

Evaluating New Towns in the Context of Mega Projects

A Case Study of the Mahaweli Architectural Unit, Sri Lanka (1983-1989)

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Abstract

This research examines new towns constructed for the Mahaweli Development Project (MDP) — a mega dam project — begun in the 1960s, which involved a comprehensive resettlement programme that impacted approximately 1 million people, consisting of compulsory and voluntary re-settlers, and the traditional inhabitants. The key goal was sustainable agricultural reform, powered by hydro-electricity, to generate national economic stability. The initial 30 year MDP was accelerated to 6 years in 1977, and has attracted significant national and international interdisciplinary scholarship which tends to focus on the economic dimensions of the project. However, only a handful of studies examine the new towns designed by the Mahaweli Architectural Unit (MAU); a government initiative under the accelerated MDP, which designed and built 12 new towns between 1983 and 1989, from the perspective of architecture and urban design.

The research analyses the design of these new towns in relation to the principles, policies and aspirations of the MDP, and, most significantly, socio-cultural assessment reports produced at the initial stages, which were comprehensive in their scope. These reports made specific recommendations about physical planning principles, and identified concerns about the full implications of population redistribution amidst established multi-ethnic settlements in the Dry-Zone. These same reports underpinned the revised brief presented to the MAU. To evaluate the new towns in the light of these recommendations, this paper draws on archival material at the Mahaweli Archives in Colombo and recent field work in four new Mahaweli towns (Girandurukotte, Dehiattakandiya, Digana and Karalliyadda). The research is also informed by the reflective retrospective writings of the key architects of the MAU and an interview with one of them.

The research argues that the MAU embraced the MDP initiative to build sustainable new towns with a certain degree of success. The MAU, which engaged local and foreign architects, instigated a new paradigm of urban design practice in Sri Lanka. However, while the vernacular language employed sought to serve the community and promote urban growth at a rural scale, notable failures can be attributed to the apparent disregard for the detailed assessments and planning recommendations provided to the MAU, despite the rigor of the sociological reports and the architects' argument for a people-centred design approach.

With the advantage of hindsight, this research reflects on the lessons that can be learned, in retrospect, from this ambitious initiative which sought to create sustainable new towns in Sri Lanka in a period of profound political, economic and environmental change. Given the recent trend of the mega dam related resettlement programmes; increasing concern for resettled peoples and renewed emphasis on addressing sociological and environmental impacts, and the escalating number of large scale infrastructure projects in developing countries, and crises ranging from climate change to ethnic conflict — the global reality today — which force displacement, resettlement and redistribution of people, the findings of this research inform understanding of planning, design and implementation in future initiatives. This modest research renews emphasis on the importance of sociological concerns as a key dimension of sustainable development.

Declaration

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PROGRAM: **Master of Philosophy**

I certify that this work contains no material which has been accepted for the award of any other degree or diploma in my name in any university or other tertiary institution and, to the best of my knowledge and belief, contains no materials previously published or written by another person, except where due reference has been made in the text.

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The help and kindness of many individuals and organizations enabled me to undertake the research in Sri Lanka, including in remote locations. Particularly I would like to say '*bohoma sthuthiy*' to my former colleagues and friends Mr. Attanayake and Mr. Leelanada, for introducing me and building the connection with the Mahaweli Authority of Sri Lanka. I am very grateful to Mr Anura Dissanayake (DG), Mr Padmasiri Premakumara (DDG), and their staff at the Mahaweli Authority including Mr C Wellappili, Ms P Thalagala, Ms Chandrika Rajapakse, Ms Geetha Irangani, Ms Jayanthi Thenuwara, Ms Mangala Wijayadasa, Ms Indika, Ms Yamuna, among many others for granting access to the archival materials and for going out of their way to find those 'long lost' drawings and books which have gathered dust for many years if not decades. Special thanks should go to the officers at the regional Mahaweli RPM offices, who helped immensely in the field work.

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Table of Contents

<i>Abstract</i>	<i>i</i>
<i>Declaration</i>	<i>iii</i>
<i>Acknowledgements</i>	<i>v</i>
<i>List of Figures</i>	<i>xi</i>
<i>List of Tables</i>	<i>xv</i>
<i>List of Abbreviations</i>	<i>xvii</i>

Chapter 1: Introduction

<i>Overview</i>	1
1.1 The MAU and the History of Resettlement in Sri Lanka	3
1.2 The Context and the Scholarship	4
1.2.1 Research on the MDP and the Mahaweli Resettlements	4
1.2.2 The MAU and the Discourse of Urban Design in Sri Lanka	6
1.2.3 The MAU in Hindsight: Reflections by the Architects	7
1.3 The Gap in Knowledge	8
1.3.1 Research Questions	8
1.3.2 Aims and Method	9
1.4 Significance of the Research	10
1.5 Limitations of the Research	11
1.6 Structure of the Dissertation	13

PART I: THE MDP, MEGA PROJECTS AND RESETTLEMENT

Chapter 2: The Mahaweli Development Project

<i>Overview</i>	17
2.1 Sri Lanka and the Mahaweli River	17
2.1.1 Topography and Agro-climatic Zones	17
2.1.2 Demography	19
2.1.3 The Mahaweli River	20
2.2 The Mahaweli Project and the Resettlement Programme	22
2.2.1 Initiation, Operation and Outcomes of the Mahaweli Project	22
2.2.2 Resettlement Schemes under the Mahaweli Project	27
2.3 The MAU within the Mahaweli Project	29
<i>Summary</i>	30

Chapter 3: Theoretical Perspectives, Models and Frameworks

<i>Overview</i>	31
3.1 Cities and Towns	32
3.2 Central Place Theory	34
3.3 Impact Assessment Frameworks	38
3.3.1 Mahaweli Resettlement Surveys and Reports	39
3.3.2 Environmental Impact Assessments (EIAs) of the MDP	42
3.3.3 Social Impact Assessments (SIAs)	46
3.3.4 Social Impact Assessments (SIAs) Related to the MDP	48
3.4 Mahaweli Recommendations in Sociological Studies	51
3.4.1 UNDP/FAO (Barnabas) Study	53
3.4.2 Sogreah Study	55
3.4.3 Hunting Study	56
3.4.4 NEDECO Study	57
3.4.5 Some Aspects of Mahaweli Sociological Studies compared to SIAs	58
<i>Summary</i>	59

Chapter 4: Mega Dam Projects

<i>Overview</i>	61
4.1 Development Strategies: Past and Present	62
4.1.1 Early Mega Dam Projects	62
4.1.2 Mega Dams in Industrializing Countries	68
4.1.3 What are Mega Dam Projects?	70
4.2 From 'Mega' to 'Monster' projects	72
4.2.1 Dam Projects as Key Development Tools	73
4.2.2 From Good to Bad and Bad to Worse	76
4.2.3 A Controversial Debate	79
4.2.4 Current Trends	85
<i>Summary</i>	87

Chapter 5: Resettlement

<i>Overview</i>	89
5.1 Displacement and Resettlement associated with Mega Dam Projects	89
5.1.1 Displacement: Some Facts and Figures	90
5.1.2 Resettlements: Socio-Cultural, Economic and Environmental Concerns	94
5.2 Urbanisation and Rural Development: a Goal of Mega Projects	97
5.2.1 Resettlement Projects as Rural Development Instruments	98
5.2.2 Economic Opportunities in Resettlement Projects	99
5.3 Future Trends in Resettlements	101
<i>Summary</i>	103

PART II: ANALYSIS AND EVALUATION

Chapter 6: An Overview of Resettlement in Sri Lanka

<i>Overview</i>	107
6.1 State Sponsored Resettlement and Political Events	107
6.2 Resettlement and the National Policy Framework	110
6.2.1 Agrarian Development vs. Population Growth	110
6.2.2 Dry Zone Resettlement	112
6.2.3 Direction of Dry Zone Resettlement Schemes	115
6.2.4 Legal Provisions and the Process of Resettling within the Institutional Framework	117
6.3 The Physical and Socio-Cultural Parameters of the Project Area	119
6.3.1 Traditional Villages	119
6.3.2 Rural Townships	125
6.3.3 New Villages	126
6.3.4 Colonization Schemes	126
6.4 Resettlement Schemes and the Post-Colonial Planning Discourse in Sri Lanka	127
<i>Summary</i>	129

Chapter 7: The MAU and the Mahaweli Towns

<i>Overview</i>	131
7.1 The MAU and the AMP	131
7.1.1 Political Priorities and the Formation of the MAU	131
7.1.2 UlrikPlesner and the Formation of the MAU	134
7.1.3 The MAU (1983-1989) and its Operation	142
7.2 MAU Design Principles	154
7.2.1 Pre-MAU Design Principles and the MAU Response	154
7.2.2 A 'People Centred' Approach	155
7.2.3 Relationship of the MAU to the Overall Mahaweli Project	157
7.3 Physical Layout	160
7.3.1 Mahaweli Settlement Model	161
7.3.2 Models for Mahaweli Townships	174
7.4 New MAU Towns	181
7.4.1 The MAU Principles for Designing Towns	181
7.4.2 The MAU Towns	184
7.4.3 Mahaweli Buildings	205
7.4.4 Reflective Observations on the MAU Towns and Buildings	215
<i>Summary</i>	225

Chapter 8: Discussion

<i>Overview</i>	227
8.1 The MAU Design Responses in the MDP Context	228
8.1.1 Design and Concept Problems	228
8.1.2 Sociological Aspects	230
8.1.3 External Factors and Systemic Faults	234
8.1.4 Lost Opportunities	237
8.2 Significance of the MAU within the Pragmatic Architecture and Urban Design Discourse of Sri Lanka	239
8.3 Lessons Learned	245
<i>Summary</i>	247

Chapter 9: Conclusions 249

<i>Selected Bibliography</i>	253
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<i>Appendix I:</i>	<i>Interview Questions for Dr. Nihal Perera</i>
	<i>Interview Consent by Dr. Nihal Perera</i>
	<i>University of Adelaide HREC Approval</i>
<i>Appendix II:</i>	<i>Some Facts and Figures about Mega Projects</i>
<i>Appendix III:</i>	<i>World Bank Involuntary Resettlement Policies</i>

List of Figures

Figure 1.1	Mahaweli Development Project	2
Figure 2.1	Location of Sri Lanka	17
Figure 2.2	Topography and Agro-climatic Zones of Sri Lanka, and the MDP Area	19
Figure 2.3	Mahaweli River and its Basin, its Main Tributaries and other Main Rivers of Sri Lanka	21
Figure 2.4	AMP Area, Dams and Reservoirs	25
Figure 2.5	Settlements under the MDP	27
Figure 2.6	Mahaweli Towns	29
Figure 3.1	Ideal and Real Ranges of a Central Place Function	35
Figure 3.2	Market System of Central Places according to Christaller showing 5 of the Levels	36
Figure 3.3	Three Different Arrangements of Central Places	37
Figure 3.4	Major Reservoirs, Villus and Mangrove Swamps of the Mahaweli Basin	44
Figure 3.5	Representation of the Link between Poverty and Environmental Degradation in Mahaweli Resettlements	46
Figure 3.6	Interrelationships between Environment, Socio-cultural and Economic impacts in Mahaweli Resettlements	51
Figure 4.1	A Memoir	65
Figure 4.2	Kentucky Dam on Tennessee River in Tennessee River Valley	66
Figure 4.3	Norris Dam, United States. The First Dam Built by the Tennessee Valley Authority	67
Figure 4.4	The High Aswan Dam	69
Figure 4.5	Rate of Large Dam Building, 1950- 1986	71
Figure 4.6	Single-purpose Dams (27,982) or 71.4 % of Large Dams	73
Figure 4.7	Multipurpose Dams (9,752) or 24.9 % of Large Dams	73
Figure 4.8	Number and Purpose of Large Dams	74
Figure 4.9	Kariba Dam on Zambezi, Zambia	76
Figure 4.10	Five Key Decision Points- A Comprehensive Frame Work for Decision Making on Water and Energy Services Identified in the WCD	84
Figure 5.1	Traditional Fishing in the Xingu River, Brazil	93
Figure 6.1	Economic Activity in 1976	112

Figure 6.2	Population Density in 1976	113
Figure 6.3	Ethnic Composition in 1976	114
Figure 6.4	Migration of the Kingdoms of Sri Lanka (in Mahaweli Project Area)	114
Figure 6.5	Schematic Representation of a Dry Zone Tank Based Traditional Village	121
Figure 6.6	Schematic Representations of Different Traditional Villages: Dry Zone and Hill-country Villages	121
Figure 6.7	Traditional Dry Zone Village	122
Figure 6.8	Traditional Hill Country Village	122
Figure 6.9	Traditional Wet Zone Village	122
Figure 6.10	Rural Township	125
Figure 6.11	Settler Housing - Temporary and Semi-permanent	128
Figure 7.1	Secular Buildings - <i>Ambalama</i> and the Bridge	137
Figure 7.2	Vernacular Buildings - Dwellings	138
Figure 7.3	Vernacular Buildings - Buddhist Temples and Hindu Kovils	139
Figure 7.4	Colonial Influence	140
Figure 7.5	The MAU within the MECA Organizational Structure	143
Figure 7.6	The MAU Chart of Projects	145
Figure 7.7	The MAU Job Descriptions	147
Figure 7.8	The MAU Work Program 1	149
Figure 7.9	The MAU Work Program 2	151
Figure 7.10	Mahaweli Towns including MAU Towns	159
Figure 7.11	Townships in System 'C'	160
Figure 7.12	Types of Rural Agricultural Settlement Systems	161
Figure 7.13	Traditional Compact Housing Clusters	162
Figure 7.14	Layout Pattern of Settlement	164
Figure 7.15	Summary of Sogreah Settlement Planning Policies	164
Figure 7.16	System H - Typical Settlement	165
Figure 7.17	Diagram of the Spatial Organization of Settlements in a Region	166
Figure 7.18	MDB Standards for Infrastructure Services	167
Figure 7.19	Mahaweli Town Spatial Model	168
Figure 7.20	Distribution of Services by Rank of Centre	169
Figure 7.21	Recommended Central Places in System C	170
Figure 7.22	System C in the Mahaweli Project	171
Figure 7.23	Mahaweli System 'C' settlement	171

Figure 7.24	Proposed Layout for Town	175
Figure 7.25	Scale Comparison - Girandurukotte and Kandy	176
Figure 7.26	Girandurukotte Plan	177
Figure 7.27	Plan of Girandurukotte - Legend	178
Figure 7.28	Landscape Pattern and Road Network of Girandurukotte	179
Figure 7.29	Dehiattakandiya Plan - Proposed by the Hunting Consultants	180
Figure 7.30	Dehiattakandiya Township Plan - MAU	187
Figure 7.31	Dehiattakandiya Township - Google Maps	189
Figure 7.32	Girandurukotte Township Plan - MAU	191
Figure 7.33	Girandurukotte Township- Google Maps	193
Figure 7.34	Digana Township Plan - MAU	197
Figure 7.35	Digana Township- Google Maps	199
Figure 7.36	Karalliyadda Township Plan - MAU	201
Figure 7.37	Karalliyadda Township - Google Maps	203
Figure 7.38	Model Core House - Hunting Report	206
Figure 7.39	Low Cost Housing Proposed by the MAU	206
Figure 7.40	Experimental Core-House Built in 1984 by the MAU	206
Figure 7.41	One of Many Low Cost House Plans Prepared by the MAU	207
Figure 7.42	Typical Dry Zone Farmer's House	208
Figure 7.43	Traditional Dry Zone Housing Design	208
Figure 7.44	Mahaweli Shops - Dehiattakandiya	209
Figure 7.45	Mahaweli Shops - Plans	211
Figure 7.46	' <i>Walawwa</i> '	214
Figure 7.47	A Colonial Inspired Building, Sri Lanka	214
Figure 7.48	Dehiattakandiya Post Office Plan- Designed By the MAU	215
Figure 7.49	Welikanda Residential Project Manager's Office Designed by the MAU	215
Figure 7.50	The Main Street of a Typical Township - Dambulla Town	216
Figure 7.51	The Main Street of a Pre-MAU Township - Thalawa Town	216
Figure 7.52	The Main Street of an MAU Township - Dehiattakandiya Town	216
Figure 7.53	Distinctive and Personalised Shop Fronts	217
Figure 7.54	Unplanned Commercial Activity	218
Figure 7.55	Entrances to the Townships	219
Figure 7.56	Entrances to the Townships	219
Figure 7.57	Inappropriate or Under Used Places and Spaces in Townships	221

Figure 7.58	New Buildings, Building Modifications, Colourful Buildings not compliant with the MAU Guidelines, Observed in the MAU Towns	222
Figure 7.59	Comparison of Towns: an MAU Township, a Typical Sri Lankan Town in the Past, a Typical Sri Lankan Town in the Present and a Pre-MAU Township	224

List of Tables

Table 1.1	A Historical Overview of Resettlement in Sri Lanka	3
Table 2.1	Key Information of the AMP Sub Projects	25
Table 2.2	Statistical Data and Progress of Resettlements in the Mahaweli Systems	28
Table 5.1	Active World Bank Projects with Resettlement, including Number of People Displaced	90
Table 5.2	Distribution of Displacees by Cause of Displacement in the World Bank Projects	91
Table 6.1	Timeline of State Sponsored Resettlement in Sri Lanka	108

List of Abbreviations

AMP	Accelerated Mahaweli Project
CECB	Central Engineering Consultancy Bureau
CPT	Central Place Theory
FAO	Food and Agriculture Organization
ICOLD	International Commission on Large Dams
IRN	International Rivers Network
MAU	Mahaweli Architectural Unit
MASL	Mahaweli Authority of Sri Lanka
MDB	Mahaweli Development Board
MDP	Mahaweli Development Project
MEA	Mahaweli Economic Agency
MECA	Mahaweli Engineering and Construction Agency
NEDECO	Netherlands Engineering Consultancy
PMU	Planning and Monitoring Unit
PWD	Public Works Department
PPD	Project Planning Division
SLFP	Sri Lanka Freedom Party
TAMS	Tippetts-Abbett-McCarthy-Stratton
TVA	Tennessee Valley Authority
UF	United Front
UNP	United National Party
UN	United Nations
UNDP/SF	United Nations Development Program/ Special Fund
USA	United State of America
USAID	United Sates Agency for International Development
WRD	World Register of Dams
WCD	World Commission on Dams

Chapter 1. Introduction

*A reservoir is the antithesis of a river –
the essence of a river is that it flows,
the essence of a reservoir is that it is still.*

Patrick McCully, *Silenced Rivers: the ecology and politics of large dams*, (UK: Zed Press, 1996), 10.

Overview

The Mahaweli Development Project (henceforth: MDP) is one of the most significant multi-dimensional infrastructure projects ventured in post-independent Sri Lanka. The Project comprised a complex reservoir and canal network which was constructed to irrigate the dry zone of Sri Lanka [Figure 1.1]. The primary purpose of the MDP was to reform economic and socio-cultural development, including; the attainment of agricultural self-sufficiency through increased rice production; the production of hydro-electricity to meet increasing energy demands; the creation of new employment opportunities related to agriculture and related services; the implementation of rural infrastructure development; and the redistribution of the population through new settlement programs. Since its implementation, the project has had an unprecedented impact on all aspects of the country and its people owing to its immense scale. The MDP has generated significant local and international interdisciplinary research. The majority of studies focus on the economic impact of the MDP although there are only a handful of studies which focus on the settlements. This present study focuses on the design of new towns built as a key component of the MDP resettlement process.

Under the MDP, a comprehensive resettlement process was implemented which involved approximately 1 million people. The process involved the design of new settlements and modification to existing settlements to accommodate displaced people (as a result of the irrigation network) as well as people who relocated voluntarily. The latter was promoted to redistribute the nation's population inland and to further stimulate agriculture and rural infrastructure development. Since the 1980s, these resettlement schemes have instigated a new paradigm of regional planning and urban design practice in Sri Lanka. 12 new towns were designed and built by the Mahaweli Architectural Unit (MAU), a unit operated under the MDP comprising local and expat architects who were responsible for planning, designing and constructing towns and buildings between 1983 and 1989. The establishment of the MAU, which was solely responsible for the town design and the design of individual buildings had no

precedent in Sri Lanka. This initiative also had no precedent in the context of international mega-dam projects. However, the work of the MAU has not received sufficient scholarly attention in the disciplines of architecture or urban design. Given the limited number of studies, this research focuses on the MAU and the towns they built. The primary aim is to evaluate the work of the MAU in terms of the recommendations, particularly sociological, prepared by the Mahaweli Project authorities. Recognizing the increasing number of mega projects in developing countries, the findings from this case study are intended to offer insight into more sustainable planning, design and implementation practices and policies for new settlements and townships.

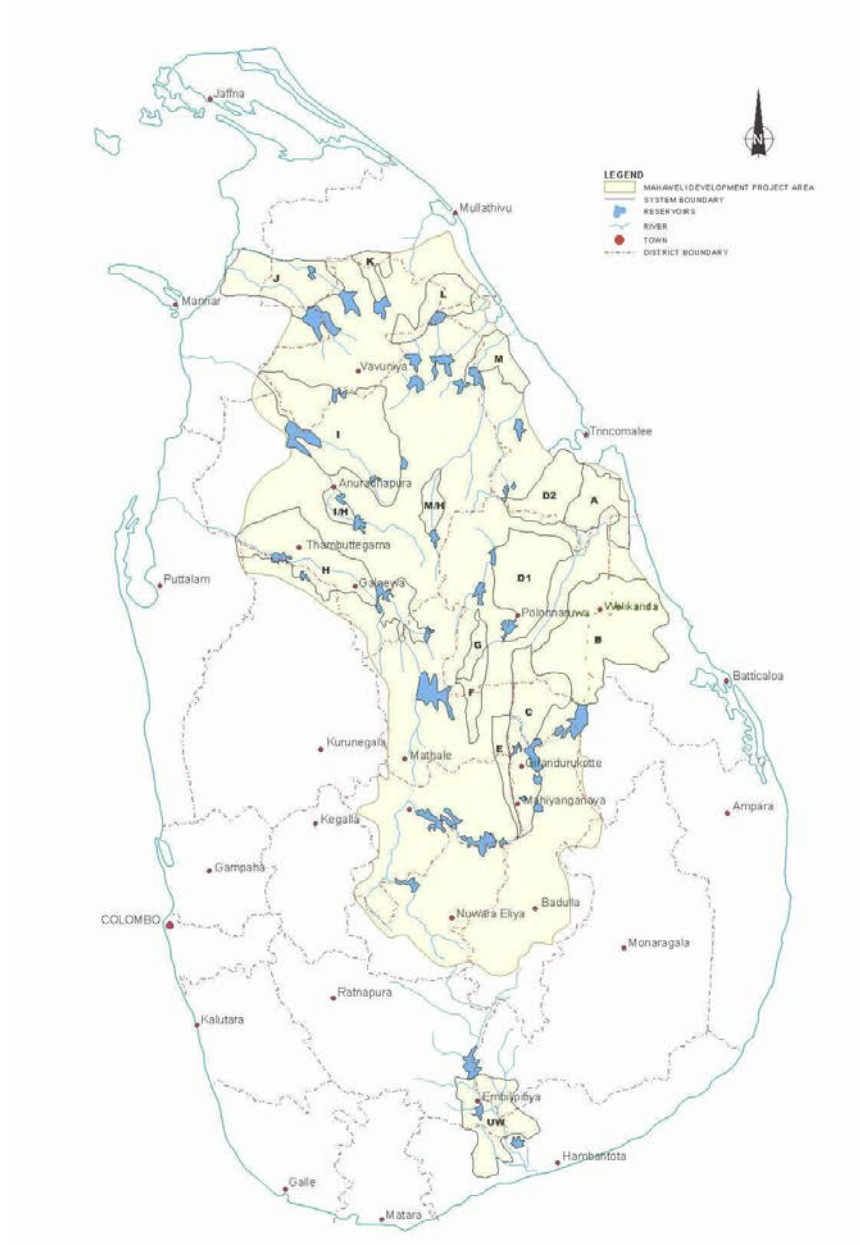


Figure 1.1 Mahaweli Development Project (Mahaweli Authority of Sri Lanka, accessed July 20, 2016, <http://mahaweli.gov.lk/en/maps.html>, Mahaweli maps.)

The chapter consists of 6 sections. The first section is a tabulated brief history of resettlement in Sri Lanka. It follows the introduction to crucial literature which underpins the analysis of this dissertation. The gap in the research and research questions are identified in the third section, the significance of the research is explored in the fourth section and limitations of the research are discussed in the fifth section. The final section outlines the structure of the dissertation.

1.1 The MAU and the History of Resettlement in Sri Lanka

An overview of history of Sri Lanka in relation to state sponsored resettlement, relevant political events, the MDP and the formation of the MAU, is provided succinctly in the following table (Table 1.1).

Table 1.1 a Historical Overview of Resettlement in Sri Lanka

Time/period	Event
Approx. 1500 BC	Known history of the country begins in the Dry Zone of Sri Lanka with the arrival of Indo-Aryans who conquered the Indigenous peoples
12 th Century BC	Kingdoms moved out of the Dry Zone due to various reasons including invasions by South Indians
1505	Invasion by the Portuguese
	Invasion by the Dutch
1840	Entire island became a British Colony
1890s	Earliest attempts of resettlement in the Dry Zone by the Colonial government
1948	Dominion Independence granted
1953	Gal-Oya: major pre-Mahaweli irrigation and settlement scheme
1963	Pre-investment survey of the Mahaweli Development Project
1969	Uda-Walawe: major pre-Mahaweli irrigation and settlement scheme
1970	Establishment of the Mahaweli Development Board (MDB) and inauguration of the 30 year Mahaweli Development Project (MDP)
1972	Dominion of Ceylon obtained complete independence
1977	Change of government policy to globally oriented liberalised economy and accelerated (6 year) Mahaweli Project (AMP)
1979	Establishment of Mahaweli Authority of Sri Lanka (MASL)
1983	Establishment of the Mahaweli Architectural Unit (MAU)
1983-1989	MAU built 12 towns

It is necessary to provide an introduction to the MAU, its works and Mahaweli towns, and the significance of the MAU in the urban design discourse in Sri Lanka very briefly at this point. Convened in 1983, by the Minister for Mahaweli Development, the MAU built 12 towns, some of them from scratch while others were extensively modified. The MAU designed and built the basic urban facilities in the towns including schools and hospitals and also, core buildings for commercial activities. These towns were inspired by traditional rural town design and the buildings were influenced by the vernacular architectural language.

The design of these towns is unique in the post-colonial Sri Lankan context due to the emulation of vernacular building types, the integration of natural elements and the landscape design using local species. The MAU is significant in the mega dam discourse as well as Sri Lankan architectural discourse. The formation of a unit dedicated to the design of towns and buildings is a rare occurrence in mega dam related resettlements. It is the first time in post-colonial Sri Lanka, too, that an organization was set up to design urban spaces in the rural regional context. Thus, the operation of the MAU deserves scholarly attention and the towns designed by the MAU represent a benchmark in Sri Lankan urban design that has not attracted due consideration, locally or internationally.

1.2 The Context and the Scholarship

This section reviews research conducted on the MDP with particular attention to research related to the Mahaweli settlements, Mahaweli towns and the Mahaweli Architectural Unit (MAU).

1.2.1 Research on the MDP and the Mahaweli Resettlements

The MDP generated significant local and international interdisciplinary research. From the early stage, the economic impacts of the overall project have received the most attention in independent scholarship and sponsored research. The Accelerated Mahaweli Project (AMP), ushered in with a change of government, attracted criticism in these research, due to the political motives and the failure to realise the many stated objectives of the project. Indeed, only one of the major objectives of the project has been achieved to date; self-sufficiency in terms of rice

production.¹ As a result of this project, the population increased by about 1 million people in the dry zone within a very short time and unemployment drastically rose in the area. Land ownership practices also contributed to unemployment problems which impacted future generations economically and sociologically. Rice monoculture has generated environmental issues such as pest problems, water pollution and soil degradation, and economic problems such as inadequate labour supply. The environment of the Mahaweli project area was severely impacted also due to other planning and implementation issues including excessive clearance of lands.² The project affected geological stability of the island, especially the hill country, due to construction of massive dams and reservoirs which stored huge volumes of water. The acceleration of the project, together with the over estimation of benefits and the underestimation of costs, and many other factors such as underlying political interventions, long-term debts, poor land ownership policies, poor irrigation practices, poor institutional framework and lack of future opportunities has escalated the poverty of the settlers in the project area and the country, despite the intended overall benefits. These are only some of the issues of a variety of problems caused by the project as per the various research findings.³

Another area of the MDP related research is, the critical analysis of the Mahaweli reports prepared during the planning stage, including project proposals, plans and recommendations. Extensively analysed are economic⁴ and environmental reports, although sociological reports

¹ The Central Bank and The People's Bank of Sri Lanka have sponsored a series of studies from as early as 1974 employing foreign experts such as Ragnhild Lund and Jan Lundquist. The studies were concentrated on various topics including economics, trade, community and cooperative organizations and gender issues. Prominent independent scholars include, economists such as H.N.S. Karunatilake, Satchi Ponnambalam and Rainer Schickele.

² Thayer Scudder played a significant role in the project as a consultant advisor upon appointment by the USAID from 1979 to 1989 and again from 1998 to 2001. He has conducted research on the resettlements in a number of case studies.

³ H.N.S. Karunatilake, *the Accelerated Mahaweli Programme and its Impact*, 1st Ed. (Colombo: Centre for Demographic and Socio-Economic Studies, 1988.); Namika Raby and Douglas J., Merrey, *Professional Management in Irrigation Systems: A Case Study of Performance Control in Mahaweli System H, Sri Lanka*, IIMI Country Paper, Sri Lanka No. 1 (Colombo: International Irrigation Management Institute, 1989.); Rainer Schickele, "The Mahaweli Scheme- Success of Failure," *Ceylon Papers, on Agricultural Development and Economic Progress* (Agricultural Development Council, 1969.); Rainer Schickele, "Towards a Progressive Theory of Land Tenure," *Ceylon Papers, on Agricultural Development and Economic Progress* (Agricultural Development Council, 1969.); S.A.B. Ekanayake, "Location Specificity, Settler Type and Productive Efficiency: A Study of the Mahaweli project in Sri Lanka," *Rural Development Working Paper*, 86/11 (Canberra: The Australian National University, 1986.); Satchi Ponnambalam, *Dependant Capitalism in Crisis, the Sri Lanka Economy, 1948-1980* (London: Zed Press, 1981.); *Sri Lanka: Mahaweli Ganga Development, Independent Evaluation Group-the World Bank Group* (2012), accessed January 1, 2015, <http://lnweb90.worldbank.org/oed/oeddoclib.nsf/DocUNIDViewForJavaSearch/0D869807701D1EEE852567F5005D8903#top>; Thayer Scudder, *The Future of Large Dams, Dealing with Social, Environmental Institutional and Political Costs*, (London: Earthscan, 2005.)

⁴ Here the prominent researchers in the field include, Karunatilake, Ponnambalam and Schickele among others.

are analysed limitedly, which is surprising given the large number of people involved and resettled. According to these analyses, detailed environmental assessment reports have been prepared for the MDP. However, environmental issues were largely ignored or side-lined in both the Master Plan stage as well as in implementation. The miscalculation of data crucial for projects, such as technical, and population data, in these initial reports was a major issue, which significantly influenced the overall success in terms of planning, cost and technical aspects.⁵

A considerable number of studies focused on particularly the settlements, in varying aspects, such as economic conditions, technical aspects of water and irrigation, the bureaucratic and administrative framework etc.⁶ yet, socio-cultural aspects of the settlements received little attention in commissioned or independent research. The major social impact was the transition of the traditional society, from small isolated village societies to production oriented colonization schemes, the loss of traditional values and the loss of social cohesion within small, kinship based villages.⁷ Despite the evolution of this project over 40 years, intriguingly, little attention was given to the formal character, facilities and infrastructure, and the social impact of the design of the settlements.

1.2.2 The MAU and the Discourse of Urban Design in Sri Lanka

A limited number of scholars have examined the physical planning of the Mahaweli Settlements. M.W.J.G. Mendis studied the planning implications of the MDP for his Master's Degree in 1973, which was the first on the physical planning of the resettlements.⁸ He conducted a critical analysis of the physical layout of the settlements proposed in the initial Master Plan. His work offered an important precedent for the very few future studies which examined the planning of the resettlements and served as an important benchmark for subsequent studies as cited by Perera, Nigamuni and Rajapakse.⁹

⁵ Modak and Biswas extensively evaluated Environmental Impact Assessment reports on the MDP, in Prasad Modak and Asit K. Biswas, *Conducting Environmental Impact Assessment in Developing Countries*, (United Nations University Press, 1999): 284-298. Also, Scudder criticized the MDP for ignorance of the environmental aspects substantially, in his book *The Future of Large Dams*.

⁶ Examples for researchers include Namika Raby and Douglas J. Merrey on irrigation management, S.A.B. Ekanayake on productive efficiency and R. Lund on women of the resettlements, among many others.

⁷ A widely-cited study, which is very important in basically environmental aspect of the project was conducted by TAMS in 1980; the report included a section on human environment. TAMS Report: *Environmental Assessment: Accelerated Mahaweli Development Program: Section L*, TAMS, New York (1980).

⁸ M.W.J.G. Mendis, *The Planning Implication of the Mahaweli Development Project in Sri Lanka* (Colombo: Lakehouse Investments Limited, 1973).

⁹ Amanda C. Rajapakse, "Analysis of the Mahaweli Towns of Digana and Karalliyadda- Sri Lanka" (paper presented at the Emerging South Asian Urban Design Practices and Paradigms Conference at the Centre for Housing Planning and Building, Colombo, 7-9 June 2007); K.K. Nigamuni, "a Study of Urban Centres in System

This dissertation is based on literature available at the archives of the Mahaweli Authority, Colombo, at libraries of other government institutions in Colombo and libraries of Universities of Melbourne and Adelaide and online literature. As observed in this research, only 3 independent research conducted on the Mahaweli townships could be found through these resources. Moreover, they are limited to research papers presented at conferences, or articles that have not been peer reviewed. These articles authored by Architects are; the first by Shanthi Jayewardena - a short article published in *Mimar* in 1988, reviewing MAU works and recommending MAU work to be extended to settler house planning in addition to urban design; the second is by Thamal Udumulla, who analysed the present condition of the Dehiattakandiya Township which was published in the "Sri Lanka Architects" periodical journal in 2000 in which he reflects the use of the elements of the town by the general public observing some are very much underutilised; the third is an analysis of two Mahaweli town plans, Digana and Karalliyadda, conducted by Amanda Rajapakse in 2005 which was presented in an international urban design conference in which she had concluded that the Mahaweli towns have changed the urban design course of Sri Lanka by introducing new and unique design approach, but with an obvious conceptual mismatch with the context. ¹⁰

1.2.3 The MAU in Hindsight: Reflections by the Architects

However, most notable writings on the MAU were produced by Architect Nihal Perera and Architect Ulrik Plesner.¹¹ Perera and Plesner were the key designers responsible for the MAU settlements and they have both written retrospectively on their experiences. Their writings provide a valuable insight into the intentions of the MAU and its work.

In his 2010 article, Perera revisited his experience with the MAU as the Chief Architect-Planner and reflected the planning and development process of the Mahaweli towns with reference to archival material and interviews with key contributors of the MAU past and present. Perera

'C' of the Mahaweli Development Scheme" (M.Sc. diss., University of Moratuwa- Moratuwa, 1994/95); N.S. Perera, "a Critical Evaluation of the Proposed Locations of the Townships in 'System B' of the Mahaweli Development Project" (M.Sc. diss., University of Moratuwa- Moratuwa, 1980/82).

¹⁰ Rajapakse, "Analysis of the Mahaweli Towns", 219-240; Shanti Jayewardene, "Mahaweli Development Programme, Sri Lanka", *Mimar 28: Architecture in Development* (Singapore: Concept Media Ltd., 1988): 33-39; Thamal Udumulla, "Dehiattakandiya: Sri Lankan Experience of Developing a New Town", *SLA Journal*, 102, 1 (1999/2000): 42-45;

¹¹ Nihal Perera, "When Planning Ideas Land: Mahaweli's People Centred Approach", in *Crossing Borders: International Exchange and Planning Practices* ed. Patsy Healey and Robert Upton (London: Routledge, 2010): 140-172; Ulrik Plesner, the Mahaweli Buildings, *Living Architecture*, No. 5, (1986). 84-88; Ulrik Plesner, *In Situ*, (Hong Kong: Aristo, 2010).

states the MAU approach to the design process was “a people centred” one where towns were created for the ‘present’ rather than for the ‘future’. They were expected to initiate, guide and develop spontaneously after they were implemented.

Ulrik Plesner, the Danish consultant for the MAU, wrote about the MAU initiatives in 1986 and 2012. He reflected on his experience at the MAU and the guiding principles of design he adopted and developed for the MAU. According to Plesner, Mahaweli towns should be places that people use, which would grow with the people and would be ultimately loved by people.

These retrospective writings of Perera and Plesner provide important insight into the MAU and then inform the analysis part of this dissertation.

1.3 The Gap in Knowledge

This very brief overview of the existing literature indicates that settlement has not been studied sufficiently. The importance of research is intensified by the fact that a large number of people has been resettled and new towns were constructed, impacting a large rural area of Sri Lanka, in every aspect particularly in the physical layout and the socio-cultural perspective. Towns play a major role in any human habitat as service centres. Therefore, a significant need to investigate the settlements to gain insight into more sustainable planning and urban design strategies and the implementation of future settlements, particularly in developing countries is needed.

Mahaweli sociological surveys recommended wellbeing of the settlers and how they can be integrated into local fabric of life. The MAU played an important part in regard to designing towns to serve the re-settlers as well as the traditional inhabitants. However, the MAU's work in relation to recommendations, goals and objectives of the MDP, its approach to design and how the Mahaweli towns have grown and established in the rural Mahaweli area is not independently researched. Therefore, this research tries to fill that gap in knowledge, which would help in sustainable and effective directions in future resettlements.

1.3.1 Research Questions

This study is motivated by the hypothesis that, despite the many admirable goals of the Mahaweli Project and the positive impact on economic development in Sri Lanka, the present-

day settlements, created as a part of the Accelerated Mahaweli Project, do not meet the stipulated goals, and particularly those of the Mahaweli Architectural Unit (MAU).

Through a critical examination of archival material documenting the project, 40 years after its inception, this research project seeks to address the following questions.

1. What were the goals of the Mahaweli Project, in relation to
 - a) Resettlement strategies,
 - b) The urban design of the settlements,
 - c) Settlers' socio-cultural wellbeing?
2. What is the MAU's
 - a) Design philosophy,
 - b) Response to prevailing design principles,
 - c) Architectural language of the dwellings?
3. Have these goals been implemented?
4. What can we learn about the relationship between urban design and resettlement with a view to future mega-projects in developing countries?

1.3.2 Aims and Method

Through a critical evaluation of archival materials, critical studies of the MAUs work, and the contemporary social, political and environmental context, considered in relation to the discourse of resettlement design and planning, this research project aims to:

- understand the original resettlement goals of the MDP and evaluate the materialisation of these resettlement goals today (particularly in relation to environmental, economic and socio-political concerns) through a critical comparison of these goals and outcomes, which helps in,
- gaining critical understanding of resettlement processes in relation to urban design, planning, and implementation in order to provide insight for future mega-projects that inevitably involve resettlement in developing countries particularly in the present context.

This research specifically is an archival based study, in which the available literature on resettlements, Mahaweli Master Plans, proposals and recommendations, research findings and discussions on Mahaweli resettlements, and materials produced by the MAU were critically evaluated and discussed. As mentioned before, the writings of the MAU architects, Nihal

Perera's and Ulrik Plesner's, were also critically evaluated, and Nihal Perera was interviewed to gain more insight into the MAU and its work according to the ethics approval by the University of Adelaide Human Research Ethics Committee, Approval H-2015-055, which was conducted on 23 April, 2016 (interview questions and the consent form are in the Appendix I).¹² The field work in 4 Mahaweli towns - which were designed and constructed by the MAU - were very valuable for the critical observations of the present state of the towns. Due to the lack of research material and archival material, the project is exploratory and expected to establish the basis for further research.

1.4 Significance of the Research

This research project will produce knowledge which helps to understand the design approach to resettlement which is lacking in the context of mega dam projects. In addition, research of this kind is recommended by the scholars who have studied the Mahaweli resettlements. For example, the constant learning of the changes of the Mahaweli towns, Rajapakse claims, "highlights the need for constantly evolving new urban paradigms and practices that accommodates/ supports or rejects the impact of preconditioning".¹³ This is further strengthened by Scudder, who claims, that "there is strong evidence that the resettlement component has failed, due to economic, political and religious issues mostly derived from the forces outside the project" and concluding, "the settler poverty and lack of multiplier effect is the one reason why it is so important to carefully analyse and learn from Mahaweli case".¹⁴

Mahaweli Project – a mega project - was created at a time when these projects were very significant in the world. Mega projects were very popular and glorified in the last century as "the development strategy" for achieving multi-purposes of economic and social development.¹⁵ In the present context, worldwide, large populations are displaced for various reasons, including

¹² This recent interview provided much value for the research, as it re-affirmed, what Dr. Nihal Perera has written hindsight. However, this research would have been much more comprehensive if there was an opportunity to interview the inhabitants of the Mahaweli settlement. Unfortunately, the time constraint of this Masters research did not provide that opportunity. As Perera rightly claims in the 'Introduction' of his new book *People's Places*, "our knowledge of the spaces ordinary people produce for and through their everyday activities and cultural practices is minimal", a ground level exploration will show how these people have occupied, modified and negotiated the spaces of the Mahaweli towns in their everyday lives. Nihal Perera, *People's Places*, (New York and Abingdon: Routledge, 2016), 1-19.

¹³ Rajapakse, "analysis of the Mahaweli Towns", 220.

¹⁴ Scudder, *the Future of Large Dams*, 142, 143 & 167

¹⁵ Scudder, *the Future of Large Dams*, 5

mega- infrastructure projects, civil conflicts and wars, and the looming effects of environmental change, and are forced to relocate. The problem of resettling is growing and so are the attempts of major development projects and other issues mentioned.¹⁶ Building new settlements and towns is necessary to resettle voluntary and involuntary re-settlers. An important question to ask who desire to make a change for better, particularly by the project authorities and planners, is whether the re-settlers have actually upgraded their lives compared to their original circumstances in the various resettlement projects attempted globally.¹⁷

Mega projects as well as resettlement planning and design are studied constantly, so the vast body of knowledge is growing, which is apparent by ongoing research based on large infrastructure projects. Sorensen in her much appreciated and cited sociological study - which she conducted by 'participating in social life on a full time basis' in Hamlet No. 7 of the Mahaweli System H, and analysed in depth, the challenges the re-settlers face, and emergence and evolution of strategy to face life by re-settlers on a sociological point of view - declares that resettlement is a process of evolution,¹⁸ whereby the entire process takes at least two generations.¹⁹ Therefore this retrospective research on the Mahaweli Project and resettlement, as a 'mature' project, with more than 40 years history and three consecutive generations is expected to be a timely study which can enrich critical debate about architectural and urban design in the context of mega-projects.

1.5 Limitations of the Research

The major limitation as a whole for this research was the lack of prior research focusing on the architecture and urban design dimensions of the MDP, and the according gap in relevant research findings and literature related to the MAU and design of the Mahaweli Towns. Therefore, this research has necessarily been a very pragmatic but pioneering exercise in primary archival exploration and documentary field work and observation.

¹⁶ *Losing Your Home: Assessing the Impacts of Eviction* (Nairobi: UNHABITAT, 2011): 1.

¹⁷ C.J. De Wet, *moving Together, Drifting Apart: Betterment Planning and Villagisation in a South African Homeland* (Johannesburg: Witwatersand University Press, 1995): 1-2.

¹⁸ Birgitte R. Sorensen, *Relocated Lives: Displacement and Resettlement within the Mahaweli Project, Sri Lanka* (Amsterdam: VU University Press, 1996), 4.

¹⁹ Scudder, *the Future of Large Dams*, 32

Conducting research in Sri Lanka today still poses challenges more or less typical to a developing country. This applies more so for archival research. The records available were not properly stored, categorised or catalogued which made research difficult and time consuming. Organising archives is difficult due to limited resources, space and funds in these government institutions and preserving these material is not considered a priority due to lack of understanding of the value of these materials. There is little effort taken to digitise the manually drawn drawings, produced by the MAU on fragile drawing/parchment papers. Therefore, much of the drawings were no longer available, as some of them were destroyed or damaged in the poorly maintained MASL storage without proper conditions to weather nearly 30 long years from the time of MAU's operation. This dissolution of the archives parallels the dereliction of the built projects, which is inherent for politically motivated mega-projects in developing countries, particularly with consecutive political changes. Red-tape and some gate-keepers, particularly in government organisations, were the other issues. Contacts and personal connections of the researcher within the MASL and the architectural community were put to good use in retrieving records which might otherwise have been impossible to access.

Apart from the skype-based interview with Nihal Perera, due to strict constraints on the duration and scope of this MPhil (Masters Level) research project, it was not feasible to collect first-hand information through interviews or surveys of stakeholders. The study would have been more comprehensive if had been possible, for instance, to gather and interpret the experience, views and thoughts of the re-settlers, who are the ultimate users of these towns, and of business/ shop owners and other workers who keep the towns alive. Ideally, such a larger study would also have surveyed the officers within the MASL, either in Colombo or regionally based, who are involved in administering these towns and have their ears close to the ground - the first contact with the communities - thus maintain close relationships with them.

It should be noted that, the nature of the drawings and/or documents on sociological surveys that the MAU might/might not have conducted, is not certain. The fact that none were available in the MASL, or elsewhere, could be due to many reasons, as stated above, which were beyond the control of the MAU itself. However, it is certain that, even if such studies were available, they clearly could not alter the present context of the MAU towns. The evidence supported the interpretations this research has arrived at, but acknowledging the limitations of the 'available resources' with which this exploratory pilot research project was conducted, it is fair to state that the findings remain less than conclusive, pending further research.

As a whole, the MAU and the Mahaweli towns are not sufficiently researched, thus this 40 years' retrospective study is important to learn from the resettlements and recommendations today, as ever, in the context of ever increasing number of mega infrastructure projects and associated resettlements. Learning from this current study, which is based on the existing archival drawings and first-hand analysis of the towns in the light of recommendations prepared prior to the formation of the MAU, and the secondary literature, is particularly important as it produces knowledge which would help in future design approaches related to resettlements. However, this small research shows the importance and the need, for further research, based on the first-hand information through interviews and surveys of a range of stakeholders, to be informed in a larger and more comprehensive manner in the design of the resettlements.

1.6 Structure of the Dissertation

This dissertation is divided into 2 main parts. The first part identifies the context of the MAU within the phenomenon of mega projects more generally and examines existing scholarship on these topics. The second part comprises analysis and discussion of the MAU's work between 1983 and 1989.

Part I includes chapters 2 to 5. The Mahaweli Project, its resettlements and the MAU are introduced in Chapter 2. In Chapter 3, theories and research frameworks related to the study are explored and effective flag statements for the evaluation are established. Chapters 4 and 5 contextualise MAU within mega dam projects and related resettlements internationally in an effort to understand the applicable lessons of the MDP and, specifically, the MAU.

Part II includes chapters 6 to 9. Chapter 6 introduces the resettlement history of Sri Lanka and locates the Mahaweli Project and the MAU within this context. Chapter 7 contains the evaluation of the Mahaweli planning recommendations and the MAU's approach to design and construction based on the analysis of the town designs and other relevant drawings produced by the MAU. The discussion of the research is included in the Chapter 8. Finally, the conclusions and recommendations for future research are in chapter 9.

PART I

THE MDP, MEGA PROJECTS AND RESETTLEMENT

Chapter 2. The Mahaweli Development Project

Overview

The MDP is the most ambitious development project attempted in post-independent Sri Lanka. This multi-purpose project, which primarily sought self-sufficiency in rice and hydro-electricity, covered the largest area by a project, and involved resettling a large number of people. This chapter provides an overview of the context of the MDP.

The chapter comprises of three main sections. The first section includes a brief description about the country and the Mahaweli River. The second section describes the economic and political circumstances which led to the initiation and change of the MDP, while the final section gives some basic information about the Mahaweli Resettlements and the MAU.

2.1 Sri Lanka and the Mahaweli River

Sri Lanka is an island located in the Indian Ocean with an extent of 65 525 km² [Figure 2.1].



Figure 2.1 Location of Sri Lanka (“List of World Map Changes”, Wikipedia, modified July 23, 2016, https://en.wikipedia.org/wiki/List_of_world_map_changes.)

2.1.1 Topography and Agro-climatic Zones

For a small island, Sri Lanka shows much diversity in topography as well as climatically. There are three main topographical zones in Sri Lanka; the *Coastal Low Country*: elevations from sea

level to 270m; slopes small to flat; the *Mid Country*: elevations from 270m to 1060m, ridges and valley topography, 30% of the island, average slope varies from 10° to 35°; the *Central Hill Country*: elevation from 1060 to 2420m, well defined high plains and plateaus, characterizes the central part of the island.

Although Sri Lanka is generally known to be hot and humid, the climate is extremely variable across the land mass, due to its location near the equator (Latitudes 6°-10°N and Longitudes 79°- 82°E), its proximity to the massive Indian subcontinent, monsoonal circulation in South Asia, and the influence of the central mountainous region which is a sharp contrast to the south-west region and the rest of the island. The island can be divided into 3 main agro-climatic zones based on annual rainfall; dry zone, intermediate zone and wet one. The dry zone covers about 70% of the total land mass on the northern and eastern parts, and the wet zone covers the south-west including the lower part of the central hill country, while the intermediate zone is located in-between with intermediate climatic characteristics. Two monsoons bring rainfall to the country, entering the island from North-East and South-West. The wet zone receives a relatively higher mean annual rainfall (over 2,500mm) without a prominent dry period from both monsoons, while the dry zone receives rainfall of less than 1,750mm from the North-East monsoons. This brings a relatively lower rainfall resulting in a distinct dry spell from May to September. There is a considerable variation of temperature across the agro-climatic zones. For example, the average temperature in the coastal wet zone is 27° C. It decreases to about 20° C in the Mid Country and further drops to 13-16° C in the mountainous areas of the Hill Country. The entire dry zone consists of lowland plains, with the exception of a few isolated hills, and it has a mean annual temperature of 30°C, although the maximum temperature can occasionally exceed 37° C.¹

The MDP head works are located in the hill country, while resettlements are located primarily in the dry zone lowlands [Figure 2.2].

¹ B.V.R. Punyawardena, "Technical Report on the Characterization of the Agro-Ecological Context in which Farm Animal Genetic Resources (FAnGR) are found: Sri Lanka" (report submitted to the FAnGR Asia Project, 2004) 2-4, Accessed January 6, 2014, http://www.fangrasia.org/admin/admin_content/files/60202.pdf.

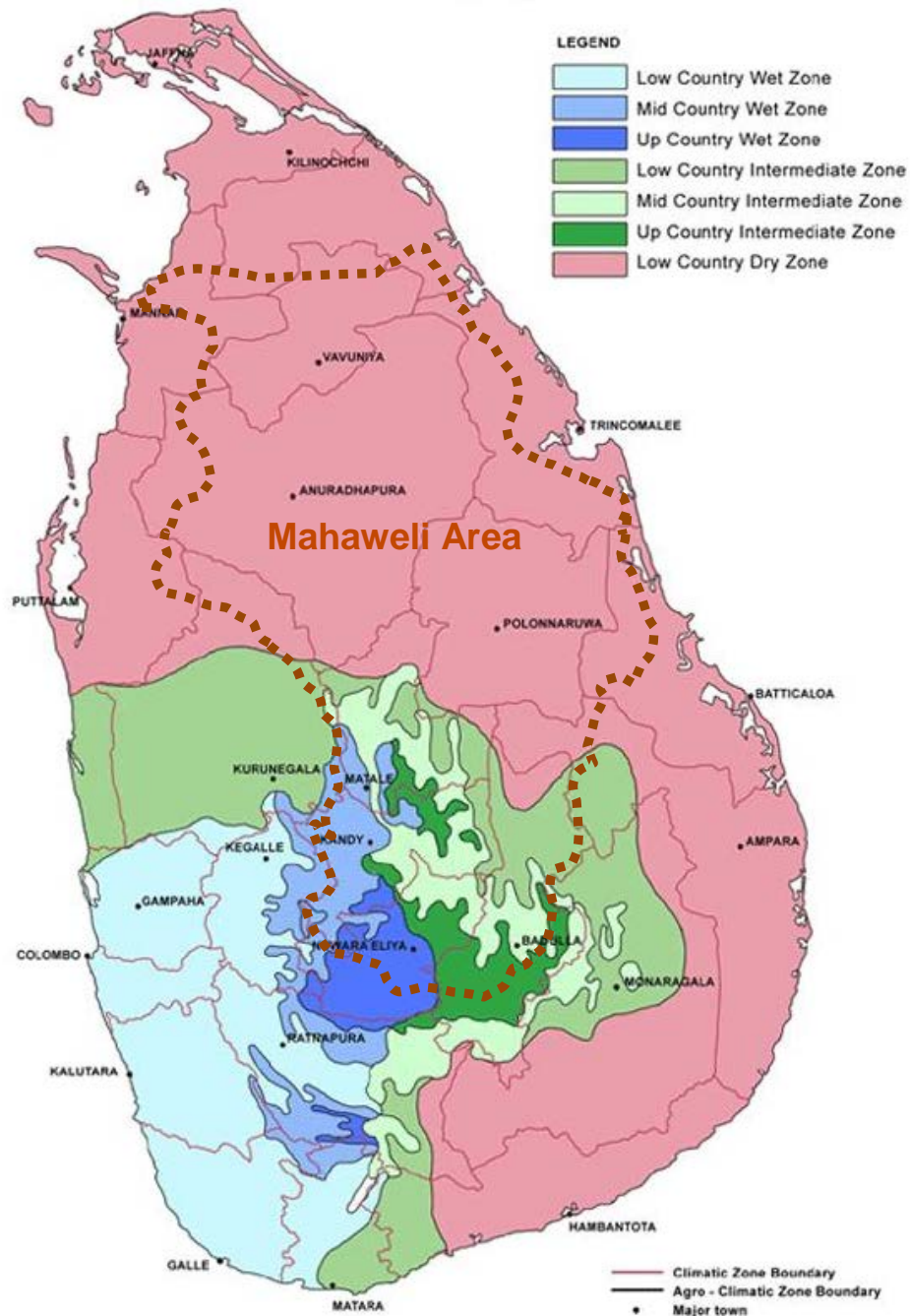


Figure 2.2 Topography and Agro-climatic Zones of Sri Lanka, and the MDP Area (Adopted from "Agro-climatic Zones", Wikigoviya, published January, 6, 2016, <http://www.wikigoviya.goviya.lk>.)

2.1.2 Demography

Sri Lanka is inhabited by diverse ethnic and religious groups although there is an underlying similarity among them due to interdependency and interrelations built on coexistence over many centuries. Yet, even among the same ethnic group, there are slight variations, such as cultural practices and food preferences due to the original location of the group, caste, social class etc.

The demographic profile of the Mahaweli Project area is diverse and complex, similar to the whole country, and influenced by historical events that changed the demographic mix over thousands of years.² The majority of people residing in the project area are Sinhalese Buddhists, who are believed to be of Indo-Aryan origin. The north and north-eastern fringes are inhabited by mostly Tamils of Indian origin who migrated to the region during different periods. Muslims, who have settled in the island primarily for the purpose of trade since the thirteenth century, are concentrated along the eastern coasts.³ A very small number of indigenous people, known as “Veddahs”, consisting of a few distinct tribes, also live in the project area.⁴ Sinhalese speak their own language called Sinhala while Tamils and Muslims mainly speak the Tamil language.

2.1.3 The Mahaweli River

The Mahaweli River, the longest river in Sri Lanka, originates in the wet zone in the Hatton plateau of the central mountains at a height of 1,400m above mean sea level. It flows northwards first through the mountain valleys and then takes a north-east turn to reach the sea at Trincomalee, completing a 331.7 km journey. The Mahaweli River is nurtured by a number of tributaries originating in both the dry zone and wet zone, due to which the river is assured of a large though fluctuating perennial flow. The river carries more than 20% of the total run-off of all the island’s rivers and drains more than 15% of the island’s land area. More importantly, it is the major source of water during the dry season in the dry zone (the river flows over 160km through the dry zone). For this reason, the Mahaweli River is particularly important historically, as the ancient civilization in this dry zone, which was based on complex and advanced cascade irrigation system, relied intensively on this river⁵ [Figure 2.3].

² Ethnic Structure of Sri Lanka in 1971: Sinhalese 72%, Sri Lankan Tamils 11.2%, Indian Tamils 9.3%, Sri Lankan Moors 0.2%, Indian Moors 0.4%, Burghers and Eurasians 0.4%, Malays 0.3%, Others 0.1% according to B.L.C. Johnson, and M.LeM. Scrivenor, *Sri Lanka: Land, people and Economy* (London: Heinemann Educational Books Ltd., 1981), 19.

³ S. Pathmanathan, *the Kingdom of Jaffna* (Colombo: Arul M. Rajendran, 1978), 2-3.

⁴ Gamini De S.G. Punchihewa, *Souvenirs of a Forgotten Heritage* (Colombo: Department of Information of Sri Lanka, 1989), 90; Siri Gamage, “The Destiny of Bintenna Veddahs: Incorporation Perspectives and Problems of Resettlement” in *Incorporation and rural Development*, ed. H. Heringa, U.L.J. Perera and A.J. Weeramunda (Colombo: International Conference on Incorporation and Rural Development, January 1984), 6.

⁵ Nalani Hennayake, *Culture, Politics and Development in Postcolonial Sri Lanka* (Lanham, MD: Lexington Books, 2006), 108-110.



Figure 2.3 Mahaweli River and its Basin, its Main Tributaries and other Main Rivers of Sri Lanka (Adopted from "River Map Sri Lanka", *La Historia Con Mapas*, accessed November 5, 2016, <http://www.lahistoriaconmapas.com/atlas/river-map/river-map-sri-lanka.htm>.)

2.2 The Mahaweli Project and the Resettlement Programme

Resettlement efforts, which were called “colonization schemes”, based on irrigation development projects have been tried in the dry zone since the latter part of the British regime as a response to economic problems such as increased population and the demand for food. Two major irrigation projects were operated in Sri Lanka by local leaders, after independence, prior to the Mahaweli Project. However, the Mahaweli Project was different to these projects, due to the input of western capital, knowledge, direction, model and skills.⁶ The Sri Lankan government negotiated foreign aid from multi-lateral agencies and Western countries through the intervention of the World Bank, as many other developing countries at the time,⁷ which implemented mega-projects similar to the MDP, such as India, Pakistan, Brazil and China. These projects displaced many people including the indigenous communities, many of them associated with controversial resettlement programmes. MDP too was associated with an extensive resettlement programme that has impacted the country and its people immensely.

2.2.1 Initiation, Operation and Outcomes of the Mahaweli Project

Scholars who have written about the MDP, such as Mendis and Karunatilake, documented the early history of the MDP. The original documentations such as *gazettes*, *parliament acts* and *circulars* related to the formation of the MDP, changes to the project and implementation, and master plans etc. were accessed in the Mahaweli Archives.

According to these sources, in 1963, the government of Sri Lanka requested the assistance of the United Nations Development Program/ Special Fund (UNDP/SF) for a pre-investment survey, which commenced in 1965. The final report was published in 1969 by the Food and Agriculture Organization (FAO) of the United Nations (UN) acting as the executive agency for the UNDP. According to the recommendations in the report, the government of Sri Lanka established the Mahaweli Development Board (MDB) by a *Parliament Act* in 1970 as the agency responsible for overall implementation of the project.⁸

From the outset, the project was multi-dimensional. The Board sought to find solutions to 3 key problems at the time:

⁶ Perera, “When Planning Ideas Land”, 141

⁷ Godfrey Gunatillake, “Development Policy regimes” in *Facets of Development of Sri Lanka since Independence: Socio-Political, Economic, Scientific and Cultural*, ed. W.D. Lakshman and C.A. Tisdell, (Brisbane: The University of Queensland, 1999), 196.

⁸ Mendis, *the Planning Implication*, 6.

1. Reduce costly dependence on rice imports (staple food)
2. Supply the increasing demand for energy
3. Redistribute the population from the overpopulated wet zone to the underpopulated dry zone thereby addressing the shortage of land in the wet zone for paddy cultivation ⁹

A complex reservoir and canal network system was proposed to irrigate the dry zone of Sri Lanka. A master plan was developed accordingly and 3 development phases were proposed within a 30-year time frame. Each phase consisted of a number of projects.

The political party in power was the United National Party (UNP) at the time of the proposal. Subsequently, the United Front (UF) led by the Sri Lanka Freedom Party (SLFP), implemented the first phase in 1970. This phase included the construction of the Polgolla Dam, the diversion tunnel and the channel system (to divert Mahaweli waters partially to the North-Central tank system including the tanks of Anuradhapura and Polonnaruwa cities), Ukuwela Power house and the Bowatenna Dam. This phase was completed in 1977 with 80% of the work completed of the Bowatenna Dam and according to Karunatilake (who has conducted extensive research on the economic implications of the Mahaweli Project), was considered to be the most remunerative stage of the whole project.¹⁰

1977 marked a new period in Sri Lankan political history. It also led to a radical reworking of the MDP timeline due to the major changes in government economic policy. The right of centre UNP government - who swept the elections of 1977 with a landslide 5/6th majority victory - riding on an economic liberalisation agenda 'to make Sri Lanka another Singapore', and backed by a new constitution that transferred enormous executive power to the newly formed presidency, as the head of state, overhauled the monetary and fiscal policies from a 'closed' to an 'open' more globally-oriented economy.¹¹ Along with a concomitant introduction of new labour laws, Sri Lanka had thus become the first south Asian country to embrace the liberal economic model that would be synonymous in the West over the next decade with the reforms of Ronald Reagan and Margaret Thatcher. This change brought a profound transformation, not only on the socio-economic platform, but in all aspects of the everyday life of the people. The industrial sector

⁹ Mendis, *the Planning Implications*, 6-7; See K.M.A. Kendaragama and T.M.J. Bandara, *Changes in Land Use Patterns in Paddy Lands*, accessed June 20, 2016, http://www.agrilearning.goviya.lk/Paddy/Paddy_Research/Paddy_pdf/SE1.pdf.

¹⁰ H.N.S. Karunatilake, *the Accelerated Mahaweli Programme and its Impact*, 1st ed. (Colombo: Centre for Demographic and Socio-Economic Studies, 1988), 42.

¹¹ Mick Moore, "the Ideological History of Sri Lankan Peasantry" in *Agrarian Change in Sri Lanka*, ed. J. Brow and J. Weeramunda (New Delhi: Sage Publications, 1992), 29-30.

was expected to develop quickly, thereby increasing the demand for energy rapidly. This economic factor and acute unemployment led to the acceleration of the MDP, to complete the remaining work within the next 6 years. During this same period, approximately 1.2 million people were unemployed. With an influx of 200,000 people for the workforce annually, acceleration of the project was further justified as the viable solution to create immediate jobs within the project and long term employment in agriculture and related services.¹²

With this impetus, the entire scheme was effectively revamped under the umbrella of the new Accelerated Mahaweli Project (AMP). The establishment of the MAU – the focus of the present case study – was a direct outcome of this new AMP. The Netherlands Engineering Consultancy (NEDECO) was invited by the government to carry out an evaluation of the project, following an initial review by the World Bank. The NEDECO team made substantial variations to the initial UNDP/FAO master plan and added 2 completely new projects. However, local funding was impossible due to high inflation tied to the liberation of economic policies. Financial assistance from foreign countries was essential. Some foreign countries had agreed to assist readily, in terms of financial donations and loans, upon the condition of using their expertise and construction companies.¹³

Under the initial programme, 15 dams and reservoirs were proposed on the Mahaweli River and its tributaries, 11 of these had nearby power stations and another power station was located on a trans-basin canal.¹⁴ Under the AMP, 6 projects were implemented – deemed the most advantageous and largest, but costly projects, to supply water to cultivate new and existing agricultural lands via 13 irrigation systems which were fed by a large reservoir or a major canal. The AMP was launched in November 1977. According to the Annual Report (1984),

*The objectives were, within five to six years, the construction of four major multi-purpose reservoirs for both irrigation and hydro-power generation, to provide irrigation and social infrastructure downstream on both the left and the right bank, to settle farmer families in their respective allotments, and to ensure agricultural production in the new lands brought under cultivation.*¹⁵

The four principal dams for reservoirs were Victoria, Kotmale, Maduru-Oya and Randenigala-Rantembe. The two irrigation reservoirs were Ulhitiya and Rathkinda. Downstream irrigation

¹² Karunatilake, *the Accelerated Mahaweli Programme*, 36.

¹³ Karunatilake, *the Accelerated Mahaweli Programme*, 33-40.

¹⁴ Mendis, *the Planning Implication*, 13

¹⁵ *Annual Report and Accounts 1984* (Colombo: Mahaweli Authority of Sri Lanka, 1985), 2.

water delivery networks were Minipe Anicut and Minipe Right Bank Trans-Basin Canal [Figure 2.4, Table 2.1].

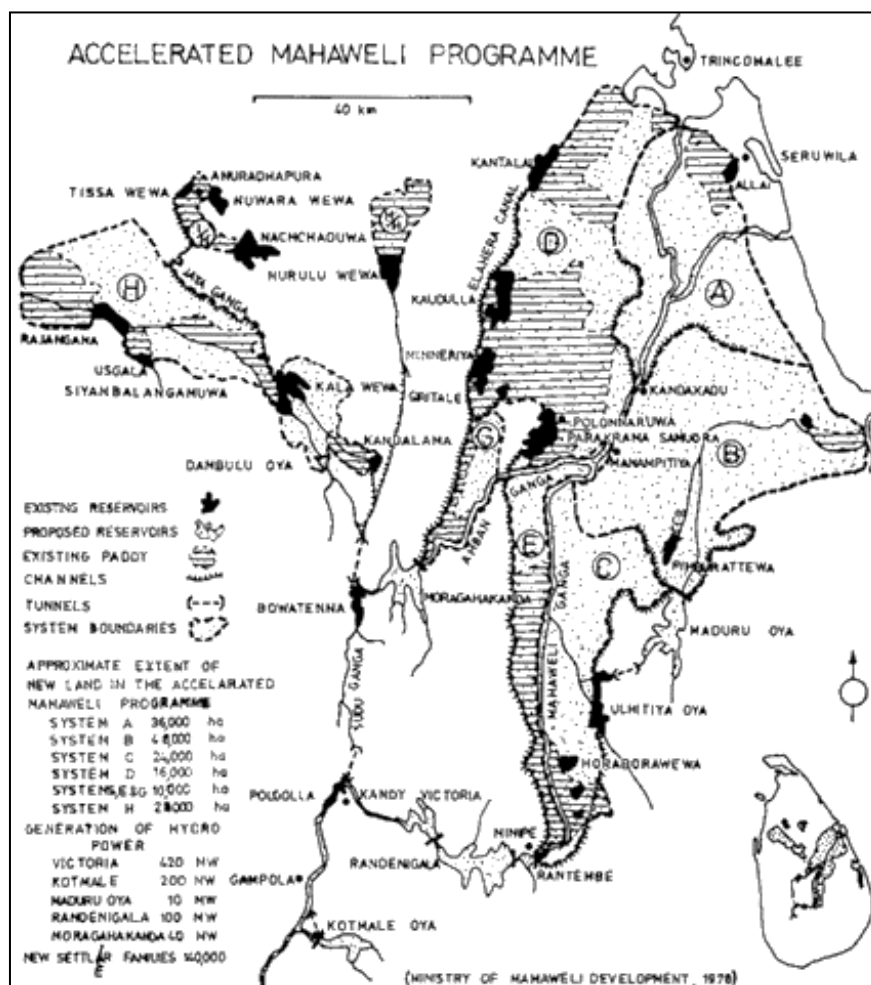


Figure 2.4 AMP Area, Dams and Reservoirs ("The Mahaweli Basin", FAO, accessed February 13, 2016, <http://www.fao.org/docrep/003/X6861E/X6861E10.htm>.)

Table 2.1 Key Information of the AMP Sub Projects¹⁶

Reservoir	Dam Ht (m)	Dam Length (m)	Donor Country	Funding (Rs. Mn.)		Gross Storage (MCM)	Generating Capacity (MW)
				Grants	Loans		
1. Victoria	122	520	United Kingdom	4,304	956	721	210
2. Kotmale	87	600	Sweden	4,482	1,220	172	201
3. Maduru Oya	41	1,090	Canada	665	1,305	597	-
4. Randenigala	94	485	West Germany	-	3,924	861	126
5. Rantembe	41.5	420				22	50

¹⁶ Adopted from *Mahaweli Statistical Handbook 2011*, (Colombo: Mahaweli Authority, 2012), 4.

The Mahaweli Project was the largest project undertaken in Sri Lanka until recent times. 30% of the national capital development funds were allocated at the outset. The initial estimated cost of Rs. 6.7 billion, substantially increased to 25 to 30 billion with the acceleration of the project.¹⁷ However, as Karunatilake claims, the actual project cost exceeded these figures due to various factors such as cost escalation, inflation, operational inefficiency and political mishandling. When the impact on the environment and the social pitfalls are considered, it is difficult to calculate the actual cost incurred to the country.¹⁸

The magnitude of the project is evident from the following figures.¹⁹ Initially the project required financial support amounting to Rs. 12 billion (USD 800 million):

- The project was intended to provide more than 70% of hydro-power supply, when completed
- The total area under the project was 2.53 million ha (55% of the Dry Zone, and 39% of the whole island)
- The aim was to irrigate approximately 365,000 hectares, of which 120,000 hectares were already partially cultivated
- Approximately 1.5 million people were to be resettled, of which 825,000 were people involved in agriculture or agriculture related activities

Victoria Dam was completed in January 1984. The inauguration was on the 12th April 1984 by the Rt. Hon. Margaret Thatcher, prime Minister of the United Kingdom. Kotmale Dam (Swedish funding) was completed in November 1984, Maduru-Oya Dam (Canadian funding) in July 1983 and Randenigala and Rantembe (Danish funding) in 1986. The Ulhitiya and Rathkinda reservoir works began in 1980 and were completed in 1983. Further downstream projects included, irrigation infrastructure, settlement of farmer families, on-farm development, agricultural production, road construction, and provision of social infrastructure such as health and education, banking and agricultural services.²⁰

¹⁷ Satchi Ponnambalam, *Dependant Capitalism in Crisis, the Sri Lanka Economy, 1948-1980* (London: Zed Press, 1981), 155.

¹⁸ Karunatilake, *the Accelerated Mahaweli Programme*, 155.

¹⁹ Sri Lankan Association for the Advancement of Science: Seminar on Mahaweli Development, 4-5 August 1978, cited in Jan Lundquist, *Trade and Formation of Sectors of Production: The Build-up of a Mahaweli Economy, A Study Paper* (Colombo: People's Bank, 1978), 1.

