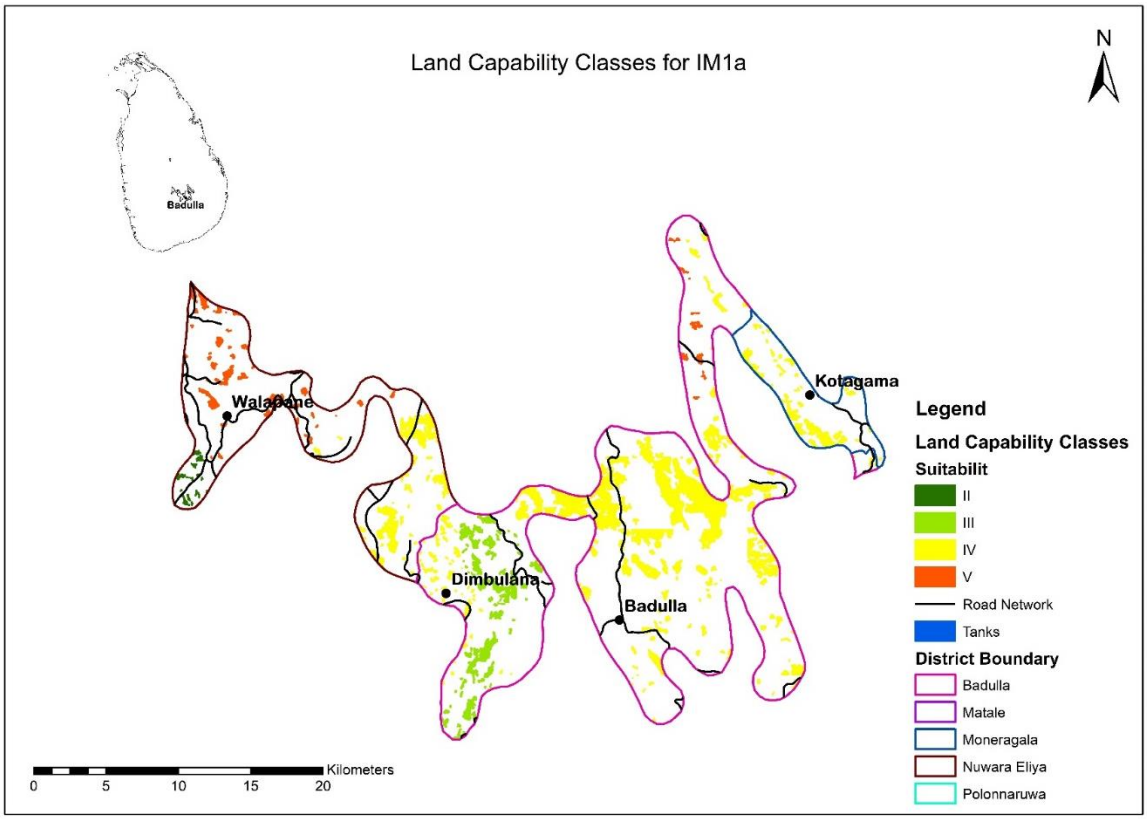

Figure 3-24: Land capability classes for IM1a

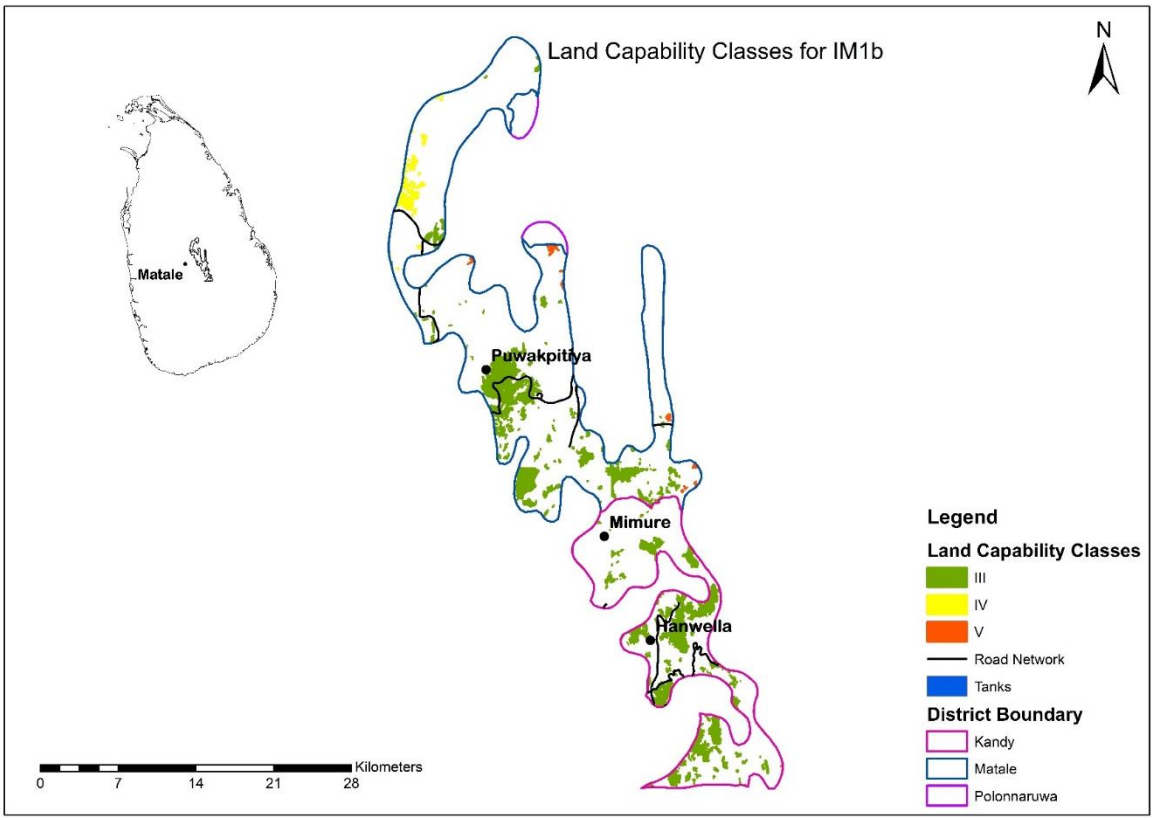

Figure 3-25: Land capability classes for IM1b

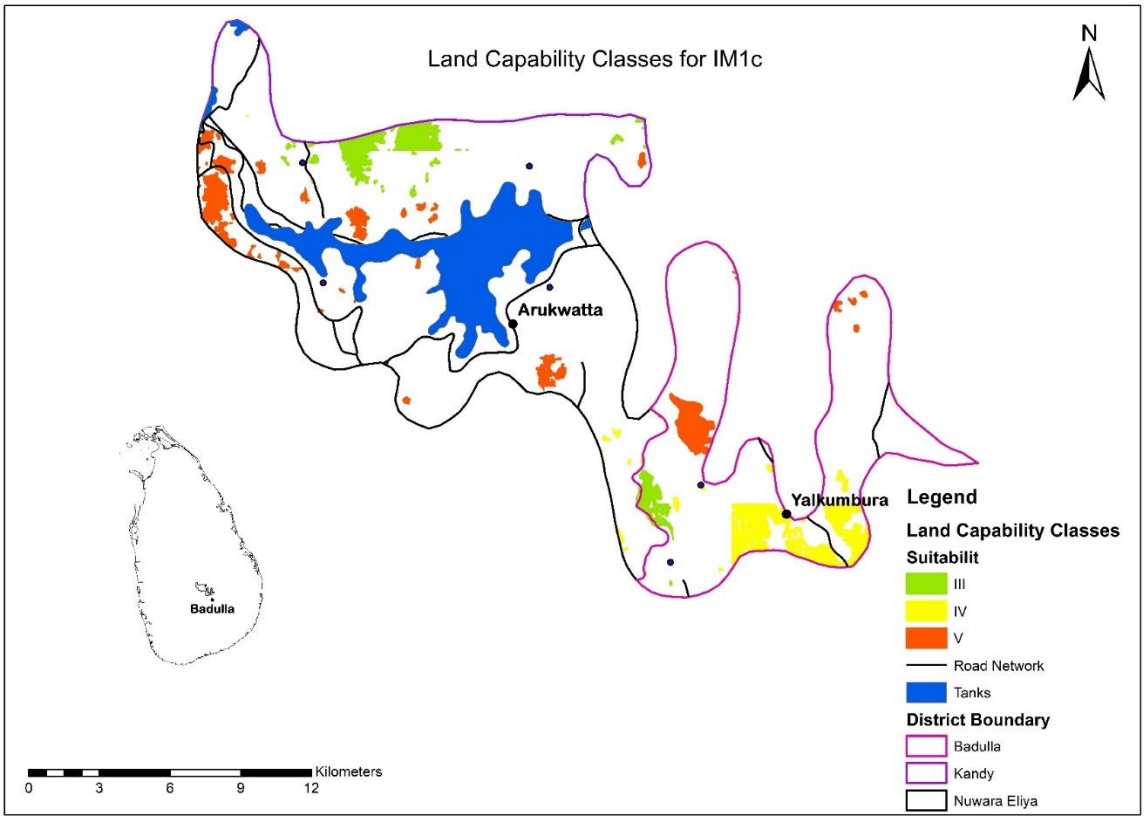

Figure 3-26: Land capability classes for IM1c

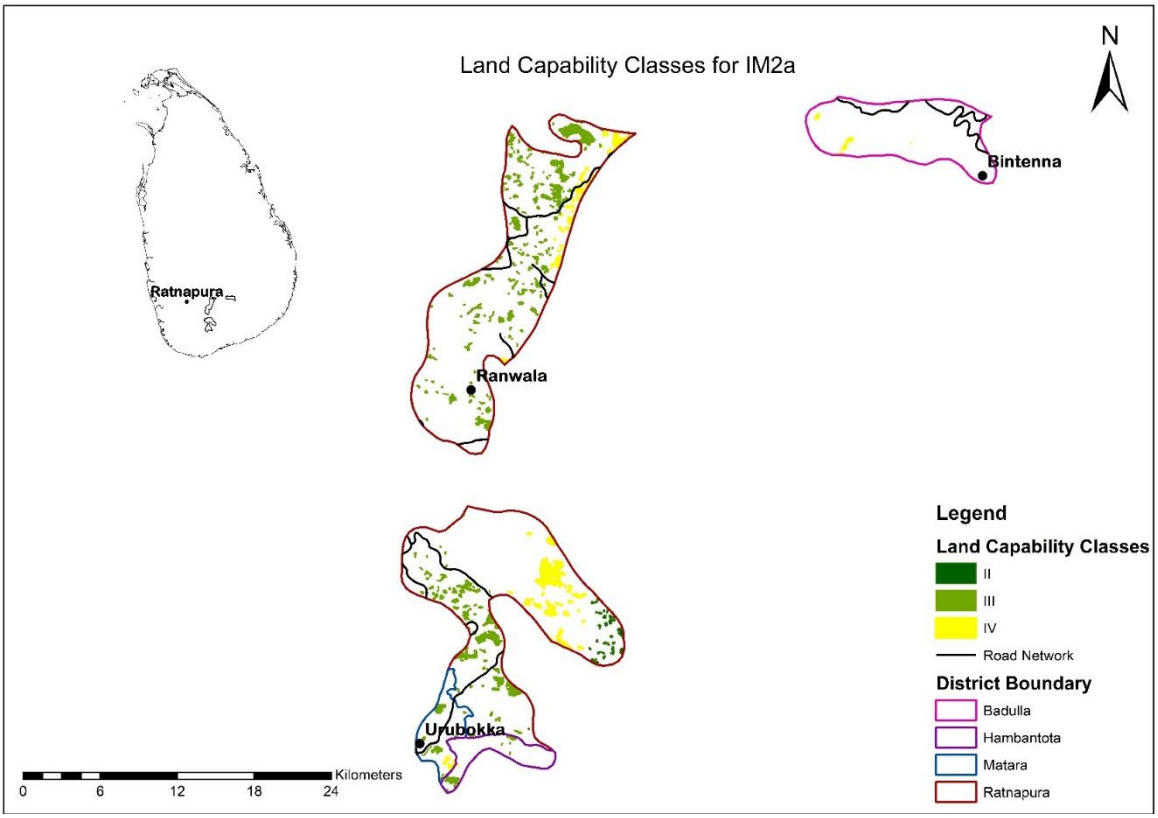

Figure 3-27: Land capability classes for IM2a

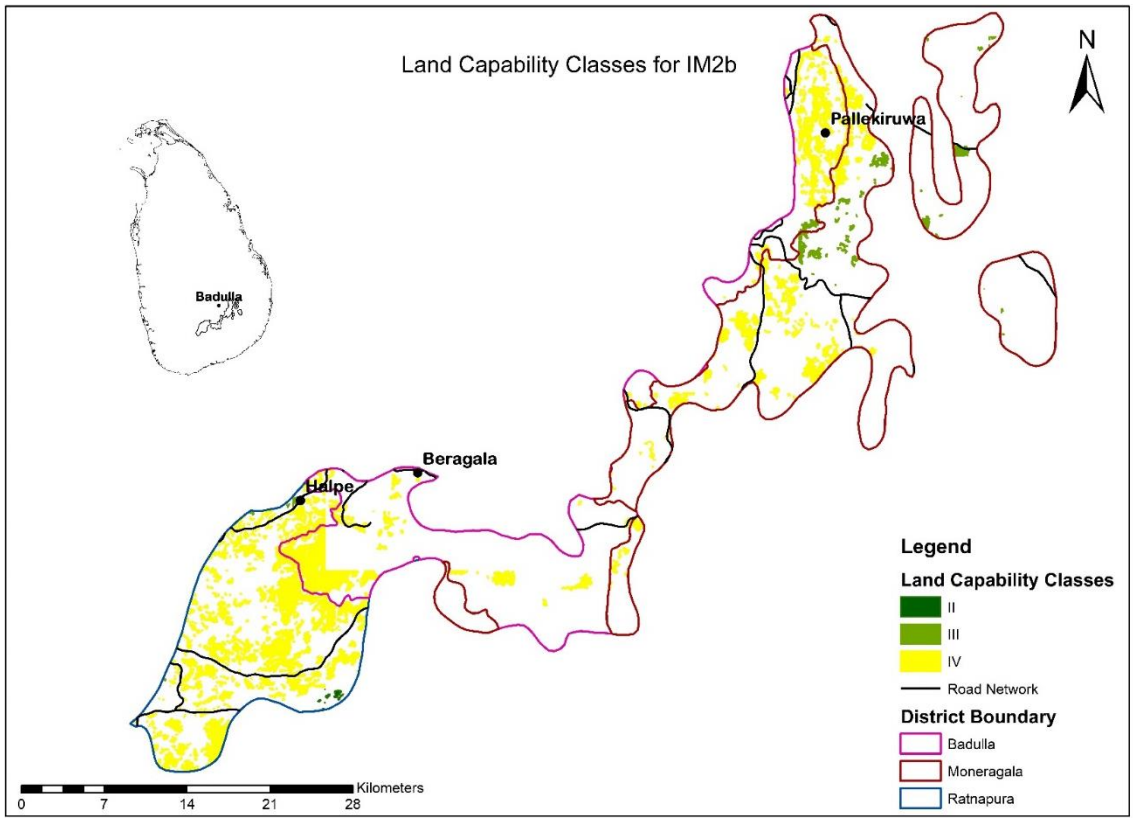

Figure 3-28: Land capability classes for IM2b

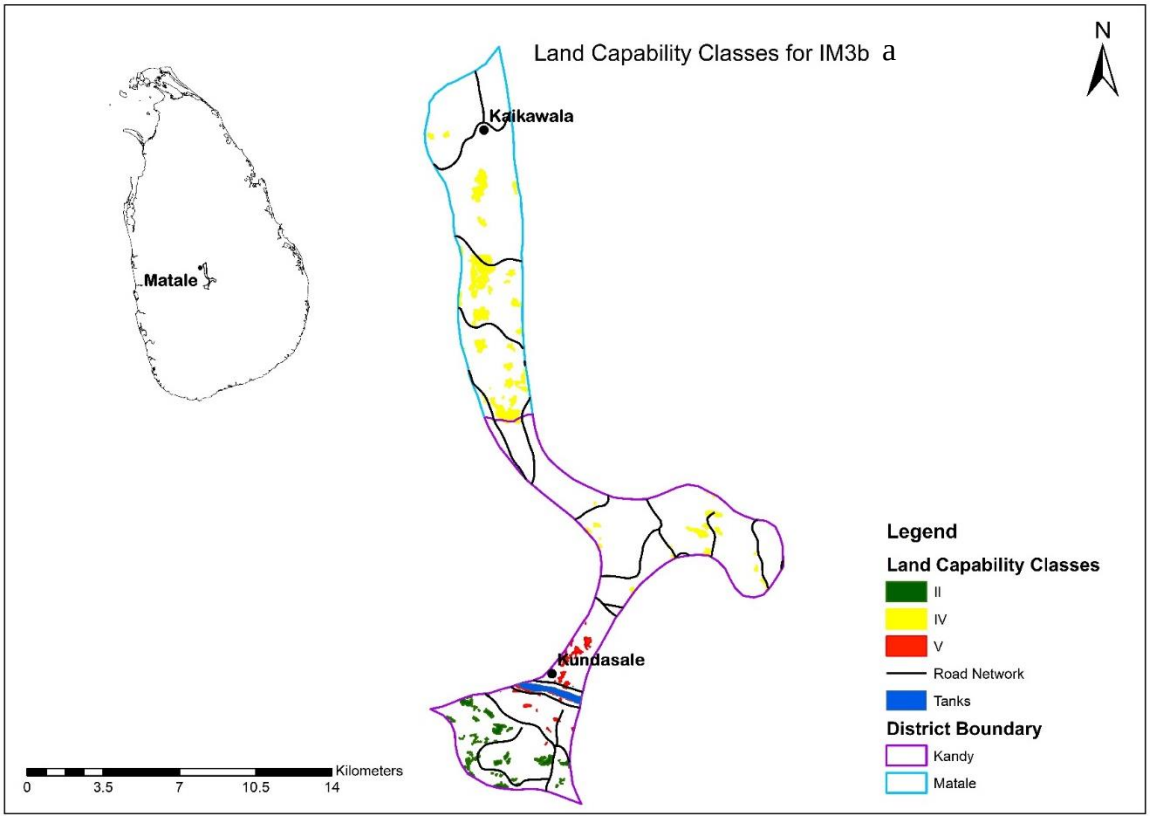

Figure 3-29: Land capability classes for IM3a

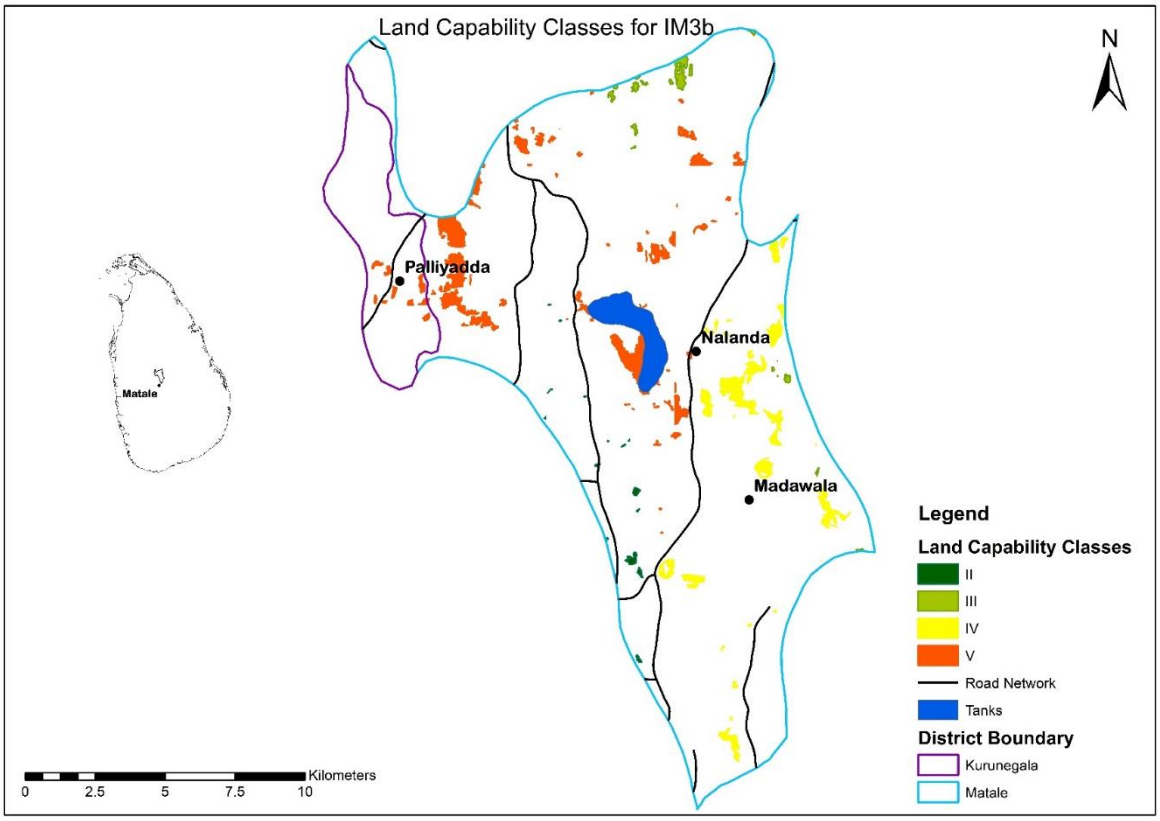

Figure 3-30: Land capability classes for IM3b

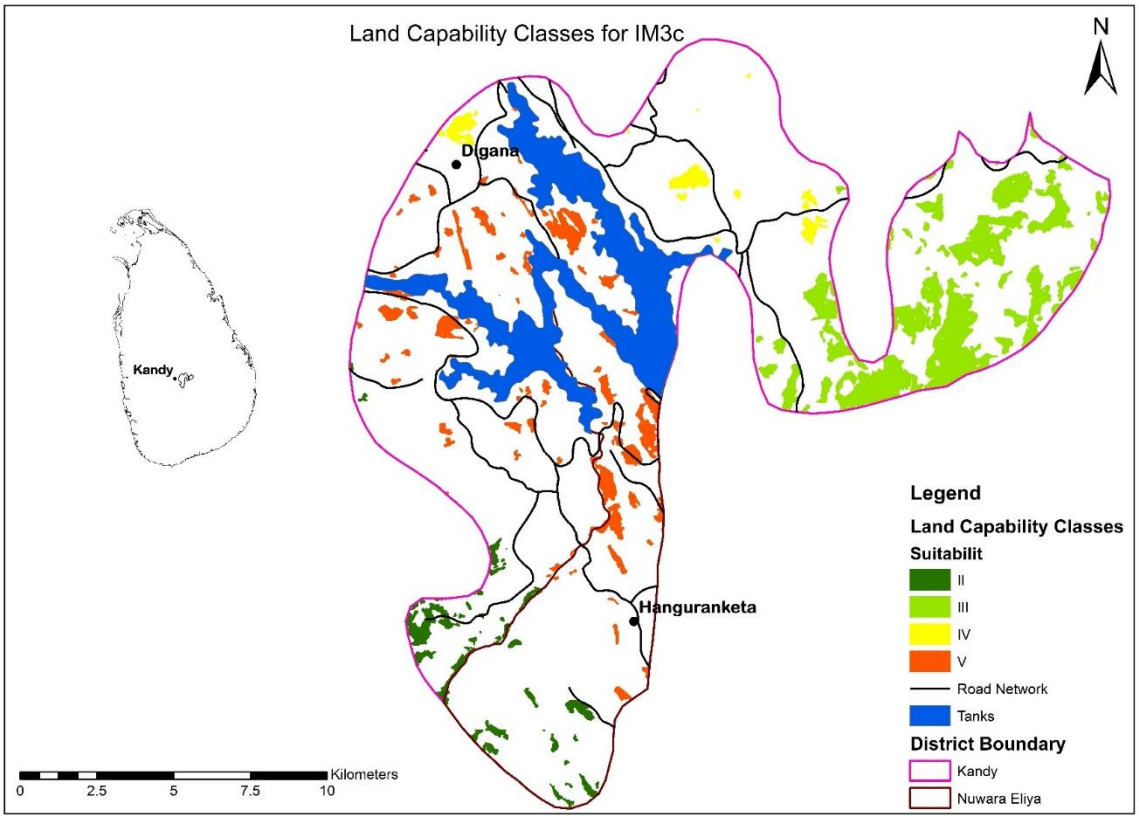

Figure 3-31: Land capability classes for IM3c

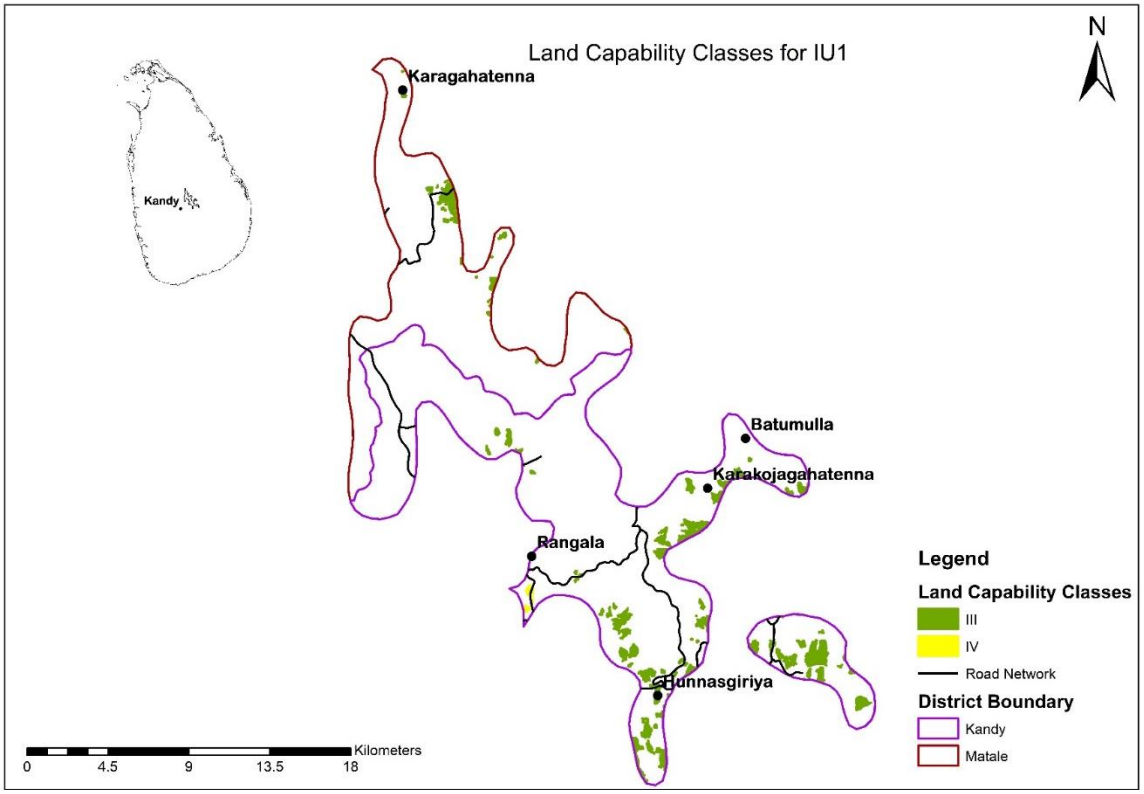

Figure 3-32: Land capability classes for IU1

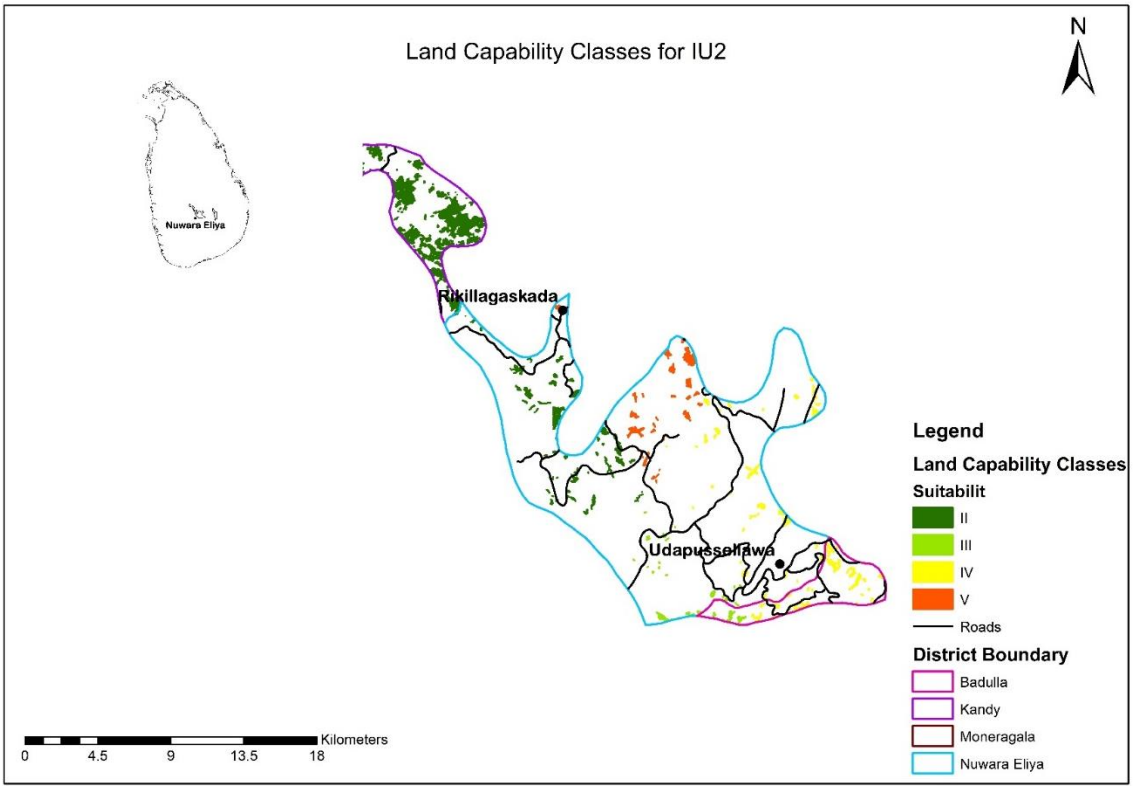

Figure 3-33: Land capability classes for IU2

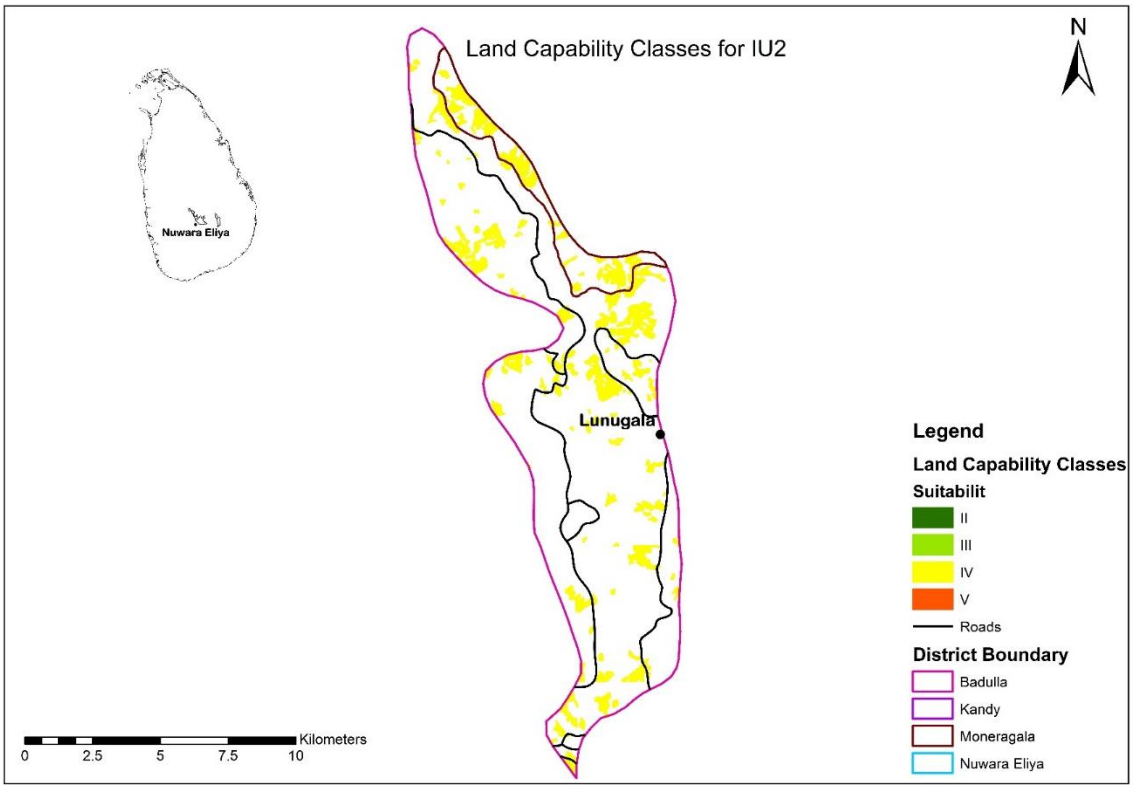

Figure 3-34: Land capability classes for IU2

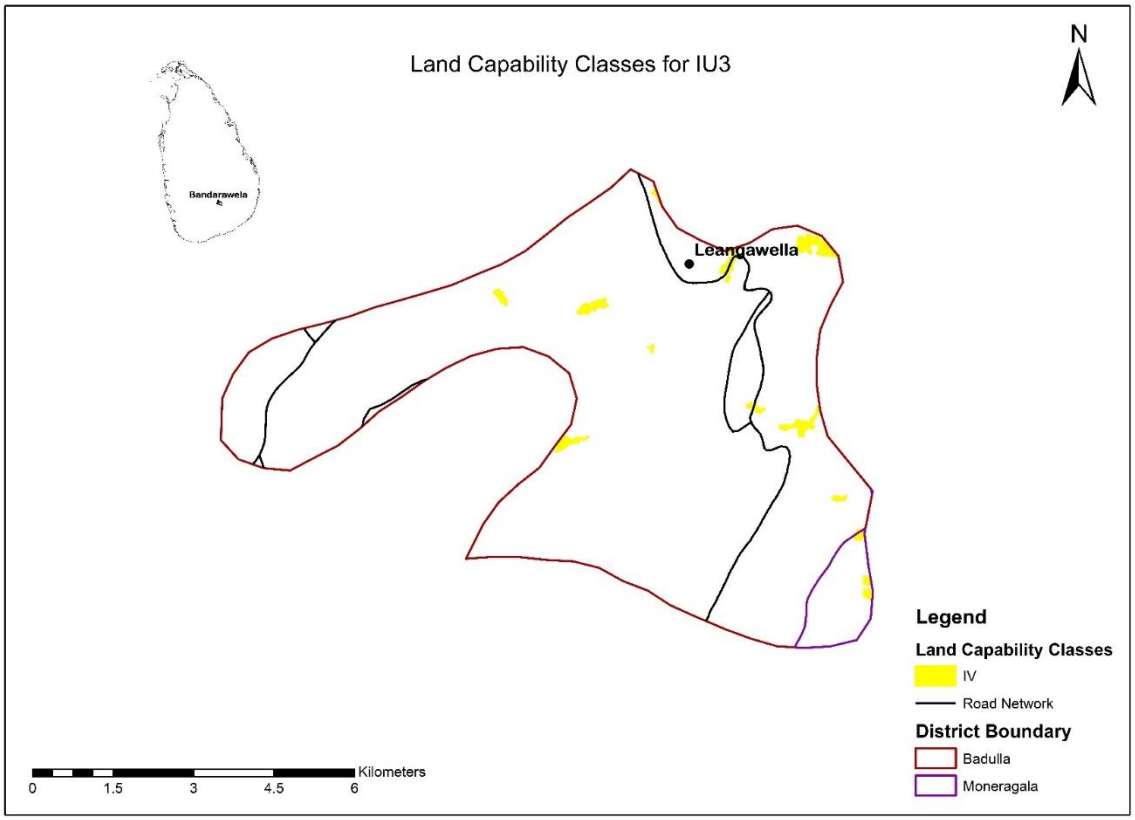

Figure 3-35: Land capability classes for IU3a

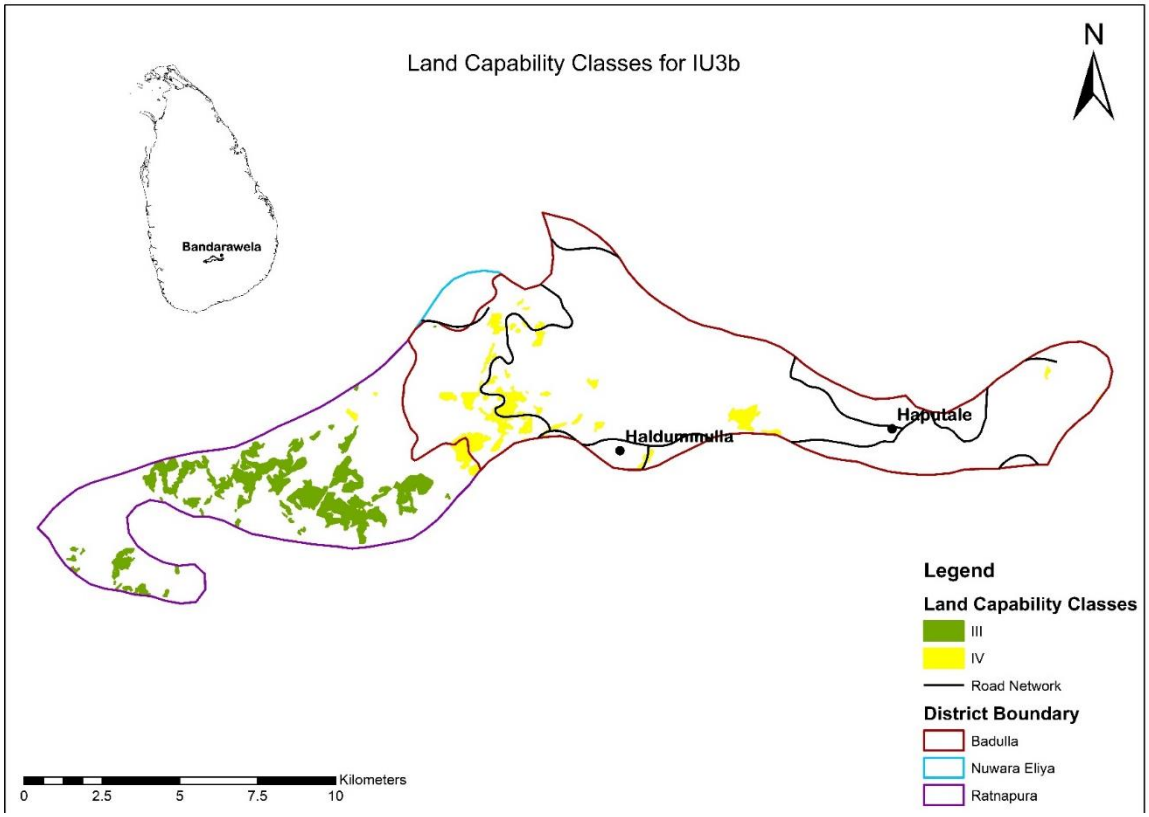

Figure 3-36: Land capability classes for IU3b

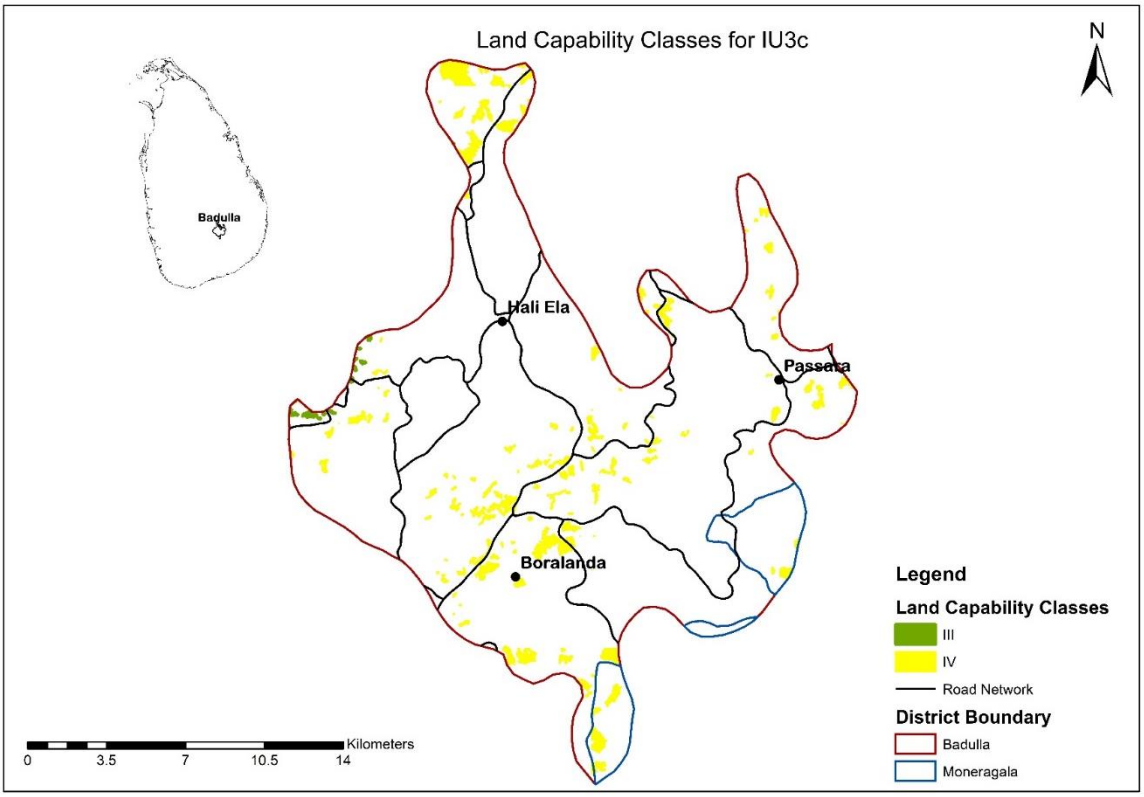

Figure 3-37: Land capability classes for IU3c

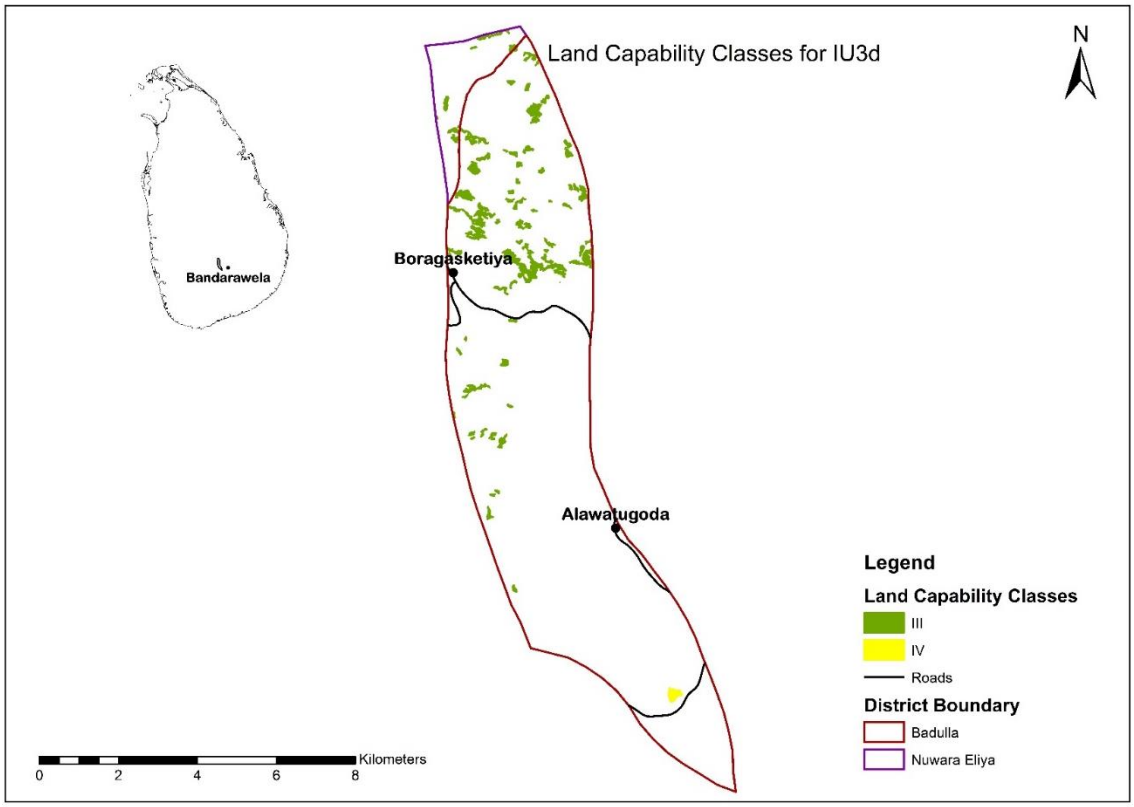

Figure 3-38: Land capability classes for IU3d

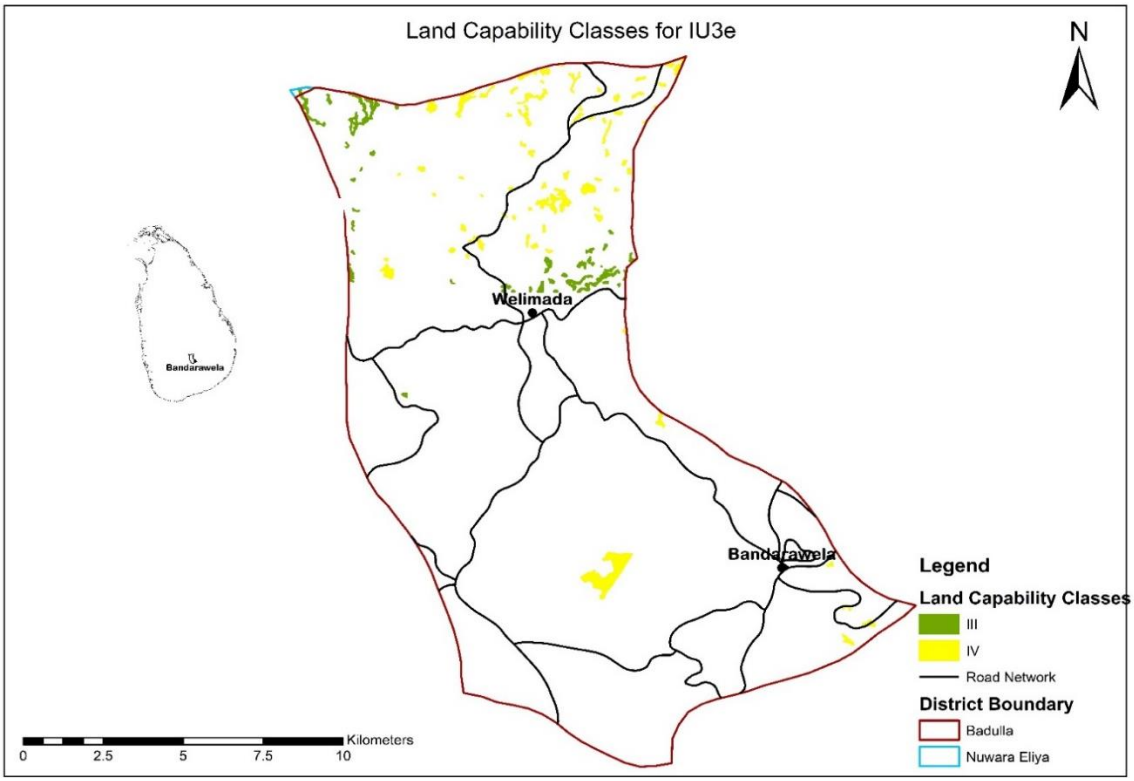

Figure 3-39: Land capability classes for IU3e

3.1.32 Land Capability of scrub and underutilized distributed in WL1a

The agro-ecological region WL1a is distributed over Colombo, Gampaha, Kaluthara districts, Rathnapura, Kegalle, Nuwara Eliya, Galle and Matara districts. The annual rainfall of WL1a is >3200 mm. The major soil series of this AER are Palatuwa, Galigamuwa, Boralu soil series. When unutilized scrub lands and underutilized lands are considered, 1100 ha of land are very suitable (class II) for the crops mentioned in Table 3-29. Further, 13 000 ha of lands are suitable (Class III), 14500 ha of lands are moderately suitable (class IV) and 1200 ha of lands are slightly suitable (class V) for the crops mentioned below. Please refer Figure 3-40 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-29: Crop Recommendation WL1a

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Colombo Gampaha Kalutara Galle Matara Kegalle Nuwara Eliya Rathnapura	Brinjal Cassava Okra Sweet potato Cucurbits		Rice	Rice	Cassava Kiriala Sweet potato Ginger		Rice	Rice

3.1.33 Land Capability of scrub and underutilized distributed in WL1b

The agro-ecological region WL1b is distributed over Colombo, Gampaha, Kaluthara, and Galle Districts. The annual rainfall of WL1b is >2800 mm. The major soil series of this AER are Palatuwa and Boralu soil series. When unutilized scrub lands and underutilized lands are considered, 240 ha of land are very suitable (class II) for the crops mentioned in Table 3-30. Further, 180 ha of lands are suitable (Class III), 800 ha of lands are moderately suitable (class IV) and 2200 ha of lands are slightly suitable (class V) for the crops mentioned below. Please refer Figure 3-41 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-30: Crop Recommendation WL1b

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Colombo Gampaha Kalutara Galle	Brinjal Cassava Okra Sweet potato Kiri-ala Cucurbits Dambala		Rice Brinjal Cassava Okra Sweet potato	Rice	Brinjal Cassava Okra Sweet potato Kiri-ala Cucurbits Dambala Ginger Turmeric Radish		Rice Brinjal Okra Sweet potato Potato	Rice

3.1.34 Land Capability of scrub and underutilized distributed in WL2a

The agro-ecological region WL2a is distributed over Galle, Matara, Hambantota, Kaluthara, Colombo, and Rathnapura Districts. The annual rainfall of WL2a is >2400 mm. The major soil series of this AER are Wagura, Negombo and Boralu soil series. When unutilized scrub lands and underutilized lands are considered, 300 ha of land are very suitable (class II) for the crops mentioned in Table 3-31. Further, 1300 ha of land are suitable (Class III), 3400 ha of land are moderately suitable (class IV), 2000 ha of land are slightly suitable (class V) and 130 ha of lands are unsuitable for the crops mentioned below. Please refer Figure 3-42 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-31: Crop Recommendation WL2a

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
Colombo	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Kalutara Galle Matara Rathnapura Hambantota	Brinjal Cassava Okra Sweet potato Cucurbits		Rice	Rice	Cassava Sweet potato Kiri-ala Ginger		Rice	Rice

3.1.35 Land Capability of scrub and underutilized distributed in WL2b

The agro-ecological region WL2b is distributed over Kegalle, Gampaha, and Kurunegala Districts. The annual rainfall of DL1b is >2200 mm. The major soil series of this AER are Galigamuwa, Mawanella and Minuwangoda soil series. When

unutilized scrub lands and underutilized lands are considered, 950-ha of land are moderately suitable (class IV) for the crops mentioned in Table 3-32. It should be noted that the field visits and on-site soil observations are recommended for selecting crops and identifying sustainable soil management and soil conservation practices. Please refer Figure 3-43 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-32: Crop Recommendation WL2b

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Kegalle Kurunegala Gampaha	Bean Okra Sweet potato Cassava Me Cucurbits Green chili		Rice	Rice	Ginger Turmeric Kiri ala Sweet potato		Rice	Rice Bean Okra Tomato Cucurbits Me

3.1.36 Land Capability of scrub and underutilized distributed in WL3

The agro-ecological region WL3 is distributed over Colombo, Gampaha, Kegalle, Kurunegala and Puttalam Districts. The annual rainfall of WL3 is >1700 mm. The major soil series of this AER are Boralu, Negombo and Palatuwa soil series. When unutilized scrub lands and underutilized lands are considered, 500 ha of land are suitable (class III) for the crops mentioned in Table 3-33. Further, 970 ha of lands are moderately suitable (class IV), 1400 ha of lands are slightly suitable (class V) and 120 ha of lands are unsuitable for the crops mentioned below. Please refer Figure 3-44 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-33: Crop Recommendation WL3

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Gampaha Colombo Kurunegala Kegalle Puttalam	Brinjal Cassava Sweet potato Green chili Kiri ala Cucurbits Okra		Rice	Rice	Kiri ala Sweet potato Ginger Turmeric		Rice Brinjal Cucurbits Okra	Rice

3.1.37 Land Capability of scrub and underutilized distributed in WM1a

The agro-ecological region WM1a is distributed over Galle, Matara, Kaluthara and Kandy, Kegalle, Nuwara Eliya and Rathnapura Districts. The annual Rainfall of WM1a is >3300 mm. The major soil series of this AER are Malaboda and Maskeliya soil series. When unutilized scrub lands and underutilized lands are considered, 1500 ha of land are very suitable (class II) for the crops mentioned in Table 3-34. Further, 5400 ha of land are suitable (Class III) and 1700 ha of land are moderately suitable (class IV) for the crops mentioned below. Please refer Figure 3-45 and Figure 3-46 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-34: Crop Recommendation WM1a

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
Kandy	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Nuwara Eliya	Brinjal		Rice	Rice			Rice	Rice
Rathnapura	Okra							
Kegalle	Sweet							
Galle	potato							
Matara	Cassava							
Kaluthara	Radish							

3.1.38 Land Capability of scrub and underutilized distributed in WM1b