²⁰ *Annual Report and Accounts 1984*, (Colombo: Mahaweli Authority of Sri Lanka, 1985), 2-5.

2.2.2 Resettlement Schemes under the Mahaweli Project

The Mahaweli Project area was divided into 'hydrological Systems', each fed by either a large reservoir or a major canal.²¹ [Figure 2.5] Each system also referred to a resettlement scheme (System A, B, C etc.).

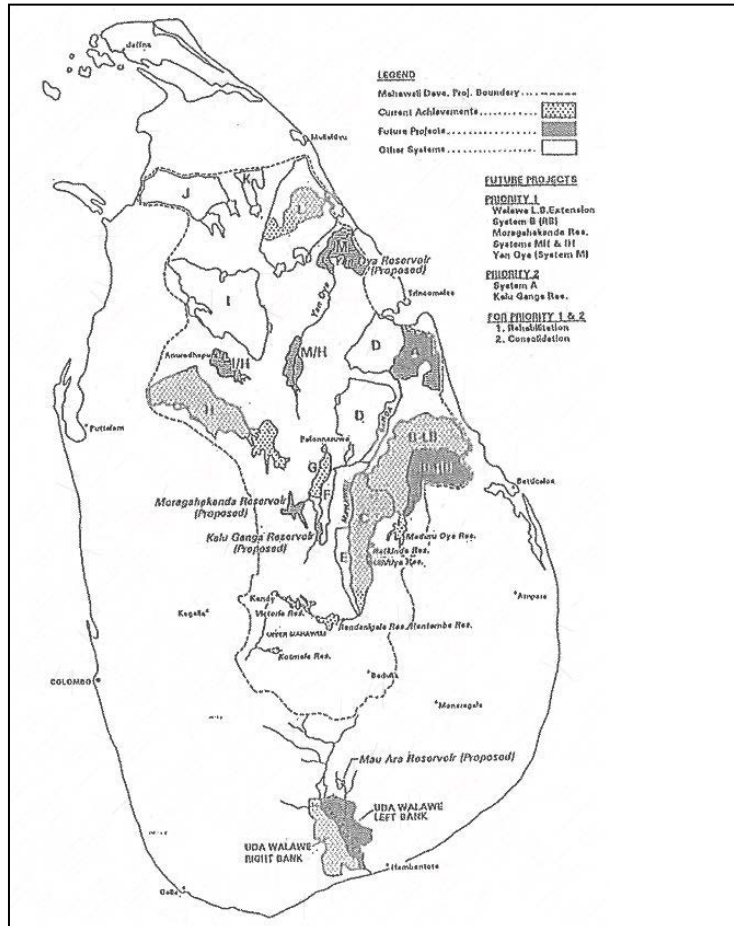


Figure 2.5 Settlements under the MDP (Moonasingha, *Ethics and social sustainability of Engineering Projects*, accessed February 13, 2016, http://moonasingha.yolasite.com/anand_civil-engineering_ethics.php.)

'System H' was the first settlement scheme established; which became a model, for the subsequent resettlements. The system entailed a package of central planning, implementation, management and monitoring.²² Presently, settlement is almost complete in systems, B, C, G, H, L, Upper Mahaweli system (including Kotmale, Victoria, Randenigala and Rantembe project evacuees) and Uda Walawe System²³ [Table 2.2].

²¹ Perera, "when Planning Ideas Land", 153.

²² Karunatilake, *the Accelerated Mahaweli Programme*, 146; *Survey of the economic conditions in the Mahaweli Development Area: 1974* (Colombo: The Central Bank of Ceylon, 1975), 9.

²³ Mahaweli Authority Web Site, accessed on January 19, 2015, <http://mahaweli.gov.lk/en/index.html>.

Table 2.2 Statistical Data and Progress of Resettlements in the Mahaweli Systems ²⁴

Mahaweli Systems/ Sub-projects	Target Families Resettled	Actual Families Resettled	Progress %	Estimated Population
Mahaweli Down Stream:				
B (Left Bank)	26,670	28,939	109	140,050
C	30,881	32,493	105	179,122
Moragahakanda / G	6,922	6,151	89	50,751
H	39,120	28,211	72	202,499
H - 1	8,573	8,183	95	
L	3,364	4,488	133	13,224
Uda Walawe:				243,156
Left Bank	28,702	23,227	81	
Right Bank	24,285	24,285	100	
(LB+RB) Total	52,987	47,512	90	
Sub Total	168,517	155,977	93	
Upper Mahaweli:				49,350
Kotmale	3,863	3,865	100	
Victoria	5,324	6,345	119	
Randenigala	66	66	100	
Rantambe	16	16	100	
Sub Total	9269	10,292	111	
Total	177,786	166,269	94	878,152

The Mahaweli Project precipitated compulsory relocation of “evacuees”, the people displaced from the areas inundated by reservoirs and other development works, as in the case of many mega dam projects world-wide. However, the schemes also housed voluntary re-settlers. The re-settlers included families from traditional villages in the project area and families from prior colonization schemes. Moreover, with the population redistribution a priority, poor families were also chosen from various parts of the country based on a points system.²⁵ This prioritised larger families (average is 6.49 compared to that of the traditional settlers which was 5.87)²⁶, experience in agriculture, and the age of the family members. However, Scudder claims, typical to developing countries, politics played a major role in the selection process and resulted in a clear bias which minimised the resettlement of minority groups.²⁷

²⁴ Adopted from the *Mahaweli Statistical Handbook 2011*.

²⁵ *Survey of the Economic Conditions in the Mahaweli Development Area, 1974, 27-36.*

²⁶ *Survey of the Economic Conditions in the Mahaweli Development Area, 1974, 27.*

²⁷ Scudder, *the Future of Large Dams*, 151, 170-172.

Resettlement was also reliant on the provision of rural infrastructure, another priority of the Mahaweli Project. Thus, existing towns were redeveloped and new towns were built from scratch. Due to these extensive works and the lack of expertise, the MAU was formed to enhance and accelerate this process. [Figure 2.6].

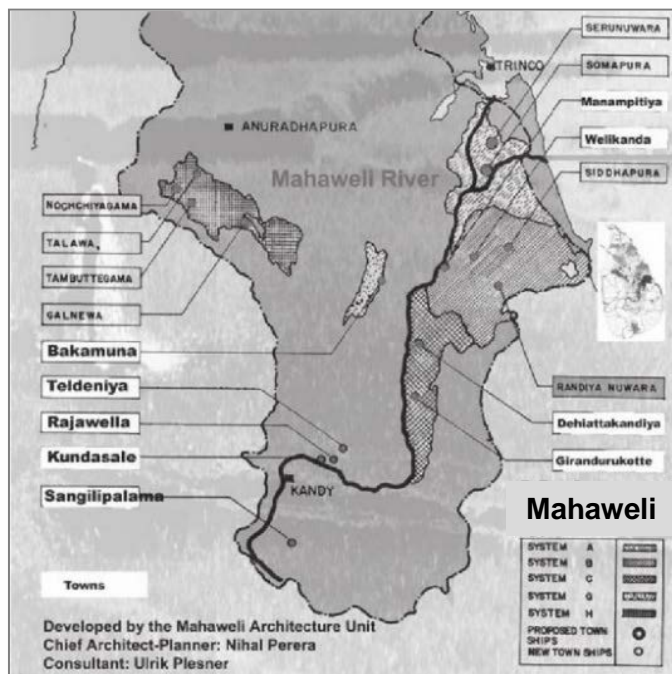


Figure 2.6 Mahaweli Towns (Nihal Perera, "When Planning Ideas Land", 142)

2.3 The MAU within the Mahaweli Project

The MAU was established under the umbrella of Mahaweli Authority of Sri Lanka (MASL) in 1983 as a special unit. It planned and built 12 towns, including new towns, between 1983 and 1989,²⁸ under the direction of Danish Architect Ulrik Plesner. At the outset, the unit comprised several architects, a surveyor, draftspersons and support staff.

It is important to understand the basic organizational structure of the MASL and the place of the MAU within it. At the initiation of the MDP, the organization responsible for the project was the MDB. The MDB was governed by the Central Engineering Consultancy Bureau (CECB) within the Ministry of Irrigation, Hydropower and Highways. With the acceleration of the project, MASL was established in 1979 for overall operations.²⁹ There are 2 main operational arms in the

²⁸ Perera, "when Planning Ideas Land", 141.

²⁹ *Annual Report and Accounts 1984*, 1.

MASL, Mahaweli Economic Agency (MEA) and Mahaweli Engineering and Construction Agency (MECA).

MEA, established in 1981, was the department responsible for the implementation of economic and community development programmes following construction. MECA was established in 1983 to manage planning, design and construction works in the downstream areas related to irrigation and social infrastructure.³⁰ The MAU was framed under the umbrella of MECA and since it comprised specialised personnel, the Planning and Monitoring Unit (PMU) which consolidated activities in 1982³¹ - another special unit under MECA - was affiliated with the MAU and provided administrative and monitoring support.

After 1989, the MAU was restructured and downsized considerably and the work was limited to designing individual buildings and a few facilities in the towns such as stadiums. It consisted of an architect, an engineer and a few draftspersons today and this continues to be attached to the Project Planning Division (PPD) of the MASL today.

Summary

Mahaweli River is of the greatest importance for Sri Lanka - a small tropical island - to provide irrigation for agriculture for its dry zone, which was home for a hydraulic civilization. In addition to irrigation, the MDP was anticipated to provide solutions for energy requirements, unemployment problems and national development. Under this project a resettlement programme involving a large number of people was implemented. This expensive project was accelerated later, and under this accelerated project, the MAU was formed. This unit, which operated in the 1980s and has contributed largely in the Mahaweli town design and construction, is still functional as a very small unit in the MASL; the work at prime of the MAU (1983-1989), is the focus of this study, for which the following chapter provides the theoretical and conceptual frameworks.

³⁰ *Annual Report and Accounts 1984*, 19.

³¹ *Administrative Report and Accounts 1982*, 1.

Chapter 3. Theoretical Perspectives, Models and Frameworks

Overview

The Mahaweli Project was a major infrastructure project initiated and constructed at a time when mega projects were thought to be the ultimate solution for development throughout the world. It was a multi-purpose development with admirable goals. The concomitant design and construction of new settlements is one facet of such projects to resettle people displaced as a result of the new infrastructure. The MDP can be regarded as a unique mega project with regard to resettlement as the re-settlers consisted of not only the displaced people, as with the many mega dam projects in the world, but enthusiastic volunteers too. Thus, a further goal of the project, directly related to resettlement, was the redistribution of the population from overpopulated areas to scarcely populated areas, through the development of new urban nodes and infrastructure which was intended to stimulate rural development. The displaced population of MDP, typical to multipurpose infrastructure projects was massive: approximately 500,000 people. ¹ Even though it was difficult to calculate exactly, the volunteer re-settlers were also considerable in number, estimated to be nearly 400,000. ²

Resettlement is a very important process that contributes to the overall success of large scale infrastructure projects. ³ Resettling displaced people, an inevitable consequence of the implementation of a mega project, was identified as a major responsibility of the planning authorities. ⁴ As Rajapakse claims, Mahaweli authorities sought to provide properly planned settlements with contributions by local and foreign Planners, Architects and Landscape Architects; professionals who sought to test accepted planning and design frameworks and theories. ⁵ 'Central Place Theory' was predominantly used to plan the hierarchical structure of the resettlements. The 'Mahaweli Architectural Unit (MAU)' was established with the single purpose to design the settlements. This initiative is unique in the context of mega dam projects. 12 new towns were designed and built by MAU.

¹ Thayer Scudder, "Development-induced Relocation and Refugee Studies: 37 years of change and continuity among Zambia's Gwembe Tonga," *Journal of Refugee Studies*, Vol 6 (2), (1993), 135.

² According to the *Mahaweli Statistical Handbook 2011*.

³ Arundhati Roy, *the Cost of Living* (New York: Random House Inc., 1999), 20-22.

⁴ *Involuntary Resettlement Sourcebook, Planning and Implementation in Development Projects*, 30118, Vol. 1 (Washington DC: The World Bank, 2004), 321-323.

⁵ Rajapakse, "Analysis of the Mahaweli Towns", 222.

The focus of this chapter is to provide an overview of the basic theories, frameworks and models that have been posited in relation to the design of the new towns. The intent is to evaluate the success of the new towns in the light of these theories, frameworks and models. Further, the new towns will be evaluated in relation to recommendations presented prior to the formation of MAU. Emphasis is placed on the reports which focus on sociological concerns which resonate with the stated aims of the MAU. Thus, this chapter consists of 4 main sections. The first section explores the urban environment usually denoted by cities and towns. The second section is a review of the Central Place Theory, while the third section assesses the environmental and social impact assessment reports prepared for the MDP. Finally, the sociological recommendation reports prepared at the initial stages of the MDP are reviewed in this chapter.

3.1 Cities and Towns

Since development of new towns is a primary goal of the MDP it is appropriate to clarify particular 'terms' related to urban environment in this section. Urban centres (cities and towns) of various size and character can be found all over the world, since ancient times. They may have originated as religious, administrative or defensive sites, but a common activity is trade and commerce. The term "urban centres/ places" can be used regardless of the size or population for any city, town or a village. ⁶ Gallion wrote,

Urban areas can be simple or complex. They can have a rural flavour or that of an industrial workshop. They can be peaceful or filled with all types of conflict. They can be small and easy to maintain or gargantuan and filled with strife and economic problems. ⁷

It is useful to clarify the contrast between urban and rural in this context. According to King, who was a prominent writer about the Central Place Theory – which related to physical planning - "Urban implies a way of life consisting of types of economic activity and patterns of social and cultural organization that are radically different from those of such communities" ⁸ who are engaged in subsistence farming, hunting and fishing. Urban areas have comparatively larger

⁶ Leslie J King, *Central Place Theory* (Beverly Hills: Sage Publications, 1984), 9-10.

⁷ Arthur B. Gallion and Simon Eisner, *The Urban Pattern: City Planning and Design*, 5th ed. (Van Nostrand Reinhold, 1986), cited in Nigamuni, "a Study of Urban Centres in System 'C'", 35.

⁸ King, *Central Place Theory*, 10.

populations than rural centres and people are free of subsistence farming. However, urban places are very much interrelated and interdependent with the surrounding rural hinterland.⁹

Urban centres can have different functions, which are predominantly economic activities and in any centre, one or some of the functions can be more important than the others for varied reasons.¹⁰ An urban centre serves purposes such as,¹¹

- Commercial/ trade activities
- Provision of services (health, education, communication, infrastructure, finance, electricity, transport, water, etc.)
- Social and economic opportunities
- Recreation
- Security
- Sense of citizenship
- Allow for future growth

In the case of the MDP, the urban centres under concern for the study, are towns. The foremost activity of the towns is trade¹² and in the farming regions the town acts as a service centre for the surrounding rural community which in turn determine the characters of the service activities.¹³ In agricultural settings, the main trade functions are supplying agricultural equipment and tools, collect produce and provide competitive markets.¹⁴ They act as "centres of management functions" which organize business activities and "centres of creation and delivery of standards of living" with better services than the rural hinterland, providing innovative and diversified human activities and a higher quality of life.¹⁵ In rural regions, towns are the key nodes in development efforts, contributing to the growth of the economy and generating wealth. They influence the rural environment, and transmit and transfer economic and socio-cultural development. In a planned agricultural resettlement, towns are responsible for the "provision of diversified employment opportunities for the non-farmer communities and for the landless".¹⁶

⁹ King, *Central Place Theory*, 9-11.

¹⁰ King, *Central Place Theory*, 15.

¹¹ Mendis, *the Planning Implication of the Mahaweli Development Project*, 61-72; Perera, "When Planning Ideas Land", 158-164; Nigamuni, "a Study of Urban Centres in System 'C'", 35-37.

¹² F.P. Hosken, *The Functions of Cities*, (1973), 2 cited in N.S. Perera, . "a Critical Evaluation of the Proposed Locations of the Townships in 'System B'", 61.

¹³ King, *Central Place Theory*, 20.

¹⁴ Nigamuni, "a Study of Urban Centres in System 'C'", 61; N.S. Perera, "a Critical Evaluation of the Proposed Locations of the Townships in 'System B'", 36.

¹⁵ Nigamuni, "a Study of Urban Centres in System 'C'", 36.

¹⁶ Nigamuni, "a Study of Urban Centres in System 'C'", 36.

They absorb the overflow of the resettlements and the non-farmer settlers from all over the country who are attracted by potential opportunities. They act as points of exchange for new ideas, knowledge and information among the rural populace. Towns provide administrative functions which ensure law and order. Thus, the towns serve as necessary service and growth points in the rural setting.¹⁷

3.2 Central Place Theory

According to the MAU architect Nihal Perera, and also Rajapakse, Central Place Theory (CPT) was clearly identified as the theoretical framework which shaped the design of the new settlements.¹⁸ From the 1968 Master Plan of the MDP, the settlement model was shaped based on the CPT in the consecutive Mahaweli recommendations.¹⁹ Therefore, an understanding of the CPT is required in this study.

The formulation of the CPT can be attributed to Western rural sociologists and geographers in the early 1900s. Studies related to the functional relationships between town and country were begun by C. J. Galpin (1915), and enlarged upon by J.H. Kolb (1923, 1940). Their studies were built on by many other scholars. The most prominent researchers to formulate theories based on the size and spacing of urban centres are Walter Christaller, and August Losch, both German scholars. Christaller studied urban settlement patterns in the Southern Germany and “constructed a completely new framework for the study of settlement geography”.²⁰ This was based on the idea of functional interdependency between a town and surrounding area that he published in 1933,²¹ which was further developed and refined by Losch in 1940.²²

This theory, which he called the “Central Place Theory” is based upon a hierarchy of service centres from higher order to lower order and the size of the market area they serve. It explains

¹⁷ N.S. Perera, “a Critical Evaluation of the Proposed Locations of the Townships in ‘System B’”, 62-64.

¹⁸ Peiris (1996), 185 cited in Perera, “when Planning Ideas Land, 153; *Mahaweli Projects and Programmes 1988* (Settlement Planning Policy, Information Services of the Ministry of Lands and Land Development and Mahaweli Development, Sri Lanka) and *Mahaweli Projects and Programmes 1989* (New Urban Centres, Informations Services of the Ministry of Lands and Land Development and Mahaweli Development, Sri Lanka) cited in Rajapakse, “Analysis of the Mahaweli Towns”, 222.

¹⁹ Hunting Report- System C: *System C: Mahaweli Development Project: Feasibility Study, Volume 5, Section Q*, Hunting Technical Services Limited, UK (1979), 94.

²⁰ King, *Central Place Theory*, 29.

²¹ King, *Central Place Theory*, 26-29; John Glasson, *An Introduction to Regional Planning: Concepts, Theory and Practice* (London: Hutchinson, 1974) cited in Nigamuni, “a Study of Urban Centres in System ‘C’”, 38.

²² King, *Central Place Theory*, 37.

that service centres of similar order are roughly equidistant, centrally located in their tributary areas. Moreover, centres and their hinterland can be modelled using geometric patterns. A Central Place is a settlement which provides one or more services for the population living around it. Simple basic services (e.g. grocery stores) are said to be of low order while specialized services (e.g. universities) are said to be of high order. Having a high order service implies there are low order services around it, but not vice versa. Settlements which provide low order services are said to be low order settlements. Settlements that provide high order services are said to be high order settlements. The sphere of influence is the area under influence of the Central Place. These models are generated by assumptions that the area (which assumed to be homogenous plain) has a uniform settlement distribution with evenly distributed population and resources, perfect competition and rational economic behaviour and complete transportation accessibility.²³ The basic concepts of the theory are,

1. Threshold- the minimum population that is required to bring about the provision of certain goods or services. This can be influenced by frequency of use.
2. Range of goods and services- the average maximum distance people will travel to purchase goods and services. This can be influenced by time and cost factors.²⁴

Figure 3.1 shows Christaller's model for the central places and settlements. The ideal range is S_2 ; real range is S_3 .

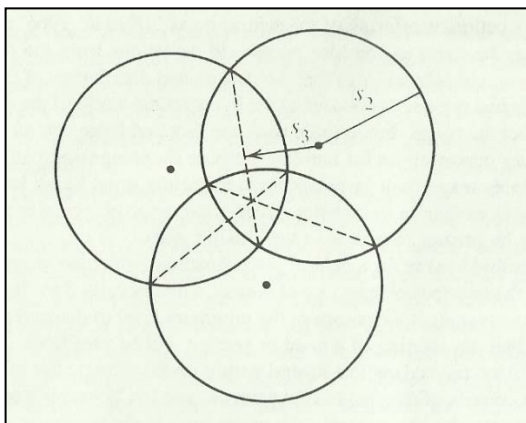


Figure 3.1 Ideal and Real Ranges of a Central Place Function [Leslie J. King, *Central Place Theory*, (Beverly Hills: Sage Publications, 1984), 32. Leslie J. King a Professor emeritus of the McMaster University, Ontario, Canada introduces Central Place Theory in a Scientific Geography Series to be used for students, researchers and professionals.]

²³ King, *Central Place Theory*, 38.

²⁴ Glasson, *An Introduction to Regional Planning* cited in Nigamuni, "a Study of Urban Centres in System 'C'", 39.

However, equidistant service centres and their tributary or trading areas represented as circular shapes with equal radius overlapping each other, resulted in either un-served or over-served areas. Therefore, a hexagonal distribution of service centres was proposed by Christaller [Figure 3.2].

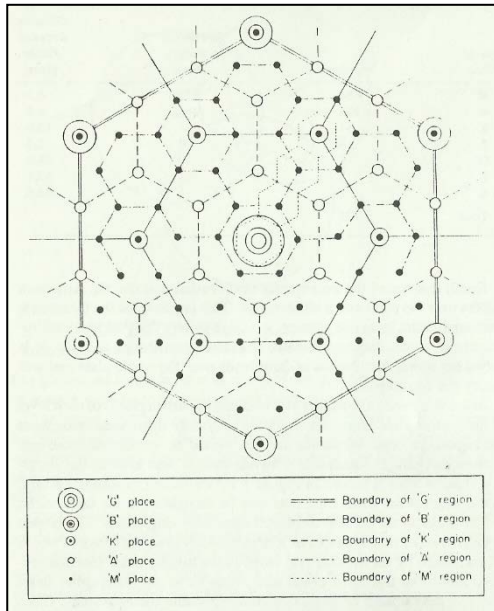


Figure 3.2 Market System of Central Places according to Christaller, Showing 5 of the Levels [Leslie J. King, *Central Place Theory*, (Beverly Hills: Sage Publications, 1984), 34]

King explains this representation as,

*The largest or highest-order central place has a large tributary area, the extent of which is determined by the average real range of the highest-order functions offered there. But that same centre also offers all of the lower order functions that have smaller ranges and, therefore, smaller tributary areas. There is then for the highest-order centre and, indeed, for each centre at any level of the hierarchy, a set of tributary areas of differing sizes nested within one another. Further, it is clear that within the larger tributary area there are located many lower-order urban places.*²⁵

Christaller noted that this representation based on "Marketing Principle", might be distorted by the other forces; in particular, two competing principles- transportation/traffic principle and administrative/separation principle. According to those principles he proposed the following arrangements of central places [Figure 3.3].

²⁵ King, *Central Place Theory*, 33.

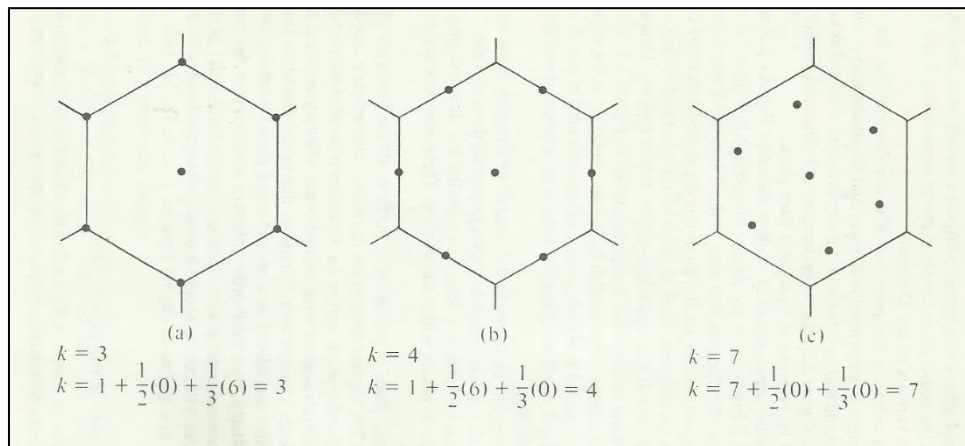


Figure 3.3 Three Different Arrangements of Central Places [Leslie J. King, *Central Place Theory*, (Beverly Hills: Sage Publications, 1984), 36]. 'k' is the number of equivalent full places of particular order served by a place at the next higher order. Christaller identified three values for k, as k= 3 for market principle, k=4 for traffic principle and k=7 for administrative principle. Losch identified as many as 10 "smallest economic areas" for k values of 3, 4, 7, 9, 12, 13, 16, 19, 21 and 25. ²⁶

CPT is explicitly for rural agrarian situations and Christaller's Central Place model has been criticised for and the failure to address the changes that take place over time. This theory is criticised due to the unrealistic assumptions they are based on, such as the flat geographical area. Thus, this model is not found in the real world, due to "failure to meet initial assumptions".²⁷ Government interventions and people's preference of trade which is not always in the nearest central place too are other real world factors that were not considered in the theory. Thus, this raises questions about the rationality of using this CPT as the model for the MDP settlements. However, the theory explains why there is a hierarchy of urban centres and the spatial pattern of urbanization found in the real world, as no other theory does.²⁸

Even though this theory is basically economical-geographical, it has anthropological and archaeological dimensions too. Cultural anthropologists and archaeologists, in particular, have found that the theory provides a useful framework for analysing the social structures of societies that either have existed and flourished in the past or exist today in underdeveloped countries.²⁹

There are many instances where regional planning was proposed according to the CPT, for examples, the planning study of Ghana by Grove and Huszar in 1964, in Sierra Leone by Harvey

²⁶ King, *Central Place Theory*, 44.

²⁷ *Christaller's Central Place Theory*, accessed on December 08, 2015, <http://uprav.ff.cuni.cz/?q=system/files/christaller.pdf>.

²⁸ *Christaller's Central Place Theory*, accessed on December 08, 2015, <http://uprav.ff.cuni.cz/?q=system/files/christaller.pdf>.

²⁹ King, *Central Place Theory*, 66.

et al. in 1974, and in newly established Israel around 1948, and even in developed countries such as Saskatchewan in Canada in 1957. But there is no evidence that they were implemented as proposed.³⁰ King argues, that the theory is useful in regional planning as it can be used to understand “how regional economies and social systems function and should be, and, therefore an integral and important component of any regional development plan”.³¹ This is true for both developed and developing countries, may be not as rigid applications but as useful building blocks.³² As a settlement model, which closely resembles the CPT, its application in the MDP is discussed in the Evaluation and Discussion chapters.

3.3 Impact Assessment Frameworks

As the basis to assess the impact of the resettlements in the MDP, it is important to understand the benefits the project brought to Sri Lanka, which were mainly economic.³³ The main objective of the MDP met to date is the achievement of self-sufficiency in rice production (100% according to the Department of Census and Statistics, Sri Lanka).³⁴ Apart from that, improved access to power and land and agriculture based livelihood for the poor are the other benefits. However, the benefit did not fully reach the project affected population, due to basic agriculture planning issues such as double cropping of paddy with the limited irrigated water, lack of crop diversification, soil and water quality degradation, and the drop of the international rice price.

Regarding impact assessment, Cernea, Scudder and Vanclay³⁵ argue that economic, socio-cultural and environmental aspects play equally important roles in development projects. Economic development, environmental preservation and social welfare should be integrated for a development project to be effective and sustainable. In the past, many impact assessments prepared for development projects were primarily based on the economic assessment. The

³⁰ King, *Central Place Theory*, 72-74.

³¹ King, *Central Place Theory*, 76.

³² King, *Central Place Theory*, 91.

³³ Ragnhild Lund, *A Survey on Women's Working and Living Conditions in a Mahaweli Settlement Area with Special Emphasis on Household Budgets and Household Surplus*, A Study Paper (Colombo: People's Bank, 1978); Lundquist, *Trade and Formation of Sectors of Production*, 53-60.

³⁴ Agriculture and Environment Statistics Division, Department of Census and Statistics, Sri Lanka, 2010, accessed on December 10, 2015, <http://www.statistics.gov.lk/agriculture/>.

³⁵ Michael M. Cernea, “The Risks and Reconstruction Model for Resettling Displaced Populations,” in *World Development*, Vol. 25, No. 10, World Bank, Elsevier Science Ltd. (1997), 7-8, Accessed on 5 January 2014. <http://www.chs.ubc.ca/srilanka/PDFs/Model%20for%20resettling%20displaced%20populations.pdf>; Scudder, *the Future of Large Dams*, 1; Frank Vanclay, *Social Impact Assessment: Environmental and Social Impact Assessment for Large Dams*, a contributing paper prepared for thematic review V.2, (Cape Town: World Commission on Dams, 2000).

physical development was prioritized and the social development was thought to be an automatic result following on from the development of the infrastructure. However, due to the increasing recognition of adverse environmental and social costs which overrun the economic gains, fuelled by constant opposition by various environmental activists and community groups, and increasing aspirations for sustainable and integrated development, the major promoters of international development projects such as the World Bank and the United States Agency for International Development (USAID), have gradually acknowledged the importance of evaluations that encompass these other important factors. Earlier sociological assessments, if they ever done, were included under the title 'the environment' - 'human environment' - which assessed only the physical aspects of the people such as the housing, sanitation etc.. So, if the environmental impact assessment is a fairly new concept in the context of development projects, social considerations are even newer.³⁶ The MDP was implemented in that era when this transition of understanding, and interrelations of impacts were coming to light. Therefore, assessments were prepared for the MDP that addressed sociological concerns, even though they were not independent social impact assessments. This initiative should be considered advanced for the period.

3.3.1 Mahaweli Resettlement Surveys and Reports

A number of surveys, feasibility studies and reports were prepared for the MDP. The primary reports are referred to as FAO, NEDECO, Sogreah, Hunting and TAMS. These were written, predominantly, by foreign experts with varying degrees of collaboration with Sri Lankan government officers. The main reports are introduced in this section. An extensive analysis of the recommendations follows in the Evaluation chapter.

FAO Reports

In short, the FAO reports provided the Master Plan for the MDP. The *Mahaweli Ganga Irrigation and Hydro-Power Survey* was the outcome of the surveys funded by the United Nations Development Programme (UNDP). The surveys were prepared in collaboration with the Irrigation Department of Ceylon as a prerequisite for World Bank funding, and published by the Food and Agriculture Organization (FAO) in 1968 and 1969.

³⁶ Vanclay, *Social Impact Assessment for Large Dams*; Vanclay, Frank, *International Principles for Social Impact Assessment*, Special Publications Series, No. 2, (ND, USA: International Association for Impact Assessment, May 2003), 1.

When the project was proposed, A.P. Barnabas, the Rural Sociologist of the FAO was assigned to survey sociological aspects of rural communities in the Mahaweli Areas. He studied three existing colonies in the Dry Zone Sri Lanka and collected data from both the colonists and the colonization officers and cross referenced them to affirm his recommendations. His report, titled *Volume XI - Sociological Aspects*, was published in 1968. This is referred to as the “Barnabas report” in this study. The report was a largely independent review of the sociological aspects of the resettled communities in the project area, prepared prior to the AMP. However, Barnabas did not provide a detailed examination of the physical setting of the project area in depth given the limited time and resources, thus a major limitation.³⁷

Sogreah Reports

Sogreah (Société Grenobloise d’Etudes et d’Applications Hydrauliques) was an independent private consulting and engineering firm based in France which specialised in construction in the field of hydraulics, including rural engineering, irrigation, water supply and sewerage systems.³⁸ The report titled *Mahaweli Ganga Development - Project I: Feasibility Study for Stage II*, was a joint endeavour of Sogreah and the MDB published in 1972.³⁹

In relation to resettlement, the report titled *Volume VII - Settlement Planning and Development* comprised a brief review of the FAO recommendations. The study covered System H. Key components of the report were the detailed analysis of the socio-economic environment of traditional villages, the colonies and—most relevant to the current study—the townships and the “administrative machinery and its impact on rural life”.⁴⁰ This comprehensive analysis generated a number of recommendations, not least, the proposal to change the term for “colonist” and “colonization Scheme” which the Sogreah report rightly claims to be “loaded with depreciative content”.⁴¹ It should be noted that the report was not entirely independent; “the entire work...is the result of close and intimate collaboration between the Sogreah consultant Sociologist and (Settlement Planning and) Development Division of the Mahaweli Development Board.”⁴²

³⁷ Barnabas Report, 7.

³⁸ The firm was formed in 1923 as the Laboratoire Dauphinois d’Hydraulique and changed its name to Sogreah in 1955. In 2009, Sogreah and COBETA merged to form ARTELIA. Over the years, Sogreah has become an important Research and Development organization, in close co-operation with international partners, currently working mainly in association with China and EU funded projects

³⁹ Sogreah Report, i.

⁴⁰ Sogreah Report, 2.

⁴¹ Sogreah Report, vi.

⁴² Sogreah Report, 4.

Hunting Reports

Hunting Technical Services Limited, a leading British based natural resources and rural development consultancy, carried out several feasibility studies for the MDP and published a number of reports between 1978 and 1980. Some of these were conducted under the umbrella of the Ministry of Overseas Development of the British Government. The preliminary feasibility studies were completed in collaboration with Sir Alexander Gibb and Partners, another British Civil Engineering consultancy firm.

The Hunting reports covered different components of the Mahaweli Project including the *Mahaweli Ganga Trans-basin Diversion Study, System C - Feasibility Studies* and *Victoria Scheme - Preliminary Feasibility Studies*.⁴³ *Volume V: Annex Y - Settlement Planning for Victoria Scheme*, published in 1978, and *Volume V: Q - Settlement and Infrastructure section for System C*, published in 1979, were consulted in detail for the current study. These reports reviewed the FAO and Sogreah settlement policy and recommendations and informed a model for the settlements, including examples of Town Centres.⁴⁴ The Hunting reports recommended the employment of a planner for the first time, and further recommended collaboration with a Demographer/Sociologist in relation to the planning process.⁴⁵

NEDECO Reports

The Netherland Engineering Consultancy (NEDECO) was engaged (and funded by the Dutch government) to prepare proposals for the AMP. The reports for *Mahaweli Ganga Development Program: Implementation Strategy Study* were published in 1978 and submitted to the International Bank for Reconstruction and Development (IBRD) for funding consideration.

Substantial changes to the original FAO reports were recommended with the compression of the MDP into 6 years. Accordingly, the AMP was split into several sub-projects so that different international donors could fund each project. At this stage, a significant change to the operation and implementation of the MDP was the reliance on foreign countries for not only funds, but also technical expertise. *Annex L in Volume 5* incorporates "Aspects of Settlement", which was

⁴³ Victoria Scheme was funded by the Great Britain.

⁴⁴ Hunting Report- System C.

⁴⁵ Hunting Report- Scope Proposal: *Mahaweli Ganga Trans basin Diversion Study: Scope Proposal for Consulting Services*, Hunting Technical Services Limited, London in association with Resources Development Consultants Limited, Colombo, (1980), 43.

written by a sociologist attached to NEDECO and this substantially informs the analysis in Chapter 7.

TAMS Reports

Tippetts-Abbott-McCarthy Stratton (TAMS), an engineering consultancy firm based in New York, was engaged to prepare an environmental assessment for the MDP. The study was funded by the United States Agency for International Development (USAID). This appointment coincided with changes in the World Bank development project policies and funding largely fuelled by concerns of international groups who opposed mega projects like the MDP. The resultant report *Environmental Assessment: Accelerated Mahaweli Development Programme* published in 1980, included a comprehensive analysis of the MDP proposals in relation to the perceived impacts on three ecological systems: terrestrial, aquatic and human. The recommendations were substantial and major changes to the administrative structure of the MDP were proposed in the report. Detailed analysis of the re-settlers' lives, including their health, sanitation and well-being, were included in the report. Moreover, emphasis was placed on the necessity of social planning. Accordingly, *Volume IV: Human Environment* informs the analysis of the current study.

The following section presents a brief review of the environmental assessments prepared for the MDP and a more detailed review of the Sociological Assessments prepared for the MDP.

3.3.2 Environmental Impact Assessments (EIAs) of the MDP

EIA's are considered crucial in any development project as they analyse feasibility and predict the cost of the project in relation to the physical and social environment. They make recommendations and they serve as a benchmark for future evaluations. It is an integral part of the feasibility study, which gives opportunity for design changes to be made and mitigation measures to be incorporated in the project design.⁴⁶ As Gilpin, Modak and Biswas (key researchers in the field who have prepared a number of environmental assessments), and Fischer confirm, Mahaweli EIAs were the most comprehensive EIA reports prepared at that time in the region providing guidelines and the impetus for other mega projects.⁴⁷ The reports were

⁴⁶ T.C. Dougherty and A.W. Hall, *Environmental Impact Assessment of Irrigation and Drainage Projects*, 53 FAO Irrigation And Drainage Paper, (HR Wallingford, United Kingdom, 1995), accessed on January 2, 2015, <http://www.fao.org/docrep/v8350e/v8350e06.htm>.

⁴⁷ Fred C Fischer, *an Evaluation of U. S. Assistance for Preparation of the Mahaweli Environment Assessment*, (Colombo: ASIA/ PNS for USAID, 26 September 1983); Alan Gilpin, *Environmental Impact Assessment: Cutting*

prepared by international consultants and involved interviews and consultation with the relevant Mahaweli officers and local inhabitants, in addition to in-situ studies.

Since the Mahaweli Project was accelerated in 1977, the most important EIA was the report prepared in October, 1980, which is the 'Environmental Assessment, Accelerated Mahaweli Development Programme', by TAMS (Tippetts-Abbett-McCarthy-Stratton, an Engineering Firm based in New York) for the Ministry of the Mahaweli Development of Sri Lanka and USAID. This assessment examined three categories of environmental resources: terrestrial, aquatic and human. The report gives a detailed account of the existing conditions and predicts severe impacts on those three environmental resources categories. The human category was further subdivided under social profile, cultivation practices (including pest control), and public health. It is clear, therefore, as mentioned in the earlier, this report places more emphasis on the physical dimension of the sociological analysis.

Terrestrial concerns included the erosion of watershed zones, the conversion of downstream forests, scrublands and Chena⁴⁸ lands into paddy lands which would severely effect wild life.⁴⁹ Not least, reduced river flood flow would affect *villus* (floodplain lakes) which were grazing lands available for cattle and wildlife. Effects on the aquatic environment included: 1. the reduction in the flow of Mahaweli River which was predicted to affect the water balance in the Mahaweli basin; 2. Increased surface runoff would lead to decreased water quality. Concerns were raised related to the reduction of numerous species of fish including several endemic species. The infestation of water weeds was identified as a further concern [Figure 3.4].

A range of extensive environmental planning and mitigation strategies ensuring water management, reduction of soil erosion, reforestation (especially for fuel wood plantations for re-settlers) and establishment of nature reserves were recommended in the EIA report. Out of some 160 recommendations, approximately 145 were accepted by the Government of Sri Lanka. They included the establishment of institutions to coordinate the subsequent tasks and

Edge for the 21st Century (Cambridge: Cambridge University Press, 1995), 132-133; Modak and Biswas, *Conducting Environmental Impact Assessment in Developing Countries*, 284-298.

⁴⁸ Chena- also known as shifting cultivation; a traditional dry zone agriculture method in which an area of virgin or secondary timberland is cleared and cultivated for only a few years and then abandoned.

⁴⁹ AMP area was approximately 421,000 ha, of which 80,000 and 82,000 ha were five forest reserves and five wild life reserves respectively. Water works and physical infrastructure only, would reduce that area by about 27,000 ha (adopted from the TAMS report, 1980).

even led to the alteration of existing national government structure and policies.⁵⁰ The Sri Lankan government specifically established the 'Central Environmental Authority' according to the 'overall general recommendation' of the report for 'a national coordinating agency for natural resources'⁵¹ and attempted to implement many of them. However, Scudder affirms many subsequent research findings which led to the conclusion that environmental issues were ignored due to underlying reasons of political and economic misconduct which prevented the achievement of full economic benefits.⁵²

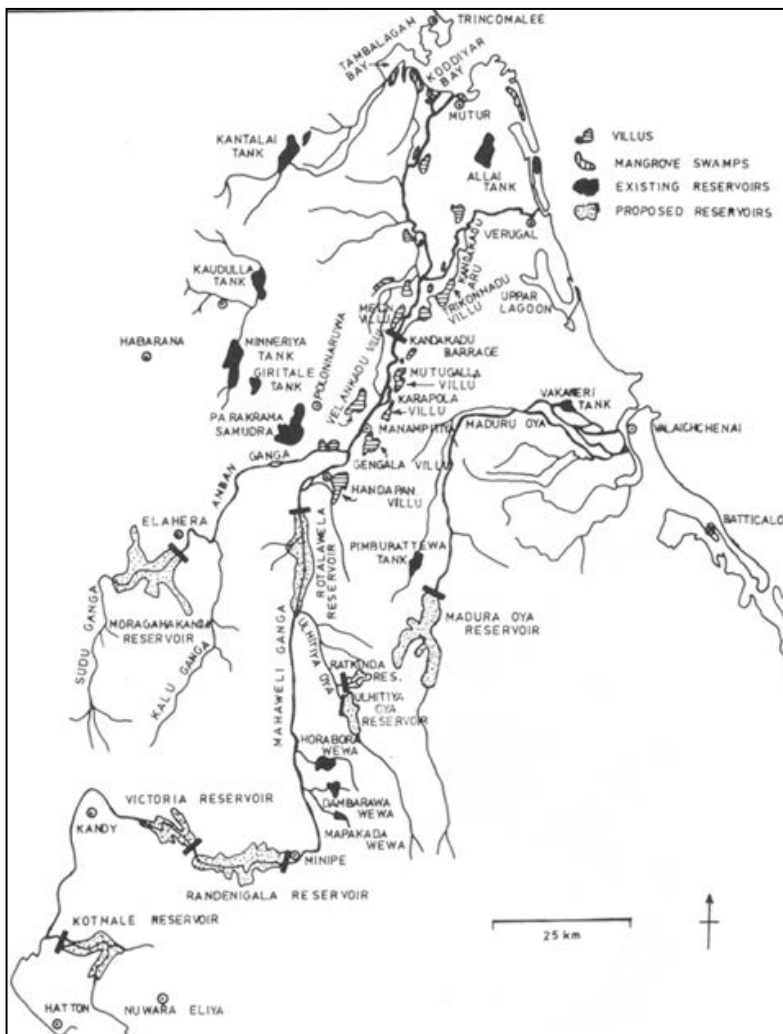


Figure 3.4 Major Reservoirs, Villus and Mangrove Swamps of the Mahaweli Basin ("The Mahaweli Basin", FAO, accessed February 13, 2016, <http://www.fao.org/docrep/003/X6861E/X6861E10.htm>.)

⁵⁰ Modak and Biswas, *Conducting Environmental Impact Assessment in Developing Countries*, 284-298.

⁵¹ Fischer, *an Evaluation of U. S. Assistance for Preparation of the Mahaweli Environment Assessment*.

⁵² Scudder, *the Future of Large Dams*, 145.

'An Environmental Evaluation of the Accelerated Mahaweli Development Program: Lessons Learned and Donor Opportunities for Improved Assistance' conducted in 1993, ⁵³ (which will be referred to as the Environmental Evaluation Report- 1993 here onwards) confirms that the adverse impacts predicted in the 1980s TAMS report were accurate and they prevail in the Mahaweli areas [Figure 3.5]. It identified the following actions to remedy these effects, summarized thus.

- Coordinated monitoring of environmental systems including strengthening the technical, financial and infrastructure capacities of the relevant institutions
- Local participation in environmental management
- Consolidating and coordinating the environmental responsibilities within a few ministries and enhancing them through more definitive national policies that are publicized and enforced.

The report further emphasizes that these actions should be based on two essential principles which overlap and are mutually reinforcing, as follows.

1. Prioritizing maintenance and restoration of the natural resources and environmental systems, considering the entire Mahaweli area as a whole, which may need institutional restructuring and adequate personnel and infrastructure as well as clarified and enforced policies and mandates.
2. Future development activities and options which are based on community participation in decision making to make them more sustainable and respected, thereby designed to break the linkages between poverty and environmental degradation.⁵⁴

⁵³ Nine professionals specialised in ecology, forest and watershed management, wildlife conservation, project planning and management, environmental economics, agronomy and soil science, and sociology have prepared this report for the USAID.

⁵⁴ *An Environmental Evaluation of the Accelerated Mahaweli Development Program*, (Maryland: DAI, 1993), x-xiii.

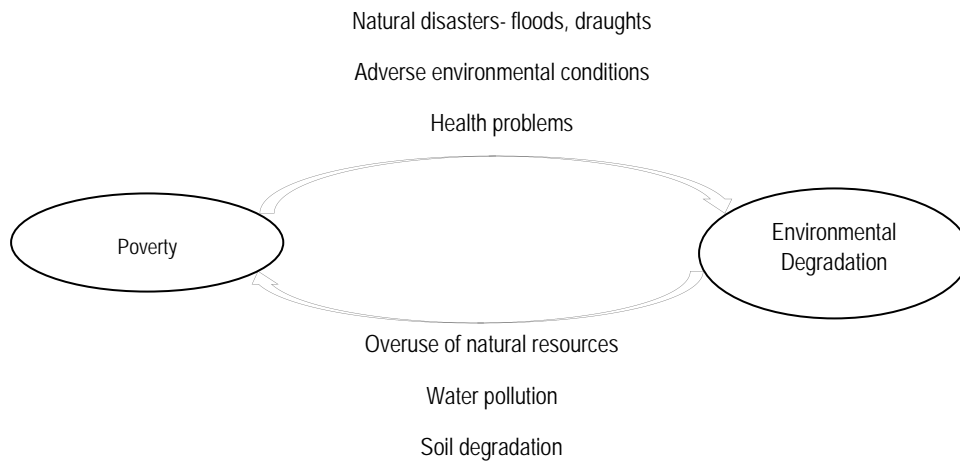


Figure 3.5 Representation of the Link between Poverty and Environmental Degradation in Mahaweli Resettlements (Figure compiled based on the assessments in the TAMS report and Environmental Evaluation Report- 1993)

The EIA's prepared for the MDP were, inarguably, comprehensive with impressive proposals to mitigate the perceived impacts. The degree of application in the implementation of the project is worthy of analysis. However, it is beyond the scope of this study. This study is concerned with the sociological assessment in relation to the design of the new towns specifically and these assessments are considered in further detail below.

3.3.3 Social Impact Assessments (SIAs)

The first international conference on SIA was held in Vancouver, British Columbia, Canada, in 1982.⁵⁵ SIA is the process of assessing or estimating the intended and unintended social and cultural consequences as a result of planned policy actions or project development. As Burdge and Vanclay explain,

*The social impacts include any actions that may alter the way in which people live, work, play, relate to one another, organize to meet their needs, and generally cope as members of society. Cultural impacts involve changes to the norms, values and beliefs to the individuals that guide and rationalize their cognition of themselves and society.*⁵⁶

The primary goal of a social impact assessment is to ensure sustainable and equitable integrated economic and socio-cultural development.⁵⁷ As described above, earlier impact

⁵⁵ Rabel J Burdge and Frank Vanclay, "Social Impact Assessment," *Impact Assessment*, a contribution to the State of the Art Series 14, 1, (1996), 64, accessed on January 2, 2015, DOI:10.1080/07349165.1996.9725886.

⁵⁶ Burdge and Vanclay, "Social Impact Assessment", 59-60.

⁵⁷ Burdge and Vanclay, "Social Impact Assessment", 60; *Social Impact Assessment: Interim Policy and Guidelines*, Frankston City Council (July 2004); Vanclay, *Social Impact Assessment for Large Dams*, 2.

assessments for development projects were primarily based on tangible or quantifiable parameters (such as economic or environmental impacts). The conceptual advancement represented in the preparation of an SIA is, the emphasis placed on the intangible aspects of human life such as community interrelations and the psychological implications of a proposed development. Community participation and acceptance is crucial to the success of SIA to increase project success, prevent planning disasters and associated costs, and to ensure sustainability.⁵⁸

As mentioned before, the sociological assessments prepared for the MDP and included in the EIA documents prioritised physical human needs. These were prepared prior to the increased understanding of the necessity and importance of SIA today. Therefore, since exploration of social and community aspects is crucial in this case study which evaluates the MAU new towns - which are predicated on a people centred approach - an understanding of the fundamental principles of SIA is necessary.

As Vanclay claims, it is convenient to conceptualize social impacts as the changes to people's way of life, including:

- culture
- community structure
- political systems
- environment in relation to health and wellbeing
- personal and property rights, and
- fears and aspirations

There are 7 key questions which underpin the preparation of an SIA,

1. What is being analysed?
2. What is the welfare measure being assessed?
3. Whose welfare is being analysed?
4. How are impacts channelled?
5. How do institutions affect outcomes?
6. When do impacts materialize?

⁵⁸ Burdge and Vanclay, "Social Impact Assessment", 61.

7. What are the risks of an unexpected outcome? ⁵⁹

As SIA community of practice believes, the core values of SIA which underpin the principles of SIA are,

- Fundamental human rights shared equally across culture without bias of gender and these human rights should be protected by law with equal and fair justice,
- Right to live a good quality life and work in healthy environment which enables people to develop human and social potential,
- Rights of good quality social relationships, freedom from fear and a sense of belonging
- Right to participate in decision making of planned interventions
- Valuing local knowledge and experience and appreciating them in decision making.⁶⁰

Finally, SIA is important in projects to enhance consistency, certainty and transparency, maximizing positive impacts and minimizing negative impacts, through community participation.⁶¹

3.3.4 Social Impact Assessments (SIAs) Related to the MDP

Although an SIA should be completed in advance of a project and should continue during a project, many completed or ongoing development projects – especially mega-dam projects - have not been the subject of a separate SIA other than as a part of EIA concerning the physical human environment, as in the case of the Mahaweli Project. The following section outlines discussion of the SIA related to the MDP. Social Impact is assessed in the section 'Social Profile' in the TAMS report and a more profound assessment is found in the Environmental Evaluation report of 1993 under the sections focusing on 'Social and Economic Systems' and 'Impacts on Women'.

As the TAMS report correctly identified, the major social benefit for the settlers was the receipt of irrigated land for agriculture, which is the main livelihood in the area. The TAMS report identified the transition of small isolated village societies to production oriented colonization schemes as the major social impact. This transition would modernize the rural society resulting in the inevitable loss of traditional values and social cohesion within small kinship based villages.

⁵⁹ *A Users' Guide to Poverty and Social Impact Analysis*, (Washington D.C.: World Bank, 2003), 3-7.

⁶⁰ Vanclay, *International Principles for Social Impact Assessment*, 2-8.

⁶¹ *Social Impact Assessment: Interim Policy and Guidelines*, Frankston City Council, 3.

Other issues identified in the TAMS report includes land holding and acquisition disputes due to changes in traditional inheritance and kinship roles, the subsequent fragmentation of lands and unemployment for future generations, and illegal encroachments. The TAMS Report further claimed that the displaced communities from the up-stream (hill country) areas which were resettled in the down-stream dry zone, would harbour a general resentment and a sense of loss of ancestral homes, and anxiety about their future, although they have accepted their inevitable relocation unspoken.⁶² Modak and Biswas summarize the recommendations in the TAMS report as follows,

- establishment of a regional planning and socio-economic studies unit,
- establishment of a settler orientation program,
- studies for developing guidelines for managing a variety of social problems, including special attention to the poorer population sectors such as fishermen's families and agricultural labourers, and evaluation of tourist potentials, and
- strengthening agricultural extension services⁶³

The 1993 Environmental Evaluation Report concluded that the unemployment and encroachment problems, predicted in the TAMS Report and other documents, prevail in the Mahaweli area. This report placed more emphasis on women (as the more affected group of the resettled community) and listed the impacts, thus:

- Higher malnutrition among women than men
- High and increasing suicide rates, a considerable amount of the rate has been directly attributed to the lack of options available for women (however a higher suicide rate among men exists in Mahaweli areas than in other parts of the country due to economic factors)
- Women spend a large percentage of their time collecting subsistence resources, such as fuelwood (education levels are poor and marriage at a young age is common)
- Female participation in resource management and decision-making tasks is virtually absent
- Family planning services are largely unavailable to women who might want to limit family size and increase their own contribution to land and resource management

⁶² Sorenson, *Relocated Lives*, 178: Sorenson notes the relationship of the religious beliefs such as 'karma' and 'fate' in acceptance and tolerance of the relocation.

⁶³ Modak and Biswas, *Conducting Environmental Impact Assessment in Developing Countries*, 284-298.

According to the report there were very few programs to address these problems at the time, and the project affected population who play an intrinsic part in resource use had little input in its ultimate management.

An independent evaluation conducted in 2012 further confirmed the predictions of unemployment and encroachment in the Mahaweli area.⁶⁴ It further recommended empowering farmer organizations, especially in the ground level operations such as water distribution, and educating and assisting entrepreneurial young farmers.

However, it should be noted that the above EIA reports did not predict the ethnic conflict within and surrounding the Mahaweli areas which led to a 30-year civil war between the Sri Lankan Government Armed Forces and LTTE (Liberation Tigers of Tamil Eelam). The reason could be that the original planning did not assume the political intervention and ethnic bias which took place in selecting re-settlers. As Scudder observes, "in the north-eastern area ... (System B), the majority of the population were Tamil-speaking Hindu and Muslim villagers, who have been later immigrants into Sri Lanka".⁶⁵ Scudder rightly claims that the settlement of Sinhalese people in these Tamil villages as part of the MDP had directly and indirectly contributed largely to the conflict.⁶⁶

It is important to understand that the economic, environment and social impacts are interconnected and the changes in the one aspect change the others too. The relationship can be represented as in the Figure 3.6.

⁶⁴ *Sri Lanka: Mahaweli Ganga Development, Independent Evaluation Group-the World Bank Group*, (2012)

⁶⁵ Scudder, *Future of Large Dams*, 141.

⁶⁶ Scudder, *Future of Large Dams*, 141.

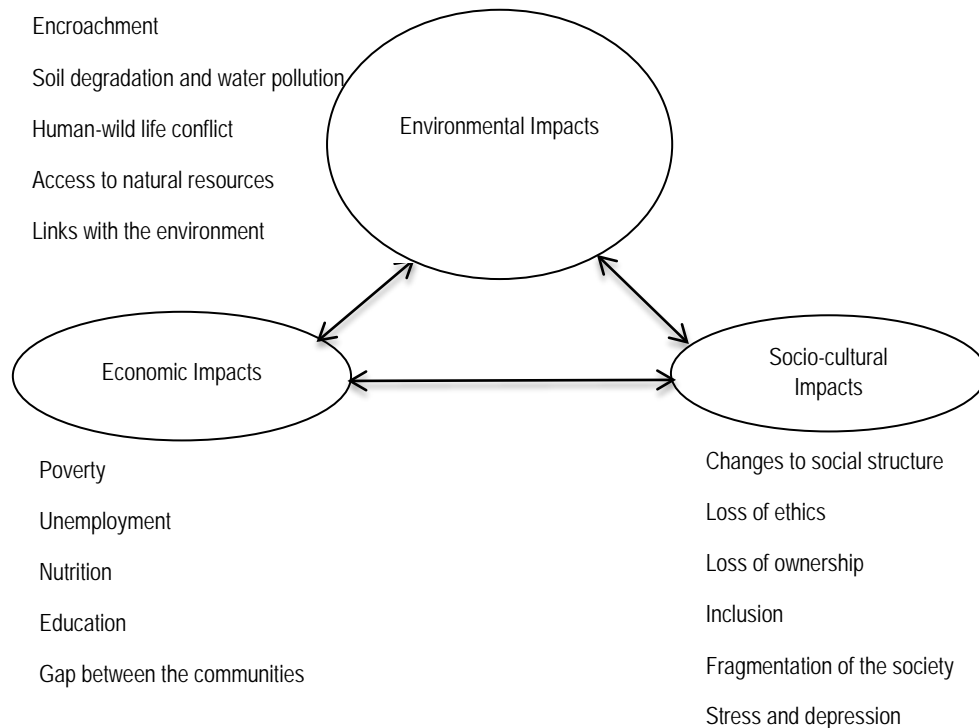


Figure 3.6 Interrelationships between Environment, Socio-cultural and Economic Impacts in Mahaweli Resettlements [adopted from Yan Tan, *Resettlement in the Three Gorges Project* (Hong Kong: Hong Kong University Press, 2008), 143].

Environmental, economic and socio-cultural aspects should be balanced for a development project to be effective and sustainable. As a development project with economic priorities, one can appreciate the failure to address the environmental and socio-cultural aspects in the MDP as many scholars have argued.⁶⁷ However, Mahaweli planning studies and reports, even though they were prepared prior to the regular preparation of SIA reports, did address sociological concern which will be discussed in the next section.

3.4 Mahaweli Recommendations in Sociological Studies

Most comprehensive sociological assessment reports and an impressive number of recommendations were prepared for the Mahaweli project, in the initiation phase, even at that time when the Social Impact Assessments were fairly new (even if they were not of the calibre or rigour of SIAs today). The importance placed on sociological studies are explained and

⁶⁷ Ekanayake, "Location Specificity, Settler Type and Productive Efficiency", 1986; Karunatilake, *the Accelerated Mahaweli Programme and its Impact*; Sri Lanka, 1988: *Mahaweli Ganga Development, Independent Evaluation Group-the World Bank Group*, 2012; Raby and Merrey, *Professional Management in Irrigation Systems*, 1989; Ponnambalam, *Dependant Capitalism in Crisis*, 1981; Schickele, "The Mahaweli Scheme- Success of Failure," 1969; Scudder, *Future of Large Dams*, 2005.

justified in these reports. In each case, there is a recommendation relating to crucial issues that require remediation. Given such comprehensive understanding of the sociological aspects, there is a very good basis and justification for the “people centred approach” presented by the MAU.⁶⁸

The list of Mahaweli reports that were analysed for this study:

- Barnabas Report: Barnabas, A.P. *Sociological Aspects of Mahaweli Ganga Project*, Food and Agriculture Organization of United Nations and Irrigation Department of Ceylon, Colombo. (1968).
- Schure Report: Schure, P. Th. *Mahaweli Ganga Irrigation and Hydro Power Survey: Stage II: Volume VI- Irrigation: Part IV- Settlement*, Food and Agriculture Organization of United Nations and Irrigation Department of Ceylon, Colombo. (1968).
- Sogreah Report: *Mahaweli Ganga Development Project I: Feasibility Study for Stage II: Volume VII-Settlement Planning and Development*, Mahaweli Development Board of Sri Lanka and Sogreah, Grenoble, France. (1972).
- Hunting Report- *Victoria Scheme: Mahaweli Development Project: Phase I: Preliminary Feasibility Report: Volume V: Annexes Y-Z*, Hunting Technical Services Limited, Borehamwood, Sir Alexander Gibb and Partners, Reading and Preece, Cardew and Rider, Brighton, UK. (1978).
- Hunting Report- *System C: System C: Mahaweli Development Project: Feasibility Study, Volume 5, Section Q*. Hunting Technical Services Limited, UK. (1979).
- NEDECO Report: *Mahaweli Ganga Development Programme: implementation Strategy Study: Volume 5*, MDB, Colombo and NEDECO, Netherlands. (1979).
- TAMS Report: *Environmental Assessment: Accelerated Mahaweli Development Program: Section L*. TAMS, New York. (1980).

In the following, I attempt to show the importance placed on sociological aspects in these reports (regardless of whether they were followed or not when implemented). The reports are reviewed here separately, in anticipation to review them collectively in the Evaluation and Discussion chapters underpinning the analyses of the Mahaweli towns.

⁶⁸ Nihal Perera, "When Planning Ideas Land: Mahaweli's People-Centered Approach", in *Crossing Borders: International Exchange and Planning Practices*, edited by Patsy Healey and Robert Upton. Routledge (2010): 140-172.

3.4.1 UNDP/FAO (Barnabas) Study

Barnabas studied three colonies, which were started at different times; the first one in 1937, the second in 1958 and the third in 1962.

In my view, the Barnabas's report is the most independent study which attempted to address the sociological concerns and views of the re-settlers in a comprehensive way. Barnabas generated genuine inferences about the concerns and aspirations of the re-settlers, out of all the reports that are examined in this research. Even as early as the 1960s when the sociological aspects of mega projects were not priorities, Barnabas stressed the importance of people in development projects and technological advancement. For Barnabas, technological change is "Social", which is clear in his statement "the ultimate products of technology is the use by humans. Technology is therefore in a sense social".⁶⁹ A sociologist should be concerned with two key inter-relationships,

- 1) the sociological factors which allow and encourage innovation and diffusion
- 2) The impact of innovations on the society or social relations⁷⁰

As Barnabas rightly argued, technological advancement (which the project tries to bring to rural Sri Lanka) for food production serves an ultimate "social" goal, in light of the solution to Sri Lanka's "twin problems" at that time, i.e. population increase and lack of sufficient agricultural produce. Social development is cumulative growth plus change; hence "Development planning should...cover (both) social change (and) economic growth."⁷¹ Barnabas viewed the sociological aspects of the project area within a broad framework based on two important and wholesome factors; in other words, the maximum positive relationship, between economic growth and social change. Thus, according to him, rightly, development is long term sustained growth.⁷²

Barnabas in length clarified the importance of both economic and social evaluation to measure development, in the following statements.

Development is growth, plus change; change in turn is social and cultural as well as economic and qualitative as well as quantitative. Viewed from this point, it will be seen

⁶⁹ Barnabas Report- A.P. Barnabas, *Sociological Aspects of Mahaweli Ganga Project*, Food and Agriculture Organization of United Nations and Irrigation Department of Ceylon, Colombo (1968), 3.

⁷⁰ Barnabas Report, 3.

⁷¹ Barnabas Report, 3.

⁷² Barnabas Report, 4.

that the purely economic indicators for progress cannot be the sole criteria for evaluating any project.⁷³

Moreover, development planning should, therefore, cover social change as well as economic growth. ⁷⁴ According to Barnabas, the sociological concerns of the Mahaweli Project were related to,

- agricultural innovation and introduction
- administrative pattern acting as a catalyst to change and relationship between administrator and administered
- family and kinship impacts with reference to division of property and marriage patterns
- relationships among colonists and surrounding villages
- formal and informal organizations that would allow development of leadership
- means of social control and their effectiveness
- adequacy of facilities for people to get settled, established and rooted⁷⁵

His understanding about the re-settlers are shown further by his concerns about, how the new innovations are to be introduced, awareness of the relevant authoritative bodies of the social structure, social values and pattern of leadership and the type of provisions that ensure proper use of increased incomes by the inhabitants to minimise social problems.⁷⁶

Barnabas specifically stressed the importance of leadership, unity and co-operation for the success of the project, in claiming the following.

It must be noted here that the social relations have a bearing on production as they affect the adoption and diffusion of new practices. Further, if there is effective leadership, the acceptance of innovations could be expedited. Social relations have thus to be studied not only for their own sake but also because of their impact on production. ⁷⁷

This is further strengthened by Barnabas claiming, “the whole concept of settlement is based on the idea of co-operation”.⁷⁸

⁷³ Economic Bulletin for Asia and the Far East, cited in Barnabas Report,3.

⁷⁴ Economic Bulletin for Asia and the Far East, cited in Barnabas Report, 3.

⁷⁵ Barnabas Report, 5-6.

⁷⁶ Barnabas Report, 5.

⁷⁷ Barnabas Report, 36.

⁷⁸ Barnabas Report, 45.

The Barnabas Report is referred to again and again, in regard to the sociological aspects for developing planning principles and detailed cost estimates by the subsequent reports. In another report of the same UNDP/FAO proposal series, prepared by P. Th. Schure, a very important point is stated; the flexibility of initial planning to accommodate future developments and improvements.⁷⁹ This point is particularly important in urban design and should be related to the ultimate goal of the MAU for the Mahaweli towns, which was to create beautiful thriving towns.

3.4.2 Sogreah Study

The Sogreah study was carried out in the System H area, which is the first settler scheme of the Mahaweli, and the study covered Purana villages, new villages and small townships. They have employed many and varied methodologies such as free observations, a questionnaire for comprehensive factual data, opinion studies, semi-directed interviews, projective tests and an analysis and review of official documents. An important point is including townships in the study.⁸⁰ However, one must query the independence of the report, and the bias of the recommendations is questionable as it states,

*Several surveys and studies were undertaken by the Settlement Planning and Development Division of the Mahaweli Development Board in close collaboration with and association with the Sogreah Consultants.*⁸¹

The close collaboration with officials could have influenced the findings and recommendations.

The main component of this report is the recommendations; moreover, socio-economic and institutional framework of the project area including leadership patterns and functioning of the institutions, the administrative machinery and its impact on rural life, ways of popular participation including villagers' and settlers' creativity and potential initiative, present colonization policy and the implementation were reviewed in detail.

As stated in the summary of this report, the socio-economic objectives of the Mahaweli Project, which are "increasing production, productivity and income, (stimulating) peasant initiative,

⁷⁹ Schure Report - P. Th. Schure, *Mahaweli Ganga Irrigation and Hydro Power Survey: Stage II: Volume VI- Irrigation: Part IV- Settlement*, Food and Agriculture Organization of United Nations and Irrigation Department of Ceylon, Colombo (1968), 1.

⁸⁰ Sogreah Report - *Mahaweli Ganga Development Project I: Feasibility Study for Stage II: Volume VII- Settlement Planning and Development*, Mahaweli Development Board of Sri Lanka and Sogreah, Grenoble, France, (1972), 1-4.

⁸¹ Sogreah Report, i in Summary and Conclusions.

integration of the population and generalization of social change” could be achieved by possibly “promoting social cohesiveness, strengthening leadership, sponsoring self-management, introducing a contractual relationship and community development”.⁸² By that, it is evident that social aspects were viewed as very important. Their “guiding assumption is that leadership is crucial for the success of the project” and studying them would help in “making inferences about the values, attitudes and patterns of behaviour influencing collective action and forecast their consequences for adoption of innovation and occurrence of cohesive and cumulative social changes.”⁸³ What is important to remind here is that innovation does not only mean the new agricultural techniques, but other aspects also, such as the building types introduced by the MAU. (They can be regarded as innovations because the buildings of MAU towns, deviated from the concurrent modern type buildings which were popular with the general public at the time).

3.4.3 Hunting Study

The Hunting Study was conducted for the AMP, particularly for System C. Different reports were prepared by each donor organization for different sub-projects and each Systems.⁸⁴ The Hunting study did not involve analysis of the social aspects as earlier reports did, but it did incorporate and review information and recommendations from earlier reports such as Barnabas, Sogreah etc. to propose a complete settlement process with comprehensive cost estimates and detailed designs for both townships and core houses. The Hunting Study rightly suggested that the first priority was “construction of the main permanent urban settlements.”⁸⁵ Proposed typical plans and designs contained in the Hunting reports are exclusively discussed in the evaluation and discussion chapters.

3.4.4 NEDECO Study

The NEDECO Study was written by a Sociologist who was attached to the team for just 6 weeks. They have used literature as well as discussions with officers of the Mahaweli, researchers and settlers to generate recommendations. It is questionable that a complete study could be done

⁸² Sogreah Report, 21.

⁸³ Sogreah Report, 21.

⁸⁴ Different Organizations which prepared reports for different Mahaweli Systems-
System A: Electrical Engineering Services Limited (Zurich)
System B: Acres International Limited (Canada)
System C: Hunting Technical Services Limited (United Kingdom)
System D: Japan International Corporation Agency (Japan)

⁸⁵ Hunting Report-System C, 31.

in such a short time, especially when the request was to “analyse previous studies, and to give some (insight into) future policies and planning”, which could be a lengthy task, in addition to looking at “social aspects of settlement”.⁸⁶ The Sociologist does stress, however, that two particular researchers attached to the People’s Bank who shared information with him claim to have deep understanding about the settlers as they have lived and worked with them for some time period.⁸⁷ And the study is concentrated mainly on one aspect, i.e. how far does the basic idea of the proposed stage of the project match with the existing tendencies in agriculture in the System H area (the family farm concept and farmers’ organizations proposed by Sogreah report, but did not realize or form by the relevant authorities).⁸⁸

The Sociologist observed that discrepancies gradually developed in terms of the financial situation and power among the different types of people in the settlement which first had the same resources, and non-farming people such as tradesmen, officers etc. had direct or indirect power over the settlers and lands. These issues are discussed at length in the report, which shows that they were more concerned about the present financial situation which is very important in the settlements’ economy and would interchangeably influence the socio-cultural aspects in turn as explained in the Figure 3.6 “Interrelationships between environment, socio-cultural and economic impacts in Mahaweli resettlements” (above in this chapter). Another facet of this situation is the distorted leadership pattern that could emerge in settlements, because of the power concentration among few people, which could be a factor among others that prevented implementation of interest groups and farmer organizations proposed by the earlier reports. In my view, the suggestion of the report to give preference to the children of the traditional leaders, for fostering leadership and maintaining corporation in the resettlement, is controversial. However, they have a point. Traditional leaders had more control over land among other traditional attributes which gave them the leadership status by birth right. But in the resettlements that pattern is disrupted. Waiting for the true leadership to emerge naturally could take a long time.⁸⁹

The study refers to the repeated notion of “viable communities” and claims that “social aspects” and social policies” refer to that notion, which in other words say that sociological factors are

⁸⁶ NEDECO Report- *Mahaweli Ganga Development Programme: implementation Strategy Study: Volume 5*, MDB, Colombo and NEDECO, Netherlands (1979), ii.

⁸⁷ NEDECO Report, ii.

⁸⁸ NEDECO Report, iii.

⁸⁹ NEDECO Report, 1-2.

important in resettlement.⁹⁰ I confer with the four basic policy issues which they have identified as the background for the study. One being co-operation; farmers have to frequently be reminded to co-operate (against their own individual interest), for efficient operation of the activity such as distribution of water, especially after they were given the authority ultimately. Second, is provision of minimal social services, to prevent extra hardship in the resettlement process and the third is the transition from peasant farming to more commercially oriented small scale farming. The fourth relates to social security which is necessary for satisfactory social life.