As shown in figure 3.45 and 3.46, AER WM1b is distributed over Matara, Hambantota, The agro-ecological region WM1b is distributed over Matara, Hambantota, Kaluthara, and Rathnapura Districts. The annual rainfall of WM1b is >2900 mm. The major soil series of this AER are Malaboda and Dodangoda soil series. When unutilized scrub lands and underutilized lands are considered, a 3700 ha of land are suitable (class III) for the crops mentioned in Table 3-35. Please refer Figure 3-47 and Figure 3-48 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-35: Crop Recommendation WM1b

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Matara Rathnapura Kaluthara Hambantota	Brinjal Cassava Me		Rice	Rice	Brinjal Cassava Cucurbits Yams		Rice Sweet potato	Rice

3.1.39 Land Capability of scrub and underutilized distributed in WM2a

The agro-ecological region WM2a is distributed over Nuwara Eliya, Kandy, and Kegalle Districts. The annual rainfall of WM2a is >2200 mm. The major soil series of this AER are Gampola, Galigamuwa and Mawanella soil series. When unutilized scrub lands and underutilized lands are considered, 1500 ha of land are very suitable (class II) for the crops mentioned in Table 3-36. Further, 20 ha area of land are moderately suitable (class IV) for the crops mentioned in the said Table. Please refer Figure 3-49 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-36: Crop Recommendation WM2a

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Kandy Nuwara Eliya Kegalle	Capsicum Cassava Cucurbits Okra Sweet potato	Potato	Rice	Rice	Bean Capsicum Tomato Cassava Cucurbits Okra Sweet potato		Rice	Rice Bean Tomato Brinjal Cabbage Me Okra

3.1.40 Land Capability of scrub and underutilized distributed in WM2b

The agro-ecological region WM2b is distributed over Kandy and Kegalle Districts. The annual rainfall of WL2a is >1800 mm. The major soil series of this AER are the Akurana, Galigamuwa and Mawanella soil series. When unutilized scrub lands and underutilized lands are considered, 1000 ha of land are very suitable (class II) for the crops mentioned in Table 3-37. Further, 1200 ha of land are moderately suitable

(class IV), for the crops mentioned below. Please refer Figure 3-50 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-37: Crop Recommendation WM2b

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Kandy Kegalle	Bean Okra Sweet potato Cucurbits Cassava Green chili		Rice	Rice	Ginger Turmeric Kiri ala Sweet potato		Rice	Rice Bean Tomato Okra Cucurbits Me

3.1.41Land Capability of scrub and underutilized distributed in WM3a

The agro-ecological region WM3a is distributed over Kandy, Kegalle, and Kurunegala Districts. The annual rainfall of WM3a is >1600 mm. The major soil series of this AER are the Akurana, Kiruwana and Mawanella soil series. When unutilized scrub lands and underutilized lands are considered, 650 ha of land arevery suitable (class II) for the crops mentioned in Table 3-38 Further, 350 ha of lands are moderately suitable (class IV), 1 ha of lands are slightly suitable (class V) the crops mentioned below. Please refer Figure 3-51 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-38: Crop Recommendation WM3a

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Kandy Kurunegala Kegalle	Bean Wing bean Knolkhol Cucurbits Cassava Green chili Brinjal Cabbage Okra Sweet potato Spring Onion		Rice	Rice	Ginger Turmeric		Rice	Rice Bean Tomato Capsicum Cucurbits Brinjal Okra Bushitao Knolkhol

3.1.42 Land Capability of scrub and underutilized distributed in WM3b

The agro-ecological region WM3b is distributed over Kandy, Matale, and Kurunegala Districts. The annual rainfall of WM3b is >1400 mm. The major soil series of this AER are Ukuwela, Akurana, Kiruwana soil series. When unutilized scrub lands and underutilized lands are considered, a 2900 ha of land are very suitable (class II) for the crops mentioned in Table 3-39. Further, 120 ha of lands are suitable (class III), 320 ha of lands are moderately suitable (class IV) and 40 ha of lands are slightly suitable (class V) for the crops mentioned below. Please refer Figure 3-52 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-39: Crop Recommendation WM3b

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Kandy Matale Kurunegala	Bean Brinjal Cucurbits Cassava Green chili Cabbage Okra Sweet potato Spring Onion		Rice	Rice	Ginger Turmeric		Rice	Rice Bean Tomato Capsicum Cucurbits Brinjal Okra Bushitao Knolkhol

3.1.43 Land Capability of scrub and underutilized distributed in WU1

The agro-ecological region WU1 is distributed over Kandy, Kegalle, Nuwara Eliya, Rathnapura, and Matara districts. The annual rainfall of WU1 is >3100 mm. The major soil series of this AER are Malaboda, Mattakale, Maskeliya soil series. When unutilized scrub lands and underutilized lands are considered, 2200 ha of land are very suitable (class II) and 800 ha of land are suitable (class III) area for the crosp such as tea, natural forest and forest plantation. Please refer Figure 3-53 and Figure 3-54 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

3.1.44 Land Capability of scrub and underutilized distributed in WU2a

The agro-ecological region WU2a is distributed over Nuwara Eliya districts. The annual rainfall of WU2a is >2400 mm. The major soil series of this AER are Nuwara Eliya, Maskeliya and Mattakale soil series. When unutilized scrub lands and underutilized lands are considered, 300ha of land are very suitable (class II) for the crops mentioned in Table 3-40. Further, 460 ha of land are suitable (class III) for the crops mentioned below. Please refer Figure 3-55 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-40: Crop Recommendation WU2a

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Nuwara Eliya	Capsicum Potato Beet Bean Carrot Cauliflower Leek Lettuce Strawberry Cabbage Knolkhol Radish Sweet potato		Rice	Rice	Capsicum Bean Cabbage Cassava Radish Sweet potato	Potato Beet Carrot Leek Cabbage Radish		Rice

3.1.45 Land Capability of scrub and underutilized distributed in WU2b

The agro-ecological region WU2b is distributed over Kandy, Nuwara Eliya, and Rathnapura Districts. The annual rainfall of WU2b is >2200 mm. The major soil series of this AER are Nuwara Eliya, Malaboda, and Mattakale soil series. When unutilized scrub lands and underutilized lands are considered, 1400 ha of land are very suitable (class II) for the crops mentioned in Table 3-41. Further, 450 ha of land is suitable (class III) for the crops mentioned below. Please refer Figure 3-56 and Figure 3-57 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-41: Crop Recommendation WU2b

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Kandy Nuwara Eliya Rathnapura	Capsicum Radish	Potato Bean Carrot Cabbage			Capsicum Bean Sweet potato	Potato Carrot Cabbage		

3.1.46 Land Capability of scrub and underutilized distributed in WU3

The agro-ecological region WU3 is distributed over Badulla, Nuwara Eliya, and Rathnapura districts. The annual Rainfall of WU3 is >1800 mm. The major soil series of this AER is Nuwara Eliya, Malaboda and Badulla soil series. When unutilized scrub lands and underutilized lands are considered, a 300 ha of land are suitable (class III) for the crops mentioned in Table 3-42. Please refer Figure 3-58 for the map showing the spatial distribution of the level of agricultural potential of scrub and underutilized lands.

Table 3-42: Crop Recommendation WU3

District	Maha				Yala			
	Upland		Lowland		Upland		Lowland	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
Nuwara Eliya Badulla Rathnapura	Capsicum Broccoli Cauliflower Strawberry Potato Carrot Leek Lettuce Bean Beet Green peas Cabbage Knolkhol Radish	Carrot Potato Beet Cabbage Capsicum Leek Lettuce Cauliflower Knolkhol	Bean Cabbage Potato Beet Carrot Leek Cauliflower Knolkhol Lettuce	Bean Cabbage Potato Beet Carrot Leek Cauliflower Knolkhol Lettuce	Bean Cabbage Potato Beet Carrot Leek	Bean Cabbage Potato Beet Carrot Leek Cauliflower Garlic	Carrot Potato Beet Cabbage Capsicum Leek Cauliflower Knolkhol Lettuce	Potato Bean Carrot Leek Tomato Capsicum Cauliflower Lettuce

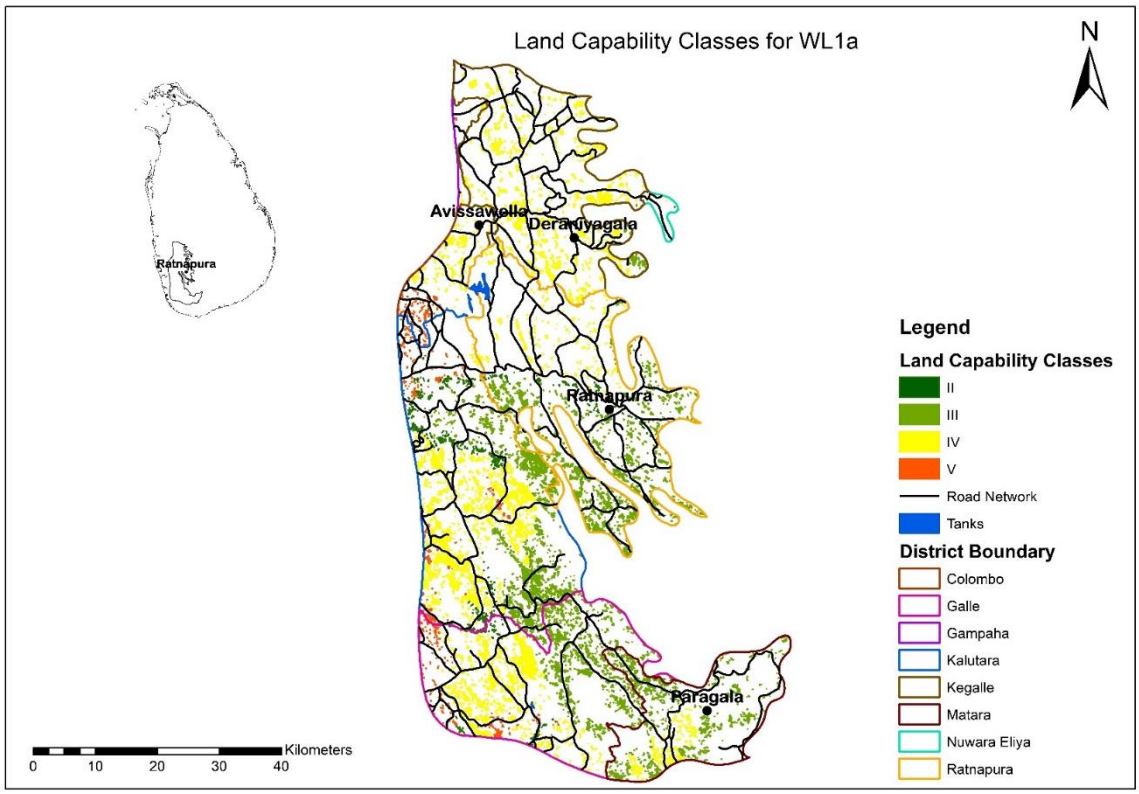

Figure 3-40: Land capability classes for WL1a

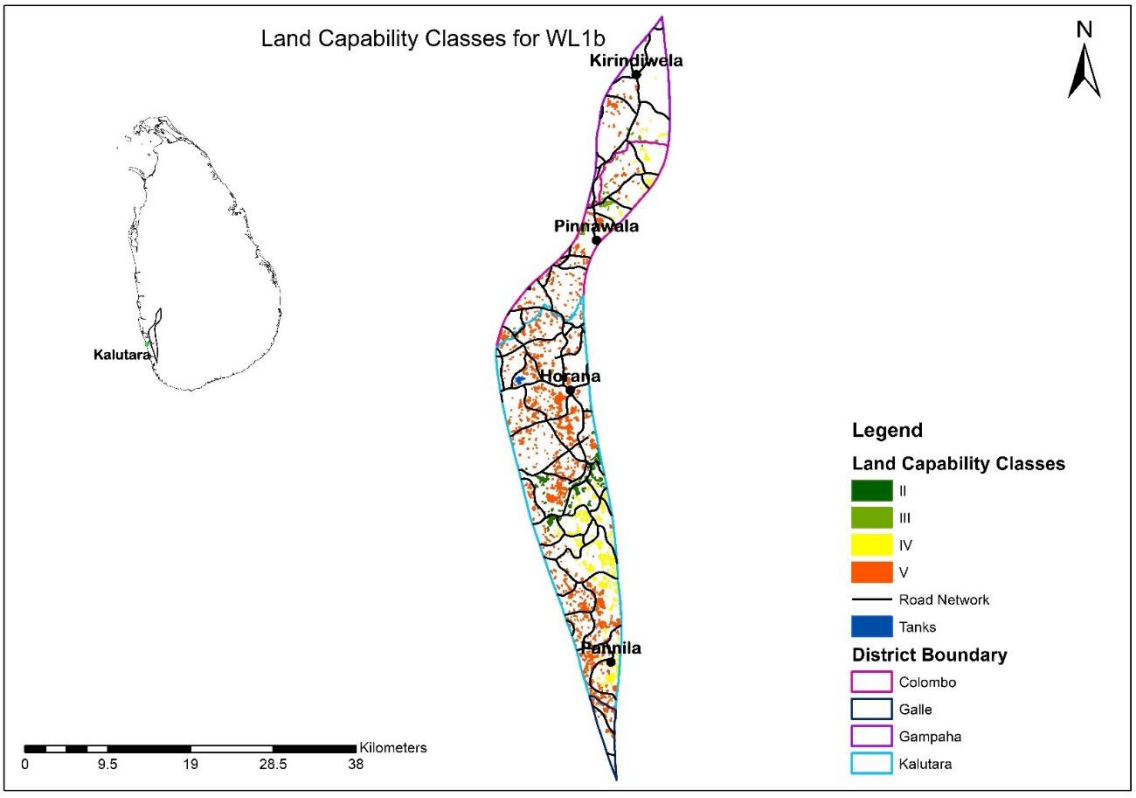

Figure 3-41: Land capability classes for WL1b

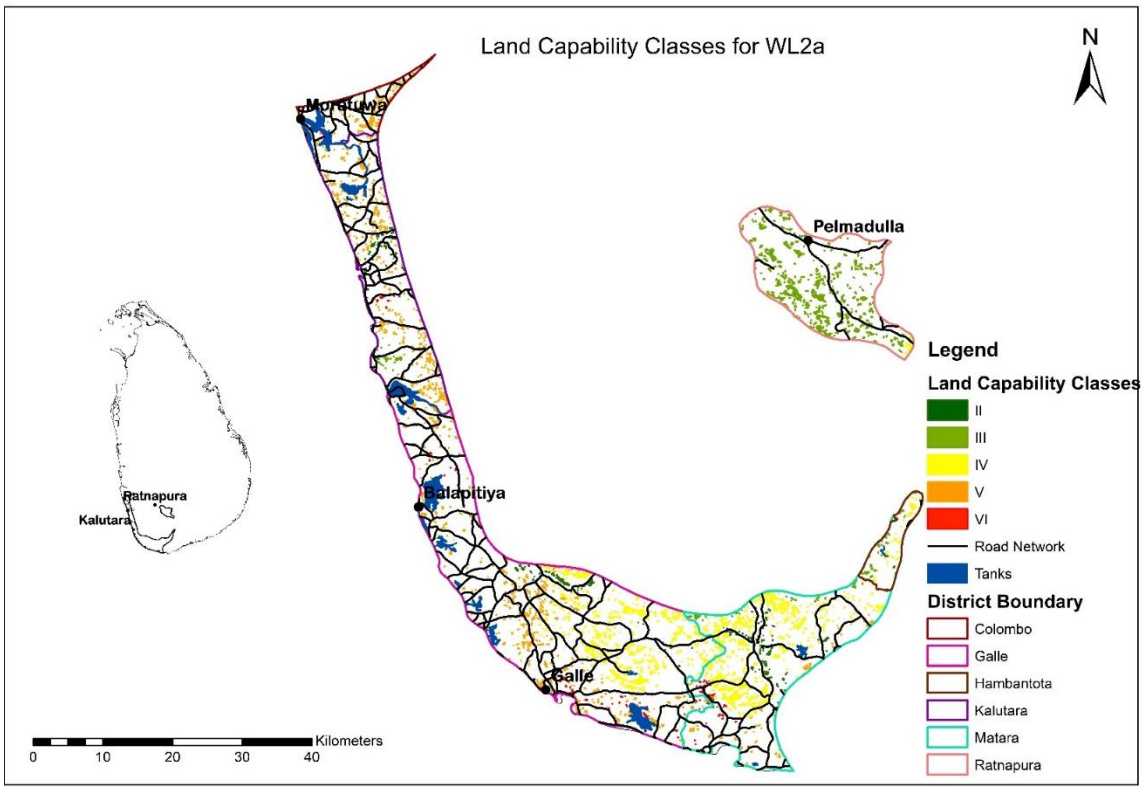

Figure 3-42: Land capability classes for WL2a

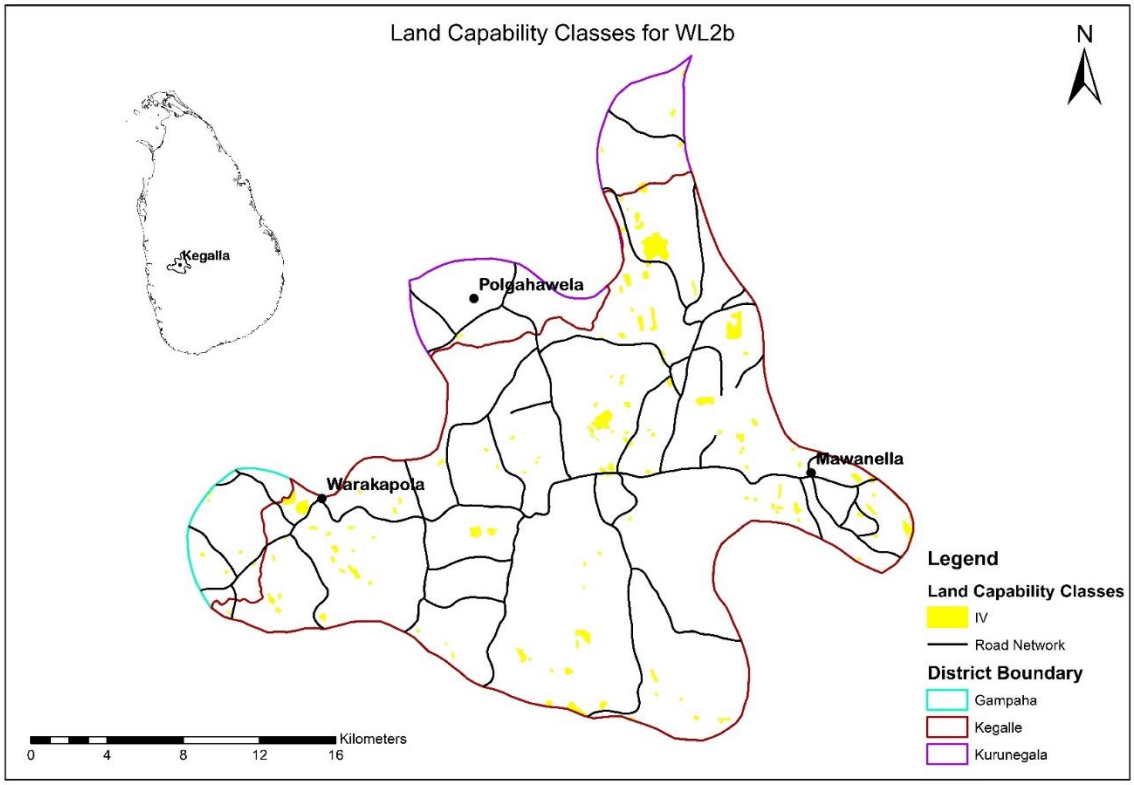

Figure 3-43: Land capability classes for WL2b

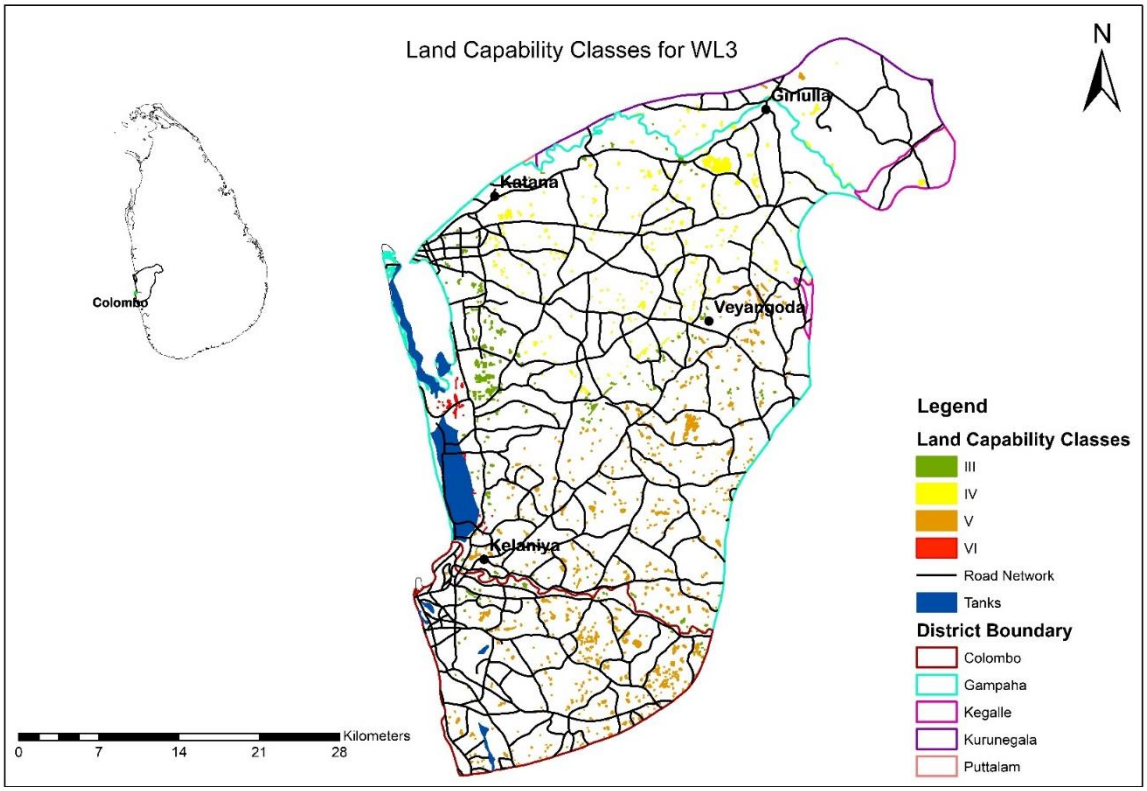

Figure 3-44: Land capability classes for WL3

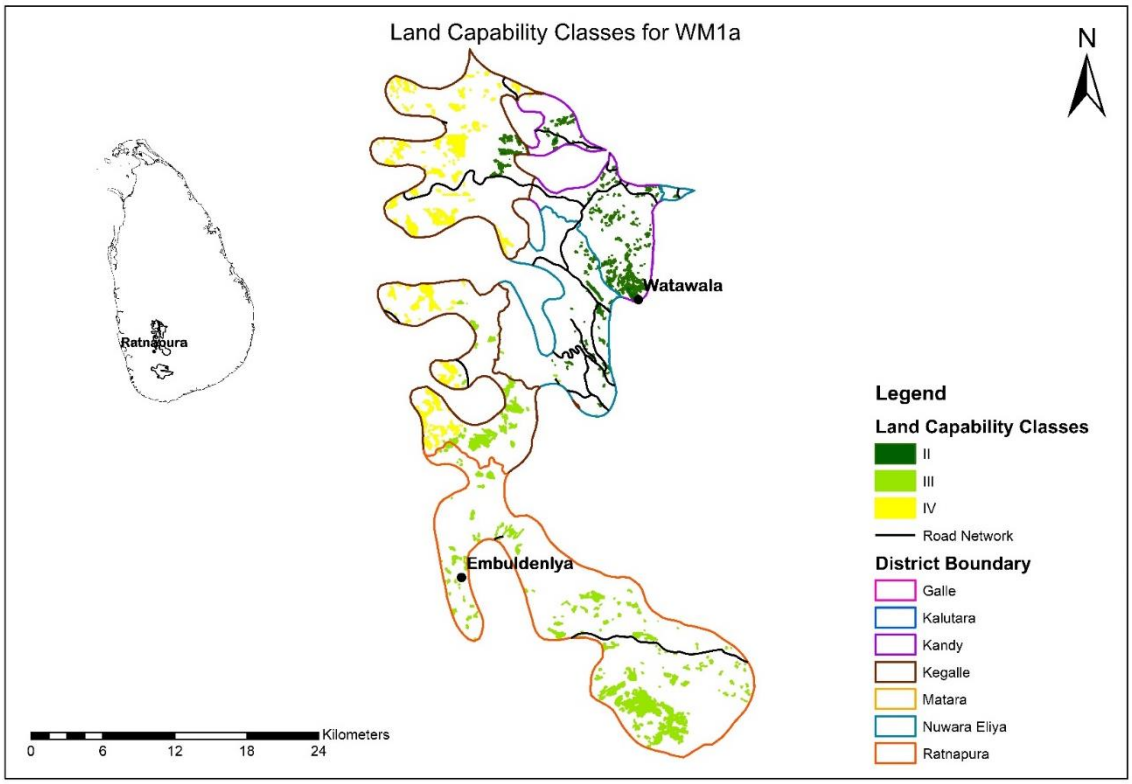

Figure 3-45: Land capability classes for WM1a

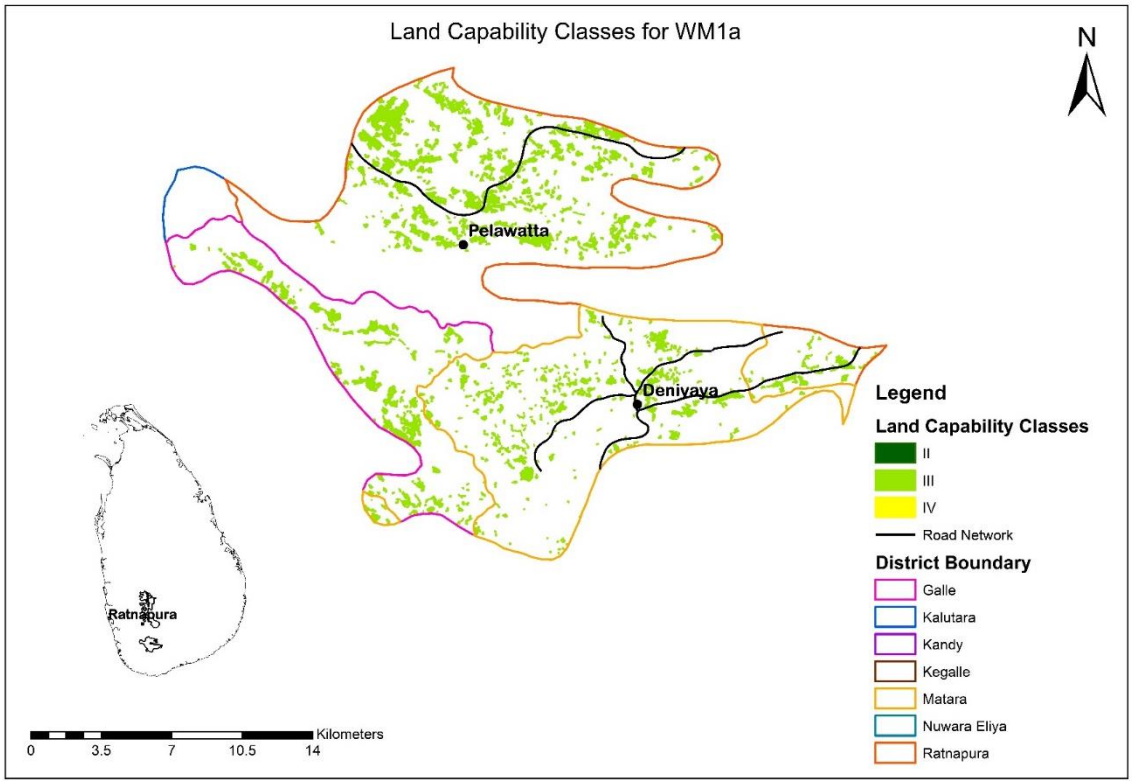

Figure 3-46: Land capability classes for WM1a

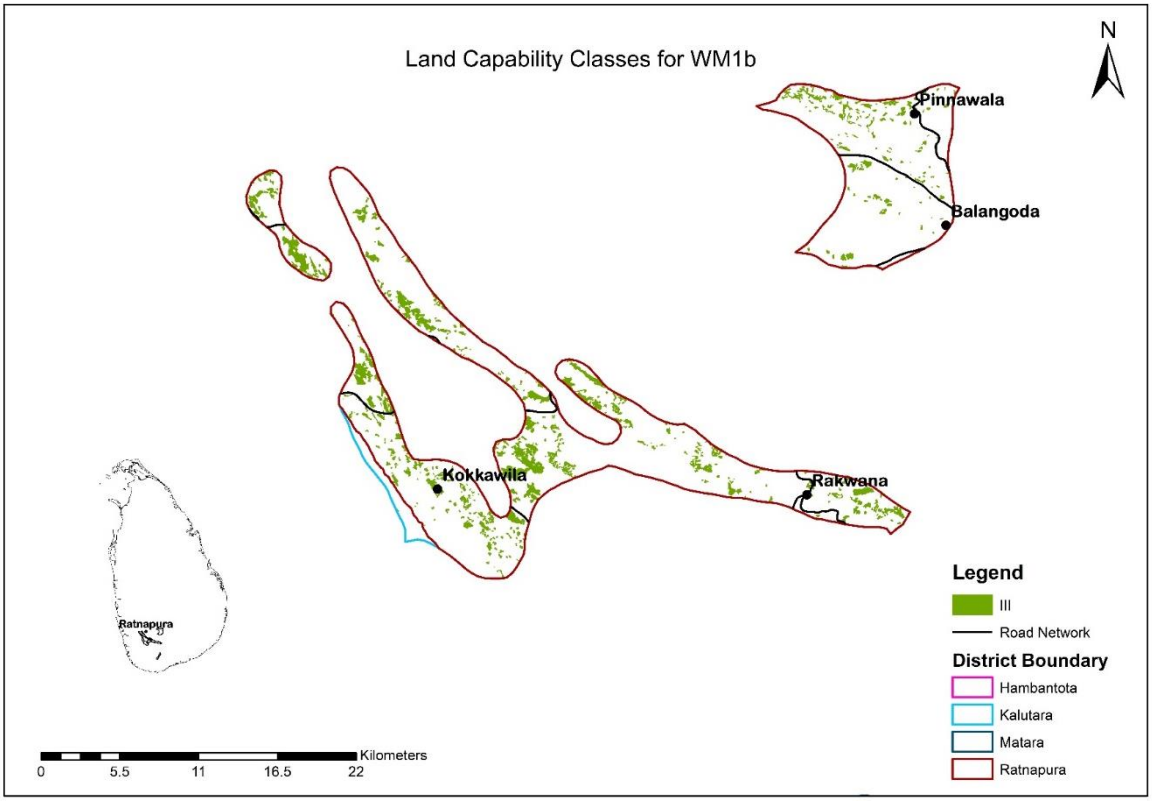

Figure 3-47: Land capability classes for WM1b

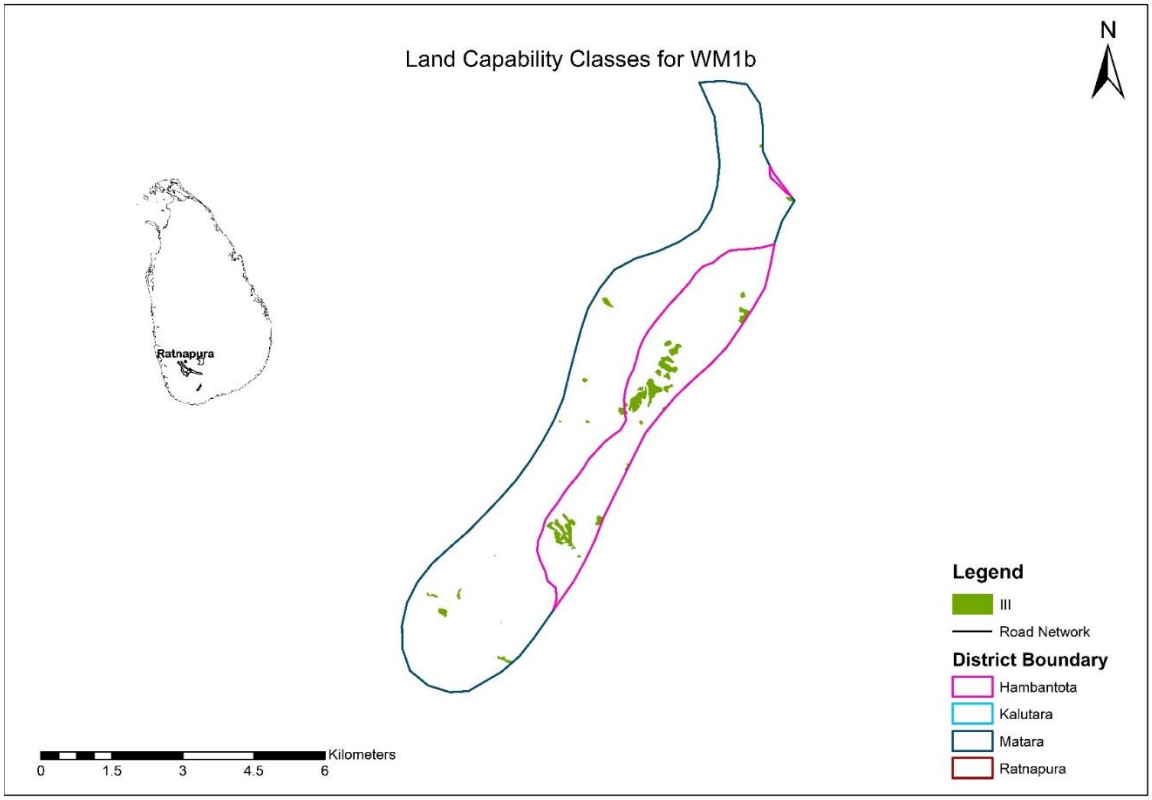

Figure 3-48: Land capability classes for WM1b

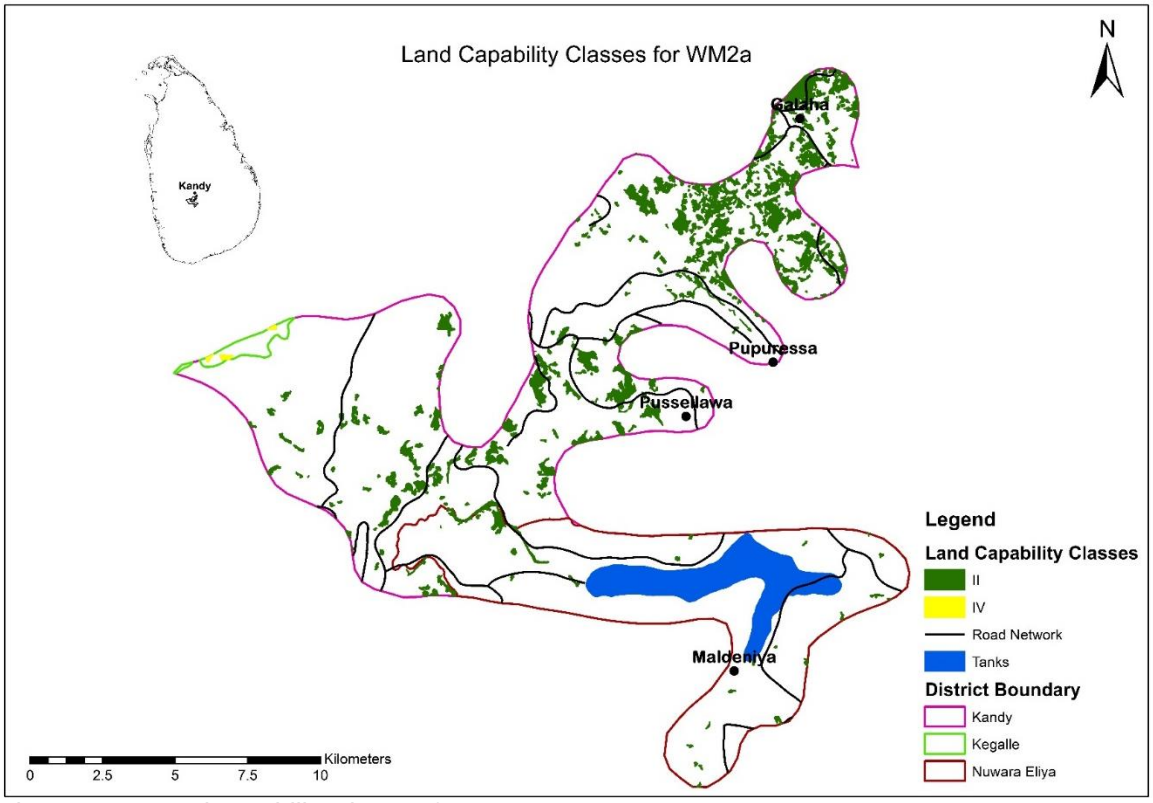

Figure 3-49: Land capability classes for WM2a

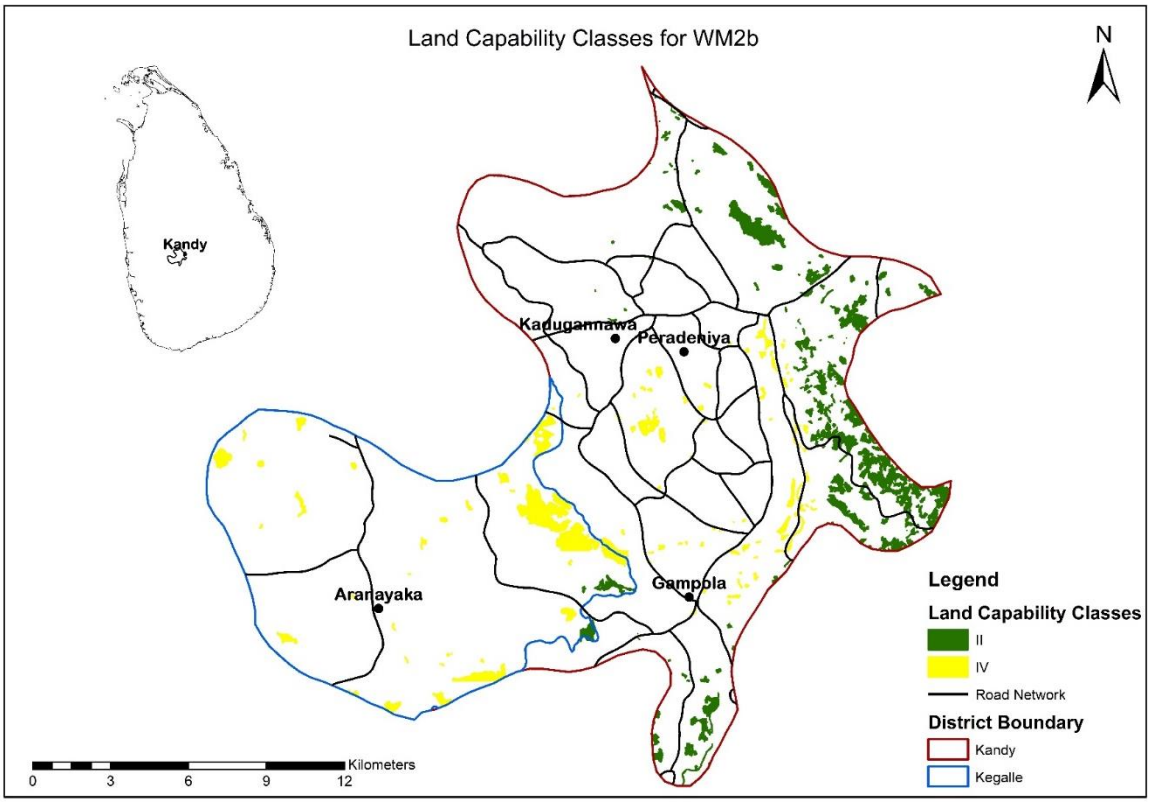

Figure 3-50: Land capability classes for WM2b

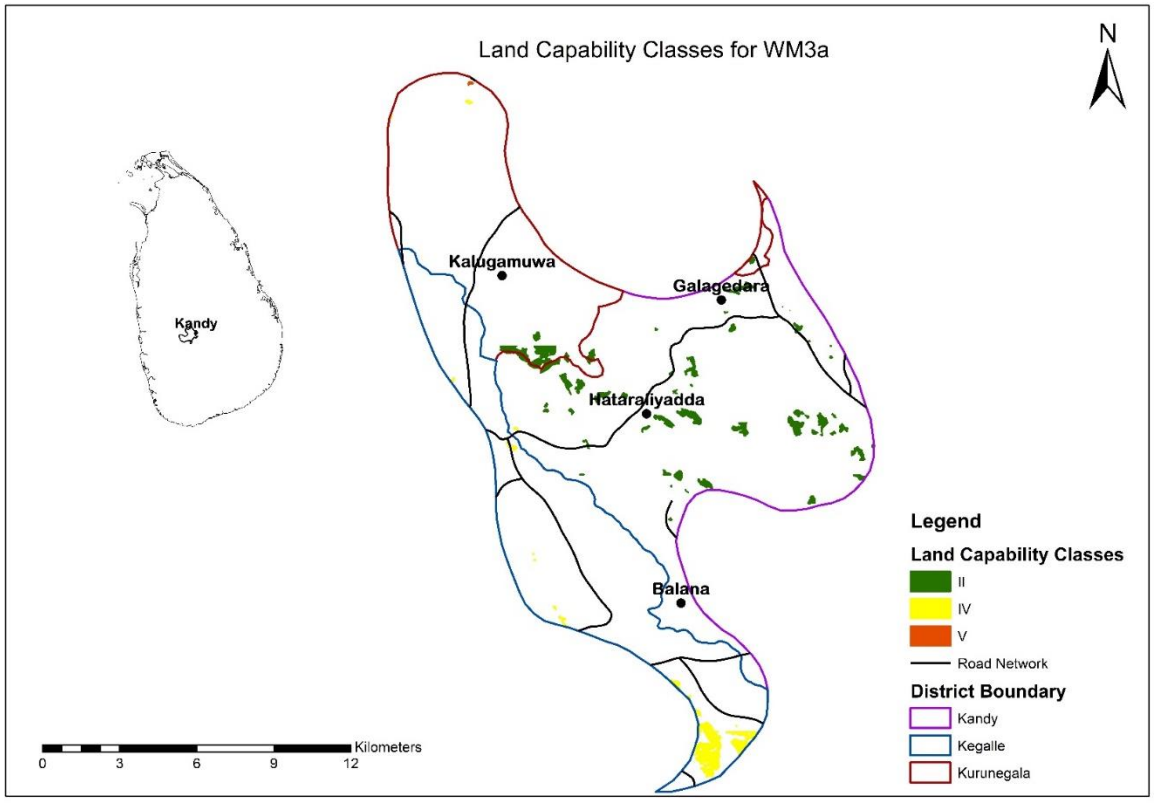

Figure 3-51: Land capability classes for WM3a

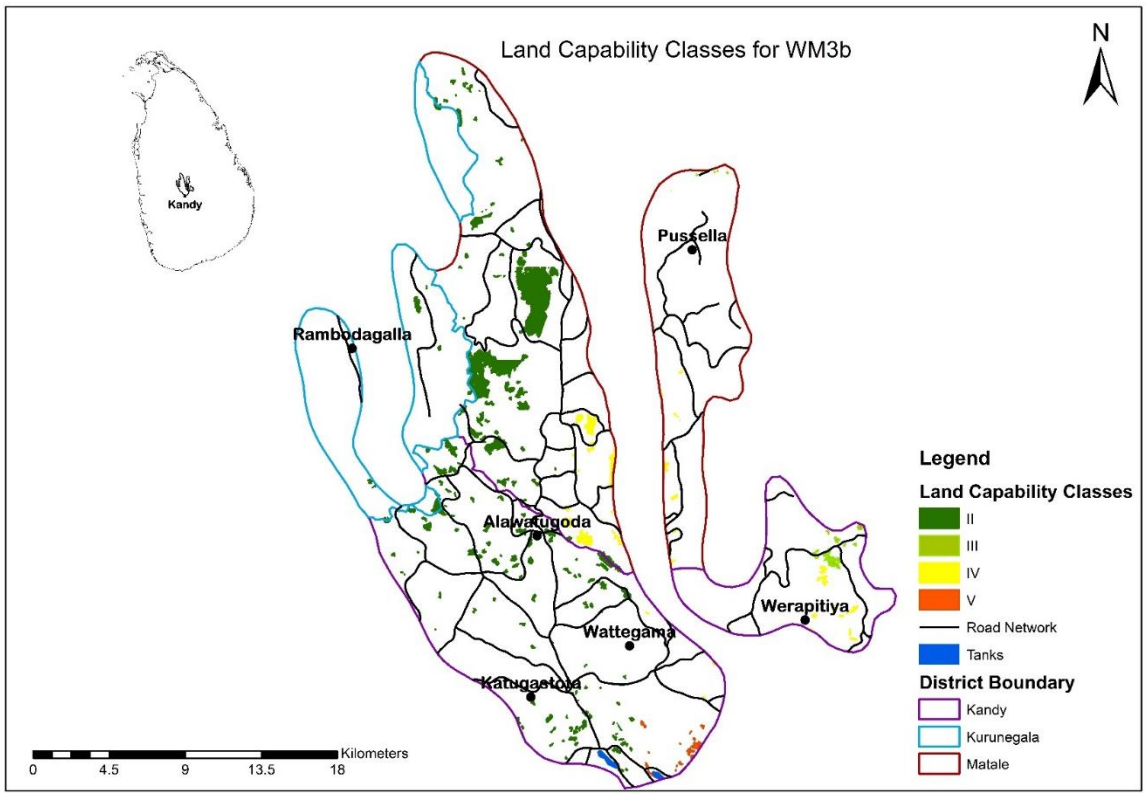

Figure 3-52: Land capability classes for WM3b

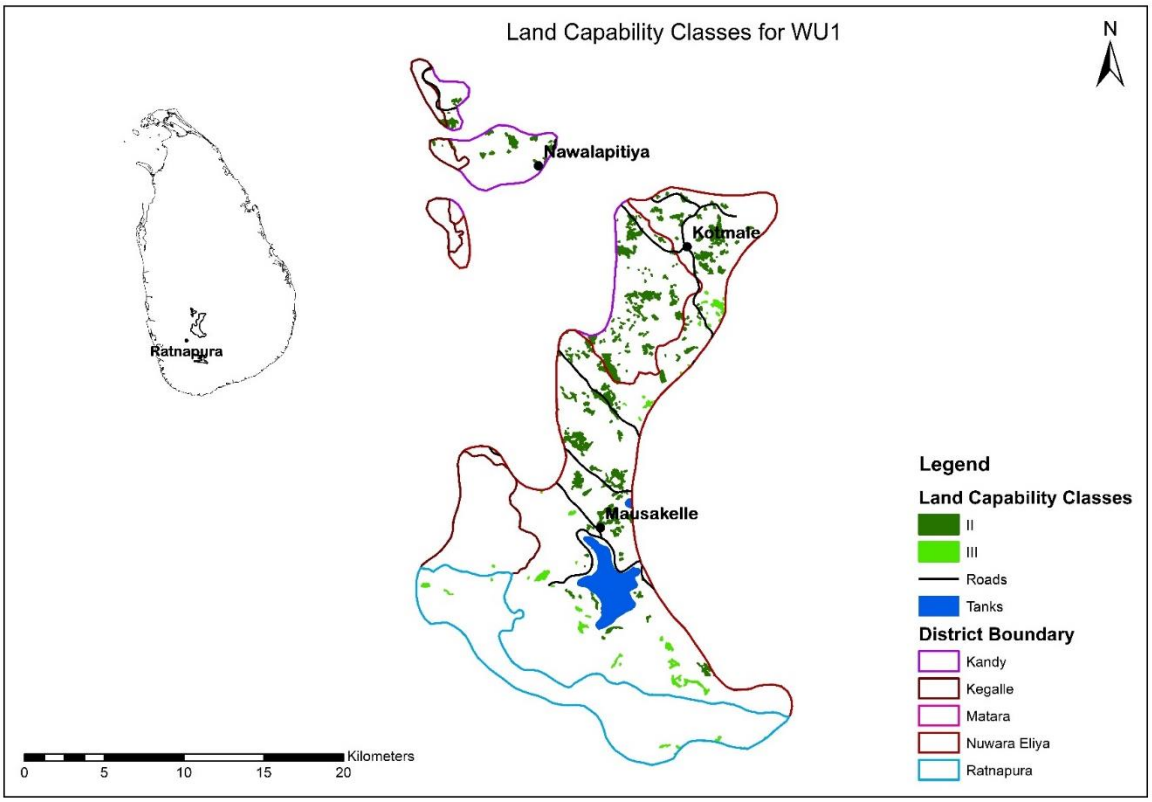

Figure 3-53: Land capability classes for WU1

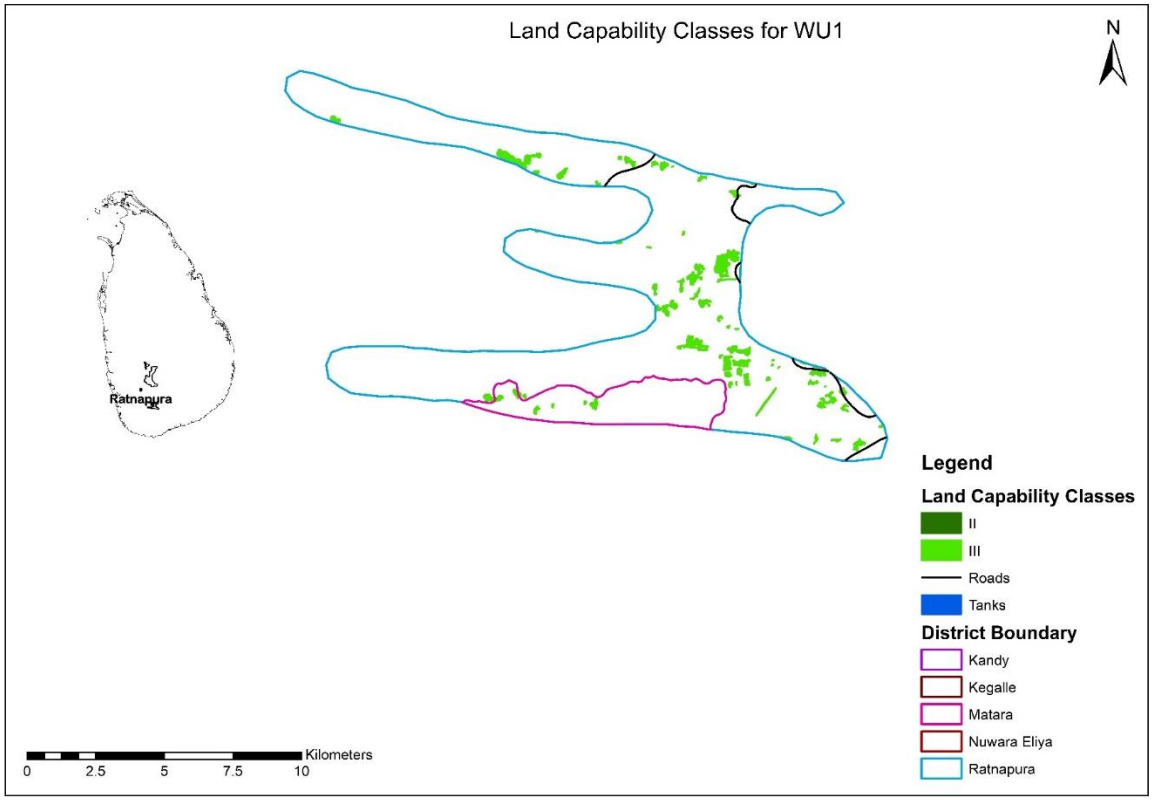

Figure 3-54: Land capability classes for WU1

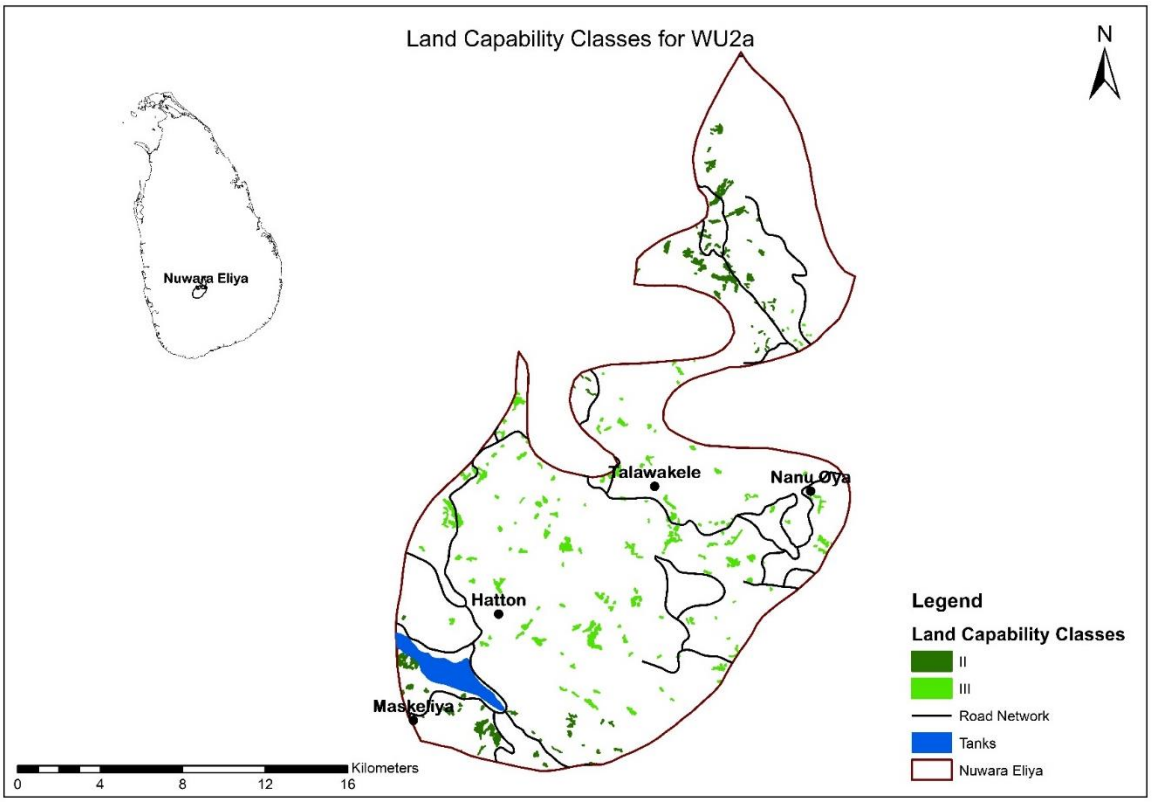

Figure 3-55: Land capability classes for WU2a

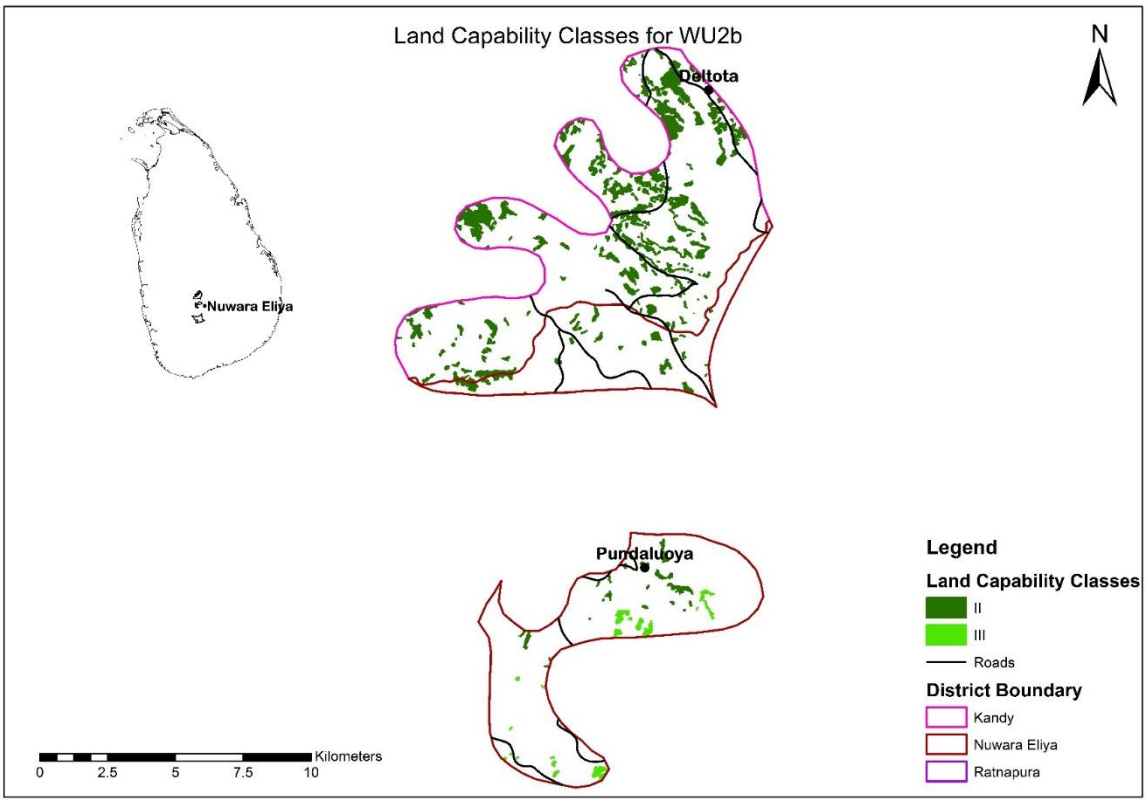

Figure 3-56: Land capability classes for WU2b

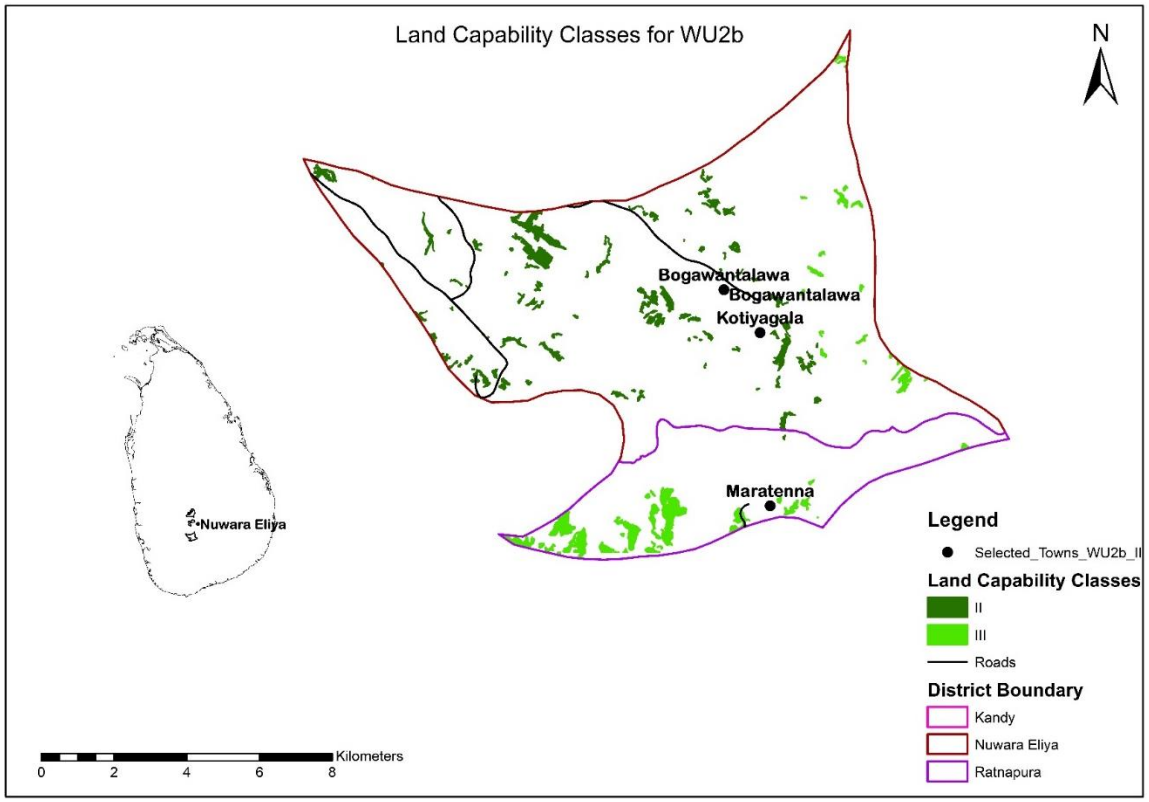

Figure 3-57: Land capability classes for WU2b

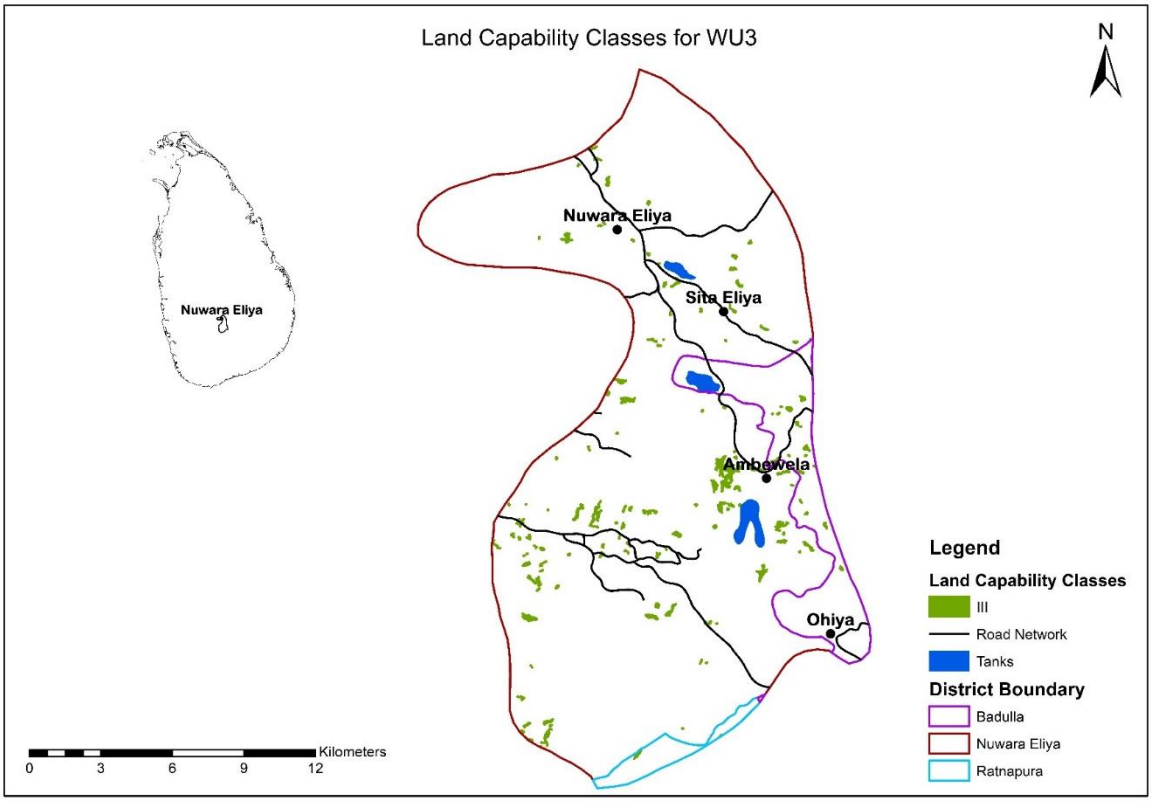

Figure 3-58: Land capability classes for WU3

3.2 Classification of Agricultural Households

According to the Economic Census 2014 of the DCS, the total population of agricultural households was reported to be 9,133,268. It has increased from 7,397,880 in 2002. The average family size of agricultural households was 4.2 in 2002 while the average family size is 4.0 in the year 2014 which is slightly lower compared to 2002. According to the investigation for classifying the agricultural household, the following classification of households was identified based on key informant interviews and literature. In doing so the geographical variation, the predominant crops cultivated and ownership were taken into consideration.