The study recognised the importance of “development of traditions and forms of cooperation at the village level.” Especially a “harmonious village community” would lead to cooperation which is essential to small scale farming. Also, two factors that were overlooked by previous Mahaweli reports, were explored in detail in the NEDECO Study: 1) consequences of “modernization” of agriculture and population changes which brought changes to the rural, and 2) the way traditions and culture related to the production structure.⁹¹ Finally, I affirm NEDECO’s view that the agricultural system and the relationship among the villagers have changed considerably compared to the traditional system, however, the adoption of the old system does not match the concurrent context and is “inevitably outdated”.⁹²

3.4.5 Some Aspects of Mahaweli Sociological Studies compared to SIAs

From this section, the importance of some basic facts emphasized on the Mahaweli sociological studies is clear, such as technological advancement that should be utilised for community benefits, social change which is as important as economic growth and the importance of leadership in the settlements. Apart from these main aspects, the studies show some considerations which were highlighted in the SIA concepts. For example, a critical aspect of the SIA’s are community participation and acceptance. At least for these initial studies, there is some attempt to achieve community participation. Barnabas report states that it has used samples of communities, even though the sample size is too small, due to limited resources and time.⁹³ Sogreah report claims, that the community participation in the survey was ensured by the questionnaires and interviews.⁹⁴ NEDECO report which was based on secondary data and compiled within a very short time, obviously lacked peoples’ participation. However, there is no

⁹⁰ NEDECO Report, 1.

⁹¹ NEDECO Report, 2.

⁹² NEDECO Report, 3.

⁹³ Barnabas Report, 88.

⁹⁴ Sogreah Report, 3-4.

strategy proposed by any report that ensure community participation in the implementation process, other than the 'farmers organizations' proposed by Sogreah consultants which were expected to gradually be autonomous in the settlements, which was not realized due to various reasons such as administrative and inherent problems in the settlements for example personal gains, lack of initiative and cooperation. Moreover, the recommendations lack mechanisms to ensure adhering to core values of SIA - which are the rights of the community - including the right to participate in decision making of planned interventions. However, according to Perera, valuing "people's perspective" and considering them "the primary resource and agents of development" is fundamental to the MAU's 'people centred approach'.⁹⁵ How effective were they in the actual settlement context is reviewed in the Evaluation and Discussion chapters.

What is apparent with the reports and recommendations is that the gradual ignorance of the sociological aspects by the later reports while they give more and more emphasis on developing a physical settlement model. For example, most of the Barnabas report recommendations such as settler selection from the distant areas, heterogeneous community in the settlements and avoidance of tight cluster systems were considered not practical by the later reports, such as the Hunting report. They have not tried to accommodate those earlier recommendations by Barnabas and Sogreah consultants which might have led to present problems and effected in achieving economic, socio-cultural or environment goals by the project.

Summary

To summarise this review of the related concepts and theories for this study, it is acknowledged that the towns can be very important centres of service and economic development as well as for diffusing innovations in the rural agricultural settlement context, especially with regard to this type of development project. However, the CPT which was used to model the MDP settlements, might not be the rational strategy to employ for such matter. In this settlement context, SIAs are gradually considered as important as well as economic and environmental assessments. While a few but comprehensive EIAs were conducted for the MDP, standard SIAs were not conducted. However, the sociological aspects were studied comprehensively at the initial stages and recommendations were published. An important fact of these studies is that they had identified the importance of the sociological issues in relation to community needs and aspirations. The

⁹⁵ Perera, "when Planning Ideas Land", 167.

reports promoted advancement of technology for the benefit of the settlers and identified that the leadership is crucial for the smooth function of the settlements. As mentioned before, these separate reports look at various sociological issues, and they collectively offer substantial understanding and guidance for social engineering and physical planning. Finally, this knowledge about the related concepts and understanding about the recommendations will be used in the Evaluation and Discussion chapters which follow later in the document.

Chapter 4. Mega Dam Projects

Overview

Major infrastructure projects are one of the key development strategies emerging in the twentieth century and continue to be dominant in both developing and developed countries. Such multi-purpose projects, which are implemented at an immense scale, involve huge costs and have an unprecedented impact on the socio-cultural, economic and environmental aspects of the respective contexts. Scudder, one of the Commissioners of the World Commission on Dams (WCD in 2000) identifies such projects as a flawed yet still necessary development option.¹ These mega infrastructure projects which carry large benefits are inevitable as a means to cater for the increasing demands for resources in developed countries, as well as increasingly in developing countries. This is evident by the significant number of new projects globally. As stated in the *Report of the World Commission on Dams*, over the past 50 years, the number of large dams have increased tenfold from 5,000 in 1950 to approximately 45,000 today over 140 countries. The primary goals of these projects are catering for the increasing demand for resources triggered by population booms, industrialization, urbanisation and new settlement plans. These are concentrated primarily (nearly 80%) in five countries – China, USA, India, Spain and Japan – following rapid economic growth after World War II. It is predicted that the future trend will shift to late-industrializing countries, with Brazil, China, India, Turkey and African countries at the top of the list.² The Mahaweli Development Project, initiated in the 1960s, coincides with a peak in development when over 5,000 large dams were built.

Despite the political and professional rhetoric which praises these major infrastructure projects, and the documentation that justifies them during the preliminary phases, and during implementation, they are undertaken at a massive cost in developing countries, from local social costs to global environmental costs these countries can ill afford. A number of case studies highlight these undesirable costs including sponsored studies and independent research, as well as environmental impact assessment reports.

¹ Scudder, *Future of Large Dams*, 1.

² *Dams and Development, a New Framework for Decision Making*, the Report of the World Commission on Dams (VA: Earthscan Publication Ltd., 2000), 9-10.

The social cost is extraordinary. Large scale displacement is inevitable in these projects. The figures are disturbing. According to the *Dams and Development Report (2000)*, 10.2 million people were displaced in China alone during 1950-1990, with substantial increases following the construction of Three Gorges Dam after 1990. It is estimated that 16-38 million people were displaced in India after the 1950s. The *Dams and Development Report* stresses the fact that these are only estimates and the real number is likely to be much larger.³ Thus, resettlement is a very important process that contributes to the overall success of these mega projects. Resettling displaced people is a major responsibility for the planning authorities. However, as claimed by the World Bank, which issued guidelines and policy documents identifying comprehensive resettlement plans, they failed in many cases to provide suitable resettlement colonies; not least, projects supported by the World Bank.⁴

To better understand these opportunities and shortcomings, this chapter provides an overview of the history of dams from their evolution to the present, with particular emphasis on the theme of resettlement. The chapter consists of 2 main sections. The first section is a review of the history of mega dam projects and their present importance as a development tool. The second section explores the benefits and more importantly problems - which are economic, socio-cultural and environmental - caused by these projects especially in developing countries. This chapter ends with an exploration of the current trends in the mega dam context.

4.1 Development Strategies: Past and Present

When considering mega dam projects one should understand why mega dams were built and why and how they have changed during the course of time. This evolution has two aspects; the shift of these projects from the developed world to the developing world increasingly - primarily from North to South; and that the projects gradually became multi-faceted with many key goals.⁵

4.1.1 Early Mega Dam Projects

The 20th century has experienced a boom in mega dam projects. However, the construction of dams has a much longer history. The earliest civilisations emerged on rivers and water bodies.

³ *Dams and Development*, 102-104.

⁴ *Involuntary Resettlement Sourcebook, Planning and Implementation in Development Projects*, 30118, Vol. 1, (Washington DC: The World Bank, 2004), 321-323.

⁵ Scudder, *Future of Large Dams*, 5.

Rivers were honoured as 'Mothers' especially in India (and Thailand) and worshipped as gods in different cultures with reverence (including Egypt and Ireland). People of ancient civilizations knew that their lives depended on and were sustained by water sources and that humans are minute, powerless creatures when faced with the might of water, not least floods. Myths and legends surrounding rivers or water bodies are common.⁶ In South Asian cultures, kings and rulers who constructed dams were worshipped as gods, an excellent example is the Sri Lankan king, King Mahasena, who ruled from 270 to 304 AD, who was called 'Minneri Deviyo' which means 'God of Minneriya' (Minneriya is a large tank in Sri Lanka).⁷

The earliest recorded dam builders were the farmers of Mesopotamia about 8,000 years ago. The Sumerians irrigation systems date to 4000 BCE, according to the comprehensive analysis of history and evolution of the mega dams by McCully - a leading anti-dam activist, the executive Director of the International Rivers Organization.⁸ The earliest dam remains were discovered in Jordan which date to 3,000 BCE, while the ancient Egyptians built many dams. Historically, stone and earth dams were built in the Mediterranean region, the Middle East, China and Central America, and impressive dams and irrigation systems were iconic structures in Roman civilization. South Asia has a long history of dam building with hydro based civilizations thriving in India and Sri Lanka.⁹

Dams were not only built for irrigation, they also powered watermills throughout history. Many examples can be found in Europe whereby the energy generated from flowing water was converted to mechanical energy. During the middle ages, watermills were used for various industrial tasks such as grinding corn, or pumping water in Germany and Northern Italy. By the

⁶ McCully, *Silenced Rivers*, 9-10.

⁷ From the Mahavamsa, accessed January 25, 2016, <http://mahavamsa.org/2008/05/king-mahasen-275-ad-301-ad-sri-lanka/>.

The Mahavamsa, accessed August 3, 2016, <http://mahavamsa.org/>.

The "Great Chronicle" otherwise known as "The Great Dynasty" is the single most important work of Lankan origin (written in Pali language). It describes the life and times of the people who forged our nation, from the coming of Vijaya in 543 BCE to the reign of King Mahasena (334 – 361) (6th Century BC to 4th Century AD). A companion volume, the Culavamsa or Choolavansha ("lesser chronicle"), covers the period from the 4th century to the British takeover of Sri Lanka in 1815. The Mahavamsa itself is actually comprised of three parts, all written at different times in Lankan history. The combined work, sometimes collectively referred to as the "Mahavamsa" or "Mahawansha", provides a continuous historical record of over two millennia and can be considered as the world's longest unbroken historic record.

⁸ McCully, *Silenced Rivers*, 13.

⁹ McCully, *Silenced Rivers*, 13.

beginning of the industrial revolution water mills were used extensively to power Europe's factories and mines.¹⁰

Dams, Irrigation and hydropower systems are directly connected to the industrial revolution. Advances in technology, knowledge, navigation and global economy, accelerated urbanisation, population growth and industries which relied on water, irrigation and/or hydro power.¹¹ During the 19th century countless dams were constructed in Britain and throughout the British Empire. Ancient dams and irrigation systems were also reconstructed or renovated under British administrators, especially in Sri Lanka and India, and new dams were built in Africa. In the next few decades, small dams and irrigation systems which had served simple purposes proliferated around the world, including Europe, Australia, USA, Russia and Scandinavia.¹²

The recent upsurge in the construction of large dams and irrigation systems was to stimulate development in regional areas. One of the first examples of regional planning based on irrigation can be found in Australia's Murray-Darling Basin in the 1880s [Figure 4.1]. With the backing of Alfred Deakin, a lawyer, journalist and politician, who later became prime minister of Australia, the Chaffey brothers (originally from Canada), attempted the first irrigation scheme designed in conjunction with the planning of new settlements in inland Australia. They achieved great success in California with similar projects. This project was based on irrigation development in south eastern Australia in the states of Victoria, New South Wales and South Australia along the River Murray as well as its tributaries, including the Goulburn and Murrumbidgee Rivers. After substantial public investment, the struggle to negotiate with authorities and cultural change in relation to agricultural practices, a number of towns such as Mildura, Renmark, Griffith, Leeton and many others, are now major towns in rural Australia, even though there are significant concerns about their long term sustainability.¹³ Another remarkable example is the 'Snowy Mountains Hydro Electric Scheme' (1949-1974), the largest engineering project

¹⁰ McCully, *Silenced Rivers*, 14; John H. Munro, "Industrial energy from water-mills in the European economy, 5th to 18th Centuries: the limitations of power" In *Economia ed energia, secoli XIII - XVIII*, Atti delle 'Settimane di Studi' e altre Convegni, Istituto Internazionale di Storia Economica, F. Datini 1.34 (2003), 223.

¹¹ Asit K. Biswas and Cecilia Tortajada, "Development and Large Dams: A Global Perspective," *Water Resources Development*, Vol. 17, No. 1, (2001), 9.

¹² McCully, *Silenced Rivers*, 15.

¹³ Daniel Connell, "The Tennessee Valley Authority: Catchment Planning for Social Development," *International Water Politics*, posted March 20, 2013, <http://www.globalwaterforum.org/2013/03/20/international-water-politics-the-tennessee-valley-authority-catchment-planning-for-social-development/>; J.J. Pilgram, *Issues in the Management of Australia's Water Resources*, (Melbourne: Longman Cheshire, 1986), 62-69, 119 & 175.

undertaken in Australia, which had unprecedented impacts on lives of people and benefited the agriculture in the region immensely. ¹⁴



Figure 4.1 A Memoir ("Irrigation of the Murray River", *Discover Murray*, accessed June 15, 2015 [http://www.murrayriver.com.au/images/history/irrigation.](http://www.murrayriver.com.au/images/history/irrigation))

By the early 20th century, the size of dams started to increase and the desired number of goals increased. The USA, which was the most vigorous dam builder at the time, had exhausted almost all the best sites for small dams and irrigation systems. ¹⁵ Under the *National Reclamation or 'Newlands' Act*, passed in 1902, USA sought to irrigate land, generate power and resettle the western parts of the country. ¹⁶ The United States Bureau of Reclamation (the federal government body responsible for water infrastructure development in the western part of the country), promoted small-scale irrigation-based farming across the south-west of the United States. These were surpassed by the Hoover Dam, unprecedented in scale, which was the first mega dam begun in 1931 by the Bureau. ¹⁷ This project enabled 'Las Vegas' to prosper in the desert by providing 90% of its water. ¹⁸ In this same period, the great rivers of the USSR, the Volga, Don and Dnieper, were dammed under the management of powerful bureaucracies and staffed by thousands of engineers. ¹⁹

¹⁴ "The Snowy Mountains Scheme", *Australian Government*, last updated June 8, 2015, <http://www.australia.gov.au/about-australia/australian-story/snowy-mountains-scheme>.

¹⁵ McCully, *Silenced Rivers*, 16-17.

¹⁶ McCully, *Silenced Rivers*, 16-17.

¹⁷ Connell, "The Tennessee Valley Authority: Catchment Planning for Social Development" .

¹⁸ Jacques Leslie, *Deep Water: The Epic Struggle over Dams, Displaced People, and the Environment*. Farrar, Straus and Giroux, (2005), 3.

¹⁹ McCully, *Silenced Rivers*, 17.



Figure 4.2 Kentucky Dam, 1939, on Tennessee River in Tennessee River Valley (TVA) in Kentucky ("Kentucky dam", *Wikipedia*, last modified February 23, 2016, https://en.wikipedia.org/wiki/Kentucky_Dam#/media/File:Kentucky_Dam_1939.jpg.)

For the USA and the USSR – countries with vast arid areas – the construction of dams was connected to inland conquest and the intent to make them habitable (often in relation to the exploitation of other natural resources). The dams provided irrigation for large scale farming and powered heavy industry including weapons manufacture. Later as major opponents involved in the Cold War, these two countries played the most prominent roles in the construction of mega dams.

Tennessee Valley Authority (TVA), USA

TVA marks a new era in relation to mega dam development projects.²⁰ TVA has served as a model for subsequent projects throughout the world. As such, it deserves special attention here. The TVA, was established under 'New Deal Programme' initiated by President Franklin Roosevelt in 1933, under the influence of Gifford Pinchot, politician and forester. As described by an Australian scholar, Daniel Connell, who worked extensively on the governance of trans-boundary rivers, TVA was developed to manage the impact of one of the most devastating economic collapses of the twentieth century; the Great Depression. The target area was the Tennessee valley catchment in the southern part of the USA. This region was chronically poor, and was further deteriorating under the pressure of economic depression, which this project sought prevent. Another goal was to break from the exploitative private ownership of electrical power generation and distribution system that existed in the country at the time.²¹ The TVA built a network of 29 major dams by the 1950s [Figure 4.2], and Connell explains it was a multi-resource management programme which sought to achieve, flood control, generate hydropower and improve navigation by linking to the Ohio-Mississippi River system which drains much of the central and southern United States. Associated with this were ambitious rural electrification,

²⁰ McCully, *Silenced Rivers*, 17.

²¹ Connell, "The Tennessee Valley Authority: Catchment Planning for Social Development".

agricultural and industrial development programs that transformed the lives of millions of people in the seven states.²²

Today, TVA is an independent government company and the largest provider of electrical power in the United States. It also operates a number of large coal and nuclear power stations in addition to its hydropower stations.²³

There are contrasting views about the benefits for the evacuees, re-settlers and resettlements among different scholars; some stating that the population of the Tennessee Basin is in many ways poorer than those living in nearby areas who did not 'benefit' from TVA development.²⁴ Others stress the advantages of the new industries and high-tech farming ventures which emerged in the area.²⁵ However, TVA is one of the prominent project which still attract scholarly interest,²⁶ moreover, still a model for mega-dam projects.



Figure 4.3 Norris Dam, United States. The First Dam Built by the Tennessee Valley Authority (J. Stephen Conn, *flickr*, accessed July 16, 2015, [https://www.flickr.com/photos/jstephenconn/.](https://www.flickr.com/photos/jstephenconn/))

TVA's role as a model for similar projects around the world has historical and political background. After World War II, there was a high degree of optimism about the capacity of governments to achieve complex goals through extensive planning.²⁷ As many scholars

²² Connell, "The Tennessee Valley Authority: Catchment Planning for Social Development".

²³ Connell, "The Tennessee Valley Authority: Catchment Planning for Social Development".

²⁴ W. Chandler, *the Myth of TVA: Conservation and Development in the Tennessee Valley 1933-1983*, (1984) cited in McCully, *Silenced Rivers*, 17.

²⁵ Connell, "The Tennessee Valley Authority: Catchment Planning for Social Development".

²⁶ Laura Silvert, "the Industrial Pastoral in the Tennessee Valley Authority", a paper presented at the Society of Architectural Historians (SAH) Annual Conference in Buffalo, 2013; Torben Huus Larsen, "Enduring Pastoral: Recycling the Middle Landscape Ideal in the Tennessee Valley," *Architecture, Technology, Culture*, Vol 4 (Rodopi, 2010).

²⁷ Connell, "The Tennessee Valley Authority: Catchment Planning for Social Development".

acknowledge, in the context of the Cold War, TVA was presented as a democratic model for social and economic development in contrast to the Communist models of the Soviet Union and China.²⁸ USA aid planners were eager to offer this package to their strategically important countries, exemplified in aid packages provided to Cambodia and Laos, parallel to the military investment in neighbouring Vietnam, and later similar aid programmes in Africa and Asia, directly or through donor organizations such as the World Bank and the Asian Development Bank.²⁹ Similarly, the Soviet Union has aided many countries in their campaign, including Central Asia, Siberia, Caucasus and other developing countries, which has contributed to the escalation of dam construction around the world.

The TVA model has remained a prominent model and the characteristics of TVA are quite common in subsequent mega dams. These comprise large scale planning initiatives, on a level that can only be implemented at a national scale due to the massive investment in infrastructure, national and regional coordination. Emphasis is on common benefits rather than profits for specific public or private economic institutions.

4.1.2 Mega Dams in Industrializing Countries

The construction of mega dams has drastically reduced in industrialised countries since the mid-20th century due to increased understanding of the irreversible environmental impacts as well as the negative social and cultural implications. Furthermore, the majority of suitable sites have been exploited. In contrast, the number of mega dams in developing countries is increasing. Ironically, countries which do not want to construct these projects within their countries, now support such projects elsewhere. Dam construction is concentrated in developing regions today.³⁰ Factors affecting this shift can be understood according to three broad categories: international influences, the need to alleviate poverty and local political issues.

British colonists were active dam builders during the late 19th and early 20th century. They encouraged the growth of cash crops such as sugarcane and cotton. The British pioneered the Low Aswan Dam in 1902, in Egypt [Figure 4.3], and the Sennar Dam, upstream, in Sudan.³¹ In the decades following the World War II, with newly gained independence anew bureaucrats

²⁸ Connell, "The Tennessee Valley Authority: Catchment Planning for Social Development"; McCully, *Silenced Rivers*, 19.

²⁹ Connell, "The Tennessee Valley Authority: Catchment Planning for Social Development".

³⁰ Yan Tan, *Resettlement in the Three Gorges Project* (Hong Kong: Hong Kong University Press, 2008), 28.

³¹ McCully, *Silenced Rivers*, 18.

were enthusiastic about developing and improving their countries. Poverty has been their biggest economic hurdle, and remains so. Poverty is further confirmed by Scudder as one of the three main global problems preventing better living today.³² Food shortage was also a significant issue for the growing populations as well as increasing energy needs. The quickest solution for all these problems was perceived to be large scale irrigation development programmes. This scenario is seen especially in Asian countries like India, Thailand and Sri Lanka, and later in Africa. Examples are numerous and include the Gal-Oya Development project in Sri Lanka in the 1950s. The Cold War provided further impetus for the USA and the USSR to influence their allies through aid packages which came in the form of mega dam projects, an example is USSR providing aid for High Aswan Dam in 1960s in Egypt,³³ and USA support for many mega dam projects in Asia and Central America. McCully blames international corporate beneficiaries of dam building projects, such as environmental consultancies, dam construction companies and electricity intensive industries like Aluminium, for actively persuading politicians and bureaucrats to continue supporting the construction of mega dams.³⁴

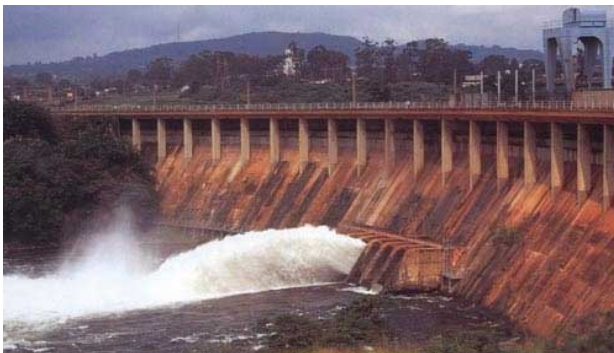


Figure 4.4 The High Aswan Dam (“Aswan High Dam”, *Egypt Holiday Tour*, accessed November 25, 2015 <http://www.egypholidaytour.com/?p=44>)

Major dams are the most expensive of infrastructure development projects. The World Bank is the biggest international financier of these projects and these large-scale irrigation and regional planning projects were hoped to be the best investment to eliminate poverty and to develop the interiors of developing countries at that time. According to the World Commission on Dams (WCD) records, the World Bank has provided almost US\$ 75 billion until 1998 for 538 mega dam projects, in 92 countries.³⁵ These projects were particularly attractive to the developing

³² Thayer Scudder, *Global Threats, Global Futures: Living with Declining Living Standards*, (Cheltenham, UK: Edgar Elgar Publications, 2010), 3: the other two main global problems according to Scudder are, fundamentalism and environment degradation.

³³ McCully, *Silenced Rivers*, 19.

³⁴ McCully, *Silenced Rivers*, 20.

³⁵ *Dams and Development*, World Commission on Dams, 2000.

countries since they temporarily built up foreign reserves as they were tied to foreign aid. Once they were implemented, these projects were expected to generate exponential improvements for large rural regions, attracting industries, sparking urbanisation and thereby raising living standards.

Finally, local political propaganda played a major role in increasing the number of dams in developing countries. While Roosevelt used TVA to attract votes, similar tactics can be identified in developing countries too. Mishandling foreign aid, exploiting development programmes for political and personal advantage is not uncommon in the region, not least, in the case of the MDP. Scudder argues that goals based on religious, political and cultural motives have led politicians to ignore one of the primary goals of the project, specifically, the promotion of national unification by involving all ethnic and religious groups according to their numerical importance.³⁶ This substantial understanding of the mega projects, particularly their relevancy in the developing countries, is a helpful base to understand the initiation of the MDP and its goals in the economic and political context of Sri Lanka, which will be discussed in the Evaluation and Discussion chapters later.

4.1.3 What are Mega Dam Projects?

Dams are located at strategic geological locations in a river valley to store water upstream and while the technique has an ancient history, McCully states that 'most of the world's river basins are now girdled with dams; many great rivers are now little more than staircases of reservoirs'.³⁷

The International Commission on Large Dams (ICOLD) defines large dams as those which are more than 15m in height from foundation to crest or, if between 5 and 15m, as having storage capacity of more than 3 million cubic metres.³⁸ A major dam is defined as a one greater than those with more than 150m in height, or 15 million cubic metre storage capacity, or more than 1,000 megawatts electrical generation capacity.³⁹

³⁶ Scudder, *Global Threats*, 54.

³⁷ McCully, *Silenced Rivers*, 6.

³⁸ McCully, *Silenced Rivers*, 4. (Scudder 2005, 2)

³⁹ McCully, *Silenced Rivers*, 5-6. See Appendix II for a list of the world's 20 highest dams and for a list of dams with largest reservoir capacity.

Mega dam construction reached its peak in the early 1970s, with a rate of nearly a thousand dams per year.⁴⁰ Until 1950, there were only 5,000 large dams in the entire world. Since then the number has soared to more than 45,000 [Figure 4.5]. China alone has nearly 19,000 large dams including 10 major dams followed by the USA with 5,500 large dams. Russia, Japan and India are not far behind. However, recent records show that Brazil, Turkey and African countries are taking the lead in dam building together with China and India. It is important to state these figures in order to understand the scale of such initiatives and the significant impact on human settlement. Scudder, a leading expert in the evaluation of mega dams and the concomitant resettlement schemes, identifies the MDP as the most significant irrigation project, worldwide, of the 1970s.⁴¹

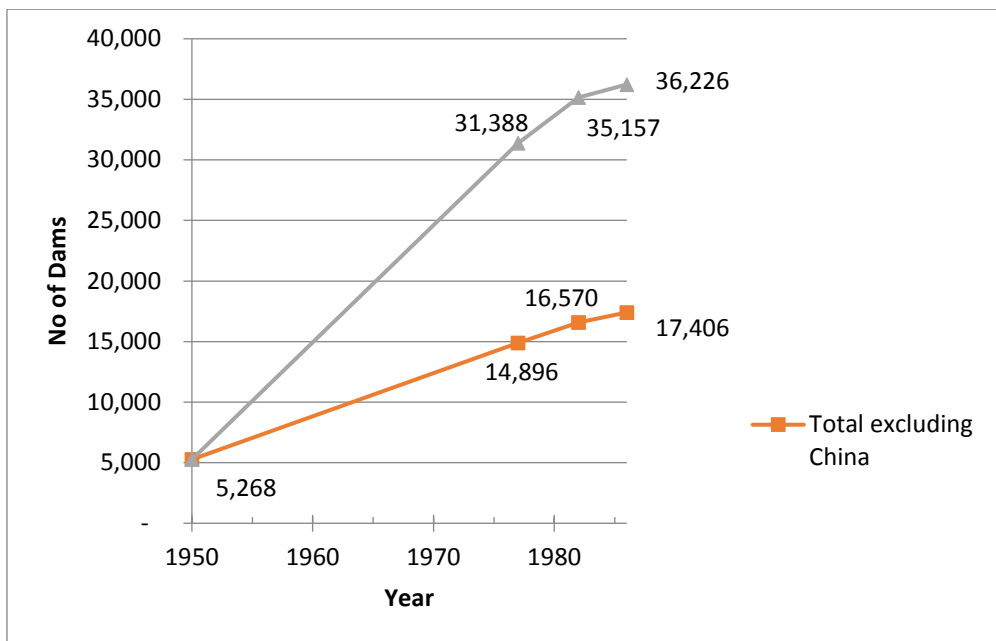


Figure 4.5 Rate of Large Dam Building, 1950- 1986 [*World Register of Dams*, International Commission on Large Dams-ICOLD, Paris, 1988 cited in Patrick McCully, *Silenced Rivers: the Ecology and Politics of Large Dams* (UK: Zed Press, 1996), 2.]

⁴⁰ Leslie, *Deep Water*, 5.

⁴¹ Scudder, *Future of Large Dams*, 5: When mega dams are implemented in developing world, they become the single most development venture in the country and are prioritised by the most powerful politicians in the country, the president or the prime minister himself. Thayer Scudder, as an expert in evaluating mega dam related resettlement projects, one of the Commissioners in the World Commission on Dams and an Anthropologist, draws examples of major irrigation projects from each decade as,
 1950s Kariba Project- the first mainstream dam in Central Africa on Zambesi River
 1960s Volta reservoir and Akosombo Dam in Ghana and High Aswan Dam in Egypt
 1970s Accelerated Mahaweli Development Project in Sri Lanka and
 1980s India's Sardar Sarovar project.

By the year 2000, about 45,000 large dams and 800,000 small ones have been built worldwide. Three gorges is the world's largest hydro-electric project currently.

4.2 From 'Mega' to 'Monster' Projects

Contemporary dams store water for two main functions. The first is to generate energy and the second is for irrigation.⁴² However, mega dam projects also provide related functions including flood control, infrastructure development, whilst stimulating economic and social improvement through industry and service development.

The increasing number of functions has generated controversial debate in scholarly circles. Such projects are often viewed positively, initially, and Connell identifies a time when they were the source of great hope.⁴³ For example, Indian Prime Minister Nehru, considered to be the father of giant multi-purpose dam projects in India, described large dams as temples of modernity, and repositories of the spirit of a new age, when it was possible to think that the world's problems could all be solved by harnessing the benefits of new technology.⁴⁴ The quotation is thus,

*This dam has been built with the unrelenting toil of man for the benefit of mankind and therefore is worthy of worship. May you call it a Temple or a Gurdwara or a Mosque, it inspires our admiration and reverence.*⁴⁵

However, his initial reverence was soon replaced by alarm. His change of heart is shown by claiming in 1958, "it is the small irrigation projects, the small industries and the small plants for electric power which will change the face of this country far more than half a dozen big projects in half a dozen places".⁴⁶ This change in attitude reflects public and expert views worldwide, and thus partly led to a decrease in dam building. There is an increasing awareness of the limitations of large scale dam projects. In this context, there has been an increasing interest in the impact of these projects on resettlement.

By all means, building of mega dams has never stopped and even at a depleted rate they will be built in the future. Therefore, it is necessary to understand the goals and intentions of mega dam projects, and why and how they were anticipated to bring prosperity to a country. In this study about resettlements it is useful to understand the dam controversy and current attitudes.

⁴² McCully, *Silenced Rivers*, 11.

⁴³ Connell, "The Tennessee Valley Authority: Catchment Planning for Social Development".

⁴⁴ Connell, "The Tennessee Valley Authority: Catchment Planning for Social Development".

⁴⁵ Former Prime Minister of India, Jawaharlal Nehru, October 1954, at the ceremony to mark the dedication of the Bhakra-Nangal Project to the Nation in India, cited in Arundhati Roy, *The Greater Common Good* (Bombay: India Book Distributor, 1999).

⁴⁶ At the Annual Meeting of the Central Board of Irrigation and Power, India in November 1958 by Jawaharlal Nehru, cited in Roy, *The Greater Common Good*.

4.2.1 Dam Projects as Key Development Tools

Dam projects, if implemented properly, can be great development tools. According to the ICOLD, rightly so, water is a valuable natural resource that is finite, fast exhausting, unevenly distributed and subject to seasonal fluctuations. In this case, storing water is vital. Reservoirs does this storing and guarantee the water supply for irrigation, domestic and industrial use. They reduce floods as well. The ICOLD further stresses that, 'many more dams need to be built to ensure proper use of this resource, in accordance with ICOLD policy'.⁴⁷

As development tools, large dams can be divided into two main categories: single purpose (71.4%) and multi-purpose dams (24.9%) [Figures 4.6, 4.7 and 4.8].

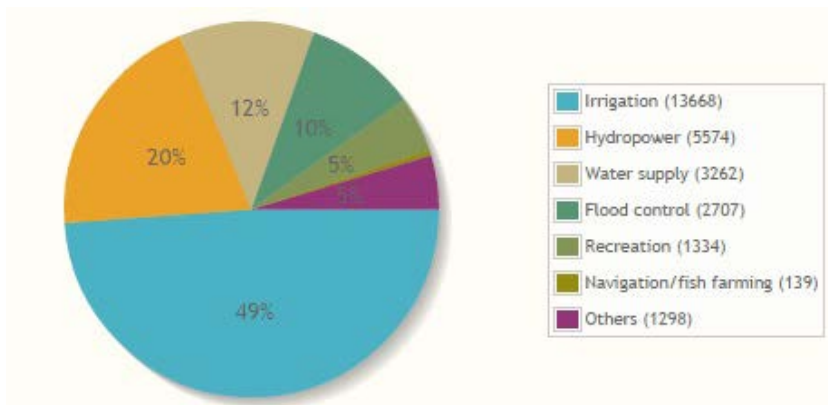


Figure 4.6 Single-purpose Dams (27,982) or 71.4 % of Large Dams (“General Synthesis”, ICOLD, accessed July 25, 2016, http://www.icold-cigb.org/GB/World_register/general_synthesis.)

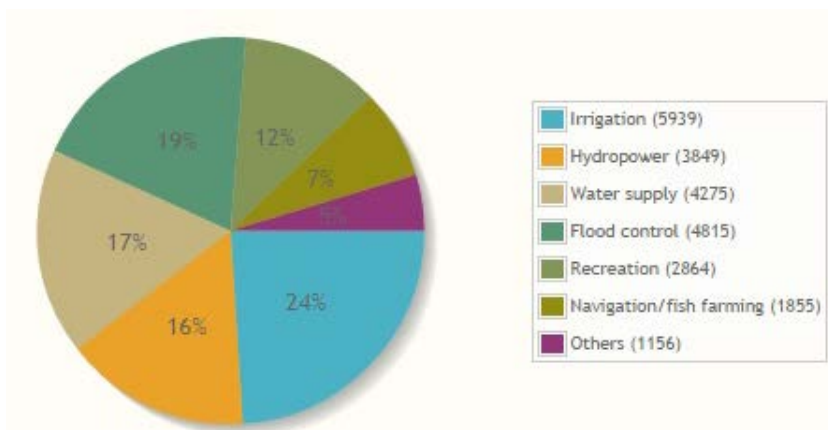


Figure 4.7 Multipurpose Dams (9,752) or 24.9 % of Large Dams (“General Synthesis”, ICOLD, accessed July 25, 2016, http://www.icold-cigb.org/GB/World_register/general_synthesis.)

⁴⁷ International Commission on Large Dams (ICOLD) has issued its “Position Paper on Dams and Environment” in 1997, cited in A.H.Walz. “General Report- Session IV,” *Dams and Reservoirs, Societies and Environment in the 21st Century*, eds. Luis Berga, J.M. Buil, E. Bofill, J.C. De Cea, J.A. Garcia Perez, G. Mañueco, J. Polimon, A. Soriano, J. Yagüe (Taylor & Francis, 2006), 1062.

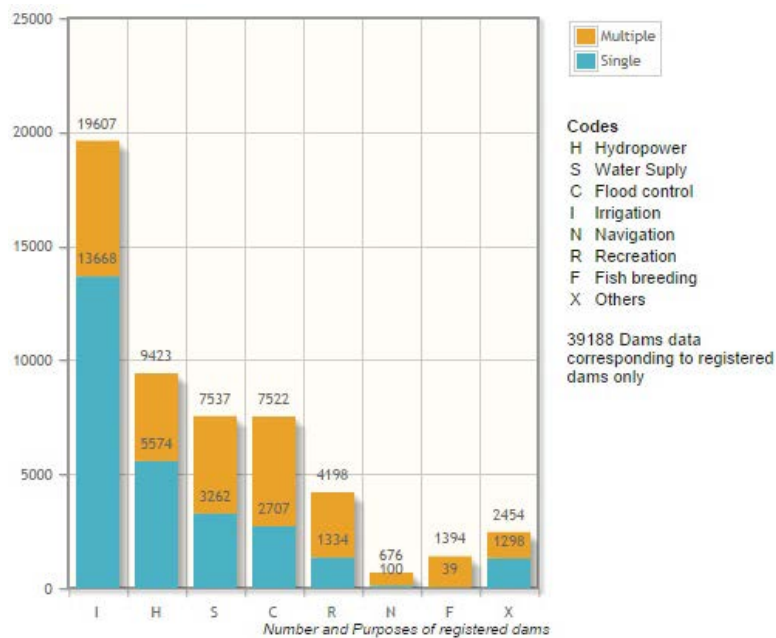


Figure 4.8 Number and Purpose of Large Dams (“General Synthesis”, ICOLD, accessed July 25, 2016, http://www.icold-cigb.org/GB/World_register/general_synthesis.)

Scudder points out that mega dam projects are promoted as a development strategy by, a powerful coalition of politicians and civil servants, multilateral and bilateral financial institutions, and parastatal agencies and private sector engineering firms. The scope of the projects is dynamic and expectations are high and multi-purpose projects are justified on environmental, economic, social and political grounds. They involve extensive planning and implementation strategies and production of comprehensive research, consultation and environmental impact assessments etc. in the planning phase and throughout the implementation directed to achieve their goals.⁴⁸

The goals and expected benefits of mega dam projects were and are major and varied. Their function might include hydro-electricity, irrigation, water supply, flood management, recreation or tourism.⁴⁹ As shown in USA and Australia, the first dams were connected to conquering and settling dry, undesirable and unused parts of basically newly developed countries.⁵⁰ More recent examples are related to the population boom in developing countries and the increased demand for drinking water and irrigation for food production, also new industries and economic growth

⁴⁸ Scudder, *Future of Large Dams*, 5.

⁴⁹ Scudder, *Future of Large Dams*, 5.

⁵⁰ McCully, *Silenced Rivers*, 15.

which increased the demand for water and water related services such as hydro-power.⁵¹ This is reflected by the increasing number of these projects in rapidly developing regions such as India, China, Central American countries and African countries, and not least, the MDP.

The benefits of mega dam projects are significant. 20% of global electricity is generated from hydro-power. The World Commission on Dams (WCD) estimates that approximately 15% of world food production is based on irrigation derived from dams. Many main cities worldwide significantly depend on dam supplied water for consumption, including Los Angeles, USA, Gauteng, the industrial hub of South Africa, and Nairobi, Kenya.⁵² In relation to people who are evacuated and resettled and for the host population in which they are settled, the projects are anticipated to bring benefits such as improved infrastructure, services and facilities such as new schools and hospitals and improving overall quality of life.

The Role of the World Bank⁵³

The World Bank, has traditionally been the world's most important financier of dams with more than 600 large dam projects funded since the 1950s. Large dam projects were also funded in collaboration with other international organizations such as the Asian Development Bank or other donor countries. The Bank has also played a key role in establishing the institutional groundwork, propagating and legitimizing large dams.

The first large dam funded by the World Bank is 'Kariba' on the Zambezi River, Zambia.⁵⁴ Projects like the Kariba Dam [Figure 4.9], the Akosombo Dam on the Volta, Ghana, MDP on the Mahaweli River in Sri Lanka and the Sardar-Sarovar Dam on the Narmada River, India, were supposed to transform whole countries and regions. Once the disastrous social, environmental and economic impacts of such projects became apparent, the Bank largely withdrew from the sector in 1993. Furthermore, the Bank responded to these deleterious impacts by preparing guidelines in an effort to avoid or mitigate the adverse consequences of large dams. The

⁵¹ *Dams and Development*, 3-5.

⁵² Scudder, *Future of Large Dams*, 6.

⁵³ The World Bank originated as a vital source of financial and technical assistance to developing countries around the world. It is not a conventional bank. It comprises two unique development institutions owned by 184 member countries – the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA). Each institution plays a different but supportive role in its effort to reduce global poverty and the improvement of living standards. The IBRD focuses on middle income and creditworthy poor countries, while IDA focuses on the poorest countries in the world. Together they provide low-interest loans, interest-free credit and grants to developing countries for education, health, infrastructure, communications and many other purposes.

⁵⁴ Leslie, *Deep Water*, 107.

following guidelines were issued; on dam safety (1977); involuntary resettlement (1980, 1986, and 1990); on safeguards for indigenous people in 1982; natural habitat (1986 and 1995); environmental aspects of dams and reservoirs (1989); and on environmental assessment (1991).⁵⁵ By 1993 the World Bank had withdrawn from India's Sardar-Sarovar project (1985), due to systematic mishandling of policy by local authorities.⁵⁶

The Bank claims that mega-dam projects bring benefit to a larger number of people in poor countries, and they provide infrastructure for the poorest.⁵⁷ While the Bank has reduced the rate of funding, (only half of the funds as 1980s currently), it has directly or indirectly assisted 3 percent of the dams in developing countries. Lending for 39 projects, since 1989, it has incurred \$7.4 billion, for large dam projects, which accounts for about 3 percent of total World Bank lending in the past ten years.⁵⁸ Even though the pace has slowed, the World Bank still plays a major role in dam building projects especially in the developing countries.



Figure 4.9 Kariba Dam on Zambezi, Zambia ("Weak Kariba Dam walls threaten Zambia's energy security", *BBC News*, accessed July 28, 2016, <http://www.bbc.com/news/business-30850591>.)

4.2.2 From Good to Bad and Bad to Worse

Mega dam projects are expected to bring major benefits. However, due to many embedded shortcomings such as the impact on people, the environment or the political and economic

⁵⁵ *Sri Lanka: Mahaweli Ganga Development, Independent Evaluation Group-the World Bank Group.*

⁵⁶ J. Stanley, "Development Induced Displacement and Resettlement: A research Guide," *Forced Migration*, published (January 2004), 5, <http://www.forcedmigration.org/research-resources/expert-guides/development-induced-displacement-and-resettlement>.

⁵⁷ "The World Bank Group," *International Rivers Organization*, accessed February 6, 2015, <http://www.internationalrivers.org/campaigns/world-bank-group>.

⁵⁸ *Sri Lanka: Mahaweli Ganga Development, Independent Evaluation Group-the World Bank Group.*

interventions, most of them have not achieved their goals so far. In recent decades, significant research has emerged which focuses on these mega dam projects. The impact can be broadly categorised as environmental and ecological, economical and socio-cultural.

The environmental impacts of the mega dam projects are significant; they cannot be reversed and very hard to rectify. The most extreme example is the Aral Sea in the Central Asia, the largest body of freshwater outside North America, which has shrunk to less than half its previous area and separated into three hyper-saline lakes.⁵⁹ Fresh water ecosystems, which are largely altered by hydro projects are especially vulnerable to human development interventions. Large dams built to modify the seasonal and geographic variation of global water resources and supply have been one of the key issues for declining freshwater aquatic species around the world. These dams and reservoirs not only contribute largely for evaporation and evapotranspiration, but they change natural ecosystems too.⁶⁰

Inundation of forests, nature reserves and natural resources is very common with large dam projects. Substantial evidence can be found in almost all cases and the danger is that most future projects at the proposed stage pose threats to virgin forest reserves, such as dam projects in Brazil and Africa. The amount of land as well as the quality of land inundated is important, as riverine and flood plain habitats are rich in biodiversity. Reservoirs and canals can also interfere with the behavioural patterns of the wild life as happened in the MDP in Sri Lanka which had cut off the migratory routes of the endangered elephants. Consequently, the elephants have become pests and the elephant-human conflict now claims lives of farmers as well as elephants.⁶¹

Most recent large dam projects are implemented in poor developing countries. These multi-purpose mega scale projects are carried out at a massive expense, and every project requires large foreign aid and donations; long term loans bound to conditions to ensure that the most of the moneys go back to donor countries. Common conditions require that the equipment, and/or technical, construction and engineering services should be obtained from the donor country. The result is massive debt and interest which exacerbates the poor economic situation. In developing countries with corrupt governments, there are no transparent transaction procedures

⁵⁹ McCully, *Silenced Rivers*, 7.

⁶⁰ Leslie, *Deep Water*, 184.

⁶¹ McCully, *Silenced Rivers*, 32.

and a portion of foreign aid often goes to local politicians' pockets, making matters worse. Directly or indirectly, these mega projects can worsen the economy of a specific country.

Socio-cultural aspect of the impacts of mega dam projects are harder to quantify in conventional measures. However, they are significant because mega dam projects are implemented to benefit the people, and which is why this evaluation of one of the components of the resettlements – new towns – in the light of the sociological concerns are important, as attempted in this research. The human consequences are varied and diverse. They directly impact on evacuees or a relocated community by a dam project. The impacts span from losing a home, a habitat and a livelihood to a psychological ordeal. Very few cases in the history of mega dams have shown recovery from the devastation following evacuation resulting from a dam project, let alone, benefiting. They face many challenges during the process of resettling from rebuilding their lives, livelihood, or antipathy from the hosts, through to deadly diseases and epidemics such as mosquito related malaria. Since this study is based on resettlement, the socio-cultural impacts of mega dam projects are discussed in depth in the next chapter.

In addition to the direct impacts on people, there are other effects of mega dam projects which have social and cultural implications. One of them is the loss of scenic value associated with a riverine environment. Inundation of archaeological sites is another irreversible loss for future generations to come, but very common in many dam projects. In the MDP as well, as in many cases in India and Africa this has happened knowingly, along with historical and archaeological remnants and sites which are not yet founded or known as to exist, thus are lost forever with reservoirs. The International Rivers Organization, an active anti dam organization list outs some of the dam-threatened heritage sites around the world, including some World Heritage Sites. Following are just a few examples,⁶² by which the variety of the threat is clearly visible; Three parallel Rivers of Yunnan Protected Areas - the epicentre of Chinese biodiversity, consisted of fragile and unique ecosystem – a World Heritage Site; Lake Turkana National Parks, Kenya – the world's largest desert lake – another World Heritage Site; Lower Valley of Omo, Ethiopia - tribal and indigenous peoples along the Omo Valley that would be affected by the Gibe III dam that include eight distinct indigenous communities; Dja Faunal Reserve, Cameroon - one of the largest rainforests in Africa, with 90% of its area left undisturbed; Kaziranga National Park, India - home to many unique species; Ashur (Qal'at Sherqat), Iraq - The ancient city of Ashur is

⁶² "Dam Threatened World Heritage Sites," *International Rivers Organization*, accessed February 6, 2015, <http://www.internationalrivers.org/list-of-dam-threatened-world-heritage-sites>.

located on the Tigris River in northern Mesopotamia in a specific geo-ecological zone, at the borderline between rain-fed and irrigation agriculture. The city dates back to the 3rd millennium BC; Alto Douro Wine Region, Portugal - the Region has been producing wine for some 2,000 years and its landscape has been moulded by human activities; Lake Baikal, Russia - the deepest, oldest and largest lake in the world, containing 20% of the planet's unfrozen fresh water; Victoria Falls, Zimbabwe/Zambia - one of the most spectacular waterfalls in the world.

4.2.3 A Controversial Debate

Increased awareness of the natural environment and its endangered situation is one of the most important development in the late 20th century.⁶³ Especially in early 1970s, the emergence of environmental and social movements⁶⁴ had broadened the knowledge base and awakened interest on environment related activities. An increasing number of research and studies based on mega dams and associated resettlements showed data on devastating environmental, ecological and economic effects. More and more international community had access to knowledge of hardships of evacuees, conflicts, forced evacuations by the authorities and even massacres resulted by them. Mega dam projects once glorified had started to show the failures and flaws. All these factors cumulatively shaped the current perception on mega dams and antipathy against them. Many organizations and community groups world-wide coming from various backgrounds, including scientists, environmentalists, human rights activists and even rural and indigenous people even though rarely, have organized and started to show their opposition for mega dam projects by various activities.

The argument of dam opponents is based on 3 main factors; The first is that mega dams do not realise their goals – Reservoirs fill up with silt long before predicted and hydro plants work much less and supply much less electricity. Badly managed irrigation schemes destroy fertile soils, degrade soils and increase salinity. Hydro projects designed to control floods bring much devastation by misleading and encouraging people to live in the flood plains.⁶⁵ Due to their large scale they often get out of hand and end up with cost overruns and delays in operation diverting the investments in more sustainable and beneficial uses.⁶⁶ With prolonged planning and

⁶³ Walz, "General Report- Session IV", 1062.

⁶⁴ Biswas and Tortajada, "Development and Large Dams: A Global Perspective".

⁶⁵ McCully, *Silenced Rivers*, 24.

⁶⁶ Engelburtus Oud and Terence C. Muir, "Large Dams, Learning from the Past Looking at the Future," *Engineering and Economic Aspects of Planning, Design, Construction and Operation of Large Dam Projects*, Workshop Proceedings, Gland, Switzerland, April 11-12, (1997), 25, ed. Anthony H.J. Dorsey, (World Bank

implementing periods, they can effect on a country's economic status badly because of increased debt due to inflation, which can result on invariable cost than they claim.⁶⁷ From settlers point of view it is worse. They uproot people from their origins and alienate them in new surroundings which would take generations to recover or would never recover in any case.

The second is, the argument that dams can bring severe harmful outcomes on environment, ecology, economy, society and people that do not overweigh the costs incur by these projects. The evidence for this fact is increasing. The third is that there are other more sustainable methods which would yield similar outcomes - small scale, traditional or improved methods, increase of efficiency of resource use, alternative energy resources such as wind and solar. Moreover, smaller dams are cheaper, less risky investments, and the impact would be smaller and resilience, more local benefits, smaller amount is affected and easier to maintain.⁶⁸

However, still some strong dam supporters express that the only efficient solution for many problems prevailing in the developing world such as chronical poverty, food shortage and lack of infrastructure are the mega dam projects. Their argument is based on 2 main factors; the first is that the dam opponents and environment activists have hidden agendas, who are from developed countries which have exhausted potential sites for mega dam projects and taken full advantage of these projects, who already have good standards of living, access to clean water and adequate food and energy. They often back counterparts in developing countries trying to prevent or delay development projects, through various ways such as, giving financial and intellectual support, misleading scientific and technical facts and manipulating available information. Moreover, the activists from poor countries come from a particular 'elite class' who have not really been directly affected by mega dam projects. It is rare to find rural peasant activists or indigenous leader among them.⁶⁹

The second is, the argument that in water supply scenario, small can mean inefficiency or inadequacy - even though in some environmentally sensitive and rural cases the small projects

Publications, 1997), accessed March 25, 2015, http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/1999/09/17/000178830_98101912310448/Rendered/PDF/multi_page.pdf.

Engleburtus Oud and Terence C. Muir of the Lahmeyer International GmbH, the largest German consulting engineering company, have been team leaders of a number of hydropower and power system development studies. The trends proposed here are included in the paper commissioned from them by IUCN for the joint IUCN, The World Conservation Union/ World Bank.

⁶⁷ McCully, *Silenced Rivers*, 25.

⁶⁸ McCully, *Silenced Rivers*, 25.

⁶⁹ McCully, *Silenced Rivers*, 25.

can be effective, it is always not the solution for developing large areas or supply for industries which need large water supply, such as irrigation schemes. Furthermore, small projects can bring big damages. For example, India's Farakka barrage, less than 15m high, built to divert water of Ganges had catastrophic impact on downstream Bangladesh economy and ecology.⁷⁰

McCully argues that the sensible solution is not resorting to smaller irrigation systems but to implement measures to reduce the demand for power and irrigation and increase efficiency.⁷¹ Anti-dam activists today are actually much more organised than the dam supporters. There are many world-renowned organizations of anti-dam activists such as the International Rivers Organization and Narmada Bachao Andolan, founded by the world's foremost anti-dam activist,⁷² Medha Pathkar of India. But still dam supporters have more powerful institutional and financial backing of influential organizations, two powerful figures in the industry, Asit K. Biswas, the President of the Third World Centre for Water Management, Mexico and Goran Lindahl, the President of ABB Ltd., the World's largest supplier of hydro-power generators.⁷³ Mixed dam activists such as Thayer Scudder,⁷⁴ who studied dam projects for more than 40 years of his professional and academic career, claims that mega-projects, would bring great benefits,⁷⁵ if economic, technical, and environmental factors are managed properly. However, there is a main fact that all dam experts agree on, regardless they are anti-dam, pro-dam or mixed; there is no credible and comprehensive retrospective assessment of the environmental, ecological, economic and social effects of a representative sample of large dams, or even of a single project, in that case.⁷⁶

The widening understanding of the severe impacts on the environmental and sociological aspects has awakened and renewed global concerns for these projects, which paved way to take action collectively by the opponents, proponents and mixed activists. Recent commissions on this regard are such acts.

⁷⁰ Biswas and Tortajada, "Development and Large Dams: A Global Perspective".

⁷¹ McCully, *Silenced Rivers*, 25.

⁷² Leslie, *Deep Water*, 6.

⁷³ Leslie, *Deep Water*, 6.

⁷⁴ Leslie, *Deep Water*, 107.

⁷⁵ Scudder, *Future of Large Dams*, 1.

⁷⁶ McCully, *Silenced Rivers*, 24.

International Commission on Large Dams (ICOLD)

In order to understand the recent developments in the dam industry, it is useful to know about key international organizations related to mega dam projects. ICOLD is a non-governmental International Organization which provides a forum for the exchange of knowledge and experience in dam engineering. ICOLD was founded in 1928 and has National Committees from more than 90 countries with approximately 10,000 individual members. ICOLD members are primarily practising engineers, geologists and scientists from government and private organizations, consulting firms, universities, laboratories and construction companies. ICOLD leads the profession in ensuring that dams are built safely, efficiently, economically, and without detrimental effects on the environment. Its original aim was to encourage advances in the planning, design, construction, operation, and maintenance of large dams and their associated civil works, by collecting and disseminating relevant information and by studying related technical questions.

Since the late 1960s, the focus has been on dam safety, performance monitoring, analysis of older dams and spillways, the effects of ageing and environmental impact. More recently, new subjects include cost studies at the planning and construction stages, harnessing international rivers, information for the public at large, and financing. ICOLD incorporate other organizations such as World Register of Dams (WRD).⁷⁷ The WRD is a widely-recognised data base and source of information about large dams around the world. The update 2006, which has been finished and edited in early 2011, includes more than 37,500 dams with heights over 15 m. For each dam more than 30 factors are given, amongst them geographical data, data of the dam, the spillway, the reservoir, the responsible organizations, as well as important environmental data.⁷⁸

The World Commission on Dams (WCD)

An important milestone in the mega dam history which had shaped the trend and situation now is the World Commission on Dams, which was facilitated by the World Bank in 2000. Led by the dam opponents' campaigns, and formed by the World Bank, an independent commission of twelve commissioners have assessed positive and negative impacts of dam projects and produced guidelines for future constructions. In pursuit of independence and cross-spectrum

⁷⁷ W. Flögl, *the History of the World Register of Dams*, accessed on August 3, 2016, http://www.icold-cigb.org/userfiles/files/CIGB/History_of_the_WRD.pdf.

⁷⁸ "The International Commission on Large Dams", *ICOLD*, accessed on January 14, 2015, http://www.icold-cigb.org/GB/World_register/general_synthesis.asp

representation, the 12 commissioners were chosen from anti-dam, pro-dam and mixed groups, who were presided over by the former South African President Nelson Mandela.

The twelve commissioners of the WCD, including office bearers are,

1. Prof. Kader Asmal, Chair, (Minister of Education, Government of South Africa)
2. Mr. Lakshmi Jain, Vice-Chair, (Chairman, Industrial Development Services, India)
3. Mr. Achim Steiner, Secretary-General, (Director-General, The World Conservation Union/IUCN, Switzerland)
4. Mr. Don Blackmore (Chief Executive, Murray Darling Basin Commission, Australia)
5. Ms. Joji Cariño, (Tebtebba Foundation, The Philippines)
6. Prof. José Goldemberg (State Secretary for the Environment, State of São Paulo, Brazil)
7. Dr. Judy Henderson (Chair, The Global Reporting Initiative, Australia)
8. Mr. Göran Lindahl (Retired CEO, Asea Brown Boveri- ABB, Chair, Alliance for Global Sustainability and Special Advisor to UN Secretary-General Kofi Annan on the Global Compact, United Kingdom)
9. Ms. Deborah Moore (Public Interest Consulting Services and Conservation Strategy Fund, United States)
10. Ms. Medha Patkar (Founder, Narmada Bachao Andolan, India)
11. Prof. Thayer Scudder (Professor of Anthropology, Emeritus, California Institute of Technology, United States)
12. Dr. Jan Veltrop, (Retired Senior Vice President, Harza Engineering, Past President of International Commission on Large Dams-ICOLD, United States)⁷⁹

⁷⁹ "World Commission on Dams", *International Rivers organization*, accessed on February 25, 2015, <http://www.internationalrivers.org/files/attached-files/021008.wbletter.pdf>.

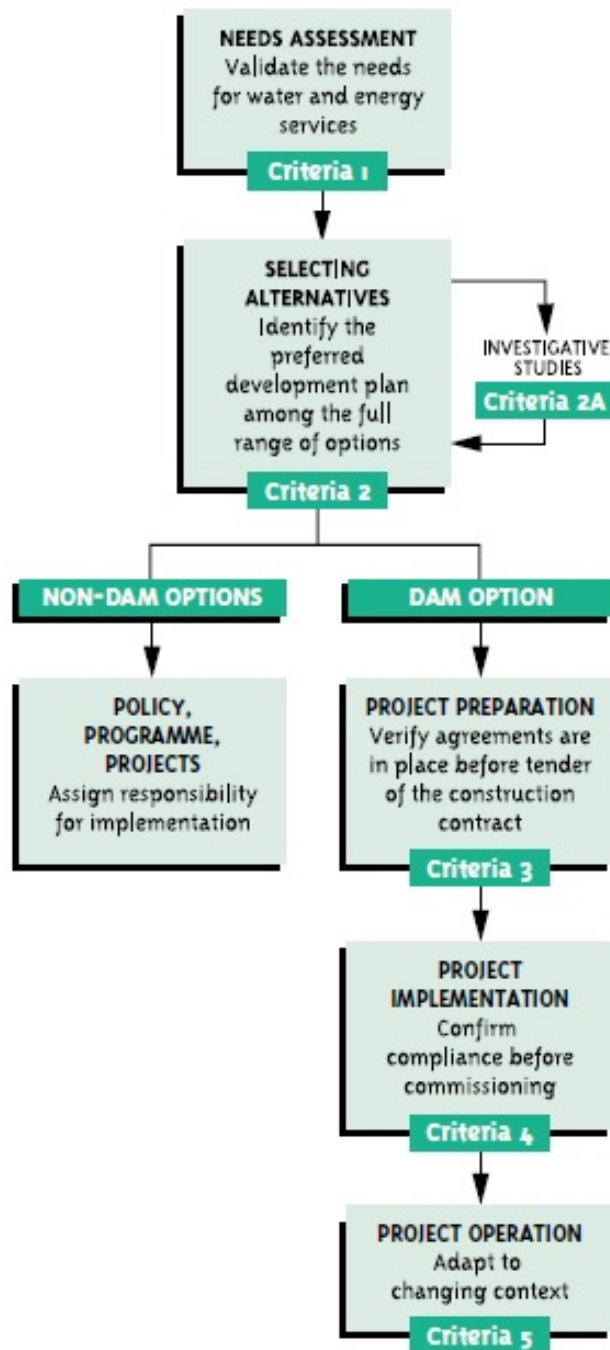


Figure 4.10 Five Key Decision Points- A Comprehensive Frame Work for Decision Making on Water and Energy Services Identified in the WCD [Imhof A.S. Wong, and P. Bosshard, *Citizen's Guide to the World Commission on Dams* (Berkeley: International Rivers Network-IRN, 2002), 11].

Two and a half years after its formation, the commission has published its final report "Dams and Development: A New Framework for Decision-Making". It is consisted of two parts: the first, a comprehensive study of dams' impacts; the second, a framework for future dams [Figure 4.10]. Even though the World Bank itself ignored in many occasions, these guidelines were considered

for new dam projects by a few countries and regional groups, such as South Africa, Vietnam, Thailand, Nepal and the Southern African Development Community.⁸⁰

4.2.4 Current Trends

The mega dam debate and the controversy is complex and due to this the trend is changing constantly.⁸¹ An important decision taken in the WCD is that, if built, the dams should take entirely new approach. The main trends for large dam projects today seem to be,

- Increased understanding and awareness of complex technical, environmental and social issues that are inherent to large dam projects; and realization that the development of large dam projects involves a trade-off between the benefits gained against losses; increased awareness that environment sustainability and high discount rates are in conflict;
- Increased public scrutiny of large dam projects and increased public interest in large dam projects as a result of NGO campaigns;
- Increased public consultation in identifying and screening of projects;
- Increased private sector financing and, as a consequence, drive to cut costs and duration of design and construction, and to reduce financial risks;
- A number of technological developments that make the planning and construction of large dam projects more efficient;
- The recognised need for independent monitoring and control of project cost, dam safety and environmental and social impact during all phases of project design, construction and operation;
- increased need for safety inspection and environmental management of existing dam projects; and
- Increased interest in modernization and upgrading of existing schemes.⁸²

More recent research and study strengthen the fact that majority of the mega dams are “unprofitable undertakings as a result of exorbitant cost overruns”.⁸³ More and more examples around the globe show that controversial mega dam projects are being redesigned, cancelled or revoked - a positive development - due to the consideration for the people and environment. This shows the acknowledgement of the adverse and irreversible impacts on vulnerable people

⁸⁰ Leslie, *Deep Water*, 8.

⁸¹ Oud and Muir, *Large Dams, Learning from the Past Looking at the Future*, 17.

⁸² Oud and Muir, *Large Dams, Learning from the Past Looking at the Future*, 18.

⁸³ Mark Howe, “Mega Dams make for Bad Investments”, *Sourcetable*, published on March 18, 2014, <https://sourceable.net/mega-dams-make-for-bad-investments-oxford-study/>.

such as indigenous communities, as well as the environment; and the positive response for mounting pressure for remedial actions. Most developed countries have almost stopped building mega dam projects, and in some cases existing dams are being removed. Strict regulations are imposed to protect whatever is left of the natural resources. McCully points out that,

Almost all remaining rivers in Sweden and Norway are protected against dams, and around 16,000 km of 'outstanding' sections of rivers and streams in US are now 'preserved in free flowing condition'.⁸⁴

Even the developing countries are following the lead. Some very recent examples are the 'Bakum Dam' in Sarawak, Malaysia, which was scrapped in April 2016 due to mass protests by the indigenous communities;⁸⁵ the HydroAysen mega project in Patagonia, Chile, which was rejected due to its effects on the environment and culture;⁸⁶ the Belo Monte Dam of Brazil was extensively redesigned following controversy.⁸⁷ Much controversy surrounds the 'boom of the dams' in China, including the Three Gorges Dam Project – the largest, most expensive and most controversial project;⁸⁸ activists are vigorously fighting though the projects are still ongoing.

Resettlement issues - the theme of the next chapter of this document - have been highly underestimated and externalised in the past. In relation to voluntary and involuntary resettlement, the trend is the optimistic perception that the living standards can be improved and the social costs can be internalised. For that, the understanding is, reasonable and adequate compensation and support should be given to rebuild the re-settlers' lives, while in the planning stages, a grass roots approach has to be exercised. Overall, the World Bank and WCD policies and guidelines should be followed and it seems that more countries are considering them these days.

⁸⁴ McCully, *Silenced Rivers*, 26.

⁸⁵ R.D.R. Yoon, "Malaysian Baram mega-dam project scrapped, indigenous people take back land", *Asian Correspondent*, published March 22, 2016, <https://asiancorrespondent.com/2016/03/baram-dam-malaysia-sarawak/>; Annette Gartland, "Indigenous communities celebrate victory in battle against Sarawak mega-dam project", *Changing Times*, published March 22, 2016, <https://time2transcend.wordpress.com/2016/03/22/indigenous-activists-celebrate-victory-in-battle-against-sarawak-mega-dam-project/>.

⁸⁶ David Hill, "Chilean Patagonia spared from US\$10 billion mega-dam project", *the Guardian*, published June 12, 2014, <https://www.theguardian.com/environment/andes-to-the-amazon/2014/jun/11/chilean-patagonia-spared-10-billion-mega-dam-project>.

⁸⁷ "Belo Monte Dam", *Wikipedia*, last modified July 30, 2016, https://en.wikipedia.org/wiki/Belo_Monte_Dam.

⁸⁸ "Three Gorges Dam", *Wikipedia*, last modified July 15, 2016, https://en.wikipedia.org/wiki/Three_Gorges_Dam.

Summary

As a whole, mega dam projects, which were a popular development method in the developed countries in the 20th century, are increasingly implemented in the developing countries. The TVA project of the US still presents a model for such mega dam projects worldwide, while the World Bank is one of the most influential financier. However, with growing understanding of adverse effects of these projects, there is a debate about the effectiveness of these projects for development, particularly in the developing countries, and the approach that should be taken if they are necessary implementations. The recent developments within the ICOLD and WCD, and the subsequent frameworks and directions that place more importance on environmental and socio-cultural impacts are a result of this growing understanding. Thus, more regulations and rules are imposed, for the planning and implementation of these mega dam projects and associated resettlements, within both developed and developing countries.

Chapter 5. Resettlement

Overview

In the changing scenario of the mega dam related controversy, the most important and positive recent trend is, the recognition of displaced peoples that is receiving increasing attention. Resettlement within a mega dam project can be a common goal. However, resettlement, by definition can involve displacement and can be an unavoidable consequence of mega dam projects. For this investigation of resettlements associated with mega dam projects, it is important to understand the context of displacement, the demographic profile of the people who are displaced, and the challenges they face during the resettlement process. Given the demographic profile of people who have been displaced in the case of the MDP, emphasis is placed on the experience of re-settlers, and notably, vulnerable indigenous communities, including women and children.

Thus, this chapter, which consists of 3 sections, first discusses the issues related to displaced peoples as a result of mega dams and the various concerns faced by them in the resettlements. The second section explores the importance of resettlements for the regional economic and socio-cultural development. The future trends in the context of these resettlements are discussed with a brief account of the MDP in Sri Lanka as the basis for Part II of this dissertation in the final section.

5.1 Displacement and Resettlement associated with Mega Dam projects

Though attention is mounting in relation to displaced populations in recent years, and there are optimistic directions that are considerate of socio-cultural aspects in attempts to resettle them according to regulations and guidelines, the immediate past in the mega dam context was different; moreover, for some countries, this trend in sociological concern related to mega dam context is still in its infancy. Since the TVA project, dams have displaced millions of people around the world. An accurate number or an estimate is difficult to ascertain, as authorities, either intentionally or unintentionally, rarely collect reliable statistics. Almost all of the people who are displaced are poor, politically powerless, and often belong to an indigenous or ethnic

minority.¹ In many instances, people were evicted with minimal compensation or nothing at all, which impacted every aspect of their lives. Cases of resistance and opposition have often met with violence, and an extreme example is the 'Rio-Negro massacre' in Guatemala between 1980 and 1982 which killed 444 Rio-Negro people, of Mayan ethnicity, when they organised protests against the hydro-electricity dam on Chixoy.²

5.1.1 Displacement: Some Facts and Figures

In the 20th century, labelled 'the Century of Displacement' by Sorenson,³ the phenomenon of human displacement has been identified as a major social and economic issue, resulting from various causes such as war or civil conflict, extreme natural resource extraction, urban renewal or development programmes,⁴ and not least, multipurpose infrastructure development projects. No data is available to calculate exactly how many people are affected by development projects. The estimated number is close to 10 million people each year.⁵ Table 5.1 gives a breakdown of regional displacement resulting from development programmes funded by the World Bank based on a report issued by the World Bank Environment Department.

Table 5.1 Active World Bank Projects with Resettlement, including Number of People Displaced ⁶

Region	Projects	Percentage	People	Percentage
Africa	34	23.3	113,000	5.8
South Asia	29	19.9	1,024,000	52.1
East Asia	58	39.7	588,000	30.0
Europe/Central Asia	5	3.4	27,000	1.4
Middle East/ North Africa	7	4.8	32,000	1.6
Latin America	13	8.9	180,000	9.1
Total	146	100	1,963,000	100

¹ McCully, *Silenced Rivers*, 66.

² Ro Negro Massacres, *Guatemala Human Rights Commission* (2011), <http://www.ghrc-usa.org/our-work/important-cases/rio-negro/>.

³ Sorenson, *Relocated Lives*, 2.

⁴ Stanley, "Development Induced Displacement and Resettlement".

⁵ Cernea; See Cernea and Mathur (2008: 20): "Globally, the WB estimated in 1994 that, over a twenty-year period and counting only three economic sectors, up to 190-200 million people were displaced by public sector projects alone, at an average of 10 million people annually. By now, this estimate is outdated. Considering the pace of displacements not only in three sectors, but in all economic sectors, and not only in public but also in private sector projects, the conservative estimate of development displacements rises to about 280-300 million over 20 years or 15 million people annually."

Can Compensation Prevent Impoverishment? Reforming Resettlement through Investments and Benefit-Sharing, ed. Michael M. Cernea and Hari Mohan Mathur (Oxford, 2008), 20, cited in Natalie Bugalski and David Pred, *Reforming the World Bank Policy on Involuntary Resettlement* (2013), <http://www.inclusivedevelopment.net/wp-content/uploads/2013/04/Reforming-the-World-Bank-Policy-on-Involuntary-Resettlement.pdf>.

⁶ World Bank Environment Department, (1993) in Stanley, "Development induced Displacement and Resettlement".

However, it should be noted that projects funded by the World Bank only account for a small fraction of global displacement: 3% due to dam projects and 1% resulting from urban development and transportation projects. The distribution is given in the Table 5.2.⁷

Table 5.2 Distribution of Displacees by cause of Displacement in the World Bank Projects ⁸

Cause	Projects	Percentage	People	Percentage
Dams, irrigation, canals	46	31.5	1,304,000	66.4
Urban infrastructure, water supply, sewerage, transportation	66	45.2	443,000	22.6
Thermal (including mining)	15	10.3	94,000	4.8
Other	19	13.0	122,000	6.2
Total	146	100	1,963,000	100

According to the figures displayed in Table 5.2, hydro-projects have a significant impact on human displacement in World Bank projects. It is estimated that globally, 40% of development induced displacement is a result of dam projects. During the latter half of the 20th century, it is estimated that 30-80 million people were displaced due to the construction of dams. This broad range is due to the difficulty of estimating accurate figures as explained above. In terms of today's population, it means that approximately one in every hundred people has been displaced by a dam project.⁹ While displaced people can be found throughout the world, China and India have the highest number of displacees and major projects have been characterised by problematic resettlement programmes. According to the Dams and Development Report, prepared following the World Commission on Dams in 2000 – an account of this commission is included in the previous chapter - 10.2 million people were displaced in China alone due to large dam projects constructed between 1950 and 1990, with substantial increases following the construction of the Three Gorges Dam in China after 1990 (displacing approximately 1.2 million people). It is estimated that 16-38 million people were displaced in India after the 1950s. The Dams and Development Report stresses the fact that these are only estimates and the real number is likely to be much higher although no actual figures are available.¹⁰ This disparity is

⁷ Stanley, "Development Induced Displacement and Resettlement".

⁸ World Bank Environment Department (1996) in Stanley, "Development Induced Displacement and Resettlement"; "Types of development projects causing displacement", *Forced Migration Online*, last updated August 17, 2011, <http://www.forcedmigration.org/research-resources/expert-guides/development-induced-displacement-and-resettlement/types-of-development-projects-causing-displacement>.

⁹ Imhof and Bosshard, *Citizen's Guide to the World Commission on Dams*, 9.

¹⁰ *Dams and Development, a New Framework for Decision Making*, 102-104.

exemplified in the case of the Kariba Dam project, in Rhodesia which, according to Basilwizi Trust, displaced 57,000 'Tonga' people,¹¹ far exceeding the initial estimate of 27,000 people.

In addition to direct displacement, many scholars such as J. Stanley, focusing on these mega projects and their implications for displacement agree that there are also indirect causes that lead to displacement. This includes the inundation of farmland and animal habitat, sedimentation resulting from dams that causes soil degradation and erosion downstream, threats to fresh water habitats leading to the endanger or even extinction of riverine and wetland fish and other life forms (further resulting in the depletion of food sources and income), reservoir induced seismic activity, the spread of diseases due to insects thriving in stagnant water, and, not least, environmental destruction and human death due to dam failure and collapse.¹²

Mega projects usually displace rural communities and especially indigenous, tribal and other marginalized ethnic minorities who deserve a special mention with regard to mega dam projects as they comprise a disproportionately large percentage of displaced people. These groups are more vulnerable as they are generally less educated and poor, thus relatively powerless to voice their opinions and fight back. They live in underdeveloped regional areas where these projects are proposed. These communities are more effected by the projects, as they have strong ties with environment and forests, and usually subsist on those resources. Especially indigenous people have strong spiritual and emotional connections with the nature. As they have traditionally lived on these lands, they usually do not have legal rights or titles for the lands, which makes it harder for them to claim the ownership for the lands. Data recorded in India, the Philippines and the USA provides evidence of the magnitude of this scenario. In India, 40% of evacuees are 'Adivasis'¹³ or 'Dalits'¹⁴ compared to the 3% of *Adivasis* and 15% of *Daliths* of the total population. In the Philippines, almost all the sites for major dams were located in areas populated primarily by indigenous peoples such as *Tumandok* and people in *Maramag Bukidnon* indigenous villages.¹⁵ Evacuation of the Red Indian community for dam projects in the USA has obliterated some of the Red Indian tribal cultures such as *Mandan*, *Hidatsa*, and

¹¹ Basilwizi Trust, "Legacy of Dams on the Zambezi: Group Works to Right Wrongs at Kariba Dam", *International Rivers*, accessed July 28, 2016, <https://www.internationalrivers.org/resources/legacy-of-dams-on-the-zambezi-group-works-to-right-wrongs-at-kariba-dam-1995>.

¹² Stanley, "Development Induced Displacement and Resettlement".

¹³ Literal meaning is 'original dwellers', collectively used for tribal people in India.

¹⁴ The lowest caste of India.

¹⁵ McCully, *Silenced Rivers*, 70.

Arikara/ Sahnish.¹⁶ These examples can be multiplied. It is estimated that the proposed Belo Monte Dam, the world's third largest hydro-power dam, on the Xingu River in Brazil, will flood the settlements of 25,000 indigenous people from 40 ethnic groups,¹⁷ even after it was redesigned. In Malaysia, 12 proposed dams under the 'Sarawak Corridor of Renewable Energy' would have removed tens of thousands of indigenous people from their traditional homes and lands,¹⁸ provided it was not revoked in April this year. The WCD has recognized the importance of indigenous people in the appointment of an indigenous leader from Philippines as one of the 12 commissioners.¹⁹



Figure 5.1 Traditional Fishing in the Xingu River, Brazil (Christian Poirier, *Amazon Watch*, accessed November 25, 2015, <http://amazonwatch.org/work/belo-monte-dam>.)

Dam affected people (displacees) can be grouped according to three categories.

1. Evacuees living above the dam whose homes will be inundated by the future reservoir
2. Host populations who receive the re-settlers
3. People living below the dam, those whose living conditions are adversely affected by the dams' construction, primarily because their economic systems are based on the natural flow of rivers²⁰

¹⁶ Berman Terri, "For the Taking: The Garrison Dam and the Tribal Taking Area", *Hydroelectric Dams and Indigenous Peoples*, 12, 2 (Summer 1988) accessed July 28, 2016, <https://www.culturalsurvival.org/publications/cultural-survival-quarterly/united-states/taking-garrison-dam-and-tribal-taking-area>.

¹⁷ *Amazon Watch*, accessed March 26, 2016, <http://amazonwatch.org/work/belo-monte-dam>.

¹⁸ *The Ecologist*, accessed March 26, 2016, http://www.theecologist.org/News/news_analysis/2456534/borneo_megadams_threaten_indigenous_ethnocide.html

¹⁹ Imhof and Bosshard, *Citizen's Guide to the World Commission on Dams*, 6.

²⁰ (Scudder 2005, 18)

People affected by such projects may not be physically displaced, however, they are indirectly affected due to the loss of livelihood through competition which constitutes another type of displacement.

5.1.2 Resettlements: Socio-Cultural, Economic and Environmental Concerns

Successful resettlement is critical to the overall success of mega projects. The primary goals of relocation are improved standards of living for the re-settlers and the appeal of the new settlement. The number of displaced people is largely underestimated; and the hardships the re-settlers have endured are also largely ignored.

Re-settlers can be divided into two groups: involuntary and voluntary. Involuntary re-settlers are the people displaced by irrigation constructions of dams, canals and reservoirs, and resettled in new sites. Voluntary re-settlers are people who relocate from various parts of a country to a proposed resettlement site, who seek economic and social benefits and better living conditions from the resettling in the new site; the type of resettling which was vigorously promoted and has partly occurred in the case of the MDP. Though, generally, advancement of life is expected for the re-settlers, at least from the project authorities' end, the resettlement process brings many problems and hardships to the re-settlers, regardless of voluntary or involuntary. Moreover, this new population in the resettlements may adversely affect the hosts, who may compete with locals for limited resources and employments.

Resettlement involves a wide range of difficulties. The large scale of operation and the multi-faceted nature of the mega projects increase the complexity of the planning, legal, administrative and management aspects of the resettlement process. The process becomes more comprehensive with incorporation of rural infrastructure development programmes including measures to attract new services and industries that would help create new jobs and opportunities. Inadequate implementation of acceptable plans due to such factors as timing, finance and institutional constraints, is particularly common for the mega dam associated resettlements. Lack of political will on the part of the governments and unexpected events including changing political priorities are other issues common in especially developing countries.²¹

²¹ Scudder, *Future of Large Dams*, 42-43.

The loss of resiliency of the uprooted communities and increased dependency following incorporation within a wider political economy makes the re-settlers economically as well as socially vulnerable and dependent on assistance from government and other institutes such as NGOs. Alienation in the new settlements, lack of opportunities, lack of infrastructure and services such as schools and health and mismatch of re-settlers' trade and skills in the new environment all contribute to lack of empowerment of relocated populations. These resettlement attempts can result in host-settler conflicts. Besides, the sustainability of the project depends on the successful resettlement programmes. Thus, ground level understanding and familiarity of the locality is needed in planning and implementation processes. ²²

Though the majority of people resettled in dam projects originates in the regional areas, this familiarity with rural life does not necessarily make the process any easier. Resettlement is a stressful process for people involved regardless of their life in a developed or developing country. It involves evacuation, settlement, adjustment and reconstruction of lives and livelihoods. The impact on people or a community will slightly differ for each case, because of the way they face or react to change and the associated impacts shaped by many different attributes such as class, gender, age, culture and/or religion which influence the attitudes, attributes, resiliency and outlook of the individuals and the community. However, in any case, the difficulties of displacement begin long before the people are physically evacuated. They start when the projects are proposed which adversely impact on economic conditions of the reservoir areas. Any investment (government or private) is withdrawn, infrastructure services are neglected and property prices fall. These difficulties coupled with uncertainty about the future, the new locations and compensations are added on top of them. When the dams are nearly completed there is the rush to evacuate the displaced people, often accompanied by violence and intimidation. ²³ Often the transfer is poorly planned, exhausting and emotionally hopeless. Finally, the people have to build their own lives with inadequate or no compensation in a new and alien location, where they may encounter hostility or at best a cool welcome. ²⁴

The stress associated with displacement is traumatic. Scudder claims that this stress involves a sense of powerlessness, loss of social and cultural resources, loss of political power and the power to make decisions, and his explanation of this stress is three dimensional, physiological,

²² Scudder, *Future of Large Dams*, 42-43.

²³ McCully, *Silenced Rivers*, 72-73.

²⁴ McCully, *Silenced Rivers*, 72-73.

psychological and socio-cultural.²⁵ Physiological stress refers to health impacts, represented by morbidity and mortality, which increase dramatically following relocation, McCully states, especially among the very young and very old, as a result of malnutrition, poor hygiene and sanitation, and parasitic and water-borne diseases.²⁶ An extreme example is 'Gwembe Tonga' resettlement in Northern Rhodesia, where 41 children died (of a total of 1,600 re-settlers), within the first three months due to unknown health conditions. Psychological stress has two aspects, grieving for the lost home and anxiety over the future. The first, is particularly related to women, elderly leaders, political leaders and religious leaders, as their power is associated with the original sites and community, while 'anxiety over the future' is common among all the resettled adults. Socio-cultural stress originates with the threat to a community's cultural identity in a new environment. This is increased by the permanent or temporary loss of livelihood. An example, according to Scudder, is among the indigenous people relocated in India, Sri Lanka and Laos, fear of practicing cultural rituals among more sophisticated host communities triggered stress.²⁷ Because insecurities associated with resettlement, the tendency to cling to the familiar customs, further contribute to alienation and prevent the search for new opportunities. These factors, though mostly prevail immediately after the resettlement has occurred, can be ongoing with unsatisfactory outcomes for a long time. Even though the projects should contribute to raising the living standards of the project affected people, the evidence suggests in almost all cases that they were more impoverished than before, Scudder claims, including the developed countries such as US, and developing countries such as China and India.²⁸

It is reasonable to place emphasis on the especially vulnerable portion of the population of the dam induced re-settlers because the effect on them is more comprehensive and intense and their agency is all but eliminated. Indigenous people, women and children dominate this category. Indigenous people displaced by dam projects face cultural alienation, dispossession of land and resources, lack of consultation, insufficient or complete lack of compensation, human rights abuse and lowered living standards. The implications of the resettlement experience for women has received very little scholarly attention. Women can be affected more than men, as they are less recognised by planning authorities thereby facing more difficulties in compensation. Women also tend to be dependent on their known locality for income, through small local or domestic businesses, as well as resources, such as food and fuel. They tend to

²⁵ Scudder, *Future of Large Dams*, 23.

²⁶ McCully, *Silenced Rivers*, 80.

²⁷ Scudder, *Future of Large Dams*, 24-28.

²⁸ Scudder, *Future of Large Dams*, 20.

endure more psychological stress because of their strong local ties and their dependency on family circles. Children are affected by disruption to their schooling. They often stop schooling in the new location in order to help generate income and help with household work.²⁹

In this context of underestimating the number and ignoring the adverse effects of the resettlements, however, the progressive improvement is that most key personnel in the World Bank in recent times acknowledge that resettlement is the 'most serious counter-development social consequence' of hydro projects.³⁰ The increased attention given to resettlement issues was evident with the introduction of the issue within the World Bank resettlement guidelines published in 1980 and subsequent updates and other recent guidelines from professional organizations such as ICOLD. The Bank claims that it is committed to restoring the living standards and earning capacities of displaced people, evident in revised resettlement policies.³¹ Yet, for majority of its funded dams, the World Bank does not have specific data on the re-settlers and it would seem that the guidelines have been ignored. As claimed by the World Bank itself, they have failed in many cases to ensure to provide acceptable solutions for living conditions in resettlement colonies.³² Furthermore as Roy, a supporter of 'Narmada Bachao Andolan' (Save the Narmada), and the author of *The Cost of Living*, argues that the consequence of poorly planned resettlement for displaced people has often been overlooked due to the focus on the benefits to the greater majority of the population.

5.2 Urbanisation and Rural Development: a Goal of Mega Projects

Resettlement programmes associated with hydro infrastructure could be used to benefit the whole community, particularly the rural community, although the general experience is not so. Despite this observation, rural development is one of the major goals of many mega dam projects. Therefore, the second section of this chapter considers the potential of resettlement programmes associated with mega dam projects to serve as agents for positive development. The section also considers the scholarship dedicated to the planning and design of resettlements, which has received little attention, as well as solutions to the resultant disasters provided by key funding agencies.

²⁹ Colchester in Stanley, "Development Induced Displacement and Resettlement".

³⁰ Scudder, *Future of Large Dams*, 42.

³¹ Scudder, *Future of Large Dams*, 21.

³² *Involuntary Resettlement Sourcebook, Planning and Implementation in Development Projects*. 30118, Vol. 1. (Washington DC: The World Bank, 2004), 321-323.

5.2.1 Resettlement Projects as Rural Development Instruments

Resettlement programmes within large or mega dam projects can be used to bring great benefits to the resettled population and host populations as well as the greater community. Scudder says a win-win scenario is possible, in which resettled communities become project beneficiaries and contribute to a project's benefits, provided issues such as institutional capacity, funds, political will, opportunities and participation are adequately dealt with, and if they are not compromised by unexpected events.³³ Resettlement programmes associated with mega dam projects have impressive potential as a rural development strategy because they cover large rural and regional areas and in most cases a large percentage of the total population. Even though the attention and emphasis given to resettlement planning in dam projects to date is minimal, as argued by Scudder, Roy and Stanley, it is important to seek opportunities for development with proper resettlement planning in the future.

54% of the world population live in urban areas in 2014, in contrast to 30% in 1950. Urbanization is a prominent phenomenon especially in developing countries, India, China and Nigeria leading.³⁴ Urbanisation is closely linked with modernism. Modernization has usually resulted in an increase of goods and services for some or most people. Modern technological and communication advancement, and especially global village concept contributed to spread of urbanism rapidly. In most countries, whether it is wanted or unwanted, rural communities undergo a process of transformation influenced by modernism. With more and more rural people moving to cities due to increased (and diverse) employment opportunities, improved standards of living, or otherwise, urban areas are widening and urban fringes are spreading. However, this phenomenon contrasts the conditions in many rural areas. In order to modernise rural areas, industries must be established, government structures organised, communication and transportation systems built, and large numbers of individuals trained to perform unfamiliar services.³⁵ In an urban community, better access to goods and services, better education and opportunities and better living standards are anticipated, although it is not always the case. With the promise of infrastructure development and resettlement planning, mega dam projects can serve as effective tools to stimulate rural development with similar goals.

³³ Scudder, *Future of Large Dams*, 87.

³⁴ *World Urbanization Prospects: 2014 Revision: Highlights* (New York: United Nations, 2014), 1.

³⁵ George M. Guthrie, *the Psychology of Modernization in the Rural Philippines*, (Manila: Ateneo de Manila University Press, 1970), 2.

As Roy observes, resettling displaced people, which is an inevitable consequence of mega projects is a major responsibility of the planning authorities.³⁶ As displacement and resettlement is difficult for people, so it is for the planning authorities. The large scale, the complexity of the resettlement planning and implementation, and the long duration involved are the main reasons for this. Scudder states resettlement takes time; in the case of resettlement it can take at least two generations to experience the benefits.³⁷ Therefore, planners have to consider the time required to fulfil realistic future projections. The intentions, approach and system of operation of planning authorities and the political will in each case is the key to a successful project. Without them a genuine resettlement design which would bring development into rural areas cannot be implemented.

5.2.2 Economic Opportunities in Resettlement Projects

Scudder rightly claims, in an ideal situation, where there are genuine intentions and all the institutional factors are fulfilled, a resettlement programme may offer major rural development opportunities. These prospects are notable in the economic sector, as the improvement of economic status in the resettlement represents success to some degree. Financial security coupled with access to new infrastructure can minimise the trauma and hardship associated with resettlement. Thus, economic opportunities play a major role in the success of rural development related to resettlement programmes. These opportunities are ground level options that closely associated with the community in the resettlements, which need careful planning initiatives and understanding of the local conditions both in the original and new settlements, to execute. Simultaneously, they should be compatible with the rural context. One such example of opportunity is joint ventures between affected people and project authorities, which facilitate a more equitable development process and provide not just participation, but consent in the future projects, as well as provide direct income to the community. Also, access to common property resources, including natural riverine, inland forests and vegetation which provides grazing should be enabled. This is a very important opportunity which could be used to ensure food, medicine, building material and fuel supply particularly in the very beginning of resettlement processes. Reservoir fisheries is an important source of financial opportunities as well as nutritional. They usually trigger associated industries such as transport, ice factories etc. Natural resource management and tourism is another important aspect which could boost the economical levels of the resettlements substantially, if the community is participated, as this

³⁶ Roy, *The Cost of Living*, 20-22.

³⁷ Scudder, *Future of Large Dams*, 28, 32.

type of mega projects attract mostly local and sometimes foreign tourists to the area. However, natural resources should be managed effectively which may degrade with popularity of tourism.

Agriculture is the major source of income in these resettlements. Multiplier effects associated with the provision of irrigation can provide not only the improved housing and social services, but also sufficient income to allow farming families to diversify their household economy into a range of higher value farming and non-farming activities. At the same time, equal amount of attention should be given to rain-fed agriculture, which would facilitate both field crops and home lot farming, promoting crop diversification and supplementary income. Similarly, careful and efficient management of the reservoir outflows is needed to choose the appropriate crops, as well as minimize the downstream ecosystem and community impacts, which had been depended on a river's pre-dam natural regime.

Providing facilities for employment training, for non-farming and alternative jobs and establishment of rural industries are particularly important for the future generations of the resettlements. Securing the economic stability of these future generations is commonly overlooked by the re-settlers due to two factors; one is that, most re-settlers are relatively uneducated and the other is that resettlement process takes majority of their time immediately before and after the resettlement. Therefore, programmes on this aspect should be carried out and actively promoted by the authorities, for the long-term success of the resettlements.

Socio-cultural and environmental potential is equally important and in turn provide economic benefits, as these aspects are interrelated, as pointed out in the 'interrelationships between environment, socio-cultural and economic impacts in Mahaweli resettlements' (Figure 3.6) in chapter 3. As mentioned before, recent trends place importance in this aspect, with measures in place which are intended to reduce the impact of resettlement on the social-cultural well-being of the re-settlers and the environment. Participatory involvement in the selection of resettlement sites is one of the measures, as familiar sites reduce the stress for the re-settlers. 'Who settles with whom' is crucial to prevent conflicts amongst the re-settlers or between the re-settlers and the host community. Housing, land size, building materials, and planning and housing configuration are also important in the design of resettlements. Especially important here is the type of housing that is suitable for the climate and locality, as resettlement architects tend to

introduce types of housing that may not suit to the area.³⁸ Though, the socio-cultural loss cannot be restored, it can be mitigated. One of the techniques which has had success³⁹ is the facilitation of cultural continuity, through the promotion of rituals and customs, in the new resettlements. Acknowledging the rights of the resettled communities, especially in the case of indigenous people, and the development of an effective reparation mechanism is also useful to promote positive mitigation.

Providing urban facilities including community and marketing services, is a very important opportunity for resettlements but often overlooked by the planning and designing authorities. These services are important for both socio-cultural stability and economic development in the new settlement, which was described more in detail in the 'Cities and Towns' section in the chapter 3 of this document. An important point to note, here, is the shared responsibility of the planners and designers in regard to the implementation of these economic opportunities in order to achieve the desired results. This has rarely been analysed in relation to any of the dam-induced resettlement programmes so far.⁴⁰

5.3 Future Trends in Resettlements

To be effective as development agents, resettlements need to be appropriately planned and designed, so that they might give some relief during the difficult process of acclimatization and resettlement. They should be planned with a clear understanding of the local (original) and resettled environment and community. Resettlement schemes should provide ready access to services and, more importantly, facilitate cooperation and relationships between households. They should pave the way to gain economic and socio-cultural benefits especially with minimal effects on environment.

In response to the widening knowledge base relating to mega projects and their implications for resettlement, as well as increasing public resistance to adverse effects resulted by displacement and in response to recommendations by a growing number of researchers and experts, the dam related organizations have taken some steps to improve the resolution of issues relating to resettlement. An important milestone in this process is the *Resettlement Policy of the World*

³⁸ Scudder, *Future of Large Dams*, 126-128.

³⁹ Scudder, *Future of Large Dams*, 134-136.

⁴⁰ Scudder, *Future of Large Dams*, 90-122.

Bank (2001).⁴¹ This was followed by the other policy documents from other organizations and countries such as Sri Lanka, South Africa and China, to some extent.

A major deviation from conventional practice and an important outcome of the World Bank's Resettlement Policy is the recommendation to avoid displacement whenever possible. In other words, it stresses that other options or alternatives to hydro-projects must be sought whenever possible. However, if displacement is unavoidable, the Policy stipulates that a separate and protected budget should be allocated exclusively for the process of resettlement. Adequate compensation is another important outcome. In addition to cash compensation, land for land, food and other relief, adequate water, sanitation, social services such as schools and clinics should be provided. ⁴² Re-settler participation in the process of displacement and resettlement is another relatively recent activity in this context and it can contribute significantly to successful resettlement planning. It requires re-settlers' active participation in decision making and implementation, which is increasingly valued by the resettlement policies.

Despite this shift, the policies are not always adhered to, not least, in the case of projects implemented by the World Bank. Moreover, the policies lack details relating to the importance of community and public services, or facilities such as counsellor services, community places, and communal activities etc., which are essential in the formation of community.

However, more and more countries give or are forced to give attention to comprehensive resettlement planning and design in the present context. A notable example is China. China has a staggering number of displacees impacted by mega dam projects for which the resettlement plans have not been adequate and compensation systems were not. However, Yan Tan identifies new resettlement policies in his book *Resettlement in the Three Gorges Project*. The objective of this policy is to restore migrants' livelihoods and productivity, by setting aside funds for appropriate use of local resources, actively promoting worthwhile industries and fuelling economic development, which is a major opportunity posed by this type of projects. The important characteristic of this policy is that it is people-centred, whereby migrants have the right to participate in discussion about their physical losses, determination of appropriate standards of compensation, options for resettlement approaches, distribution of various resources, decision making in development production projects such as rebuilding

⁴¹ See Appendix III.

⁴² Scudder, *Future of Large Dams*, 123-134.

infrastructure, land reclamation and improvement, irrigation and public services.⁴³ Although socio-cultural and economic aspects are obviously not adequately addressed by this policy, and there are conflicting views about the mode of implementing these policies by the government, it is a move in the right direction. Another example of a different direction is the formation of the MAU, though midway through the implementation, which represented a departure from conventional pre-MAU resettlement programmes, in the MDP. An organization solely for town designing is not a common circumstance in the mega dam context.

However, as pointed out by leading scholars, such as Scudder, the Mahaweli resettlements have issues that require further research especially relating to resettlement, similar to many other mega dam related resettlement projects around the world, which would be very important to provide understanding and directions for future resettlement design. Thus, the adequacy, appropriateness and the approach of the MAU resettlement policies and guidelines require further examination, which is attempted in this study.

Summary

In summary, a disturbing outcome of the mega projects is the displacement of people – uprooting them from their original locations, particularly vulnerable communities such as indigenous people - and resettling them in new environments, that are not familiar or suitable for them. Often there is no proper planning process for these operations and the re-settlers undergo hardship, in contrast to the expected better life that is anticipated through rural development. The resettlements have great potential in regional development, if they are planned and implemented effectively. A positive trend in recent years is the acknowledgement of these adverse effects on communities and some remedial measures that have been initiated. In this context, the initiative of the MDP – the formation of the MAU – is a notable step in the right direction for appropriate planning of new towns, which needs further research that could offer important lessons. Thus, this chapter provides an understanding of the resettlement circumstances that underpin the following evaluation and discussion chapters of this study.

⁴³ Tan, *Resettlement in the Three Gorges Project*, 77-80.

PART II

ANALYSIS AND EVALUATION

Chapter 6. An Overview of Resettlement in Sri Lanka

Overview

In this chapter, the researcher aims to present an overview of the history of resettlement in Sri Lanka as a means to understand the political dynamics which led to formation of the MAU, the rationale for the design of the Mahaweli new towns and the resettlement scheme, and the organizational framework within which the MAU operated. This overview provides the basis for the analysis of the MAU's work in the succeeding chapter. While the MDP was the most important mega project in Sri Lanka in economic terms, the related resettlement process had profound consequences in sociological and cultural terms due to the unprecedented number of people who were resettled in the process. Moreover, the design of the Mahaweli towns represented a significant point of departure in the disciplines of architecture and urban design and the resettlement aspect of the MDP was particularly influential in these disciplines, especially in the area of rural resettlement. In this chapter, the researcher will present a chronological sequence of the resettlement events in relation to the political context. This is followed by a brief introduction to the key reports that were prepared to, ostensibly, inform the resettlement design process. The remainder of the chapter is divided into three further sections: the first section presents an overview of the resettlement history of Sri Lanka which paved the way for Mahaweli resettlements; the second is a review of the physical and sociocultural setting of the project area. The third is a brief discussion of the role and impacts of the resettlement schemes in the architectural discourse in Sri Lanka.

6.1 State Sponsored Resettlement and Political Events

Resettlement schemes are intertwined with Sri Lankan politics, as is the case of many developing countries. Here (in the Table 6.1) the researcher intends to chart the important political events in relation to resettlement milestones in Sri Lanka. This timeline also presents the timing of the key reports that were prepared prior to the formation of the MAU.

Table 6.1 Timeline of State Sponsored Resettlement in Sri Lanka

Time/Period	Event
1890s	Earliest attempt at colonization by the Colonial Government. ¹
1925-1927	Land Commission formed recommending the release of crown land to the peasantry on a "lease in perpetuity" basis. ²
1931	DS Senanayake (Sri Lankan Independence Movement) appointed as Minister of Agriculture and Lands in the newly formed State Council of Ceylon. ³
1932	Aided colonization schemes introduced. ⁴
1935	<i>Land Development Ordinance</i> . ⁵
1939	"New Policy" of encircled colonization presided over by DS Senanayake. ⁶
1948	Colonial Ceylon granted independence as Dominion Ceylon by British Colonial Office. ⁷
1949	DS Senanayake elected the first Prime Minister of Ceylon in the conservative United National Party (UNP) coalition parliament. ⁸
1953	Gal-Oya Colonization Scheme
1960	Sirimavo RD Bandaranayake elected as the Prime Minister of the coalition Sri Lanka Freedom Party (SLFP); ⁹ Bandaranayake tended to promote closed economic policies and nationalist visionaries.
1963	Government of Sri Lanka requested assistance of UN Development Program (UNDP)/Special Fund (SF) for a pre-investment survey of MDP. ¹⁰
1965	Dudley Senanayake (son of the late DS Senanayake) of UNP elected as Prime Minister. ¹¹

¹ Sogreah Report, 86.

² Barnabas Report, 10.

³ "D S Senanayake", *Wikipedia*, accessed March 25, 2015, https://en.wikipedia.org/wiki/D._S._Senanayake.

⁴ Sogreah Report, 86.

⁵ 1935 *Land Development Ordinance Act No.19* was amended in 1961 by Act No. 60 and in 1961 by Act No. 16 and again in 1973 by Act No. 43; cited in Barnabas report, 10; Sogreah Report, 87-88.

⁶ Barnabas Report, 10.

⁷ "D S Senanayake", *Wikipedia*, accessed March 25, 2015, https://en.wikipedia.org/wiki/D._S._Senanayake; (Harris M. Lentz, *Heads of States and Governments Since 1945: A Worldwide Encyclopedia of over 2,300 Leaders, 1945 through 1992-2013*, (Routledge, 2014), 1970.

⁸ "D S Senanayake", *Wikipedia*; Lentz, *Heads of States and Governments*, 1970-1978.

⁹ Lentz, *Heads of States and Governments*, 1977-1978.

¹⁰ Mendis, *the Planning Implication of the Mahaweli Development Project*, 6.

¹¹ Lentz, *Heads of States and Governments*, 1977.

1967-1969	Mahaweli Ganga Irrigation and Hydro-Power Survey Reports published by the FAO of the UN and the Irrigation Department of Ceylon: 30-year project proposed. ¹²
1969	Uda-Walawe Colonization Scheme
1970	Establishment and constitution of Mahaweli Development Board (MDB) ¹³ as recommended by the FAO Reports for the overall operation of the MDP. MDP I - Stage I commenced. ¹⁴
	Coalition SLFP Sirimavo RD Bandaranayake elected as the Prime Minister. ¹⁵
1972	Dominion Ceylon officially declared the Republic of Sri Lanka. ¹⁶
	Feasibility Studies for Stage II published by Sogreah (Grenoble, France), and MDB of Ministry of Irrigation, Power and Highways of Sri Lanka. ¹⁷
1977	JR Jayawardena (UNP) elected as Prime Minister. ¹⁸ Change to constitution and title of Prime Minister to "Executive President" of the Democratic Socialist Republic of Sri Lanka. Change from prevailing closed economy to open market economy and liberalised international trade. ¹⁹ Gamini Dissanayake officiated as Minister of MDP. Accelerated Mahaweli Project (AMP) proposed to complete the project in 6 years with international funding. AMP inaugurated. ²⁰
1978	Netherlands Engineering Consultancy (NEDECO) proposed plans for AMP.
1978-1980	Hunting Technical Services Limited, with Sir Alexander Gibb and Partners, conduct several feasibility studies and publish reports on Victoria Scheme (MDP Phase I: Preliminary Feasibility Reports) and System C (MDP Feasibility Study 1979)
1979	Establishment of Mahaweli Authority of Sri Lanka (MASL) as the responsible institute of the AMP. ²¹
1980	Tippetts-Abbett-McCarthy Stratton (TAMS), an engineering consultancy firm based in New York, assigned to assess environmental impacts. Published "Environmental Assessment: AMP."
1983	Establishment of the MAU ²² by Minister Gamini Dissanayake. From 1983 to 1989, MAU was responsible for the revisions, design, and construction of 12 towns including several new towns. ²³

¹² Barnabas Report.

¹³ *Mahaweli Development Board Act No. 14 of 1970.*

¹⁴ Karunatilake, *The Accelerated Mahaweli Programme and its Impact*, 41.

¹⁵ Lentz, *Heads of States and Governments, 1970-1978.*

¹⁶ Lentz, *Heads of States and Governments, 1975.*

¹⁷ Sogreah Report.

¹⁸ Lentz, *Heads of States and Governments, 1978.*

¹⁹ Nedeco Report, 12.

²⁰ *Annual Report and Accounts 1983, 2.*

²¹ *Mahaweli Authority of Sri Lanka Act No. 23, 1979.*

²² *Annual Report and Accounts 1983, 5.*

²³ Perera, "When Planning Ideas Land", 160.

6.2 Resettlement and the National Policy Framework

Chapters 4 and 5 identified the bureaucratic approach to resettlement whereby key decisions relating to infrastructure are made by government authorities and planning officials on behalf of the affected people with little or no consultation and minimal local knowledge. Often re-settlers are referred to as “peasants” and regarded as uneducated and unsophisticated.²⁴ In contrast, one of the key figures of the MAU, architect Nihal Perera, defines “people centred” approach,²⁵ which was intended to shape the design of the Mahaweli new towns. This approach represented a departure in the context of the already established MDP and distinguishes it from other mega projects. This approach is examined in the next chapter. However, it is necessary to consider, beforehand, a number of questions to understand the case for resettlement: What was resettlement like in Sri Lanka? What was the organizational and legal framework that the MAU had to work within? In what way did the MDP framework enable the MAU? What circumstances led to the formation of the MAU? The following sections aim to analyse these areas.

6.2.1 Agrarian Development vs. Population Growth

The motives for the MDP have a long history that can be partly traced to agricultural change imposed during the British colonial period. While the Portuguese and the Dutch controlled certain parts of the island after the 16th century, British colonisers, as Sorenson argues, “forced a major change in the prevailing agrarian structure”.²⁶ Under the *Waste Land Ordinance*, enacted in 1840, the British Colonial government acquired tracts of land which were not permanently cultivated or which the traditional owners could not demonstrate private ownership by title deeds; as Sorenson states “making the state the main landowner.”²⁷ These crown lands were then exploited to grow export crops, predominantly coffee, tea, coconut and rubber. However, Rice is the staple food of Sri Lanka and the island was a primary rice producer in Asia during the prosperous ‘Polonnaruwa Kingdom’ as early as the 12th Century. Nevertheless, by the time of the Portuguese invasion in the 16th Century, Sri Lanka was dependent on rice imports.²⁸ The deficit of domestic food production was worsened by the agrarian change which escalated during British colonial rule to serve export

²⁴ Sogreah Report, 199.

²⁵ Perera, When Planning Ideas Land: Mahaweli’s People Centered Approach 2010: As discussed previously, Nihal Perera was the Key Architect of the Mahaweli Architectural Unit in 1983.

²⁶ Sorenson, *Relocated Lives*, 64.

²⁷ Sorenson, *Relocated Lives*, 64.

²⁸ Moore cited in Sorenson, *Relocated Lives*, 66.

markets and subsequently due to the First World War and the great depression. Evidently, the cost to import rice was a major burden on the economy during the period of British rule as well as after Independence.

The issues stemming from agrarian change have been exacerbated by the exponential population growth and it is important to understand these issues to interpret attitudes to resettlement in Sri Lanka. Statistical data for population growth in Sri Lanka demonstrates two key facts.²⁹ Firstly, there has been a phenomenal increase in the population post-independence. The population of 6.7 million in 1946 almost doubled during the next 25 years, and by 1971 (when the MDP commenced) the population was 12.7 million. Secondly, there is a significant disparity in population density between the dry zone districts and wet zone. The important question that arises from these statistics is whether the economic development grew in proportionate to population growth. The statistical evidence shows that there was a gap between the population increase and economic growth, which is demonstrated in the map of economic activity in Sri Lanka [Figure 6.1]. The logical solution was the development and resettlement of the dry zone.³⁰

²⁹ Refer Chart: Statistical Data of the Population from 1871 to 2001 and Table: Population and Population Density by Districts from 1871 to 2001. Adopted and reproduced from Statistical Abstract 2009, 34 and 57.

³⁰ Sorenson *Relocated Lives*, 65.

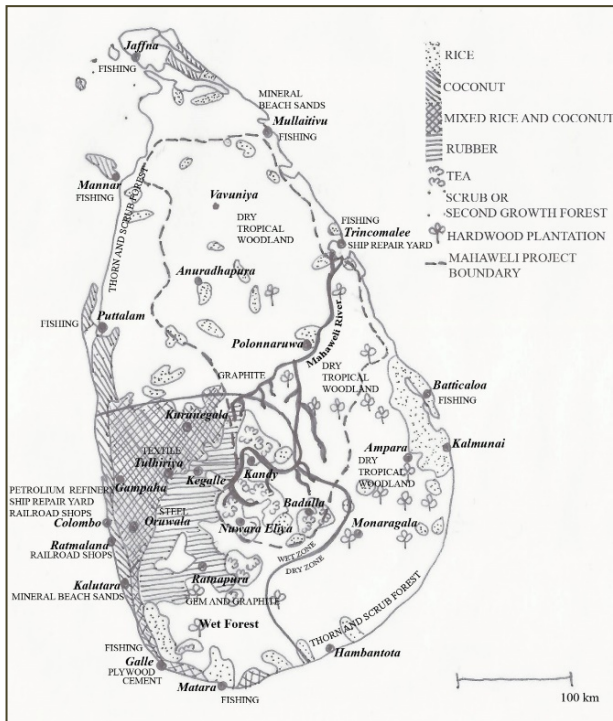


Figure 6.1 Economic Activity in 1976 [Adopted and drawn using Francis Hult (2009), "Country Profile," SlideShare, accessed August 4, 2016, <http://www.slideshare.net/asiri3com/sri-lanka-economy-view-my-view>].

6.2.2 Dry Zone Resettlement

Resettlement of the dry zone dates back to late 19th century during the period of British rule. This process of resettlements has been referred to, variously, as the alienation of crown/government/state lands to people, government/state sponsored resettlement or 'colonization'. As we know, the main objectives were to relieve population congestion in the wet zone and to increase rice production. These objectives were directly related to the secondary objectives of rural economic stimulus and infrastructure development which was also deemed a partial solution for rural under-employment and un-employment.³¹ Resettlement in Sri Lanka and relevant policies are summarised in the following section. Moreover, this resettlement history is connected to the political dynamics which led to the MDP and formation of the MAU.

The dry zone, comprising approximately two thirds of Sri Lanka's land mass, has a relatively low rainfall and long dry spells.³² Only one third of the total population inhabited the zone at the time of

³¹ Barnabas Report, 17.

³² Pathmanadan, *the Kingdom of Jaffna*, 2.

the MDP as the map Population Density [Figure 6.2]. However, there is a long history of settlement in the dry zone. Communities relied on an advanced cascade irrigation system and agrarian culture. Remnants of ancient irrigation works, ruins of colossal religious complexes and majestic cities are evident in the Dry Zone. Sources like the *Mahavamsa*³³ suggest that civilizations, originating more than 2500 years ago, were thriving in this region. These hydro-based civilizations disappeared over time, and kingdoms gradually migrated to the middle and south western parts of the country—the Wet Zone—bringing most of the population along with them. The remaining population comprised dispersed traditional villages inhabited by Sinhala people, the Tamil population in the north (Jaffna peninsula) and northeast coast and Muslim villages along the east coast. [Figure 6.3: Migration of the Kingdoms of Sri Lanka in relation to the Mahaweli Project Area and Map Ethnic Communities and Religions in Figure 6.4].

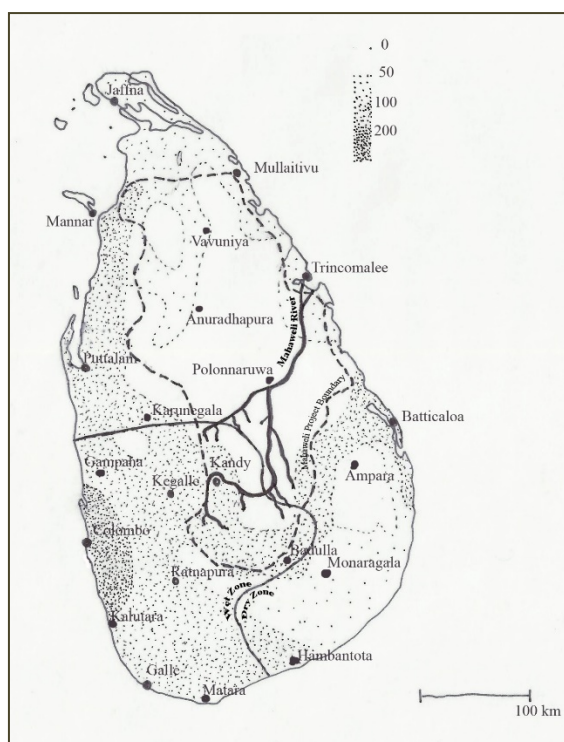


Figure 6.2 Population Density in 1976 [Adopted and drawn using Francis Hult (2009), "Country Profile," *SlideShare*, accessed August 4, 2016, <http://www.slideshare.net/asiri3com/sri-lanka-economy-view-my-view>].

³³ Cited in Sorenson, *Relocated Lives*, 70; Moore, "the Ideological History of Sri Lankan Peasantry," 325-356.

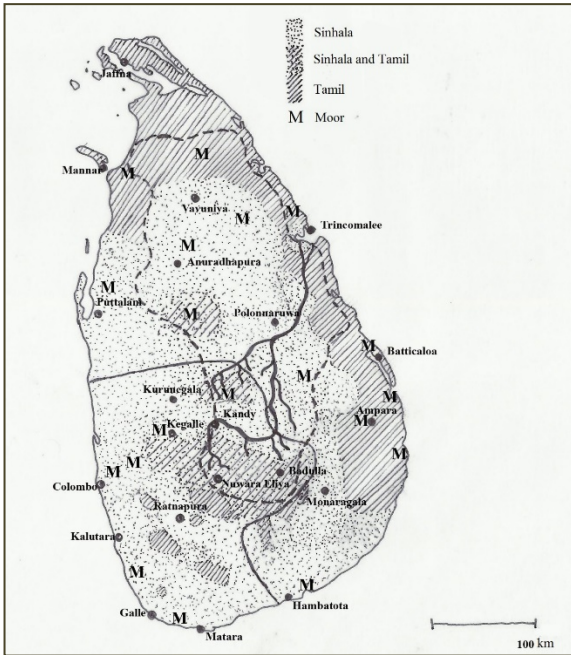


Figure 6.3 Ethnic Composition in 1976 [Adopted and drawn using Francis Hult (2009), "Country Profile," SlideShare, accessed August 4, 2016, <http://www.slideshare.net/asiri3com/sri-lanka-economy-view-my-view>].

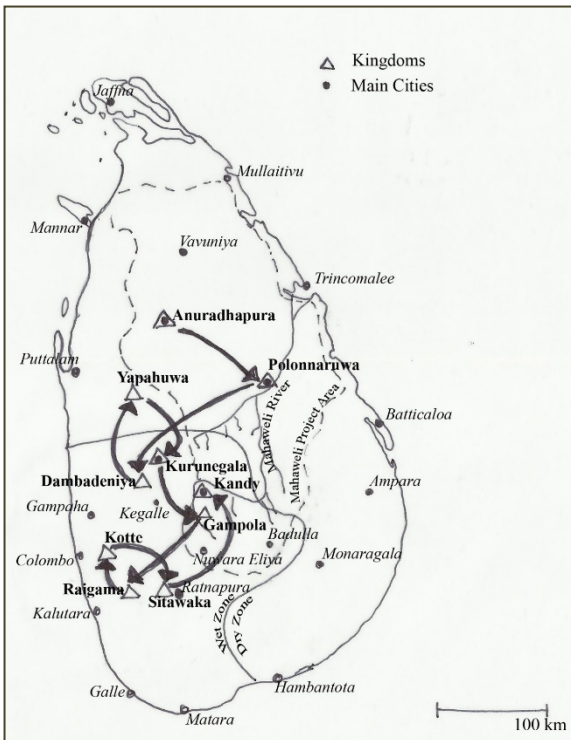


Figure 6.4 Migration of the Kingdoms of Sri Lanka in relation to Mahaweli Project Area (Drawn using Wikipedia and Google Maps).

By the 20th century, colonization in the Dry Zone was encouraged due to the low population density, remote and undeveloped traditional settlements, and the availability of vast unutilised lands. Furthermore, the ancient history of hydro-based civilization in the Dry Zone has motivated dry zone resettlement, especially after Independence.³⁴

6.2.3 Direction of Dry Zone Resettlement Schemes

Irrigation is the key to resettlement initiatives in the Dry Zone and this has included the rehabilitation of ancient irrigation works as well as the construction of new irrigation systems. As shown in the timeline at the beginning of the chapter, resettlement in Sri Lanka was primarily based on irrigation projects resulting from policies related to land allocation and development. These resettlement schemes are outlined below.

There were three distinct phases in government resettlement policy before the MDP:

- 1840-1900** Government acquired lands and promoted large scale export crop plantations.
- 1900-1930** Resettlement in the Dry Zone based on the government's recognition of the economic importance of small scale farming.
- 1930-1970** Resettlement key to national economic and political visions.

The earliest resettlements efforts in the Kalawewa area under British colonial administration are described in the Sogreah report as a "total failure".³⁵ In contrast, Tennakoon, who has conducted substantial research on the hydro-based civilization, argues that "during the whole of (the) 18th Century and the early part of the 19th Century, there were waves of immigrants from the hill country, reaching the North Central dry zone".³⁶ According to Tennakoon, they were either escapees from the clutches of local kings or unsuccessful rebels against "early colonial tyrants" who "settled down in association with the ruined tanks with the support of the very thin population of (traditional) people" and lived harmoniously with the traditional community.³⁷

³⁴ Sorenson, *Relocated Lives*, 70-75.

³⁵ Sogreah Report, 86.

³⁶ M.A.U. Tennakoon, "Traditional Dry Zone Irrigation- Ecosystematic Concepts Revisited and Reconceptualized", *South Asia Partnership Sri Lanka*, posted on January 30, 2015, <http://www.sapsri.lk/traditional-dry-zone-irrigation-ecosystematic-concepts-revisited-and-reconceptualized/>.

³⁷ Tennakoon, "Traditional Dry Zone Irrigation".

After 1932, re-settlers were offered many incentives to relocate to the Dry Zone, including transport, finance, tools and equipment. Despite this government assistance, the colonies progressed slowly due to harsh conditions, including droughts and Malaria.³⁸ Due to such challenges, many re-settlers left the new colonies. The remainder were confronted with the high incidence of serious social problems such as alcoholism, suicide, homicide and gambling.³⁹ Nevertheless, as Sorenson concludes, "this initial phase of dry zone development ... laid the physical as well as conceptual foundation for future irrigation and settlement works in the region".⁴⁰

Colonization gained renewed vigour after 1939 with the *Land Development Ordinance* of 1935, which encompassed recommendations of the Land Commission of 1927-29 by Mr D S Senanayake, which implemented encircled colonization by 1939 with under the "New Policy programme". The intent was to control Malaria with the introduction of DDT spraying in 1945, followed by resettlement based on new and rehabilitated irrigation systems.⁴¹ Resettlement was vigorously implemented not only in rural areas for poor landless peasants, but also for the middle class. Barnabas explains the resettlement schemes operated by the time the MDP was proposed and the number of acres set aside included: ⁴²

Village expansion schemes	533,000 acres
Crown lands were allotted to landless and unemployed people, usually alongside minor irrigation rehabilitation projects.	
Highland colonization schemes	28,000 acres
These projects were for expansion of major export crops such as tea, rubber and coconut.	
Middle Class colonization schemes	140,500 acres
Major colonization schemes	169,000 acres

After Independence, there was a subtle yet strong political motivation behind the resettlement agenda, which was powered by a new factor; the national political vision. Even before independence, local political power was wielded by a new elite group who had strong ideas about

³⁸ Barnabas Report, 10; Sogreah Report, 86; B.H. Farmer, *Pioneer Peasant Colonization in Ceylon, A study in Asian Agrarian problems*, (Connecticut: Greenwood Publications, 1976) cited in Sorenson, *Relocated Lives*, 65.

³⁹ Cited in Sogreah Report, 65.

⁴⁰ Sorenson, *Relocated Lives*, 66.

⁴¹ Barnabas Report, 10; Sogreah Report, 86.

⁴² Barnabas Report, 10-12.

regaining lost prosperity through repopulation of the Dry Zone by Sinhalese people. This idea was predominant in all the irrigation development works and related resettlement works after Independence. This presented an obvious threat to the Tamil population who had argued that certain areas under the Mahaweli Project were their original home lands.⁴³ This nationalistic vision was highly influential to the formation of the MAU, which will be discussed in the next chapter.

6.2.4 Legal Provisions and the Process of Resettling within the Institutional Framework

Important legal provisions were enforced by different political parties. Five such Acts, which were essentially associated with the implementation and function of colonization schemes included:⁴⁴

- *Land Development Ordinance Act No. 19 of 1935, amended by Acts No. 16 of 1961, 16 of 1969 and further amended by Law No. 43 of 1973.*⁴⁵
- *Paddy Lands Act of 1953*⁴⁶, amended by No. 1 of 1958,⁴⁷ No. 42 of 1973,⁴⁸ No. 58 of 1979.⁴⁹
- *Irrigation Ordinance of 1946*,⁵⁰ amended by No. 48 of 1968, No. 23 of 1983, No. 34 of 1990.⁵¹
- *Cooperative Societies Ordinance No. 5 of 1972, amended by No. 32 of 1982, No. 11 of 1992 with cooperative society regulations of 1973.*⁵²
- *Village Communities Ordinance No. 26 of 1871, 1924 (enacted village committees), amended by No. 60 of 1938, No. 11 of 1940, No. 24 of 1940, No. 24 of 1940, No. 31 of 1940, No. 50 of 1941, No. 54 of 1942, No. 58 of 1943, No. 44 of 1944, No. 12 of 1945, No. 53 of 1946, NO. 17 of 1947, No. 39 of 1951, No. 8 of 1952, No. 38 of 1953, No. 12 of 1956.*⁵³

⁴³ Sorenson, *Relocated Lives*, 67-69, 70-75.

⁴⁴ Nimal Sanderatne, "Agricultural Development: Controversial Issues", *Economic Policy in Sri Lanka: Issues and Debates*, ed. Saman Kelegama (New Delhi: Sage Publications, 2004), 196-207.

⁴⁵ Sogreah Report, 87-88.

⁴⁶ Sanderatne, "Agricultural Development, 199-203.

⁴⁷ Sanderatne, "Agricultural Development, 199-203.

⁴⁸ Sanderatne, "Agricultural Development, 199-203; "Sri Lanka Acts and Ordinances," *LawLanka*, accessed August 08, 2015, <http://www.lawlanka.com/>.

⁴⁹ "Domestic Instruments and Institutions," *Human Rights Commission of Sri Lanka*, accessed August 08, 2015, <http://hrcls.lk/>.

⁵⁰ "Domestic Instruments and Institutions," *Human Rights Commission of Sri Lanka*.

⁵¹ "Sri Lanka Consolidated Acts," *Commonwealth Legal Information Institute*, accessed August 08, 2015, <http://www.commonlii.org/>.

⁵² "Law," *Department of Co-operative Development*, accessed August 08, 2015, <http://www.coop.gov.lk/>.

⁵³ "Village Communities Ordinance," *Sri Lanka Law*, accessed August 08, 2015, <http://www.srilankalaw.lk/>.

During this resettlement history, many changes have occurred in relation to government assistance and the land allocated for the colonists. Initially, irrigation was provided prior to resettlement together with a house in the 1930s (with 5 acres of paddy land and 3 acres of highland). However, more recent initiatives have involved the re-settlers in the process, as in the Udawalawe schemes. With the MDP re-settlers were just provided with financial assistance and materials rather than housing (with 2 acres of paddy and 1 acre of highland) due to the reduction in available land and the larger number of people requiring resettlement. By this time, though, rural town centres had been developed. Ampara, a major town developed extensively under the Gal-Oya scheme is an excellent example.

Resettling is a collective effort involving several government organizations which requires effective inter as well as intra-relationships. For successful operation, it needs effective horizontal as well as vertical communication, collaboration, coordination and administration, from top-down and bottom-up. The MAU was a considerably autonomous unit which was formed by the Mahaweli Minister,⁵⁴ equipped with the human and capital resources on its own, thereby enjoying relative independence from other departments of the MASL. However, for effective operation, it needed the co-operation of other institutes within and beyond the MASL. This degree of co-operation and independence are discussed in the next chapter. However, the work of MASL is presented below.

MASL managed many of the operations undertaken by different departments in the earlier resettlement systems.⁵⁵ Hence, communication between critical institutions was quite efficient. An idea of the broad range of activities which MASL was responsible for can be obtained by looking at the roles of different organizations in the earlier resettlement schemes. Some of the important government organizations included the Irrigation Department, the Land Development Department (Responsible for land clearing, construction of re-settlers' houses, basic facilities, towns and infrastructure) and the Land Commissioner's Department (which managed financial assistance for the re-settlers). Other institutions, such as the government administrative system [from the village Grama-Niladhari (Village Officer), to the Provincial District Revenue Officer (DRO), now known as Divisional Secretary (DS)], the Department of Surveys, government banks, private banks and

⁵⁴ Plesner, *In situ*, 378.

⁵⁵ *Mahaweli Authority of Sri Lanka Act No. 23, 1979.*

financial institutions, and Non-Governmental Organizations (NGOs) all played important roles in the process of resettlement in parallel to the MASL.

Considering this overview of resettlement in Sri Lanka, it is evident that the required legal framework for providing housing was not firmly in place when the MAU was established. Likewise, as resettlement is a collective effort which involved diverse activities shared across a number of different institutions, the MAU had to collaborate with a number of organizations to operate. Additionally, the political environment the MAU had to work in was dominated by nationalistic views. While these areas are further discussed in the latter chapters, the following sections include a review of the physical and socio-cultural environment of the project area within which the MAU proposals were implemented.

6.3 The Physical and Socio-Cultural Parameters of the Project Area

Sogreah provides a clear overview of the project area stating that “the existing pattern of settlement in the project area is a development from the ancient settlement layout based on the irrigation complex”.⁵⁶ It consists of remote traditional villages, new villages, small townships and major colonization schemes. The Mahaweli project involved resettlement amidst rural communities in rural areas. Therefore, the following section considers the layout of traditional villages and the socio-cultural setting of their inhabitants to shed light on the life and livelihood of the majority of people affected by the project.

6.3.1 Traditional Villages

As stated in the Hunting report, a variety of traditional villages exist in Sri Lanka.⁵⁷ They differ due to environmental factors such as location or topography (for example, Dry Zone villages or Hill-country villages), economic factors such as proximity to urban centres or traditional livelihoods, and socio-cultural factors such as ethnicity or religion.

⁵⁶ Sogreah Report, 2.

⁵⁷ Hunting Report- Victoria Scheme, 29-32.

Traditional Dry Zone villages are referred to as “Purana Gam” in many texts.⁵⁸ Re-settlers originated from a number of areas including Hill-country rural villages (mostly evacuees from the reservoir sites), villages in other parts of the country (both Dry Zone and Wet Zone) and people from the traditional villages within the project area, who were resettled elsewhere from their original villages to balance the population distribution. It is necessary, then, to consider the physical layout and socio-cultural characteristics of a traditional village to appreciate the experiences of the re-settlers discussed in the remaining chapters.

The traditional village structure is based on the natural water source and the associated irrigation system. It stemmed from local knowledge of the efficient natural ecosystem management.⁵⁹ In the Hill Country the water source might be natural or a fabricated canal system to irrigate paddy fields. In the Dry Zone, this usually consisted of a minor tank; part of a complex cascade water management system which relied on various water sources. As explained in Sogeah report,⁶⁰ and supported by Abeynayake et al.⁶¹ and Tennakoon,⁶² the components of a traditional Dry Zone village are the ‘weva’ or village tank, the ‘gangodella’ or residential area, ‘vel yaya’ or paddy fields, ‘goda idam’ or highlands and ‘hena’ or chena⁶³ lands. The number of families range from 15-20 to 100-120. On average, it is 50-60 families with a population of 300-400 people. Households consist of a compact cluster, inhabited by extended families. ‘Ola gama’ is an uninhabited area nearby with paddy fields, highland and chena lands which are owned by the villagers who commute daily or live there temporarily in the cultivation season. (Figure 6.5: Schematic representation of a dry zone tank based traditional village, Figures 6.6, 6.7, 6.8, 6.9: Schematic representations of different traditional villages: Hill-country, Dry Zone and Wet Zone).

⁵⁸ In many of the Mahaweli survey and feasibility studies and reports (such as Sogeah and Barnabas reports) as well as many other literature which include accounts of traditional villages, the dry zone traditional villages are called Purana Gam. The literal meaning is Purana=old, Gam=villages, which refer to traditional villages.

⁵⁹ "Eco System based Indigenous Water Management," *Sri Lankan Heritages*, accessed August 30, 2015, <http://www.srilankaheritages.com/ecosystem.html>.

⁶⁰ Sogeah Report, 5-6.

⁶¹ A. Abeynayaka, D.R.I.B. Werellagama, S.C.B. Yatawara, and G.N. Paranavitana, "Technologies and Institutional Systems for Water Environmental Governance," *Lessons on Water Management, Past to the Future*, International Forum on Water Environmental Governance, Bangkok, March 14-15 (2007), 26-32.

⁶² Tennakoon, "Traditional Dry Zone Irrigation".

⁶³ These are small plots of land in the scrub jungle surrounding the village which were cultivated for one or two seasons and then left to regenerate. Cited Sorenson, *Relocated Lives*, 61); Villagers grow drought resistant grains, legumes, oil crops and vegetables in chenas. They are also known as slash and burn or shifting cultivation. Cited in A.L. Sandika, and N.R.P. Withana, "Economic Analysis of Chena Cultivation in Monaragala District, Sri Lanka," *15th International Forestry and Environment Symposium*, Sri Jayawardenapura Kotte: University of Sri Jayawardenapura (2010), 350.

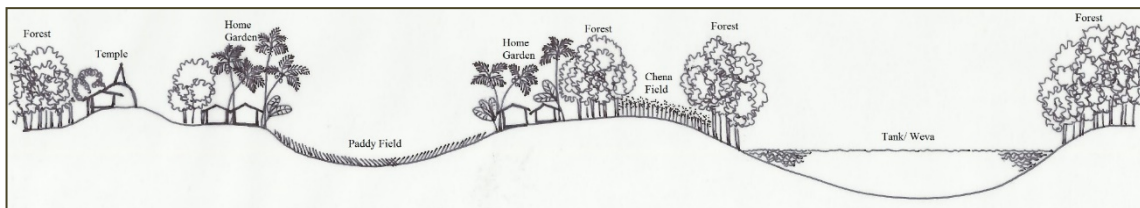


Figure 6.7 Traditional Dry Zone Village [Drawn using Gender and Bio resources Research Team, *Sri Lankan Men and Women as Bio-resource Managers*, Food and Agriculture Organization, accessed August 25, 2015, <http://www.fao.org/docrep/005/ac791e/AC791E00.htm#TOC> and *Google Maps* and *Wikipedia*].

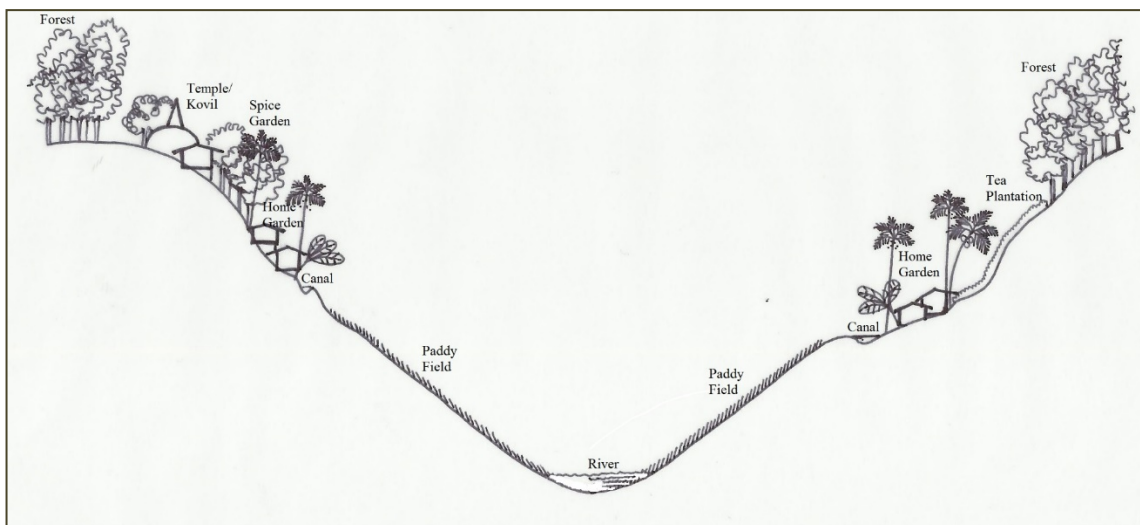


Figure 6.8 Traditional Hill Country Village [Drawn using Gender and Bio resources Research Team, *Sri Lankan Men and Women as Bio-resource Managers*, Food and Agriculture Organization, accessed August 25, 2015, <http://www.fao.org/docrep/005/ac791e/AC791E00.htm#TOC> and *Google Maps* and *Wikipedia*].

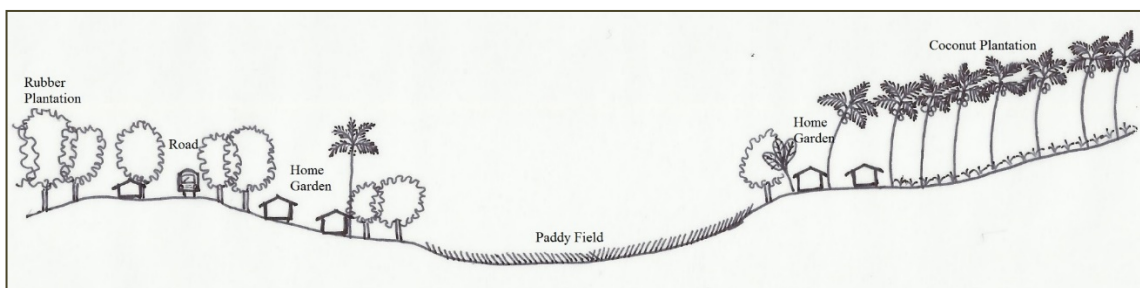


Figure 6.9 Traditional Wet Zone Village [Drawn using Gender and Bio resources Research Team, *Sri Lankan Men and Women as Bio-resource Managers*, Food and Agriculture Organization, accessed August 25, 2015, <http://www.fao.org/docrep/005/ac791e/AC791E00.htm#TOC> and *Google Maps* and *Wikipedia*].

Traditional Sri Lankan villages are separate, kinship based, autonomous socio-economic units, which are self-sufficient, each with inhabitants of common origins and a distinctive cultural character stemming from the isolated physical setting with little connection to the wider population of Sri Lanka. Interrelations with other villages were scarce and infrequent. The community was connected to the landscape and depended on the environment for almost all their needs. Sogreah provides a thorough and detailed description of the socio-cultural context of a traditional village:

the main features of the Purana villages are social and cultural homogeneity, established traditional leadership, strong institutions setting up norms and mores, a traditional pattern of land tenure often characterized by joint ownership and operations and subsistence level of farming. The social framework is further strengthened by grouping patterns and affiliations based on kinship, lineage, caste, religion, geo-cultural origin, education and occupational status etc. ... therefore... (the) rural peasant society is a complex social phenomenon with numerous social and cultural forces at work. ⁶⁴

Economic and social grouping is one of the most important and prominent components in the traditional system. In the social sphere, groupings were important because they established informal leadership patterns (which has been identified as an important factor in this type of development project in both the Barnabas and Sogreah reports).⁶⁵ In the economic sphere, groupings are important as economic activities such as cultivation and harvesting are dependent upon a co-operative and participatory system for labour, and sensitive and intimate economic relationships, such as borrowing and lending, which are based on the group's inter-relationships. There are various types of groupings detected in the traditional community, according to lineage, kinships, caste and religion, education, social and economic status, and affiliation with political parties.

Another prominent component is the caste. Generally, a village consists of one predominant caste, in which they live with other castes harmoniously. The caste system is traditionally defined by the different vocations in the village, hence it ensured the proper functioning of 'rajakariya' or service-tenure system.⁶⁶ As Sogreah report states,

⁶⁴ Sogreah Report, i-ii.

⁶⁵ Barnabas Report, 117; Sogreah Report, 112.

⁶⁶ De Silva cited in Sorenson, *Relocated Lives*, 64.

the rights, duties and obligations of different caste groups are clearly defined...often there are close social relationships among different caste groups in religious and social occasions, and the different roles are understood and adhered to. However, intimate social contact, (and) marriage... (are not accepted).⁶⁷

However, interdependency between different caste groups was crucial for the smooth function of the village in adherence to these traditions.⁶⁸

Generally, the main caste of the traditional villages are farmers, particularly paddy farmers, who owned lands or cultivated others' lands as tenants. The tenure system is complicated, but primarily ownership descended from generation to generation resulting in one area of land divided among siblings. With the dramatic population increase, land fragmentation became one of the main social problems.⁶⁹ It affected the economy too, by reducing the productivity of lands and increasing unemployment. This situation was one of the key motives for changes to land policy.

Even though the physical setting described above presents a romantic picture of the traditional village and solidarity within the homogenous community, one should not refrain from identifying flaws. Issues such as lack of privacy, rebellion against the tradition, and exclusion from the traditional community due to caste or poverty, acted as major factors (apart from the landlessness and unemployment), prompting people to migrate and resettle in the new settlement schemes. Conflicts arose because of disputes over land and irrigation, as well as the generation gap. However, one of the strongest causes for conflict was political affiliation. Traditional leadership could influence followers, resulting in resistance to change and innovation and the authority of influential leaders of high caste or wealthy tradesmen in the village society was an indirect factor for the prevailing poverty. Nonetheless, any disputes were usually resolved by mutual agreement, sometimes with a leader's intervention. Broadly, the smooth functioning and unity of the community owed much to the traditional leadership.

⁶⁷ Sogreah Report, 26.

⁶⁸ Sogreah Report, 9-20.

⁶⁹ Sogreah Report, 15.

6.3.2 Rural Townships

The literature about traditional dry zone villages is comprehensive and detailed. However, it is difficult to locate primary sources which describe the rural townships, although the names of the traditional townships in the project area are named in the Mahaweli reports. These urban centres are not large, but they provided many services to the rural population especially given the poor transport facilities and the distance from the settlements to the main towns. These small towns offered modern ways of life to rural people.⁷⁰

The unplanned Sri Lankan rural town originates at a nodal junction, where a road heading towards the interior intersects the main road, and it grows in a linear fashion along the main road. These towns are places of transit and transaction, not leisure. The towns are often busy, as people come and go for their different requirements from trade to (unprofessional) legal services to resolve a boundary dispute. Pedestrians and vehicles share the same narrow main road. (Figure 6.10: Rural Township)

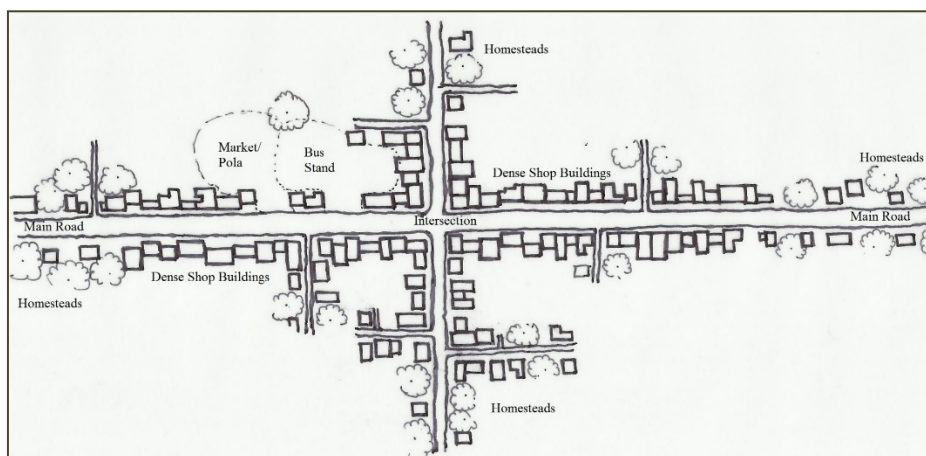


Figure 6.10 Rural Township [Drawn using the description in B.L.C. Johnson, and M.LeM. Scrivenor, *Sri Lanka: Land, people and Economy*. (London: Heinemann Educational Books Ltd., 1981), 136, and Google Maps].

Johnson and Scrivenor describe the typical rural township as follows:

As a rule, towns in rural Sri Lanka are an agglomeration of one or two storey buildings, the most important of which are the local offices of the government departments. A street or

⁷⁰ Sogreah Report, 7.

two of open-fronted shops along with the market place, provide the commercial needs of the neighbourhood. Day to day requirements of fresh foods and vegetables are obtained in the market where producers and small entrepreneurs offer their wares for sale, or provide minor services as shoe menders and repairers of umbrellas. A bus station generally occupies a central location near the market. Immediately adjacent to such a centre residential density is fairly high... The services to these homes may be very limited... At a distance of a block or two from the centre, the tight nucleation gives way to homes standing in gardens planted with subsistence fruits and vegetables...⁷¹

6.3.3 New Villages

New villages are of recent origin and closer to the main roads than traditional villages. They often stretch along the roads or irrigation canals. They are home to landless or unemployed young families who were considered as 'encroachers' of the crown land, the overflow of people from traditional villages, colonization schemes⁷² or migrants from nearby urban areas. Those new villages were validated when governments alienated lands and included them in new irrigation schemes. This endorsement of new villages by the governments from time to time was driven by the intention to legitimise land ownership for these people, as well as promoting food production.

6.3.4 Colonization Schemes

According to the Sogreah report, the colonies were, "imposed" upon this traditional physical and socio-cultural environment,⁷³ and they shared limited characteristics with this environment in every aspect. However, as more detailed insight is required in this study about these resettlements, the layout and the characteristics of the colonization settlements are discussed based on the proposals and recommendations given in the Mahaweli reports in the next chapter.

⁷¹ Johnson and Scrivenor, *Sri Lanka: Land, People and Economy*, 66-69.

⁷² Sogreah Report, 2.

⁷³ Sogreah Report, 2.

6.4 Resettlement Schemes and Post-Colonial Planning Discourse in Sri Lanka

While Sri Lanka's post-colonial architectural discourse is intimately tied to politics, architects drew inspiration from many international precedents during this same period. As displayed in Table 6.1, the political changes were sudden, drastic, varied and unstable. For example, the earlier Colonial hegemony was replaced by concepts of nationalism (1930-1950s); then, the economy was 'closed' from the 1950 to the 1960s when the government was allied with other 'Socialist' countries such as China and Russia; yet, with another change of government, Sri Lanka was suddenly 'open' and oriented towards the global market after the 1970s as the political leadership followed the 'Western Thatcher-Regan' policies. As Anoma Peiris argues in *"Modernity and Revolution: the architecture of Ceylon's twentieth-century exhibitions"*, political change was very much reflected in each eras' architecture.⁷⁴

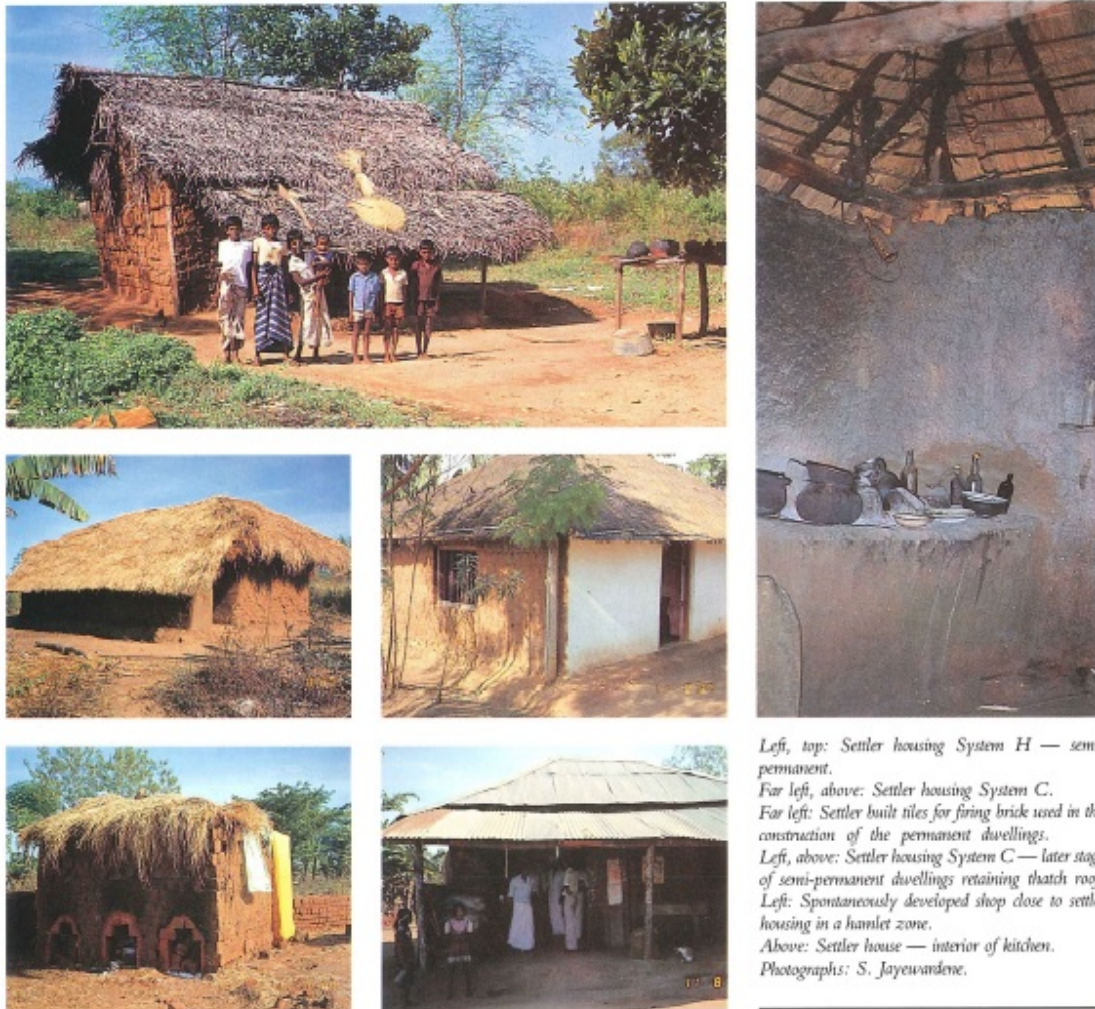
However, the prominence and significance of resettlement in the dry zone, in recent history, has remained unchanged. As mentioned earlier in this chapter, these resettlements were mainly promoted as irrigation schemes, together with the promotion, to a lesser extent, of 'village expansion' or 'urban expansion' programmes. Some towns were designed, such as Ampara, under the irrigation schemes while others, including Anuradhapura, were redesigned and upgraded prior to the MDP. Mass housing was also implemented in the 1980s, parallel to the MDP, such as "Gam Udawa" (Village Re-awakening) and the Million Housing Programme. Many rural towns were also developed and upgraded by government organizations such as the Urban Development Authority.⁷⁵

Resettlement has changed the landscape of the dry zone in Sri Lanka. The physical as well as the socio-cultural environment, which survived in the traditional villages with vernacular cluster type households, was transformed into colonies as a result of these resettlement projects. The houses built by farmers were initially temporary or semi-permanent structures and they were gradually replaced by permanent houses, which were neither built using traditional materials nor according to

⁷⁴ Anoma Peiris, "Modernity and Revolution: the architecture of Ceylon's twentieth century exhibitions," *Third World Modernism: Architecture, development and identity*, (ed.) Duanfang Lu. (Oxon: Routledge, 2011), 141-164.