- Small-holder tea land
- Dry zone paddy cultivation
- Dry zone home gardens
- Rainfed uplands
- Vegetable cultivation
    - Up country
    - Low country
- Wet zone paddy cultivation
- Kandyan home garden
- Kalpitiya
- Mahaweli
- Private coconut states
- Coconut small-holdings
- Home gardens in the coconut triangle
- Rubber smallholdings

3.2.1 Smallholder Tea Lands

Tea smallholdings can be defined as tea lands that are less than 20 perches in extent. The contribution of tea smallholdings to the total national production was 75% which consisted of 96% of the total low country tea production, 66% of the total mid-country tea production, and 18% of the total up-country tea production in 2018. The volume of finished tea production from small-holdings was 228,049 million kg in 2018.

The total extent of tea small-holdings was 122,604 hectares and the number of tea smallholders was 399,313 at the end of the year 2018. Small-holder tea lands are located in several districts in Sri Lanka and tea smallholdings have been scattered in

3,692 Grama Niladhari's Divisions under 123 Divisional Secretary's Divisions. In 2014 the highest number of small holding was recorded in Ratnapura (104,316) which is accounted for 84, 499 ac and lowest number of small holdings was observed in Kurunegala (262) which is accounted for 415 ac. Comparing from 2002 to 2014 33,564 small holdings was increased in Ratnapura and overall, in Sri Lanka the small holdings increased by 139,716 from 2002 to 2014. The average productivity of a tea smallholder was 1,958 finished tea/kg per hectare and average land holding size was reported as 0.69 ac in 2017 (Tea Small Holders Development Authority, 2018).

According to the study carried out by Perera (2014) with small holders in Wet Zone, the gender composition is recorded as 62.8% of male farmers and 37.2% of female farmers and most land is owned by men. A common perception is that unlike Sri Lanka's low country tea smallholders, tea smallholders in the high grown areas cultivate tea as a supplementary source of income rather than the main sources of income. According to a recent study carried out by Tea Smallholder Development Authority, majority of smallholder farmers in Sri Lanka were in the age range between 26-55 years (66.5%) and nearly 30% were more than 56 years old (Fernando, 2015).

3.2.2 Dry Zone Paddy Cultivation

The annual production of Dry Zone paddy cultivation (4,072,903 MT) accounts for 88% of the total annual paddy production in Sri Lanka while the extent accounts for 86% (644,384 ha) in Maha season and 85% (314,151 ha) in the Yala season of the total cultivated extent in Sri Lanka. The highest production was reported from Ampara district (650,311 MT) and the lowest from the Jaffna district (38,123 MT) in the year 2019. Ampara district holds 48,172 (141,395 ac) agricultural households and Jaffna has 14,334 (25,531 ac) agricultural households. Anuradhapura accounts for highest number of agricultural households which is reported as 111,598. When the seasonal variation is considered, Anuradhapura district reported the highest extent and the production in Maha season while Mullativu district reported the lowest extent in Maha and Jaffna district reported the lowest production. In Yala, the

Polonnaruwa district reported the highest extent and production. The highest productivity was reported from the Hambantota district in both Maha and Yala seasons in the year 2019 which are 6622 kg/ha and 5726 kg/ha respectively. Other than paddy farmers engage in mixed home gardens, sugarcane and rainfed upland crops (DOA). Further low night time temperatures are experienced during winter months in the northern peninsular of the island due to the influence of the huge land mass of the Indian sub-continent making it possible to grow potato.

3.2.3 Dry Zone Home Gardens

Less intensively managed home gardens are found in the low country Dry Zone in Sri Lanka. According to Forestry Sector Master Plan of Sri Lanka (1995), Dry Zone home gardens account for 46% of the home gardens in the country. These home gardens are less profitable and they operate below the potential efficiency resulting in low incomes to the households. A typical Dry Zone home garden consists of a mixture of food and fruit trees such as coconut, mango, banana, soursop, jack fruit, cashew, wood apple, guava, lime, and orange, along with annual crops such as cassava, sweet potato, and winged bean. Farmers keep space to grow other species of trees or shrubs in their home gardens such as Margosa, Halmilla, Mee, Teak, and Satinwood (Priyadarshika and Gunawardena, 2016).

Dry zone home gardens have special characteristics, such as low species composition, problem of water scarcity, high soil fertility, more crop varieties grown in the field and high crop diversity. Average home garden size was reported as between 0.5ha and 1.0ha and the density of the crop cover is estimated as 125 trees/ha (Marambe et al, 2012). Marambe et al. investigated expenditure patterns of households in a poverty-stricken rural village in the Dry zone (Keeriyagaswewa) in Sri Lanka to identify the contribution from the home gardens to household food security. The results showed a household, on an average, spends Rs. 6,179 per month to purchase food from the market and the market values of home garden produce was Rs. 1,155 per month (equivalent to 16.6% of the household food expenditure) (2012). The study carried out by Sangakkara and Frossard indicated

that most of the households had two males and females for work on home gardens (2016).

3.2.4 Rainfed Uplands

Rainfed uplands are most abundant in the Dry Zone and the Intermediate Zone of Sri Lanka for example in Kurunegala, Batticaloa, Jaffna, Moneragala, and Mullativu districts. The main crops cultivated in this system are maize (27,106 kg Yala, 220,425 kg Maha), mung beans, black gram, sesame, groundnut, manioc, sorghum, cowpea, onion, chili, and rice. Total upland production of maize was 27,106 kg in Yala and 220,425 kg in Maha in the year 2018 which record the highest production followed by manioc and red onion (Department of Census and Statistics, 2018). Around 80% of the national mung bean production is obtained from rainfed uplands (Department of Agriculture, 2020).

3.2.5 Vegetable Cultivation

Vegetable cultivation in Sri Lanka can be classified into 2 categories as upcountry and low country based on the climatic conditions. Upcountry vegetable cultivation is prominent in Nuwara Eliya, Badulla, and Kandy Districts while low country vegetable cultivation is prominent in Anuradhapura, Polonnaruwa, Kurunegala, Puttalam, Moneragala, Ratnapura, and Hambanthota Districts. Among the upcountry vegetables, the highest extent of cultivation was allocated to beans (7344 ha) followed by tomato (6712 ha) in the year 2018. The highest extent of cultivation from low country vegetables was for brinjal (10,834 ha) and red pumpkin (8,469 ha). In terms of production, the highest in upcountry was from cabbage (111,141 tons), tomato (101,404 tons), and bean (83,966 tons), and the highest of the low country was from Brinjal (129,212 tons), red pumpkin (123,261 tons) and ash plantains (81,200 tons) in 2018.

3.2.6 Wet Zone Paddy Cultivation

Paddy cultivation in the Wet Zone can be observed in several Districts in Sri Lanka such as Galle, Matara, Kalutara, Gampaha, Colombo, Ratnapura, Kegalle, Kandy, Nuwara Eliya, and Badulla. The highest extent of Wet Zone paddy in 2019 was reported in Badulla district (Maha 25,670 ha, Yala 11,270 ha) followed by Matara (Maha 12,950 ha, Yala 11,306 ha), and Ratnapura (Maha 11,175 ha, Yala 7349 ha). The highest annual production was from Badulla district (150,328 MT) whereas the lowest was reported from Colombo (11,692 MT). Paddy production from the wet zone was 519,153 MT in 2019 which accounted only for 11.3% of the total paddy production in Sri Lanka.

The study carried out by Wijesinghe and Wijesinghe (2015) in Low Country Wet Zone indicated that, 59% of the total sample families have at least one household member to support in agricultural activities and majority of the farmers (66%) were above fifty years of age. About half of the sample households engaged in farming on a fulltime basis and farming was their main income source. The results prove that most of the farmers in Low Country Wet Zone were not commercial level farmers and they were doing paddy farming at a subsistence level. Around 70% of farmers have lands less than one acre while for 45% it was 0.5 – 1 acre and 28% of farmers have lands smaller than 0.5 acre.

3.2.7 Kandyan Home Gardens

Home gardens in the Kandy district possess unique characteristics and vegetation. FAO (2009) estimated that home gardens covered about 13% of the land area while recent data (Department of Agriculture, 2016) reported a much higher value of 22%. The export crops are prominent in this system including vanilla (*Vanilla aromatic*), arecanut (*Areca catechu*) and coffee (*Coffea arabica*), and spice crops such as nutmeg (*Myristica fragrans*), pepper (*Piper nigrum*), and clove (*Syzygium aromaticum*), as well as ornamental species such as anthurium (*Anthurium andraeanum*) (Mattson et al, 2018). The total production of nutmeg, pepper, clove,

and coffee in Sri Lanka was 4,180 MT, 22,551 MT, 3,360 MT, and 2,294 MT respectively and the majority of the production is obtained from this farming system.

These home gardens are believed to be offering a significant amount (30–50%) of the household income of the farmers. Average size of home gardens was reported as 0.05 ha-2.5ha. The household population density was reported per square km is 500-699 with family size of 2-9 members. Mainly the land is owned by private parties (Pushpakumara et al. 2010).

3.2.8 Kalpitiya

Kalpitiya is located in the Puttalam district in Sri Lanka which is unique due to the climatic conditions, soil characteristics, and groundwater availability. It belongs to the DL3 agroecological zone. The commonly grown crops in this farming system are red onion, chili, tobacco, beetroot, radish, and capsicum. Red onion cultivated extent in Kalpitiya (1633 ha) had a share of 32% of the national extent) while chili (1175 ha) and beetroot (168 ha) had a share of 8% and radish (191 ha) and capsicum (241 ha) had a 7% share of the national extent during 2001-2010 (Samanmali et al, 2014).

Landholding has become more concentrated. More efficient farmers are purchasing land from less efficient ones. The farmer workforce is increasingly educated and travelled. Around 8,000 families live in the area extending from Mampuri to Thalawila via Ethalai, Norochcholai, Kalkudah and Senapola. The study carried out by Wickramasinghe (2013) found that the systems hold 22, 048 farmers who come from 7500 farm families. Farming system began with the cultivation of onion as a leafy vegetable along with tobacco and chilli. Time to time, changes have occurred with crop diversification shifting to other crops or shifting to new varieties and due to changes of cultivated land extent. Depending on current market demand and market prices, farmers decide the crop to be cultivated in the next season. For instance, harvesting stage of onion is determined based on the market demand and prices for bulbs and onion leaves as a vegetable.

3.2.9 Mahaweli

Mahaweli region covers the Mahaweli river basin, the basin of the Maduru Oya, and rivers in the North-Central part of Sri Lanka which covers 55% of the Dry Zone in Sri Lanka. Mahaweli system contributes 23% for the national production and share 19% of the extent. It includes Mahaweli systems B, C, D, G, H, Huruluwewa, Udawalawe, and Rambakan Oya. Mostly, paddy and Other Field Crops (OFCs) are cultivated in the Mahaweli area in both Maha and Yala seasons. In the Maha season of 2019, the cultivated extent of OFCs was 7,851 ha and in Yala, 6,292 ha which added up for a total of 14,142 ha of OFC. Paddy cultivated extent was 93,337 ha in Maha and 63,359 ha in Yala which was a total of 156,696 ha. The highest paddy production was reported from Mahaweli H (159 770 MT) and Udawalawe (132 962 MT) systems which together accounted for almost 7.5% of the national production in 2018. Except paddy the main income earned by the cultivation of chili, maize, big onion, green gram and cowpea.

The system holds 331,000 families and 1,117,000 people. Average household size is reported as 3.4 and 105, 583 people are in agricultural labour force. Average yearly household income was estimated as Rs. 504,334 in 2018. Udawalawa holds highest number of farming households which is accounted as 32,200 households (Mahawwli Authority of Sri Lanka, 2018).

3.2.10 Coconut Small-Holdings

Coconut cultivations that range from 2-20 acres are considered smallholdings (Jayalath et al., 2008). Coconut smallholdings are common in Kurunegala, Gampaha, Puttalam, and Colombo districts. These systems are commonly intercropped with the crops such as coffee, pepper, banana, pineapple, and pasture.

3.2.11 Home Gardens in the Coconut Triangle

Coconut cultivations that are below 2 acres in extent are considered home gardens. These home gardens are mostly intercropped with the crops such as coffee, pepper,

banana, and pineapple. Landowners of those home gardens often leave an area in their coconut land for pasture, which is used for their livestock to graze. The scattered trees in the smallholding sector are mostly confined to home gardens and account for 64.6 percent out of a total of 83.7 percent smallholding sector in extent. Of this 64.6 percent of home gardens, 41.13 percent is located in three major coconut growing districts – Puttalam, Kurunegala and Gampaha – the majority being in the Kurunegala district. Kurunegala district has the highest acre of scattered trees which is accounted as 240,338 ac (DCS, 2014).

3.2.12 Rubber Smallholdings

Rubber smallholdings are mostly abundant in the Wet Zone and the Intermediate Zone in Sri Lanka. According to the Census of Agriculture 2014 the highest extent of rubber smallholdings was recorded from Kegalle (22,908) followed up by Kalutara (20,334), and Ratnapura (12,663) districts. The number of rubber smallholdings was 80,555 which covers a total extent of 122,529 ac which holds a share of 44.21% of the total rubber extent in the country. The average land size per household was estimated as 1.5 acres.

The study carried out by Senanayake and Ginigaddara (2019) in Kegalle district for rubber small scale farmers revealed that the mean actual productivity of the area was 29.15 kg/ha per month while the targeted productivity was recorded as 56 kg/ha per month. It was also discovered that the majority of the planters are newly emerged ones while more-aged people in the study area have been engaged in rubber cultivation throughout their life. Majority of the respondents are married males (84%) with the age between 40 and 70 years while the mean was recorded as 58 years. Dissanayake et al (2016) found that around 87% of the respondents were engaged in rubber cultivation as fulltime farmers and majority of the respondents' (81%) monthly income was less than 15,000 rupees per month.

This task was completed through spatial analysis of soil information and climatic information and assessing the lands that are not presently used for agriculture but having an agricultural potential. The land use map of the Land Use Policy Planning

Department (LUPPD) was used to identify the distribution of scrub lands and under-utilized lands and those were considered as agriculturally potential lands. It should be noted that the team did not consider the forest cover to this category considering the importance of maintaining the forest cover of Sri Lanka. Subsequently, the Soil series map of Sri Lanka was used to find out the dominant soil series covering those scrub and underutilized lands. Further, the AERs were considered to identify climatic suitability.

Land capability classes represent the degree of the natural fertility of soils for crop cultivation. Six land capability classes were identified as Class I: excellent, Class II: excellent-very suitable, Class III: very suitable - suitable, Class IV: suitable-moderately suitable, Class V: slightly suitable- moderately suitable, Class VI: Unsuitable-slightly suitable.

When from class I to class VI, a higher level of management intervention is needed. For example, lands belonging to class 1 do not require soil improvements to use for crop cultivation, and lands belonging to class II require little management intervention to improve the soil before crop cultivation is practiced. However, none of the lands (scrub or under-utilized lands) were found under the class I (excellent capability) category. In modernization work, choice of lands for crop cultivation needs to be followed in the same order.

Soil characteristics namely, soil profile development, soil texture, soil depth, drainage, base saturation, and the development stage of the A horizon were considered and a rating system was adapted to identify land capability classes. Using this information, land capability classes for annual crops were identified. The database of soil profiles of soil series was prepared and then used to extract soil information needed for the land capability classes.

Agriculturally potential lands were categorized according to Agroecological Region (AER) and maps were created for each AER to ensure detailed representation of land capability classes. Moreover, the team uses the CropRec software (http://nrmc.lk/NRMC/) developed by the Natural Resource Management Centre to choose the most suitable crops for each AER. Please note that these maps were

developed using GIS tools and the team is ready to provide digital copies of these maps upon request.

Concluding remarks on Assessment and Classification of the Government Lands Suitable for Agricultural Purposes

This task was completed through spatial analysis of soil information and climatic information and assessing the lands that are not presently used for agriculture but having an agricultural potential. The land use map of the Land Use Policy Planning Department (LUPPD) was used to identify the distribution of scrub lands and under-utilized lands and those were considered as agriculturally potential lands. It should be noted that the team did not consider the forest cover to this category considering the importance of maintaining the forest cover of Sri Lanka. Subsequently, the Soil series map of Sri Lanka was used to find out the dominant soil series covering those scrub and underutilized lands. Further, the AERs were considered to identify climatic suitability.

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The maps of lands under different government institutes are not available except the Mahaweli Authority and Department of Wildlife Conservation. Thus, the limitation of information is beyond the control of the consultancy team. We believe a map of government-owned land needs to be prepared through a national-level project.

Despite the unavailability of maps of government-owned lands, digitize soil series soil map of Sri Lanka and analyze the soil database to identify and map land suitability classes for agricultural purposes covering the entire country. For that, underutilized and shrub-lands were considered. Further, district-level availability of suitable areas for agriculture was reported in addition to digital map layers of land suitability at the level of the agro-ecological region. Once boundaries of government-owned lands are identified through a national level endeavor, the digital data produced in this work can be used to identify suitable lands for agriculture.

As there is the unavailability of the list of government-owned lands, it is recommended to conduct an island-wide survey to identify the governments' lands and update them into the central computerized system. It will help to retrieve the data with less time and effort which will increase the efficiency of future works. After the identification of government lands, these identified lands can be used for agricultural purposes. The digital data of land suitability classes can be provided for national-level agricultural land reformation work.

3.3 Review of Land Policies Adopted by the Neighboring Countries

This section explored the existing literature to identify policies and instruments that have successfully directed efficient and sustainable land usage as well as policies that have been failed in Asian countries. Further, this section extended to identify the context in which these policies and instruments have been implemented, the salient feature of these policies, and the implementation mechanism which made them be success or failure. The focus of the analysis is mainly limited to South Asian countries, as the social, cultural background of the Asian countries are similar to that of Sri Lanka. However, as most of the success stories of land policies are recorded not in South Asia, but East Asia such as Japan, South Korea, and Taiwan (FAO, 2016), this section reviewed the land policies adopted by these countries as well.

For South Asians land is not only a crucial input for agriculture, but it is a symbol of prestige, a means to power, and social security (Mannan, 2001; Deininger, 2003: Sharma and Khanal, 2010; Niroula and Thapa, 2005). Therefore, historically, land use has been governed by many other interests other than economic efficiency. This complexity together with a constant supply and competing demands for land has presents a complex governance challenge between sectors.

As a result of these competing demand and previous land reform policies, land use has been altered in favor of other social needs at the expense of efficiency in agriculture. Furthermore, due to problems associated with land ownership efficiency of land use has been reduced. Over the years, land fragmentation has been taken place resulting in small plot size which are not economically attractive and agriculture lands are being converted to non-agriculture usage.

Against this background, this section reviewed the policies adopted by other Asian countries to address the issues on land use, land fragmentation, ownership issues, conversion of agricultural lands to non-agricultural purposes, through different policy instruments, and implementation process The issues have been discussed and the common policies reviewed are summarized in Figure 3-59.

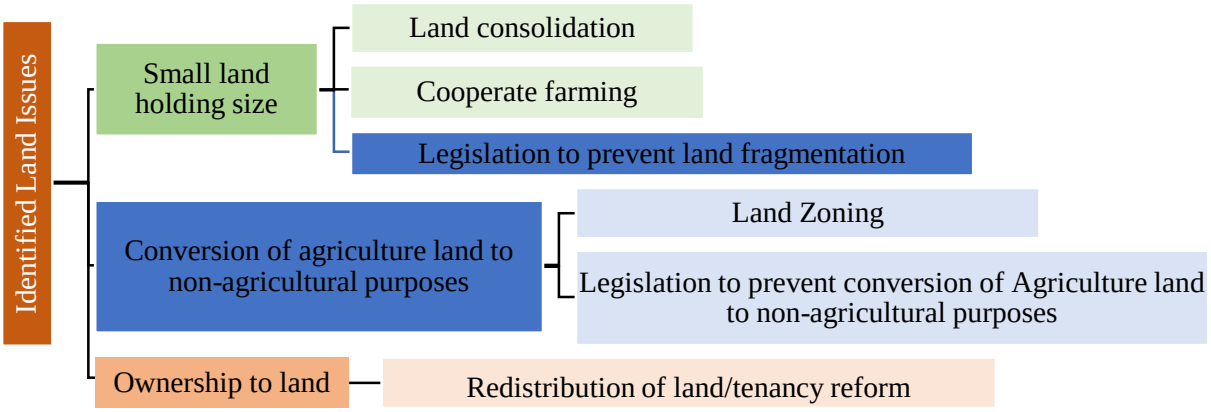


Figure 3-59: Issues about land use and commonly used policy instruments to address them

3.3.1 Land Fragmentation/Small Landholding Size

As indicated in Table 3-43, over the last three decades, the number of agricultural landholdings has increased in all most all South Asian countries. For example, the average landholding size in Sri Lanka is getting declined over the years as the number of holding has increased from 1.6 million in 1980 to 2.3 million in 2012 (Department of Census and Statistics, 2013).

Japan and South Korea are two Asian countries exception to this, where landholding size has increased over the years (Niroula and Thapa, 2005, Hashimoto and Nishi, 2016, Quizon, 2013; Manjunatha *et al*, 2013). Social and economic changes followed by early land policies, especially land reform policies, and expansion of the industry/manufacturing sector have naturally created a preference for large landholding sizes over small landholding sizes in those countries. More specifically, it is not only the land policy per se but structural changes that have taken place in these countries that have contributed to this change (Niroula and Thapa, 2005, Quizon, 2013; Choi, 2004; Manjunatha *et al*, 2013).

Table 3-43: Land fragmentation in South Asian Countries

Country	Number of holdings (million)			Average agriculture holding size
	1980	1990	2013/2014	
India	81.6	106. 6	146	1.08 (2015-2016)
Sri Lanka	1.65	1.82	2.3	0.5
Bangladesh	6.85	17.8	15	
Nepal	2.24	2.74		
Pakistan	4.19	5.11	8.26	2.59
Japan	4.66	3.45		
South Korea	2.16	1.77		

Source: Niroula and Thapa, 2005; Manjunatha, et al., 2013; Naseer, et al., 2016; Vishwa Mohan, 2018

The term land fragmentation can be used in three different scenarios. (i) Land splintering or land fragmentation in the narrow sense, a situation where many farmers each own a smallholding of land, (ii) Many owners having rights over one holding, in other words, a situation of multiple-ownership (fragmentation of land through inheritance), (iii) Land scattering, a situation in which land owned by one farmer is fragmented over several parcels, which is known as farm fragmentation (Korthals Altes and Sang, 2011).

Land fragmentation is an outcome of both social drives as well as, an externality of strong government interventions. In the context of social drivers, in many South Asian countries, lands are subdivided among household heirs. In terms of policy-driven fragmentation, many Asian countries back in the 1940s implemented a land redistribution program which has ultimately led to a mini-farm agriculture sector (Korthals Altes and Sang, 2011).

Small landholding size is a barrier to mechanization and to realize cost efficiency in farming (Niroula, and Thapa, 2005, Wan and Cheng, 2001; Rao and Chotigeat, 1981). Reduced land size leads to diseconomies of scale and hence a bottleneck for commercial agriculture. Contradicting to this some researchers have found an inverse relationship between land size and productivity (Dorward, 1999), suggesting that small farmlands are more efficient. However, as Deolalikar, 1981 described this may be due to the differences in the level of technology used in farming. Since outmigration of labor to other industries is a common phenomenon in many Asian countries and as mechanization is one of the most viable alternatives, it has become

imperative to create land sizes and infrastructure which are appropriate for mechanization.

Asian countries have made several efforts to tackle small landholding sizes and to create viable landholding sizes mainly through three measures; viz: legal restrictions on land fragmentation, consolidation efforts, and facilitation of consolidation through cooperatives.

I. Legal Restriction to Prevent Land Fragmentation

In 1959, the Pakistan government also introduced a land reform policy to prevent land fragmentation. Land regulations stipulated subsistence holdings of 12.5 acres and economic holding of 50 acres, below which sub-division was prohibited. In India, the government has identified one unit of the standard area as a fragment and less than that cannot be transferred to anybody. If the owner wishes to sell the land, he/she has to offer it first to the owner of a contiguous plot, if they do not agree to purchase the land, then the government has to purchase the land and then sell it to the owner of the contiguous plots (Niroula and Thapa, 2005). However, these regulations have not been implemented strictly (Deshpande, 2007).

Bhutan law stipulates that a household who owned 10 ha or more than that of land cannot purchase additional land and nobody can buy land from a household with only 2 ha or less than that (Niroula and Thapa, 2005, Hussain, 1989). In Thailand, to control the land fragmentation, The Land Act and Rules 1964, authorized the government to implement a program to control land fragmentation and consolidate the land. The government has authorized not to allow fragmentation of land below a certain unit of land and promote cooperative farming to a group of ten or more landlords by increasing facilities, improved technology, and inputs (Sharma and Khanal, 2010). However, the implementation of the act is minimal.

3.3.2 Land Consolidation

Land consolidation is both the process and instrument for enlarging land-use units (Van Dijk, 2004). The objective of land consolidation is to increase the farm holding

size so that inputs are effectively used and in turn, the economics of scale is achieved. Sharing machinery is another objective of land consolidation. Though many Asian countries have implemented land consolidation projects, except few countries, all the other countries have failed to achieve the desired outcome of land consolidation due to pitfalls in operationalizing the policy.

India has tried to consolidate the land in the 1930s via the Land consolidation Act. The mechanism is, if the sizable majority of the villages in any single village were willing, then the government would redraw the plot boundaries. However, the program was a failure for two reasons, namely, participation was voluntary and lands were frequently tied up for years in court disputes (Elder, 1962). India also attempted to consolidate land in 1970. However, except in few states, Punjab, Haryana, and Uttar Pradesh, in all other states, it was not implemented well due to the lack of political will and administrative difficulties (Deshpande, 2007).

Land consolidation attempts made in Pakistan in 1959, also could not achieve the expected outcomes as only 1.8 million of the land was consolidated in the program within the period of 1977-1983 due to factors such as differences in land valuation, lack of an acceptable compensatory mechanism and farmers' sentimental attachments to land (Niroula and Thopa, 2004).

Intending to get irrigation water for the second crop, Thailand also adopted a land consolidation program. The program was not successful in Thailand as different farmers affect differently from the implementation of the project. Extensive consolidation project requires some farmers to sacrifice their land to the common use, however, these farmers were not compensated for their sacrifice. More, specifically, farmers in the upper stream receive fewer benefits from the program while they have to sacrifice considerably high land areas to create canals. This failed the project (Sakuma, *et.al,* 2001).

Under the Land, Improvement Law enacted in 1949, if more than two-thirds of the farmers like, Japan implemented a land consolidation program in which several small land plots are consolidated into a larger rectangular plot and they were provided with independent access to road, ditch, and drain system. The objective of the program is

to introduce tractors and combined harvesters by improving road access and drainage condition, to raise labor productivity through the consolidation of scattered plots followed by mechanization, and to raise land productivity by improving irrigation and drainage conditions. Under the program, 50% of the paddy land was consolidated. In Japan farmer's participation in the program was high (Hashimoto and Nishi, 2016).

South Korea also implanted a land consolidation program during the 1960s and 1970s, in which the rapid industrialization created an unbalanced regional development in which urban dwellers become economically better off as compared to rural agricultural households. The difference in economic status between the two sectors triggers farmers to left farmland to factory labors (Choi, 2004; Korthals Altes and Sang, 2011) creating a shortage of farm labor. Therefore in 1970 government attempt to mechanize farmlands as a solution. The project focused on widening farm transportation, arranging irrigation systems, merging fragmented agriculture plots (Choi, 2004). Furthermore, land consolidation has been supported by providing selected rice producers with low-interest loans to lease and acquire farmland and through a farmland banking system (Korthals Altes and Sang, 2011).

3.3.3 Cooperatives

Some Asian countries have attempted to consolidate land via forming farmer cooperatives. India and Nepal are such examples. Through cooperatives, small and fragmented lands are consolidated into economically viable operational units. There are different forms of cooperatives, in some cooperatives, farmers pooled their land without changing the ownership whereas, in some cooperatives, it requires the ownership shift from private to collective ownership. However, since capitalist countries promote private ownership, the success of the later is problematic in capitalistic countries.

Though India implements the program in 1959 only 2% of the farmers, those who have ownership of 6.4% of the agricultural land participated in the program. The rest was feared losing their ownership of the land (Niroula and Thapa, 2005). However,

group contract farming has been successful in some areas in India (Deshpande, 2007). The experience of Nepal also not that promising as management inefficiencies and conflicting interests caused a collapse in groups. However, it is noteworthy to mention that at the initial stage, many farmers were attracted to the program to receive the subsidy benefit and operating funds. The problem aroused only when the management of cooperatives was handed over to participants (Niroula and Thapa, 2005).

3.3.4 Promoting Land Purchase

In Thailand, earlier, farmers have been provided with a credit to purchase additional land (SEAMEO, 2000). However, as landlords did not want to sell their land this program did not succeed in Thailand. Nevertheless, with the development of the industrial sector, labor moves away from agriculture and there was a shortage of labor and this has compelled farmers to mechanize their land which in turn need them to increase their landholding size.

3.3.5 Land Reform/Tenancy Reform

Land reform usually refers to significant changes in agrarian structures and relationships for securing access to a new land and favorable tenure for those who work on the land, including a secure land title, legally fixing rents, removal of intermediary, and better working conditions for tenants and agricultural labors. Land reform changes the ownership of land. However, at the time of the end of World War II, land distribution is highly skewed in many Asian countries (Binswanger *et al,* 1995) and tenant farmers had to pay exorbitant rent for the use of land. Thus, to achieve fairness, there was a need to redistribute land from landlord to landless tenant farmers. The need was strong in many Asian countries as tenant farmers were against the prevailing system. The influence of external parties also supported early land reforms in Asia. For example, in Japan, land redistribution was supported by the US Occupation Force with their interest of breaking down the power of the large landowners, who were the pillars of the country's militaristic class(Quizon, 2013).

Apart from the equity objective, land reform attempted to address inefficiency issues. Land ownership security is an important incentive to invest in farmlands (Binswanger *et al,* 1995). The land is collateral to asset-poor farmers in developing countries. Since much of the large farmlands were cultivated by sharecroppers or tenants who do not possess ownership of the land, there was no incentive to improve and conserve the land. Since they cannot use it in a credit transaction, farm productivity is lower than optimal (Feder and Feeny, 1991).

Exploring the experience of other countries, many land reform acts preceded by the appropriation of land above the legislated ceiling from large landowners, while compensating the landowner in some instances and then distribute to tenants and small landholders. In many Asian countries, the implementation of land redistribution is a failure as the appropriation of land was a failure.

In implementing these policies, some Asian governments, such as India, Pakistan, Bangladesh, Thailand, imposed a land ceiling, and any land that surpasses this ceiling was acquired by the government since this made large landowners' losers and disrupt the power relations associated with land ownership, landlords resisted the implementation of the policy and tried to evict the policy by transferring the land to relatives and family members.

For example, in India, many landowners resisted the implementation of this policy and they use their political power to prevent this law from implementing and used various methods of evasion and coercion, which included registering their land under names of different relatives to bypass the ceiling. However, this program was successfully implemented in Western Bengal and Kerala. In West-Bengal, if the tenants registered with the Department of Land Revenue, they would be entitled to permanent and inheritable tenure on the land they sharecropped. In return for this, they have to pay the landlord 25% of the output as the rent. The program was a success in which productivity of land increased following the implementation of the program (Ghatak and Roy, 2007). Moreover, the West Bengal Acquisition and Settlement of Homestead Land Act, 1969; and the West Bengal Acquisition of Homestead Land for Agricultural Labourers and Fishermen Act 1976 are successful. The 1976 act has several salient features. First, the land is not transferable, but

inheritable, and could also be mortgaged to banks against loans. Second, eviction of occupiers is illegal and a punishable offense. Third, the original landowner will be given compensation only ten times the annual rent (Mannan, 2001). However, in Kerala, it was found that land reform has led to extreme fragmentation and made agriculture a low-profit venture (Krishnakumar, 2014).

Pakistan also experienced the same. Pakistan has attempted to change the land concentration with the Land Reform Act of 1959/1972 and 1977. However, there is considerable evidence that it did not significantly alter the concentration of land-ownership, as there were substantial interfamily land transfers and even evasion of the ceiling requirements on individual holding. The three land reform acts have redistributed less than 1.5 million hectares to less than 290,000 beneficiaries. Land distributed were not of high quality and not all beneficiaries were sharecroppers (Khan and Imam, 1985). In addition to the implementation issues, these policies have been criticized for not having a follow-up supportive system, such as credit, input, and farmer organizations to make beneficiaries use these lands effectively.

To reduce inequality in the distribution of agricultural land, the Lands Act 2021 (1964) is being implemented as early as 1964 in Nepal. This act fixes ceilings on the land an individual can own, protects the right of tenants by registering his or her name in the owner's deed itself, fixes rent on agricultural land, and does away with the traditionally very high-interest rates on rural loans. This law has been amended six times. Most important among them are the fourth and the fifth amendments. The fourth amendment has made a provision of apportioning 50% of the land hitherto cultivated by a tenant between the tenant and the landowners to ensure that the tenants become the owners of cultivated land. In the same amendment a provision has also been made to provide credit facilities through "land bank" to the tenant, should she/he be interested in buying the owners' share also. It came into force in January 1997 (FAO, 2016: Adhikari, 2011). This is a market-led approach in which tenants can purchase the land and the government will provide needed credit, which can be repaid within 15 years. However, after the 2006 political change, this program was stopped (Adhikari, 2011). The program was a failure mainly due to the lack of commitment of the politicians. Since the majority of the parliament members are

landlords, land redistribution policies that adversely affect landlords were not properly implemented in Nepal. When the government imposed a ceiling on land to acquire excess land and redistribute it to landless, landlords try to evict the law by transferring the ownership of land to relatives or family members. To make this process easy, land ownership at the time of implementation was considered instead of considering the land ownership at the time of announcement of the law. Since the program was implemented in a phased manner (state-wise implementation), it provided ample amount of time to landlords to evict from the law (Adhikari, 2011). Resistance from the lords, lack of cooperation between government departments, together with a lack of clarity in the administrative and bureaucratic procedures related to its implementation too have impeded the successful implementation of the policy (Adhikari, 2011).

The three-stage Land Reform Program (1949-1953) in Taiwan which was operationalized in three stages was the best land reform program in Asia. At the first stage (1949), the rent the tenure has to pay was made fix. This provides an incentive to the tenant, as the benefit of any increase in productivity can be solely enjoyed by them. In turn, a farmer increased fertilizer usage and adopt better farming practices. As a result, agricultural productivity was increased (Chang, 1974; Park and Johnston, 1995). An increase in income of farmers followed by this created a domestic market for industrial products and the industry sector grow at a rapid rate than the agriculture sector (Chang, 1974). As a result of this reform, two types of lands were created in Taiwan, owner-cultivated land and tenant-cultivated land, the price of tenant cultivated land was lower than the price of owner-cultivated land, as the owner can only transfer the ownership of the land to the buyer, not the usage right. This made landlords sell their land and tenants were in a position to buy these lands as they have gained savings. According to Chang (1974), in four years, 41,300 hectares have been sold to tenant farmers. Meanwhile, the government paid for the land in commodity bonds (70 percent) and in shares of stock in four government enterprises (30 percent) (Ho, 1987). Thereby transform landlords into entrepreneurs (Park and Johnston, 1995). Further, since, large landlords lost land, they looked for investment in other sectors and it led to the development of other sectors (Ho, 1987).

One of the other successful land reforms was taken place in Japan in the late 1940s, which provided for the compulsory purchase of the land of resident landlords with more than 2 ha and all the land of absentee landlords, (Rothacher, 1989). The program set land rent at a very low level and imposed a three-hectare ceiling on landholdings (Hayami, 1988). This was a huge incentive for peasants to increase output, (Hayami and Yamada, 1991). This increased agriculture production by many times in Japan. The introduction of new technology to agriculture (Õchi, 1966) enhances the return to increased investment in agriculture. During this time, both labor productivity (by 4%) and land productivity (by 5%) increased (Sharma and Jha, 2016). In terms of the factors that contributed to the success of these reforms is the provision of necessary infrastructure need to boost agriculture production, efficient implementation of the program. The industrial expansion which occurred simultaneously led to the outmigration of labor from the agriculture sector, which in turn create a shortage of labor. This outmigration of labor caused agricultural landholding size to increase as out-migrated laborers were no longer interested in cultivating lands. Then, to cope up with the shortage of labor, the government implemented a consolidation program with the objective of mechanization of land (Õchi, 1996), so that the welfare gap between urban and rural dwellers will be lowered.

South Korea also has witnessed success in land reform attempts. Through, Land reform Act (1950), the Government purchased land from absentee farmers and farmers who had land extend above a ceiling size and farmland owned by non-self-cultivators. However, only 63% of the land from the expected lands were acquired by the government as some lands were exempted from government acquisition. In return, landlords were compensated with a value equal to 150% of the average crop income over the past 5 years. They were given a land-value bill and the government planned to pay the payment in five years. The government sells these land and part of the government land to tenant farmers, owner-framers those who cultivate small plots, agriculture labors, and countryman who has returned from overseas, those original occupation is farming. Ownership of the land was transferred to farmers, though it was prohibited to sell, donate and mortgage until the full payment of the land is paid. The government keeps the right to consolidate, improve or divide the

land. However, this was not implemented (Shin, 1976). Land reform has increased the investment in agriculture and increase production (Jeon and Kim, 2000). The increased income of farmers was spent on their children's education and as a result school enrolment increased a significant proportion of this educated labor force moved to industry and contributed to the growth of the industry sector (Putzel, 2000). Landlords were allowed to invest these Land-value Bills in purchasing the government-owned industrial plants and establishments (Shin, 1976). However, only a few landlords used this opportunity due to inefficiency in the process. Many landowners, those who lost their land bankrupt in South Korea (Putzel, 2000). Furthermore, until 1960, the government did not provide any support to farmers. However, Korean farmers were able to survive without these services was that they inherited a relatively advanced production structure from the Japanese (Putzel, 2000).