⁷⁵ Anoma Peiris, Nihal Perera, Locana Gunaratne and Nalini Hennayake are some of the prominent scholars among many others that have extensively discussed the post-colonial politics in relation to housing and architectural projects related to development programmes in Sri Lanka.

vernacular house typologies. It took a long time to build permanent structures or to extend them adequately. As Jayewardene claims, there was much that the architects could have done to improve the housing for farmers,⁷⁶ which the MAU did not have a chance to do at the time. This will be discussed in the following chapter.



*Left, top: Settler housing System H — semi-permanent.
Far left, above: Settler housing System C.
Far left: Settler built tiles for firing brick used in the construction of the permanent dwellings.
Left, above: Settler housing System C — later stage of semi-permanent dwellings retaining thatch roof.
Left: Spontaneously developed shop close to settler housing in a hamlet zone.
Above: Settler house — interior of kitchen.
Photographs: S. Jayewardene.*

Figure 6.11 Settler Housing- Temporary and Semi-permanent (Jayewardene, "Mahaweli Development Programme", 38.)

The significance of the resettlement schemes in the planning discourse of Sri Lanka is a broad topic that deserves lengthy discussion. But for the present study, the researcher would like to conclude

⁷⁶ Jayewardene, Shanti. "Mahaweli Development Programme, Sri Lanka." *Mimar 28: In Architecture in Development*. Singapore: Concept Media Ltd. (1988): 37-39.

this section, emphasizing, as mentioned before, that the MAU was responsible for the largest resettlement programme in Sri Lanka under the MDP and thus it plays a very important role in the planning discourse in Sri Lanka.

Summary

To summarise this chapter, resettlement in Sri Lanka, which was initiated during the period of British rule, was driven by socio-economic and political ambitions. The process was imposed by enacting policies related to land ownership and implemented through the rejuvenation of a long-lost heritage of irrigation. Resettlement in the rural Dry Zone has played a key role in national population redistribution and the improvement of agricultural productivity. However, as a major irrigation and resettlement project, the MDP changed the traditional physical and the socio-cultural environment. In the early phases of the MDP a number of reports provided substantial recommendations about the appropriate course for the planning and design of the resettlements and new towns in the light of these environmental factors which will be discussed in relation to the operation of the MAU and the implementation of their work in the next chapter.

Chapter 7. The MAU and the Mahaweli Towns

Overview

The previous chapter identified key issues pertaining to resettlement, both generally, and in the case of the MDP. Concerns were identified, in particular, about resettlement in terms of the socio-cultural context of the project area, including the composition of traditional villages and rural townships. The aim of this chapter is to evaluate the MAU, its design approach and the new towns constructed for the MDP in the light of these concerns. According to Perera, the design principles of the MAU were “people centred”.¹ Given these principles, the MAU work is evaluated in terms of the reports prepared prior to the formation of the MAU to better understand the value of prior sociological analyses for these types of resettlement projects. The chapter consists of four main sections. The first section provides the rationale for the MAU in the context of the AMP and introduces the key personnel. The second section reviews the MAU’s design approach. The third section explores the physical planning of the MDP resettlements, and the last section reviews the ambitious design interventions of the MAU and reflects on the present condition of four sample MAU towns (Girandurukotte, Dehiattakandiya, Digana/ Rajawella and Karalliyadda/Teldeniya).

7.1 The MAU and the AMP

This section examines the foundation and operation of the MAU based on the retrospective texts written by the key MAU architects, Nihal Perera (the Chief Architect Planner), and Ulrik Plesner (The Danish expatriate architect). These texts provide insight into the factors that led to the formation of the MAU, the brief provided to the MAU under the new accelerated programme, as well as the design approach employed to design the Mahaweli new towns.

7.1.1 Political Priorities and the Formation of the MAU

As explained in the earlier chapter, the priorities of the ‘nationalist’ Sinhala portion of the political elite underpinned the renewed efforts and motives to resettle the Dry Zone in the 20th Century. The researcher will argue, ultimately, that the brief presented to the MAU was substantially

¹ These principles are presented by the MAU’s Chief Architect, Nihal Perera in the chapter “When Planning Ideas Land: Mahaweli’s People-Centred Approach”.

influenced by these priorities. As Sorenson claims, the 'Nationalist' vision was a strategic political approach at the time.² The approach was promoted to gain the support of the Sinhalese majority and to close the wide social and cultural gap between the British-educated, land-owning, newly-rich "small section of the society"³ – which included the political leaders – and the general population. Sorenson argues, convincingly, that this approach was reasonable given the "exploitation", poverty and disintegration of the rural village community by colonial authorities.⁴ This vision was also politically relevant with regard to the change in the constitution for 'universal suffrage' following the Donoughmore Constitutional Commission in 1931,⁵ which required the support of the majority 'Sinhala' population.⁶ However, Sorenson further argues that this "construction of Sinhala territory and national identity" was blended with "a moral history of the country" as the Dry Zone was once the homeland for the Sinhala civilization. This perception to "restore the Dry Zone to its former glory" was the slogan for colonization of the zone after independence (1948).⁷ This went hand-in-hand with the notion of a 'just ruler' who would emulate the ancient kings to construct reservoirs in a self-sufficient Agrarian Buddhist society. This served as a "cultural model" that was promoted by local politicians.⁸ Heath states the,

*reassertion of Sri Lankan (Sinhala) national identity has been an important aspect of governmental efforts...and it has coloured many of its national policies and physical expression even as it has made efforts to join in the processes of globalization and the world marketplace.*⁹

This model was pursued by all the national leaders, including D.S. Senanayake, the first Prime Minister, S.W.R.D. Bandaranaike and Sirimavo Bandaranaike, J.R. Jayawardana, the first Executive President, R. Premadasa,¹⁰ and subsequent political leaders. As a Sinhala politician, Gamini Dissanayake, former minister of Mahaweli, in the J.R. Jayawardana government was no different. This is clear, as Sorenson argues,

² Sorenson, *Relocated Lives*, 69.

³ Siriwardena cited in Sorenson, *Relocated Lives*, 67.

⁴ Samaraweera, 1981, cited in Sorenson, *Relocated Lives*, 68.

⁵ Laksiri Jayasuriya, "the Colonial Linages of the Welfare State," *Economic Policy in Sri Lanka: Issues and Debates*, ed. Saman Kelegama (New Delhi: Sage Publications, 2004), 409.

⁶ Shanmugaratnam (1985), 66 cited in Sorenson, *Relocated Lives*, 69.

⁷ Sorenson, *Relocated Lives*, 75-76.

⁸ Bulankulame, 1984, 332 cited in Sorenson 1996, 70.

⁹ Heath, *Vernacular Architecture and Regional Design*, 63.

¹⁰ The specific political affiliations and roles of these individuals is presented in Chapter 6.

When the resettlement of farmers within the Accelerated Mahaweli Development Project began in the late 1970s, it was accompanied by speeches celebrating the process as a 'return of the people to the ancient homeland...in the Rajarata', Rajarata being the territory of the ancient Anuradhapura Kingdom. ¹¹

Furthermore,

The role of past as orienting model was expressed very clearly in a speech delivered by the former minister of Mahaweli Development, G. Dissanayake, at the ceremonial commissioning of the first project within the Accelerated Mahaweli project, when he declared that 'the soul of the Mahaweli Society... will be the cherished values of the ancient society which was inspired and nourished by the Tank, the Temple and the Paddy Field. ¹²

Minister Dissanayake's nationalist inclinations are highlighted by Perera.

The minister also built more overt monuments for himself: in addition to one of the major dams in his electorate, Kotmale, he constructed a giant concrete stupa right next to the dam, striking a comparison between himself and significant ancient Sinhalese kings who built massive stupas and reservoirs. ¹³

The decision, therefore, to appoint a foreign architect, Ulrik Plesner may seem surprising given this vision. However, Plesner was recognised, by this time, as an influential and inspirational authority on vernacular architecture in Sri Lanka after independence. Plesner claims, Minister Dissanayake knew of his work with Geoffrey Bawa, his interest in Buddhism and his role in exploring, identifying and publishing historical studies of architecture in Sri Lanka in the late 1950s to 1960s.¹⁴ This expert knowledge about Sri Lankan vernacular architecture, discussed in the following section, was entirely compatible with the prevailing political vision and his key appointment in the MAU is unsurprising.

¹¹ Quotation from a speech given by the former minister of the MDP. G. Dissanayake, 1983 in Tennakoon, 1988, 298 cited in Sorenson, *Relocated Lives*, 70.

¹² M.U.A. Tennakoon, "Desertification in the Dry Zone of Sri Lanka," *Perception of Desertification*, ed. R.L. Heathcote (Tokyo: The United Nations University, 1980), 297, accessed August 29, 2015, <http://archive.unu.edu/unupress/unupbooks/80190e/80190E00.htm#Contents>; See also Woost, 1990; Brow, 1990c cited in Sorenson, *Relocated Lives*, 75.

The Tank, the Temple and the Paddy Field symbolises the prototype image of the ideal Sinhala, Buddhist rural village.

¹³ Perera, "when Planning Ideas Land", 150.

¹⁴ Plesner, *In situ*, 365.

7.1.2 Ulrik Plesner and the Formation of the MAU

Plesner's early architectural career was influenced by his early childhood, his formal architectural education and his early holiday employment. In *Architectural memoir from Sri Lanka - In Situ* (2010), his inclination to emulate traditional architecture was shaped by these experiences:

*These childhood summer holidays in English and Scottish country houses and castles have remained a treasure chest, full of experiences, magic and richness that I have lived on and used, and by which to this day I judge interiors and gardens, even low-cost houses and small roof gardens, for it is not a matter of money or scale. It is a view of life.*¹⁵

Plesner studied architecture at the Royal Danish Academy where he learnt "the craft of building".¹⁶ Plesner's vacation work as a building carpenter, bricklayer's apprentice and at the National Museum exploring, measuring and drawing historic buildings, fostered a thorough technical knowledge of building construction,¹⁷ complemented by his first-hand experience of art and architecture during his childhood travel.¹⁸ He read extensively about the art of China, the Renaissance, Mexican and Indian architecture, and Hinduism and Buddhism.¹⁹ This inspired him to compete in an international competition for the design of a monument for the Buddha Jayanthi commemoration which won him the third prize in 1956.²⁰ At the invitation of the esteemed Sri Lankan architect Minette de Silva, he embarked on his journey to Sri Lanka in early 1958.²¹ He had no significant professional architectural experience when he first arrived in Sri Lanka.

The profession of architecture, like all aspects of Sri Lankan development in the 1950s and 60s, underwent major transformation. Political emphasis on local attributes, including the promotion of Sinhala as the first language, paralleled the pursuit of regionalism in architecture. Prominent architects including Minette De Silva, Valentine Gunasekera and Geoffrey Bawa all examined regionalism. Plesner claims that Sri Lanka had a "long and fine functional tradition before colonial times", which was splendidly enriched by "three hundred years of Portuguese and Dutch

¹⁵ Plesner, *In Situ*, 20.

¹⁶ Plesner, *In Situ*, 21.

¹⁷ Plesner, *In Situ*, 30-31.

¹⁸ Plesner, *In Situ*, 37.

¹⁹ Plesner, *In Situ*, 40.

²⁰ Plesner, *In Situ*, 40-43.

²¹ Plesner, *In Situ*, 57. Minette De Silva was the first Asian female architect to be elected as a member of the Royal Institute of British Architects. Plesner identifies De Silva as one of the first modern, progressive and reforming architects in Sri Lanka after independence (Plesner, *In Situ*, 42, 62 and 63).

colonial rule, starting in 1505, and the first hundred years of British rule, starting in 1807".²² However, in the latter part of the colonial regime, he argues, this mutual nurturing of architecture changed with the establishment of the large-scale export oriented economy. He states,

*the large new class of colonisers with no particular empathy for the country they found themselves in... applied what they brought with them. There was no time or encouragement to think independently. Their peers were each other, not the bright Ceylonese...they believed that progress was to do in the East what was being done in the West, meaning London. Unfortunately, English architecture of the 1920s, 30s and 40s was not an export quality item.*²³

Reforming architects, as claimed by Plesner, tried to change "dull" conventional architecture, and "dreary" building types built by the Colonial 'Public Works Department (PWD)' which employed Ceylonese Architects who were educated in England and inspired by "all things British" which were unsuited to the cultural and climatic context. At this time, Plesner worked with Minette De Silva and Geoffrey Bawa as well as on small private jobs,²⁴ whilst "recording and saving old buildings" with Barbara Sansoni, Laki Senanayake and Ismeth Raheem²⁵ and "teaching at the (newly formed) Architecture School at Katubedda".²⁶

This was a time of transition whereby the architecture of Sri Lanka departed from colonial trends and drew inspiration, instead, from traditional architecture. As discussed by Katharine Bartsch in her PhD thesis, Plesner brought an "appreciation of Scandinavian design and detailing, a sense of professionalism and a curiosity about Sri Lanka's building traditions".²⁷ Plesner's association with Bawa was a remarkable incident in Sri Lankan architectural history. Plesner claimed that Bawa "became the central person of [Plesner's] life and work in Ceylon",²⁸ and both of them shared similar architectural interests. Their collaboration was a fruitful union for both themselves and for Sri Lankan Architecture.²⁹ In *Geoffrey Bawa*, Taylor claims Bawa's

²² Plesner, *Insitu*, 63-65.

²³ Plesner, *Insitu*, 64-65.

²⁴ Plesner, *Insitu*, 117.

²⁵ Barbara Sansoni discusses this collaborative effort to draw a selection of important buildings in Ronald Lewcock, Barbara Sansoni and Laki Senanayake, *The Architecture of an Island: The Living Heritage of Sri Lanka*, Colombo: Barefoot, 1998 and 2002, xxviii.

²⁶ Quotes are excerpts from an interview by Deepali Mody in August 2007, in Ismeth Raheem, "Plesner in Sri Lanka," *The Architect*, the journal of the Sri Lanka Institute of Architects, June, 2008.

<http://www.thearchitect.lk/2008/06/plesner-in-sri-lanka/>.

²⁷ Katharine Bartsch, "Re-Thinking Islamic Architecture: A Critique of the Aga Khan Award for Architecture through the Paradigm of Encounter," 285.

²⁸ Plesner, *insitu*, 93.

²⁹ Plesner, *Insitu*, 117.

earlier “contemporary Western models of structure, materials and detailing”³⁰ were transformed gradually after he started working with Plesner as seen by his later works. Robson claims, Plesner and Bawa, who were regarded as *de facto* partners, worked on separate projects, but “they regularly conferred and shared advice.”³¹ The symbiotic relationship of Bawa, who had a “good taste, sure eye”, and “depth of knowledge” and “experience gained through travel”, was complemented by Plesner’s “technical skills and professional know-how”; moreover, Plesner was an “inventive designer with strong ideas of his own”.³² Robson explains Plesner’s influence on Bawa’s work until their separation followed by Plesner’s departure from Sri Lanka:

*All the evidence suggests that they worked together on these projects and that each contributed in their different way. Plesner certainly played a crucial role in helping an inexperienced Bawa to find his feet and contributed enormously to the development of Bawa’s design philosophy.*³³

The new “authentic architecture” was shaped by the local history of Sri Lanka and the policies of the 1950s which highlighted independence and self-reliance. Taylor argues that Bawa’s architecture cannot be simply categorised as ‘vernacular’, as his designs were influenced not only by traditional Sri Lankan buildings, but by his extensive knowledge about the architecture of other cultures and most significantly his years of travelling abroad.³⁴ So too, the researcher argues that Plesner’s designs cannot be categorised as ‘vernacular’. However, at this point it is necessary to draw attention to Sri Lanka’s vernacular architecture, at least briefly. The proximity of the island to India and the position between the Arabian Sea and the Bay of Bengal³⁵ has placed Sri Lanka as an important stopover amid maritime trade routes which resulted in diverse cultural influences since ancient times. Early architecture was shaped by Indian archetypes³⁶ and the two main religions, Buddhism and Hinduism; however, the “Sri Lankan artists and craftsmen, responding to their particular set of circumstances, developed unique designs that were wholly Sri Lankan in spirit”.³⁷ Moreover, the influences of far distant empires from the eastern Mediterranean to China, as well as south Asian coastal cultures including Sumatra, Malaya, Burma, Thailand and Kerala, can all be identified in the traditional buildings of the

³⁰ Brian Brace Taylor, Geoffrey Bawa and Barbara Sansoni, *Geoffrey Bawa*, London: Thames and Hudson, 1995, 11.

³¹ David Robson, *Geoffrey Bawa: the complete works*. London: Thames and Hudson, 2002, 51.

³² Robson, *Geoffery Bawa*, 52.

³³ Robson, *Geoffery Bawa*, 52.

³⁴ Taylor et al., *Geoffrey Bawa*, 13.

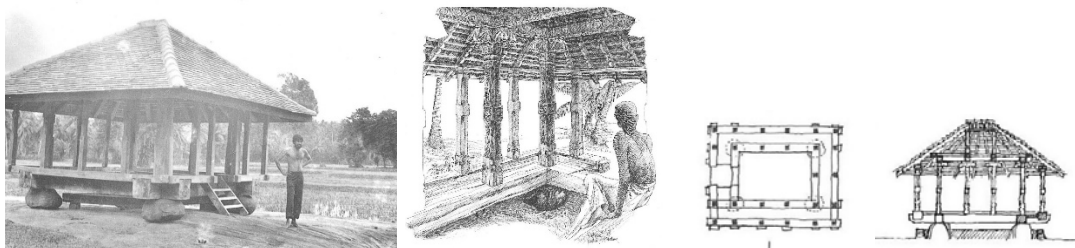
³⁵ Robson, *Geoffery Bawa*, 27.

³⁶ Robson, *Geoffery Bawa*, 34.

³⁷ Robson, *Geoffery Bawa*, 34.

country.³⁸ As mentioned in Chapter 6, this strategic location has led the island to be conquered by Portuguese, Dutch and British, and thus the architecture was influenced by these cultures, after the sixteenth century.

Despite these varied influences, discussed by Lewcock, Robson and others, Sri Lankan traditional buildings have also evolved as a result of the hot humid climate and heavy rainfall. This is evident, not least, in the courtyards and verandahs, the pitched roofs with deep eaves, and the elevation above the ground level. They were designed to enable air movement and cross-ventilation. Vernacular building traditions have long responded to the topography and water courses. They were always built using local materials, such as wattle and daub (*wareechchi*) or rammed earth (*thaappa*) walls and straw or cadjan thatched or clay tiled roofs.³⁹ A valuable collection of the drawings of these vernacular buildings was published by Ronald et.al in *The Architecture of an Island*, from which selected photographs and drawings are reproduced, in the following figures [Figure 7.1, 7.2, 7.3 and 7.4], to show examples of a diverse, yet fundamentally similar, variety of buildings found in Sri Lanka.



Ambalama - a wayside resting place, interior, Plan and the Section. Several examples can still be found.

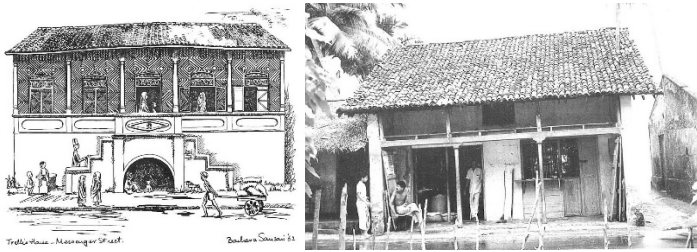


Bridge at Bogoda - elaborate, roofed, timber bridge. This is the only bridge of this type to have survived.

Figure 7.1 Secular buildings - *Ambalama* and the Bridge (Lewcock et al, *The Architecture of an Island*, 72, 73, 78 and 79.)

³⁸ Ronald Lewcock, Barbara Sansoni and Laki Senanayake, *the Architecture of an Island: The Living Heritage of Sri Lanka*, Colombo: Barefoot, 1998 and 2002, 85, xxii and xxx.

³⁹ Robson, *Geoffery Bawa*, 28 and 34.



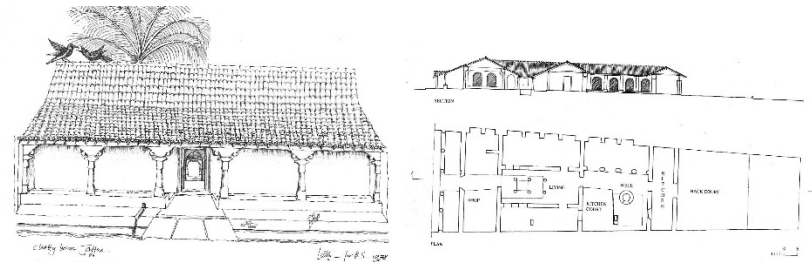
Terrace Houses in Colombo and Shop Houses along the main road from Colombo to Galle.



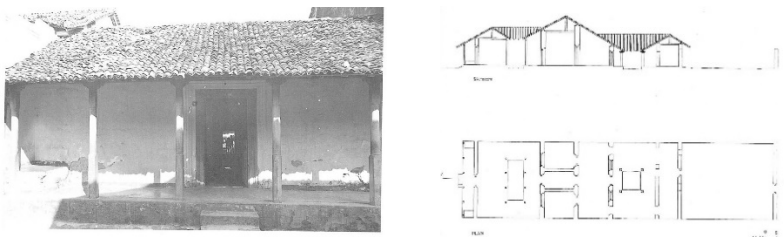
A cadjan house interior - dry zone, a farmer's house and a courtyard house of a Sinhala family.



A house of high caste Hindu family - Jaffna.



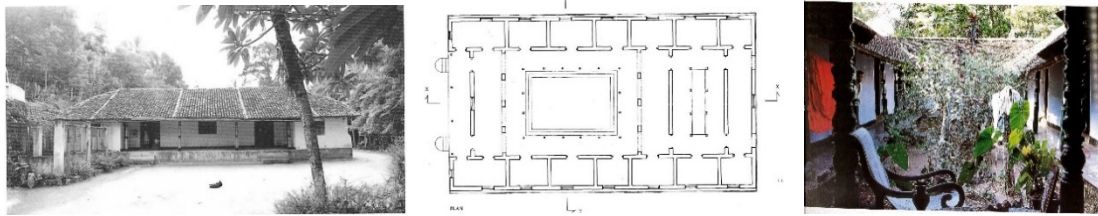
A Chetty merchant house - Jaffna.



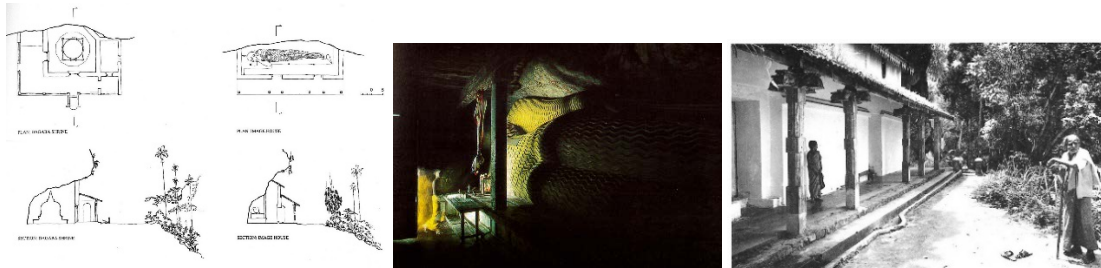
A Muslim trader's House, Galle Fort.

The buildings show similarities regardless of ethnic differences, (eg. the common courtyard).

Figure 7.2 Vernacular Buildings - Dwellings (Lewcock et al, *The Architecture of an Island*, 272, 274, 5, 15, 27, 56, 62, 68, and 69).



Buddhist Monks' House - front, plan and the interior courtyard.



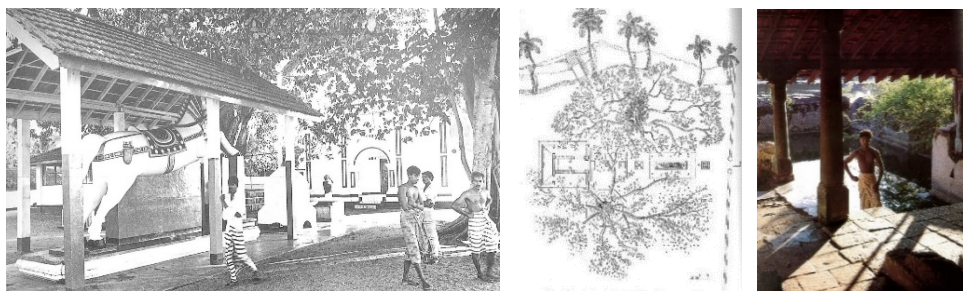
Temple- Kande Vihare, Kadugannawa, a temple built against a cliff.



Gatehouse of the Embekke, a temple in the paddy field, Wattegama and a plan of a temple, Seeduwa.

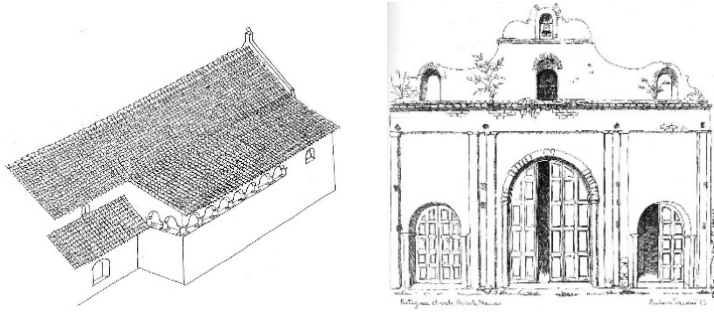


Different examples of image houses in temple compounds.

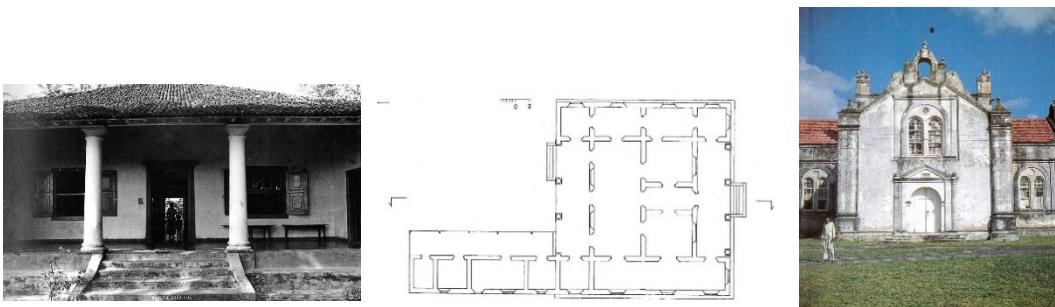


Hindu Kovil for Aiyandar Deity near Chilaw, the plan of the Kovil and the interior of a low caste Hindu kovil.

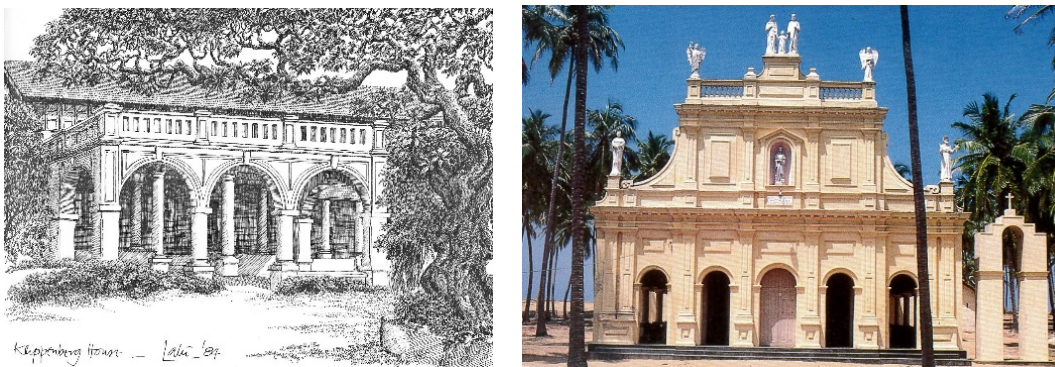
Figure 7.3 Vernacular Buildings- Buddhist Temples and Hindu Kovils (Lewcock et al, *The Architecture of an Island*, 51, 46, 89, 106, 140, 142, 141, 120, 141, 100, 145, 146 and 151).



A Portuguese house, Atchuweli and a Portuguese Church, Mannar.



A Dutch house, Galle Fort, the plan of the house and a Dutch Church, Jaffna.



A house in Colombo and a Church in Dungalpitiya built in the 19th century (British rule).



Other buildings - the Dutch Hospital, Colombo Fort built in the 17th century and the Law Courts, Colombo and Railway Station, Ukuwela built under the British rule.

Figure 7.4 Colonial Influences (Lewcock et al, *the Architecture of an Island*, 158, 169, 190, 170, 287, 302, 217, 259 and 291).

Plesner left Sri Lanka in 1967 before returning for a visit in 1981, by which time the MDP was underway. However, most of the Mahaweli towns were only red dots marked in maps; particularly after the AMP. As Perera claims a "large number of urban centres and buildings (had to be built) within the remaining six years".⁴⁰ The planning, design and construction of new towns was assigned to the 'Design Department', with only 3 young architects, including Perera himself, of the Mahaweli Construction and Engineering Agency (MECA), a branch of Irrigation Department. Perera further claims, "public buildings...were built using the Department of Building (the successor of the PWD) plan types".⁴¹ These were incompatible with the vision of Minister Dissanayake who thereby requested Plesner's view on the design of the remaining settlements.⁴² To increase the pace of work, which was behind schedule, Minister Dissanayake requested that Plesner take responsibility of the task, which he enthusiastically accepted.⁴³ After working for a period with a shortage of experienced staff, limited facilities and bureaucratic red tape, the MAU was formed under the umbrella of Mahaweli Authority, with Plesner as the Consultant Architect/Director, with supporting local staff in 1983. Nihal Perera, the Chief Architect Planner and Head of the MAU, claims that the main goal of the MAU was "to create towns that functioned from the outset, and supported the local populace in their daily activities and cultural practices, particularly through the production of spaces and places",⁴⁴ for which a "separate institution outside the Engineering Agency (MECA)" which evaded the "engineering hegemony",⁴⁵ the MAU, was formed.

It is observed in this research that Plesner's knowledge of Sri Lankan vernacular architecture, as well as the physical and cultural context, and his professional experience in Sri Lanka has largely defined the character of the Mahaweli buildings and new towns. Perera introduces Plesner as an architect who has "co-developed a hybrid architecture, (with Geoffrey Bawa), which is suitable for contemporary institutions and functions and culturally comfortable for Sri Lankans", which he refers to as "critical vernacular".⁴⁶ Although Plesner worked elsewhere, including a brief stint at Arup from 1967 to 1972, and the role of city architect in Jerusalem,

⁴⁰ Perera, "when Planning Ideas Land", 145.

⁴¹ Jayewardene, "Mahaweli Development Programme," 35.

⁴² Plesner, *In situ*, 375.

⁴³ Plesner, *In situ*, 376.

⁴⁴ Perera, "when Planning Ideas Land", 158.

⁴⁵ Perera, "when Planning Ideas Land", 158-159.

⁴⁶ Perera, "when Planning Ideas Land", 159.

Plesner claims a 'special bond' with Sri Lanka; "I often had a fleeting feeling of having myself been a Sri Lankan in a previous incarnation".⁴⁷

7.1.3 The MAU (1983-1989) and its Operation

In its heyday, the MAU employed about 30 local young architects, with varying degrees of experience, including Danish architect, Dan Vodek Wajnman, with whom Plesner knew in Jerusalem. The staff, which totalled about 60, included experienced Draughtsmen from the Irrigation department.⁴⁸ Perera claims, that they "shared similar interests with regard to planning and design" and the combination of local-foreign expertise was a complementary strength; particularly Plesner's experience, external connections, and access to upper administration, and Perera's knowledge of local conditions, connections and social capital.⁴⁹ The organisational structure of the MAU within MECA is illustrated in the following figures [Figures 7.5, 7.6, 7.7, 7.8, and 7.9].

⁴⁷ Plesner, *In situ*, 375-376.

⁴⁸ Plesner, *In situ*, 400; "Ulrik Plesner on Gamini Dissanayake and the Accelerated Mahaweli Scheme," *Island Newspaper*, published August 17, 2013, http://www.island.lk/index.php?page_cat=article-details&page=article-details&code_title=86032.

⁴⁹ Perera, "when Palnning Ideas Land", 159.

**MAHAWELI ENGINEERING & CONSTRUCTION AGENCY
OF
MAHAWELI AUTHORITY OF SRI LANKA
ORGANIZATION CHART**

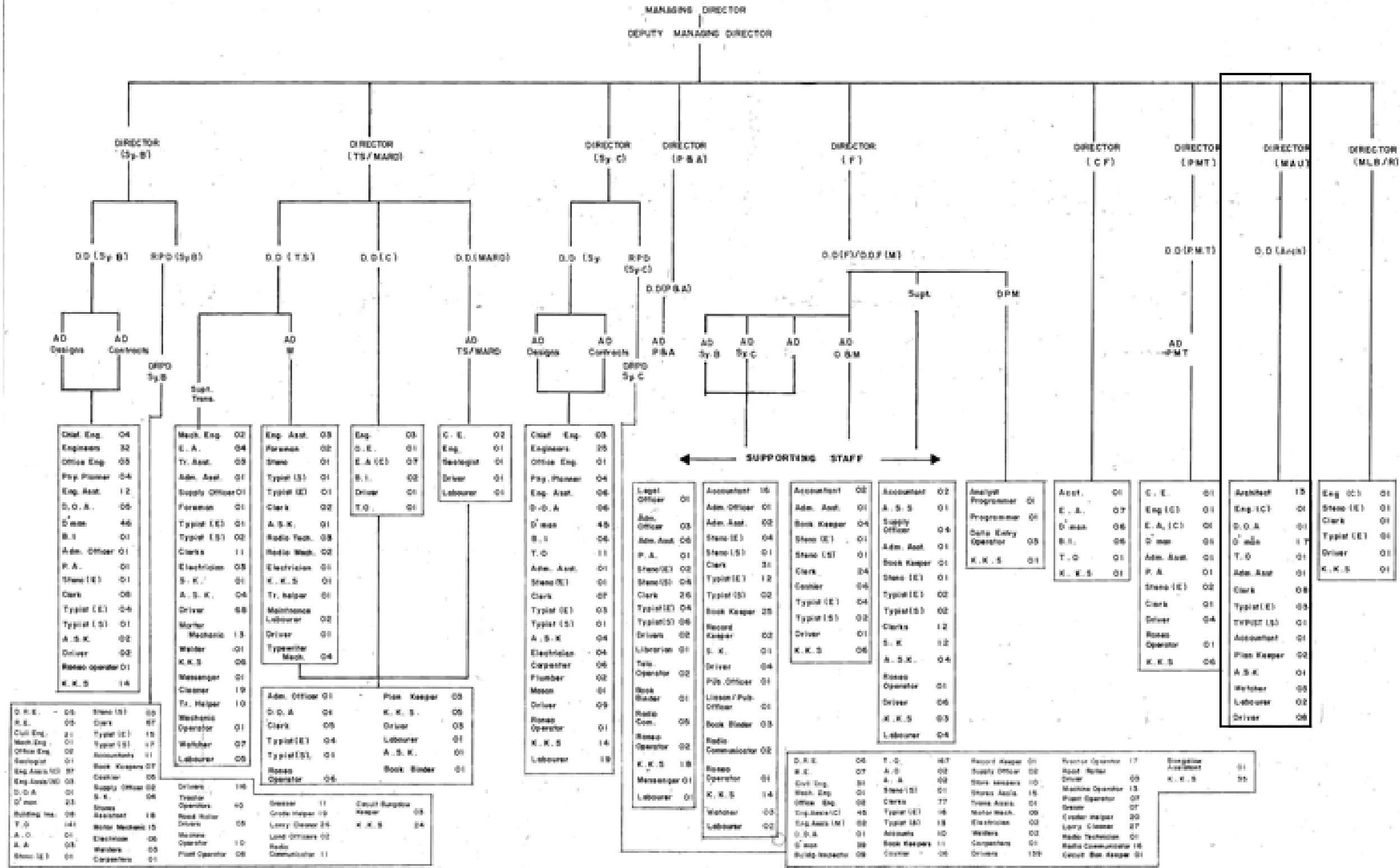


Figure 7.5 the MAU within the MECA Organizational Structure (MASL Archives)

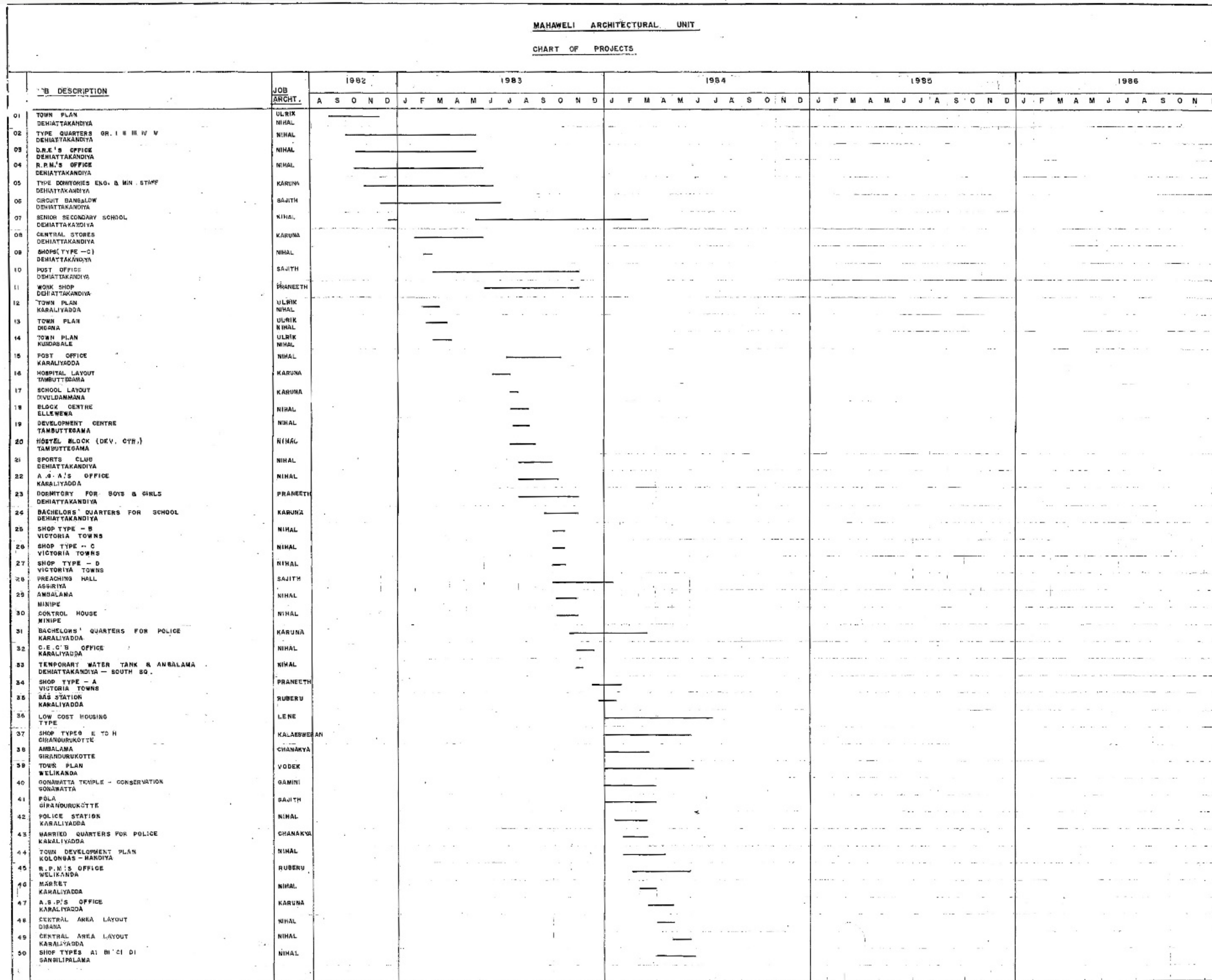


Figure 7.6 the MAU Chart of Projects (MASL Archives)

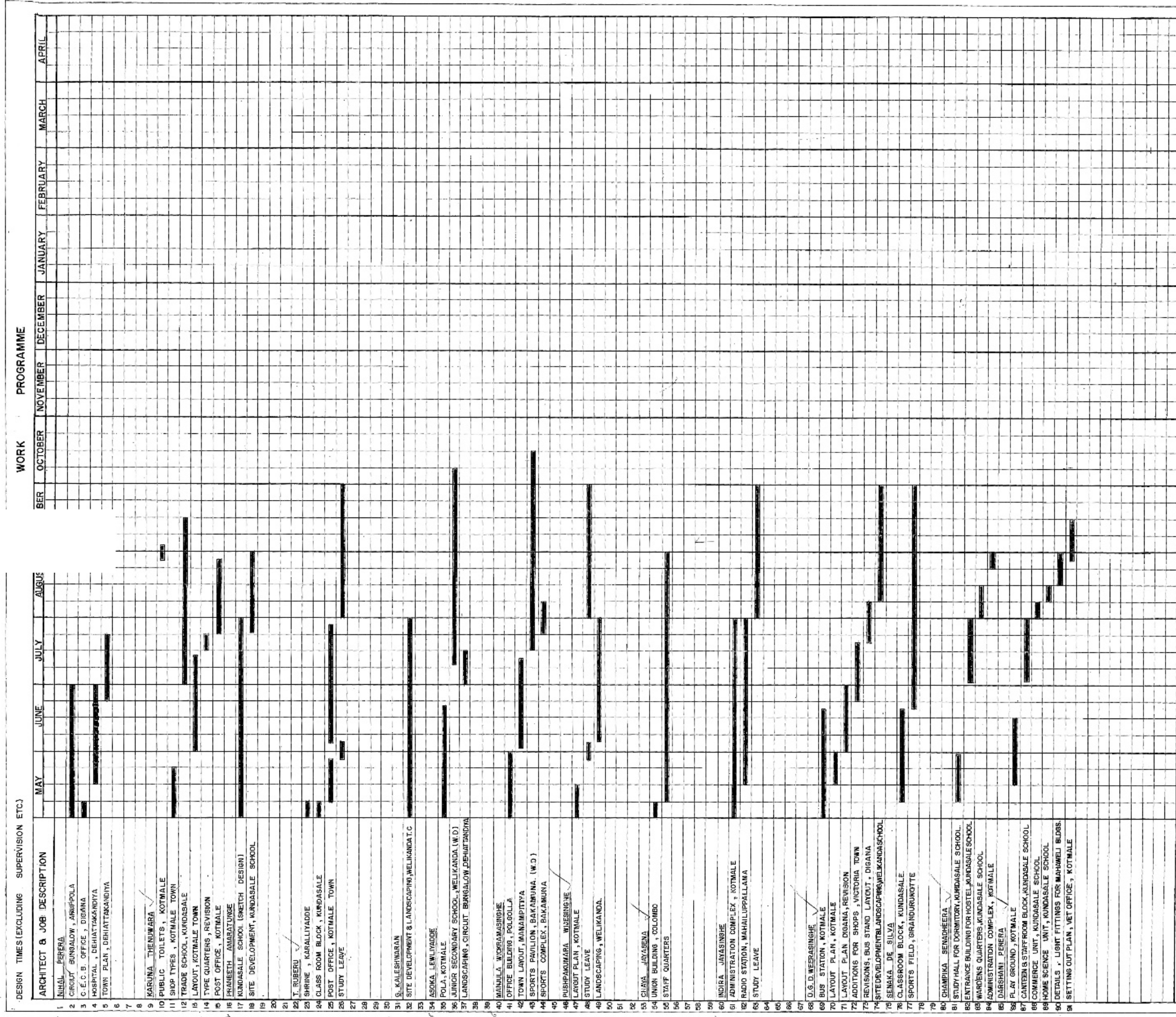
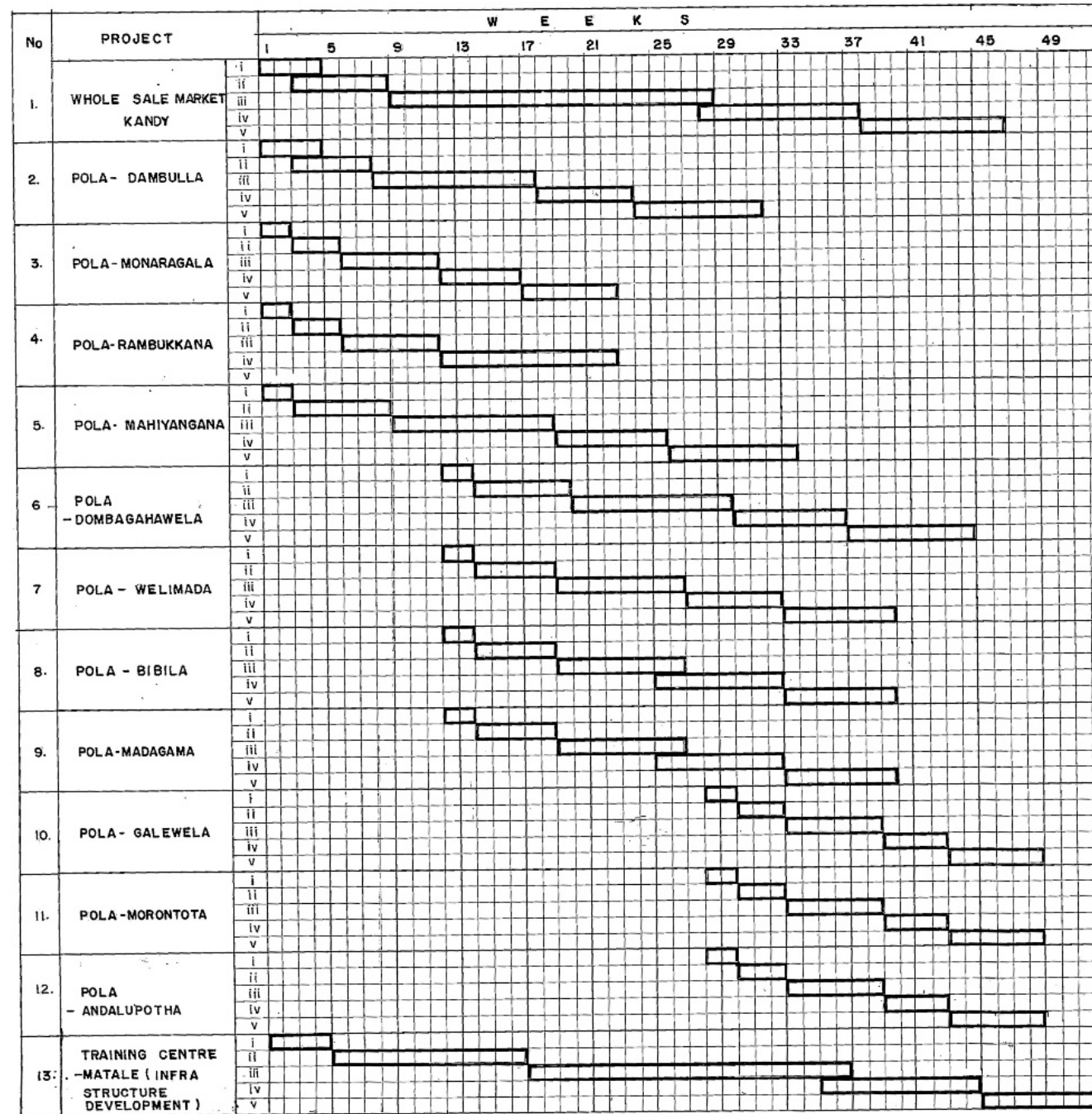


Figure 7.8 the MAU Work Program 2 (MASL Archives)

PROGRAMME OF WORK



KEY

- i. SITE INVESTIGATION & ANALYSIS OF CLIENT'S BRIEF. [Bar]
- ii. PREPARATION OF SKETCH DESIGN & CLIENT'S APPROVAL. [Bar]
- iii. PREPARATION OF ^{Details &} PRODUCTION DRAWINGS. [Bar]
- iv. PREPARATION OF B.O.Q & TENDER DOCUMENTS. [Bar]
- v. TENDER ACTION & AWARDED OF CONTRACT. [Bar]

Figure 7.9 the MAU Work Program 2 (MASL Archives)

Each Mahaweli Annual Report from 1983-1989 contains a section about the MAU. According to the 1983 report, the MAU office shifted to Digana in Kandy district, centrally located in the project area. While the administrative facilities and other supporting services are provided by MECA, the MAU's "principal function (was) to prepare plans for buildings and layout plans for townships for the Mahaweli Development area".⁵⁰ These annual reports provide information such as the MAU's tasks and responsibilities during its operation; for example, in the 1984 Annual Report, the MAU responsibilities included designing staff quarters and low-cost houses for settlers;⁵¹ Girandurukotte new town was declared open in April 1986,⁵² while in 1987 the MAU prepared the landscape design;⁵³ Dehiattakandiya, the largest AMP towns was completed, which the MAU designed and constructed anew in 1989.⁵⁴

The MAU operated within a complex organisation, perhaps with too many sub-organizations, as Perera argues,⁵⁵ with the potential for major administrative issues, communication breakdowns, and lack of co-ordination as well as opportunities for negotiation. Within this structure, the MAU maintained a certain degree of independence; nevertheless, it needed to cooperate with other organizations, through formal and informal mechanisms. Perera claims, the MAU sought opportunity in the "cracks and interstices",⁵⁶ and excelled in negotiating with external organizations. Perera claims when the cost effectiveness of the MAU designs was appreciated by the funding authorities, new funds became available; and the MASL allocated funds to build complete town centres with access roads complete with planted trees.⁵⁷ Acceleration of the project also "expanded room to manoeuvre".⁵⁸ The popular support of the general public backed by enormous political publicity, furthered this ability to be nimble (while covering possible flaws) and, as Perera concedes, Plesner's personal and professional connections with influential persons, both local and expatriate, and he being a "white" foreigner had probably helped in this regard.⁵⁹

⁵⁰ *Annual Report and Accounts 1983, MASL, 3.*

⁵¹ *Annual Report and Accounts 1984, MASL, 21, 34.*

⁵² *Administrative Reprt and Accounts 1986, MASL, 5.*

⁵³ *Administrative Report and Accounts 1987, MASL, 4.*

⁵⁴ (Administrative Report and Annual Accounts 1989, 7-8)

⁵⁵ Perera, "when Planning Ideas Land", 149.

⁵⁶ Perera, "when Planning Ideas Land", 143.

⁵⁷ Plesner, *Insitu*, 378.

⁵⁸ Perera, "when Planning Ideas Land", 149.

⁵⁹ Perera, "when Planning Ideas Land", 159.

From 1989, architect Balendra, a student of Plesner when he was teaching at Katubedda who was already working at MAU, took over Plesner's position as the Director. Subsequently, the MAU was gradually "reabsorb[ed] into the main stream",⁶⁰ but was still in operation at a smaller scale, and continued to design and produce drawings and plans particularly for 'Mahaweli buildings' which complied with the 'original' MAU planning principles and guidelines, continuing the 'critical vernacular language' as evident in the many drawings subsequently produced. It currently operates as a small unit which comprises an architect, an engineer and a couple of draughtsmen under the Deputy Director General (Technical Services) in the Mahaweli Authority of Sri Lanka.⁶¹

7.2 MAU Design Principles

The design principles of the MAU differed from the prior unit located within the irrigation/engineering department. These two different design approaches are analysed in this section to understand the relevance of the MAU approach followed by a discussion of the scope of works of the MAU. Perera has given a comprehensive critical review in this regard and the TAMS report (1980) also contains a section that warns of the possible shortcomings of the pre-MAU design principles.

7.2.1 Pre-MAU Design Principles and the MAU Response

Perera claims, that the "social power of Eurocentrism and the authority of the national state",⁶² dominated the project and its resettlement programme, a tendency which characterises mega infrastructure projects. As national projects operated through administrative bureaucracy they depend on Western funds and expertise, hence "Western supremacy" seeps through the administrative system; and since they are projects mainly involving engineering works, the design approach was "engineering dominated".⁶³ The typical relationship between the project planners and the re-settlers can be described, as it is in the Sogreah report, as top-down, bureaucratic, patronising and paternal.⁶⁴ In this context, the early plans emulated 'Western models'.⁶⁵ The TAMS report stressed that the early plans for resettlement did not tally with the

⁶⁰ Perera, "when planning Ideas Land", 141.

⁶¹ "Organization Structure," *Mahaweli Authority of Sri Lanka*, accessed January 13, 2016, <http://mahaweli.gov.lk/en/os.html>. This was observed in the field visit in June 2015.

⁶² Perera, "when Planning Ideas Land, 147-148, 151.

⁶³ Perera, "when Planning Ideas Land, 147-148, 151.

⁶⁴ Sogreah Report, 81-82.

⁶⁵ Perera, "when planning Ideas Land", 141.

“human side of planning”,⁶⁶ and put forward the recommendation that efforts should be made in the following areas:

- incorporate human needs into the settlement plans
- plans for social integration
- regional and urban planning
- monitoring social evolution
- plans for settler orientation

Although written evidence documenting the connection between the TAMS recommendations to the formation of the MAU could not be identified, the sequence is visible; the TAMS recommendations were published in 1980 followed by Minister Dissanayake’s appointment of Plesner to report on resettlement progress in 1981 followed by the official formation of the MAU in 1983.

The pre-MAU settlements were mostly located on cleared, level sites. Perera claims the pre-MAU planners were not sensitive to the environment or the society, and they did not consider existing land uses, the landscape character or the scenographic qualities, which distinguished each site.⁶⁷ They depended on the same blue prints and in the context of acceleration, the drawings were mass produced.⁶⁸ The town buildings were built over a long time, a few buildings each year, as funds became available. Moreover, they were widely dispersed in the project area and the private sector which is a vital part for the growth of any town, were reluctant to move in.⁶⁹ According to Perera, the MAU addressed the ineffective operational model and the perceived limitations of the planning to this point. He claims that a major underlying issue to which the MAU responded was that pre-MAU towns did not allow people “to create their own places and develop a sense of belonging”.⁷⁰ Instead the MAU advocated a people-centred approach.

7.2.2 A ‘People Centred’ Approach

According to Perera, the success of the MDP was “the ability of the farmer families to make a living, economically, socially and culturally,” needs that the MAU sought to fulfil along with

⁶⁶ TAMS Report, 25.

⁶⁷ Perera, “when Planning Ideas Land”, 152-153.

⁶⁸ Perera, “when Planning Ideas Land”, 141-145.

⁶⁹ Perera, “when Planning Ideas Land”, 153.

⁷⁰ Perera, “when Planning Ideas Land”, 158.

establishing a sense of security and belonging.⁷¹ The main goal of the MAU was to create towns that performed from the outset and to eliminate the “processes that were reproducing hegemonic planning practices”.⁷² In response a people centred approach was pursued from the outset. The MAU considered, according to Perera, the “local realities such as funding, implementation conditions and the interest of local and international agencies”.⁷³ Fundamental to this approach was the effort to “ensure that the settlers received most of the benefits possible”, which the MAU tried to achieve through “read[ing] the cracks in the project structure and processes” to seek opportunities to change, manoeuvre, negotiate and convince the project authorities as well as donor organizations, to build buildings in the towns before settling the people. This process was facilitated by Plesner’s “critical vernacular – hybrid architecture – both suitable for contemporary institutions and functions and culturally comfortable for Sri Lankans” and the semi-autonomous status the MAU carved out in the Mahaweli organizational structure.⁷⁴

Perera claims, the MAU took advantage of the local experience of its planners while conducting “special studies” to understand local conditions.⁷⁵ According to Perera, rather than providing ideal resource allocation through redistribution, the MAU tried to utilise available resources to guide the development of functioning towns.⁷⁶ The MAU provided a ‘framework’ or a ‘loose-fit plan’⁷⁷ instead of comprehensive plans as a rigid tool of control. Once the citizens arrived the MAU “took lead from, accepted, accommodated and directed”⁷⁸ their interventions, and updated, changed, modified and amended their ‘loose-fit’ plans accordingly, thus “blurring the separation of plan making and implementation”.⁷⁹ Perera claims, the MAU incorporated “Sri Lankan sensibilities” into the planning process. The MAU towns were thus “compact and made up of various (mixed) land uses and functions”⁸⁰ that did not follow established Western zoning based on land use.

Plesner describes traditional Sri Lankan towns as “crowded but lovely places”, with “human qualities and beauty...as valid today as they were in the past.” In his view the new towns must

⁷¹ Perera, “when Planning Ideas Land”, 160.

⁷² Perera, “when Planning Ideas Land”, 158.

⁷³ Perera, “when Planning Ideas Land”, 160-161.

⁷⁴ Perera, “when Planning Ideas Land”, 158-160.

⁷⁵ Perera, “when Planning Ideas Land”, 163.

⁷⁶ Perera, “when Planning Ideas Land”, 158.

⁷⁷ Perera, “when Planning Ideas Land”, 161.

⁷⁸ Perera, “when Planning Ideas Land”, 167-168.

⁷⁹ Perera, “when Planning Ideas Land”, 163, 168.

⁸⁰ Perera, “when Planning Ideas Land”, 163.

be the 'recreations' of "these traditional qualities in new circumstances", solving the concurrent problems such as "traffic, parking, shanty development and unknown future growth rate of the town."⁸¹ This approach is also fundamental to Plesner's design approach upon which the MAU's guiding principles were developed. Based on his own observations of small towns, Plesner argued that the new MAU towns should be,

*useful in the way people are accustomed to, that a man in a sarong must feel comfortable, not alienated, that tradition is a powerful practical matter, and an elementary tool for making a town that works.*⁸²

However, Perera stresses that these towns are not 'traditional' or 'Sri Lankan' as opposed to 'Western'. According to him, the MAU created 'towns for people', with "contemporary livelihoods and identities or local (hybrid) modernities", as the designs were influenced by a mixture of experience and culture.⁸³

The 'loose-fit or adaptable framework' of the MAU was compatible with a primary recommendation in the FAO report which advocated a 'flexible plan' for this type of settlements:

*Guiding principle of planning is that healthy settlements should be provided, which are attractive for people to move into, and comfortable to live in and work. The arrangements provided in the early stage of a settlement should have ample flexibility for future developments and improvements, along with the overall socio-economic trend.*⁸⁴

The MAU's approach is further accentuated by the fact that they provided facilities, recommended in the Mahaweli reports (particularly the Sogreah and Hunting reports), to the settlers from the outset.

7.2.3 Relationship of the MAU to the Overall Mahaweli Project

The MAU work encompassed a vast scale from territorial considerations through to small buildings within the townships. The scope of the MAU included,

- Planning new towns and settlements, including development planning for future urban areas.

⁸¹ Plesner, *In situ*, 384.

⁸² Plesner, *In situ*, 385.

⁸³ Perera, "when Planning Ideas Land", 163.

⁸⁴ Schure's FAO Report: P. Th Schure, *Mahaweli Ganga Irrigation and Hydro Power Survey: Stage II: Volume VI- Irrigation: Part IV- Settlement*, Food and Agriculture Organization of United Nations and Irrigation Department of Ceylon, Colombo (1968), 1.

- Design and construction of individual buildings.
- Environmental planning.
- Development and preservation of the reservoir watershed areas.
- Landscaping, both overall and in specific areas.⁸⁵

Within this vast scope of works, the MAU planned and built 12 towns between 1983 and 1989 [Figure 7.10]. Most of them were built on newly open lands, which were entirely designed by the MAU (such as Dehiattakandiya, Karalliyadda and Digana Townships), while the MAU revised some pre-MAU plans and built accordingly (such as Girandurukotte Township). Moreover, existing towns were upgraded within the Mahaweli area (for example, Bakamuna Township).⁸⁶ The MAU built towns both in the downstream and upstream Mahaweli areas. The downstream towns basically served the new agriculture settlements while the upstream towns provided services for the displaced population with irrigation works. Perera and Plesner both claim, that the new town centres provided shops, schools, hospitals and houses, and all the necessary amenities that the re-settlers needed. They also planted tens of thousands of trees along the highways and in the towns. The positive performance of the MAU was recorded in the 1984 Mahaweli Annual Report, "It seems that Girandurukotte has been a centre with a lot of activities such as, training agriculture, water management and performing arts".⁸⁷

To realise the designs within the short time frame that was further compromised by bureaucratic red tape Plesner maintained that the towns must be built by "many local builders", which make them truly towns for those (same local) people.⁸⁸ Accordingly, the MAU employed a large number of small scale village contractors and purchased equipment locally in order to strengthen the local economy, as well as to give them ownership through participation,⁸⁹ despite the Hunting report's recommendation to use large contractors as they are easier to supervise with less paperwork.⁹⁰ In keeping with this sense of agency, the design of buildings in the vernacular style was compatible with the technical skills of local carpenters and builders.

⁸⁵ Jayewardene, "Mahaweli Development Programme", 34; Plesner, "The Mahaweli Buildings", 86; Raheem, "Plesner in Sri Lanka".

⁸⁶ Perera, "When Planning Ideas Land", 160.

⁸⁷ *Annual Report and Accounts 1984, MASL*, 34.

⁸⁸ Plesner, *In situ*, 385.

⁸⁹ Plesner, "The Mahaweli Buildings", 86.

⁹⁰ Hunting Report- System C, Section S, 63. References from the Section 'S' are specially mentioned in the notes. All the other references are from the Section 'Q' of the report.

Given these considerations, the MAU aimed to:

- Develop simple and rational low-cost building and self-help housing types.
- Bring rammed earth constructions to a state where it is technically satisfactory and officially acceptable.
- Design improved buildings for such purposes as schools, health centres etc.
- Establish better building habits and good conditions for towns to survive and to develop on their own.

Plesner claims, as Jayewardene confirms, that the ultimate aim of the MAU was to ensure that all the effort that went into the project would create communities, towns, buildings, and landscapes with sound human and social qualities, while creating places of beauty in which people of all levels – farmer settlers as well as the middle class – will be content and proud to live in.⁹¹

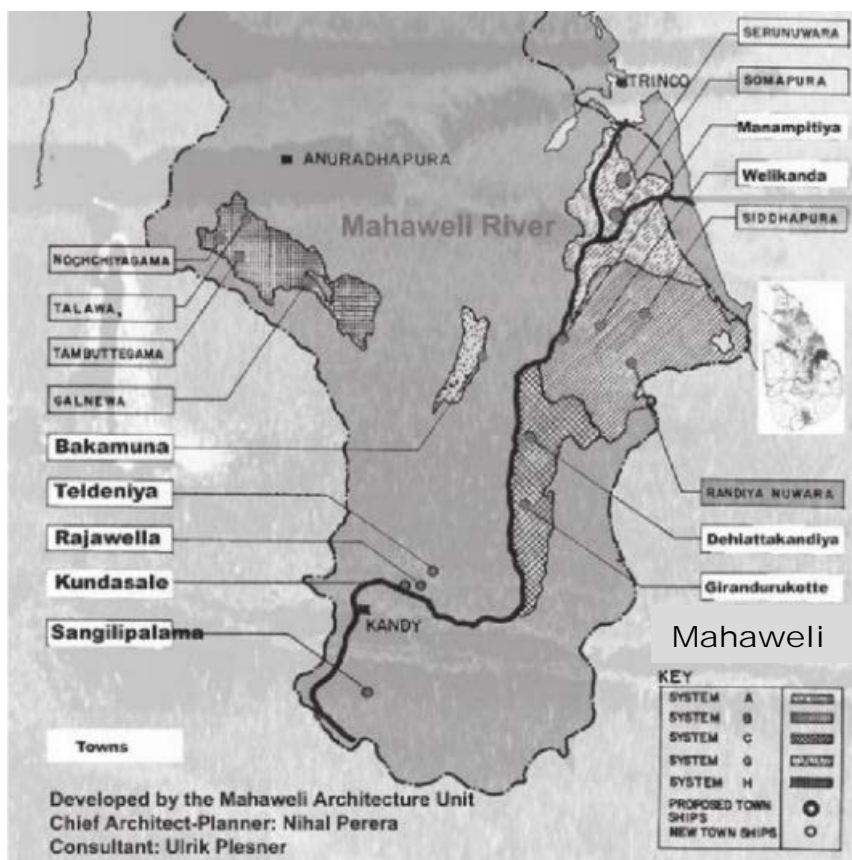


Figure 7.10 Mahaweli Towns including MAU Towns [Nihal Perera, “when Planning Ideas Land: Mahaweli’s People Centred Approach,” in *Crossing Borders: International Exchange and Planning Practices*, edited by Patsy Healey and Robert Upton (Routledge, 2010), 142.]

⁹¹ Jayewardene, “Mahaweli Development Programme”, 34; Plesner, “The Mahaweli Buildings”, 86.

7.3 Physical Layout

Recommendations contained in the Mahaweli Reports were twofold. On the one hand the Sociologists who compiled these reports studied sociological concerns related to resettling people (at least incompletely) in the Dry Zone and offered recommendations and guidelines, and on the other, based on these sociological studies, they gradually developed the resettlement model that was followed by the MASL to establish settlements in the Mahaweli area. In this section the researcher will introduce the Mahaweli resettlement model which was based on Central Place Theory (CPT) - as explained in the theoretical framework - and how this model changed and evolved in each consecutive report. While doing so, the researcher will discuss some of the sociological concerns that those reports raised. The final plans for the settlements and urban centres were prepared for each 'Mahaweli System' by different organizations during the late 1970s.⁹² The MAU built towns in the locations marked on these maps; e.g. the proposed locations for townships in System 'C', Dehiattakandiya and Girandurukotte are shown in this map in the Hunting Report- System C [Figure 7.11].

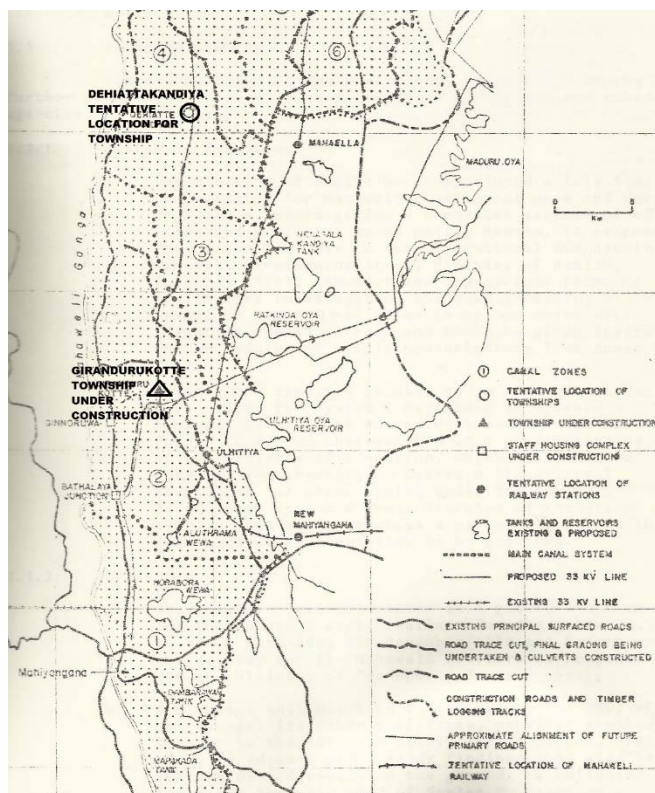


Figure 7.11 Townships in System 'C' (Hunting Report- System C, 27).

⁹² N.S. Perera, "a Critical Evaluation of the Proposed Locations of the Townships in 'System B'", 29.

System A: Electrical Engineering Services Limited (Zurich)

System B: Acres International Limited (Canada)

System C: Hunting Technical Services Limited (United Kingdom)

System D: Japan International Cooperation Agency (Japan)

7.3.1 Mahaweli Settlement Model

Type of the settlements

In the Mahaweli reports, physical planning is proposed from the macro level of 'System' planning to the micro level of core-house planning. They include layouts of settlements in a 'System', typical plans for different levels of the settlements with lists of the services at each different level, and typical plans and designs for model core houses for professionals and farmers. Barnabas claims that the proposed physical layout for the Mahaweli settlements derived from sociological analysis and lessons learnt from previous irrigation projects.⁹³ Prior settlement schemes for major irrigation projects (colonization schemes) were based on irrigation canals and engineering convenience.⁹⁴ The Gal-Oya scheme was the "first attempt to link towns with villages"⁹⁵ covering a large area of the Eastern Province of Sri Lanka. The Uda-Walawe scheme was an extension of the Gal-Oya model. These settlements consisted of 'scattered-farms' and 'semi-scattered villages'. Homesteads and farms were distant from each other which caused difficulty in the provision of services and infrastructure which did not facilitate relationships and solidarity among the settlers [Figure 7.12].⁹⁶

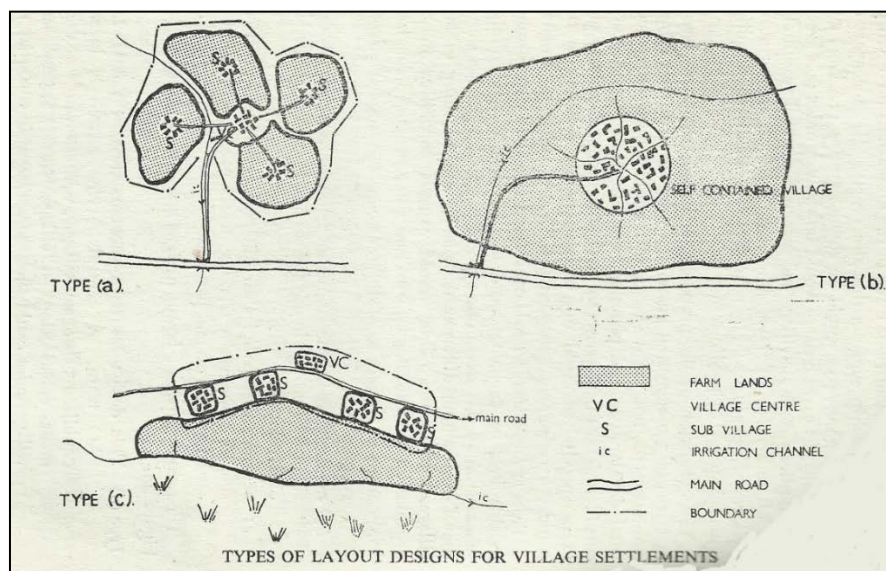


Figure 7.12 Types of Rural Agricultural Settlement Systems: Type (a) Cluster, Type (b) Self-contained, Type (c) Linear (Adopted from Mendis, *the Planning Implications*, 78 and N.S. Perera, "a Critical Evaluation of the Proposed Locations of the Townships in 'System B'", 52.)

⁹³ Barnabas Report, 23.

⁹⁴ N.S. Perera, "a Critical Evaluation of the Proposed Locations of the Townships in 'System B'", 50; Johnson and Scrivenor, *Sri Lanka: Land, People and Economy*, 66,69.

⁹⁵ N.S. Perera, "a Critical Evaluation of the Proposed Locations of the Townships in 'System B'", 50-52.

⁹⁶ N.S. Perera, "a Critical Evaluation of the Proposed Locations of the Townships in 'System B'", 50-52; Sogreah Report, 122,123.

Barnabas (1967) claims that the majority of the people settled as well as officials preferred houses in farmsteads over clusters to avoid conflict with neighbours, to keep better watch over crops and to prevent encroachment.⁹⁷ Re-settlers felt a sense of independence and privacy in the new resettlements, which they did not have in their compact house clusters in the traditional villages, where “social pressures are very operative”.⁹⁸ One of the main reasons for resettling for these people, was to escape from the traditional norms and social pressures, for example, concerns relating to caste. Preferences for ‘homestead’ types also, likely, related to the room for expansion for future generations, in contrast to the limits of ‘cluster’ housing [Figure 7.13].⁹⁹

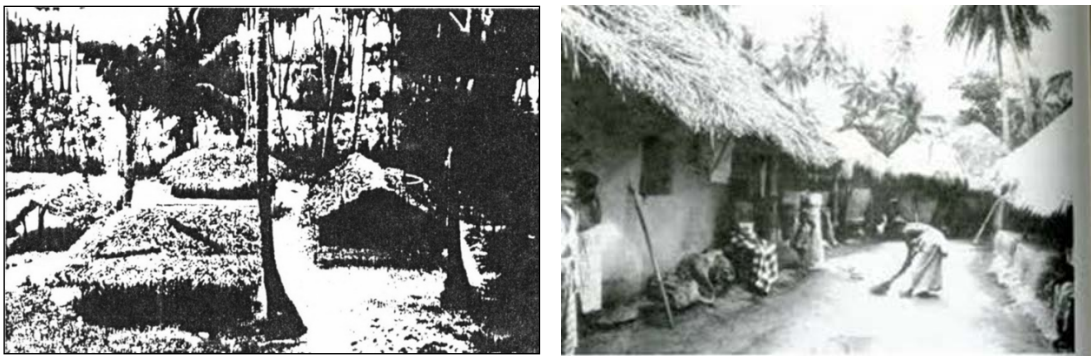


Figure 7.13 Traditional Compact Housing Clusters (Source: Left- “Courtyard Houses”, *Hubpages*, accessed February 9, 2014, http://rmnathan.hubpages.com/hub/Coutryard_Houses# and Right- a Photo by Engineer P. Thalagala of the MASL.)

However, the proposed resettlement model was not primarily homesteads. Barnabas claims that “some sort of a judicious combination of the elements of clustering as well as homesteads” was needed for the ease (or less costly) provision of services, and to facilitate negotiated social relationships (whereby neighbours could choose whether to engage or not).¹⁰⁰ Considering agro-distance (distance from the farm) and socio-distance (distance to the other amenities such as school, hospital and shops), he proposed the first ever settlement model for the Mahaweli settlements, the ‘basic hierarchical cluster and township system’ complete with ‘primary amenities’.¹⁰¹ This served as the model for subsequent designs. Barnabas recommended that the size of the facilities should depend on the population and, in the case of an established township, they should be expanded according to the population increase.¹⁰² This model was

⁹⁷ Barnabas Report, 41,65.

⁹⁸ Barnabas Report, 90.

⁹⁹ Barnabas Report, 90.

¹⁰⁰ Barnabas Report, 110.

¹⁰¹ Barnabas Report, 106-107.

¹⁰² Barnabas Report, 110-111.

adopted, refined and evolved gradually during the course of the Mahaweli Project, as evidenced in the subsequent reports, to inform the design of whole settlements.

In P. T. Schure's very detailed report in the same FAO study series (1968), included a wide range of settlement proposals and the report included typical designs and cost estimates for housing, road networks, irrigation works and other infrastructure, as well as recommendations for materials and construction techniques (such as prefabricated parts for the houses), in addition to the increasingly refined settlement model.¹⁰³ Schure recommended that the settlements should be compact and nucleated and they should form a 'physical unit' which would conform to irrigation and engineering priorities. His model consisted of the smallest type of new community, a so called 'hamlet' – comprising 100 farming community – serviced by a 'village' – with 300-400 farmer and about 50 non-farmer families. For every 4-5 villages, a central 'town' – the major service centre – with 'core' facilities such as, administrative, commercial, social and recreational services should be developed, with about 100 non-farm families settled. At the district or provincial level major agricultural industries should be planned in macro scale national planning level.¹⁰⁴

In the Sogreah report (1972), the 'cluster' system was further supported to break up the caste system, and other social barriers. A cluster is serviceable as one 'irrigable block' and the size is favourable for development of "social cohesiveness, solidarity and complementarity", and more importantly corresponds to the typical Dry Zone village to offer "a type close to the traditional village environment".¹⁰⁵ Unfortunately, this constituted the very environment that the re-settlers wanted to avoid. However, it was manageable by local leaders, thereby reducing the costly administrative and police control which might stifle the initiatives of the new settlers.¹⁰⁶ The settlement model, thus, is clearly illustrated in the following figures, consisting of 3 levels, hamlet, service centre and 'urban' centre [Figures 7.14, 7.15 and 7.16].¹⁰⁷ In both FAO and Sogreah reports this is called a rural urban centre.¹⁰⁸

¹⁰³ Schure Report, 4.

¹⁰⁴ Schure Report, 2-6.

¹⁰⁵ Sogreah Report, 123-124.

¹⁰⁶ Sogreah Report, 123-124.

¹⁰⁷ Sogreah Report, 128.

¹⁰⁸ Sogreah Report, 129; FAO- Final Report: *Mahaweli Ganga Irrigation and Hydro Power Survey, Final Report, Volume III: Organizational and Management Requirements*, UNDP/FAO (1969), 147.

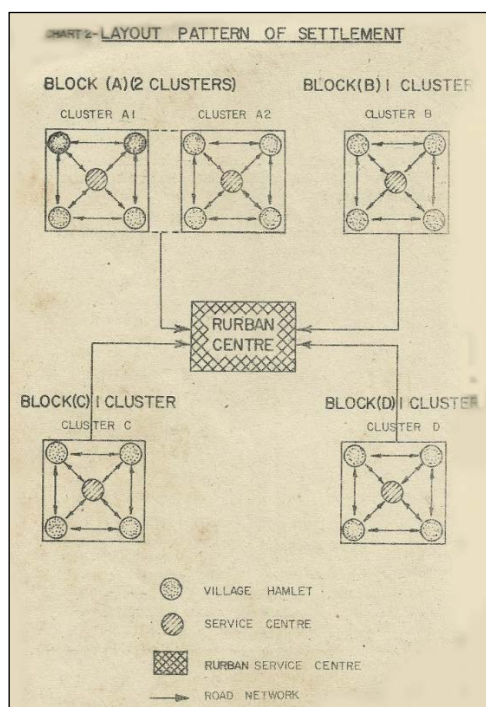


Figure 7.14 Layout Pattern of Settlement (Sogreah Report, 129.)

Settlement Unit	Population Served	Proposed Facilities
'Hamlet'	A group of about 100 households and population of 5 - 600	Primary School Cooperative Depot Post Box Plus private boutiques etc. (IBRD also propose the inclusion of facilities for a visiting dispensary).
'Cluster'/Village' (the latter term preferred by IBRD)	4 or 5 hamlets i.e. 4 - 500 households and population of 2,500 - 3,000.	Provided in the central hamlet: Junior Secondary School Cooperative Branch Public Health Centre/Dispensary (IBRD) Sub-Post Office Religious institutions, pola, shopping centre etc.
'Sub-Area'/Township' (the latter term preferred by IBRD)	6 to 8 villages i.e. 2,500-4,000 households and population of 15,000-24,000	Senior Secondary School Primary Cooperative Society and Rural Bank. Central Dispensary and Maternity Home. Post Office Farmers' Training Centre Central Stores, Project Office etc.

Figure 7.15 Summary of Sogreah Settlement Planning Policies (cited in Hunting Report- System C, 27.)

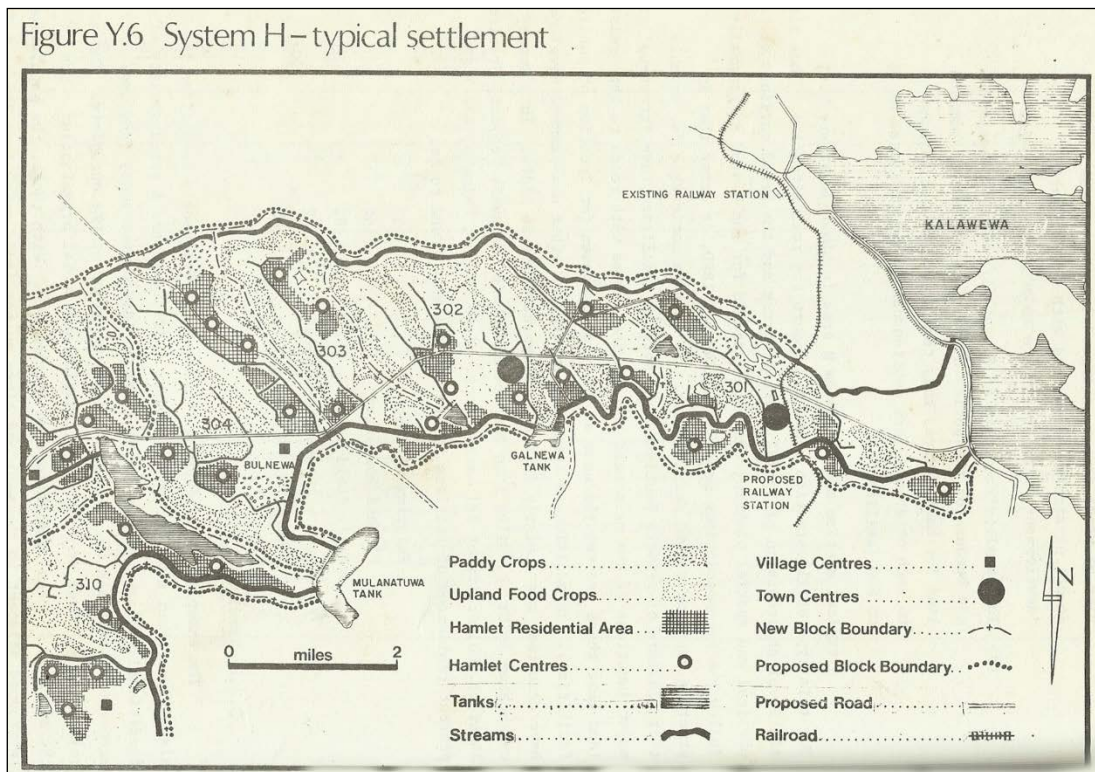


Figure 7.16 System H- Typical Settlement (Hunting Report- Victoria Scheme, 30.)

The Hunting studies were carried out to develop detailed settlement plans exclusively for the Victoria project (1978) and System C (1979). According to the report, the “hierarchical settlement pattern provided a flexible and convenient statistical tool for the rational distribution of population and services, compatible with the social conditions found in settlement schemes”.¹⁰⁹ As pointed out in the report, in Sri Lankan tradition, community and ancillary facilities are related to transport routes, where the street serves as a public space. Accordingly, the ‘best fit’ settlement model is “a so-called cluster/multiply nucleated pattern”, distributed in a ‘linear’ arrangement, so that the size – which would affect the provision of services - is not so significant.¹¹⁰ The approach to settlement presented in the Hunting report is quite flexible. It claimed that the settlements should be ‘indeterminate’ and not strictly regulated in size or hierarchy, to allow for later changes to be accommodated.¹¹¹ It further claimed, that other than townships which physically corresponded to the ‘irrigation region’, neither village centres necessarily represented ‘irrigation range’ nor did hamlets correspond to ‘irrigation development units’.¹¹² Thus the Hunting recommendations demonstrated a departure from over-dependence on the irrigation works for ‘detailed’ settlement planning; however, it did not completely depart

¹⁰⁹ Hunting Report- Victoria Scheme, 34.

¹¹⁰ Hunting Report- Victoria Scheme, 33.

¹¹¹ Hunting Report- Victoria Scheme, 34.

¹¹² Hunting Report- Victoria Scheme, 27, 29.

from the settlements based on irrigation canals, as the transport network lies along the canal system in the Mahaweli Project area.

The MDB model for the settlements

The MDB model applied to plan the settlements is described as follows. The smallest unit of the settlements, called a 'block', consisted of 100 to 125 farmer household lots within 1-2 km zone of irrigated allotments served by a single irrigation canal. Each lot comprised 0.4ha of upland for a house lot and garden, and 1ha for paddy cultivation (in contrast, the traditional farmers cultivated 0.2 to 0.6 has of paddy lands).¹¹³ A couple of blocks, made up a 'Hamlet' with about 250-300 families. 4-5 such hamlets formed a 'Village Centre', serving about 800-1,000 families, where basic services for the farming population were provided. A couple of village centres made up an 'Area Centre', which served about 2,000-3,000 families. For a 2-4 such area centres there is a township with urban characteristics which catered to around 8,000-10,000 families. The township provided basic public facilities such as post offices, multi-purpose co-operative societies, banks and peripheral hospitals. A system consisted of several townships.¹¹⁴ Each level was systematically planned to provide social services (these are illustrated in Figures 7.17, 7.18, 7.19 and 7.20).

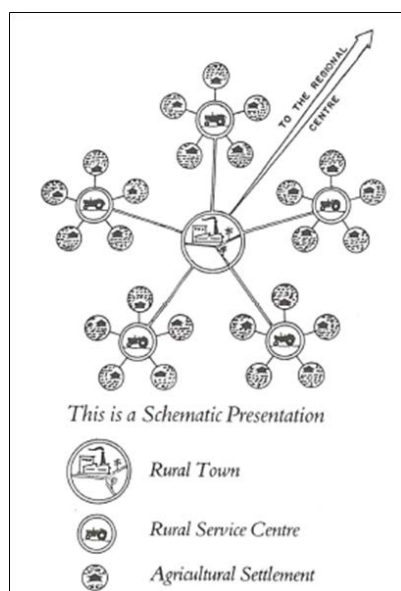


Figure 7.17 Diagram of the Spatial Organization of Settlements in a Region (Jayewardene, "Mahaweli Development Programme", 36.)

¹¹³ Modak and Biswas, *Conducting Environmental Impact Assessment in Developing Countries*, 289.

¹¹⁴ Jayewardene, 1988, 34; Karunatilake, *the Accelerated Mahaweli Programme and its Impact*, 137; Modak and Biswas, *Conducting Environmental Impact Assessment in Developing Countries*, 289; Perera, "when Planning Ideas Land", 153.

TABLE Y.9 MDB Standards for Infrastructure Services

Settlement Level	Administrative	Commercial	Agricultural	Industrial	Educational	Cultural	Health	Others
Hamlet 100-125 families (500-600 persons)		Co-operative depot	Farmers organisation representative		Primary school	Area to be reserved for: recreation, religious and community activities	Mobile dispensary	Cemetery (one for two hamlets)
Village (cluster) For 4-6 hamlets 500-700 families (2,500-3,500 persons)	Grama Sevaka's office Range office (one for two clusters)	Branch co-operative society and co-op depot Sub post office (one for two clusters) Repair shop Shops and Sunday fair (pola ground)	Fertilizer store Paddy store Tractor repair station Project office (cluster level)	Textile weaving centre Cottage industries Small scale mills Paddy processing Fibre processing	Primary educational institutions Junior secondary school and play ground	Community centre Multipurpose hall Reading room Library playground etc. Archaeological and architectural ruins to be preserved Religious institutions temple, church, kovil, mosque, etc.	Public health midwife Dispensary -- visiting (one for two clusters)	Bus stop Parking area Green belts Cemetery Public toilets
Township 5-6 clusters or villages 3,000-3,600 families (15,000-20,000 persons)	Town council Police station	Multipurpose co-operative society -- primary and co-operative retail depot Post Office, banks, central market, shops, repair shops filling stations, cinemas	Agricultural training centre Sub area farmers committee office Paddy store Fertilizer stores Agricultural service centre	Textile mill Rice processing mills Other mills for agro-based industries - groundnut oil, straw board	Senior secondary school and play ground Other educational institutions Technical and commercial	Community centre Multipurpose hall Library Playground Cinema, etc. Religious institutions Archaeological and architectural ruins to be preserved	Central dispensary and maternity ward Public health centre Hospitals peripheral unit or rural	Bus stand (main) and bus stop Railway station (if passing through) Parking lots Public toilets Cemetery and crematorium

Figure 7.18 MDB Standards for Infrastructure Services (Hunting Report- Victoria Scheme, 28.)

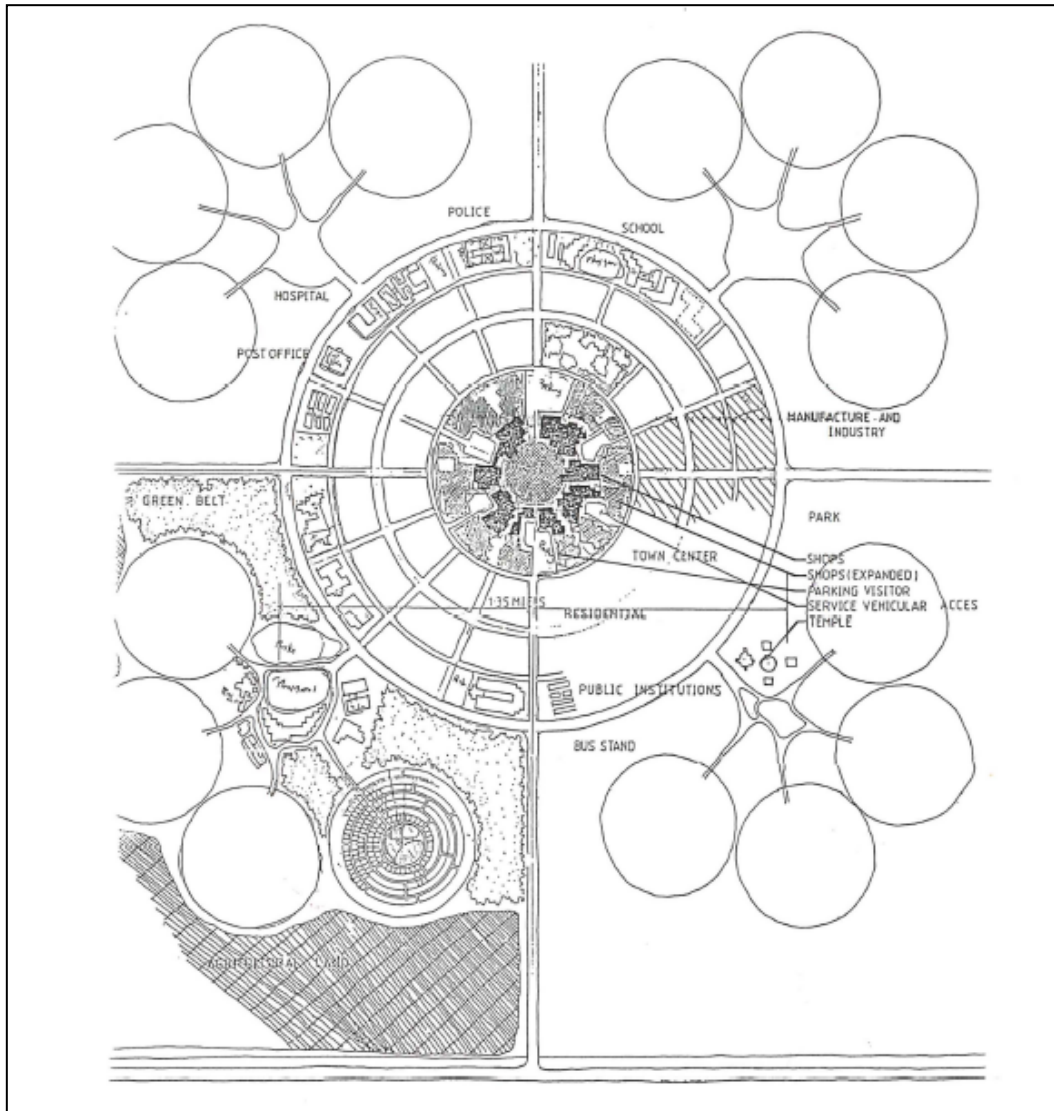


Figure 7.19 Mahaweli Town Spatial Model (Jayewardene, "Mahaweli Development Programme", 36; Mendis, *the Planning Implication of the Mahaweli Development Project*, 237.)

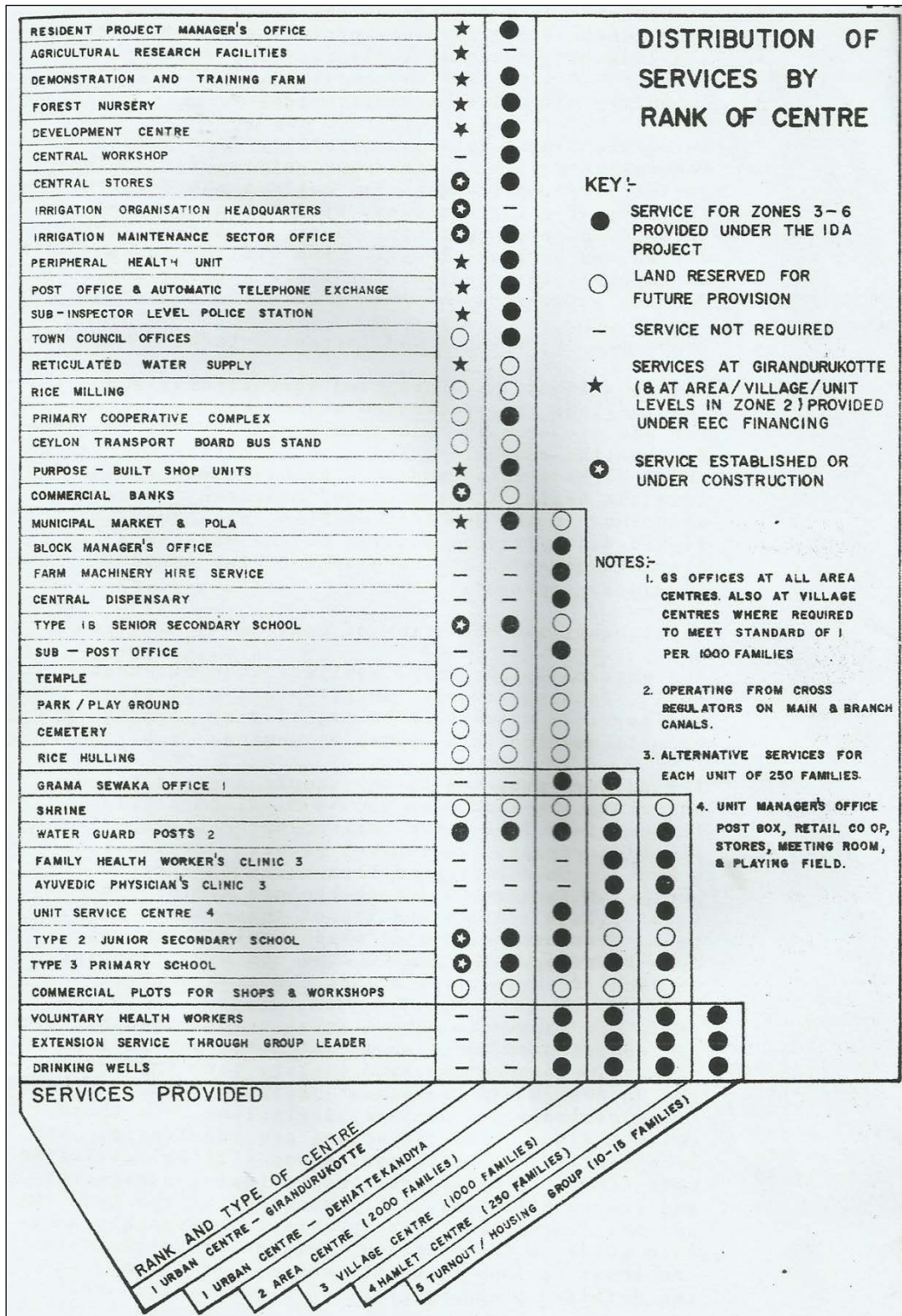


Figure 7.20 Distribution of Services by Rank of Centre (Hunting Report- System C, 43.)

Based on this MDB model, the settlement model that the Hunting report proposed for System C is illustrated in the following table [Figure 7.21].

Central Place	Medium Catchment (Families)	Distance Apart (Kms)
Sub-District/ System Centre	50 - 60,000	40 - 50
Urban Centre	8 - 10,000	16 - 20
Area Centre	2 - 3,000	7 - 10
Village Centre	800 - 1,000	4 - 5
Unit Service Centre	200 - 300	2 - 3
Housing Group (corresponding to turnouts)	10 - 15	$\frac{1}{2}$ - $1\frac{1}{2}$

Figure 7.21 Recommended Central Places in System C (by Hunting Consultants) (Hunting Report- System C, 94)

Distinct features of this Mahaweli Settlement model were, concentration of families in clusters of settlements, and the spatial disposition of settlements and hierarchical classification of service centres.¹¹⁵ Perera declares, the block of 100 farm families – which was believed to be the manageable and serviceable by a single canal – derived from the form of traditional villages – ‘*Purana Gam*’, was one instance where the traditional system was taken into account.¹¹⁶ The ‘hierarchical service centres’ of the Mahaweli settlement model were called ‘central places’ in the Hunting report.¹¹⁷ This report draws on precedent studies, related to central place theory applied in the Sri Lankan context, to justify the applicability of this theory in settlement design.¹¹⁸ Moreover, Perera claims that “western theories such as central place theory and post-War master planning were applied in conceiving the physical layout of urban centres”.¹¹⁹ The settlement model closely resembles CPT,¹²⁰ however, it is not an outright application, as the theory needs several pre-conditioning factors such as a certain population threshold and a market range etc. the following figures (Figure 7.22 and 7.23 show an example of the settlement model based on this CPT proposed for the System ‘C’).

¹¹⁵ Mendis, *The Planning Implications of the Mahaweli Development Project*, 69.

¹¹⁶ Perera, “when Planning Ideas Land”, 155.

¹¹⁷ Hunting Report- System C, 94.

¹¹⁸ Hunting Report- System C, 83-84. The studies and conclusions are as follows.

by K.A. Gunawardena- a comparatively low catchment population can support a service centre in the dry zone; a hierarchical pattern of central places is more visible in the dry zone by a clustering of population thresholds. M.W.J.G. Mendis- derived a classification of settlements (Mahiyangana, the existing town in System C was classified as a second order town).

Staffan Ohirling- the changing relationship of central places to local communities.

¹¹⁹ Perera, “when Planning Ideas Land”, 146.

¹²⁰ Hunting Report- System C, 83.

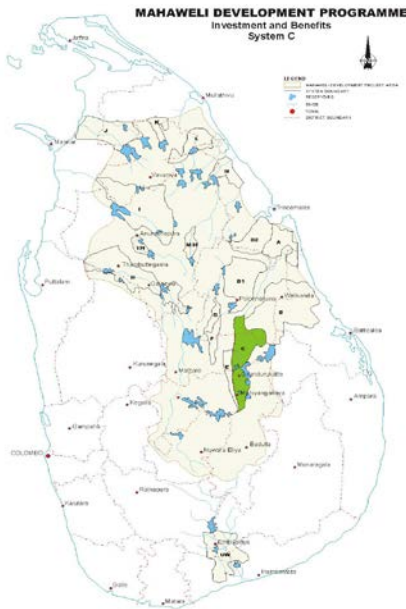


Figure 7.22 System C in the Mahaweli Project (“Maps”, Mahaweli Authority of Sri Lanka, accessed January 15, 2016, <http://mahaweli.gov.lk/en/maps.html>.)



Figure 7.23 Mahaweli System 'C' settlement (“Maps”, Mahaweli Authority of Sri Lanka, accessed January 15, 2016, <http://mahaweli.gov.lk/en/maps.html>.)

Composition of the settlements

Barnabas recommended heterogeneous settlements, so that the social pressures might be minimised for the new settlers among a mixed group. He perceived such a community would grow roots in settlements faster than re-settlers from close-by villages with minimal chances for interaction with the original village such that the settlers would be more independent. Moreover, people from different areas would have more diverse experience in agriculture, offering opportunities to learn from each other so that the "rate of change is more rapid".¹²¹ Though the Sogreah consultants agree, in the context of integrating the people from existing villages (the overflow population) and encroachers, it would be fair and reasonable to give priority to the people from the neighbouring area.¹²² Sogreah further recommended that the settlers should be given a choice to select the hamlet, allowing groups to form according to the geo-cultural origin, caste, long acquaintance and profession, if they prefer, so that a 'dynamic community' and harmonious blending of a number of social groups is achieved in a "most practical and healthy method of creating a homogenous rural community".¹²³ Thus, the recommendation for the composition of the sub-unit/hamlet was to be homogenous, having "same geo-cultural background, social status and caste affiliation."¹²⁴ Ultimately, the TAMS consultants also recommended settling people "with the similar background" as "cohesive family units" to promote social bonding.¹²⁵

Core houses

Both Barnabas and Schure recommended that core houses should be built for the settlers, including farmers before they arrive.¹²⁶ This would allow the new settlers to bring families, which would contribute to a decrease in social problems such as drinking.¹²⁷ However, Sogreah discouraged providing a built house for re-settlers as they are costly and unsatisfactory "because the aesthetic feelings and aspirations of the colonists have not been considered in the type-plan(s)," and building their own houses with "distinct individuality" would encourage farmers to work hard.¹²⁸ Under the MDP, houses for farmers were not build, even though Jayewardene stresses, that it is a requirement for successful settlements; thus, there was no opportunity for

¹²¹ Barnabas Report, 105.

¹²² Sogreah Report, 105-106.

¹²³ Sogreah Report, 124-126.

¹²⁴ Sogreah Report, 124.

¹²⁵ TAMS Report, 16.

¹²⁶ Barnabas Report, 109; Schure Report, 8.

¹²⁷ Barnabas Report, 109.

¹²⁸ Sogreah Report, 183-184.

architects' expertise to sufficiently extend to settlers in a "more immediate and relevant fashion".¹²⁹ However, the MAU did build "low cost" model houses for staff in townships.

Public amenities

The Reports by Barnabas, Sogreah, Hunting and TAMS recommended at least the provision of basic facilities for settlers and main permanent urban settlements should be constructed at the outset.¹³⁰ It was expected to be a major incentive at the initial stages of resettlement, to create a sense of belonging and to attract private investments and professionals. Adequate infrastructure provision in service centres has two roles, first it contributes to the "quality of life" and second it facilitates "production and marketing".¹³¹ The Hunting Report recommended two critical conditions that would guide the future architectural designs for the settlements and townships. Firstly, the lowest possible site development costs with acceptable standards. Secondly, a workable and efficient planning framework with "the greatest possible freedom for the subsequent architectural design work."¹³²

The Hunting recommendations for the settlements including townships were comprehensive. They are summarised below.

- Circulation - use road network to define structure and organization of the areas; minimise heavy-goods traffic; clear and direct access system; prioritise traffic movement; provide safety and shade for pedestrians; provide convenient access for service vehicles and adequate parking.
- Land-use zoning and urban form - locate major facilities within comfortable walking or accessible distance; group facilities for maximum and dual use; allow for various support catchments and activity patterns; encourage private investments in community and recreation; use strategic landscaping for convenience and visual appeal with minimal maintenance; use natural landscape and provide open spaces; choice in diversity of housing types, plot sizes, location etc.; density and height of dwellings to identify circulation and activities; access to dwellings from one side to clarify approach and internal organization; private out-door space free of over-looking for all dwellings; zone noisy activities; locate different dwelling types according to their convenience.

¹²⁹ Jayewardena, "Mahaweli Development Programme", 37.

¹³⁰ Barnabas Report, 109; Sogreah Report, 109; Hunting Report- SystemC, 31; TAMS Report, 27.

¹³¹ Hunting Report- Victoria Scheme, 35.

¹³² Hunting Report- Victoria Scheme, 54

- Design and location of centre – The Hunting Report proposes that the commercial activity should be placed at the junctions of the main roads; the market area should be the centre with major functions around, with room for expansion for commercial activity; administrative and civic functions should be grouped near to the market, so that they are not isolated; school and community centres should be adjacent expansion areas, so they can be used as open spaces for the time being and staff housing within walking distance.¹³³

The Hunting Report also recommends that,

*A linear form of centre straddling a main road is likely to meet the above conditions most satisfactorily - as no additional access into plots will be required in the short term and power/ telephone connections can be obtained more economically.*¹³⁴

Thus, the Hunting Report recommended a linear form for the urban centre complementing the traditional Sri Lankan township pattern.

7.3.2 Models for Mahaweli Townships

Schure's Report and the Hunting Report contain proposed township layout plans. The prominent features are described briefly in the following section, to provide a basis for the comparative analysis of the MAU township plans in the next section.

In Schure's township layout, "the focal point" is the market square, where the weekly fair (*Pola*) is held, around which the other commercial and public facilities located. However, it should not be on the "main thoroughfare", to avoid "traffic bottlenecks". Adequate parking which would double as bus station should be located near the market. Health facilities and schools should be located centrally within the residential area but away from this commercial centre. Religious places and cemeteries are the other essentials that should be positioned away from the square in suitable locations. House-lots should be located at the periphery, with a recreation park within reach.¹³⁵ Thus this proposed township is a compact, concentric arrangements of services along the main road [Figure 7.24].

¹³³ Hunting Report- Victoria Scheme, 54-57.

¹³⁴ Hunting Report- Victoria Scheme, 54-57.

¹³⁵ Schure Report, 27.

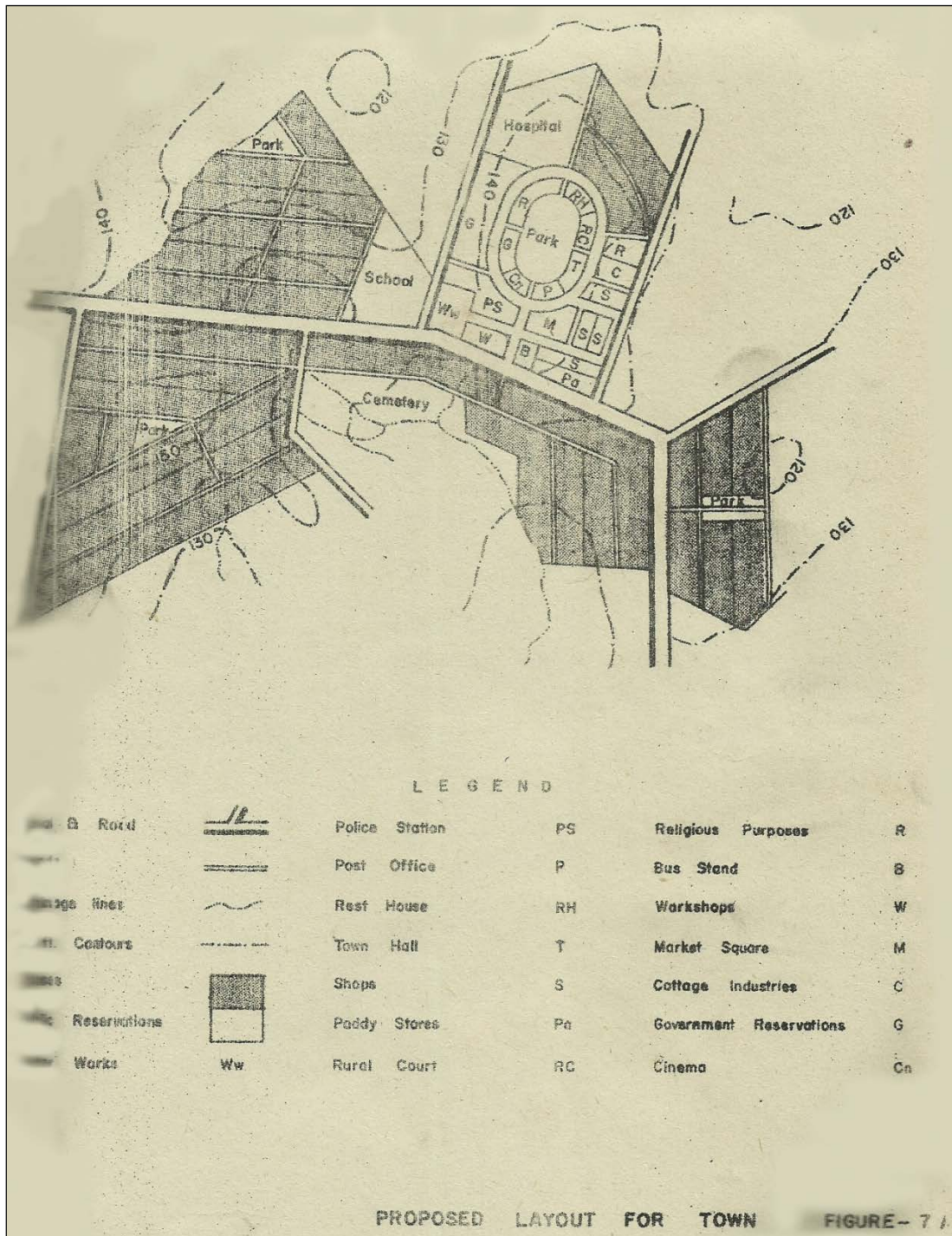


Figure 7.24 Proposed Layout for Town (Schure Report, 28.)

The Girandurukotte township plan proposed by the Hunting consultants was illustrated alongside the plan of Kandy¹³⁶, of approximately similar scale, to demonstrate the corresponding sizes of the towns. This demonstrated that the central commercial area of Girandurukotte was smaller but equally compact and arranged in a linear pattern. However, as

¹³⁶ Kandy is the capital of the central hill country and a major city in Sri Lanka second to only Colombo.

a planned town, zoning is clearer in the Girandurukotte town than in the Kandy town [Figure 7.25].

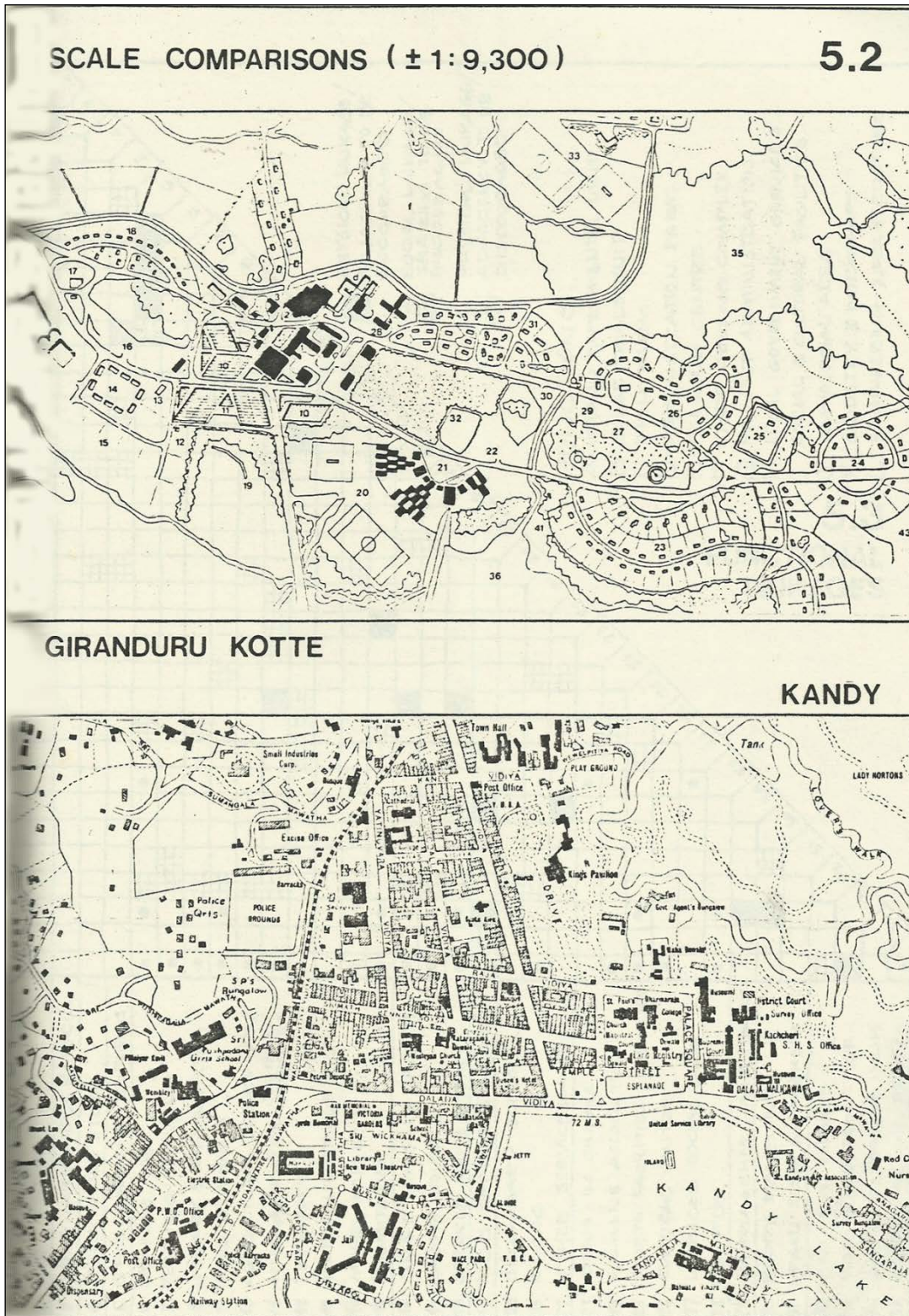


Figure 7.25 Scale Comparison- Girandurukotte and Kandy (Hunting Report- System C, Section S, 18.)

In the township plans for Girandurukotte and Dehiattakandiya proposed by the Hunting consultants, the high density central area corresponds to dense traditional towns, which is expected to maximise interactions among dwellers, minimise walking distance between facilities and reduce capital and running costs.¹³⁷ The township is located directly on the main road. While going through the town, the main road lies as a ring road, dividing the town into three segments. All the prominent elements in the town are located in one large group. The market is centrally located, similar to the traditional Sri Lankan towns, with 'allocated planned areas' for small trade places. Administrative and civic areas are grouped but close to the market, and schools and community centres are adjacent to open/ expansion areas. Residential areas are clustered and located away from the main hub to avoid heavy and through traffic.¹³⁸ It is claimed that the Girandurukotte township was planned incorporating the natural features, and with landscaped streets and ample public open spaces.¹³⁹ Administrative and commercial areas are limited to pedestrians and the amenities such as schools were placed away from the town centre to increase safety (See Figures 7.26, 7.27, 7.28 and 7.298).

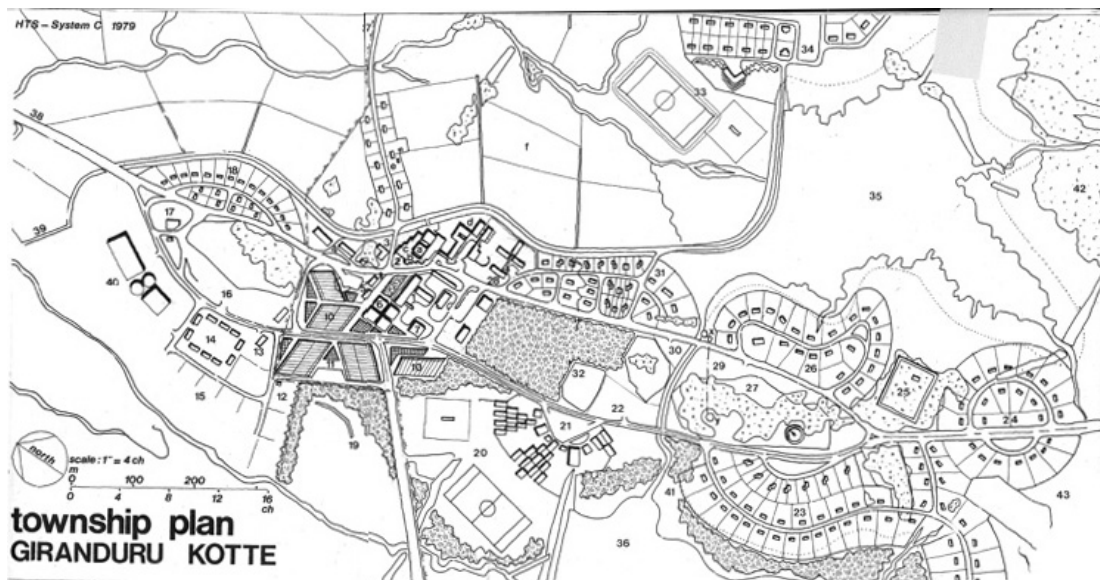


Figure 7.26 Girandurukotte Plan (Hunting Report- System C, Section S, 16.)

¹³⁷ Hunting Report- System C, Section S, 15.

¹³⁸ Hunting Report- System C, Section S, 24-25.

¹³⁹ Hunting Report- System C, Section S, 15.

TOWNSHIP PRIMARY LAND USES		5.1
	Site Area (Ha)	
1 PROJECT HEADQUARTERS	0.5	
2 DEVELOPMENT CENTRE (a Auditorium, b Library, c Main Teaching Complex, d Student Housing, e Model Housing, f Training Farm)	75.4	
3 POST OFFICE AND TELECOMMUNICATION	0.25	
4 POLICE STATION AND HOSTEL	0.5	
5 BANKS	0.1	
6 COVERED MARKET	0.16	
7 CINEMA	0.1	
8 LOCAL GOVERNMENT OFFICES	0.2	
9 CULTURAL CENTRE	0.2	
10 COMMERCIAL	1.5	
11 BOUTIQUES	0.4	
12 HT/LT TRANSFORMER	0.02	
13 COOPERATIVE	0.56	
14 STORES	0.08	
15 SMALL INDUSTRIES & WORKSHOP	0.30	
16 BUS STAND	1.0	
17 PETROL FILLING STATION & SERVICE WORKSHOP	0.6	
18 TRADERS HOUSING/POLICE QUARTERS	2.2	
19 DRIVE-IN CINEMA	3.7	
20 SCHOOL PLAYING FIELDS	7.0	
21 SECONDARY/PRIMARY SCHOOL CAMPUS	1.9	
22 CHURCH SITES	0.5	
23 TEACHERS/PRIVATE HOUSING	8.4	
24 PRIVATE HOUSING	4.0	
25 CONSERVATION AREAS - ARCHEOLOGICAL SITE	4.4	
26 PRIVATE HOUSING	4.2	
27 BUDDHIST MONASTERY SITE	3.6	
28 PERIPHERAL HEALTH UNIT	0.55	
29 TOWN WATER SUPPLY (a Well, b High Level Tank)	-	
30 MOSQUE SITE	0.2	
31 DEVELOPMENT/HEALTH STAFF HOUSING	2.6	
32 ORNAMENTAL TREE NURSERY/FUTURE TOWN PARK	4.1	
33 SPORTS CLUB	7.4	
34 EXISTING MDB STAFF HOUSING COMPLEX	4.4	
35 EXISTING GIRANDURU KOTTE TANK	11.0	
36 MAHA GIRANDURU KOTTE TANK (under construction)	18.6	
37 33 kVA POWER LINE 38 MAIN ROAD	-	
39 DISTRIBUTORY CHANNEL	-	
40 PADDY PROCESSING	5.0	
41 NEW SHELTER BELT AND ORNAMENTAL PLANTING	-	
42 EXISTING FOREST RETAINED	-	
43 CEMETERY	2.0	

Figure 7.27 Plan of Girandurukotte- Legend (Hunting Report- System C, Section S, 17.)

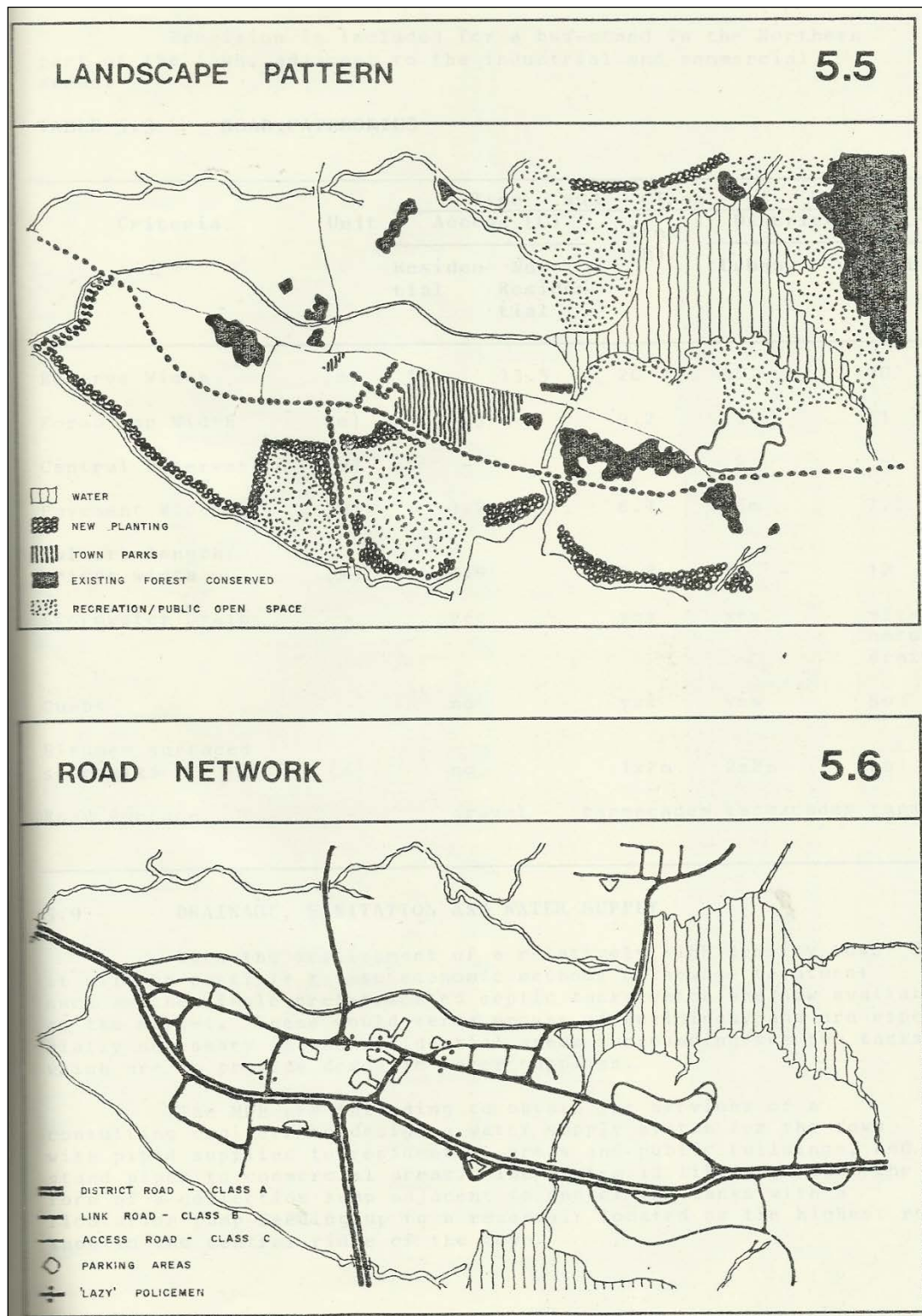


Figure 7.28 Landscape Pattern and Road Network of Girandurukotte (Hunting Report- System C, Section S, 27.)

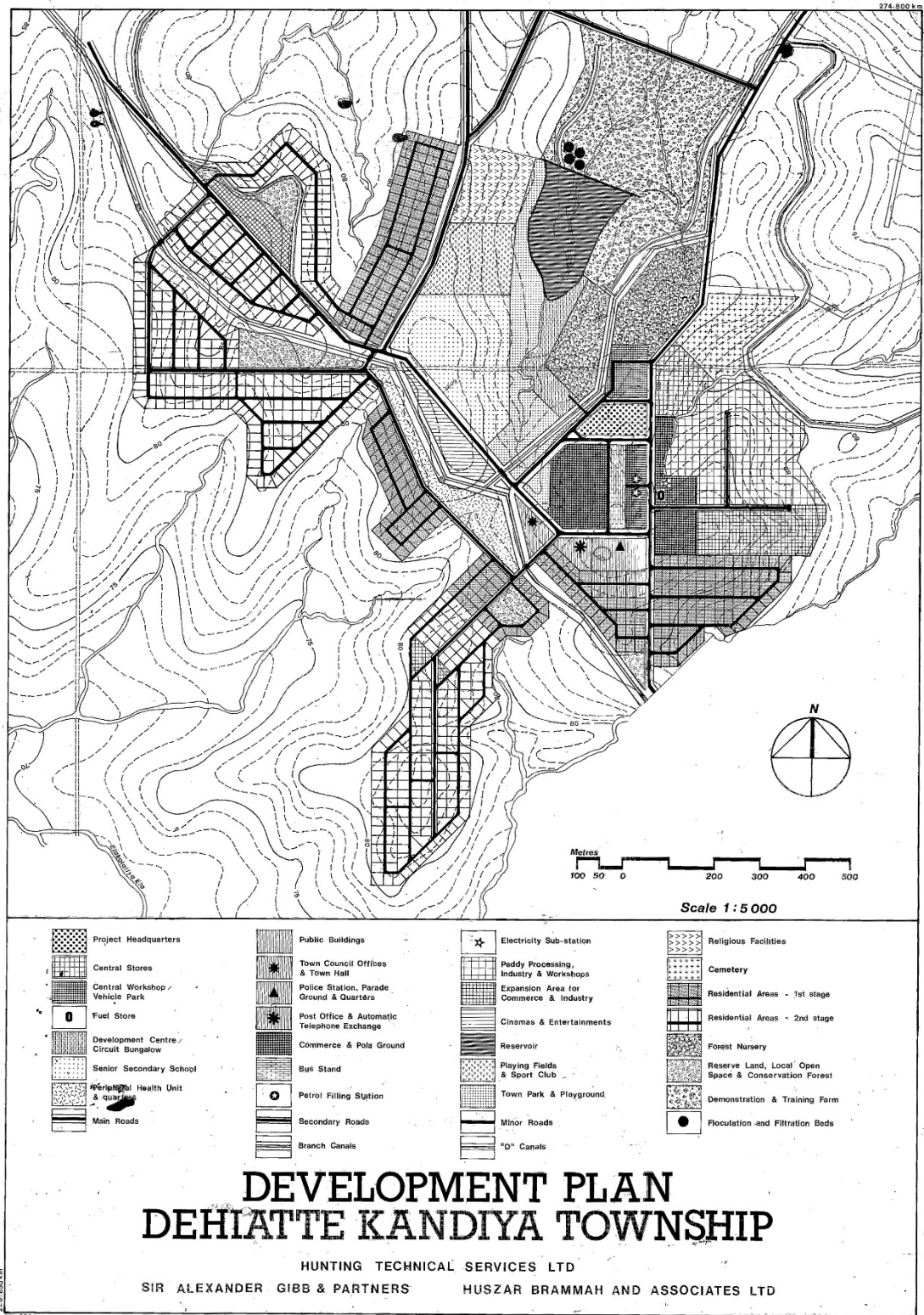


Figure 7.29 Dehiattakandiya Plan- Proposed by the Hunting Consultants (MASL Archives)

7.4 New MAU Towns

The primary role of the MAU was to design new towns.¹⁴⁰ In this final section, the guiding principles that the MAU adopted to design towns, the MAU plans and the distinctive characteristics of the architecture are discussed. This discussion also draws on field work in the project area.

7.4.1 The MAU Principles for Designing Towns

The MAU team developed 8 guidelines, according to Plesner, to create the “character and personality of the towns” incorporating the natural terrain, enhanced by landscaping.¹⁴¹ These guidelines are briefly described below.

1. Location of the town within the “general geographical area indicated by the red dot”: Plesner, pointing out Robert Knox’s description¹⁴² of 17th century Ceylon, claims that the ancient Sinhala towns were “placed some distance from the highways”, to avoid “through traffic and the traffic of commerce”.¹⁴³ Thus, the intent was to locate MAU towns on a loop-off the main roads, “yet close enough to be seen and recognized when by passed on the highway”,¹⁴⁴ so that the towns are safe for pedestrians and not poisoned by exhaust fumes, with less traffic congestion. This was also intended to prevent separation of the cities into two blocks by the main road running through it, such as Kegalle and Mawanella (towns which have grown naturally along the main road as two narrow strips – typical linear Sri Lankan towns).¹⁴⁵
2. The density and the fabric of the town: The Mahaweli towns should have a dense core, similar to “nice old Lankan towns”, Plesner claims, “with narrow streets with shops, one next to the other, and are fairly dense in the centre, where people mill around, often in the shade of big trees.”¹⁴⁶ The MAU did not want to create dispersed towns separated by wide roads and reservations with

¹⁴⁰ Jayewardena, “Mahaweli Development Programme”, 35.

¹⁴¹ Plesner, *Insitu*, 385.

¹⁴² Plesner, *Insitu*, 385-386. As Plesner describes “Robert Knox spent 20 years as a Prisoner of the King of Kandy, in the 1860’s, and whose description of the character and personality of Sinhalese is as dead-on today as it was then”.

¹⁴³ Plesner, *Insitu*, 385-386; Plesner, “The Mahaweli Buildings”, 88; Perera, “when Planning Ideas Land”, 164.

¹⁴⁴ Plesner, *Insitu*, 387.

¹⁴⁵ Plesner, *Insitu*, 385-386; Plesner, “The Mahaweli Buildings”, 88; Perera, “when Planning Ideas Land”, 164.

¹⁴⁶ Perera, “when Planning Ideas Land”; 164. Plesner, *Insitu*, 387-388; Plesner, “The Mahaweli Buildings”, 88.

'unbuilt stages' in-between (such as Ampara and Anuradhapura; comparatively new post-Independence, planned towns). Thus, the streets of the MAU towns comprise two lanes, 'safe' with pedestrian walkways along them, shaded by trees and arcades. Amenities are within short walking distances. 'Loose fit' planning is to allow the town's natural growth.¹⁴⁷

3. All the buildings necessary to establish the towns as functioning centres, for the surrounding farming population, should be built. These included institutions such as schools and hospitals, housing for public servants and professionals, and the commercial spaces. The "tempting locations near the town centres" are designed with little room to spare, to discourage shanty growth and temporary poor quality illegal constructions. The area along the public highway which passes near the town centre is allocated to autonomous institutions such as the Police station, temple or schools for the same reason.¹⁴⁸
4. Shade is vital in this hot humid climate: Programs should be established to grow and plant large, shade trees, in all town centres - along pavements, public squares, parking places and highways. Shops, which are in rows must have wide roofs - making arcades - shading the pavements.
5. The centre of the town, the heart, is the market place (*Pola*) which should be built in the middle of the town, and other public amenities such as bus station, schools, hospital etc. should be built as close as possible.
6. Easy access to every place in the town by vehicles and bullock carts,¹⁴⁹ and convenient parking, with strategically limited movement within the town centre is critical for pedestrian safety as well as to prevent pollution.¹⁵⁰
7. The growing centre: the Mahaweli town should "feel and function as a town" from the outset. After many years as well, they should be "good and well-

¹⁴⁷ Perera, "when Planning Ideas Land", 164. Plesner, *Insitu*, 387-388; Plesner, "The Mahaweli Buildings", 88.

¹⁴⁸ Perera, "when Planning Ideas Land"; 164. Plesner, *Insitu*, 388.

¹⁴⁹ As a transport method, you can hardly see bullock carts now even in the Mahaweli area.

¹⁵⁰ Plesner, *Insitu*, 388-389.

functioning".¹⁵¹ Town's character, quality and the room for growth is facilitated by the off-highway location and expandable loose-fit plan.

8. Guidelines for the future: the MAU will set aside space for the future development of the town. Instead, town plans should be flexible, adaptable, loose-fit frameworks. Flexibility to incorporate and adapt to change is responsive, however, Plesner claims, future buildings needed a little 'discipline' and guidance; he claims "in a situation where detailed enforcement is neither customary nor desirable, we do not want to make strict planning and building regulations - but try to implant two kinds of guides";¹⁵² the first is where to build - this is achieved by laying down a compact centre and a road network system, to reinforce 'the character' which is a permanent element that does not change easily with time; and the second is what to build - the guide lines for the Mahaweli buildings (which are explained in the following section).

In addition to these, different identities within the 'Mahaweli identity' were achieved by different combinations of buildings in different towns. The MAU utilised natural features and terrain, to create a unique character in each town. Moreover, the MAU saved as many trees as possible and built around them, thus giving towns, 'the character' and people, 'the shade'.¹⁵³ The loose-fit plan left a large area for future developments; "Loose zoning" was used to define the "segments of the town" – which are commercial, institutional and residential – but not for rigid land use regulations.¹⁵⁴ Residential areas, which are not far from the shops, but still safe for children to walk to school are connected to the town centre with a "hierarchical street network" ending with cul-de-sacs. The surrounding area was connected by the centrally located bus station.¹⁵⁵

Udamulla points out that the MAU townships were careful planning initiatives intended to facilitate the rural agricultural community, in the detailed design, location and connections between public amenities; which provided public squares, market places and civic centres for high public gatherings; public transport terminals and waiting areas to accommodate major

¹⁵¹ Plesner, *In situ*, 389.

¹⁵² Plesner, *In situ*, 398.

¹⁵³ Perera, "when Planning Ideas Land" 165-166.

¹⁵⁴ Perera, "when Planning Ideas Land", 161.

¹⁵⁵ Perera, "when Planning Ideas Land", 164.

transitional activities; main bazaar and recreational areas - where the generation of high public movement is intended; and approaches and entrances; while incorporation of significant natural or built entities, where attraction and attachment of people to their cultural, historical, functional or geographical importance is intended.¹⁵⁶ Rajapakse describes the Mahaweli town centres as the major planning unit that re-configured the rural territory into an urban landscape. Mahaweli towns were intended to act as nodes, linking urban areas to the rural, underdeveloped Sri Lankan interior. These towns were considered from the regional scale to the micro scale of an individual building and careful consideration was given to the building fabric, the relationships between spaces and functions, scale and character, and landscape principles.¹⁵⁷ The Mahaweli town identity was created through the distinctive design of the buildings and places,¹⁵⁸ giving them their special 'Mahaweli Town' characteristics.

These MAU designs for the townships are further analysed – by describing four townships, in the following section.

7.4.2 The MAU Towns

Dehiattakandiya and Girandurukotte Townships, two down-stream townships are located on loop roads which connect to the Kandy - Polonnaruwa main road.

Dehiattakandiya was designed to accommodate higher level services including 'project management unit headquarters'; thus, the town is substantially larger than the other new towns in the System C.¹⁵⁹ The main street connects the two main town squares, at the North and South ends. A larger square complete with a clock tower is in the midpoint of the main street,¹⁶⁰ so that these three squares lie almost aligned, and the main street is like a 'back-bone (spine)'. From this central square, another street leads to further settlements, making it a junction. North and South squares are surrounded by administrative and institutional buildings such as Mahaweli Residential Project Manager's Office, post office, the secondary school, courts and the police station, and they mark the outer administration layer of the town. The central square is surrounded by the public amenities such as banks and a sports club, while along the main

¹⁵⁶ Udamulla, "Dehiattakandiya: A Sri Lankan Experience of Developing a New Town," 44.

¹⁵⁷ Rajapakse "Analysis of the Mahaweli Towns", 222.

¹⁵⁸ Perera, "when Planning Ideas Land", 166.

¹⁵⁹ Hunting Report- Victoria Scheme, 34.

¹⁶⁰ A clock tower is the climax of Sri Lankan towns, and demarcates the centre of the town. Many towns that were built or developed recently have clock towers in the centre of the town or at the main junction.

street, commercial activities such as shops are located, some in their own quadrangles. Weekly market place – *Pola*, the future super market (which was never built) and the central bus terminal are situated along the interior road. The town is separated from the main road by the public playground and an open space with many large trees. The MAU plan is included in the next figure [Figure 7.30] followed by a Google Earth aerial photograph [Figure 7.31], which displays the current situation of Dehiattakandiya.

Girandurukotte is bounded by two tanks on south, Maha Girandurukotte tank at the south-western boundary and the Girandurukotte tank at the south-eastern boundary. The main street skirts the town. The loop (ring) road is connected to the highway at several points by cross roads, dividing the town into segments. One of these roads, which directly links the town centre to the highway, acts as the main entry. The town centre cannot be clearly identified in Girandurukotte due to this segmentation, even though the centre is demarcated by a clock tower – which is small and insignificant. The weekly market, *Pola*, and the central bus stand are located towards the north end of the town. Commercial activities such as shops are concentrated nearby while institutional buildings such as the post office, health centre and the police station are in the south segment. Banks are in another segment towards South. The entrance to the town directly brings one to an abandoned public place consisting of several ‘*Ambalam*’.¹⁶¹ Shops are arranged in two rows, facing paved courtyards which are only accessible strictly to pedestrians. The secondary school is located at quite a distance to the south. The town is dispersed and separated by large areas with substantial trees. The MAU plan is included in the next figure [Figure 7.32] followed by a Google Earth aerial photograph [Figure 7.33], which displays the current situation of Girandurukotte.

¹⁶¹ Plesner dedicated an entire chapter in his book *Insitu for ‘ambalams’*. As cited in Plesner, *Insitu*, 78-80: “*Ambalams*’ are open-sided roadside pavilions symbolising the good qualities of Lanka’s traditional architecture. Made for people, not for theology or grandness, they were built as public shelters to give comfort in this richly humid climate, and have a sensible and occasionally beautiful construction. They are modest, functional, informal and relaxed and assume that people cannot be running around forever, but must occasionally sit and watch the world go by. Over the centuries, around Lanka, the kings of Kandy built many *ambalams* as a public service. Some bigger, some smaller, they were all erected at crossroads, near temples or at river crossings or at distances half a day’s journey by foot along the hundreds of miles of trails crisscrossing the island. In the heat of the noon or when the rain came down, or in the quick dusk before dark, the traveller could seek rest in the *ambalam*, protected from the sun and rain and wild animals. The *ambalam* were a social service, and because they were also a gift to the unceasing stream of Buddhist and Hindu pilgrims forever crisscrossing the island, they acquire merit for the donor.”



Figure 7.31 Dehiattakandiya Township (Google Maps, accessed on November 20, 2016.)