The success and failure of these land reform policies lied on two factors, one is the implementation of the policy and the infrastructure support provided to farmers who newly owned the land. The program was not implemented well in Asian countries, due to the lack of political will and the unwillingness of landlords. Furthermore, although, land reforms provided incentives to landless smallholders to invest in land, early Land reform policies were criticized for two reasons. First, in many instances, the full ownership of land was not granted as it could lead to the conversion of these lands to non-agricultural purposes. It is the partial formal right such as preemptive right and usufruct right. These rights restrict the transfer of holding to only by inheritance and prohibit the transfer of ownership or rental. However, efforts to implement such restrictions have almost invariably weakened property rights with the result that often the unintended negative consequences of sales market restrictions have far outweighed the positive impacts they were intended to achieve (Deininger, 2003). Secondly, after many decades, many countries have realized that this division of large land to small plots has achieved the equity objective at the expense of economics of scale.

3.3.6 Conversion of Agricultural Lands to Non-Agricultural Usages

Due to progressively diminishing return from agriculture and increase in population, there is a high demand for farmland for urban development and in turn, it has increased the rate of conversion of agricultural land to non-agricultural purposes (Samaratunga and Marawila, 2006). To accommodate the increased population, farmlands have been transformed into housing areas and further, it was evident that some farmlands have been transferred into the infrastructure needed to cater to the increased population such as roads, markets, and institutions (Quasem, 2011).

Bangladesh also attempted to prevent the conversion of agricultural lands through National Land Use Policy 2001. It restricted unplanned housing and land construction. However, as revealed through a survey farmers suggested making agriculture more profitable and imposing a tax (30%) when converting farmlands to non-farm purposes rather than restricting unplanned housing. Further, they have suggested exempting commercial farms from tax, so that people will not fragment the land (Quasem, 2011). Another successful tool that worked in preventing transform of agricultural lands to non-agricultural purposes is “Agriculture Zoning”.

3.3.7 Land-use Zoning

Land-use zoning allocated lands to restricted usage. To prevent the conversion of agricultural land to non-agriculture purposes which triggered by a boom in the manufacturing sector which was led to the outmigration of labor from agriculture to the manufacturing sector, Japan enacted the Improvement of Agriculture Promotion Areas Act in 1969. The purpose is to oversee investments in agricultural development through the Agricultural Land Zone (ALZ) scheme by which farmland within an ALZ1 is disallowed to be converted for other land use while being specifically targeted to national subsidies including the subsidy for land improvement projects.

Thailand also has introduced the Agricultural Economics Act which creates the agro-economic zone or in short “Agro zoning”. However, the objective of zoning is not to

prevent the conversion of farmland. The objective is to promote the land use that matches with its suitability; to balance the crop supply with the market demand, in the hope that the balance quantity will solve the crop price instability issue; and to develop a systematic control of the agricultural program at a provincial level. It defined the ago-zoning area as an area of agricultural production, to be established according to the soil type, rainfall, temperature, economic crop, farm type, and main income of farmer by using the boundary line of the province as a border zone. In 1987 Thailand government divided 24 Agro zones with the provinces that have similar attributes and characteristics were categorized into the same zone, and the specific crop type was set and encouraged for production in each zone. In 2013 Thailand government has redefined these zones as agricultural zones to adjust for the animal husbandry practices and reforestation to be established according to the market conditions and agricultural economy of the country. However, the program was not a success as the net return associated with the cultivation of recommended crop was negative. Nepal also planning to create Agricultural Zones through Land Policy, 2015, this will make Agricultural Zones.

3.3.8 Lessons Learned from Other Countries

Asian countries have adopted different land policies and policy instruments to tackle issues about agricultural land use, viz, land fragmentation, small landholding size, conversion of agriculture land to non-agricultural usage, and land ownership issues. However, except a few, many have not been implemented successfully. Ineffective implementation mechanism was the most frequently stated reason for the failure of these policies. Among others, lack of farmers/land owner’s willingness to participate in this program either due to the fear of losing their land or social status, unequal distribution of benefits which is associated with land ownership are the major reasons behind the effective implementation of these policies instruments. As some of these policy objectives are against the socially driven changes and were unable to provide a net benefit to the participants,

Land policies adopted by East Asian countries, Japan, Korea, Taiwan are not only successful but also paved the foundation for the development of the other sectors by

releasing surplus labor and creating required investment (FAO, 2016). Furthermore, the most salient feature of the series of land policies adopted by these countries is they are need-driven and market-oriented. Though it is impossible to replicate the same experience, it would be worthwhile to understand how policies can be used to trigger socially driven favorable changes and to alter the context if market-driven land-use changes are not in favor of agriculture.

As evident from successful East Asian country stories, as far as state-led-land reforms were coupled with market-led reforms, the objectives of the land policies have been achieved with satisfaction. Therefore, to address the challenges related to land use in Sri Lanka, a holistic approach in which all the sectors in the economy, are needed.

To reap the benefit of existing government alienated lands, immediate actions are required to lift the restrictions on these lands. The land commission 1955 also recommended allowing the allotter to dispose of his land at will if all payments were completed. But this recommendation was not accepted (Gunawardena, 1981) and hence, not implemented. One of the arguments against this revision is, if the full ownership of the land is given to farmers, they will sell the land for non-agricultural purposes. Therefore, the review on policies of other countries suggests having joint ownership to land, where the government would be the other partner. Thus, if the farmer wanted to sell the land, they have to sell the land to the government and then the government can resell these lands to those who use this only for agricultural purposes. Again, in selling these lands, the government can retain its ownership of the land, to prevent future conversion to non-agricultural purposes. Another aspect of the reform which could change is the removing of restriction on land renting and leasing. If this restriction is released, then, the land will be handed over to the most efficient farmers those who can invest the land and can increase the return to land. However, to provide incentives to buyers, long-term leasing is recommended. On the other hand, farmers also can earn better revenue from leasing the land and they can earn an income from off-farm activities. Furthermore, incentives need to be provided to farmers who lease their land to the private sector to start agri-food industries. In

this way, surplus labor will be removed from agriculture, and hence, the tendency to fragment land also will decline.

To be successful, land reform policies need to provide incentives to farmers to invest more in their land. Unless farmers can receive the benefits of ownership, they will not continue farming and with the restriction to rent, lease, and sell, these lands will be either informally rented out or leased which will result in less gain or abandoned in which economic efficiency will not be achieved. However, in coming up with reforms, it is important to understand the social needs that drive unfavorable land use patterns, as the success of land regulations or reforms lie on its ability of these reforms or regulations to provide solutions to the farmers have.

All in all, in revising and formulating new land policies, it is imperative to study the informal land market. It will shed light on the market allocation of land. If these informal land market does not reduce agricultural productivity and contribute to increasing the return to agriculture, it may be prudent to formalize these informal markets. One such example could be the informal land market developed in Sri Lanka, in which large agribusiness have rented lands from farmers those who reside in government alienated lands.

To promote land consolidation, incentives, subsidies need to be provided to farmers to engage in collective farming. Since mechanization is not possible with small landholding sizes, the government can subsidize the purchase of machinery by farmer cooperatives, if farmer cooperatives are willing to engage in cooperative farming. However, to eliminate the management failures, it is imperative to either train farmers to be better managers or keep the management in the hand of a related state institution. Furthermore, the government can give priority to consolidated lands in purchasing the output. Since, considerable state land is still vested with the Government, to tackle the problem of landlessness, the government can realize government lands to private entrepreneurs either through renting or long-term leasing. Furthermore, to implement land policies, it is necessary to enhance institutional efficiency and reduce transaction costs.

3.4 Assessment of the Land Tenure System in Sri Lanka

3.4.1 Property Rights and Tenure

Land tenure is characterized by the bundles of rights, rules, and institutions that define an individual or community's access to land. Critical rights include rights of access, rights of withdrawal of resources, rights of management, rights of exclusion, rights of alienation (to sell property), and authority to sanction (Ostrom and Schlager, 1996; Wickramasinghe 2013).

3.4.2 Historical Evolution of Land Tenure System in Sri Lanka

In Sri Lanka, the reign of local kings prevailed until 1815. During this period, all lands were considered as belonged to the King. As per the wish of the King, lands were granted to people either for a payment or as a return for services rendered (*Rajakariya)*. The lands given out to people for their service to the King were known as "*Nindagam*". Some lands were given out to religious activities and the lands given out to Buddhist temples were known as "*Viharagam*" and those given to Hindu temples were known as "*Dewalagam*". Sri Lanka was colonized by the Portuguese (1505 - 1658), Dutch (1658 – 1796), and British (1796 – 1948). The Portuguese and Dutch ruled only the coastal belt of the country and significant changes in the traditional land management system during their reign were not visible. Some drastic changes to the land use and tenure were made during British rule. Under the British ruling, the Crown Land (encroachment) Ordinance No. 12 of 1840 was enacted and it acquired almost 90% of all the lands to the Crown. Gradually this system created a landless peasant sector in the country and traditional institutions, such as land tenure by accommodation (the granting of land for cultivation, as opposed to its outright sale), were abolished. *Rajakariya* system was opposed not only on moral grounds but also because it slowed the growth of private enterprises, impeded the creation of a land market, and interfered with the free movement of labor. The land tenure system introduced by Crown Land (encroachment) Ordinance No. 12 was unfamiliar to native people. Since documentary evidence was not in use at the time,

peasants who could not prove ownership lost their land to the Crown. Some land appropriated to the Crown was sold to private investors. In 1897, the Waste Land Ordinance was enacted to prevent the encroachment of Crown wastelands by the peasantry. This further marginalized the peasants. The lands acquired were later given to various government departments, projects and alienated for land settlements, land grants, and leaseholds. The Department of Forest Conservation, Department of Wild Life and Conservation, the Railway Department, and the Mahaweli Authority are the largest recipients (Mapa, et al, 2002).

In 1927, the first Land Commission was established by the colonial government mainly to improve the welfare of peasants (Bandara, 1990; Goonawardene and Hatten, 1990). The recommendations of the Commission led to the enactment of the Land Development Ordinance (LDO) in 1935 which set the future course of land development of Sri Lanka (Goonawardene and Hatten, 1990; Jayawardana, 1990; Bandara, 1990; Abeysinghe, 1979). It marked the beginning of an era of rapid land settlement starting from the mid-1930s and continued up to the implementation of the Accelerated Mahaweli Development Project in the mid-1980s. The initial objectives of the LDO were to protect the interests of the peasantry. The government introduced a system of protected tenure under which the recipients of LDO land had the right to occupy and cultivate the land in perpetuity, subject to restrictions imposed on sale, leasing, and mortgaging, and conditions related to abandoning or failing to cultivate the land. The holding size of the lands alienated during this period was as large as 8 acres.

3.4.3 Land Tenure and Property Rights at Present

Land tenure systems in Sri Lanka are complicated. The rights to private lands are clearly defined. There are statutory laws, common laws, and customary laws defining tenure concerning agricultural land in Sri Lanka. The common law is the Roman-Dutch law. Differences arise concerning customary laws about land, especially concerning land transfer. On marital property and inheritance, there is Muslim law, Kandyan Law, and Thesawalamay Law applicable to Muslims, Sinhalese Kandyans, and Jaffna Tamils in the country respectively. These customary laws seek to protect

the traditional rights and customs of religious or ethnic groups. State lands are mainly ruled by statutory laws.

Different tenures can be observed in agricultural land compared to residential and commercial lands. Sharecropping “ande” is traditional land management practiced in lands cultivated by tenants commonly seen in paddy cultivation. The poor landless managed the land for a share of the crop. There were many concerns about the over-exploitation of the poor farmers by the rich landlords, issues of shirking, and disputes over the share. The Paddy Land Acts of 1953 and 1958 is a milestone in the property rights definition of paddy lands in Sri Lanka. They were intended to regulate the rent paid by tenants to the landlords. Yet, they turned out to be more detrimental than beneficial to the tenant-landlord relationship. Agrarian Services Act of 1979 and Agrarian Development Act of 2000 followed aimed at further securing the rights of tenant cultivators and enhancing paddy productivity. Agrarian Development Act of 2000 also tries to ensure maximum utilization of agricultural land by imposing restrictions on the conversion of agricultural land into non-agricultural uses.

At present share “ande” is not much commonly practiced in Sri Lanka. Instead, land leases and rents are common. Long-term leases are common for perennial crops while short-term leases are common for annuals. For paddy, there are other informal land-use arrangements like “kattimaru” and “thattumaru”. They are land use in rotations by different farmers. These are working well in cases where land division is not possible and where water resources are not equally available for all. They operate based on relationships and trust. This arrangement has been helpful to avoid land fragmentation.

Land tenure arrangements in contemporary Sri Lanka can best be termed as “complex”. They are a reflection of composite effects of government interventions, the population pressure on land and cultural norms of the society. Accordingly, the resulting tenure arrangements are region specific. The earlier stated rotational tenure forms (such as *thattumaru* and *kattimaru*) are found mainly in the densely populated and paddy land scarce districts in the Wet Zone of the country. Various forms of share tenancies (such as *ande, karuande, koottuande, vi poronduwa*, and other

forms) involving different arrangements of labour and input sharing and allocation of use rights on a temporary (seasonal) basis or on the basis of affixation exist in these areas. Tenancy rights are permanent and inheritable in the Wet Zone. The lands owned and managed by Buddhist and Hindu temples, known as *Vihargam* and *Devalagam*, are found in Central Highlands and districts of the Dry and Intermediate Zones of the country. In these lands, temples extract a combination of crop shares and prescribed servitudes from 'tenants' who occupy the land (Ratnayake, undate).

Absentee landlordism associated with the *gambaraya* system is concentrated in the South-East Dry Zone Districts and the *podiyar* system is found in the Eastern Province with exploitative rent collecting and grazing rights exerted by representatives (overseers) of absentee landowners. Similar, albeit more commercialised contractual transactions are found in certain districts (Vavuniya and Mullaitivu) (Kumara, 2016).

Small tank-based land ownership and land use systems found mainly in the North Central and North-Western Provinces in particular, still retain much of the communal ownership character in homestead land as well as paddy land. In the traditional village paddy tract (*purana vela*), individual rights claimed over land parcels tend to become subordinated to a communal decision to cultivate a limited extent of the tract, with a reduced number of individual land parcels. This is termed as the *bethma* arrangement and practiced in times of water shortage in the tank. Similar communal ownership exists in the case of *paraveni* (ownership rights through long term use) *chena* (shifting cultivation) and *kurulupaluwa* (areas allocated for birds) strips of land in *purana* (traditional) small tank villages. Tenancy rights for private lands are permanent and heritable in these small tank-based systems as well (Shah, 2013).

The land tenure of the Dry Zone agricultural system is still characterized by the indigenous system comprising the old-fields (*purana vela*), acre/leased fields (*akkara vela*) and *chena* lands under communal ownership (Abeywardena et al., 2019). Tenancy rights for private lands in the Dry Zone are also permanent and inheritable. In irrigation settlement schemes however, land is owned by the government and farmers are given varying degrees of rights through various land lease arrangements. Illegal land transactions are also present in these areas.

Tenure arrangements for plantation crops are specific to types of cultivation. Small holdings mostly have private ownership to the lands. The large estates are owned by the State and are managed by the Regional Plantation Companies (RPCs) under a long-term lease agreement (Herath, 2016).

3.4.4 Land Tenure Related to State Lands

For state lands, property rights are not well defined. Common lands, parks, reservations, forests, and conservation areas belong to state lands. Other than the ownership rights to land, user rights are not well defined. Therefore, there are conflicts among the public about benefit sharing. The state lands are alienated giving away user rights (sometimes transfer rights) to the public. The receiving party could use and develop the land as per the conditions stated in the agreements except selling of the land. Land alienated as land grants (Swarna Bhoomi, Jaya Bhoomi, Ran Bhoomi, Ranbima) could be transferred to the next generation of the grant holder. The land transferring to the next generation, the land division is also permitted subject to a minimum size of the resulting land plots.

Land permits are issued by the respective Divisional Secretariats to those who need land and are only issued subject to several conditions, including fairly stringent conditions regarding the ability of a permit-holder to dispose of the land. A permit-holder may not dispose of the land, and may only mortgage his interest in the land with the permission of the GA. A permit-holder may only erect those structures specified in the permit, and the permit-holder must obtain permission from the GA before erecting any additional structures. The permit can also be canceled if the permit holder has not developed the land or has breached the stipulated conditions. Permits can be issued under the LDO and State Land Ordinance (SLO). The LDO provides that no person may acquire a prescriptive title (i.e through long-term occupation) to permit lands. It is an offense to encroach on permit/ grant land, and anyone who does so may be required to pay a fine or be subjected to imprisonment, or both. A permit cannot be sold, regardless of the conditions. A permit may be converted into a grant after a specific period has passed if the permit holder has used the land according to the conditions stipulated in the permit. Usually, for paddy

land, a permit can be converted to a grant after three years have elapsed and other conditions are met. In the highlands, this period is usually only one year, but specific conditions must also be met.

Permit-holders may apply to the Land Commissioner for their permits to be converted to the status of grants or deeds. Grants or deeds confer legal ownership and cannot be taken back by the State except under the Land Acquisition Act. There is a process by which a permit may be converted into a grant or deed. An application to convert a permit to a grant/deed needs to be made to the local GS who then needs to examine the land and submit a report to the respective DS. The land officer or colonization officer of the DS will also prepare a report and document whether the land has been developed according to the criteria set out in the permit. The plan will be then examined by the Survey Department, DS, or Deputy Land Commissioner (inter-province) who will prepare the deed/ grant and forward it to the Land Commissioner through the Provincial Land Commissioner. After the document is checked by the Land Commissioner, it is then forwarded to the Presidential Secretary for the President's signature. Only then will the grant/deed be registered in the land registry. A grant/deed provides absolute ownership of the land to the owner. Once the permit has been converted to a grant/deed, the grantee cannot divide the plot further and cannot transfer the land without the permission of the GA. A grant may be sold with the permission of the respective Divisional Secretary. According to the Ministry of Lands and Land Development, grants have been issued under several projects (Swarnabhoomi, Jayabhoomi, Jayabhoomi, Ranbima).

3.4 Land Regulation and Management

3.5.1 Institutional Set-Up Governing Land

The land is a devolved subject under the Thirteenth Amendment to the Constitution. However, the Central Government exercises executive control over how state lands are alienated and used. It is further complicated by the numerous laws and policies

that are relevant to both state and private lands, and numerous processes involved in the various functions of land. Land laws cover both state and private land.

The Ministry of Land, the key institution governing lands, was established in 1932. The objectives of the Ministry are to formulate and implement state land policies, conserve state lands, and implement activities related to land settlement and land acquisition for public purposes. This Ministry's vision is the optimum utilization of land resources for sustainable development and its Ministry's mission is to effectively and efficiently manage land resources to an optimal level contribute to the country's socio-economic development while maintaining environmental equilibrium. The Survey Department, the Land Commissioner General Department, the Land Title Settlement Department, the Land Use Policy Planning Department, Land Survey Council, Institute of Surveying and Mapping and Land Reform Commission fall under the purview of the Land Ministry.

The custodian of the land acquired to the Crown (The British rule) and not vested to other institutions is under the Land Commissioner General. The Land Commissioner General's Department alienate land to the public as per the need. Land parcels are first alienated as permits. The permit requests from the public comes to the Divisional Secretariat of area who is the local custodian of the land under the Land Commissioner. The requests are evaluated based on the intended use of the land and the landlessness of the requester. Priorities are given to blood relatives of the person who used the land before. Land is thus alienated for agricultural use and residential use. The land permits will be later considered for land grants (*Swarnabhoomi, Jayabhoomi* deeds). Number of permits and grants issued are presented in Table 3-44. A land granted with a *Swarnabhoomi* or a *Jayabhoomi* deed cannot be sold. The land may be divided and be transferred to the next generation subjected to a minimum size.

Table 3-44: Land Statistics in Sri Lanka – 2019

Criteria	Extent (ha)
Total land	6,561,000
State land	5,403,809
Percentage of state-owned land	83%
No. of issued land permits (up to 2019)	2,952,542
No of Issued land grants (up to 2019)	1,361,391
No. of surveyed lands	701,398
No. of plots yet to be surveyed	436,993
No. of issued long term leased land permits (up to 2019)	261,572
No. of lands plots yet to be regularized	600,000

Source: Land Use and Policy Planning Department, Land Commissioner General's Department

The Land Commissioner General Department is governed by two Ordinances. The Land Development Ordinance (1935) and the State Land Ordinance (No. 7 of 1947 ad No. 8 of 1949). The State Land Ordinance stipulates provisions for the grant and disposition of state lands in Sri Lanka; for the management and control of such lands and the foreshore. The Land Development Ordinance (No. 19 of 1935) provides for the systematic development and alienation of State land in Sri Lanka. It marked the beginning of an era of rapid land settlement and starting from mid-1930s. It continued up to the implementation of the accelerated Mahaweli Development Project in mid-1980s.

The Mahaweli Authority of Sri Lanka was established in 1979 by a Parliamentary Act with the mandate for implementing the Mahaweli Development Programme to develop agricultural land and human settlements in the Dry Zone of Sri Lanka. Nearly, 365,000 ha of public and private land were earmarked for this programme. The new settlers were granted an acre of lowland and a half an acre of homestead per family with restrictions for on transfer and sale of land.

3.5.2 Institutional Developments Related to Agricultural Land

At present, a number of institutions perform key functions in land related matters as well as a number of institutions that perform related auxiliary functions. Many government institutes are directly involved in land-related activities and the relevant institutes with their specific functions related to land are discussed below.

I. Ministry of Lands and Land Development

This ministry is responsible for the formulation and implementation of land policies and land development programs. The Ministry is also responsible for the management of land settlement; land acquisition; surveying; land use planning and alienation of land and development of settlement projects. The Land Commissioner General's Department, Survey Department, Land Title Settlement Department, Land Use Policy and Planning Department and Land Reforms Commission are the main institutes attached to this Ministry.

Sri Lanka Survey Department (SLSD) is the National Surveying & Mapping Organization. SLSD is responsible for surveying land for government institutes and projects and produce survey maps. Title registration is being implemented by the Survey and Land Title Settlement Departments. The operations are carried out within the Registration of Titles Act No. 21 of 1998. The title register is maintained by the Registrar General's Department. By 2014, 405,813 titles had been registered under the National Land Titling Program (*Bim-Saviya*). The Survey Department has developed a national Cadastral Map in SLG99 for title registration and by the end of 2014 had surveyed close to one million land parcels. In 2015 the Registrar General's Department recorded 25,500 transactions for titles.

The Land Reforms Commission is established under Land Reforms Act No 01 of 1972 and currently bears the responsivity of utilizing lands and physical resources vested under the Land Reforms Act. Under the said Act, land ceilings were imposed for private ownership of land. The ceiling is 50 acres of highland and 25 acres of lowland. The Commission releases statutory determinations, pays compensation to the owners of lands, utilizes lands taken over for productive investments and collects revenue of the Commission. The excess land thus acquired to the Commission are leased out short term (5 years) or long term (30 years) for private investors.

The Land Use Policy Planning Department was initially established as the Land Use Policy Planning Division, under the Ministry of Land Development and Mahaweli Development in 1983, with the objective of advising the Inter-Ministerial Co-coordinating committee for Land Use and Development, to assist with the

formulation and implementation of Land Use Policies and to develop a Land Information System. In the year 2010, The Division was upgraded to the status of a Department and given more responsibilities. Land Use Planning activities are being undertaken in 25 Districts and in each District, the activities are supervised by a District Land Use Planning Officer (DLUPO). The DLUPO also supervises the planning activities of Assistant Land Use Planner and Land Use Planning Assistants at the Divisional Level.

II. Registrar General's Department of Ministry of Public Administration and Management

There are 45 Land Registries in Sri Lanka managed by the Registrar General's Department of the Ministry of Public Administration and Management (MOPAM). The Land Registry records deeds, mortgages, leases, and other documents on land and property. It covers approximately seven million land parcels (of the estimated total of 13 million land parcels in Sri Lanka). Registration is not mandatory and there is no legal guarantee on the rights that are registered. Over 1.1 million deeds were registered in 2015.

III. National Physical Planning Department

The Department is operating under the Ministry of Urban Development, Construction, and Public Utilities with the mandate for formulation and implementation of a national physical planning policy.

The Town and Country Planning (Amendment) Act, No. 49 of 2000 was approved unanimously by the Parliament of Sri Lanka on 9th August 2000 and received the official sanction over establishing of National Physical Planning Department to replace the former Town & Country Planning Department. Having taken necessary administrative steps required by this amendment the new National Physical Planning Department (NPPD) was formerly established and inaugurated by the Ministry of Urban Development, Construction and Public Utilities on 21st May 2001. Its purpose was, as specifically stated in the preamble to the Act.

To authorize the formulation and implementation of a national physical planning policy; the making and implementation of a national physical plan with the object of promoting and regulating integrated planning of economic, social, physical and environmental aspects of land in Sri Lanka; to provide for the protection of natural amenities, the conservation of natural environment, buildings of architectural and historic interest and places of natural beauty; to facilitate the acquisition of land for the purpose of giving effect to such plan and to provide for matters incidental to or connected with the matters aforesaid.

IV. The Valuation Department

The Valuation Department undertakes valuing of state lands and properties. The department provides compensation values for the land acquisition and suggests lease levels for the government including to Provincial Councils and local authorities.

V. Mahaweli Authority

The Mahaweli Authority of Sri Lanka was created in 1979 under an Act of parliament to be in charge of all aspects of the Mahaweli Development Programme which was accelerated under the Ministry of Mahaweli Development established in 1978. The Mahaweli Development Programme began with the first major project in the Master Plan, in February 1970, i.e the Polgolla diversion. These developments programmes have resulted in irrigation of paddy lands, re-settlement of farmer families, setting up new towns, villages and hamlets, and providing vital facilities for the people in the Mahaweli areas, like education, healthcare and agriculture and farming assistance. Land and administration of land has been at the heart of the Mahaweli Development Program. The Mahaweli Program spans 13 administrative districts and 14 irrigation systems. Mahaweli Authority administers land in area declared for the Mahaweli Ganga Development Scheme (about 39% of Sri Lanka has been declared). In the Dry zone alone, the Mahaweli Master Plan has earmarked 365,000 hectares of land.

The water resources of Mahaweli depend on six river basins and the major projects of Mahaweli include the Victoria dam, Rantambe, Polgolla, Randenigala, Kotmale, and Bowathenna. Mahaweli manages the irrigation of over 101,000 hectares of

irrigable land in the dry zone. The main objectives of the programme have been food production (through irrigation and agriculture and allied increase in employment opportunities), hydropower generation, providing land to the landless, and better flood control. The Programme was envisioned to be implemented over 35 years. Administration of lands, including matters relating to forests, wild life, irrigation, agrarian services and agriculture, in areas that are demarcated under the Mahaweli Act is within the purview of the Mahaweli Authority. Land related matters are handled by a special unit in the Development Services Division of the Mahaweli Authority.

VI. Provincial Council

Land administration and management powers were intended to be devolved to the Provincial Councils under the 13th Amendment (1987) to the Constitution (1978). There are uncertainties in the devolution of responsibilities to the Provincial Councils and hence has not functioned as yet.

VII. Divisional Secretariat (DS)

The DS Functions as the local custodian of state land. Applications and requests from the public are evaluated, processed, and recommended to the Land Commissioner-General by the respective DSs.

VIII. Forest Department

Forest Ordinance is administered by the Forest Department and the very first Forest Ordinance was the No.10 of 1885 which made provisions for the declaration of reserved forests. National Heritage and Wilderness Areas Act No. 3 was passed in 1988 to provide special protection to the forest areas that harbor unique ecosystems, genetic resources, or outstanding natural features. Sinharaja forest, which is a World Heritage Site at present, was the first forest area declared under this Act.

IX. Department of Wild Life Conservation

The department is governed by the Fauna and Flora Protection Ordinance, No. 2 of 1937. Under the legal provisions of this Ordinance, suitable areas were identified

and declared as wildlife reserves subsequently. Initially Wildlife Conservation was with the Forest Department and in 1949 a separate Department was established for Wildlife Conservation.

3.5.3 Regulatory Framework Governing Agricultural Lands

The following section summarizes the key regulations governing agricultural lands in Sri Lanka with special emphasis on the resulting tenure rights. For comprehensives reviews on the implications of land regulations in Sri Lanka see Amerasinghe (1976), Ellman et al. (1976), Herath (2006), Marawila (2010) and Wanigaratne et al. (1979), For pioneering work on land tenure in Sri Lanka see Obeysekera (1967), Peiris (1978) and De Silva (1992). Box 2 provides a list of land regulations implemented during 1840 – 2020.

Box 2: List of Land Regulations pertaining to Agricultural Land

Ordinances, Acts and Laws Related to Land Ordinance/Act/Law

- Crown Lands (Encroachments) Ordinance No. 12 of 1840
- Waste Lands Ordinance No. 1 of 1897
- Land Development Ordinance No. 19 of 1935
- Irrigation Ordinance of 1946
- Paddy Lands Act, No. 1 of 1953 and 1958
- Land Reform Law, No.1 of 1972
- Land Reform (Amendment) Law, No. 39 of 1975
- Agrarian Services Act, No. 58 of 1979
- Agrarian Development Act, No. 46 of 2000, 46 of 2011

Source: Samaratunga and Marawila, 2006.

I. *Rajakariya* System During Pre-Colonial Period

The pre-colonial period of Sri Lanka refers to the reign of local kings which prevailed until 1815. During this period, all lands were considered as belonged to the King. Lands were granted to people either for a payment or as a return for a service rendered. The latter system was termed as a *Rajakariya* (Zubair,2005). The services

expected were of two kinds: (i) public works such as construction of roads, bridges, and irrigation infrastructure, and (ii) special services elicited on the basis of a person's caste-related occupation[3]. The lands given out to people for their service to the King were known as "*Nindagam*". Some lands were given out to religious activities and the lands given out to Buddhist temples were known as "*Viharagam*" and those given to Hindu temples were known as "*Dewalagam*". Three categories of land tenancies have been identified for *Paraveni* tenure. They are (i) share cropping (*Ande paraveni*), (ii) tenancy ownership of less fertile lands (*Otuparaveni*), and (iii) non-service tenancy ownership (*Ovita paraveni*) (Wijeyewardene,1956).

During this period, Sri Lanka has self-sufficient in its requirement of rice, the staple food crop. Excess rice has even been exported to neighboring countries. Hence, the dominant land use was paddy cultivation. Extensive irrigation networks that consist of a large number of village tanks, gigantic reservoirs and network of water canals connecting these tanks were constructed by the kings to facilitate rice production particularly in the Dry Zone. A tax on agricultural lands was charged by the kings (Marambe, 2017).

The inheritance rule practiced during this period did not require division of lands between sons and daughters. The daughters take their share in the form of a monetary dowry and other assets and the sons inherit land only when they stay at home and reside patri-locally. This resulted in a system of patrilineal descent associated with the holding of large undivided estates (Leach, 1959). This system avoided land fragmentation.

II. Crown Lands during Colonial Period

Sri Lanka was colonized by the Portuguese (1505 - 1658), Dutch (1658 – 1796) and British (1796 – 1948). The emphasis of the colonial rulers was on a trading economy hence subsistence agriculture was neglected during the colonial period and instead export crops were given prominence. The Portuguese and Dutch ruled only the coastal belt of the country and significant changes in the traditional land management system during their reign was not visible. Some drastic changes to the land use and tenure were made during the British rule. Under the British ruling, the

Crown Land (encroachment) Ordinance No. 12 of 1840 was enacted and it acquired almost 90% all the lands to the Crown. Gradually this system created a landless peasant sector in the country and traditional institutions, such as land tenure by accommodessan (the granting of land for cultivation, as opposed to its outright sale), was abolished. *Rajakariya* was opposed not only on moral grounds but also because it slowed the growth of private enterprises, impeded the creation of a land market, and interfered with the free movement of labor. The land tenure system introduced by Crown Land (encroachment) Ordinance No. 12 was unfamiliar to native people. Since documentary evidences were not in use at the time, peasants who could not prove ownership lost their land to the Crown. Some land appropriated to the Crown, were sold to private investors. In 1897, the Waste Land Ordinance was enacted to prevent the encroachment of Crown waste lands by the peasantry. These further marginalized peasants. The lands acquired were later given to various government departments, projects and alienated for land settlements, land grants and leaseholds. The Department of Forest Conservation, Department Wild Life and Conservation, the Railway Department and the Mahaweli Authority are the largest recipients (Mapa, 2002).

In 1927, the first Land Commission was established by the colonial government mainly to improve the welfare of peasants (Madduma Bandara, 1990; Goonawardene and Hatten, 1990). The recommendations of the Commission led to the enactment of the Land Development Ordinance (LDO) in 1935 which set the future course of land development of Sri Lanka (Goonawardene and Hatten, 1990; Jayawardana, 1990; Madduma Bandara, 1990; Abeysinghe, 1979). It marked the beginning of an era of rapid land settlement starting from mid-1930s and continued up to the implementation of the Accelerated Mahaweli Development Project in mid-1980s. The initial objectives of the LDO were to protect the interests of the peasantry. The government introduced a system of protected tenure under which the recipients of LDO land had the right to occupy and cultivate the land in perpetuity, subject to restrictions imposed on sale, leasing and mortgaging, and conditions related to abandoning or failing to cultivate the land. The holding size of the lands alienated during this period was as large as 8 acres.

III. Land Acquisition and Alienation during 1948 – 1977

The Land Acquisition Act of 1950 acquired lands and alienated among the landless. The settlers were assured of free water supply through the canal system managed by a separate irrigated office for each settlement and were granted with two acres of highlands. The extent of low lands granted varied over time. The early settlers were granted five acres and the allocation reduced to three acres to two acres in subsequent allocations. These provisions were introduced through the LDO in 1935. The provisions provided by the ordinance restricted further subdivisions and all forms of transactions. Later, amendments to LDO introduced a legal minimum of 1.5 acres to a low land plot. In addition, a farmer with a valid deed was given transfer rights subjected to the sanction of the government administrative officer of the respective settlement area.

According to Ellman et al. (1976), there has been a marked difference in selecting settlers in the programmes implemented in 1935 and 1960s. During the early phase, the government was of the view that peasants should be protected and assisted. Social justice, more than agricultural efficiency, was the priority. Hence landless were selected in alienating crownland. Latter, educated youth was chosen for settlements and collective tenure was promoted to improve resource use efficiency.

The Irrigation Ordinance of 1946 which was amended in 1951 and 1968 specified the division of responsibility between the cultivators and the Irrigation Department for maintaining and operating the irrigation system.

Issues were reported with respect to tenure arrangements, i.e., share cropping, *Thattumaru* and *Kattumaru*, in the Wet Zone in early 1950s. By 1954, 25-30% of paddy lands were cultivated under share tenancy. Owner-tenant disputes were common and tenant exploitation was also common. In order to ensure tenure security and to regulate the rent paid by tenants to the landlords, the government enacted two tenure reform programmes, Paddy Lands Acts of 1953 and 1958.

The Paddy Lands Act of 1958 generated important tenancy reforms in the paddy sector by protecting the rights of *ande* tenants (share croppers). It achieved greater

social justice, but failed to increase productivity. This was offset by the introduction of high-yielding paddy varieties in the following period. Today, tenant protection measures continue to operate under the Agrarian Development Act (Amendment) 46 of 2011.

With respect to landlord-tenant relationship however, the two acts turned out to be more detrimental than beneficial. Between 1958 and 1972 about 43,000 tenants were reported to have been evicted (Gamage, 2000) and only 18 per cent ended in a final restoration.

With growing shortage for land for new settlement in the Wet Zone and rising cost of developing land for colonization in the Dry Zone, pressure for the takeover of private estate became acute (Ellman et al., 1976). Two land reform Acts were passed in 1972 and in 1976 to address this issue. The Land Reform Act of No. 01 of 1972 established the Land Reform Commission (LRC). A ceiling (of 50 acres of highland and 25 acres of lowland) on private ownership was imposed through the two acts. Large extents of plantations (mainly tea plantations) were nationalized and were vested with two state companies, Janatha Estate Development Board (JEDB) and State Plantations Corporation (SPC). Approximately 981,160 acres of land have been acquired under the Land Reform Commissions and of them about 10 per cent has been granted to the low-income groups (blocks of 0.25 acre to 1 acre were distributed among the landless and most of which were marginal). The majority of the lands (e.g., > 60% of the tea land) was vested with state agencies, further shrinking the privately-owned productive agricultural land and limiting the access to productive lands by the poor (Land Watch Asia). Wanigaratne et al. (1979) states that declared objectives of solving problems of landlessness and unemployment have not been satisfactorily achieved by the land reforms implemented during 1972-1975.

The LRC leases land for 35 years. The public could identify land plots under LRC and apply for long term leases with an investment plan. In 1995 the government leased out plantations under the JEDB and SPC to the private plantation companies for a 55-year lease period.

According to Ganewatte and Edwards (2000), the lands brought under the management of two state organizations; JEDB and SPC were subjected to many changes to make the estate management more efficient until 1992 when the plantation restructuring begun. All the actual and potential profit-making tea estates were grouped in to 21 regional plantation companies and assigned their management to selected private companies at initial stage. Then, ownership of the estate was gradually transferred to the private sector. However, JEDB and SPC continue with the marginal unproductive lands in mid grown area of the country. Subsequent land distribution after land reform and attractive prices for low grown tea helped to develop small holder sector extensively in the country. Land ownership regulation and unavailability of large land blocks did not permit further growth of estate sector. Poor performances of the estate sector with its incapability to expand the production to meet the increased demand further induced small holder expansion.

Agriculture Productivity Law No. 22 of 1972 was enacted to ensure that lands acquired, private lands and lands in settlement are properly utilized and developed. Later, the Land Sales (Special Provisions) Act No. 43 of 1973 provided freehold tenure to allotees subject to certain conditions on sale and subdivisions.

Agrarian Services Act of 1979 also aimed at securing tenure rights of tenant cultivators of paddy and improving productivity of such lands. It is considered as a more realistic approach in solving the problem of the paddy sector. This policy was also considered to be in complete conformity with open economic policies and the macroeconomic needs to affect higher flexibilities in basic resources governing food production, employment and income creation (Alwis and Wanigarathna, 2001). Agrarian Development Act No. 46 of 2000 has identified the necessity of setting a national policy to safeguard the rights of tenant cultivators. It also tries to ensure maximum utilization of agricultural land by imposing restrictions on conversion of agricultural land into non-agricultural uses.

With respect to the tenure that was given to the recipients of land settlement schemes, a clear distinction can be observed in most of the new types of settlement initiated after 1970 compared to those initiated in 1935. The concept of individual

ownership has been introduced over collective ownership in alienating lands under the old settlement schemes. The individual ownership and management devolved the ultimate responsibility on the officials, since settlers had become so dependent on government assistance for solving their problems. In the case of the new settlement schemes, there has been a positive attempt to encourage self-reliance and management. The encouragement of non-traditional forms of cultivation has been another important difference between the two types of settlements. In the old colonization schemes a perpetuation of the peasant rural economy centered on paddy cultivation had been encouraged, while on the new settlement schemes, market-oriented production of cash crops and livestock has been encouraged (Amerasinghe, 1976).

IV. Enhancing Land Rights during 1978 - 2020

The Government of Sri Lanka opened the economy in 1977 yet retained the achievement of food self-sufficiency, particularly with respect to rice, as one of its key policy objectives. Mahaweli Development project took a new turn and the Accelerated Mahaweli Development Program was initiated in 1977. The State Land (Recovery of Possession) Act No 07 of 1979 and Land Grant (Special Provisions) Act No 43 of 1979 were enacted to distribute lands under Mahaweli Development Program.