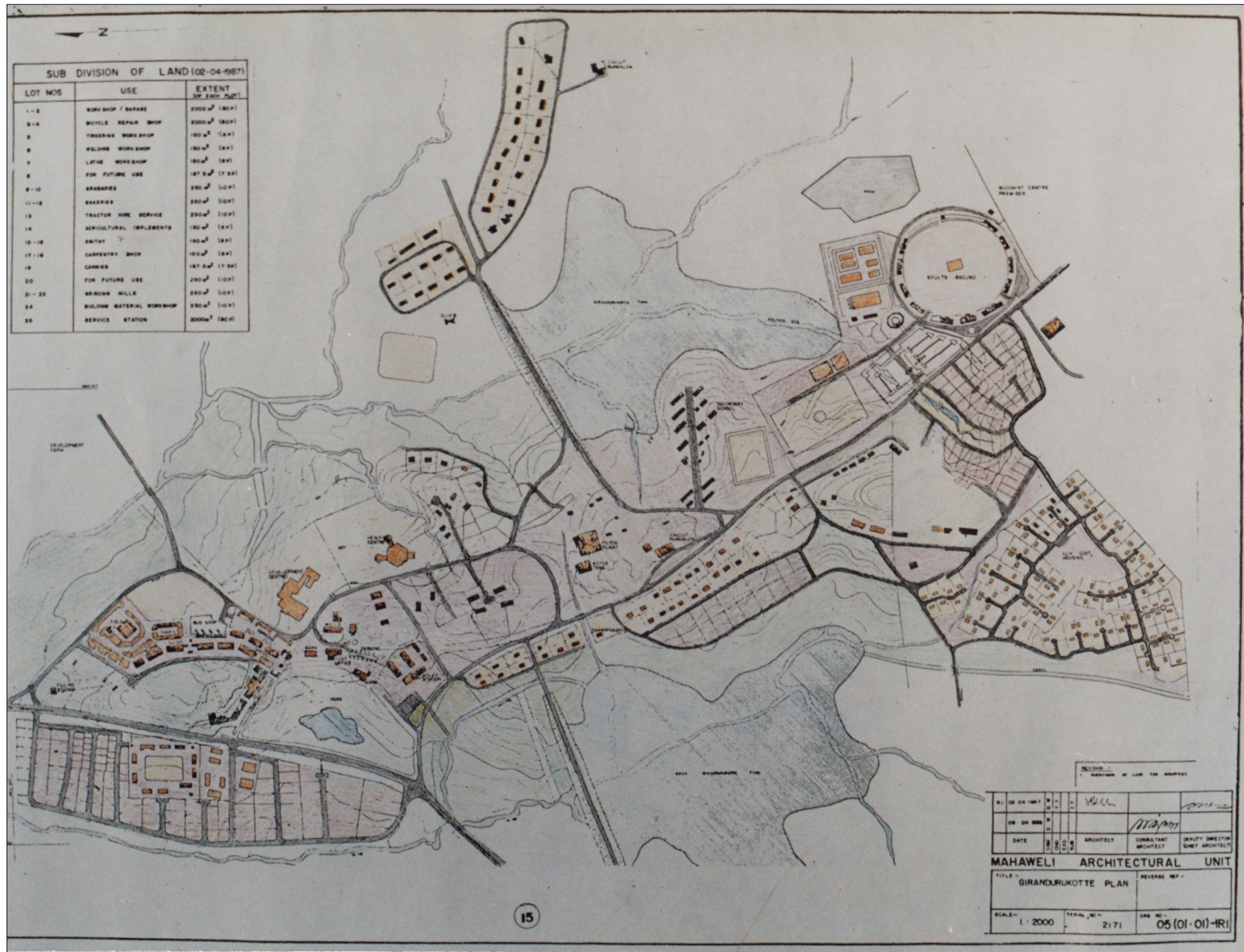


Figure 7.32 Girandurukotte Township Plan- MAU (MASL Archives)

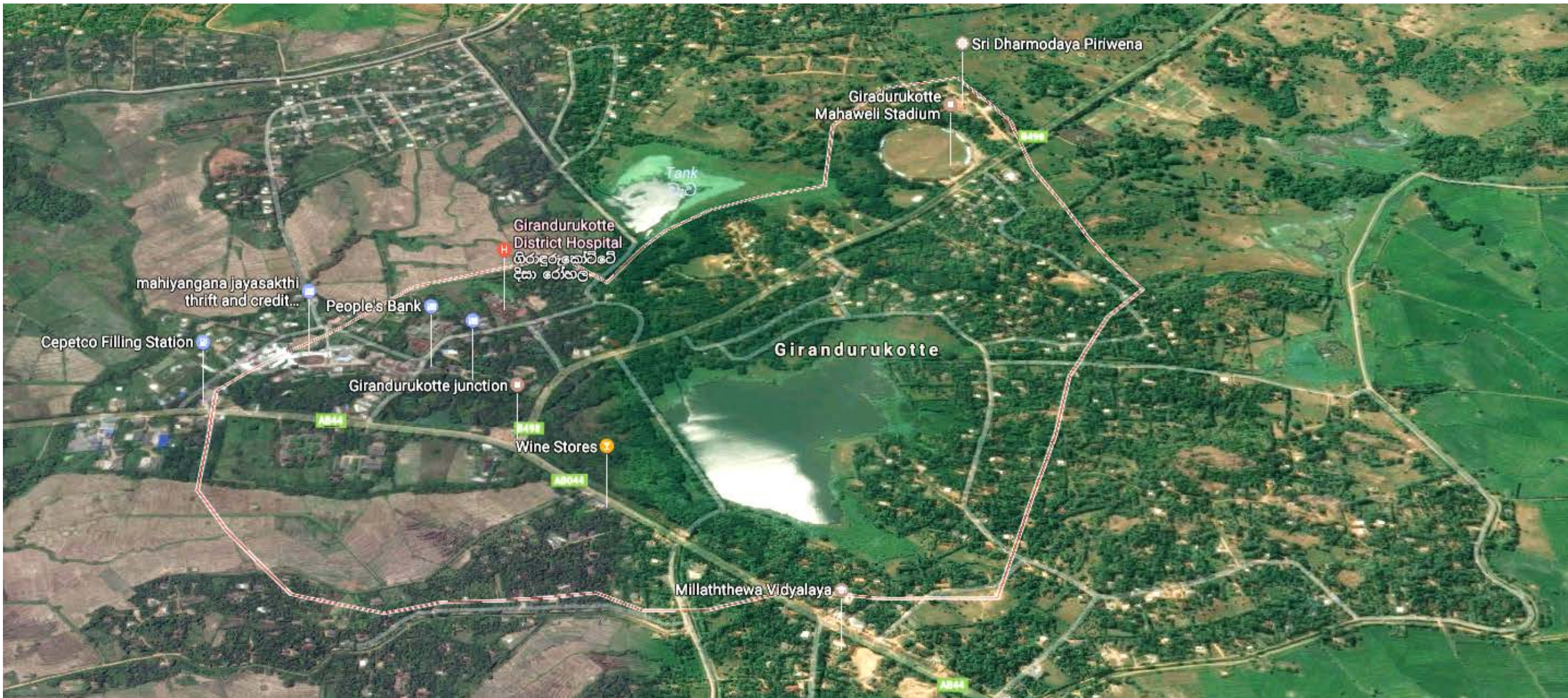


Figure 7.33 Girandurukotte Township (Google Maps, accessed on November 20, 2016.)

Digana and Karalliyadda towns, two upstream towns are located on loop roads which connect to the main Kandy - Mahiyangana highway.

Digana, also called 'Rajawella', is the first new upstream Mahaweli town. It is a commercial town, with concentrations of shops and commercial services. The by-pass road skirts the town similar to the Girandurukotte town. The highway and the town centre are separated by a forest reservation. A cross road divides the commercial hub into two segments within the ring road. The bus station and the market place are in the farther segment from the main road. The next figure [Figure 7.34] depicts the MAU plan of the town and the following Google Earth aerial photograph [Figure 7.35] displays the current situation of Digana.

Karalliyadda replaced the inundated Teldeniya town. It is more similar to traditional towns than the other MAU towns. The main street is a backbone/spine that runs through the middle of the town, not a loop road as in the other three examples. The market place and the bus station are adjacent to the main road, which is a departure from the other MAU plans. Similar to the typical Sri Lankan traditional towns, the clock tower at the intersection of the main road demarcates the centre of the town as well as the main entry. The shops are located along the main street, with administrative buildings in the periphery. The next figure [Figure 7.36] depicts the MAU plan for the town and the following Google Earth aerial photograph [Figure 7.37], displays the current situation of Karalliyadda.

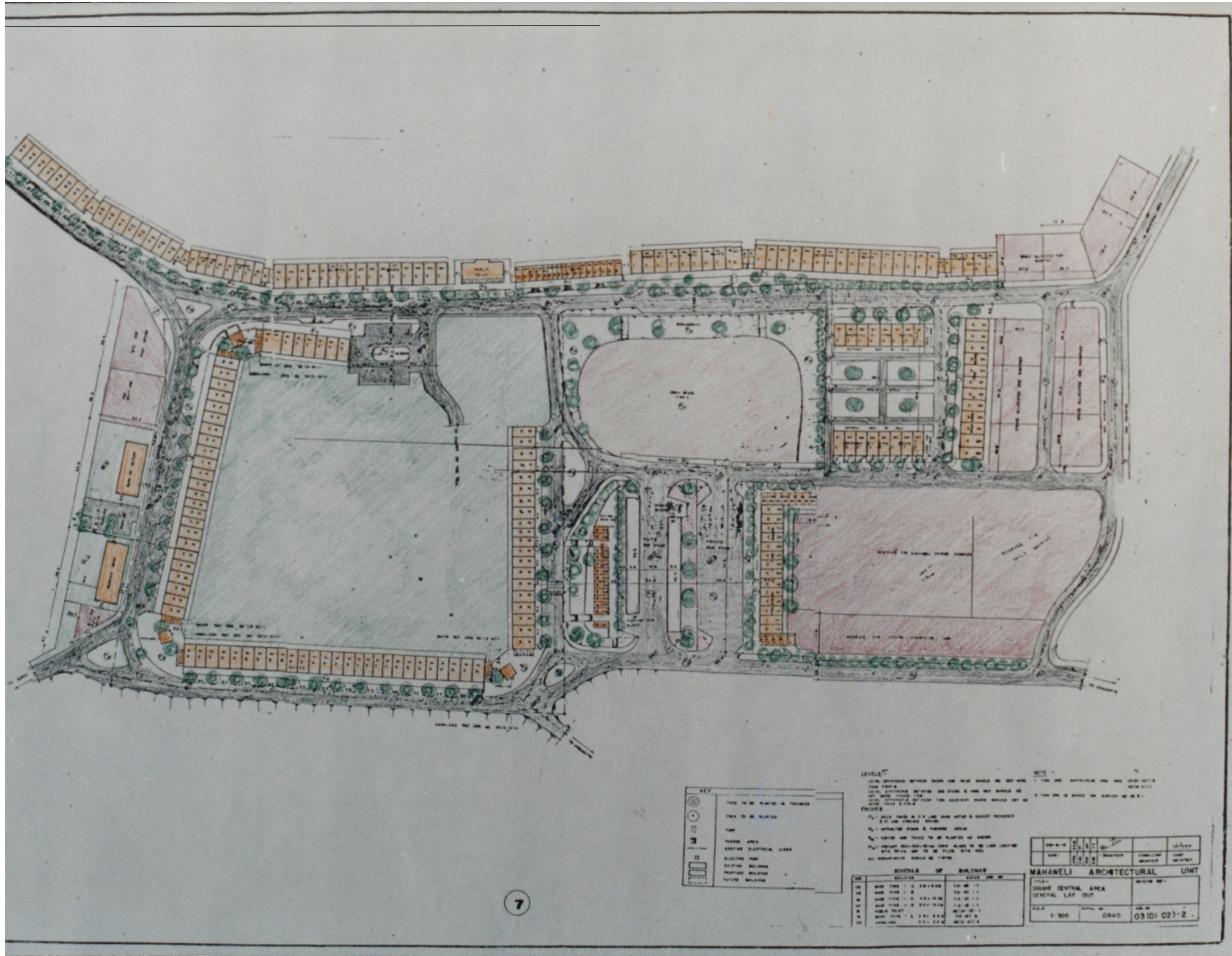


Figure 7.34 Digana Township Plan- MAU (MASL Archives)

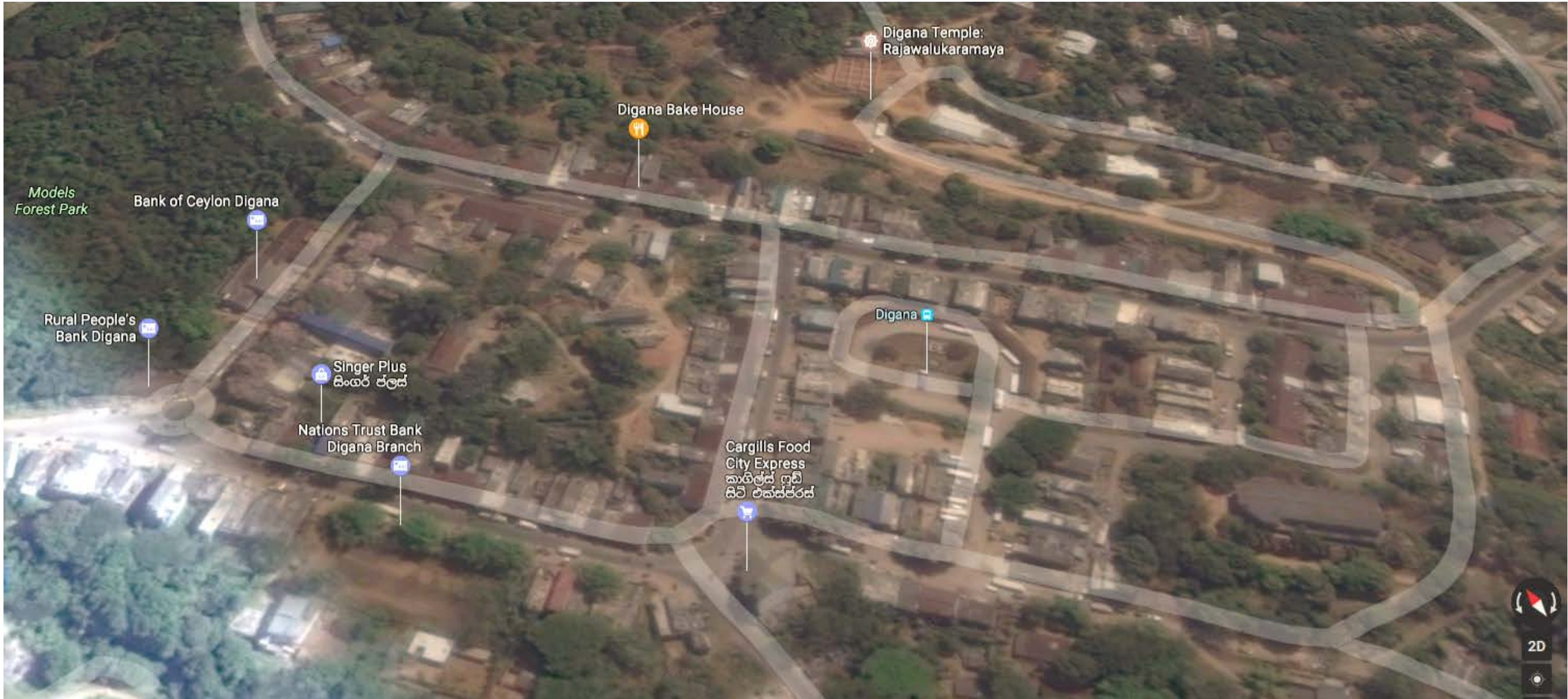


Figure 7.35 Digana Township (Google Maps, accessed on the November 20, 2016.)

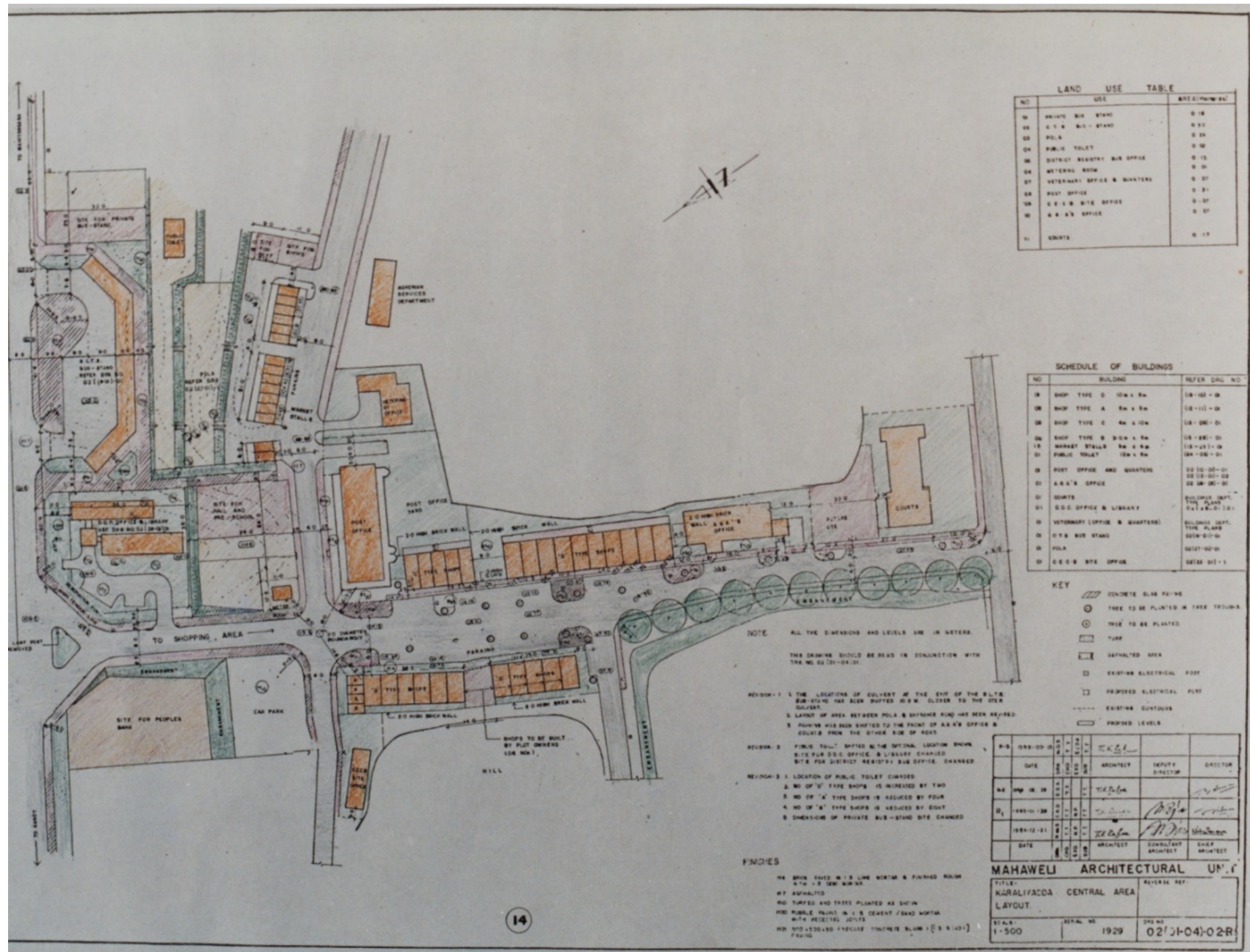


Figure 7.36 Karaliyadda Township Plan- MAU (MASL Archives)



Figure 7.37 Karalliyadda Township (Google Maps, accessed on the November 20, 2016.)

These examples show the basic characteristics of the MAU towns. However, the architecture is equally distinctive. As Perera claims, the buildings should be able to relate to people, support the towns' functions and give a strong identity.¹⁶² Buildings are central elements that were supposed to enhance a sense of place and belonging for the re-settlers. In fact, MAU buildings, which are inspired by the 'vernacular architecture style' give the towns their unique 'Mahaweli Town Identity'. Thus, the following section attempts a critical analysis of the MAU buildings.

7.4.3 Mahaweli Buildings

The MAU developed guidelines for the Mahaweli buildings, according to Plesner, to prevent the use of poor quality, undesirable materials such as corrugated iron and to establish a traditional pitched roof with low eaves. These guidelines are technically pragmatic, economical, and suited to the climate. The design was intended to provide visual cohesion. White washed walls and dark timber is prominent in Mahaweli buildings while low-cost, rammed earth and cement block constructions were promoted for low cost housing.¹⁶³

Model farmer's houses

The MAU designed two types of buildings for the Mahaweli Project; town buildings and houses for the farmer settlers. Vernacular elements are prominent in both. Even though the earlier Mahaweli reports, such as Sogreah recommended the provision of completed houses for farmers, later reports such as Hunting were limited to guidelines.¹⁶⁴ Therefore, though the MAU built most of the town buildings, they did not have an opportunity to build farm houses, except for some model core houses. Both Schure's report and the Hunting recommendations urged the use of local materials and construction techniques.¹⁶⁵ Moreover, the Hunting report provides detailed guidelines for buildings in relation to thermal comfort, form, orientation and openings, while it recommends preserving existing trees.¹⁶⁶ The proposed core house in the Hunting report and the sample core houses designed by the MAU along with the traditional farmer's house in the Dry Zone are provided in the following figures to illustrate the similarity of the designs, particularly the open verandah with plenty of ventilation (See Figures 7.38, 7.39, 7.40, 7.41, 7.42 and 7.43).

¹⁶² Perera, "when planning Ideas Land", 166.

¹⁶³ Plesner, "The Mahaweli Building Program", 88.

¹⁶⁴ Perera, "when Planning Ideas Land", 157.

¹⁶⁵ Hunting Report- Victoria Scheme, 40; Schure Report, 8-10.

¹⁶⁶ Hunting Report- System C, Section S, 31.

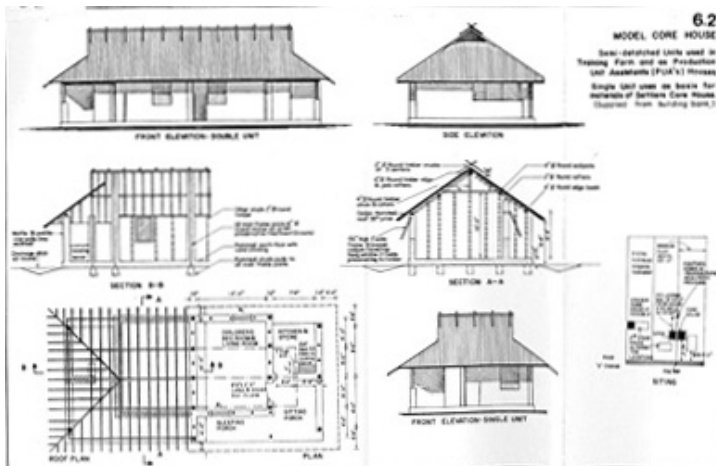


Figure 7.38 Model Core House - Hunting Report (Hunting Report- System C, Section S, 31.)

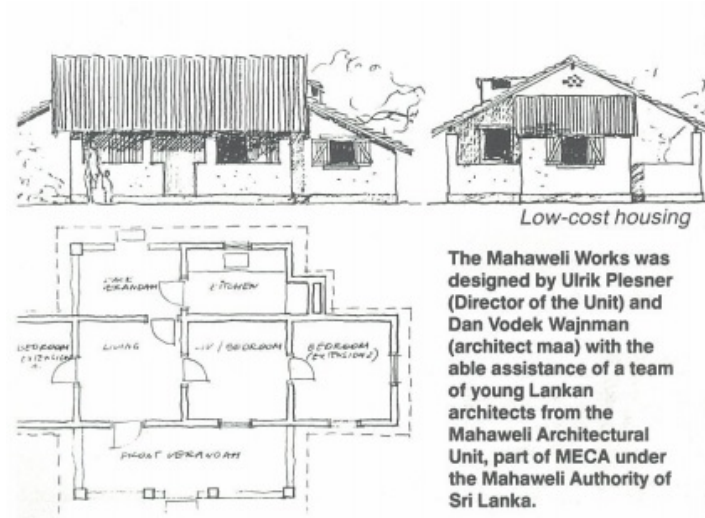


Figure 7.39 Low Cost Housing Proposed by the MAU (Plesner, "The Mahaweli Buildings", 88.)



Figure 7.40 Experimental Core-House Built in 1984 by the MAU in Digana for Rs. 25,000 Using Mud Bricks with Cinnavan (photograph and description by Shanti Jayewardena in Jayewardena, "Mahaweli Development Programme", 39.)



Figure 7.42 Typical Dry Zone Farmer's House (Google Images, accessed February 22, 2015.)

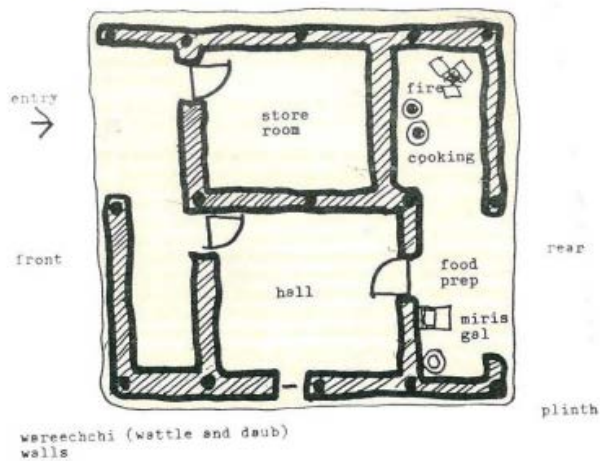


Figure 7.43 Traditional Dry Zone Housing Design (Sonya Redman, *a Study of Support-based Housing and Community Participation in the Million Houses Programme, Sri Lanka 1977-1989*, a research report submitted for the Byera Hadley Student Travel Scholarship, (2005), 52, accessed on September 3, 2015, http://architectureinsights.com.au/media/uploads/resources/FINAL_MILLION_HOUSES_PROGRAMME_Sonya_Redman.pdf.)

Shop houses

Mahaweli town buildings comprised a “linear system of buildings”¹⁶⁷ concentrated along streets and squares. They were open on two sides to allow cross-ventilation in response to mitigate the hot-humid conditions. They could be adapted with new ceilings, windows or were special equipment, and connected to nearby buildings with a covered walkway.¹⁶⁸ The MAU built two types of town buildings, shop-houses and administrative buildings. Shops were built with an upper floor for living or storing goods. This “shop house typology... built wall to wall”¹⁶⁹ along the main road is a very common element in the rural Sri Lankan towns. To prevent possible homogeneity when using just one model, Perera claims, the MAU just built the shells, allowing the owners to customise their interior.¹⁷⁰ In particular, the provision of sidewalks was intended to enhance the people-centred approach¹⁷¹ and create opportunities for individual expression whilst breaking the monotony that might result from recurrent building types. Rajapakse rightly observes that the “covered walkway in the shop house is a key element in tying the buildings within a common theme” (See Figures 7.44 and 7.45).¹⁷²



Figure 7.44 Mahaweli Shops- Dehiattakandiya (at the early stages of implementation. Photographer unknown- the photo is now with an officer of the MASL.)

¹⁶⁷ Rajapakse, “Analysis of the Mahaweli Towns”, 228.

¹⁶⁸ Plesner, “The Mahaweli Buildings”, 86.

¹⁶⁹ Rajapakse “Analysis of the Mahaweli Towns”, 227.

¹⁷⁰ Perera, “when Planning Ideas Land”, 164.

¹⁷¹ Perera, “when Planning Ideas Land”, 166.

¹⁷² Rajapakse, “Analysis of the Mahaweli Towns”, 229.

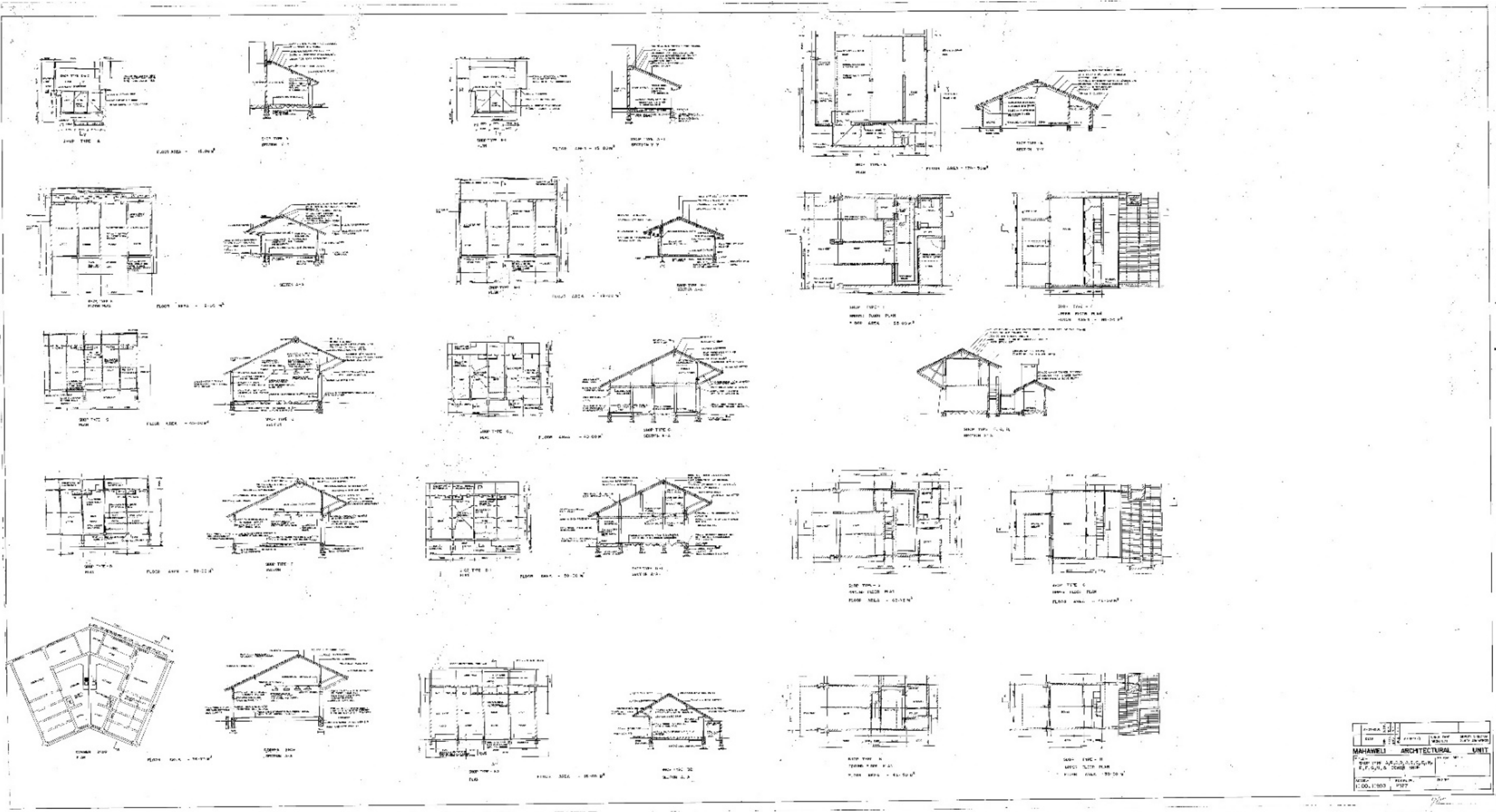


Figure 7.45 Mahaweli Shops- Plans (MASL Archives)

Administrative buildings

Inspiration from vernacular architecture is significant, particularly in the case of the administrative buildings constructed by the MAU. Even after the 'golden days', the MAU continued to produce buildings that followed the same guidelines and expressed the same architectural style. The vernacular language, nurtured by both the Portuguese and the Dutch, and which mitigated the Sri Lankan hot and humid tropical climate, was prominent not only in these Mahaweli towns, but it was an important new trend in the Sri Lankan built environment, embraced in particular, by wealthy, educated, elite families. These buildings expressed the traditional 'spirit of the place' and they were arranged around internal courtyards as in the case of the ancient '*Walawwa*'s;¹⁷³ they are further characterised by pitched roofs with low eaves providing cool shade using a technology which is known to local carpenters; colonnades covering wide, deep, open verandas, as in buildings in down-South Sri Lanka where colonial influence was prominent; long vistas, as in Buddhist Temples; trellis windows, letting the breeze flow through whilst giving privacy and security as in the Moorish houses in Colombo and useful and beautiful details including in-built sleeping and sitting platforms such as examples evident in old traders' houses in Jaffna.¹⁷⁴ The following figures demonstrate the similarities in the architectural expression of these traditional buildings and the Mahaweli administrative buildings (See Figures 7.46, 7.47, 7.48 and 7.49).

The buildings designed by the MAU differed significantly from the pre-MAU designs, particularly those proposed in the Hunting report, which are "square volumes with pyramidal tiled roofs" built using red bricks and stained timber and "repeated throughout the town to give unity", though, the use of unfamiliar forms was expected to enliven the ordinariness resulting from the use of familiar materials. Perera claims that the MAU used "scales that were not overwhelming" which provided "an economy of scale for the town(s)". As Jayewardene states, the MAU buildings were well integrated into the rural surrounding, and cohesive with the Mahaweli town character. With this critical understanding of the MAU, its approach to design, and the towns including the buildings they built, a critical analysis of the observations made in the four Mahaweli towns follows.

¹⁷³ *Walawwa* is a traditional residence of the nobility. One or more internal courtyards are characteristic, around which a mansion is built. Several original *walawwas* can still be found in the various parts of the country.

¹⁷⁴ Plesner, *In situ*, 195-197.



Figure 7.46 'Walawwa' (A photo of "Maduwanwela Walawwa" of 1700's, which consists of several courtyards; "Maduwanwela Walawwa", *Nature Resort*, accessed on February 14, 2016, <http://www.yalanatureresort.com/Places.html>.)



Figure 7.47 a Colonial Inspired Building at Down South Sri Lanka (Dennis Kopp's photo of a Dutch inspired building in Dennis Kopp, "the National Museum of Galle", *See the World in My Eyes Travel Blog*, accessed on February 14, 2016, <http://www.seetheworldinmyeyes.com/category/travel-diary/south-asia/sri-lanka/>.)

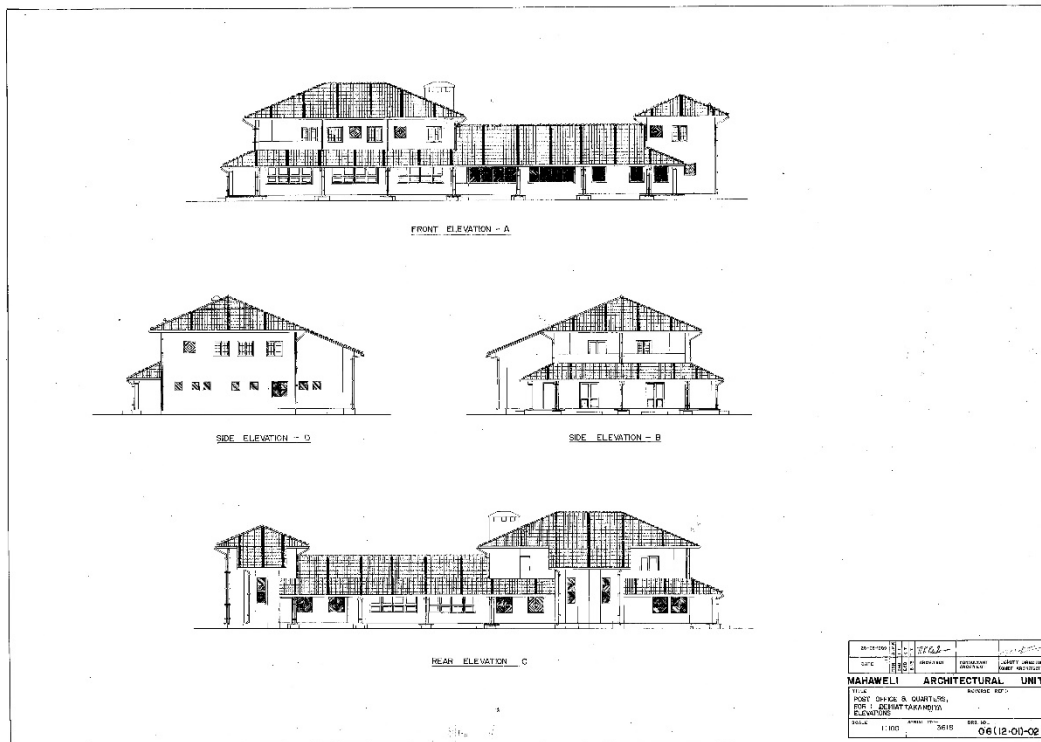


Figure 7.48 Dehiattakandiya Post Office Plan- Designed by the MAU (MASL Archives.)



Figure 7.49 Welikanda Residential Project Manager's Office Designed by the MAU (Photographer unknown. Photograph is with an officer of the MASL now.)

7.4.4 Reflective Observations of the MAU Towns and Buildings

Many interesting features of the towns can still be observed. It is clear, as Perera, Plesner, Rajapakse, Udumulla and Jayewardene confirm, and the researcher concurs, that the Mahaweli

towns express a unique identity which is distinct from other newer towns in Sri Lanka, with the inspiration deriving from vernacular architecture, the creative integration of the natural terrain and landscape character, while providing large open spaces with large trees. The following figures illustrate this character in comparison to a typical organic township, pre-MAU Mahaweli Township and an MAU township (See Figures 7.50, 7.51 and 7.52).



Figure 7.50 the Main Street of a Typical Township - Dambulla Town ("Dambulla in Sri Lanka", *Nashaplaneta*, accessed on August 5, 2016, <https://nashaplaneta.net/asia/srilanka/dambulla.php>.)



Figure 7.51 the Main Street of a Pre-MAU Township - Thalawa Town (photograph by the author, June 2015.)



Figure 7.52 the Main Street of an MAU Township - Dehiattakandiya Town (photograph by the author, June 2015.)

The covered walkway is functional and humanises the scale of the street and the shop houses, materialising the ‘people centred approach’ advocated by the architects. These allow the “personalisation of space”,¹⁷⁵ and create opportunities for individual expression. These transitional spaces also create “interesting social spaces”,¹⁷⁶ thus opportunities for social interaction [Figure 7.53].



Figure 7.53 Distinctive and Personalised Shop Fronts- Digana (left) and Girandurukotte (right) (photograph by the author, June 2015.)

Heath quotes Perera conceding, that the “project both failed and succeeded as intended.”¹⁷⁷ According to Perera himself the “MAU towns were not perfect”.¹⁷⁸ Observations made in the field visits to the MAU towns support both sides of the architect’s somewhat ambiguous conclusion. Particularly, given the time that has passed since the towns were originally built, it is possible to observe the successes and shortcomings of these unprecedented urban experiments which are discussed below.

By-pass concept

The by-pass concept, the main departure from traditional towns, has both positive and negative aspects. The towns are safe for pedestrians and there is no traffic congestion. Towns are devoid of vehicles, which differentiates them from traditional towns. But, this concept is alien to Sri Lankan towns and thus effects the town’s natural growth. Unauthorized temporary structures are observed at almost all the MAU townships, at the critical places where growth in Sri Lankan towns naturally happens, such as entry nodes or junctions along the main road, outside the town centre. For an example, new commercial structures along the highway is the response to

¹⁷⁵ Rajapakse, “Analysis of the Mahaweli Towns”, 229.

¹⁷⁶ Rajapakse, “Analysis of the Mahaweli Towns”, 229.

¹⁷⁷ Heath, *Vernacular Architecture and Regional Design*, 71.

¹⁷⁸ Perera, “when Planning Ideas Land”, 166.

the design failure of the interior shop arcade, especially in Girandurukotte and near the junctions in Digana and Karalliyadda [Figure 7.54].



Figure 7.54 Unplanned Commercial Activity- along Digana township entrance road at the forest reserve edge (left) and in front of the Post Office building on a junction at Karalliyadda Township (right) (photograph by the author, June 2015.)

In some of the MAU towns, the entrance points to the towns are insignificant. Even though one of the guiding principles is that the towns should be visible from the main road - as they are on a by-pass road – this is not so. Furthermore, the vegetated median strips separating the main road and the town centre (except in Digana and Karalliyadda town) are overgrown and hide the town centre from the road. For example, when nearing the Dehiattakandiya, approximately 1km away from the main road, there is no indication that an important town is close-by. This is the opposite of Sri Lankan organic townships, where you can appreciate the liveliness of the town as soon as you approach. On the other hand, the clock tower and the bus station at the entry of the Karalliyadda Township do resemble the entry to a typical town. Digana, is distinguished by a Buddha statue located at one entry, as found in other junctions or significant location in Sri Lanka. Unplanned commercial activities mark the entrance to the town at the other entry of the loop road (Figure 7.55 and 7.56).



Dehiattakandiya, entrances to the township are not prominent even though one is marked by a Buddha statue.



Girandurukotte, one of the entrances are marked by new developments.

Figure 7.55 Entrances to the Townships- Dehiattakandiya, (top two photographs) and Girandurukotte, (bottom two photographs) (photograph by the author, June 2015.)



Digana, both the entrances are significant as one is marked with a Buddha statue and new developments, and the other with unplanned developments, even though there is a forest reserve separating the town centre from the main road.



Karalliyadda, the only one entrance to the town centre is significantly marked by the clock tower, similar to typical Sri Lankan towns.

Figure 7.56 Entrances to the Townships - Digana (top two photographs) and Karalliyadda (Bottom) (photographs by the author, June 2015.)

Empty places and spaces

The intention of the MAU was to create the right sized towns at an appropriate scale, differentiating them from the large new towns built pre-MAU, such as 'Anuradhapura', at the same time providing adequate public open spaces.¹⁷⁹ However, these spaces which harmonize with the natural environment are not fully used. A relevant example is the town squares in Dehiattakandiya which are too large (especially the North and middle ones); located in the middle of the road. They are unusable for any purpose stated by the architects,¹⁸⁰ standing, sitting, waiting or parking. It was also observed that the prime places in the MAU towns are underused or completely unused. Traditional building 'types' and spaces were not integrated in productive ways. A key example of this is the incorporation of the traditional *ambalama* (rest house) in Girandurukotte. It is too distant from the main circulation routes and does not serve as a wayside stop which was the traditional purpose of the *Ambalama*, and now a squatting place for beggars. Moreover, the centrally planned market squares are not used. This feature does not match the tendency for people to gather at a specific place of business. The town segment comprising the Bus Station and the *Pola* (Market Place), key public places of the town, in Digana, are far from the main road. They are not used at all. Thus, the towns are empty in contrast to crowded, lively and busy typical towns (see Figure 7.57).

¹⁷⁹ Perera, "when Planning Ideas Land", 161.

¹⁸⁰ Plesner, "The Mahaweli Buildings", 86.



Digana abandoned *Pola* (market place) and the bus station.



Dehiattakandiya (too large) central square/ roundabout and a green space between the shops and the main road, dividing shops from the main road, obstructing the commercial appeal.



Girandurukotte abandoned *Ambalam*.

Figure 7.57 Inappropriate or Under Used Places and Spaces in Townships (photograph by the author, June 2015.)

Modern constructions

Mahaweli buildings are prominent in the town centres, however, the architectural style is not popular in the interior of the settlements. Not least, the buildings which are inspired by the vernacular architecture, which maintain continuity with the past, do not seem to be appreciated by the new settlers who have built modern structures and amenities when the opportunity to do so has arisen (see Figure 7.58).



Digana- shop modified in to three storey pink building and the pink colour Bank building instead of white colour (MAU colour code).



Dehiattakandiya- multi storey shop building and yellow colour Bank building.



Girandurukotte- completely out-of-character bus station and multi coloured shop fronts.



Karaliyadda- earlier bus station is demolished and a new modern type multi-storey bus station is in the process of construction.

Figure 7.58 New Buildings, Building Modifications, Colourful Buildings not compliant with the MAU Guidelines, Observed in the MAU Towns- Digana, Dehiattakandiya, Girandurukotte and Karaliyadda (Photograph by the Author, June 2015.)

Liveliness, vitality and modernism

Towns are the points of innovation with comparative luxury and a better quality of life, shaped, also, by modern conveniences. The rural people are drawn to the towns for what they lack in their villages. Towns are exciting places full of life and vitality, particularly in the rural setting. One can see, hear, smell, taste and feel the vibrant town character, especially in the Sri Lankan context. This inherent character of a town is an important point to consider, and from the following figures it is intended to illustrate the lack of this character in the case of the MAU towns. Several factors contribute to this. First the vernacular style of the buildings give the towns a dated appearance, demonstrated in the façades depicted in the figures below [Figure 7.59]. The traditional architectural style is a sensible approach, using the same architectural language, size, proportion, form and detailing throughout the built fabric. However, this has contributed to a lack of individual identity and variety,¹⁸¹ no matter how hard people have tried to customise their shop fronts. Use of the same core type of buildings, which obviously is the rational practise when one appreciates this massive exercise, completed with limited time and resources, further contributes to the monotony of the towns, even though, considered individually, the buildings are aesthetically pleasing. This further contributes to the lack of ownership – as ownership is enhanced by being able to choose and personalise – which gives inhabitants an opportunity for self-expression and a sense of belonging, to their habitat.¹⁸² Large and under-utilised public places are out of proportion to the built elements and the natural environment, making them look abandoned, which also affects the town's character in a detrimental way. Ultimately this lack of character contributes to the failure of commercial activities, as they prevent the attraction of entrepreneurs, which in turn is important for the future growth and the potential economic growth of the Mahaweli towns and their surrounding settlements (see Figure 7.59).

¹⁸¹ Udumulla, "Dehiattakandiya: A Sri Lankan Experience of Developing a New Town", 45.

¹⁸² This is one of the reasons for not building a core house for the farmer settlers.



Dehiattakandiya (an MAU town) in the present and Badulla Town¹⁸³ (a typical town) in the past.



Ginigathhena town¹⁸⁴ (a typical town in the present) and Thalawa Township (a pre-MAU town) in the present. Dehiattakandiya town's serene spirit is more similar to the Badulla town's past calm façade than the crowded and congested Ginigathhena town at present, but it lacks necessary modernity, vitality and life-force so typically experienced in Sri Lankan towns.

Figure 7.59 Comparison of Towns: an MAU Township, a Typical Sri Lankan Town in the Past, a Typical Sri Lankan Town in the Present and a Pre-MAU Township.

It is evident that the MAU attempted to create cohesive physical environments and functional towns, while maintaining a simple and rational scale and style in the built entities which were sensitive responses in relation to the landscape character and the climate. In doing so, the new towns created a distinctive Mahaweli identity. However, it is also clear that beyond the potential to enhance the formal character, spatial interest of the designs could be created through a greater variety of composition, scale, texture, proportions and colour; and further consideration of functional and cultural aspects of the context is required to better relate these places to the people they were designed to accommodate. Moreover, it is not entirely clear how the designs for the new towns addressed the recommendations presented in the MDP Reports (such as the FAO Survey, the Sogreah or the Hunting Feasibility Reports) which offered substantial guidelines for the detailed physical planning of the Mahaweli settlements, including the Mahaweli towns. While the successes are applauded, the obvious failures of the towns are discussed in the next chapter, in light of the sociological recommendations and the economical and administrative context of the Mahaweli Project.

¹⁸³ Source: *Delcampe*, accessed on February 25, 2016, <http://www.delcampe.net/>.

¹⁸⁴ Source: Saman Jayawardene, "Ginigathhena", *Panoramio*, accessed February 25, 2016, <http://www.panoramio.com/photo/62583898>.

Summary

To summarise, one should acknowledge that the MAU faced the challenge of developing 'good towns' with its complementary strengths of foreign and local expertise, and genuine dedication to a 'people centred approach', inspired by the vernacular architecture that was climatically and culturally suited to the local conditions. However, in the context of substantial planning guidelines provided in the prior recommendations, success was partial due to unforeseen disappointments – evident from the field observations. Nevertheless, the MAU created towns with a distinctive 'Mahaweli identity' that aimed to serve the community and to promote growth at an appropriate rural scale.

Chapter 8. Discussion

Overview

People settled under the MDP, according to the Sogreah report, can be “much better off than the traditional ... villagers”, with the assurance of adequate irrigation water, organised supply of credit, inputs, extension services, education and marketing for paddy and other produce.¹ However, regardless of whether the relocation is forced or voluntary, as Sogreah consultants themselves acknowledge, the re-settlers inevitably go through a difficult period in an unfamiliar environment.² Undoubtedly the aim of the MAU through their ‘people centred approach’ was to build towns which suited to the local climate and culture, which were ready to function when the re-settlers start to move in, with traditional elements that were familiar to re-settlers to make this difficult period a little easier. As Perera claims, planning should facilitate a smooth transformation with minimal disturbances and without adverse effects on daily life, as thus:

*Planning is most successful when the inhabitants are able to relate to the environment and familiarize their spaces and places with minimal transformation of their daily activities and cultural practices.*³

There is no way to find out how the Mahaweli towns were regarded in the resettlements at the initial stages, not least in this modest study. The architects involved directly did not have an opportunity to evaluate their work after the towns were occupied by the re-settlers due to their abrupt end of tenure with the MAU and the MDP.⁴ It is more than 25 years since the height of the MAU and the towns they built. Yet, when visiting the Mahaweli towns and observing them critically one can identify both acceptance and rejection at the receiving end and grass root actions to view, resist, familiarise, adopt, manage, practice, transform or change.⁵ Perera citing Scott rightly claims that “the fact that particular order works for municipal or state authorities is no guarantee that it works for citizens”.⁶

¹ Sogreah Report, 18.

² Sogreah report, 74-75.

³ Perera, “when Planning Ideas Land”, 160.

⁴ Interview with Nihal Perera.

⁵ Perera, “when Planning Ideas Land”, 142.

⁶ Scott (1998), 58 cited in Perera, “when Planning Ideas Land”, 148.

Thus, a critical discussion based on the observations made in the towns at this point of time, is one way to understand the actual long term intervention made by this ambitious architectural venture, as well as the possible reasons for the outcomes. Nevertheless, the whole process of making Mahaweli towns has emphasised the importance of urban design in planning urban environments, at least in the Sri Lankan context. Thus, this concept of creating 'planned' towns that followed a 'vernacular architectural style' yet were unlike any other town in Sri Lanka, was no less than a change of paradigm in the Sri Lankan urban design discourse.

This final chapter discusses the MAU and the towns they built in relation to architecture and urban design. It consists of 3 main sections. The first is a critical explanation of the observations made in the MAU towns in light of the sociological recommendations given in the initial Mahaweli reports (FAO, Sogreah, Hunting, TAMS etc.) and a critical discussion of opportunities that the towns could not realise in the MDP context. The second section discusses the significance of the MAU within the Sri Lankan architecture and urban design discourse. The final section briefly discusses the lessons that have been learnt from the study, in the context of the resettlement scenario.

8.1 The MAU Design Responses in the MDP Context

Many of the failed architectural initiatives in the design of the new towns that were observed in this study appear to relate to the design response of the MAU to the local sociocultural and economic conditions. Particular aspects and sub-factors of this problem that offer at least a partial explanation for these evident lapses or differences in response can be categorised as follows; (1) problems inherent in the actual design and conception of the new towns; (2) sociological factors; and (3) the inherent systemic conditions of the MDP that the MAU could not change. The following is an attempt to discuss these factors objectively.

8.1.1 Design and Concept Problems

Although the MAU tried to build new towns informed by traditional towns, most obviously through the architectural interpretation and expression of a vernacular style, this study has highlighted a number of other seemingly significant aspects of traditional towns relating to form, composition, scale and balance in the making of public and commercial spaces in small towns that were evidently

overlooked in the conception of the MAU-designed towns. These issues were described substantially in the previous chapter in the initial exposition of the archival findings and field observations. Thus a more succinct analysis and discussion will be sufficient here.

One of the most problematic design concepts was the use of highway 'by-passes'. The location of the town centres of these new townships away from the main road directly contradicted the Hunting report, which recommended that the junctions of key roads, as observed in most traditional Sri Lankan towns, should be the "real central places" and that circulation should be planned accordingly.⁷ Moreover, other traditional elements prominent in Sri Lankan towns were not incorporated productively either. For an example, the clock towers in a roundabout in the middle of the main road, in the MAU towns, do demarcate the centre of the town, similar to traditional towns, but, they are out of scale – as in Dehiattakandiya and Girandurukotte – thus insignificant. Also, though it was a progressive new characteristic of the MAU-designed towns to provide open public recreation spaces, which was not a typical feature of traditional towns, the spaces were too large, adversely affecting the character and the visual balance of the new towns.

Another critical town feature is the market place. In Schure's township layout, 'the focal point' is the market square, around which all the other services are arranged. Similarly, in Hunting's recommendations the market area was regarded as the central place, surrounded by major services. In the typical small Sri Lankan town, the *Pola* (market place) and the bus station are the central places. Plesner too claims that the centre of the town should be the *Pola*.⁸ However, other external circumstances appear to have intervened in the designing of the MAU towns, as the market place is not the central point in any of the cases observed.

Arguably, these issues regarding some of the initial design concepts and details of the MAU-designed towns have influenced their day-to-day function as nodes of social as well as economic development and potential future urban centres, and, thus, their present state of relative underdevelopment.

⁷ Hunting Report- Victoria Scheme, 56.

⁸ Plesner, *In Situ*, 388-389.

8.1.2 Sociological Aspects

The initial Mahaweli reports provide a considerable wealth of sociologically-grounded assessment and understanding of the issues that were at stake in the larger MDP resettlement and DZ colonisation scheme, as well as guidance for potential physical planning based on that sociological analysis. However, there is little if any evidence that these guidelines were considered in the design of the MAU townships despite the fact that all of these earlier Mahaweli reports had emphasised – in addition to the sociological concerns they raised – the importance of conducting such surveys and studies not only in the pre-planning stages, but to continue experimenting with and monitoring these concerns during both the implementation and post-implementation stages. These ongoing studies could have been facilitated, the reports had suggested, by employing an associate or collaborating sociologist throughout the design and implementation process. They also recommended the importance of utilizing local leadership channels to better instil innovations that would support integration and harmonious co-existence of the traditional inhabitants and re-settlers, while the latter grew roots in the settlements. However, none of these recommendations were reflected in the team and approach undertaken by the MAU.

Employing Sociological expertise

More importantly, the composition of a team that would be responsible for successful settlement planning and implementation is continuously recommended in these reports. Barnabas recommends setting up an independent institute, covering expertise from all the sectors relevant to resettlement, with a Sociologist as the head and a core staff consisting of an Agricultural Scientist, an Irrigation Engineer, an Economist and a Statistician, which works with the help of other government departments, the university, research and other institutions, and would be associated with an advisory committee consisting of administrators, technicians (engineering, medicine, animal husbandry etc.) and scientists.⁹ Further, the Final Report of the FAO series contains recommendations for a “Physical Planning Committee” which consists of a Land Commissioner, Irrigation Specialist, Soil Specialist, Agronomist, Agricultural Economist, Rural Sociologist and (for the first time) a Rural Planning Architect. Sogreah report specifically contains recommendation for

⁹ Barnabas Report, 119-120.

“Specialists Services” by “a Sociologist with basic knowledge in rural economy” to assist the MDB in “various phases of project development”.¹⁰

Although these recommendations for expert sociological consultation are clear and comprehensive in the initial Mahaweli reports (such as FAO and Sogreah), there is a relative disregard for comprehensive sociological analysis in evidence in the later reports (e.g. the Hunting report), particularly following the acceleration of the MDP. For example, the Hunting consultants who proposed comprehensive physical plans, did not conduct a thorough sociological analysis by themselves, though they claimed to be mindful about the previous Barnabas and Sogreah reports and based their recommendations on these previous reports. However, the later report contains a recommendation to appoint a Physical Planner to do a ‘preliminary study’ of existing data regarding communications between the regional service centres, public utilities at each service centre, the government plans and policies regarding the settlements and local experience gained on existing settlement schemes. His responsibilities would include analysing settlers’ attitudes, aptitudes and responses, but the most important point was the recommendation that “these factors would also be examined together with the Demographer/ Sociologist in relation to the outline development plan.”¹¹ The physical planning recommendations in the Hunting report, being much more flexible, provided room for changes according to these sociological findings. The Hunting report also recommended sociological studies for the ‘future development planning’ of the settlements; it recommended studying detailed current and proposed land use maps, population growth estimates, growth of urban centres near to and within the Mahaweli Development Program zone, as well as industrial development in the wider region. The TAMS consultants also recommended social monitoring and evaluation studies based on existing and proposed settlements by “a Regional Planning Unit” made up of highly qualified specialists in economics, regional and urban planning, with a socio-economic studies group. A research institute headed by social scientists was recommended for “long term continued evaluation and monitoring”.¹²

¹⁰ Sogreah Report, 19, 114, 200.

¹¹ Hunting Report: *Mahaweli Ganga Transbasin Diversion Study: Scope Proposal for Consulting Services*, Hunting Technical Services Limited, London in association with Resources Development Consultants Limited, Colombo, (1980), 43.

¹² TAMS Report, 27-30.

It is clear that the Mahaweli reports have given considerable importance to sociological aspects of settlement planning and it repeatedly recommended the importance of sociological expertise in the ongoing process. However, it is not apparent how the MDP has facilitated the MAU – the organization responsible for an important element of the resettlement, townships – to adhere to this recommendation. Plesner claims that they travelled around the country and studied small towns and came to conclusions based on observations about how the Mahaweli towns should be.¹³ Perera states simply that they did ‘special studies’.¹⁴ Except for these assertions, however, there is no evidence available of any extensive sociological studies, research or surveys that have advised the actual designing of the Mahaweli towns; neither in Plesner’s nor Perera’s writings, nor in the Mahaweli Archives. All the recommendations, as well as concerns of the SIAs particularly in the recent context of the mega projects point to the need for comprehensive and holistic sociological appraisals in physical planning and designing for the long-term viability and sustainability of the resettlements. Thus, it is reasonable to conclude that the relative disregard of this important criterion has contributed to the present conditions of the MAU towns.

Innovation and leadership

In all the Mahaweli reports, innovation and leadership are stressed as the most essential mechanisms in prompting and distributing development in the rural interior - the main purpose of the Mahaweli towns – as discussed in the theoretical framework of this dissertation. The technological advancements which impact society and its relationships should be for human benefit, thus have to be encouraged and diffused effectively. According to Barnabas, and rightly so, the technology is a social product that enhanced by ‘innovation’, and diffused by ‘leadership’, which, with “proper appreciation of the human factors, is a fundamental necessity to ensure the continued growth”.¹⁵ Projects like Mahaweli, are highlighted for bringing in rural development¹⁶ and as pointed out in the Sogreah report, the development projects should not only bring desirable social changes, but they should be well established as an integral part of the community life, and become a “dynamic process for more positive innovations.”¹⁷

¹³ Plesner, *In situ*, 385.

¹⁴ Perera, “when Planning Ideas Land”, 163.

¹⁵ Barnabas Report, 3-4.

¹⁶ Barnabas Report, 3; Sogreah Report, 118.

¹⁷ Sogreah Report, 118.

The primary relations in the social life of the village settlements impact on adoption rate which tend to conformity and “hence new innovations are resisted”.¹⁸ Much as this is true in the traditional villages, in the case of the Mahaweli project, in which the settlers partially were the second-generation overflow of those villages – enthusiastic, opportunity seeking volunteers – that might not be entirely the case. Barnabas suggests, which is confirmed by the Sogreah consultants, that the re-settlers desired new and innovative concepts.¹⁹ Even those forced re-settlers who reluctantly migrated might have hopes of a new life and opportunity in the new settlements. This is more so for the future generations of the settlements. Thus, in this complex resettlement environment, the diffusion of the innovation and technology has to be strategic; one such effective channel is through local leaders.

Community guidance in the traditional societies is met on an informal basis,²⁰ the informal ‘leadership’ being one such facilitator. However, in the case of new settlements, leadership takes time to emerge and is difficult to identify at the beginning. The success of the project and quick recovery in the case of resettlements, depend on how fast and effectively these leadership channels are identified and utilised to facilitate and diffuse innovations. According to Sogreah consultants, this helps to make ‘inferences’ about the re-settlers – the values, attitudes and patterns of behaviour which influence collective action – and “forecast their consequences for adoption of innovation and occurrence of cohesive and cumulative social changes”.²¹ In the Sogreah report, much validity is given to leadership, stressing that local innovation and opinion leadership is crucial for the success of the MDP. In the same report, it is further emphasised that “no innovation can be initiated by the government officials in charge of the agricultural development if they are not supported by village or community leaders.”²² Leaders act as middlemen in the two-step flow process of communication between the source (in this case planners) and the audience (in this case the settlers), especially in the mega-projects which are often top-down authoritative processes. The “innovation-spreading requires powerful leaders in strategic positions”²³; as explained in the Sogreah report, the local leaders’ process of adoption of new thinking was thus,

¹⁸ Barnabas Report, 5.

¹⁹ Barnabas Report, 99-101; Sogreah Report, 95.

²⁰ Barnabas Report, 96.

²¹ Sogreah Report, 21.

²² Sogreah Report, 30.

²³ Sogreah Report, 31.

(They considered) the pros and cons of the (proposals) for their own status within the community and for the welfare of the community itself and made clear that they would adopt (new ways, thinking, practices, etc.) personally ... that the bulk of the people follow. ²⁴

Even though vigorously insisted by the Mahaweli recommendations, there is no indication of facilitating innovation, or utilizing local leadership channels innovatively, in the MDP. Perera claims, that for the regulation and direction of growth of the towns after initiation, “what mattered was leadership”, ²⁵ as there was no formal regulatory authority responsible for town growth. This shows the importance of promoting their innovation by leadership channels. Therefore, in the absence of this critical aspect, the innovation of the MAU – their ‘people centred approach’ and ‘critical vernacular architecture’ – might not have had the opportunity to be successfully integrated, established, sustained and thrive in the rural Mahaweli area or in that case influence the future developments. The MAU towns which conformed more closely with tradition may, in turn, have been slowing the process further and hence lagging behind in facilitating innovation, which is unfavourable for the success of the towns and thereby the whole project.

8.1.3 External Factors and Systemic Faults

The following external factors and systemic faults inherent in developing countries, which were beyond the control of the MAU, may also have contributed largely to the present conditions of the towns, in addition to the factors discussed above.

Location of the towns in the Mahaweli ‘Systems’

The locations for the towns in each Mahaweli ‘System’ were pre-determined for the MAU. However, some of these locations demarcated in the Mahaweli reports as the town centres – according to the model based on the ‘Central Place Theory’ – might not have been the best locations for the future growth of the particular town. For example, in a Masters dissertation, N.S. Perera concluded that the “location for Aralaganwila town centre (in the System B) is inappropriate and it should be replaced by Kolangas junction”. ²⁶ Perera criticises this MDP settlement model, claiming it disregarded the Sri Lankan social, cultural and environmental context, and opted instead to fit the

²⁴ Sogreah Report, 31.

²⁵ Perera, “when Planning Ideas Land”, 164.

²⁶ N. S. Perera, “a Critical Evaluation of the Proposed Locations of the Townships in ‘System B’”, 88.

regional planning into totally alien Western context.²⁷ However, Perera also claims that some of the MAU towns were equipped with locational advantage. The upstream towns (Digana and Karalliyadda) began functioning much faster, because there were more initial buildings in them and there was already an established population that depended on those towns.²⁸ Even now these towns are substantially functioning more than the other two downstream towns studied (Dehiattakandiya and Girandurukotte). Further to the identified issue of locational advantage, the MAU had 'fought hard' to consolidate and expand the Manampitiya new town at the existing location against MECA's decision to move it away.²⁹ After all, the function and future growth of the towns depended largely on the location specific attributes in every aspect: economic, social, environmental, infrastructure and services etc.

Economic development

The Mahaweli Project had not reached its anticipated economic goals, and substantially failed at the macro-economic level as well as at an individual family income level; moreover, it escalated poverty in the rural sector³⁰ though it was supposed to trickle down the economic wealth to the community. This regional economic failure can be a contributing factor for the present underdeveloped state and the slow growth of the studied towns.

Population growth

Hunting consultants in 1978 had allocated land for the townships assuming that the projected non-agriculture families would be around 25,000 by the project year 20 (i.e. by 1998) in that particular area – System C.³¹ However, according to the MASL population and settlement data, the non-farming families in the System C in 2011 (after 38 years) were only 10,828.³² During a time period that is twice as long as predicted, only a half of the population estimated is actually living in the area. As discussed in the theoretical framework, one of the basic conditions of the Central Place Theory is the threshold population that is required to bring about the provision of certain goods or

²⁷ Perera, "when Planning Ideas Land", 155.

²⁸ Perera, "when Planning Ideas Land", 161.

²⁹ Perera, "when Planning Ideas Land", 167.

³⁰ Scudder, *Future of Large Dams*, 142,143 and 167.

³¹ Hunting Report- Victoria Scheme, 53.

³² "Settlements", *Mahaweli Authority of Sri Lanka*, accessed March 23, 2016, <http://mahaweli.gov.lk/en/statistics.html>.

services to a central place. Clearly, low population growth has resulted in less economic wealth and less spending, and might be a contributing factor to the current status of the MAU towns.

Transport system

The reality of the Sri Lankan public transport system is that facilities are very poor and often irregular, especially in rural areas, with standards far below basic norms. This clearly makes it difficult for people to visit the towns while making it time consuming in turn, affecting the frequency of use, another basic condition of the Central Place Theory.

Maintenance

Plesner stressed the necessity to maintain the natural growth of trees in Sri Lanka, claiming "trees have to be managed to prevent overgrowth".³³ The maintenance of public entities is at the bottom of the list of priorities in the Sri Lankan context, especially for the rural local authorities. Not only trees, but the physical structures are not maintained regularly, as it is a costly operation. As Perera rightly claims, this obviously contributes to the rundown condition of the MAU towns, especially Girandurukotte Township.³⁴ Moreover, the use of vegetation in certain prime locations, such as the planted forest reservations – which are overgrown – at the entrance points in Girandurukotte and Dehiattakandiya townships has certainly contributed effectively to the less than attractive urban character of those towns.

Organizational problems

Issues inherent in administrative structure such as poor communication and co-ordination, too many organizations, institutes without clear scope and responsibilities, and confusable office duties of different ranks, is a considerable factor that can affect every aspect of any public project – in this case, the MDP – and any public entity such as the MAU towns. This has been a problem throughout the history of the MAU towns, even from the planning stages through the implementation stage up to the present condition, which contributes to inefficient management, non-existent maintenance and resultant ineffective and non-operative urban entities.

³³ Plesner, "the Mahaweli Building Program", 86.

³⁴ Perera, "when Planning Ideas Land", 158.

Ethnic problem and unstable political situation:

Plesner claims after the sudden death of Minister Dissanayake, the priority given to the Mahaweli Project came to an abrupt end, as thus,

(After the Minister Gamini Dissanayake's assassination), the Mahaweli Project lost its sense of purpose and energy and never regained it. Tragically, the whole wonderful future vision seemed to crumble just before the finishing line. ³⁵

The volatile political situation prevailed at the time and the civil war which was associated with the area of the Mahaweli and the fringes, also undoubtedly impacted economic growth, population growth and the attraction of private economic activities to the Mahaweli towns. In a more favourable situation, the MAU towns would have had the potential to be more productive as growth centres, in the rural Sri Lankan context.

Cost of materials

Not least, the cost of materials can have a significant impact on the built environment. Local materials such as roof tiles get increasingly expensive while imported materials such as corrugated sheets become cheaper. Moreover, local materials are costly to maintain.

8.1.4 Lost Opportunities

As briefly discussed in the theoretical framework, many opportunities particularly related to future generations of thriving, sustainable rural settlements can be created in the towns. These opportunities are interconnected and intertwined, thus act cyclically in prompting regional development. It is arguable to what extent the Mahaweli towns have been involved in this regard, however, the potential is discussed very briefly in the following section.

Opportunity for youth

One of the main social problems in the settlements is idle youth. The land ownership policy associated with the Mahaweli settlements restricts the land subdivision by limiting the inheritance to one person. As predicted by Barnabas, the large family size of the re-settlers and this land policy created a serious social issue particularly regarding the second and third generations. ³⁶ Thus, for

³⁵ Plesner, *In situ*, 411.

³⁶ Barnabas Report, 98.

this type of project to be successful, it is mandatory to provide alternative employment opportunities, vocational training, and incentives for small scale industries, targeted not only for the future generations of the re-settlers, but the overflow of the traditional villages nearby. The ideal locations for this type of opportunities are in urban areas; but the urban areas should be viable and expanding, "in which these job opportunities will likely arise" as stated in the Hunting report.³⁷ In my view, the Sri Lankan towns embed the opportunity to solve the youth problems at least to some extent, as Sri Lankan youth are particularly attracted to towns. They find towns as places of interest, with many activities and opportunities for them such as recreational places and events, entertainment such as musical shows and dramas, and also as gathering places, such as shopping centres, libraries or youth centres, which are not provided in their villages. Towns can provide the youth with tuition classes, vocational training institutes, and technical colleges. Towns can attract young work force by providing employment in factories and industries. Therefore, as stated in the TAMS report, "stimulation of growth of urban areas"³⁸ is needed, which the MDP was presumed to provide. The MAU towns could have been strategic in this regard, but due to the lagging growth and development they could not provide these opportunities for the full potential, at least in the present condition.

Economic and social growth

Towns contribute to the regional economic growth, in turn social growth. More importantly, rural towns incorporate points of micro-economic growth in the Sri Lankan context, as these service centres are the places where the small-scale businesses and economic activities such as small snack bars, clothing boutiques and food vendors, operate and thrive, especially near pivotal points such as hospitals and schools. These contribute largely to regional economic activity and standard of living, while providing alternative employment and income. However, very few opportunities are present for these types of temporary but essential and productive micro businesses in the Mahaweli towns, especially in the 'planned layout' of the towns. Thus, this is a very important opportunity that has been overlooked in creating the Mahaweli towns.

³⁷ Hunting Report- Victoria Scheme, 40.

³⁸ TAMS Report, 26.

8.2 Significance of the MAU within the Pragmatic Architecture and Urban Design Discourse of Sri Lanka

As a very important phase of the Sri Lankan urban design milieu, the creation of these unique MAU towns and its effect on the discourse is briefly discussed in this section.

Continuation of the Tradition

Plesner's Pioneering work was significant in the revival of traditional architecture. Similarly, the MAU work led by Plesner was significant in the urban design discourse in Sri Lanka. Plesner's Architectural view is, in gist, "how the spirit of man functions best in a building. How does the building we live in help us to be happy, content, excited, searching, amused, and mentally active?"³⁹ Plesner places utmost importance on the 'user', in claiming "the magic of architecture lies in the spirit of the place and in the soul of the person ...using it...", and if they love to work and live in the building, it has not failed, "often also economically".⁴⁰ This identification of the 'users' is important in designing, for on them the utilization and change of the elements designed depend.

Plesner's basic principles for Mahaweli towns were based on the certainty that tradition must be continued, to a certain degree, as follows,

*the new must be a seamless extension and improvement of the old, villages that the poor farmer and villager could move into and feel at home in and function well in, and towns that must be attractive to the urban middle class of professionals and traders who would have to move out into the unknown of their own free will.*⁴¹

Plesner claims that "this certainty grew to become a shared approach among all the young Lankan architects and myself" During the time at the MAU.⁴²

The relationship of the users and the continuation of tradition in creating the MAU towns can be critically discussed in relation to the Mahaweli reports, all prior to the MAU. True as it is the above claim of Plesner, however, Barnabas's findings show that the continuation of tradition will fail, in the Mahaweli settlement context, as thus, "the community in the colonies are no longer at the end of a

³⁹ Plesner, *Insitu*, 20.

⁴⁰ Plesner, *Insitu*, 39.

⁴¹ Plesner, *Insitu*, 383.

⁴² Plesner, *Insitu*, 383.

continuum of a traditional society", as the colonists are "essentially Pluralistic in their character",⁴³ and their relocation is an ambitious and entrepreneurial process – mainly consisted of young families with enthusiastic hopes for a new life, who desired new opportunities⁴⁴ and open to modern innovations. Even the *Purana Gam* (traditional villages) were changing physically as well as economically and socio-culturally, under the influence of post-independence settlement schemes, and with other concurrent prominent economic and political occurrences that transformed every life in the country, such as land and agricultural policy changes and pressures of new open market monetary systems. Thus they "lost the exact physical characteristics of the ideal type."⁴⁵ As in the TAMS report's description, small isolated village societies were transformed into production oriented colonization schemes due to the Mahaweli Project as well as other pre-MDP projects. Barnabas identified the consequences of 'modernization' and demographic change that come along with these colonization schemes, arguing that adoption of the old system would be a 'mismatch' to the new context and inevitably 'outdated'.⁴⁶ It is a change, for better or for worse, which would not match with the tradition.