Land Development (amendment) Act No. 27 of 1981 provided legal provisions to mortgage the lands only to prescribed banks and institutions, amendment Act No. 22 of 1993 empowered mortgaging lands in State Banks, and the amended Act No. 20 of 1996 enabled mortgaging in private banks. The Department of the Land Commissioner General (DOLCG) is responsible for promoting the society with undisputed lands as the predecessor of government land administration.

The Title Registration Act No 21 of 1998 envisaged (i) a transformation of the country's land administration system from one based on deeds and documents permitting private use of state land into a system based on registration of secure and clear titles; and (ii) the elimination of some market restrictions on privately-held (state) land leases, grants and permits as well as on land sales. The elimination of

these restrictions enabled a process of conversion from grants into full ownership and provided about 1.4 million hectares freehold titles to their land.

The Agrarian Development Act No. 46 of 2000 and the Amendment Act No. 46 of 2011 constituted legal environment on matters relating to landlords and tenant cultivators of paddy lands, for the utilization of agricultural lands in accordance with agricultural policies and establishes provision for the utilization of agricultural land. The Agrarian Development Act restricts cultivation of paddy (low) land only to paddy. As successor to the Paddy Lands Act of 1957 and the Agrarian Services Act of 1979, Agrarian Development Act No. 46 of 2000 sought the establishment of agricultural tribunals, farmer organizations, and agrarian development councils that promote the interests of the farming community.

In order to strengthen ownership of land by providing secure titles to those possessing or utilizing a parcel of land, the Ministry of Land and Land Development launched the Land Title Registration Programme in 2007 known as *Bim Saviya*. Under the provision of the Registration of Title Act No. 21 (1998), this programme surveys, defines boundaries, and ensures ownership under a title certificate issued free of charge. It is anticipated that clear and secure land titles will lessen land disputes and litigation, while improving land security and its marketability. This programme seeks to introduce title registration (in place of deed registration), to resolve or make arrangements to resolve the ownership of unsettled lands, and to establish a Digital Land Information System for better land administration.

3.5.4 Contemporary Issues

The issues pertaining to the management of the agricultural land in contemporary Sri Lanka as stated earlier is a result of the legacy of the pre-colonial and colonial rule and regulations enacted by the successive local governments. They could be identified as limited availability of land for agriculture, tenure insecurity, informal land markets, land fragmentation and degradation, land encroachment, land conflicts and lack of institution coordination. They are discussed below in relation to the historical developments.

I. Limited Availability of Land for Cultivation

The appropriation of land during the colonial period and the land reforms in the 1970s, resulted in about 83% of the land under the State ownership. Even though most of these lands are alienated for the public (except for the 1.95 million ha of land gazetted under the Departments of Forest Conservation and Wildlife Conservation and land given to other State Departments) in small allotments, it is done so withholding the ownership status with the State. While these lands are having user rights (e.g., residential and agricultural), they are not saleable. This is often criticized and cited as a hindrance to the efficient allocation of land resource in Sri Lanka. Private investors find it difficult to access lands for large agricultural or forest plantation investments as the State ownership has blocked the functioning of a land market for most of the agricultural land and hence, the productivity of agriculture sector in Sri Lanka is lowest among its Asian counterparts. There has been attempts by the government to provide freehold titles to these lands, but it often loses momentum due to the fear of land grabbing leading to again a class of landless rural poor.

II. Insecurity in Land Tenure Rights

The land alienation by the State discussed above has also led to the problem of inadequate tenure rights. This has been identified as another factor that demoralize cultivators to do productivity enhancing investments. Of the agricultural lands, 52% were inherited and 16.8% were granted by the government. Table 3-45 presents the distribution of tenure types.

Table 3-45: Tenure of Agricultural Lands

Type	Category	Percentage
Inherited		52
Granted	Government	16.8
	Others	1.6
Purchased	With title	9.9
	Without title	1.8
Rent/leased	Government owned	0.4
	Private owned	6.0
Borrowed for free		2.2
Encroached		5.9
Fallowed paddy fields		0.1
Other		2.8

Source: Agriculture Household Survey 2016/2017

This situation is predominant in irrigation settlements in Sri Lanka. With various amendments to the Land Development Ordinance over time, the restrictions now consist of the following: (i) the land cannot be sold or disposed of except with the prior consent of an authorized Government Agent, (ii) the land can be mortgaged but only to selected financial institutions stipulated by the Government, (iii) the allottee cannot lease or sub-lease the land, except in cases of extenuating circumstances, such as illness, and then only for up to one year, (iv) the allottee cannot dispose of a portion of the land, which is less in extent than the prescribed minimum unit of subdivision, and (v) the allottee cannot dispose of the land or a part of it that would lead to co-ownership. Transferability of land is restricted to persons belonging to the same class with the prior approval of the Government Agent.

Wickramarachchi and Weerahewa (2016) revealed, using data gathered from 935 farmers who cultivated 1230 plots in total in *Maha* 2013/2014 in three irrigated settlements namely *Mahakanadarawa, Rajanganaya, Kagama- Katiyawa* settlements in Anuradhapura district, that land tenure differences affect land investment and thereby they affect land productivity. A security in tenure encourages land investment and hence has the ability to increase land productivity. It was found that farmers who do not possess documents to prove tenure are of the view that their rights to land is weak and hence spend less time on investing on the lands, particularly on application of organic manure, and the plots with high tenure security

are more productive. The average productivity of a plot is kg 4,148 per ha and the highly secure plots demonstrated a productivity of kg 4,951 per ha.

III. Informal Land Markets

It is evident that the distribution of lands by the government to the first-generation settlers was guided by the LDO. As time passes, the settlers found that the conditions stipulated in the LDOs, i.e., prohibitions on sales, mortgages and subdivisions, have been stringent and hence started informal transactions of land allotments.

Even though formal land transactions are restricted for most of the alienated land to the public under land alienation programs or irrigation settlements informal land transactions are quite common place. There are informal sales of lands, land subdivisions and land transformations. Table 7 lists the types of informal land transactions and the percentages. By means of informal transactions there is a tendency to acquire more land plots by entrepreneurial farmers leading to increase in the size of land. The presence of informal land market is evident that the enforcement of land laws are weak and inadequate. Further, the government has been unable to stop land grabbing even though the informal land markets allocate resources more efficiently. Moreover, the land values are misrepresented by the informal land markets. Paranage (2018) provides a good overview on the consequences of restricting rights to lands. How the rules of minimum sub-divisions have been disregarded was illustrated. Despite the permissible minimum sub-divisions of land, land sub-divisions and land transfer to next generations take place. Again, due to the poor enforcement of the laws, the protection provided for the land against fragmentation has been ineffective.

IV. Land Fragmentation

The initial equal size land allocation was sub-divided and distributed among the second and third generation farmers. According to Wanigarathne (1995) and Chandrasiri (2009), a decrease in land sizes by 45% to 60% after thirty years period of the establishment of settlements can be observed and cultivating lowland with an

extent of 0.25 acres is not uncommon. Land Watch Asia states that nearly 300,000 share tenants and 1.2 million landowning farmers who live in similar, dismal conditions. Any action to improve the plight of share tenants must also take into account the conditions of small land-owning cultivators. Wickramarchachi and Weerahewa (2018) find a significant variability in productivity has been observed by size class, number of plots, distance to plots, shape of the plots, and tenure arrangement. It was revealed that land productivity decreases when a farmer cultivates more plots, plots that are far from home, and irregular shaped plots keeping all other factors affecting productivity at constant levels, total farm productivity increases until the farm size reaches 1.708 hectares and it declines thereafter and productivity of plots increases with size. An increase in size by one hectare will increase land productivity by 185 kg.

V. Land Degradation

Land degradation has emerged as a serious problem in Sri Lanka over the last century. Around 11.8% of the land area of Sri Lanka is categorized under high hazard level of erosion while 4.8% is under very high level of hazard (Jayasekara et al, 2018). Both these categories are not suitable for any land use in terms of sustainable productivity. In the long run these are leading to loss of water resources, vegetation, biodiversity and ecosystem services, and less climate resilient in agricultural production systems.

Furthermore, more than 44% of the soils in the country are under some form of degradation. For example, soil fertility has affected agricultural land productivity making 1.2 million ha (Sustainable Sri Lanka, 2030), mostly in the Dry Zone, unproductive and of limited use while marginal lands have led to the loss of land productivity in annual and perennial cropping and animal production.

According to Agriculture Household Survey 2016/2017, of the agriculture households, 54% do not engage in any form of soil erosion control. Terraces and bunds are being used by 27% of the population each. A survey conducted by Hector Kobbakaduwa Agrarian Research and Training Institute (HARTI) in 1998 related soil erosion and insecurity of tenure. The topsoil was thinnest in encroachments on

Government lands where the occupants had no security of tenure (See Table 3-46). Further, annual leases by government and temporary leases granted by the private sector do not create the motivation required for the farmers to adopt soil conservation practices because the benefits of investments on land conservation are realized only in the long term. This applies also to leasing of agricultural lands by entrepreneurs, very often on short-term basis, to cultivate commercial crops such as potato, vegetables and pineapples. The tenurial arrangements leave little incentives for the lessees to adopt conservation measures (UNEP, 2001).

Table 3-46: Links between Erosion and Tenure

Land Tenure	Soil Depth Highland Average	Soil Depth Home Garden Average
Sole owner	4.40	3.34
Co-owner	4.43	3.18
Allotments granted under the Land Development Ordinance	5.27	3.53
Encroached (Private)	5.00	5.33
Encroached (Government)	2.00	1.50
Leased in	4.10	--
Leased out	2.94	2.00
Rented in	4.00	--

Source: HARTI-Socio Economic Survey (1998)

About 14% of the island's total land area is under state ownership as protected areas of which 12.3% is administrated by the Department of Wildlife Conservation and the balance 1.7% by the Forest Department, designated as different categories of reserves under the protected area network. The boundaries of reserves are being surveyed and marked to prevent encroachments. However, still deforestation and forest degradation due to encroachment, tree felling are still continuing. During the last three decades, the importance of community participation in biodiversity conservation has gained much recognition. Forest zoning and buffer zone management, participatory forest management is being increasingly considered in the protection of conservation areas, particularly in the buffer zone development activities with limited success in Sri Lanka. In forest plantation establishments, Thaungya system, community forestry and participatory forestry approaches have been used but again with limited success due to lack of land rights for cultivators.

Forest users have been registered and permits have been granted to collect non-timber forest products, but again with limited success.

Chena (shifting cultivation) continues in most Dry Zone areas despite restrictions, contributing to land degradation and thwarting efforts to introduce alternative farming systems. About a million farmers depend on chena for their livelihoods or as a secondary source of income (Land Watch) (Gunasena and Pushpakumara, 2015).

VI. Land Conflicts

In the war-affected areas of Sri Lanka, land use for agricultural production has been severely affected by the conflict because people had to abandon their land or cannot access it due to the war. The current volatile and fuzzy land entitlements seriously threaten the societal bonds across communal boundaries, constrain development efforts and contribute to confirm old and create new socio-political cleavages among the communal (ethnic) groups in the Trincomalee district (Fonseka and Raheem, 2010).

VII. Encroachment

The last encroachment survey was conducted in 1979, and no similar survey has been done since. The island-wide survey done by the Department of Land Commissioner General (DOLCG) in 1979 revealed that an extent of 386,038 ha was encroached, out of which, about 155,803 ha were distributed among encroachers in all districts in the country by 1980. Since then, the DOLCG has undertaken further clearances of encroachment. It may be assumed that there are nearly half a million encroachments despite periodic regularization. Evicting encroachers may not be a good political option, but allowing “business-as-usual” not only increases proneness to natural hazards such as floods and landslides, but encourages further encroachments.

VIII. Institutional Coordination

There are numerous policies, laws, action plans and institutions involved in addressing the land use and land tenure issues in Sri Lanka. Having multiplicity of

agencies enhances inefficiencies in coordination. Poor land recording (all compounded by a heavily centralized administration with the Land Commissioner's Department). As an example, there has been much concern about bringing the Forest Department and the Department of Wildlife Conservation under one ministry. Further, in 1979 the Land Use Policy Planning Division (LUPPD) was set up under the Ministry of Lands and District Land Use Planning Committees (DLUPC) were set up at each district consisting of 10-12 district level officers. More recently a District Land Use Planner was appointed to each district who is supposed to coordinate planning at national, district and local levels.

3.6 Compilation of the Ongoing Projects on Agricultural Lands

In this section, Land Title Registration: Bimsaviya Program, and Land Degradation Neutrality Target Setting *by UNDP* are considered under the ongoing land-related programs.

3.6.1 Bimsaviya Programme

The government introduced the 'Bim Saviya' program in 2008 with the objective of clearing impediments on land titling. A 10-year action plan was drawn up to enable the registration of around 10 million blocks of land in 332 divisional secretariat divisions and also to computerize related information. This program comes under the Registration of Title Act 1998 which enables title registration for plots of land. The Land Title Registration Act was passed in 1998 after identifying the importance of providing freehold titles to land. Freehold land titles should reduce land-related disputes, fraud and increase the value of land assets as collateral. This program only looks at private land. It is a program conducted by the Ministry of Land and Land Development and implemented by three departments including the Survey Department, which surveys all the lands and prepares the plan, the Land Settlement Department, which investigates ownership and confirms it, and the Registrar General's Department which does the required registration.

This ’Bim Saviya’ program is initiated as a key element of the “Gama Neguma” program under *Mahinda Chintanaya*. The activities of the ‘Bim Saviya’ program include; conversion of land registration in Sri Lanka from Deed Registration to Title Registration, clear ownership of lands; and the development of a Land Information System which enables better land Management.

At the onset it was expected that as a result of the ‘Bim Saviya’ Program, a digital Land Information System will be established and will be made available for planners and decision-makers and will be an asset for scientific land administration. This is a program existing from 2007 to 2021. The districts concentrated by the program are Kandy, Gampaha, Ratnapura, Colombo, Hambantota, Kurunegala, Badulla, Monaragala, Polonnaruwa, and Trincomalee. This program is administered by a council established under the Registration of Title Act. Although the program intends to include the East, at present work has commenced only in the Kanthale division which comes within the Trincomalee.

It is noteworthy that title registration for the land with private deeds is moving sluggishly The Centre for Policy Alternatives (CPA) has been informed that there are several setbacks in the program. Though this program was initially planned for 15 years to cover 12 million land parcels, due to insufficient staff the project has stalled. At present there is 200 staff employed under this program and with the current staff capacity, it will only complete its target in 2037. CPA was informed that only 40% of the program has been completed up to date which covers the areas of Balangoda, Divulapitiya, and Doluwa. Interviews held at the Survey Department and Land Commissioners Deparment painted the same grim picture about the progress of the programme. In addition to inadequate resources, there are other setbacks to the program. CPA was informed that a regular problem encountered in the program is identifying land ownership of particular plots of land. Furthermore, CPA was informed that the Land Title Act does not make provision for dispute settlement and therefore it was essential to have a mechanism to look into land problems such as the establishment of a Land Tribunal. Although land titling is considered to be an effective and less cumbersome form of ownership of land, it has been very slowly implemented in Sri Lanka. Lack of resources and funds have delayed progress and

therefore we are unable to comment on the impact of the programme. Experiences elsewhere have indicated that this form of ownership of land may be the best since it establishes a clear ownership title and reduces disputes and conflict. In a country that has seen varied and diverse forms of conflicts and disputes related to land, some of which are documented in this report, it is essential to find ways of reducing such disputes and identifying sustainable and effective ways of owning land. Therefore the 'Bim Saviya' program is welcome, though in need of support to facilitate speedier implementation on the ground.

3.6.2 Land Degradation Neutrality Target Setting by UNDP

Land Degradation Neutrality Target Setting Program (LDTNSP) was carried out by UNDP. This program targets, halt the conversion of forests and wetlands to other land cover classes, restore and improve degraded forest (80% in the Dry Zone and 20% in the Wet Zone), increase forest cover from 29% to 32%, reduce the rate of soil degradation to improve land productivity and Soil Organic Carbon (SOC) stocks, and reduce soil erosion of lands cultivated with annual and plantation crops. There have been many achievements during the LDNTSP. During the LDNTSP, they provided expertise and information to validate global data, agreed to use global data after verifying it with local data on an interim basis to set the baseline while agreeing to improve the local database, and decided to set the LDN targets and measures jointly. They agreed to make commitments to implement measures associated with the mandates of each institution so that the Ministry of Mahaweli Development and Environment, as the National Focal Point (NFP) of the United Nations Convention to Combat Desertification, would be able to coordinate and monitor such measures identified to achieve LDN targets. It was suggested that the National Steering Committee, which would consist of most of the National Working Group members would serve as the main instrument to strengthen the coordination among different institutions responsible for land resources management of Sri Lanka so that the synergetic effect would help to achieve a much better impact on the ground.

3.7 Review on Existing Policies/Regulations Related to Agricultural Lands

In this section, initially, the historical development of land policies in Sri Lanka is discussed. It is followed by the institutional developments related to land in Sri Lanka. Then, the list of policies selected for detailed review is provided, and finally, the importance of each, deficiencies and related issues are discussed.

3.7.1 Historical Development of Agricultural Land policies

Land policies date back to the colonial era of Sri Lanka. The first land policy was enacted in 1840, which is the Crown Lands (encroachment) Ordinance. Since then, various land policies have been enacted by the colonial government and subsequently by the successive local governments. Table 3-47 contains a comprehensive list of land policies related to agricultural land in chronological order with their amendments and important policies are highlighted.

Table 3-47: Chronological order of agricultural land-related regulations in Sri Lanka

Acts/ Laws/ Policies	Year Implemented	Years Amended
1. Crown Lands Ordinance	1840	1930, 1947, 1949
2. State Lands Encroachments Ordinance	1840	1931, 1947, 1954
3. Definition of Boundaries Ordinance	1844	1905, 1919, 1933, 1947, 1955
4. Service Praveni Lands Succession Ordinance	1852	-
5. Registration of Temple Land Ordinance	1856	-
6. Admiralty Lands Ordinance	1862	-
7. Land Surveys Ordinance	1863	-
8. Sannases And Old Deeds Ordinance	1866	-
9. Services Tenure Ordinance	1870	-
10. Matrimonial Rights and Inheritance Ordinance	1876	1889, 1923
11. Land Resumption Ordinance	1887	1934, 1942, 1955
12. Waste Lands Ordinance	1897	-
13. Forest Conservation Ordinance	1907	1912, 1918, 1931, 1935, 1945, 1947, 1951, 1954, 1966, 1979, 1982, 1988, 1995, 2009
14. Buddhist Temporalities Ordinance	1931	1940, 1941, 1947, 1973, 1955, 1968, 1980, 1981, 1981, 1992, 2013
15. Land Settlement Ordinance	1931	1932, 1933, 1955, 1996
16. State Land (Claims) Ordinance	1931	-
17. Land Settlement Ordinance	1931	1932, 1933,1955, 1996
18. Land Development Ordinance	1935	1946, 1973, 1953, 1955, 1969, 1971, 1981, 1983, 1993, 1995, 1996
19. Fauna and Flora Protection Ordinance	1937	1942, 1944, 1945, 1949,

Acts/ Laws/ Policies	Year Implemented	Years Amended
		1964, 1970, 1993, 2005, 2009
20. Irrigation Ordinance	1946	1973, 1951, 1968, 1983, 1990, 1994
21. Town and Country Planning Ordinance	1946	1950, 1953, 1955, 1981, 2000
22. Thesawalamai Pre -Emption Ordinance	1947	-
23. Mortgage Act	1949	1953, 1969, 1987, 1990
24. Land Acquisition Act	1950	1954, 1955, 1964, 1969, 1971, 1979, 1983, 1986
25. Requisitioning of Land Act	1950	1953, 1961
26. Soil Conservation Act	1951	1953, 1981, 1996
27. Paddy Lands Act (Repealed by Agrarian Development Act)	1958	1961, 1964, 1966.
28. Tea and Rubber Estates (Control of Fragmentation)	1958	1983, 2005
29. Walawe Lands Act – 1958	1958	-
30. Nindagama Lands Act	1968	-
31. Sri Lanka Land Reclamation and Development Corporation Act	1968	-
32. Protection of Tenants (Special Provisions) Act	1970	1972, 1974, 1978, 1970, 1982, 1984
33. Land Reform Law (Act)	1972	1975, 1981, 1986
34. Agricultural Lands Law (Repealed by Agrarian Development Act)	1973	-
35. Land Sales (Special Provisions) Act	1973	-
36. Agrarian Services Act (Repealed by Agrarian Development Act)	1979	1991, 1993
37. Land Grants (Special Provision) Act	1979	-
38. Mahaweli Authority of Sri Lanka Act	1979	1993
39. State Lands (Recovery of Possession) Act	1979	1981, 1983, 1987, 1992, 1993, 1997, 1998, 2005
40. National Environmental Act	1980	1988, 2000
41. Coast Conservation and Coastal Resource Management Act	1981	1988, 2011
42. Pasture Lands (Reservation and Development) Act	1983	-
43. National Forest Policy	1995	
44. Registration of Title Act	1998	-
45. Agrarian Development Act	2000	2011
46. National Wildlife Policy	2000	
47. National Involuntary Resettlement Policy	2001	
48. National Physical Planning Policy	2002	
49. National Environmental Policy	2003	
50. Resettlement Authority Act	2007	2013
51. National Policy on Land Use	2007	
52. Haritha Lanka Program	2008	
53. Land (Restrictions on Alienation) Act	2013	2014, 2017, 2018
54. National Policy on Protection and Conservation of Water Sources, Their Catchments and Reservations in Sri Lanka	2014	
55. National Agriculture Research Policy and Strategy	2018	
56. National Agriculture Policy (Draft)	2020	

3.7.2 Review on Agricultural Land related Policies

Sri Lanka has a long history of land policy, which has been subjected to systematic analysis and several amendments. In ancient Sri Lanka, the land policies and regulations were managed by the King where all lands belonged to the King. Based on the service performed by the people under the *Rajakariya* system, the lands were given to them by the king, and those lands were called “Nindagam”. Other than that, lands were provided for religious places. After the end of the King’s reign, Sri Lanka was colonized by the Portuguese (1505 - 1658), Dutch (1658 – 1796), and British (1796 – 1948). The Portuguese and Dutch ruled only the coastal belt of the country and significant changes in the traditional land management system during their reign were not visible. In the British era, drastic changes were made to tenure systems and land management. This section provides a review of policies implemented from the British colonial era related to agricultural land in Sri Lanka related to land distribution, land ownership, land tenure, and property rights.

I. Content Analysis

Content analysis is a type of qualitative study, which is defined as “a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes and patterns” (Hsieh and Shannon, 2005). Further, it is a systematic reading for making replicable and valid interferences from texts or other symbolic matters (Krippendorff, 2012). The purpose of using content analysis as a research method is to provide new insights and increase the understanding of a specific phenomenon, and to gain a broader and more condensed description of the phenomenon, as well as to describe and quantify a phenomenon. Content analysis as a method includes both quantitative and qualitative research strategies. The quantitative analysis gives the result in the form of frequency, typically answering the question ‘how many. The qualitative analysis presents data in the form of categories, enabling interpretation of the text (Bengtsson, 2016). The most vital usages of content analysis are in research designs that relate content to non-content variables.

In this study, the content analysis is used to fulfil the following objectives. At first to measure the abundance of words related to restrictions on land usage in each act/law; secondly to identify the act/law which has the highest percentage of the abovementioned words. Based on these acts/laws were selected for in-depth analysis. Thirdly to understand how each act/law is related together and fourthly to identify the most used terms in each act/law related land.

The reliability of coded items was checked by the overlapping nature of the codes where the non-overlapping was ensured by the Pearson correlation coefficient, Sorensen's correlation coefficient, and Jaccard index. The results of the abovementioned test are given in Table 3-48.

Table 3-48: Nonoverlapping results of codes

Code A	Code B	Jaccard's coefficient	Pearson correlation coefficient	Sorensen's coefficient
Sale	Ownership	0	-0.08	0
Transfer	Ownership	0	-0.09	0
Transfer	Sale	0	-0.10	0

The frequency of codes in the selected Laws and Acts based on the availability of agricultural content is described in Table 3-49 as a percentage of their contribution to the codes. According to the high availability of relevant codes, the Acts/Laws are selected for further review. A high percentage of content related to land ownership and tenancy, land sale and purchase, and land transfer and distribution is observed in Agrarian Development Act, Land Acquisition Act and Forest Conservation Ordinance respectively.

Table 3-49: Frequency table for acts/laws with codes

Acts/Laws	**Ownership**	**Sale**	**Transfer**	**Agri related content**
Agrarian Development Act	9.10%	5.39%	8.22%	High
Agrarian Services Act	8.97%	4.69%	6.03%	High
Agricultural Lands law	5.23%	2.03%	4.61%	High
Irrigation Ordinance	5.39%	6.28%	6.47%	High
Land Reform Act	9.04%	5.66%	6.80%	High
Paddy Lands Act	7.02%	3.09%	6.14%	High
Pasture Lands Act	0.32%	0%	0%	High
Soil Conservation Act	0.76%	0.27%	0.77%	High
Tea & Rubber Estates (Control of Fragmentation) Act	2.31%	1.86%	5.15%	High
Crown Land Ordinance	4.24%	2.65%	3.84%	Medium
Fauna and Flora Protection Ordinance	6.55%	5.39%	3.95%	Medium
Forest Conservation Ordinance	6.89%	15.92%	10.53%	Medium
Land Acquisition Act	4.91%	22.55%	1.43%	Medium

Acts/Laws	Ownership	Sale	Transfer	Agri related content
Land Settlement Ordinance	2.23%	1.68%	3.62%	Medium
Service Tenure Ordinance	1.30%	1.15%	0.77%	Medium
State Lands (Recovery of Possession) Act	1.59%	0.09%	0%	Medium
State Lands Encroachments Ordinance	0.58%	0.18%	0.11%	Medium
Walawe Lands Act	0.04%	0.88%	0%	Medium
Coast Conservation Act	3.04%	0.35%	8.99%	Low
Definition of Boundaries Ordinance	1.46%	0.53%	0.99%	Low
Land Grants (Special Provisions) Act	0.64%	0%	5.26%	Low
Land Sales Act	1.71%	4.77%	0.55%	Low
Mahaweli Authority of Sri Lanka Act	2.42%	3.71%	2.41%	Low
State Land Ordinance	4.46%	2.83%	3.95%	Low
Town and Country Planning Ordinance	4.42%	4.16%	4.28%	Low

Acts were clustered by their word similarity to understand the replication and duplication of the content. Jaccard Index was chosen out of three correlation tests based on its wide range of application in the existing literature on content analysis (Bhatt, 2020; Verma et al, 2020; Fried, 2020). The similar Laws/Acts are grouped based on the word similarity and the result is given in Figure 3-58. For example, the duplication of Laws and Acts in the Agrarian Development Act, Agrarian Service Act, Agriculture Lands Act, and Paddy Land Act, is clearly explained by the cluster diagram where all these acts were considered under one group as these are repealed act of another. The word clouds of results of content analysis for highly relevant Acts/Laws to our study are indicated in Figure 3-61 – Figure 3-65. This was used as another technique to sort out the important laws/acts for the in-depth study.

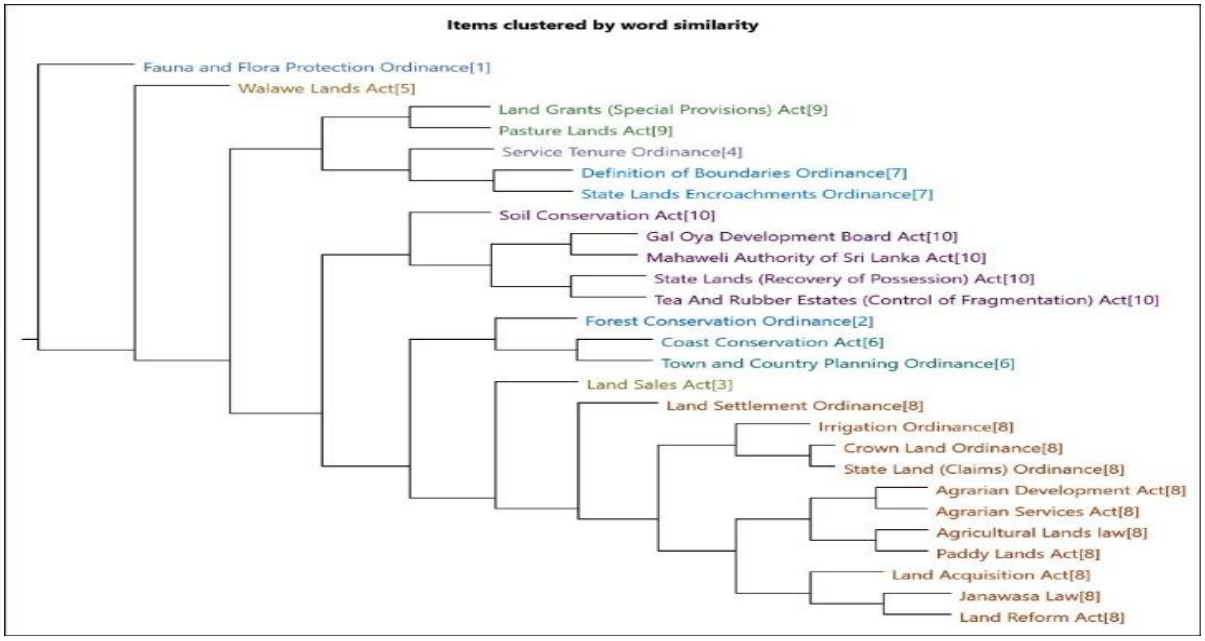


Figure 3-60: Correlation test results by word similarity

Figure 3-61: Agrarian Development Act *Figure 3-62: Irrigation Ordinance* *Figure 3-63: Land Reform Act*

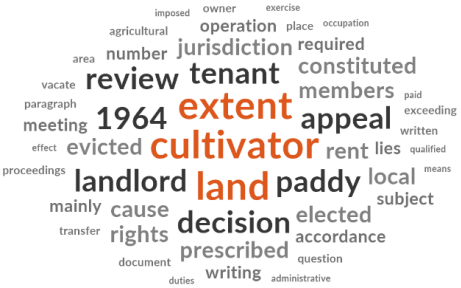


Figure 3-64: Paddy Lands Act *Figure 3-65: Land Acquisition Act*

II. Review of Selected Acts/Laws

The Acts and Laws selected based on the content analysis reviewed further under the land-related contents such as land ownership and tenancy, land acquisition, land fragmentation, and land distribution. The Acts/Laws under each content were discussed in chronological order.

a) Tenancy and Encroachments

Nindagama Land Act as a repealed act of the Praveni Land Succession Ordinance was implemented to abolish the services due from the tenants and holders of Nindagama lands to the proprietors. Based on this Act any tenant holder of Nindagama land was named as the owner of that particular land and no proprietor shall be entitled to demand the performance of services or to demand or receive any sum of money in commutation of services, from any tenant or holder.

In terms of the ownership of Manawari lands, cultivation committees under the Forest Conservation Ordinance have the rights to regulate or manage Manawari lands, conservation of rainwater, and enforce established customs affecting the cultivation of such lands.

Further, after the acquisition of lands by the Crown Land Ordinance and Wasteland Ordinance, the encroachment of tenants was suspended by the Act of Sale of State Lands and State Lands Encroachments Ordinance, where Sale of State Lands indicates that any person encroaches on any land which has been alienated under the State Land Law on a permit, he shall be guilty of an offense. According to the State Land Encroachment Ordinance, anyone, without the permission of the government, who entered upon or taken possession of any land which belongs to the State will be taken under legal actions. Encroachment of State lands by the landless and for economic purposes has been widespread after the implementation of the Crown Land Ordinance and the Wasteland Ordinance. An island-wide survey done by the Department of the Land Commissioner General in 1979 revealed that an extent of 386,038 ha was encroached, out of which, about 155,803 ha were dispersed among encroachers by 1980. The regularization of encroachment is mismatched with the policy of mapping out of state land supported by the first Land Commission of 1927 and secondly with the land use planning. This has additionally complicated the problem of water management too.

Original Land Development Ordinance in the British era allowed the selection of people for alienation of State lands through the Land Kachcheri. In the latter part of amendments of Land Development (Amendment) Act of 1969, this process is altered and allowed selection of people outside the Land Kachcheri. As a solution to the encroachment, the government has specified State land allotments that can be relaxed to accommodate encroachments according to the amendment of the Land Development Ordinance. However, due to the possibility of misusing the new amendment rules, a circular has been issued. This Circular mentioned that if any doubts have arisen on the encroached persons who applied for the ownership under the new amendment, public inspection of persons can be done to accept or reject the person after the publication of the list of persons selected.

Agrarian Development Act as a repealed act of Agrarian Services Act, Agricultural Land Act, and Paddy Land Act, restrict the free will of sale by owners and protect tenant farmers. When paddy landowner plan to sell the land in the first instance should make an offer to sell such extent to the tenant cultivator. Only with the approval of the tenant on his intention to transfer or to cede his rights, the owner can sell the land. Further, it protects the tenant from eviction. It clearly described that apart from the agreement condition between tenant and landlord, the tenant cannot be evicted or no person can interfere with the cultivation of the tenant and no excess rent should be demanded from tenants. Even though the land ownership is changed by sale, transfer gift, testamentary disposition or by assignment, or by devolution under the law of inheritance, the rights of a tenant cultivator of any extent of paddy land shall not be affected at any extent and this is lawfully ensured by several laws such as Agrarian Development Act and Land Reform Law. The rights of a tenant cultivator to occupy and use any extent of paddy land shall not be sequestered, seized, or sold in execution of a decree or process of any court. Where a person lets any extent of paddy land to any other person and that person then lets such extent to the tenant, the subtenant's right as the tenant cultivator of such extent shall not be affected in any manner by the termination of the lease granted by the primary lease person to secondary lease person.

Moreover, tenants are protected and supported by this Act with the establishment of a land bank from where financial assistance is provided to tenant cultivators to purchase the ownership of the paddy land in respect of which they are the tenant cultivators. Concerning the Sri Lankan experience, though, the Paddy Lands Act of 1953 which is repealed by the Agrarian Development Act, Sri Lanka also tried to ensure tenancy security and to regulate the rent paid by tenants to the landlord. This regularizes the rent payment to the landlord (one-third of the harvest or 10 bushels whichever was less).

According to the above-said Acts/Laws severe control can be seen in the independent decision-making of owners and tenants. The command-and-control method in this context can be led to the inefficiency in the usage of land where the frustration due to the high regulations and inability to implement their plan can be the

reasons for the low productivity of the land. Further, for the owners of the land, their decision-making is controlled by the tenants also. For example, the owners are unable to sell, transfer the ownership and change the land use without the consent of the tenants. Therefore, even though the land can be used efficiently, the owners cannot implement them due to these regulations. The high protection and dependency on tenants for decision-making severe the situation rather than improve the conditions of tenants. The Acts/Laws became a failure and around forty thousand tenants were evicted from the land after the implementation of the Latest Agrarian Development act.

Moreover, it led to the increase in illegal ownership due to the encroachment and the strict rules implemented on confirming ownership. The illegal ownership of the lands created an inability to obtain financial services that can be obtained by mortgaging the land to improve productivity. Further, the illegal owners of the lands are unable to obtain any services from the government and this led to the unproductivity of the lands with poor extension services and other assistants offered by the government to improve productivity. The encroachers are unable to cooperate with the cultivation plan of the community and irrigation plan due to the informal ownership of the land, therefore not only the productivity of their land is affected, but also it affects the productivity of other lands by intervening the plans of the community on cultivation and irrigation.

Empirical evidence shows that when the user rights for the land are defined for a limited period as in the case of a permit or a lease, it leads to a moral hazard problem. The users will not be investing in developing and long-term sustenance of the land and therefore land productivity will decrease in the long haul. As for land grants since user rights are perpetual, they should not pertain to them. Yet, the argument is since the land market is restricted with State ownership, the land will not be transferred to its most efficient use and users.

It seems like giving freehold titles to the State lands will solve the problem. There have been several attempts by different governments to issue freehold titles to the land grants. However, such attempts were not successful as they did not receive the required political commitment. There is a fear that opening agricultural land to free

markets will lead to land grabbing and that will again result in a landless poor class in the rural areas.

b) Land Acquisition

Under the British ruling, the Crown Land (Encroachments) Ordinance No. 12 of 1840 was enacted to appropriate land to the state. About 90% of all the lands in Sri Lanka became Crown land and this resulted in a landless peasant class in the country. Any land in Ceylon which have been abandoned by the owner for eight years or more is taken under the state control and declared as State lands. Some lands thus acquired were sold to plantation companies and the remaining land was retained with the Crown and later became the State lands. Some lands were allocated to various government departments, development projects and alienated for land settlements. The Forest Department, Wild Life and Conservation Department, the Railway Department, and the Mahaweli Authority are the largest recipients. In 1897, the Wasteland Ordinance was enacted to prevent the encroachment of Crown wastelands by the peasantry. This further marginalized the peasants. Based on this Ordinance all forest, waste, unoccupied, or uncultivated lands shall be presumed to be the property of the State. All Chenas and other lands can be only cultivated after intervals of several years and during the period other than the fallowing season, the land belongs to the State.

As stated by the State Land Ordinance all cinnamon lands which shall have been uninterruptedly possessed by the government for thirty years and upwards, by peeling the cinnamon growing thereon, shall be held and deemed to be the property of the State.

Under the Forest Conservation Ordinance, the lands were declared as forest lands from the lands acquired by the state by Lands Resumption Ordinance, Waste Lands Ordinances, Land Settlement Ordinance, Land Acquisition Ordinance, or Land Acquisition Act, when any part or parts thereof to be a reserved forest. By Pasture Land Reservation and Development Act and State Lands (Recovery of Possession) Act, all pasture lands shall be deemed to be State lands.

As indicated by the Land Settlement Ordinance, to a settlement officer, it shall be lawful to declare the lands as State lands where the lands are forest, wastelands, unoccupied or uncultivated land, or Chena or another land which can only be cultivated after intervals of several years. Hence, the acquired lands which have been used for a communal Chena reserve shall at any future time be used for any other purpose except by the State and with the consent of inhabitants of the village.

According to the Land acquisition Act, any land is required for any purpose of a public corporation, and the acquisition of such land for that purpose under this Act is not authorized by any other written law, the minister to whom the subject of that corporation has been assigned under the constitution may, by order published in the Gazette, declare that such land is so required, and upon such publication that purpose shall be deemed to be a public purpose, and the provisions of this Act shall apply accordingly to the acquisition of such land for that corporation.

As stated by the Mahaweli Authority Act where any land in any special area is required by the authority for any of its purposes, that land or interest may be acquired under the Land Acquisition Act by the government for the authority.

On the word of Requisitioning of Land Act it shall be lawful for a competent authority, with the prior approval of the president, to take possession of any land if the land is required for the maintenance of supplies or services essential to the life of the community; or to implement any scheme as is approved by the president for the importation, storage or distribution of essential commodities by any government department, local authority, corporation or co-operative society; or for use or occupation by the armed forces or any visiting force.

Acquisition of land required for carrying out measures to prevent erosion is legal for “to be a conservation area” under the Soil Conservation Act where any land in any erodible area should be withdrawn from cultivation or that any measures designed to prevent or reduce erosion should be taken. The acquisition can be carried out by declaring that the land is needed for a public purpose; and upon such declaration being made, the land shall be acquired under the Land acquisition Act.

The acquisition of uncultivated lands was regulated by the Walawe Lands Act where any land in the area specified in the schedule to Walawe Lands Act which was a forest, wasteland, or Chena land shall, for this Act, be considered to be an uncultivated land aside that such land may have ceased after such date to be a forest, wasteland or Chena land.

With the backing of the Land Acquisition Act, compulsory acquisition of agricultural land was taken under the Agrarian Development Act where any agricultural land should be acquired if it is necessary for the public purpose. Additionally, based on the Land Reform Law, the extent from landowners who has more than 50 acres of land had been acquired by the State and redistributed to improve productivity and employment.

The land extent under State ownership and the number of permits and grant issues are given in Table 3-50. The statistics were obtained by the research team from the LCGD. The research team tried to obtain data in terms of land extents alienated. However, the LCGD or LRC, or the Survey General's Department were unable to provide such information. Therefore, we are unable to provide the extent of unalienated land under LCGD or LRC. It is frustrating to see that crucial information needed for decision-making is not available. In many other countries, such information is made available to the public through digital portals.

Table 3-50: Details of State Lands and Alienated Lands

Criteria	Extent
Total land	6,561,000 (ha)
State land	5,403,809 (ha)
Percentage of state-owned land[1]	83%
No. of issued land permits (up to 2019)	2,952,542
No of Issued land grants (up to 2019)	1,361,391
No. of surveyed lands	701,398
No. of plots yet to be surveyed	436,993
No. of issued long term leased land permits (up to 2019)	261,572
No. of lands plots yet to be regularized	600,000

1 This includes all land vested in government institutes mainly the Forest Department, Wild Life Department, Railway Department, Mahaweli Authority and Land Commissioner General Department.

Accordingly, to LCGD, 83% of land in Sri Lanka is owned by the State. The popular claim about the State ownership of land in Sri Lanka is not false. However, it could be misleading because it might seem as if there is plenty of land in Sri Lanka just idling. Even though exact numbers are not available, considering the number of permits, grants, leases, and the land vested in other institutes such as the Forest Department, Wildlife Conservation Department, Mahaweli Authority, Railway Department to name a few, the extent of State land available for alienation should be much less than 83%. Therefore, it is important to mention the extent of State-owned land which are not alienated for other purposes to get the picture clear. Unfortunately, no institute responsible for State lands can provide these statistics.

III. Land Fragmentation

The State Land Ordinance enforced the grantees of State lands to get permission from the president before dividing or partitioning such land and this regulation is applied to the lessee of any of the State lands.

Land Reform Law enforced the ceiling on the extent of agricultural land that may be owned by a person as 50 acres. The land of the owner, who has excess above the ceiling or becomes because of marriage or by way of inheritance, or both, the owner of any agricultural land over the ceiling can transfer the excess of the land by way of sale.

Land Development Ordinance controlled the fragmentation of lands by fixing the floor for the subdivision where any partitioning cannot be done less than 1.5 acres in case of lowlands and 0.5 acres for highland. The fragmentation of lands under the plantation was controlled by the Tea, Rubber, and Coconut Estates Control of Fragmentation Act. The Act controls the partition by deed of tea, rubber, and coconut estate should be done after the consent of the board. Further, mortgaging a part of the land is also prohibited. The Estate Development Board will only provide the agreement on the transfer of ownership if it does not involve the division of such

estate into a number of lots. The ownership of transfer with a partition of land can be done if each partitioned lot is not less than 100 acres in extent.

If anyone planned to build a house or any infrastructure on the estate lands, for any industrial purpose, or the development of any town, or any other prescribed purpose, they need to get prior approval from the Board and the Board will only permit them to proceed only if its division or partition into lots is not likely to affect the productivity of the land and only if divided or partitioned lot is not less than 500 acres in extent in the case of tea and 250 acres in extent in the case of rubber. Further, the land exposed to fragmentation without prior approval or without following the regulations those smallholdings cannot be registered to avoid such fragmentation is happening illegally. In this scenario, the tea estate of fewer than 500 acres in extent and the rubber estate of fewer than 250 acres in extent is considered as a violation of this Act after the partitioning of the land.

The implemented ceiling of landholding extent led to the high fragmentation of the lands. Even though the regulation is implemented to control the fragmentation, it is very difficult to control the ongoing division of the lands among successors. The regulation of the land fragmentation with the floor for partitioning led to the informal ownership of the land where they were unable to register when the partitioning happened with less than recommended floor extent. The illegal ownership results inability to obtain financial assistants and other services for the government. This finally directed to the low productivity of the land and demotivated cultivators who owned the land with informal ownership, shall not put their effort to improve the productivity of the land.

Further, land fragmentation is increased due to the strict regulations and barriers on sales and transfer of the lands which highly depend on government decisions, and in owners' point of view, it depends on the tenant's decisions as well. The high dependency on government officials and on tenant’s decision results inability to aggregate the lands even though the owners are willing to do so.

The Land Development Ordinance, State Land Ordinance, Forest Ordinance, and Soil Conservation Act are some important legislative measures introduced in the

country for sustainable land management. However, land fragmentation has subdivided agricultural lands to economically unviable levels. The scarcity of land suitable for commercial operations has affected modernization in agriculture.

IV. Land Alienation and Distribution

As stated in Crown Land Ordinance and State Land Ordinance, the rights under any instrument of disposition are not personal to the grantee but may be assigned by Act inter-Vivo or may pass on his death to his heirs or devisees, the burden of any covenants or conditions inserted in such instrument shall run with the land and shall be binding upon the grantee and upon all persons claiming that land through, from or under the grantee. The ownership of State lands and lease of state lands can be transferred only if the president approves the change according to the State Land Ordinance.

Based on the Land Settlement Ordinance, the acquired lands which have been used for Chena cultivation can be granted or leased to any persons who permanently reside in the village when the person does not have sufficient land in the opinion of the government agent.

Land Reform Law enforced the ceiling on the extent of agricultural land that may be owned by a person as 50 acres. The maximum extent of agricultural land which may be owned by any person according to this law defined as, if such land consists exclusively of paddy land, be twenty-five acres and if such land does not consist exclusively of paddy land, be fifty acres, so however that the total extent of any paddy land, if any, comprised in such fifty acres shall not exceed the ceiling on paddy land. For the land ceiling, where any agricultural land is co-owned, each co-owner shall be deemed to own his share in such land as a distinct and separate entity, yet rights of tenant cultivators not to be affected by the change of ownership. The acquired lands can be distributed by the Commissioner of agricultural lands to increase productivity and employment. After the implementation of Land Reform Law, any person who becomes a statutory lessee of any agricultural land make an application to the Commission in the prescribed form for the transfer by way of sale,

gift, exchange, or otherwise of the entirety or portion of such agricultural land to any child who is eighteen years of age or over or to a parent of such person.

The Land Reform Act nationalized the most productive private lands, amounting to 419,000 ha and mostly cultivated with perennial crops, during three years from 1972-1975. Under this Act, the marginal land acquired was redistributed (nearly 10%) but the majority of the acquired land (e.g., >60% of the tea land) was vested with State agencies, further shrinking the privately-owned productive agricultural land and limiting access to productive lands by the poor.

The lands which were acquired by the State were alienated by the land bank which was established under the Agrarian Development Act to improve the productivity of such lands. Alienation to Sri Lankan citizens was ensured by several Laws/Acts which involve transferring the land. The lands were acquired when they were not satisfactorily cultivated and alienated to be cultivated according to the provisions of the Agrarian Development Act. Under this Act, any person who does not own agricultural land or land less than half an acre in extent may apply to the president for the grant of any State land or the grant of land by any other institution.

Further, the alienation of land is discussed in Land Reform Law, where it stated as the acquired lands can be alienated for agricultural development or animal husbandry by way of sale, exchange, rent purchase, or lease to persons who do not own agricultural land or who own agricultural land below the ceiling indicated by the Land Reform Law or for a cooperative or collective farm. The alienation can be done to individual persons for the construction of residential houses or to farms or plantations managed by the Commission or for the utilization for any public purpose. By way of sale, acquired lands can be alienated to persons who were minors at the time of the imposition of the ceiling on agricultural land and whose parents were dispossessed of such land more than the ceiling and to any corporation established under the State Agricultural Corporations Act or to the Sri Lanka State Plantations Corporation established under the Sri Lanka State Plantations Corporation Act.

Especially for agricultural lands, the extent of any agricultural land alienated by the Commission to an individual shall be such as to ensure as far as possible that the

average income derived from the development of such land shall not be less than three hundred rupees per month.

According to the Sale of State Lands Act, no State land shall be alienated to any person other than a person who is a citizen of the Republic of Sri Lanka. When the grants were given, the holder of the grant shall not dispose of the land comprised in the grant except with the prior written consent of the government agent, shall not dispose of a portion of such land which is less, in extent than the unit of the subdivision as may be prescribed and shall not dispose of such land or a portion thereof in such, manner that the land is subject to co-ownership.

Following Land Development Ordinance, no land alienated on a permit or grant shall be seized or sold in execution of the decree of any Court, and where land alienated on a grant is sold in execution of a decree entered in an action for the enforcement of a mortgage on that land, the sale shall not be confirmed by the Court unless the land Commissioner has approved the purchaser upon application made in that behalf by the purchaser. Further, no land alienated on a permit or grant shall be leased such holding to any other person except in such circumstances as may be prescribed and shall not mortgage such holding to any person other than the People's bank or the State mortgage and Investment bank or a registered society or other prescribed institution. No permit holder shall execute or effect any disposition of the land alienated to him on the permit.

For the distribution of land to the successors, the Land Development Ordinance highlighted that upon the death of a permit holder, the spouse of that permit-holder shall be entitled to succeed to the land alienated to that permit-holder on the permit and the terms and conditions of that permit shall apply to such spouse. Provided that where a spouse who was not nominated as successor by the deceased permit-holder if such spouse remarries, then upon the person nominated by the deceased permit-holder shall succeed to the land. No person shall be nominated by the owner of a holding or a permit-holder as his successor unless that person is the spouse of such owner or permit-holder, or belongs to one of the groups of relatives enumerated in the Act.

On the distribution of lands through successor, Agrarian Development Act highlights that tenants have the rights to transfer it to surviving spouse of such tenant cultivator and failing such spouse can transfer to children of such tenant cultivator; if there is more than one child, the child whose sole means of living is cultivation is preferred for transferring. Any nomination of a successor may at any time be canceled by the tenant cultivator who made such nomination and a fresh nomination of a successor may be made by such tenant cultivator. Where there is no successor, the landlord can cultivate the same as the owner cultivator of such extent with the give written notice to the Commissioner-general, of his intention so to cultivate such extent of paddy land as owner cultivator. According to the Agrarian Development Act, the distribution of land to tenant cultivator by the secondary lessee cannot be done without the consent in writing of the owner and Agrarian Development Council.

Approximately one million lands were alienated under the Land Development ordinance, however, the owners have the right to occupy and cultivate the land but there were several restrictions on mortgaging, selling, abandoning, and failing to cultivate the lands. The decision was highly bound to the regulations and free decision-making of owners was restricted by this regulation. This hindered the efficient usage of land usage which led to the low productivity of the lands. Further, this hampered the investment in lands as well as transfer the land from inefficient usage to efficient usage. The informal lending was increased as the farmers were unable to mortgage the lands in any other bank except State banks which led to the fragmentation of the land when farmers were unable to pay the loan amount. Under the schemes of “Swarnaboomi” and “Jayabhoomi” in the amendment of the Land Development Ordinance in 1991, the mortgage was permitted, yet, the sale was controlled by the government. Even though there were inefficiencies observed informal sales of the land after the permission from the government with high transaction cost, the restriction was continued to be in operation in regard to land sales.

V. Restriction on Agricultural Land Usage

According to the Agrarian Development Act, the maximum extent of paddy land that can be cultivated by a tenant cultivator is five acres. When the tenant farmers

cultivated as an owner cultivator in some extent of the land and cultivate as a tenant in some extent of land, if both these extents are above five acres then he can select the extent of paddy land which he is entitled to cultivate, and vacate the balance extent of paddy land.

Further, Agrarian Development Act highlighted that any agricultural land needs to be cultivated with crops or rear breeds of livestock and breed inland fish for the efficient management and better cultivation of agricultural land, which are best suited for the land, having regard to the extent and the natural resources of the land, in line with standards of cultivation, to improve the productivity and maintain efficient standards of production. The lands are declared as paddy land by the Commissioner-general where maximum production can be gained by the cultivation of paddy need to be cultivated with paddy during every season in which paddy can be cultivated. Yet if sufficient production can be obtained by cultivating other crops, the Commissioner-general may by a notification published in the Gazette declare that other crops can be cultivated in paddy lands. In such situations where paddy cannot be cultivated during any season in an extent of paddy land, due to a natural or other cause an agricultural crop which is not a perennial crop may be cultivated on such paddy land after obtaining the written permission of the Commissioner-general. Permission is needed from the commissioner-general to cultivate long-term crops in paddy lands before the cultivation.

Any declared agricultural lands cannot be filled up with soil or other material, no one can release, or allow the flow of waste matter into paddy lands, any constructions cannot be done in paddy lands, and no one can remove soil from that extent of agricultural land based on Agrarian Development Act. Further, using paddy land for a purpose other than agricultural cultivation without the permission of the Commissioner-general to be punishable. Where a mineral resource is identified in the paddy land, the Commissioner-general can permit the owner of paddy land to use an extent not exceeding twenty perches of that extent of paddy land to extract mineral resources during a specified period.

As stated by Soil Conservation Act, erodible areas need to be prohibited or restricted from the clean weeding of land or other agricultural practices conducive to soil

erosion. The authorizing prescribed officer or a person needs to give directions for seasonal or periodical changes in the type or nature of crops cultivated, or for the adoption or alteration of cultivation practices to promote soil conservation.

Even though there are several restrictions imposed on the usage of agricultural lands, these regulations did not provide any support to improve the productivity of the land. Only those who capitalized on the new technologies and better relationships with extension officers able to get benefit from these regulations (Gunawardhana, 1981). Further, restriction on the cultivation extent by tenants due to the said Laws/Acts led to less usage of mechanization. Due to the economies of scale in this context, tenants are facing high cost per unit area where they were unable to cultivate the whole land.

The abovementioned Acts/Laws restricted the free crop choice by farmers and the farmers are pushed to cultivate the recommended crops by ASC based on the suitable conditions of that area. However, the selection of crop is made based on productivity but is it economically viable from the farmers' point of view is questionable. In this context, the trade-off between profitability and productivity is needed to be considered to uplift the economic condition of the farmers. Further, it needed to be considered whether the recommendations are site-specific and considered the dynamic change in the climate when suggesting the farmers cultivate the suitable crop for their land because no Act/Law highlighted how the recommendation needs to be done except considering the productivity. The strict regulation on the conversion of lands led to the low productivity of the lands where the owners who want to use the land for non-agricultural purposes or cultivate crops other than paddy, do not have the motivation to improve the land productivity for paddy cultivation. There is no clear evidence by the regulations on what basis the conversion of agricultural lands needs to be analyzed, whether the market-based valuation is done or non-market valuation is done. Additionally, the conversion of the lands needs to be allowed on the basis where it will produce a balanced outcome between economic and environmental contexts which is failed to mention in the regulations.

3.7.3 Review of Current Policies

I. National Physical Plan 2050

The objective underlying the proposed spatial structure is to provide Sri Lanka with a strategic development trajectory that will enable it to achieve a well-planned and sustainably developed physical environment, pleasing and adored both by its citizens and the outsiders alike. In the plan related to agriculture, an 'Agro-Conservation Zone', is mapped, which are the lands that are predominantly used for agricultural purposes and situated away from the main urban concentrations. The plan concentrated on the productivity of paddy lands where the serious concern is highlighted as the extent of paddy and increased over the time by 15%, the production does not show the proportionate increase which leads to the question on productivity. Yet, the demand for agricultural lands in the urban areas is low, hence they need to be evaluated and converted to other purposes regarding non-market-based benefits provided by them. It is proposed to reduce the extent of land used for Tea Plantations in elevations above 300 meters to 1% between 2020-2050. The agricultural lands and the rubber plantations within the proposed Development Corridors may be demanded alternative developments in the future. Even though they will not be highly productive, they shall be thoroughly evaluated case by case in terms of their contribution to the sequestration of carbon emissions, reducing the atmospheric temperature, and the aesthetically pleasing environments they provide, as against the market value of such lands, and then put into most effective uses through the Development Plan prepared for respective local areas. The coconut plantations will need to be protected to a large extent as the demand is unlikely to sink until 2030. The fragmentation and the conversion of the estates need to be addressed with proper alternative economic measures. The current policy of approving the fragmentation of plantations less than ten acres needs to be revisited in this regard.

II. National Action Plan for Haritha Lanka Programme (2009-2016)

Under the section of responsible use of land resources in the program, the following criteria are considered such as, reduce land degradation in agricultural areas,

rehabilitate deteriorated lands, develop and implement programs for the use of non-cultivated agricultural lands, optimize soil conservation through mandatory and other measures, promote precision farming, traditional verities of crops and crops to fit agroecological condition, conserve, restoring and improve important representative landscapes, integrate a system to restore, reclaim and rehabilitate mined areas, carry out an assessment on forest cover of Sri Lanka, including different categories of forests, improve management of commercial plantations, promote the integrated management of upper watersheds, mitigate and adaptation to drought and review land-related laws. Cultivating abandoned paddy lands was considered as one of the main plans along with review all existing land-related laws and regulations and assesses the legal impact on land degradation and suggests necessary changes.

III. National Agriculture Research Policy and Strategy (2018-2027)

The policy indicated that one of the main hindrances to land productivity improvement issues is land ownership and most of the lands in the Wet zone have not been cultivated due to ownership issues. Therefore, the issues in the ownership of land need to be addressed for land productivity enhancement. The coconut industry is being threatened by coconut land been converted to real estate development and the policy considered the conservation of coconut lands. Further, the policy stated that livestock productivity is reduced as the farmers do not have enough land to grow improved grass varieties. Thus, common pasture lands should be developed with government support. The conversion of forest lands for development projects needs to be considered after sound scientific research.

IV. National Land Use Policy,2007

The policy provides a policy framework, to ensure proper land use, food security, economic development, and the maintenance of the productivity of the land at a higher level. The policy objectives are indicated as follow, expand the role of the State in matters related to lands, promote the capability of the land as a source of generating employment, rational allocation of land for different purposes and promotion of land suitability evaluation, bring about a rational distribution of population and settlement to achieve balanced regional development and orderly

economic growth, minimize fragmentation of agricultural lands, prevention of encroachment of lands, and introduce effective tenurial reforms to promote the efficient use of land resources.

Further, the policy goals considered all the lands 1600m above the mean sea level will be protected and conserved, and current land use within that zone will be allowed to continue with appropriate conservation measures. All the unutilized lands with less than 60% slopes will undergo land suitability classification to determine their uses. All unutilized lands with over 60% slope will be under permanent forestry and grassland. The policies related to agricultural lands highlighted the goals of diversification of agricultural land use will be encouraged only when land productivity can be increased, all marginal and uncultivated lands will be developed through appropriate land uses and agricultural lands, more suitable for paddy, coconut, rubber, tea, and minor export crops will be identified and developed. Conversion of these lands to other uses will be discouraged.

To implement the Land Use Policy the requirement of a Land Use Act has been identified. Even though the Land Use and Policy Planning Department is working towards getting the Land Use Act enacted, it has not materialized so far.

V. National Environmental Policy, 2003

The policy considered the following policy goals related to agricultural land management which are good land management in terms of crop productivity, allocation of State lands in an appropriate way, land use to conform to landform, and land capability, land tenurial arrangements adopted, in agricultural land and settlement areas, which promote good land management, and sound production systems adopted for the productive use of the large extent of sparsely used and fallow land, found mainly in the Dry zone.

VI. Overarching Agricultural Policy (Draft), 2017

In the draft version of the policy document, under the two main policy statements such as institutional capacity strengthening to improve land productivity and ensure sustainable management of land use, the following issues related to agriculture were

addressed. The issues considered in the policy are land tenure insecurity and lack of transparency in land administration, land fragmentation, lack of a system to identify lowlands that can be used for cultivation of crops other than paddy, non-scientific allocation of land among alternative uses, and restrictions to consolidating, renting, selling or mortgaging agricultural, and in the particular permit, land. The main activities planned to carry out in the policy to address these issues are create enabling legal backdrop for increasing investments in the land by facilitating expedient transfer of cultivation or user rights from the land permit and grant holders to prospective users, introduce science-based and transparent land classification and approval procedure for the cultivation of more economical crops in the paddy lands, enact a regulatory framework to limit sub-division of land below the current levels except where novel technologies are being used to improve productivity by revising provisions under the Land Development (Amendment) Act No. 16 of 1969, create a conducive environment for landowners to increase investments by strengthening ownership rights of land operators including the amendment of the ordering of succession and granting of land titles, energize investment climate for land by allowing landowners to consolidate ownership legally by eliminating restrictions on land acquisition via different transfer procedures such as renting, leasing.

3.7.4 Case Studies of Court Cases on Land Related Policy/Act/Law Issues

I. Case 1: The Case on Failure of Understanding the Interconnectedness of Sections in Agrarian Services Act

The appeal was submitted by a tenant cultivator to the supreme court against Assistant Commissioner of Agrarian Services and others to reject an order made by the Assistant Commissioner of Agrarian Services based on section 18 of the Agrarian Service Act amended by Act No. 4 of 1991. According to the Agrarian Service Act, the Assistant Commissioner of Agrarian Services, gave the decision to cancel the contractual relationship between the tenant and the landlord when a

tenant refuses to pay the rentals to the landlord. But due to the blurriness in the Act between sections, the power of the Assistant Commissioner of Agrarian Services to take this decision and the power of the Provincial Council to handle this case is questioned at the supreme court. Agrarian Services Act enabled the Commissioner of Agrarian Services to inquire and consider various disputes arising out of the duties and liabilities of the cultivators and paddy landowners within the jurisdiction. Section 18 of Agrarian Services Act, No. 58 of 1979 stated as follow,

> "Where the landlord informs the Commissioner that the tenant cultivator is in arrears of rent in respect of an extent of paddy land, the Commissioner shall cause an inquiry to be held by an Inquiry Officer and where the Inquiry Officer holds that the rent is in arrears and communicates his decision to the Commissioner, the Commissioner shall give notice in writing to the tenant cultivator that his tenancy in respect of such extent would be terminated if he fails to pay such arrears within the time specified in such notice"
>
> "A tenant cultivator who fails to pay the arrears of rent within the time specified therefore shall be deemed to have forfeited his tenancy and shall vacate such extent on being ordered to do so by the Commissioner"

The Provincial Council rights are stated on section 5 and 9 of Agrarian Services Act, No. 58 of 1979. However, its rights on section 18 of the Agrarian Services Act, No. 58 of 1979 are missing. Section 5 deals with the rights of tenant cultivators concerning certain eviction from paddy lands and restriction of eviction of tenants of paddy lands. Section 9 discusses the rights of the Commissioner to decide disputes regarding the devolution of rights to a tenant cultivator. It is uncertain based on the comparison of the provisions in sections 5, 9, and 18 of the Act for assessing how to deal with or revisionary jurisdiction on the Agrarian Services Act. The mismatch in the Act is section 5 and 9 was treated as one category while section 18 is treated as a different category in the list of Provincial Council but all three explains the power of Commissioner and rights of tenants. More importantly, it is to be considered that if a petitioner could come before the High Court of the Provinces, regarding a matter in connection with tenant cultivation in terms of sections 5 and 9 of the Agrarian

Services Act, No. 58 of 1979, it is surprising that such a person cannot come under the jurisdiction of the High Court of the Provinces concerning section 18 of the same Act. It would not be feasible to separate section 18 of the Agrarian Services Act from Section 5 and 9 as they are interconnected. According to the said points, the Court permitted to reconsider the appeal in the Provincial council by mentioning the interconnectedness between sections of the Agrarian Service Act where they were considered and interpreted as different categories in the Act. Based on this case, it is clear that the Act failed to understand and state the interconnectedness of the sections where the cases are arisen due to this fault interpretation.

II. Case 2: The Case on Land Filling in Agricultural Lands

This case is appealed against the decision made by the Agrarian Development Officer, Deputy Commissioner of Agrarian Services Development, and Commissioner General of Agrarian Services Development on a private company that engaged in the business of land sales to quash the decision. Agrarian Development Officer took action against the petitioner according to sections 31 and 32 of the Agrarian Development Act for unauthorized landfilling in the agricultural land.

The petitioner who is the land sales company bought land under coconut cultivation which needs filling in some part of the land. Therefore, the company had to get permission from Sri Lanka Land Reclamation and Development Corporation, Environmental Authority, Coconut Fragmentation Board, and Water and Drainage Board. The company applied for the permit. However, they started their construction before they receive the approval. The issue became complicated further when 2 rods of low land were identified inside the said land. The petitioner stated not to have been aware of it and stated that it had never been a paddy field, which argument was supported by the predecessor-in-title of the petitioner company. According to which, predecessor-in-title had purchased the land in 1986 and had never cultivated with paddy up to date. Therefore, it could be guessed the land had not been used as paddy land at least for 20 years.

Along with the interpretation in Section 101 of Agrarian Development Act No. 46 of 2000 paddy land means “land which is cultivated with paddy or is prepared for the

cultivation of paddy or which, having at any time previously been cultivated with paddy". Sections 31 and 32 in the Agrarian Development Act said the following facts related to the landfilling in the paddy land such as,

> "Any officer inspecting an agricultural land under subsection shall make such inspections and inquiries as may be necessary to ascertain whether the extent of agricultural land is being filled up or is about to be filled up with soil or other material or action is being taken to construct some structure on, or any construction is being done in, that extent of agricultural land or action is being taken to remove soil or soil is being removed from that extent of agricultural land"

> "Any person who, without obtaining written permission from the Commissioner-General fills up an extent of paddy land with soil or other material or attempts to fill up such extent of paddy land or uses any extent of paddy land for a purpose other than an agricultural purpose or does any other act for such purpose or constructs any structure within any extent of paddy land or does any act in furtherance of such purpose or removes soil from an extent of paddy land or attempts to do so or utilizes an extent of paddy land in violation of the terms and conditions of the permission issued by the Commissioner-General, shall be guilty of an offense under this Act."

According to sections 32 and 33, Agrarian Development Officer needs to submit the evidence on the offense but no proof was submitted and the Court decided that the Commissioner General can decide whether an extent of land is paddy land or otherwise and the necessary action will be taken after the decision of Commissioner-General. Based on this case it is clear that how much the regulation on converting paddy filed cause problem even though it was unproductive as paddy land for 20 years. Due to these regulations, the lands are unable to use for productive purposes and it hinders the activity of private companies which leads to economic loss.

III. Case 3: The Case on Rights of Provincial Court under the Agrarian Development Act

The appeal was submitted to the Supreme Court by a tenant cultivator with Agricultural Development Officer mentioning that he is the tenant cultivator of a two rods portion of agricultural land and he had been unable to cultivate the said portion of agricultural land for 3 years and owner is creating an obstruction on an agricultural road preventing the tenant from entering the said portion. The case was initially inquired by the Commissioner-General of Agrarian Services and he decided on the case according to section 7 of the Agrarian Development Act, the action of the owner is a violation of the Act, and based on section 90 of the Agrarian Development Act, an obstruction on an agricultural road preventing the tenant from entering the land should be removed. Sections 7 and 90 of the Agrarian Development Act mentioned that,

> "tenant cultivator of any extent of paddy land shall have the right to occupy and use such extent in accordance with the provisions of this Act and shall not be evicted from such extent……"

> "Where a complaint is made to the Commissioner-General by any owner cultivator or occupier of agricultural land that any person is interfering with or attempting to interfere with the cultivation rights, threshing rights, rights of using a threshing floor, the right of removing agricultural produce or the right to the use of an agricultural road of such owner cultivator or occupier, the Commissioner-General after inquiry may if he is satisfied that such interference or attempted interference will result in damage or loss of crop or livestock, issue an order on such person cultivator or occupier requiring him to comply with such directions as may be specified in such order necessary for the protection of such rights"

However, the owner rejects the decision made by the Commissioner and submitted an appeal to the Provincial High Court. In the said appeal owner requested to revise and cancel the order under the following criteria, the commissioner's order was contrary to the Agrarian Development Act, he misdirected himself by deciding to inquire about the complaint instead of mentioning the matter to the Agrarian Tribunal of the Agrarian Development Act and the order was given without an adequate evaluation of evidence.

Afterwards, the Commissioner argued that Provincial High Courts has no rights on taking decisions on the matter of land disputes as the rights given to the Provincial Council by sections 3 and 5 in the Agrarian Service Act were repealed by the Agrarian Development Act. Therefore, the case was transferred to the Supreme Court by the appeal from the tenant. Regarding this case, the Supreme Court discussed the matters related to the referred repealed Act and rights of the Provincial council on the cases sorted by the Commissioner of Agrarian Services.

Accordingly, section 7 of the Agrarian Development Act is the section that corresponds to section 5 of the repealed Agrarian Services Act. This is clear as the side notes to the two sections are identical and it was accepted that repealed Acts can be referred to when they are replaced by new Acts with exact statements. Further, the rights of the Provincial Court were cleared as Provincial High Court has been vested with revisionary jurisdiction to review orders made under section 5 and 9 of the Agrarian Services Act, as long as such order has been made in respect of land situated within the Province. However, as stated by the Agrarian Development Act, the owner has not attempted to challenge the order and he questioned the decision of the Commissioner as mentioned earlier, therefore, the owner cannot rely on the Provincial High Court for taking actions against the Commissioner about the abovementioned issues submitted by him. With this, the Supreme Court came to the judgment on the appeal where they decided, Provincial High Court does not have the powers to deal with this problem. This case explains the failure of Acts on the clarity of rights of the Provincial Council and the court actions against the decisions made by the Commissioner.

IV. Case 4: The Case on Missing Information on Declaration of Tenancy by Commissioner in the Act

The appeal was submitted to quash the declaration and decision made on tenancy by the Assistant Commissioner of Agrarian Development. The commissioner took action for the complaint reported by the tenant where the land was transferred without concern or awareness of the tenant. According to section 2 of the Agrarian Development Act, the commissioner declared that the transfer was invalid as the concern of the tenant was not considered. Section 2 stated that,

> “The owner of an extent of paddy land in respect of which there is a tenant cultivator, who intends to sell such extent, shall in the first instance make an offer to sell such extent to the tenant cultivator”

The owners did not accept the decision of the commissioner and appealed to the Supreme Court. The main concern raised by them was, they did not accept the tenant as a tenant to their land as his name was not registered in the Agrarian Land Registry. At this point, the owners raised two main issues which are the inquiry conducted by the commissioner cannot be accepted because the commissioner has no jurisdiction to determine whether a person claiming to be a tenant cultivator is a tenant cultivator or not.

He argued that the commissioner can decide disputes between the landlord and the tenant cultivator under the Agrarian Development Act, only if the parties admit such a relationship between them. He argued that if the authorities cannot decide whether the complainant is a tenant cultivator or not, the inquiry can only commence after establishing that he is a tenant cultivator in another forum according to the Agrarian Service Act.

However, the Agrarian Service Act was replaced by the new Agrarian Development Act. The new Agrarian Development Act No 46 of 2000 does not contain an express provision that the administrative authorities can decide whether the complainant is a tenant cultivator or not. On the contrary, the Act expressly provides that the administrative authorities can decide whether the land is paddy land or not according to Section 28.

> “The Commissioner-General may decide whether an extent of land is a paddy land”

Therefore, the actions took by the commissioner was considered invalid due to the missing part of the Act on declaring the person as a tenant. The 2nd issue that is raised by the Council is that the finding in a tenancy in the records is bad in law for the reason that it contained several errors of law on the face of the record. The person’s name who claimed him as a tenant was never entered in the Agricultural

Land Register. Under Section 53 of the Agrarian Development Act, the Agrarian Land Register is a prime facie proof of the facts stated therein. The section reads,

> "An entry in a register prepared or amended under the provisions of this section and which is for the time being in force shall be admissible in evidence and, shall be prime facie proof of the facts stated therein."

When the Agricultural Land Register is considered as a starting point, the person who claimed him as the tenant has to rebut that prima facie proof and prove that he is the tenant cultivator but he failed to prove his tenancy. The commissioner has relied on unacceptable evidence and canceled the transfer. Under these circumstances, the determination of the commissioner which contains false proof of tenancy and the proposed actions decided based on that were quashed.

This is the best suitable case for understanding the recession of regulation when repealing the Act. Even though there are cases in the past which helped to decide on tenancy by the commissioner according to the Agrarian Services Act and Paddy Land Act but with the new Act the information on the rights of a commissioner on deciding tenancy is missing. Due to this the commissioners are unable to make decisions and continue their functions, the commissioner's decision on paddy land should be expanded to declaring the tenancy of a person also.

V. Case 5: The Case on Land Title Declaration Under Statutory Lease

The case is appealed to the Supreme Court for a declaration of title and eviction according to the Statutory determination of the Land Reform Law. This property dispute case is between the appellant whose land was taken under the Land Reform Law and the proprietors of the temple who now residing on the acquired land. The appeal submitted at the Supreme Court questioned the judgment of the Civil Appeal High Court in which they allowed the temple to keep the land and canceled the ownership of the appellant.

The Supreme court was asked to give the judgment on whether the Civil Appeal High Court makes a mistake in Law in deciding the ownership of the appellant of the land when he became the statutory lessee of the land and canceled his rights to

make a declaration on which portion of the land, he wished to retain after the statutory determination. Besides, whether Civil Appeal High Court failed to appreciate that the probate holder could justify his title to the land which had been confirmed by the statutory determination.

According to Section 5 of Land Reform Law, excess land of the appellant acquired by the Land Reform Commission and his title of the land is in questioned by these sections. Section 5 states that,

> "Where after the date of commencement of this Law any person becomes the owner of agricultural land in excess of the ceiling, any such land owned by such person in excess of the ceiling shall as from that date (a) be deemed to vest in the Commission; and (b) be deemed to be held by that person under a statutory lease from the Commission"

Section 6 of the law states that,

> "Where any agricultural land is vested in the Commission under this Law, such vesting shall have the effect of giving the Commission absolute title to such land as from the date of such vesting, and free from all encumbrances"

The case can be filed under reclaiming the property by the owner from the present holder, only if the owner has the title for that property. At the time, the case was filed against the temple by the appellant of the land, he did not have the title to the land which was taken under the Land Reform Law and was under the Statutory lease. The decision made on the statutory lease was described in section 18 of Land Reform Law and section 19 and 20 of the Law is important for this case where section 19 states that,

> "The Commission shall, as soon as practicable, make a determination, in this Law referred to as a statutory determination specifying the portion or portions of the agricultural land owned by the statutory lessee which he shall be allowed to retain. In making such

> determination the Commission shall take into consideration the preference or preferences, if any, expressed by such lessee in the declaration as to the portion or portions of such land that he may be allowed to retain"
>
> "The Commission shall publish the statutory determination in the Gazette and shall also send a copy thereof to such lessee by registered letter through the post. Such determination shall be final and conclusive, and shall not be called in question in any court, whether by way of writ or otherwise"

Section 20 of the Law states that,

> "Every statutory determination published in the Gazette under section 19 shall come into operation on the date of such publication and the Commission shall have no right, title or interest in the agricultural land specified in the statutory determination from the date of such publication"

Section 20, clearly indicates that when a Statutory Determination is published in the Gazette from the date of such notification is published, the Land Reform Commission shall not have any right, title, or interests in the said agricultural land. Further, when the Statutory Determination is made and the Gazette Notification is published, the person in whose favor the said Determination was made would become the owner of the land specified in the said Statutory Determination.

Based on the above-mentioned facts, the court gave the judgments as Civil Appeal High Court has not erred in Law as Statutory lessee has a right to make a statutory declaration within 1 month as provided by Section 18 of the Land Reform Law. Further, Appellant would not be entitled to relief as requested in his amended complaint. Appellant no doubt commenced his action by filing plaint before the statutory determination was made by a gazette notification. Therefore, the action filed by the appellant in the trial court was not maintainable as he had no title to the property in dispute as at the date of filing the action.

Even though the Law mentioned the aspects of declaring the ownership of lands that are under statutory lease, it needs to add the permitted actions between the date of publishing Gazette and when the land was taken under the statutory determination where the case used the loopholes to come up with the false judgments.

VI. Case 6: The Case on Transferring the Land Under Statutory Determination

The case is about donating the agricultural land which is under the Statutory Determination of Land Reform Law. This appeal court case seeking the Supreme Court judgment on the validity of two deeds which was transferred by the way of gift and proprietorship of the owner who made the transfer of particular lands which are vested under Land Reform Law.

The case was filed with the consent on, the time when the deed was transferred by the way of gift, the owner did not have any title to the land in question and, he is only the statutory lessee of the said land under the Land Reform Commission, in terms of the Land Reform Law. It was also submitted that approval should have obtained from the Land Reform Commission before any type of alienation or transfer of the land which was vested with the Land Reform Commission in terms of Section 14 of the Land Reform Commission Law. Section 14 of Land Reform Law hereby stating that,

> "Any person who becomes a statutory lessee of any agricultural land under this Law may within three months from such date make an application to the Commission in the prescribed form for the transfer by way of sale, gift, exchange or otherwise of the entirety or portion of such agricultural land to any child who is eighteen years of age or over or to a parent of such person"

However, transfer was executed without adhering to the said provisions stipulated in Section 14 of Land Reform Law and the transfer was executed after the enactment of the Land Reform Commission Law. The land was under the Statutory Declaration under Section 18 of the Land Reform Commission Law and the Land Reform Commission had made a Statutory Determination in terms of Section 19 of the said Law. Section 19 of the Land Reform Law, which deals with the declaration in respect

of agricultural land and vesting and alienation of such land. Whilst Section 18 deals with Declaration in respect of agricultural land subject to a statutory lease, Section 19 refers to provisions applicable on the receipt by the Commissioner of a Statutory Declaration. The said Section 19 is as follows:

> "The Commission shall, as soon as practicable, make a determination, in this Law referred to as a statutory determination, specifying the portion or portions of the agricultural land owned by the statutory lessee which he shall be allowed to retain. In making such determination the Commission shall take into consideration the preference or preferences, if any, expressed by such lessee in the declaration as to the portion or portions of such land that he may be allowed to retain"

Therefore, it would be necessary to consider the actual effect of the Statutory Determination in terms of the Land Reform Law when comes to transfer the lands under the Statutory Determination. Section 20 of the Land Reform Law deals with the effect of a Statutory Determination published under Section 19 of the said Law, which reads as follows,

> "Every statutory determination published in the Gazette under section 19 shall come into operation on the date of such publication and the Commission shall have no right, title or interest in the agricultural land specified in the statutory determination from the date of such publication"

Section 20 indicates that when a Statutory Determination is published in the Gazette, from the date of such notification is published, the Land Reform Commission shall not have any right, title, or interests in the said agricultural land. Further, once the statutory determination is made the person in whose favor it was made becomes the owner of the land specified in the determination with all the incidents of ownership. Considering the aforementioned, it is evident that the Statutory Determination was made in favor of the owner who made the transfer. In terms of Section 20 of the

Land Reform Law, referred to earlier, thereafter the owner who made the transfer became the owner of the land specified in the said Determination in this case.