This fact is further elaborated in the Barnabas report. Barnabas claims that there is "sentimentality as well as value attached to factors" that village and traditional societies characterise and the planners seem to attempt to "replant traditional society in the new areas". He further claims that, "old values which were based on social security, a sense of belonging to a group and to a place are not quite... valid criteria in judging as to what factors give satisfaction to people." However, almost 50 years later, the questions which Barnabas raised for his study in 1967 are still valid; "is it feasible to try to replant such a society in the colonies? Or is it relevant?"⁴⁷ His findings were "that the characteristics which were relevant and valid for the village societies are not so in the colonies" and that "people had left the villages to escape the type of society in which they lived. Any attempt to rebuild a society according to the old pattern is thus likely to be resisted". He further certifies that, "the society that is emerging in the colonies is clearly indicative of a movement away from the direct

⁴³ Barnabas Report, 97.

⁴⁴ FAO- Final Report: *Mahaweli Ganga Irrigation and Hydro Power Survey, Final Report, Volume III: Organizational and Management Requirements*, UNDP/FAO, (1969), 47. In this report it is stated that the government land policy gets wide response as a large number of candidates apply for selection in the settlements, the low rate of defection in newly established settlements and the spontaneous encroachment by "squatters" on the land.

⁴⁵ TAMS Report, 4.

⁴⁶ Barnabas Report, 97-101.

⁴⁷ Barnabas Report, 101.

face to face contact, limited world view, religiosity, traditionalism and sense of community," which is clearly opposed to the traditional societies. "It is not that they are no longer valid, but they are no longer too functional in the situation which colonists find themselves."⁴⁸ The colonies are intermediary societies, not traditional societies, but not entirely competitive societies either. ⁴⁹ Therefore, what have to be provided for them, which would root with them and grow with them should be customised to that particular society and should be innovative, neither traditional, nor too modern.

Rural community – the users - look up to towns, as the places that represent better quality of life and offer modern and innovative physical environment. Not only that, they consider the urban dwellers more sophisticated, with modern views and aspirations, who are superior to the rural community.⁵⁰ There might be resistance from the traditional societies, especially from older generations, but this does not entirely represent the whole complex, mixed resettlement situation. Thus, the occupants of the new resettlements desired such new, modern and better quality life style. Therefore, as Perera acknowledges, the MAU towns should be neither 'old' – not continuation of tradition; nor 'new' – but innovative inventions with strategical interventions in the rural context. The MAU towns should be 'modern contemporary people's towns' that are neither 'Western' nor 'Typical Sri Lankan' towns. ⁵¹ It is evident that the emphasis on vernacular architecture was not valued by the new residents (with their progressive views). Undoubtedly the traditional vernacular-inspired building designs match the environment, climate and culture and they were embraced by the educated high class elite, but neither were the MAU's designs rooted in the Mahaweli resettlements nor would they become widely popular among the general public.

The towns for the present

In agricultural settlements, such as the Mahaweli, towns are very important as they provide innovative and diversified human activities, offer a modern way of life, and act as key nodes of social development and economic growth. The pre-MAU towns which followed western models, Perera

⁴⁸ Barnabas 1967, 99-101.

⁴⁹ Barnabas Report, 100-103.

⁵⁰ George M. Guthrie, *the Psychology of Modernization in the Rural Philippines*, (Manila: Ateneo de Manila University Press, 1970), 2.

⁵¹ Perera, "when Planning Ideas Land", 164.

criticises, had “no sense of belonging and had not created their own places”,⁵² so that the MAU tried to challenge this “supremacy of incompatible western expertise” and adopted “critical vernacularism in architecture”.⁵³ Opting for a “people-centred” perspective, claims Perera, the MAU tried to promote both the urban dweller and the farmer.⁵⁴ The MAU towns were particularly ‘towns for the present’ which provided ‘basic form types’ and acted as only a ‘framework’ for the future growth. Plesner wishfully claims that the Mahaweli towns “both now and in twenty years from now, must be good and well-functioning”⁵⁵ thus, planning should be for the future as well as for the present,

*A town is not a onetime thing ... a town is a constant process of adding and changing... the original purpose of the planner is forgotten when he goes home, unless it is implanted in the genes of the town.*⁵⁶

However, the MAU built towns for the present,⁵⁷ because, Perera claims, the projections (such as population growth) are unreliable. Therefore, the MAU did “real-time planning” instead of “for the future” and they were supposed to be modified and changed with time, with the flexibility given by the ‘framework’ approach. This flexible approach tallies well with the Hunting recommendations. Hunting discouraged rigid planning measures and strict regulations, as it acknowledges that “changes occur very rapidly and the plan should provide a framework in which they can be accommodated.”⁵⁸ The typical changes related to townships, as per the Hunting report are, “the spontaneous growth of markets and shops, together with artisan workshops (and) provision of bus services to connect the villages to markets”. This flexibility stressed in the Hunting report justifies and provides reasonable grounds for the ‘loose-fit plan/ framework’ adopted by the MAU towns, which they claim to have applied to allow for future growth. However, the Hunting consultant further recommended that the planning should not be limited to the too-near future either:

⁵² Perera, “when Planning Ideas Land”, 158.

⁵³ Perera, “when Planning Ideas Land”, 141

⁵⁴ K.Wm. Heath, *Vernacular Architecture and Regional Design*, (Abingdon, UK: Routledge, 2009), 70-72; Perera, “when Planning Ideas Land”, 158-166.

⁵⁵ Plesner, *In Situ*, 398.

⁵⁶ Plesner, *In Situ*, 385.

⁵⁷ Perera, “when Planning Ideas Land” 160, 163 and 168.

⁵⁸ Hunting Report- Victoria Scheme, 34.

Spatial priorities in settlements change over time and settlement plans and forms should not be adopted which prevent these changes or give an over-strong emphasis to temporary implementation priorities. ⁵⁹

This presents the paradox regarding the MAU towns, that while providing flexibility for future growth, they stick to a 'vernacular architecture style' not envisioning the future direction that the Sri Lankan towns would take.

In the Sri Lankan context, "the notion of town as leaders rather than followers of development",⁶⁰ does not hold valid, for the economic activities spontaneously grew with people settling in a new area. Thus, the towns actually follow the development. Therefore, if the Mahaweli towns tried to "guide development", as claimed by Perera, it would not have been successful. The key architects of the MAU themselves were critical about the Mahaweli settlements and the MAU itself. Perera suggests that "MAU story" could have had many shortcomings⁶¹ and Plesner claims, "the towns we pinned such hopes on are today unfinished and rundown ghosts, and there is very little to show for all those years of work".⁶² This utilization of the Mahaweli towns as a 'guide' or a 'framework' did not happen. Moreover, the traditional elements are under-used by the inhabitants and the new buildings in the Mahaweli towns do not necessarily follow the MAU guidelines, resembling the desire to be 'modern'. Obviously, the change and modifications which follow after the initiation of the MAU towns clearly show that the future development and growth of the towns, lie in a direction that was not anticipated by these creators of the towns, and these changes are perhaps not inspired by the MAU principles.

Sri Lankan Urban Design Discourse – Post MAU context

As Rajapakse claims, Mahaweli settlements had opened up the traditional Sri Lankan villages to the world in which rural services and infrastructure were restructured in a major scale, while major changes were socially engineered to force development in the rural interior of Sri Lanka,⁶³ linking urban and rural in their interface. Mahaweli towns record a new chapter in the urban design narrative of Sri Lanka. They are important in two main aspects. On one hand, they were products of planning

⁵⁹ Hunting Report- Victoria Scheme, 34.

⁶⁰ Hunting Report- System C, 86.

⁶¹ Perera, "when Planning Ideas Land", 143.

⁶² Plesner, *In situ*, 411.

⁶³ Rajapakse, "Analysis of the Mahaweli Towns", 220.

which combined local and foreign expertise. On the other, they were pioneer products of revived traditional vernacular architecture in mass scale with familiar elements. They are unique, as Perera rightly claims, having a strong identity, while they “represent locally produced modernity rather than an abstract or imposed modernity”.⁶⁴ The researcher concurs with Perera’s following statement, about this unique identity, as per the quotation,

*this concentration of buildings, activities, and people, all brought together in an integrated urban centre, created a sense of place that was radically new in Mahaweli; and the two-storied buildings gave the towns a unique physical identity and character, new to this previously rural area.*⁶⁵

The towns influenced the Sri Lankan urban design discourse to a certain degree. Some of the MAU concepts were directly adopted in contemporary urban design. For example, though the by-pass concept had its own drawbacks in the Mahaweli context, it was adopted recently in the town designs, to prevent traffic congestion in Kegalle and Mawanella towns on the Colombo-Kandy main highway, (though new linear commercial activity is emerging now along this by-pass road). However, as Plesner claims there is a reason for this natural origin and growth of the Sri Lankan traditional townships,

*many Sri Lankan towns today lie strung out along a highway, partly because that is the easy natural growth pattern – put your shop or house on the existing public highway – and partly because the roads in Sri Lanka usually run along the dry ridges with lower lying wet paddy fields behind, or, as in the case of the road from Colombo to Galle, the paddy fields on one side and the fishermen’s ocean on the other.*⁶⁶

In any case, these towns are outcomes of an intensive architectural effort that tried to create good towns with sensible building design. They are key examples of a different urban design perspective in Sri Lanka, and thus teach interesting and useful lessons. The MAU, as the author of the Mahaweli town story, formed the foundation based on its ‘people centred approach’ to facilitate this noteworthy epoch of the Mahaweli scheme. This story draws both admirers and critics. The key players of the MAU had played their parts as best as they could, given the circumstances. Therefore, the MAU

⁶⁴ Perera, “when Planning Ideas Land”, 161.

⁶⁵ Perera, “when Planning Ideas Land”, 161.

⁶⁶ Plesner, *Insitu*, 384-385.

by employing its genuine intentions to create Mahaweli towns, in its glorious and energetic past, played a significant role in the urban design discourse of Sri Lanka.

8.3 Lessons Learnt

The MDP was created at a time when ‘mega-dams’ were a very significant development strategy worldwide.⁶⁷ The project is one of a number of mega-dam projects which shared goals that can be traced to the TVA project, including large scale planning initiatives, massive financial investment in infrastructure, regional coordination, emphasis on the ‘common good’ and anticipated social and economic development with national benefits.⁶⁸ Mega-projects, their consequences and resettlement designs are studied constantly, so the body of knowledge is growing and it is increasingly evident that the benefits do not outweigh the social, economic or environmental costs. The mega dam controversy is complex. Although the rate of these projects has declined, they are still a prominent development tool, increasingly in developing countries. Scudder claims “such projects are flawed yet still necessary development option”.⁶⁹ The problems of relocation today have certainly not diminished.⁷⁰ Recent developments in the debate stress that the projects should take an entirely new approach including increased public interest and scrutiny of technical and social issues, and awareness and understanding of environmental sustainability. In resettlements, in particular, public consultation, private sector involvement, independent monitoring and environmental management are priorities.⁷¹

Better access to goods, services and education, stable socio-cultural and economic opportunities and better living standards are anticipated in the urban context, although it is not always the case. With the promise of ‘infrastructure development’ and ‘planned settlements’, mega-dam projects can serve as effective tools to bring these standards of living to the under-developed rural interiors, in the form of ‘rural towns’. In this respect, as a ‘typical’ mega-project, there are retrospective lessons that can be learnt from the MAU and its role in the design of new towns in Sri Lanka.

⁶⁷ Scudder, *Future of Large Dams*, 5.

⁶⁸ McCully, *Silenced Rivers*, 19-20.

⁶⁹ Scudder, *Future of Large Dams*, 1.

⁷⁰ *Loosing Your Home: Assessing the Impacts of Eviction* (Nairobi: UNHABITAT, 2011), 1.

⁷¹ *Involuntary Resettlement Sourcebook, Planning and Implementation in Development Projects*. 30118, Vol. 1. (Washington DC: The World Bank, 2004), 321-323.

Two questions raised in the Mahaweli reports are, “how can the colony be studied in their own generic reality?” and “Is it possible to get at a ‘world view’ of the colonists?”⁷² This implies that planners cannot come to universal decisions about what to provide without studying the settlers first. People and the communities are different from one another. Careful planning is needed to take into consideration the economic, socio-cultural and environmental requirements, which must be based on grass-roots knowledge of the site and of the re-settlers’ specific needs and aspirations, at every stage, from the inception to post-implementation. An important point to note here, is the shared responsibility of the designers and the stakeholders (represented by community leaders) to achieve the desired results. Successful resettlements, understood both in formal terms and as a process, should facilitate cooperation and relationships and provide joint-ventures between affected people and project authorities for a more equitable development process which is strengthened by participation, consent and, in time, empowerment of rural communities.

Both the design philosophy of the MAU, which advocated a people-centred approach, and its critical vernacular architectural language had many merits which should be applauded. However, it is evident that with the magnitude of this project, comprising the design of 12 new towns in a vast territory forever changed by a mega-infrastructure project, and displacing hundreds of thousands of people often against their will, the project would have perhaps benefitted from more rigorous sociological expertise to address the socio-cultural concerns anticipated in the Mahaweli Reports. This expertise was understandably beyond the expertise of the design excellence of the MAU and raises questions about the responsibilities of the MDP in resourcing the unit and enabling a rigorous process of sociological analysis to best inform the design process given the complexity of the settlers’ ethnic diversity, their progressive needs and aspirations, and the sheer number of people involved in the exercise.

As a whole, this research is particularly important as it produces knowledge which may inform future design approaches related to resettlements. A large portion of the world’s population today are forced to relocate not only due to major infrastructure projects similar to the MDP, but for a host of other issues including human conflicts or untenable environmental change. Where there is any opportunity for design thinking and planning to make a difference, therefore, one of the most

⁷² Barnabas Report, 100.

important questions to ask is whether, according to De Wet, settlers have ‘actually upgraded their lives relative to their original setting’? ⁷³ Sorensen declares that resettlement is a process of evolution which might take generations. ⁷⁴ Therefore, this research which focuses on a ‘mature’ project, which spans at least three consecutive generations (it is nearly 50 years since the MDP was originally conceived), teaches an important lesson; that initiatives that are not founded on detailed knowledge of the fundamental needs and aspirations of the settler communities for which such new settlements are built and on whom they depend to be sustainable are likely to fail. This research project has demonstrated that, despite the commendable goals of the MDP and the MAU, there is a mismatch between the key issues and priorities identified by the Mahaweli Reports, specifically the sociological concerns articulated in these reports, and the design philosophy and language implemented by the MAU. This comparison draws attention to the foresight of the Mahaweli Reports, prepared prior to the formation of the MAU, in relation to the demographic diversity of the new settler community and their expectations for a progressive, prosperous and sustainable future. Therefore, this research on the towns of the MDP – a ‘mature’ project with more than 40 years of history and spanning at least three consecutive generations – teaches a lesson; that major new planning and design efforts necessarily demand sociological expertise to address the complexities of human needs and may fail to address the fundamental needs of the re-settlers for whom such new settlements are built, and on whom they depend to be sustainable.

Summary

To summarise, it must be acknowledged that the MAU addressed the challenge of developing ‘good towns’ and succeeded to a degree, but with some unforeseen disappointments. While, the critical vernacular designs of the towns arguably ‘attempted’ to serve the community and promote urban growth at a rural scale, their substantial failure to achieve those goals may be explained, at least partially, by the relative disregard for the substantial impact assessment reports that were provided in the initial phases of the MDP. Instead, the design of the new towns materialises a commitment to a different design philosophy which favoured a ‘people-centred’ approach that was not grounded in knowledge of the inhabitants and a design language rooted in vernacular building typologies that

⁷³ De Wet, *Moving Together, Drifting Apart*, 1-2.

⁷⁴ Sorensen, *Relocated Lives*, 4.

were not valued by this same progressive and multi-ethnic group. In these reports, particular emphasis is placed on the 'modern' point of view of the re-settlers and their progressive aspirations. It would appear that the re-settlers did not embrace the critical vernacular approach to the design of the new towns. While the Reports placed emphasis on the importance of local leadership channels, it is not clear how these were embraced in the structure of the settlements and such channels might have been better understood through the engagement of a rural sociologist; consultation opportunities that could and should have been provided by the MDP given the emphasis placed on socio-cultural concerns raised prior to the appointment of the MAU. Without these mechanisms in place, the new towns lack vitality, or a lively character. They have not precipitated growth— the primary purposes of the proposed towns in the rural context – and they have not promoted economic and social development, or provided opportunities for youth; all issues that were raised in the Mahaweli Reports. However, it is acknowledged here that external factors and systemic faults may also have had a significant impact on the present state of the Mahaweli towns, such as, lack of economic development, low population growth, poor transport and poor maintenance; inherent problems in a developing country; as well as long-term ethnic conflict that could not have been anticipated to the degree that it affected Sri Lanka.

However, the MAU and its towns denote an important 'era' in the Sri Lankan architectural and urban design discourse. Though the continuation of traditionalism might not have been embraced by the general public, nor were future developments to be guided, as initially anticipated, by the MAU towns' framework, certain features introduced by the MAU town designs are used to resolve some of the issues in the contemporary urban environment. In the context of mega development projects, and resettlements not only associated with mega-dams but with a host of other issues as well, and in the wake of the growing concern and reservations regarding these efforts, and new directions of action, the MAU towns and the MAU's efforts teach a lesson about the value of sociological considerations for long-term integrated sustainability, which is the ultimate aim of development.

Chapter 9. Conclusion

In this final very short chapter, the researcher attempts to congregate the conclusions that she has drawn upon this research project and recommend the most important areas that the researcher believes should be studied further. It is useful to reiterate some basic information about this research at this point. The MDP major development (mega-dam) project modelled on the TVA project, USA - attempted in post-independent Sri Lanka, was aimed at self-sufficiency in rice and hydro-electricity and involved a massive resettlement programme, modelled on the popular 'nationalist political vision' to revive the 'lost glory' of the under-developed and under-populated dry zone, the home of an agricultural and hydraulic civilization nurtured by Buddhism that thrived centuries ago. The aim of this Masters Research project has been to evaluate the towns that were built by the MAU - an initiative under the accelerated MDP - in light of the sociological recommendations included in the Mahaweli survey and feasibility reports prepared at the initial stages of the project. These recommendations were comprehensive in their scope, for reports prepared in the infancy of the SIA concept, and collectively provided guidelines for detailed physical planning; expressed concerns for community wellbeing and changes to the social structure and relationships in the traditional, multi-ethnic rural society, brought in by the influx of a large number of people. The awareness of the socio-cultural and environmental losses that outweigh the economic benefits of these mega projects is increasing, and in turn the rate of the new projects is decreasing; however, they still are a popular development tool increasingly in the developing countries. In this context, and acknowledging that these unique architectural interventions have not been studied sufficiently, through a combination of techniques including a critical examination of archival materials, field work in the Mahaweli towns, critical review of retrospective writing by the key architects of the MAU, Ulrik Plesner and Nihal Perera, and a recent interview with Perera, this research has attempted to contribute to the scholarship that would help guide future design initiatives of this kind.

With their 'people centred approach' the MAU tried to build 'good' towns with 'critical vernacular architectural' styled buildings that are climatically and culturally suitable in the local context based on an 'adaptable framework/ loose fit design', that performed from the outset and catered for the 'present', and that would guide 'future developments'. Doing so, the MAU towns directed the urban design discourse of Sri Lanka into a new dimension. It is concluded that the formation

of the MAU was a timely requirement for the new town construction to catch up with engineering construction, especially in the context of the acceleration of the project; and as a response to the engineering-dominated pre-MAU planning approach. Plesner's building design style, which was already well-known in Sri Lanka and well-established in its influences from traditional vernacular architecture, may well have contributed to his selection to play the leading role of the MAU, within the concurrent nationalist political context. In turn, it clearly influenced the design approach and principles followed by the MAU. The MAU built 12 towns with basic urban facilities before settling people, as recommended by the Mahaweli reports. Nevertheless, mixed results for these unprecedented MAU efforts were identified in the field observations. A unique identity for the towns was achieved by the vernacular type buildings. However, the characteristic bypass concept in the layout of these towns impacted upon their development both positively and negatively. Today the MAU towns are in a state of relative disuse. Out-of-scale and unproductive use of traditional elements suggests that the vernacular language of design is not valued. A return to 'modern' architectural style is most prominent in the design of newer buildings constructed after the implementation of the original MAU designs; informal structures are based on traditional linear townships; public squares and spaces are empty. Towns lack vitality, lively atmosphere and modern spirit.

The MAU advocated design principles that clearly aimed to be suitable, culturally and climatologically, to the specific environment for which these new-towns were designed. This research has arrived, nevertheless, at the conclusion that the emphasis on a design language rooted in vernacular building typologies and 'present' town concept, which insisted on sustaining traditionalism, was evidently not grounded on specific knowledge of the actual users of the towns. In particular, the MAU designs appear to have denied the 'modern' point of view of the re-settlers and their progressive aspirations, emphasised in the earlier Mahaweli reports. Moreover, there are no clear indications that local leadership channels were used to promote self-management, new thinking and innovations. It is also concluded that the sociological expertise – which had been rigorously stressed by the Mahaweli reports – might have been vitally useful for an architectural initiative of this scale, which built 12 new towns in 6 years, in a dynamic mega project which was associated with large scale relocation. This expertise, which was outside the professional ambit of the MAU, should have been provided by the MDP from the initial stages of the project, as a part of the design brief that was provided to the MAU. The evidence suggests that the lack of these mechanisms contributed to the present state of the towns. As a result, they are not points of modernism and growth, which was the primary purpose

of the towns in the rural agricultural settlements; failing to serve, therefore, as a locus to promote economic and social development. It is acknowledged, however, that external factors and systemic faults such as, lack of economic development, low population growth, poor transport and poor maintenance, and the long-term ethnic conflict may also have had a significant impact on the present state of the Mahaweli towns.

In the present context, world-wide, in which displacements and resettlements of increasing numbers of people occur, the planners and designers who seek to make a difference should be concerned about ensuring that the re-settlers have actually upgraded their lives. This remarkable architectural initiative of the MAU, as Perera claims, “will continue to influence future planning, design and space making activities”.¹ In retrospective, this study about the Mahaweli towns reemphasizes the importance of sociological understanding grounded on the people themselves, in designing settlements. What is important now, the researcher believes, is the learning that stems from a ‘grass roots’ point of view, as emphasized by Perera himself: “it is these bottom-up interventions that eventually accumulate to cause transformations in larger structures and processes”.²

Further Research

This research has raised more questions than answers. In this final section the researcher will briefly introduce the areas that need to be studied further for better informed future design efforts.

Perera claims that “successful transmission of an idea depends on its being understood by ‘recipients’, who do so through interpreting and modifying it within their local contexts”.³ This suggests, despite the observations made of the possible incompatibility, that the MAU towns would have potential to be integrated to the local conditions. It has not been possible to explore the reactions (acceptance, rejection, modifications, adaptation or change) of the re-settlers to the Mahaweli towns, in this necessarily small-scale initial study. But this is a question worthy of further research. On one hand, it asks what was the re-settlers’ view of the Mahaweli towns? On the other hand, it raises questions about the suitability of alien theories such as the CPT to model the settlements, particularly where some of the locations for the townships are argued

¹ Perera, “when Planning Ideas Land”, 169.

² Perera, “when Planning Ideas Land”, 169.

³ Perera, “when Planning Ideas Land”, 149.

not to be the best. Moreover, to what extent could the 'Western' Consultants who prepared the Mahaweli reports, accurately represent the aspirations and needs of local community; and how compatible were the recommendations for the local conditions? These questions would open up avenues to look at the resettlement in a different light.

These would also prompt necessary further discussion about appropriate strategies to address the sociological concerns highlighted in the Mahaweli reports, and their recommendations to employ leadership in diffusing innovation and new thinking, and other concepts associated with SIAs such as community participation and acceptance. How valid are these at the ground level? What are the other channels that would help re-settlers to integrate into the new environment? What is the mechanism to ensure the integration with minimal disruption to their lives? How can local knowledge and experience be appreciated in decision making? These are only a few of the questions that need consideration in this area.

The Mahaweli reports recommended a 'flexible plan' for the towns. As Schure's FAO report states, the arrangements of the settlements, at the early stages, should accommodate for the future changes, developments and improvements.⁴ Thus the designs should not be rigid. If the MAU has provided the 'frameworks' for possible towns, the question remains: how can these be 're-appropriated' by the people they were designed for as truly vital settlements?

In an age where mass resettlement is becoming an endemic reality, the most fundamental questions may be, simply: what is the 'good town' in the eyes of the re-settler; how to design that 'good town'; and how to ensure that 'good town' is delivered?

⁴ Shure's Report, 1.

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APPENDICES

APPENDIX I: INTERVIEW WITH DR. NIHAL PERERA

INTERVIEW QUESTIONS FOR DR. NIHAL PERERA

INTERVIEW CONSENT BY DR. NIHAL PERERA

UNIVERSITY OF ADELAIDE HREC APPROVAL

APPENDIX II: SOME FACTS AND FIGURES ABOUT MEGA PROJECTS

THE WORLD'S 20 HIGHEST DAMS

20 DAMS WITH LARGEST CAPACITY RESERVOIRS

COUNTRIES WITH THE MOST - LARGEST AND MAJOR - DAMS

APPENDIX III: WORLD BANK INVOLUNTARY RESETTLEMENT POLICIES

OPERATIONAL MANUAL- OP 4.12

OPERATIONAL MANUAL- BP 4.12

INTERVIEW QUESTIONS FOR DR. NIHAL PERERA

1. Role in the foundation of the MAU

- What were the circumstances that led to your role in the foundation of the MAU?
- What was your prior professional experience?
- What was the brief provided to the MAU?
- How autonomous was the MAU to undertake the brief under the umbrella of the Accelerated Mahaweli Programme?
- Who was on the MAU team?
- In what way did the international collaboration at MAU shape the approach to the brief/project?

2. MDP settlements designed/built prior to the foundation of MAU

- How did the MAU team respond to the prior designs prepared by MDP?
- Was the team aware of recommendations for new settlement design such as the TAMS report? And, if so, how did this shape the approach to the project?
- What townships did MAU design?
- Were there any township designs that they amended and modified significantly that were designed prior to the MAU projects?

3. Approach to the design process

- What were the models/principles that informed the designs?
- How were traditional precedents incorporated in the design process?
- Did other rural development programs such as 'Gam Udawa' serve as precedents?
- Did MAU have a choice in the selection of the location for the townships?
If so, what was the basis for this selection?
- In what way was the natural environment taken into account in the design process?
- How was the design process "people-centred"?
- Did the MAU have direct involvement with the prospective inhabitants?
If so, how? E.g. Modes of consultation? Modes of communication?

- What inspired the idea of the adaptable plan?
- How did this differ from prior MDP designs/approaches?
- What other key ideas informed the design process?

- Did they design the landscape? How detailed were the designs?
- How did they select plants? Did they select local plants? Did they plant trees?

4. Construction

- Did the architects inspect the designs during construction?

5. Retrospective evaluation of the success of the new towns

- Were there opportunities to evaluate the success of the designs post-occupancy?
- In your view, what were the factors that contributed to the successful Mahaweli towns?
- What was the impact of your experience at MAU on your subsequent professional career?

Human Research Ethics Committee (HREC)

CONSENT FORM

1. I have read the attached Information Sheet and agree to take part in the following research project:

Title:	Evaluating New Towns in the Context of Mega Projects: A Case Study of the Mahaweli Architectural Unit (MAU), Sri Lanka
Ethics Approval Number:	H-2015-055

2. I have had the project, so far as it affects me, fully explained to my satisfaction by the research worker. My consent is given freely.
3. Although I understand the purpose of the research project it has also been explained that involvement may not be of any benefit to me.
4. I have been informed that information gained during the study may be published, in which case I will be identified and my personal results will be divulged.
5. I understand that I am free to withdraw from the project at any time.
6. I agree to the interview being audio recorded. Yes No
7. I am aware that I should keep a copy of this Consent Form, when completed, and the attached Information Sheet.

Participant to complete:Name: NITHAL PERERA Signature:Date: Feb 25, 2016

30 March 2015

Dr K Bartsch
School of Architecture

Dear Dr Bartsch

ETHICS APPROVAL No: H-2015-055

PROJECT TITLE: Evaluating new towns in the context of mega projects: A case study of the Mahaweli Architectural Unit (MAU), Sri Lanka

The ethics application for the above project has been reviewed by the Low Risk Human Research Ethics Review Group (Faculty of Arts and Faculty of the Professions) and is deemed to meet the requirements of the *National Statement on Ethical Conduct in Human Research (2007)* involving no more than low risk for research participants. You are authorised to commence your research on **30 Mar 2015**.

Ethics approval is granted for three years and is subject to satisfactory annual reporting. The form titled *Annual Report on Project Status* is to be used when reporting annual progress and project completion and can be downloaded at <http://www.adelaide.edu.au/ethics/human/guidelines/reporting>. Prior to expiry, ethics approval may be extended for a further period.

Participants in the study are to be given a copy of the Information Sheet and the signed Consent Form to retain. It is also a condition of approval that you **immediately report** anything which might warrant review of ethical approval including:

- serious or unexpected adverse effects on participants,
- previously unforeseen events which might affect continued ethical acceptability of the project,
- proposed changes to the protocol; and
- the project is discontinued before the expected date of completion.

Please refer to the following ethics approval document for any additional conditions that may apply to this project.

Yours sincerely

PROFESSOR RACHEL A. ANKENY
Co-Convenor
Low Risk Human Research Ethics Review Group
(Faculty of Arts and Faculty of the Professions)

PROFESSOR PAUL BABIE
Co-Convenor
Low Risk Human Research Ethics Review Group
(Faculty of Arts and Faculty of the Professions)



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CRICOS Provider Number 00123M

Applicant: Dr K Bartsch
School: School of Architecture
Project Title: Evaluating new towns in the context of mega projects: A case study of the Mahaweli Architectural Unit (MAU), Sri Lanka

**The University of Adelaide Human Research Ethics Committee
Low Risk Human Research Ethics Review Group (Faculty of Arts and Faculty of the Professions)**

ETHICS APPROVAL No: H-2015-055 **App. No.:** 0000020221

APPROVED for the period: 30 Mar 2015 to 31 Mar 2018

Thank you for your response dated 27.03.2015 to the matters raised.

This study is to be conducted by Mrs Nirodha Dissanayake, Masters student.

PROFESSOR RACHEL A. ANKENY
Co-Convenor
Low Risk Human Research Ethics Review Group
(Faculty of Arts and Faculty of the Professions)

PROFESSOR PAUL BABIE
Co-Convenor
Low Risk Human Research Ethics Review Group
(Faculty of Arts and Faculty of the Professions)

SOME FACTS ABOUT MEGA DAM PROJECTS

THE WORLD'S 20 HIGHEST DAMS ¹

Dam Name	Height(m)	Purposes	Country
ROGUN (C)	335	HI	Tajikistan
BAKHTIYARI (C)	315	HC	Iran
JINPING	305	HC	China
NUREK	300	IH	Tajikistan
XIAOWAN	292	HCIN	China
GRANDE DIXENCE	285	H	Switzerland
XILUODU (C)	278	HCN	China
INGURI	272	HI	Georgia
MANUEL MORENO TORRES (CHICOASÉN)	262	H	Mexico
VAJONT	262	H	Italy
KHERSAN2	260	H	Iran
TEHRI (THDC)	260	IH	India
BADOOSH	256	IHC	Iraq
MAUVOISIN	250	H	Switzerland
KALAT E DEHDASHT	250	IH	Iran
LAXIWA	250		China
DERINER	249	H	Turkey
GILGEL GIBE III (C)	243	H	Ethiopia
ALBERTO LLERAS C.	243	H	Colombia
MICA	243	H	Canada

¹ "The World's Highest Dams", ICOLD, accessed May, 12, 2015, http://www.icold-cigb.org/GB/World_register/general_synthesis.asp?IDA=207.

20 DAMS WITH LARGEST CAPACITY RESERVOIRS ²

Dam Name	Volume (10 ³ m ³)	Country
TEHRI (THDC)	260 000 000	India
KARIBA	180 600 000	Zimbabwe/Zambia
BRATSK	169 000 000	Russia (Russian Fed.)
HIGH ASWAN DAM	162 000 000	Egypt
AKOSOMBO	150 000 000	Ghana
DANIEL JOHNSON (MANIC 5)	141 851 350	Canada
GURI	135 000 000	Venezuela
BENNETT W.A.C.	74 300 000	Canada
KRASNOYARSK	73 300 000	Russia (Russian Fed.)
ZEYA	68 400 000	Russia (Russian Fed.)
HIDASE (C)	63 000 000	Ethiopia
ROBERT-BOURASSA	61 715 000	Canada
LA GRANDE-3	60 020 000	Canada
UST-ILIM	59 300 000	Russia (Russian Fed.)
BOGUCHANY	58 200 000	Russia (Russian Fed.)
KUIBYSHEV	58 000 000	Russia (Russian Fed.)
SERRA DA MESA	54 400 000	Brazil
BRISAY	53 790 000	Canada
CAHORA BASSA	52 000 000	Mozambique
BUKHTARMA	49 800 000	Kazakhstan

² "Dams with Largest Capacity", *ICOLD*, accessed May, 12, 2015, http://www.icold-cigb.org/GB/World_register/general_synthesis.asp?IDA=211.

COUNTRIES WITH THE MOST - LARGEST AND MAJOR – DAMS ³

	Large Dams (1986 data)		Major Dams (1994 data)	
1	China	18,820	USA	50
2	USA	5,459	Russia	34
3	Russia	3,000	Canada	26
4	Japan	2,228	Brazil	19
5	India	1,137	Japan	19
6	Spain	737	Turkey	11
7	South Korea	690	China	10
8	Canada	608	Germany	9
9	Great Britain	535	Italy	9
10	Brazil	516	Switzerland	8
11	Mexico	503	Argentina	7
12	France	468	India	5
13	South Africa	452	France	5
14	Italy	440	Mexico	4
15	Australia	409	Austria	4

³ Patrick. McCully, *Silenced Rivers: the Ecology and Politics of Large Dams* (UK: Zed Press, 1996), 3.

OP 4.12 - Involuntary Resettlement

These policies were prepared for use by World Bank staff and are not necessarily a complete treatment of the subject.

OP 4.12
December, 2001

Note: OP/BP 4.12, *Involuntary Resettlement*, were revised on April 2013 to take into account the recommendations in “*Investment Lending Reform: Modernizing and Consolidating Operational Policies and Procedures*” (R2012-0204 [IDA/R2012-0248]), which were approved by the Executive Directors on October 25, 2012. As a result of these recommendations: (a) OP/BP 10.00, *Investment Project Financing*, have been revised, among other things, to incorporate OP/BP 13.05, *Supervision* and OP/BP 13.55, *Implementation Completion Reporting*, (which have consequently been retired); and (b) OP/BP 8.60, *Development Policy Lending*, and OP 9.00, *Program-for-Results Financing*, have also been revised. OP/BP 4.12 have consequently been updated to reflect these changes, to clarify the extent of applicability of OP/BP 4.12 to Development Policy Lending and Program-for Results-Financing, and to reflect the updated title of the Bank’s policy on access to information.

Questions on this OP/BP may be addressed to the Safeguard Policies Helpdesk in OPCS (safeguards@worldbank.org).

Revised April 2013

1. Bank¹ experience indicates that involuntary resettlement under development projects, if unmitigated, often gives rise to severe economic, social, and environmental risks: production systems are dismantled; people face impoverishment when their productive assets or income sources are lost; people are relocated to environments where their productive skills may be less applicable and the competition for resources greater; community institutions and social networks are weakened; kin groups are dispersed; and cultural identity, traditional authority, and the potential for mutual help are diminished or lost. This policy includes safeguards to address and mitigate these impoverishment risks.

Policy Objectives

2. Involuntary resettlement may cause severe long-term hardship, impoverishment, and environmental damage unless appropriate measures are carefully planned and carried out. For these reasons, the overall objectives of the Bank’s policy on involuntary resettlement are the following:

- (a) Involuntary resettlement should be avoided where feasible, or minimized, exploring all viable alternative project designs.²
- (b) Where it is not feasible to avoid resettlement, resettlement activities should be conceived and executed as sustainable development programs, providing sufficient investment resources to enable the persons displaced by the project to share in project benefits. Displaced persons³ should be meaningfully consulted and should have opportunities to participate in planning and implementing resettlement programs.
- (c) Displaced persons should be assisted in their efforts to improve their livelihoods and standards of living or at least to restore them, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.⁴

Impacts Covered

3. This policy covers direct economic and social impacts⁵ that both result from Bank-assisted investment projects,⁶ and are caused by

- (a) the involuntary⁷ taking of land⁸ resulting in
 - (i) relocation or loss of shelter;
 - (ii) lost of assets or access to assets; or
 - (iii) loss of income sources or means of livelihood, whether or not the affected persons must move to another location; or

(b) the involuntary restriction of access⁹ to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons.

4. This policy applies to all components of the project that result in involuntary resettlement, regardless of the source of financing. It also applies to other activities resulting in involuntary resettlement, that in the judgment of the Bank, are

- (a) directly and significantly related to the Bank-assisted project,
- (b) necessary to achieve its objectives as set forth in the project documents; and
- (c) carried out, or planned to be carried out, contemporaneously with the project.

5. Requests for guidance on the application and scope of this policy should be addressed to the Resettlement Committee (see [BP 4.12, para. 7](#)).¹⁰

Required Measures

6. To address the impacts covered under para. 3 (a) of this policy, the borrower prepares a resettlement plan or a resettlement policy framework (see paras. 25-30) that covers the following:

- (a) The resettlement plan or resettlement policy framework includes measures to ensure that the displaced persons are
 - (i) informed about their options and rights pertaining to resettlement;
 - (ii) consulted on, offered choices among, and provided with technically and economically feasible resettlement alternatives; and
 - (iii) provided prompt and effective compensation at full replacement cost¹¹ for losses of assets¹² attributable directly to the project.
- (b) If the impacts include physical relocation, the resettlement plan or resettlement policy framework includes measures to ensure that the displaced persons are
 - (i) provided assistance (such as moving allowances) during relocation; and
 - (ii) provided with residential housing, or housing sites, or, as required, agricultural sites for which a combination of productive potential, locational advantages, and other factors is at least equivalent to the advantages of the old site.¹³
- (c) Where necessary to achieve the objectives of the policy, the resettlement plan or resettlement policy framework also include measures to ensure that displaced persons are
 - (i) offered support after displacement, for a transition period, based on a reasonable estimate of the time likely to be needed to restore their livelihood and standards of living,¹⁴ and
 - (ii) provided with development assistance in addition to compensation measures described in paragraph 6(a);
 - (iii) such as land preparation, credit facilities, training, or job opportunities.

7. In projects involving involuntary restriction of access to legally designated parks and protected areas (see para. 3(b)), the nature of restrictions, as well as the type of measures necessary to mitigate adverse impacts, is determined with the participation of the displaced persons during the design and implementation of the project. In such cases, the borrower prepares a process framework acceptable to the Bank, describing the participatory process by which

- (a) specific components of the project will be prepared and implemented;
- (b) the criteria for eligibility of displaced persons will be determined;
- (c) measures to assist the displaced persons in their efforts to improve their livelihoods, or at least to restore them, in real terms, while maintaining the sustainability of the park or protected area, will be identified; and

(d) potential conflicts involving displaced persons will be resolved.

The process framework also includes a description of the arrangements for implementing and monitoring the process.

8. To achieve the objectives of this policy, particular attention is paid to the needs of vulnerable groups among those displaced, especially those below the poverty line, the landless, the elderly, women and children, indigenous peoples,¹⁵ ethnic minorities, or other displaced persons who may not be protected through national land compensation legislation.

9. Bank experience has shown that resettlement of indigenous peoples with traditional land-based modes of production is particularly complex and may have significant adverse impacts on their identity and cultural survival. For this reason, the Bank satisfies itself that the borrower has explored all viable alternative project designs to avoid physical displacement of these groups. When it is not feasible to avoid such displacement, preference is given to land-based resettlement strategies for these groups (see para. 11) that are compatible with their cultural preferences and are prepared in consultation with them (see [Annex A](#), para. 11).

10. The implementation of resettlement activities is linked to the implementation of the investment component of the project to ensure that displacement or restriction of access does not occur before necessary measures for resettlement are in place. For impacts covered in para. 3(a) of this policy, these measures include provision of compensation and of other assistance required for relocation, prior to displacement, and preparation and provision of resettlement sites with adequate facilities, where required. In particular, taking of land and related assets may take place only after compensation has been paid and, where applicable, resettlement sites and moving allowances have been provided to the displaced persons. For impacts covered in para. 3(b) of this policy, the measures to assist the displaced persons are implemented in accordance with the plan of action as part of the project (see para. 30).¹⁶

11. Preference should be given to land-based resettlement strategies for displaced persons whose livelihoods are land-based. These strategies may include resettlement on public land (see footnote 1 above), or on private land acquired or purchased for resettlement. Whenever replacement land is offered, resettlers are provided with land for which a combination of productive potential, locational advantages, and other factors is at least equivalent to the advantages of the land taken. If land is not the preferred option of the displaced persons, the provision of land would adversely affect the sustainability of a park or protected area,¹⁷ or sufficient land is not available at a reasonable price, non-land-based options built around opportunities for employment or self-employment should be provided in addition to cash compensation for land and other assets lost. The lack of adequate land must be demonstrated and documented to the satisfaction of the Bank.

12. Payment of cash compensation for lost assets may be appropriate where (a) livelihoods are land-based but the land taken for the project is a small fraction¹⁸ of the affected asset and the residual is economically viable; (b) active markets for land, housing, and labor exist, displaced persons use such markets, and there is sufficient supply of land and housing; or (c) livelihoods are not land-based. Cash compensation levels should be sufficient to replace the lost land and other assets at full replacement cost in local markets.

13. For impacts covered under para. 3(a) of this policy, the Bank also requires the following:

(a) Displaced persons and their communities, and any host communities receiving them, are provided timely and relevant information, consulted on resettlement options, and offered opportunities to participate in planning, implementing, and monitoring resettlement. Appropriate and accessible grievance mechanisms are established for these groups.

(b) In new resettlement sites or host communities, infrastructure and public services are provided as necessary to improve, restore, or maintain accessibility and levels of service for the displaced persons and host communities. Alternative or similar resources are provided to compensate for the loss of access to community resources (such as fishing areas, grazing areas, fuel, or fodder).

(c) Patterns of community organization appropriate to the new circumstances are based on choices made by the displaced persons. To the extent possible, the existing social and cultural institutions of resettlers and any host communities are preserved and resettlers' preferences with respect to relocating in preexisting communities and groups are honored.

Eligibility for Benefits¹⁹

14. Upon identification of the need for involuntary resettlement in a project, the borrower carries out a census to

identify the persons who will be affected by the project (see the [Annex A](#), para. 6(a)), to determine who will be eligible for assistance, and to discourage inflow of people ineligible for assistance. The borrower also develops a procedure, satisfactory to the Bank, for establishing the criteria by which displaced persons will be deemed eligible for compensation and other resettlement assistance. The procedure includes provisions for meaningful consultations with affected persons and communities, local authorities, and, as appropriate, nongovernmental organizations (NGOs), and it specifies grievance mechanisms.

15. *Criteria for Eligibility.* Displaced persons may be classified in one of the following three groups:

- (a) those who have formal legal rights to land (including customary and traditional rights recognized under the laws of the country);
- (b) those who do not have formal legal rights to land at the time the census begins but have a claim to such land or assets--provided that such claims are recognized under the laws of the country or become recognized through a process identified in the resettlement plan (see [Annex A](#), para. 7(f)); and²⁰
- (c) those who have no recognizable legal right or claim to the land they are occupying.

16. Persons covered under para. 15(a) and (b) are provided compensation for the land they lose, and other assistance in accordance with para. 6. Persons covered under para. 15(c) are provided resettlement assistance²¹ in lieu of compensation for the land they occupy, and other assistance, as necessary, to achieve the objectives set out in this policy, if they occupy the project area prior to a cut-off date established by the borrower and acceptable to the Bank.²² Persons who encroach on the area after the cut-off date are not entitled to compensation or any other form of resettlement assistance. All persons included in para. 15(a), (b), or (c) are provided compensation for loss of assets other than land.

Resettlement Planning, Implementation, and Monitoring

17. To achieve the objectives of this policy, different planning instruments are used, depending on the type of project:

- (a) a resettlement plan or abbreviated resettlement plan is required for all operations that entail involuntary resettlement unless otherwise specified (see para. 25 and [Annex A](#));
- (b) a resettlement policy framework is required for operations referred to in paras. 26-30 that may entail involuntary resettlement, unless otherwise specified (see [Annex A](#); and
- (c) a process framework is prepared for projects involving restriction of access in accordance with para. 3(b) (see para. 31).

18. The borrower is responsible for preparing, implementing, and monitoring a resettlement plan, a resettlement policy framework, or a process framework (the "resettlement instruments"), as appropriate, that conform to this policy. The resettlement instrument presents a strategy for achieving the objectives of the policy and covers all aspects of the proposed resettlement. Borrower commitment to, and capacity for, undertaking successful resettlement is a key determinant of Bank involvement in a project.

19. Resettlement planning includes early screening, scoping of key issues, the choice of resettlement instrument, and the information required to prepare the resettlement component or subcomponent. The scope and level of detail of the resettlement instruments vary with the magnitude and complexity of resettlement. In preparing the resettlement component, the borrower draws on appropriate social, technical, and legal expertise and on relevant community-based organizations and NGOs.²³ The borrower informs potentially displaced persons at an early stage about the resettlement aspects of the project and takes their views into account in project design.

20. The full costs of resettlement activities necessary to achieve the objectives of the project are included in the total costs of the project. The costs of resettlement, like the costs of other project activities, are treated as a charge against the economic benefits of the project; and any net benefits to resettlers (as compared to the "without-project" circumstances) are added to the benefits stream of the project. Resettlement components or free-standing resettlement projects need not be economically viable on their own, but they should be cost-effective.

21. The borrower ensures that the Project Implementation Plan is fully consistent with the resettlement instrument.

22. As a condition of appraisal of projects involving resettlement, the borrower provides the Bank with the relevant

draft resettlement instrument which conforms to this policy, and makes it available at a place accessible to displaced persons and local NGOs, in a form, manner, and language that are understandable to them. Once the Bank accepts this instrument as providing an adequate basis for project appraisal, the Bank makes it available to the public through its InfoShop. After the Bank has approved the final resettlement instrument, the Bank and the borrower disclose it again in the same manner.²⁴

23. The borrower's obligations to carry out the resettlement instrument and to keep the Bank informed of implementation progress are provided for in the legal agreements for the project.

24. The borrower is responsible for adequate monitoring and evaluation of the activities set forth in the resettlement instrument. The Bank regularly supervises resettlement implementation to determine compliance with the resettlement instrument. Upon completion of the project, the borrower undertakes an assessment to determine whether the objectives of the resettlement instrument have been achieved. The assessment takes into account the baseline conditions and the results of resettlement monitoring. If the assessment reveals that these objectives may not be realized, the borrower should propose follow-up measures that may serve as the basis for continued Bank supervision, as the Bank deems appropriate (see also [BP 4.12](#), para. 16).

Resettlement Instruments

Resettlement Plan

25. A draft resettlement plan that conforms to this policy is a condition of appraisal (see [Annex A](#), para. 2-21) for projects referred to in para. 17(a) above.²⁵ However, where impacts on the entire displaced population are minor,²⁶ or fewer than 200 people are displaced, an abbreviated resettlement plan may be agreed with the borrower (see [Annex A](#), para. 22). The information disclosure procedures set forth in para. 22 apply.

Resettlement Policy Framework

26. For sector investment operations that may involve involuntary resettlement, the Bank requires that the project implementing agency screen subprojects to be financed by the Bank to ensure their consistency with this OP. For these operations, the borrower submits, prior to appraisal, a resettlement policy framework that conforms to this policy (see [Annex A](#), paras. 23-25). The framework also estimates, to the extent feasible, the total population to be displaced and the overall resettlement costs.

27. For financial intermediary operations that may involve involuntary resettlement, the Bank requires that the financial intermediary (FI) screen subprojects to be financed by the Bank to ensure their consistency with this OP. For these operations, the Bank requires that before appraisal the borrower or the FI submit to the Bank a resettlement policy framework conforming to this policy (see [Annex A](#), paras. 23-25). In addition, the framework includes an assessment of the institutional capacity and procedures of each of the FIs that will be responsible for subproject financing. When, in the assessment of the Bank, no resettlement is envisaged in the subprojects to be financed by the FI, a resettlement policy framework is not required. Instead, the legal agreements specify the obligation of the FIs to obtain from the potential subborrowers a resettlement plan consistent with this policy if a subproject gives rise to resettlement. For all subprojects involving resettlement, the resettlement plan is provided to the Bank for approval before the subproject is accepted for Bank financing.

28. For other Bank-assisted project with multiple subprojects²⁷ that may involve involuntary resettlement, the Bank requires that a draft resettlement plan conforming to this policy be submitted to the Bank before appraisal of the project unless, because of the nature and design of the project or of a specific subproject or subprojects (a) the zone of impact of subprojects cannot be determined, or (b) the zone of impact is known but precise sitting alignments cannot be determined. In such cases, the borrower submits a resettlement policy framework consistent with this policy prior to appraisal (see [Annex A](#), paras. 23-25). For other subprojects that do not fall within the above criteria, a resettlement plan conforming to this policy is required prior to appraisal.

29. For each subproject included in a project described in para. 26, 27, or 28 that may involve resettlement, the Bank requires that a satisfactory resettlement plan or an abbreviated resettlement plan that is consistent with the provisions of the policy framework be submitted to the Bank for approval before the subproject is accepted for Bank financing.

30. For projects described in paras. 26-28 above, the Bank may agree, in writing, that subproject resettlement plans may be approved by the project implementing agency or a responsible government agency or financial intermediary without prior Bank review, if that agency has demonstrated adequate institutional capacity to review resettlement plans and ensure their consistency with this policy. Any such delegation, and appropriate remedies for the entity's approval of resettlement plans found not to be in compliance with Bank policy, are provided for in the

legal agreements for the project. In all such cases, implementation of the resettlement plans is subject to ex post review by the Bank.

Process Framework

31. For projects involving restriction of access in accordance with para. 3(b) above, the borrower provides the Bank with a draft process framework that conforms to the relevant provisions of this policy as a condition of appraisal. In addition, during project implementation and before to enforcing of the restriction, the borrower prepares a plan of action, acceptable to the Bank, describing the specific measures to be undertaken to assist the displaced persons and the arrangements for their implementation. The plan of action could take the form of a natural resources management plan prepared for the project.

Assistance to the Borrower

32. In furtherance of the objectives of this policy, the Bank may at a borrower's request support the borrower and other concerned entities by providing

- (a) assistance to assess and strengthen resettlement policies, strategies, legal frameworks, and specific plans at a country, regional, or sectoral level;
- (b) financing of technical assistance to strengthen the capacities of agencies responsible for resettlement, or of affected people to participate more effectively in resettlement operations;
- (c) financing of technical assistance for developing resettlement policies, strategies, and specific plans, and for implementation, monitoring, and evaluation of resettlement activities; and
- (d) financing of the investment costs of resettlement.

33. The Bank may finance either a component of the main investment causing displacement and requiring resettlement, or a free-standing resettlement project with appropriate cross-conditionalities, processed and implemented in parallel with the investment that causes the displacement. The Bank may finance resettlement even though it is not financing the main investment that makes resettlement necessary.

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1. "Bank" includes IBRD and IDA; "loans" includes IDA credits and IDA grants, guarantees, Project Preparation Facility (PPF) advances and grants; and "projects" includes projects under (a) PPFs advances and Institutional Development Fund (IDF) grants, if they include investment activities; (b) grants under the Global Environment Facility and Montreal Protocol, for which the Bank is the implementing/executing agency; and (c) grants or loans provided by other donors that are administered by the Bank. The term "project" does not include programs supported by Development Policy Lending (for which the environmental provisions are set out in [OP/BP 8.60, Development Policy Lending](#)), or by Program-for-Results Financing (for which environmental provisions are set out in [OP/BP 9.00, Program-for-Results Financing](#)). "Borrower" also includes, wherever the context requires, the guarantor or the project implementing agency.
 2. In devising approaches to resettlement in Bank-assisted projects, other Bank policies should be taken into account, as relevant. These policies include [OP 4.01, Environmental Assessment](#), [OP 4.04, Natural Habitats](#), [OP 4.10, Indigenous Peoples](#), and [OP 4.11, Physical Cultural Resources](#).
 3. The term "displaced persons" refers to persons who are affected in any of the ways described in para. 3 of this OP.
 4. Displaced persons under para. 3(b) should be assisted in their efforts to improve or restore their livelihoods in a manner that maintains the sustainability of the parks and protected areas.
 5. Where there are adverse indirect social or economic impacts, it is good practice for the borrower to undertake a social assessment and implement measures to minimize and mitigate adverse economic and social impacts, particularly upon poor and vulnerable groups. Other environmental, social, and economic impacts that do not result from land taking may be identified and addressed through environmental assessments and other project reports and instruments.
 6. This policy does not apply to restrictions of access to natural resources under community-based projects, i.e. where the community using the resources decides to restrict access to these resources, provided that an assessment satisfactory to the Bank establishes that the community decision-making process is adequate, and that it provides for identification of appropriate measures to mitigate adverse impacts, if any, on the vulnerable members of the community. This policy also does not cover refugees from natural disasters, war, or civil strife (see [OP 8.00, Rapid Response to Crises and Emergencies](#)).
 7. For the purposes of this policy, "involuntary" means actions that may be taken without the displaced person's informed consent or power of choice.
 8. "Land" includes anything growing on or permanently affixed to land, such as buildings and crops. This policy does not apply to regulations of natural resources on a national or regional level to promote their sustainability, such as watershed management, groundwater management, fisheries management, etc. The policy also does not apply to disputes between private parties in land titling projects, although it is good practice for the borrower to undertake a social assessment and implement measures to minimize and mitigate adverse social impacts, especially those affecting poor and vulnerable groups.
 9. For the purposes of this policy, involuntary restriction of access covers restrictions on the use of resources imposed on people living outside the park or protected area, or on those who continue living inside the park or protected area during and after project implementation. In cases where new parks and protected areas are created as part of the project, persons who lose shelter, land, or other assets are covered under para. 3(a). Persons who lose shelter in existing parks and protected areas are also covered

- under para. 3(a).
10. The *Involuntary Resettlement Sourcebook* provides good practice guidance to staff on the policy.
 11. "Replacement cost" is the method of valuation of assets that helps determine the amount sufficient to replace lost assets and cover transaction costs. In applying this method of valuation, depreciation of structures and assets should not be taken into account (for a detailed definition of replacement cost, see [Annex A](#), footnote 1). For losses that cannot easily be valued or compensated for in monetary terms (e.g., access to public services, customers, and suppliers; or to fishing, grazing, or forest areas), attempts are made to establish access to equivalent and culturally acceptable resources and earning opportunities. Where domestic law does not meet the standard of compensation at full replacement cost, compensation under domestic law is supplemented by additional measures necessary to meet the replacement cost standard. Such additional assistance is distinct from resettlement assistance to be provided under other clauses of para. 6.
 12. If the residual of the asset being taken is not economically viable, compensation and other resettlement assistance are provided as if the entire asset had been taken.
 13. The alternative assets are provided with adequate tenure arrangements. The cost of alternative residential housing, housing sites, business premises, and agricultural sites to be provided can be set off against all or part of the compensation payable for the corresponding asset lost.
 14. Such support could take the form of short-term jobs, subsistence support, salary maintenance or similar arrangements.
 15. See [OP 4.10](#), *Indigenous Peoples*.
 16. Where the borrower has offered to pay compensation to an affected person in accordance with an approved resettlement plan, but the offer has been rejected, the taking of land and related assets may only proceed if the borrower has deposited funds equal to the offered amount plus 10 percent in a secure form of escrow or other interest-bearing deposit acceptable to the Bank, and has provided a means satisfactory to the Bank for resolving the dispute concerning said offer of compensation in a timely and equitable manner.
 17. See [OP 4.04](#), *Natural Habitats*.
 18. As a general principle, this applies if the land taken constitutes less than 20% of the total productive area.
 19. Paras. 13-15 do not apply to impacts covered under para. 3(b) of this policy. The eligibility criteria for displaced persons under 3 (b) are covered under the process framework (see paras. 7 and 30).
 20. Such claims could be derived from adverse possession, from continued possession of public lands without government action for eviction (that is, with the implicit leave of the government), or from customary and traditional law and usage, and so on.
 21. Resettlement assistance may consist of land, other assets, cash, employment, and so on, as appropriate.
 22. Normally, this cut-off date is the date the census begins. The cut-off date could also be the date the project area was delineated, prior to the census, provided that there has been an effective public dissemination of information on the area delineated, and systematic and continuous dissemination subsequent to the delineation to prevent further population influx.
 23. For projects that are highly risky or contentious, or that involve significant and complex resettlement activities, the borrower should normally engage an advisory panel of independent, internationally recognized resettlement specialists to advise on all aspects of the project relevant to the resettlement activities. The size, role, and frequency of meeting depend on the complexity of the resettlement. If independent technical advisory panels are established under [OP 4.01](#), *Environmental Assessment*, the resettlement panel may form part of the environmental panel of experts.
 24. See [The World Bank Policy on Access to Information, para. 34](#) (Washington, D.C.: World Bank, 2002).
 25. An exception to this requirement may be made in highly unusual circumstances (such as emergency operations) with the approval of Bank Management (see [BP 4.12](#), para. 8). In such cases, the Management's approval stipulates a timetable and budget for developing the resettlement plan.
 26. Impacts are considered "minor" if the affected people are not physically displaced and less than 10 percent of their productive assets are lost.
 27. For the purpose of this paragraph, the term "subprojects" includes components and subcomponents.

[Annex A - Involuntary Resettlement Instruments](#)

BP 4.12 - Involuntary Resettlement

These procedures were prepared for use by World Bank staff and are not necessarily a complete treatment of the subject.

BP 4.12
December, 2001

Note: [OP/BP 4.12, Involuntary Resettlement](#), were revised on April 2013 to take into account the recommendations in “*Investment Lending Reform: Modernizing and Consolidating Operational Policies and Procedures*” (R2012-0204 [IDA/R2012-0248]), which were approved by the Executive Directors on October 25, 2012. As a result of these recommendations: (a) [OP/BP 10.00, Investment Project Financing](#), have been revised, among other things, to incorporate [OP/BP 13.05, Supervision](#) and [OP/BP 13.55, Implementation Completion Reporting](#), (which have consequently been retired); and (b) [OP/BP 8.60, Development Policy Lending](#), and [OP 9.00, Program-for-Results Financing](#), have also been revised. This OP/BP has consequently been updated to reflect these changes, to clarify the extent of applicability of this OP/BP to Development Policy Lending and Program-for Results-Financing, and to reflect the updated title of the Bank’s policy on access to information.

Questions on this OP/BP may be addressed to the Safeguard Policies Helpdesk in OPCS (safeguards@worldbank.org).

Revised April 2013

1. The planning of resettlement activities is an integral part of preparation for Bank-assisted¹ projects that cause involuntary resettlement.² During project identification, the task team (TT) identifies any potential involuntary resettlement under the project. Throughout project processing, the TT consults and seeks the advice of the regional social development unit,³ Legal Vice Presidency (LEG) and, as necessary, the Resettlement Committee (see para. 7 of this BP).
2. When a proposed project is likely to involve involuntary resettlement, the TT informs the borrower of the provisions of [OP/BP 4.12](#). The TT and borrower staff
 - a. assess the nature and magnitude of the likely displacement;
 - b. explore all viable alternative project designs to avoid, where feasible, or minimize displacement;⁴
 - c. assess the legal framework covering resettlement and the policies of the government and implementing agencies (identifying any inconsistencies between such policies and the Bank’s policy);
 - d. review past borrower and likely implementing agencies’ experience with similar operations;
 - e. discuss with the agencies responsible for resettlement the policies and institutional, legal, and consultative arrangements for resettlement, including measures to address any inconsistencies between government or implementing agency policies and Bank policy; and
 - f. discuss any technical assistance to be provided to the borrower (see [OP 4.12, para. 32](#)).
3. Based on the review of relevant resettlement issues, the TT agrees with the Regional social development unit and LEG on the type of resettlement instrument (resettlement plan, abbreviated resettlement plan, resettlement policy framework, or process framework) and the scope and the level of detail required. The TT conveys these decisions to the borrower and also discusses with the borrower the actions necessary to prepare the resettlement instrument,⁵ agrees on the timing for preparing the resettlement instrument, and monitors progress.
4. The TT summarizes in the Project Concept Note (PCN) and the Project Information Document (PID) available information on the nature and magnitude of displacement and the resettlement instrument to be used, and the TT periodically updates the PID as project planning proceeds.
5. For projects with impacts under [para. 3 \(a\) of OP 4.12](#) the TT assesses the following during project preparation:

- a. the extent to which project design alternatives and options to minimize and mitigate involuntary resettlement have been considered;
 - b. progress in preparing the resettlement plan or resettlement policy framework and its adequacy with respect to [OP 4.12](#), including the involvement of affected groups and the extent to which the views of such groups are being considered;
 - c. proposed criteria for eligibility of displaced persons for compensation and other resettlement assistance;
 - d. the feasibility of the proposed resettlement measures, including provisions for sites if needed; funding for all resettlement activities, including provision of counterpart funding on an annual basis; the legal framework; and implementation and monitoring arrangements; and
 - e. if sufficient land is not available in projects involving displaced persons whose livelihoods are land-based and for whom a land-based resettlement strategy is the preferred option, the evidence of lack of adequate land ([OP 4.12, para. 11](#)).
6. For projects with impacts under [para. 3 \(b\) of OP 4.12](#), the TT assesses the following during project preparation:
- a. the extent to which project design alternatives and options to minimize and mitigate involuntary resettlement have been considered; and
 - b. progress in preparing the process framework and its adequacy in respect to [OP 4.12](#), including the adequacy of the proposed participatory approach; criteria for eligibility of displaced persons; funding for resettlement; the legal framework; and implementation and monitoring arrangements.

7. The TT may request a meeting with the Resettlement Committee to obtain endorsement of, or guidance on, (a) the manner in which it proposes to address resettlement issues in a project, or (b) clarifications on the application and scope of this policy. The Committee, chaired by the vice president responsible for resettlement, includes the Director, Social Development Department, a representative from LEG, and two representatives from Operations, one of whom is from the sector of the project being discussed. The Committee is guided by the policy and, among other sources, the *Involuntary Resettlement Sourcebook*, which reflects good practice.

Appraisal

8. The borrower submits to the Bank a resettlement plan, a resettlement policy framework, or a process framework that conform with the requirements of [OP 4.12](#), as a condition of appraisal for projects involving involuntary resettlement (see [OP 4.12, paras. 17-31](#)). Appraisal may be authorized before the plan is completed in highly unusual circumstances (such as emergency operations) with the approval of the Managing Director in consultation with the Resettlement Committee. In such cases, the TT agrees with the borrower on a timetable for preparing and furnishing to the Bank the relevant resettlement instrument that conforms with the requirements of [OP 4.12](#).

9. Once the borrower officially transmits the draft resettlement instrument to the Bank, Bank staff—including the Regional resettlement specialists—review it, determine whether it provides an adequate basis for project appraisal, and advise the Regional sector management accordingly. The lawyer reviews the legal aspects of the draft resettlement instrument and other specific items brought to the lawyer’s attention by the TT, and provides advice to help the TT and Regional resettlement specialists determine whether those aspects provide an adequate basis for appraisal. Once approval for appraisal has been granted by the Country Director, the TT sends the draft resettlement instrument to the Bank’s InfoShop.⁶ The TT also prepares and sends the English language executive summary of the draft resettlement instrument to the Corporate Secretariat, under cover of a transmittal memorandum confirming that the executive summary and the draft resettlement instrument are subject to change during appraisal.

10. During project appraisal, the TT assesses (a) the borrower's commitment to and capacity for implementing the resettlement instrument; (b) the feasibility of the proposed measures for improvement or restoration of livelihoods and standards of living; (c) availability of adequate counterpart funds for resettlement activities; (d) significant risks, including risk of impoverishment, from inadequate implementation of the resettlement instrument; (e) consistency of the proposed resettlement instrument with the Project Implementation Plan; and (f) the adequacy of arrangements for internal, and if considered appropriate by the TT, independent monitoring and evaluation of the implementation of the resettlement instrument.⁷ The TT obtains the concurrence of the Regional social development unit to any

changes to the draft resettlement instrument during project appraisal. For changes made to the legal aspects of the draft resettlement instrument and specific items brought to LEG's attention, the lawyer will review and provide advice to the TT and Regional resettlement specialists. Appraisal is complete only when the borrower officially transmits to the Bank the final draft resettlement instrument conforming to Bank policy ([OP 4.12](#)).

11. In the Project Appraisal Document (PAD), the TT describes the resettlement issues, proposed resettlement instrument and measures, and the borrower's commitment to and institutional and financial capacity for implementing the resettlement instrument. The TT also discusses in the PAD the feasibility of the proposed resettlement measures and the risks associated with resettlement implementation. In the annex to the PAD, the TT summarizes the resettlement provisions, covering, inter alia, basic information on affected populations, resettlement measures, institutional arrangements, timetable, budget, including adequate and timely provision of counterpart funds, and performance monitoring indicators. The PAD annex shows the overall cost of resettlement as a distinct part of project costs.

12. The project description in the Loan Agreement describes the resettlement component or subcomponent. The legal agreements provide for the borrower's obligation to carry out the relevant resettlement instrument and keep the Bank informed of project implementation progress.⁸ At negotiations, the borrower and the Bank agree on the resettlement plan or resettlement policy framework or process framework. Before presenting the project to the Board, the TT confirms that the responsible authority of the borrower and any implementation agency have provided final approval of the relevant resettlement instrument.

Compensation

13. Where the borrower has offered to pay compensation to an affected person in accordance with an approved resettlement plan, but the offer has been rejected, the taking of land and related assets may only proceed if the borrower has deposited funds equal to the amount offered as compensation plus 10 percent in a secure form of escrow or other interest-bearing deposit satisfying the Bank's fiduciary requirements. The borrower must also provide a means satisfactory to the Bank for resolving the dispute concerning the offer of compensation in a timely and equitable manner.

Supervision

14. Recognizing the importance of close and frequent supervision⁹ to good resettlement outcomes, the Regional vice president, in coordination with the relevant country director, ensures that appropriate measures are established for the effective supervision of projects with involuntary resettlement. For this purpose, the country director allocates dedicated funds to adequately supervise resettlement, taking into account the magnitude and complexity of the resettlement component or subcomponent and the need to involve the requisite social, financial, legal, and technical experts. Supervision should be carried out with due regard to the Regional Action Plan for Resettlement Supervision.¹⁰

15. Throughout project implementation the TL supervises the implementation of the resettlement instrument ensuring that the requisite social, financial, legal, and technical experts are included in supervision missions. Supervision focuses on compliance with the legal instruments, including the Project Implementation Plan and the resettlement instrument, and the TT discusses any deviation from the agreed instruments with the borrower and reports it to Regional Management for prompt corrective action. The TT regularly reviews the internal, and where applicable, independent monitoring reports to ensure that the findings and recommendations of the monitoring exercise are being incorporated in project implementation. To facilitate a timely response to problems or opportunities that may arise with respect to resettlement, the TT reviews project resettlement planning and implementation during the early stages of project implementation. On the basis of the findings of this review, the TT engages the borrower in discussing and, if necessary, amending the relevant resettlement instrument to achieve the objectives of this policy.

16. For projects with impacts covered under [para. 3\(b\) of OP 4.12](#), the TT assesses the plan of action to determine the feasibility of the measures to assist the displaced persons to improve (or at least restore in real terms to pre-project or pre-displacement levels, whichever is higher) their livelihoods with due regard to the sustainability of the natural resource, and accordingly informs the Regional Management, the Regional social development unit, and LEG. The TL makes the plan of action available to the public through the InfoShop.

17. A project is not considered complete--and Bank supervision continues--until the resettlement measures set out

in the relevant resettlement instrument have been implemented. Upon completion of the project, the Implementation Completion and Results Report (ICR)¹¹ evaluates the achievement of the objectives of the resettlement instrument and lessons for future operations and summarizes the findings of the borrower's assessment referred to in [OP 4.12, para. 24](#).¹² If the evaluation suggests that the objectives of the resettlement instrument may not be realized, the ICR assesses the appropriateness of the resettlement measures and may propose a future course of action, including, as appropriate, continued supervision by the Bank.

Country Assistance Strategy

In countries with a series of operations requiring resettlement, the ongoing country and sector dialogue with the government should include any issues pertaining to the country's policy, institutional, and legal framework for resettlement. Bank staff should reflect these issues in country economic and sector work and in the Country Assistance Strategy

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1. "Bank" includes IBRD and IDA ; "loans" includes IDA credits and IDA grants, guarantee made by the Bank , including Project Preparation Facility (PPF) advances and grants under the Institutional Development Fund (IDF) if they include investment activities; and "project" includes any project supported by under (a) Investment Project Financing under [OP 10.00, Investment Project Financing](#); (b) grants under the Global Environment Facility and Montreal Protocol for which the Bank is the implementing/executing agency; and (c) grants or loans provided by other donors that are administered by the Bank. The term "project" does not include a program supported by Development Policy Lending (for which social aspects are governed by [OP 8.60, Development Policy Lending](#)), or a program supported by Program-for-Results Financing (for which social aspects are governed by [OP 9.00, Program-for-Results Financing](#)). Borrower" also includes, wherever the context requires, the guarantor or the project implementing agency.
 2. See [OP 4.12, Involuntary Resettlement](#).
 3. Unit or department in the Region responsible for resettlement issues.
 4. The Bank satisfies itself that the borrower has explored all viable alternative project designs to avoid involuntary resettlement and, when it is not feasible to avoid such resettlement, to minimize the scale and impacts of resettlement (for example, realignment of roads or reduction in dam height may reduce resettlement needs). Such alternative designs should be consistent with other Bank policies.
 5. Such actions may include, for example, developing procedures for establishing eligibility for resettlement assistance; conducting socioeconomic surveys and legal analyses; carrying out public consultation; identifying resettlement sites; evaluating options for improvement or restoration of livelihoods and standards of living; or, in the case of highly risky or contentious projects, engaging a panel of independent, internationally recognized resettlement specialists.
 6. See [The World Bank Policy on Access to Information, para. 34](#) (Washington, D.C.: World Bank, 2002).
 7. For projects with impacts covered under [para. 3 \(b\) of OP 4.12](#), the analysis referred to in (b) and (d) above is carried out when the plan of action is furnished to the Bank (see para. 15 of this BP).
 8. In case of resettlement policy framework, the borrower's obligation also includes preparing a resettlement plan in accordance with the framework, for each sub-project giving rise to displacement, and furnishing it to be the Bank for approval prior to implementation of the sub-project.
 9. See [OP/BP 10.00, Investment Project Financing](#).
 10. The Plan is prepared by the regional social development unit in consultation with the TTs and Legal.
 11. See [OP/BP 10.00, Investment Project Financing](#).
 12. The ICR's assessment of the extent to which resettlement objectives were realized is normally based on a socioeconomic survey of affected people conducted at the time of project completion, and takes into account the extent of displacement, and the impact of the project on the livelihoods of displaced persons and any host communities.