However, making the Statutory Determination alone would not be sufficient for a person to become the owner of the land specified in the Determination, and it would be necessary for the said Determination to be published in the Gazette and this requirement is specifically stated in Section 20 of the Land Reform Law. In this case, even though the statutory determination was done before the transfer but it was not published in the Gazette. Therefore, the owner who made the transfer did not have title to the land in question, and therefore he was not in a position to gift, sell or exchange the lands or to execute deeds for any such purpose. In such circumstances, the court came to the judgment where the two Deeds of Gift could not have any validity and therefore both Deeds could become null and void.

This case is similar to the case as mentioned earlier (Case 5), where the Law mentioned when the owner can take the title for the land which is under Statutory Determination but failed to address the actions that can be done between the decision was made for Statutory Determination and it was published in the Gazette. There is no time limitation stated in the Law for the period between the decision was made for Statutory Determination and it was published in the Gazette. Therefore, when it takes too long, there was no Law to discuss what will happen if the owner passed away between this period or what actions can be done between this period by the owner in terms of maintaining his title and transfer the title in such circumstances.

3.8 Assessment on the Impact of Key Land-Related Policy Changes

This section first describes the change in paddy productivity over the years and then discusses qualitatively the likely effect of policies on paddy productivity. Subsequently it describes the results of farmers' and ARPA's survey to according to the hypotheses which were developed prior to the surveys. The results of farmer survey and the ARPA survey are analyzed both descriptively and econometrically and the results are presented in this section.

3.8.1 Change in Paddy Production

Figure 3-64 below depicts the change in paddy production and the area harvested over the years. Paddy production has increased drastically in late 1970s. Even though the area harvested has increased simultaneously the increase in paddy production is by several folds suggesting a notable increase in paddy productivity. Since land resource is limited in the island, productivity improvements are essential to meet the rising food demands. Our interest is in seeing if any policy has been effective in increasing the paddy productivity.

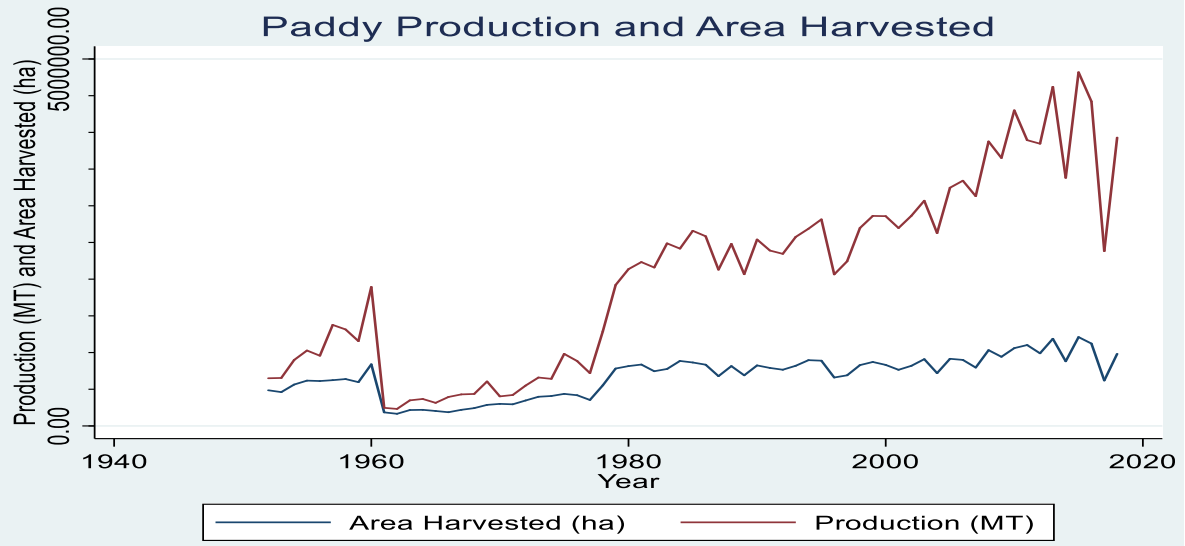


Figure 3-66: Change in paddy production and harvested area

Figure 3-66 shows different policies enacted in different years that might have an effect on the paddy sector and hence area harvested and the paddy production. Table 3-51 lists the Acts/Laws shown in the graph. Figure 3-67 further depicts the extreme weather years since paddy production is highly sensitive to droughts. Apart from land related policies the Figure also shows different fertilizer subsidy programs enacted over the time. The Figure very well illustrates the complicatedness in the policy environment pertaining to a particular crop. It is difficult to discern the effect of individual policies using secondary data. Hence, primary surveys done with farmers and ARPAs to elicit their perception on different policies.

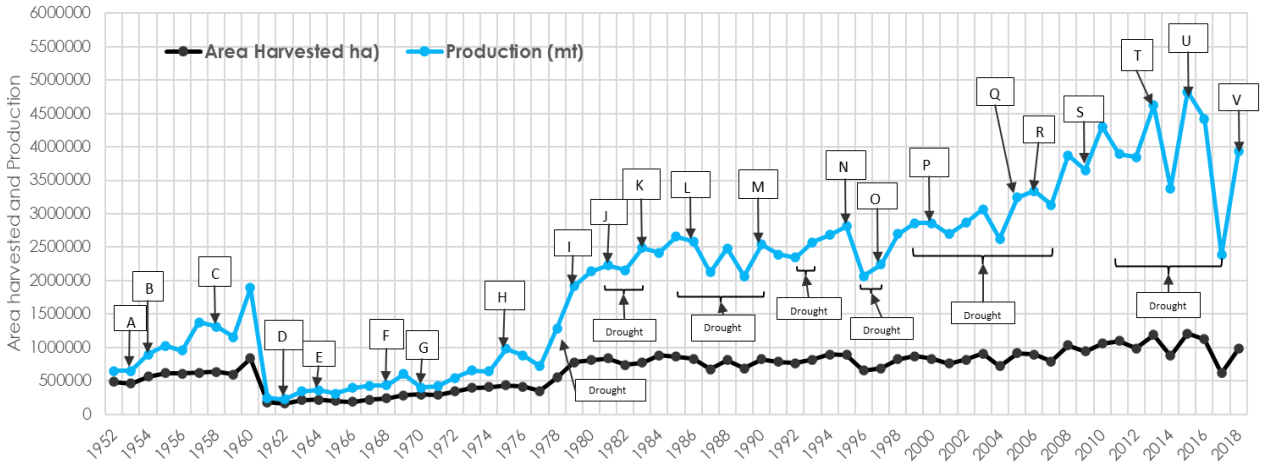


Figure 3-67: Policies and enacted years on them

Table 3-51: List of Policies Shown in Figure 3-65

A	Land Development Act No.49 and Paddy Lands Act No. 1 of 1953, Requisitioning of Land Act No. 20
B	Crown Land (encroachment) Act No.8 of 1954 and Land Acquisition Act No. 39, State Lands Encroachments Ordinance
C	Paddy Land Acts (Tenure reform programs) and The Paddy Lands Act No. 1 of 1958 and Registration of Documents Act No. 22
D	1962 – Introduction of fertilizer subsidy for urea, TSP and MOP
E	1964 - Land Acquisition Act No. 28
F	1968 - Sri Lanka Land Development Corporation Act 15
G	1970 - Protection of Tenants (Special Provisions) Act No. 28
H	1975 - Resumption of State Land (Anuradhapura Preservation Board) Law No.3
I	1979 - Agrarian Services Act No.58 and Land Grants (Special Provisions) Act No. 43
J	1981 - Land Development Act No. 27 and Land Reform Law No. 39
K	1983 - Land Development Act No. 10, Land Reform (Special Provision) Amendment 12 and Mahaweli Development Board (Repeal) Act
L	1986 - Land Reform (Special Provision) Amendment 14 and Land Reform (Special Provision) Amendment 18
M	1990 – Fertilizer subsidy was completely removed
N	1995 – Mahaweli resettlement program finished and fertilizer subsidy was reinstated for urea, TSP, and MOP
O	1997 – Fertilizer subsidy was limited only for urea
P	2000 - Agrarian Development Act No.26, Agrarian Development Act No.26
Q	2005 - Fertilizer subsidy was reintroduced for urea, tsp and mop through “Kethata Aruna” program
R	2006 - Sri Lanka Land Development Corporation Act 35
S	2009 – Subsidy was coupled with paddy procurement policy
T	2013 – New fertilizer recommendation for paddy moving away from separate recommendation for high yielding targets, Land (Restrictions on Alienation) Act 38
U	2015 – Fertilizer cash subsidy program
V	2018 – Material subsidy was implemented again

3.8.2 Results of ARPAs' Survey

VII. Profile of the ARPA Respondents

According to the descriptive analysis, most of the ARPAs have more than two years of service experience and the majority of them have more than two years of service experience in the current service area (Figure 3-68). Most of the people are traditional inhabitants of the areas where ARPAs are working. Very few of them are working in the resettled area and community with both traditional inhabitants and resettled households (Figure 3-69).

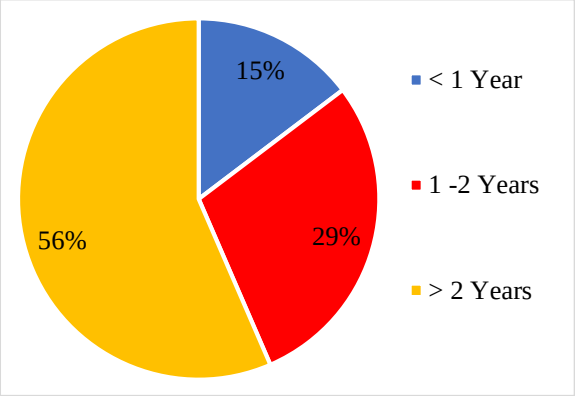


Figure 3-68: Service Experience

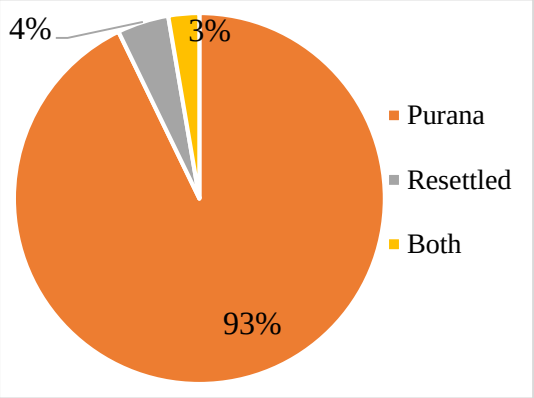


Figure 3-69: Settlement Type

According to Figure 3-70, the majority of ARPAs are working in the area consisted of a large number of smallholders in terms of the extent of low land and high land. Around 57% of farmers engaged in cultivation in the low land less than two acres and 61% of farmers engaged in cultivation in high land less than two acres.

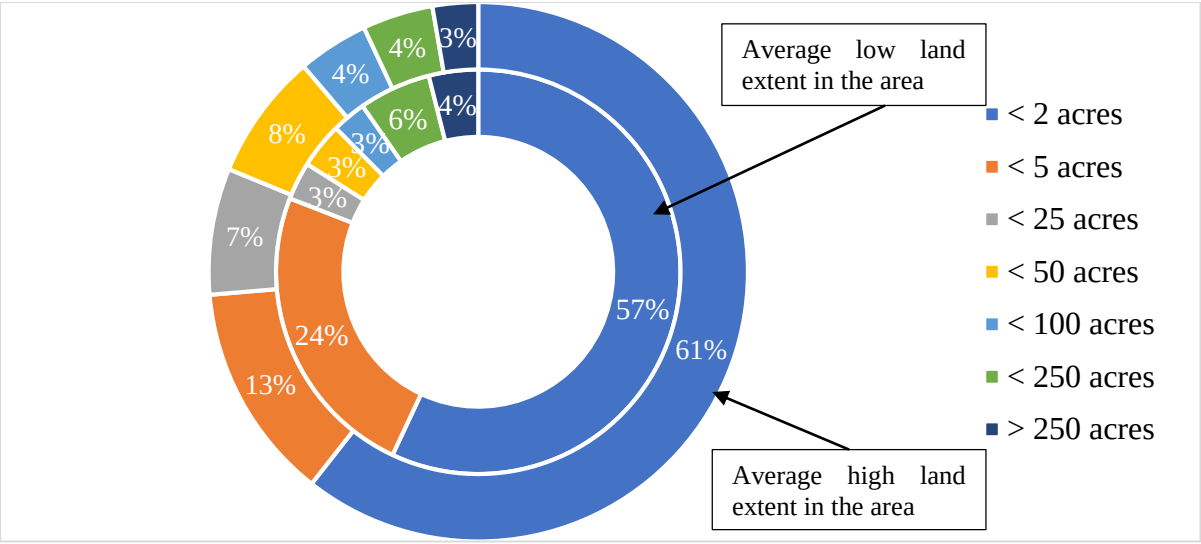


Figure 3-70: Average land holding size in the area

Table 3-52 presents the percentage of respondent agreement on each of the hypotheses. Based on the results indicated in Table 3-52, most of them agreed on hypothesis 1, 8, 10, and 14 namely “land fragmentation (small land parcels) causes a change in the land use (from cultivation to other purposes)”, “not having grazing land is a problem for livestock rearing”, “some of the paddy lands should be allowed to grow other crops”, and “it is good to allow farmers to fill their paddy lands if those are not suitable for any agricultural practices”.

Further, they have identified “lack of proper titles for agricultural lands”, “disputes in existing deeds”, “restrictions made by some policy documents (E.g.: Agrarian Development Act and Paddy land Act) to utilize land in a way farmer desired”, “time-consuming documentation and settlement process” as main barriers related to using agricultural lands more productively.

Around 30% of the ARPAs mentioned the hindrance of policy on agricultural lands. They have identified the Agrarian Development Act and Paddy land Act mainly causing hindrances to farmers (E.g., Even if some paddy lands are not suitable for paddy cultivation, it is difficult to get permission for other cultivations and other purposes. Therefore, their optimum economic use from land cannot be achievable). Around 32% of ARPAs mentioned that they are aware of lawsuits related to land in their area. They identify that the issues related to property rights, land boundary

demarcations, land ownership, encroachments, land usage such as cultivating other field crops in paddy lands, illegal construction in paddy fields, and mining in paddy lands, and land inheritance related as main reasons for lawsuits.

Table 3-52: Percentage of respondents agreeing on each hypothesis

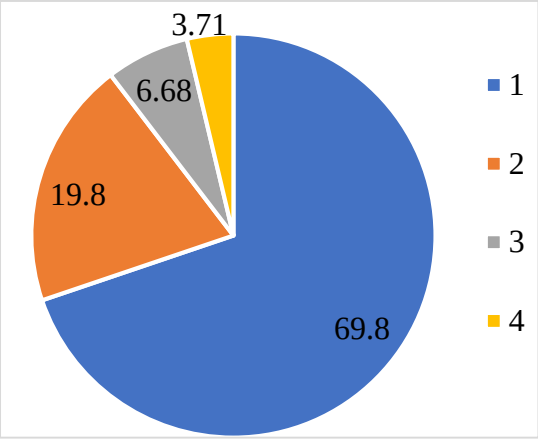
Hypothesis	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Land fragmentation (small land parcels) causes a change in the land use (from cultivation to other purposes)	6%	68%	13%	10%	3%
On average, the per-unit value of small land plots is less than the value the per-unit value of large land plots	3%	46%	21%	26%	4%
Because of restrictions imposed on agricultural land sales, unproductive (less suitable) lands are used for agriculture	2%	19%	43%	31%	5%
Because of restrictions imposed on agricultural land sales, land is abandoned	1%	11%	20%	63%	5%
Agricultural lands are undervalued in your service area	4%	35%	14%	44%	3%
There is illegal encroachment of public land/forest land for agricultural purposes	1%	17%	15%	56%	11%
There are some unused (for any specific purpose) public lands which can be used for agricultural purpose	4%	23%	18%	40%	15%
Not having grazing land is a problem for livestock rearing	11%	64%	7%	17%	1%
There are disputes over management of common grazing land	1%	13%	44%	36%	6%
Some of the paddy lands should be allowed to grow other crops	5%	64%	8%	17%	6%
Some farmers informally sell Swarna Bhoomi/Jaya Bhoomi lands to others in your service area	1%	24%	25%	43%	7%
Communal based land management (e.g., *Thattu maruwa*) are suitable in the Sri Lankan context rather than an individualized system to manage agricultural land	3%	35%	39%	17%	6%
If paddy is not productive in particular land, owners should be allowed to use it for other crops.	1%	74%	15%	3%	7%
It is good to allow farmers to fill their paddy lands if those are not suitable for any agricultural practices	4%	62%	8%	18%	8%
Land consolidation is required to achieve high productivity in agricultural land	5%	29%	27%	35%	4%
Owners should have the freedom to sell agricultural land for any purpose	2%	31%	13%	43%	11%
Owners should be allowed to sell agricultural land to any person	3%	36%	16%	36%	9%

3.8.3 Results of Farmer Survey

I. Descriptive statistics

Figure 3-71 explains the number of plots of agricultural households in the sample. Around 70% of the people cultivate only in one land plot and only 3.71% people

cultivate in four land plots. Based on Figure 3-71 around 30% of the sample experienced land fragmentation in their farms.



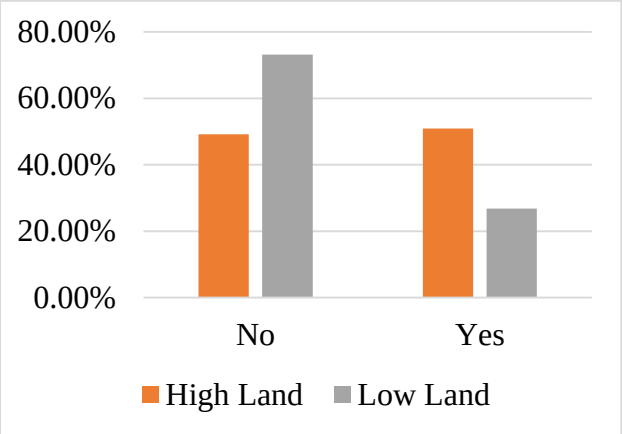


Figure 3-71: Number of plots per households *Figure 3-72: Land fragmentation with land type*

Figure 3-72 explains the land fragmentation that occurred in low lands and high lands. Compared to the low lands the exposure to fragmentation is high in high lands.

Figure 3-73 shows the types of ownership in the sample households with forms of rent paid by the tenant to the owner. Most of the sample households owned their cultivated lands and two percent of tenant farmers paid their rent as a fraction of their cultivation whereas eight percent of farmers paid fixed rent.

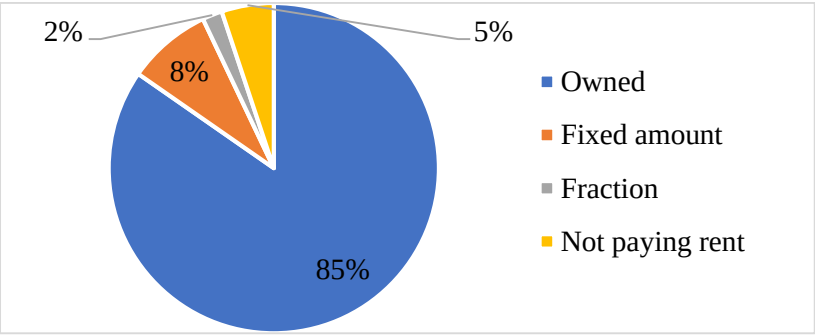


Figure 3-73: Ownership of land and forms of rent paid by the tenants

II. Regression Model

The factors affecting the paddy productivity of the farm are identified by the Multiple Linear Regression model where the farm productivity is used as a dependent

variable. The summary statistics of the variables used in the model are given in Table 3-53.

Table 3-53: Summary Statistics of the variables used in the model

Continuous Variables	Mean (Std. Dev)
Farm Productivity (Kg/Ha)	1,558.14 (1,090.41)
No of plots owned	1.44 (0.77)
Extent (Acre)	1.24 (1.21)
Urea (Kg)	59.11 (135.45)
Cost for machine harvesting	35,025.05 (97,457.76)
Experience in farming	27.73 (14.04)
Categorical Variables	**Percentage**
Engage in animal husbandry (Yes)	20.60 %
Ownership (Based – Owned)	84.67 %
Rent paid by a fixed amount	8.27 %
Rent paid by a fraction	1.95 %
Not paying rent	5.11 %
Agroecological zone (Base- Dry zone)	41.09 %
Intermediate zone	39.85 %
Wet zone	19.06 %
Planned to convert the land (Yes)	33.44 %
Planned to shift the crop (Yes)	15.10 %
Drought (Yes)	6.68 %
Flood (Yes)	3.96 %
Farming background – Traditional	89.36 %
Farming background – New	10.64 %
Nature of farming (Base - Individual)	21.29 %
Jointly with family members	49.75 %
Individual contract farming	4.46 %
Joint contract farming	1.73 %
Others	22.77 %
Legal restriction to transfer (Yes)	91.34 %

The farm (not individual land plots) is used as a unit of analysis and average farm productivity from the lands is considered for the analysis. To understand the impact of the land fragmentation number of plots owned by the farm household was used as a proxy variable and to understand the impact of the restrictions imposed by the government on land transfer, legal restriction to transfer the land is used as a proxy variable. The variables on the intention of the farmers to convert the land and change the crop from paddy were used to capture the restrictions imposed by the government indirectly. Even though they want to change their land and crop, due to

the legal restrictions, farmers are unable to do so. The results of regression are given in Table 3-54.

Table 3-54: Regression Results

Farm Productivity of Paddy (Kg/Ha)	Coef. (Std. Err.)
No of plots owned	-21.30 (71.67)
Planned to convert the land (Yes)	-822.42* (487.31)
Planned to shift the crop (Yes)	-253.89* (153.11)
Engage in animal husbandry (Yes)	-241.49 (155.17)
Ownership (Based – Owned)	
Rent paid as a fixed amount	317.92* (167.06)
Rent paid as a fraction	-511.18 (338.11)
Not paying rent	109.60 (165.03)
Extent (Acre)	-177.42*** (53.25)
Agroecological zone (Base- Dry zone)	
Intermediate zone	376.00** (172.31)
Wet zone	-884.82*** (224.25)
Season (base Yala)	
In between Yala and Maha	-211.44 (340.93)
Maha	304.80** (126.90)
In between Maha and Yala	22.25 (521.14)
Urea (Kg)	0.79** (0.41)
Drought (Yes)	-61.54 (213.51)
Flood (Yes)	-484.52* (284.65)
Farming background (Traditional)	-22.02 (181.25)
Nature of farming (Base - Individual)	
Jointly with family members	-28.21 (150.42)
Individual contract farming	-180.07 (285.82)
Joint contract farming	819.44* (436.67)
Others	-274.54 (170.94)
District (Base – Ratnapura)	
Anuradhapura	1497.94*** (387.35)
Hambantota	1457.88*** (478.28)
Jaffna	1191.73** (488.41)
Kurunegala	843.10*** (330.11)
Matale	595.69** (279.42)
Experience in farming	-4.02 (3.96)
Legal restriction to transfer (Yes)	-146.97* (203.54)
Constant	3413.81*** (600.07)

Note: * p<0.01, ** p<0.05, *** p<0.001

According to the regression results, land fragmentation does not have an impact on farm productivity. Hence the size of the farm affects the farm productivity where the unit increase in extent will reduce the farm productivity by 177.42. Interestingly the legal restriction of the land transfer reduces the productivity by 146.97. Therefore it is clear that legal restrictions on land transfer impose a barrier on productivity. Further, the impact of restrictions on land transfer is indirectly explained by the significant impact of farmers' intention to convert the land and change the crop. Due to the legal restrictions imposed by the Agrarian Development Act 2000 on crop choice, farmers

must cultivate the crop which will give the highest productivity based on the land suitability which is decided by the Agrarian Service Centres. Hence, the intention of farmers about the crop change affects their effort on the cultivation which leads to the reduction in productivity. Moreover, the Agrarian Development Act 2000 restricts the conversion of agricultural lands, therefore for the farmers to change the land, this legal restriction reduces their effort on the paddy cultivation which results in low productivity.

4. Suggestions /Recommendations for Amendments and Alterations to Land Regulations

A land policy should cover key thematic areas such as land use planning, land use management, and land administration. However, in general the land policy focuses more on land administration such as introducing land law reforms, securing land rights and tenure, creating land markets, etc. Ideally, the policy should lay more emphasis on efficient land management so that the three overarching objectives of sustainable development, viz. economic growth, social stability, and ecological protection can be achieved. Moreover, the policy on land should be formulated as an integral part of the national development strategy with the participation of all the relevant actors. In this context, the suggestions and recommendations are discussed below under the main areas such as institutional reforms, land and rental markets, land titling, protection of land rights and tenure, land fragmentation, and utilization of abandoned paddy lands.

4.1 Institutional Reforms

4.1.1 Many government institutions share the responsibilities for managing state lands; therefore, the land policies should not be treated in isolation or confined to a particular government organization. This can lead to the duplication of work, waste of resources, and confusion. E.g., The Crown Land is governed by the Land Commissioner General's Department, the land acquired by the Land Reform Act is governed by the Land Reform Commission. Difference in the timeline and occasion at which the land was acquired are not justifiable reasons to have two authorities and two Acts. Therefore, it is recommended to amalgamate these institutes.

4.1.2 The policy on land needs to take into account the exact responsibilities and activities that have to be carried out by the different institutions and organizations dealing with land matters. In such cases where any institution or organization entrusted with a land management task falls short of its duty or neglects to follow a policy directive, strict legal action must be taken against it. The policy directive should be clearly stated as an individual task and the responsibilities should be

assigned specifically in a hierarchical manner starting from the relevant ministry to the Divisional Secretariat.

4.1.3 Survey Department does not have enough capacity to handle all land-related surveys in the country. This has caused unnecessary delays in title registration. Therefore, it is recommended to get private surveyors involved. The reason for the very slow progress of the title registration process is the lack of sufficient resources at the Survey General's Department (SGD). Surveying land for title registration is yet another task undertaken by the SGD among its other responsibilities.

4.1.4 As no central digital platform is found in any of the institutions it is necessary to introduce a centralized computer database management system in all the relevant government departments to minimize human errors, avoid duplication of work, and increase the efficiency of the workflow. Institutions must be equipped with the requisite hardware and technical knowhow to enable them to develop a sound land information system that would facilitate decision-making on land policy.

4.1.5 Although, there is a land use policy, there is no land use act. Without an Act/Law, the policy does not have legal footing. Hence, it is important that a Land Use Act is formulated and implemented.

4.2 Land markets and rental markets

4.2.1 Lack of an organized land market information system, absence of secure titles, and asymmetric information flow makes for malfunctioning lands markets in Sri Lanka. Land sales are not much in evidence in rural areas as there is less willingness on the part of people to sell their lands even though they are only marginally productive or even unproductive. Further, the land transactions are restricted in various ways by the Agrarian Development Act and the Land Development Ordinance. Although the land sales markets are quite stagnant, the land rental market is rather dynamic, and rural agrarian households are more involved in rental transactions. Some of the land transaction practices such as the leasing of plots in irrigated settlement schemes have functioned positively in terms of

efficient operation of land, leading to increased production. Among the practices, leasing on fixed produce, leasing on cash, and mortgaging are popular while other methods such as purchasing without supportive legal documents are also followed. In addition to that, the productivity of these transacted lands is high due to the efficient use of land, water, and labor by the cultivator who also possesses capital and uses advanced technology. Therefore the intervention of the state in regulating the rental market should be minimal while its role should be limited to acting as a facilitator and a provider of support services and infrastructure. The amendments to the relevant acts should ensure the legitimacy of these transactions. It would be advisable to confer some sort of formal recognition to these informal transactions to encourage more investments by private entities while also addressing the financial issues of farmers.

4.2.2 Productivity of the land can be raised by increasing the land size. Larger land plots will facilitate the access of farm machinery to the land and this will eventually lead to an increase in the productivity of the land. Rather than granting several small plots of lands to farmers, it would be advisable to grant them larger land plots. When granting the lands greater attention should be paid to the location of the land. Priority should be given to the agricultural lands that are located near settlement schemes. Attention should be paid to the infrastructure facilities such as provision of access to irrigation water and roads.

4.3. Land titling

4.3.1 Provision of freehold titles should be tied to stipulating the minimum extent of land to avoid undesirable fragmentation; such a measure will also stimulate the agricultural land markets. However, there are positive and negative consequences to issuing freehold titles, hence, countermeasures should be taken to avoid negative consequences when issuing freehold titles. The grants should be given only to the efficient producers after assessing their productivity and efficient usage of lands. This assessment helps to minimize the negative effects of granting lands to settlers and landholders who do not use their lands efficiently, eventually leading to further fragmentation of land. In any case, subdivision of an allotment should be constrained

to a minimum of one acre extent for lowlands and ¼ acre for highlands. As mentioned earlier, there should be measures to manage the negative social consequences of land titling such as giving loans to settlers who had mortgaged their lands to settle the previous mortgage commitments.

4.3.2 The arable lands under state ownership should be alienated based on the sustainability of the activities proposed by the enterprising farmers instead of just keeping them idle under the state. The alienated lands should be monitored to some extent while granting sufficient freedom to the owners in terms of managing the land efficiently and enhancing productivity. The leasing of large tracts of land to private firms can improve the productivity of the land through economies of scale while also enabling those firms to support peasant farmers by providing employment opportunities. Programs and support services should be offered to both small and big cultivators to enhance their capabilities to improve the productivity of the land.

4.4 Protection of land rights and tenure

4.4.1 The protection of tenants should be given priority and there should be a policy framework to ensure this. Tenants should be protected from being marginalized, whether socially or politically. Policy must be formulated to enable the continuation of farming activities by tenants without any disruption or if that is not possible an alternative way of generating income should be arranged for them in case they become involved in lawsuits arising from their informal transactions.

4.5 Land fragmentation

4.5.1 The fragmentation of land should be discouraged by not allowing shared inheritance of land. The land should be transferred to a successor by providing entitlement to any one of the family members or any person nominated by the current holder, who believes that his nominee is capable of continuing the cultivation productively and without degrading the land. The fragmentation of land by partitioning among the family members should be restricted by imposing a minimum land extent for the divided plots.

4.5.2 Any new land settlement schemes should allow the utilization of lands productively for other purposes too, without restricting it solely for agricultural purposes. At some point, rural youth will wish to get away from the agriculture sector and try to move to the industrial sector as that may provide a higher and more sustainable income. As they may not like to use the lowlands for agricultural purposes they may well try to use these inherited lands for settlement purposes, inevitably leading to the fragmentation of agricultural lands. To provide solutions for this scenario and control the fragmentation of land, it is advisable for the state to introduce and launch affordable housing schemes in the form of housing clusters or flats for the rural youth, who come from the lower strata of society. By doing so, the state will not have to bear the burden of costly operations involved in finding solutions to problems raised by LDO grantees with regard to the development of the allotments. This will be a good solution for the numerous and diverse problems that arise between the state and the grantees during the land alienation process at the tail-ends. Therefore, it is important to create an attractive landscape for future generations so they can live without suffering the burden of having to spend a lifetime trying to solve their housing problem. Stipulating a minimum plot size to avoid fragmentation of land into impracticably small sizes is also recommended.

4.6 Other needed changes in the Acts

4.6.1State the jurisdiction of the Agrarian Tribunal, Commissioner General and Provincial High Courts in resolving matters related to land owner-tenant disputes in Section 18 of Agrarian Services Act, No. 58 of 1979. (See court case 1 for details). Section 7 of the Agrarian Development Act and Sections 5 and 9 of the Agrarian Services Act (See Case 3).

4.6.2 Agrarian Development Act No. 26 of 2000 does not state the rights of the Commissioner in deciding whether a person is a tenant or not. It should be included in the Act which authority (if Commissioner) has the jurisdiction to verify the tenancy claims by a person in case the claimant fails to submit documentary evidence for the same.

4.6.3This case is similar to the case as mentioned earlier (Case 5), where the Law mentioned when the owner can take the title for the land which is under Statutory Determination but failed to state the actions allowed after the decision was made until Statutory Determination is published in the Gazette. The Law does not stipulate time period allowed to lapse after the decision until Statutory Determination is published in the Gazette. Further, the Law does not state how to act if the owner passes away during this period or what actions can be done during this period by the owner in terms of maintaining his title or transferring the title.

4.6.4 The Mahaweli Act created in 1979 to accelerate the process by acquiring land quickly, carrying out project development activities and, land settlements. The Mahaweli Authority is vested in power to acquire land bypassing the Land Acquisition Act. At present this is not needed anymore as all the proposed projects under the Mahaweli Development Program has been completed.

4.6.5 The Mahaweli Act can carry out the following even before the Parliamentary approval is extended: Maintaining any office or stores outside any Special Area, executing outside any Special Area any such work as may be necessary for the discharge of its functions under the Act. While this autonomy facilitated the acceleration of the Mahaweli Development Programme, it should be repealed now. Different regulations in different areas of the country hamper national planning.

4.7Other suggestions

4.7.1Land information should be public information to attract investments in agriculture. Right now, there is no such public portal or place, a potential investor could obtain information on, where and the extents of State land available for lease and rent.

4.7.2Farm lands may be organized via land cooperatives. The land owners are members of the land cooperative. If a land owner wishes to sell the land, he/she should inform it to the cooperative and the members of the cooperative may purchase it. Hence, the land will remain under the management of the cooperatives. Informal communal land management practices such as thattumaru and kattimaru could be formalized via land cooperatives.

4.7.3 Necessary amendments should be made to the Irrigation Ordinance so that all provisions under it are spelled out correctly and comprehensively. The ordinance should provide a complete list of irrigation offenses, give clear definitions of major and minor irrigation works, list the regulations covering catchment management and riverine management, and explain how farmer organizations may be mobilized to act against the irrigation offenders.

4.7.4The lands under the State should be alienated based on the sustainable activities proposed by the private enterprises rather than acquiring most of the arable land to the State. The provided lands should be monitored while giving flexibility to the owners in terms of managing the land efficiently to enhance productivity. The provision of land to private firms to improve the productivity of the land by economies of scale should consider whether those firms can support the rural communities by providing employment opportunities.

4.7.5The encroachment in reserved areas should be strictly regulated and fully avoided while encroachments in the settlement areas need to be considered whether such encroachment of the State land leads to efficient use in areas where the lands are abandoned. In such a case it is advisable to consider the aspect of granting permission to the encroachers under the supervision of the State for some period before giving the ownership or evict them from the lands. It is more advisable to prevent encroachment rather than taking action after the encroachments.

4.7.6 The Department of Agrarian Development categorizes paddy lands into three groups as A, B and C (explain the process by stating the purpose for which a particular group may be released and if so under what conditions). The

categorization procedure is not scientific though and as such the technical and environmental assessments need to be done more comprehensively by the experts. Demarcations of the land groups A, B, and C must be clearly done according to the specified conditions for each group.

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Annexures

Annexure 1: Land Capability Classes

Classes		Exacting Crops
I	Cs > 90	Excellent
II	70 < Cs < 90	Very Suitable
III	50 < Cs < 70	Suitable
IV	35 < Cs < 50	Moderately Suitable
V	20 < Cs < 35	Slightly Suitable
VI	20 < Cs	Unsuitable

Annexure 2: Ratings for Profile Development

	Profile Development	Rating
1	Absence of diagnostic subsurface horizons (A-C profiles), or profiles with cambic or argillic horizon but with a CEC > 24 cmol (+) kg^{-1} clay	100
2	Cambic or argillic horizon with CEC < 24 cmol (+) kg^{-1} clay and a Munsell chroma ≤ 4	95
3	Argillic horizon with a good structure, a CEC < 24 cmol (+) kg^{-1} clay, a Munsell chroma > 4 and > 50% clay cutans on ped faces	90
4	Argillic horizon with a good structure, a CEC < 24 cmol (+) kg^{-1} clay, a Munsell chroma > 4 and < 50% clay cutans on ped faces	85
5	Oxic horizon with some (good) structure and some patchy clay skins	80
6	Oxic horizon with weak structure and almost without patchy clay skins	75
7	Oxic horizon with weak structure but having a net negative change	65
8	Oxic horizon with a very weak structure, a bleached A2 (E) horizon and/or a positive change	55

Annexure 3: Ratings for Soil Texture

Textural Class	-15% coarse fragments (*)	Ratings					
		More than 15% coarse fragments					
		Rock fragments		Laterite fragments		Quarts	
		Gravelly (1)	Very gravelly (2)	Gravelly (1)	Very gravelly (2)	Gravelly (1)	Very gravelly (2)
Clay (0-2µ + 75	75	85	60	80	60	-	-
Clay > 60 - 75	90	100	65	95	60	-	-
C < 60, SiC	100	90	75	85	60	-	-
SiCL	95	85	70	80	60	70	50
CL	90	80	65	75	55	65	50
SiL, Si	85	75	65	70	50	60	50
SC	80	70	60	65	50	55	50
L	75	70	60	65	50	55	50
SCL	70	65	55	60	50	50	45
SL	60	55	50	50	45	45	40
LS	50	45	40	40	35	35	30
S	40	35	30	30	25	25	20
(1) 15 – 40% Coarse fragments							
(2) 40 – 90% Coarse fragments							
(*) Coarse fragments expressed in weight percentages							

Annexure 4: Ratings for Soil Depth

Depth (cm)	Ratings	
	Perennial with deep rooting systems	Annual with superficial root system
+120	100	100
80-120	85	100
50-80	70	85
20-50	50	70
-20	30	50

Annexure 5: Ratings for Soil Colour

Colour* - Drainage class	Ratings	
	Annual crops	Perennial crops
Red, well drained; (5yr and redder)	100	100
Yellow, well drained; (yellow than 5YR and no mottling in upper 120cm)	95	95
Moderately well drained; (Whatever the colour, mottling between 80 and 100 cm)	90	80
Imperfectly drained; (mottling between 40 and 80 cm)	75	60
Poorly drained; (mottling between 0 and 40 cm)	60	40
Very poorly drained; (reduced horizon in upper part)	50	25
*colours: Moist		

Annexure 6: Base Saturation

pH and Ca saturation	Ratings
1. Ph 5.8 and higher in A and B (Sat > 50%)	100
2. pH less than 5.8 in B (Sat < 50%)	
a. topsoil more than 5.8 (Sat > 50%)	95
b. topsoil 5.2 – 5.8 (Sat 35-50%)	90
c. topsoil 4.6 – 5.2 (Sat 15-35%)	75
d. topsoil less than 4.6 (Sat < 15%)	60

Annexure 7: Development of Organic Soil

Thickness classes (in cm) of the dark coloured topsoil			Ratings
Savannah	Forest	Cultivated	
-	> 10	-	125
> 20	5 -10	-	120
10 – 20	-	> 20	110
5 – 10	2 – 5	10 – 20	100
2 – 5 (continuous)	-	5 – 10	80
2 – 5 (discontinuous)	-	< 5	60
< 2	-	-	40