

**IMPACT ASSESSMENT OF SOUTH NAWIN DAM ON
IRRIGATED AGRICULTURE IN PAUKKAUNG, PYAY AND
THEGON TOWNSHIPS**

Ph. D DISSERTATION

NI NI OO

**DEPARTMENT OF GEOGRAPHY
UNIVERSITY OF YANGON
MYANMAR**

JUNE, 2013

ABSTRACT

This dissertation attempts to highlight the impact on irrigated agriculture by the construction of South Nawin Dam. The study area is located in Pyay District (western part of the Bago Region, Myanmar). It lies between the transitional zone, including in three main townships. Which is composed of two main towns and 52 village tracts in Paukkaung, Pyay and Thegon Townships. Agriculture plays an important role in the study area. Most of the people in the study area live in rural area and engaged in agriculture sector. But, the study area does not have enough water for crops cultivation. To fulfill the water need for crops cultivation, South Nawin Dam was constructed near Yitthit Village and South Nawin Diversion Weir was built near Chaunggwa Village (West) in Paukkaung Township. It provides water needed for agriculture by the irrigation system of South Nawin Dam. The main economy of the study area depends on agriculture, especially irrigated agriculture. The principle crop is paddy, monsoon and summer paddy. The monsoon paddy is chiefly grown in the rainy season depending on the rainfall before dam construction. After construction of the dam, monsoon paddy and summer paddy are grown as double crops and other crops are grown as triple and mixed crops within the study area. Dam construction may result positive and negative impacts within the study area. Depending upon the availability of water from South Nawin Dam, extent of irrigated area and types of crop pattern are changed. Beside, The available water supply of South Nawin Dam affects the economic status of local people. Most of the irrigated areas lack sufficient water supply to cultivate for summer paddy. The farmland that have sufficient irrigated water do not use it for growing summer paddy, instead the farmers grow such cash crops as vegetables, black gram and sugarcane, deviating from the main purpose of the dam construction.

CONTENTS

Page

ACKNOWLEDGEMENT

ABSTRACT

LIST OF TABLES

LIST OF FIGURES

LIST OF PLATES

INTRODUCTION

Study Area

Research Problem

Research Hypotheses

Aims and Objectives

Previous Investigations and Literature Review

Sources of Data and Methodology

Research Design

Definitions

Acronyms

CHAPTER I	GEOGRAPHICAL BASES OF STUDY AREA	1
1.1	Physical Bases of the Study Area	1
1.1.1	Study area delineation	1
1.1.2	Location, size and shape	1
1.1.3	Relief and drainage	7
1.1.4	Geology	13
1.1.5	Climate	16
1.1.6	Soils	23
1.1.7	Natural vegetation	24
1.2	Human Bases of the Study Area	26
1.2.1	Demographic factors	26
1.2.2	Social factors	37
1.2.3	Cultural factors	41

	1.2.4 Economic factors	42
	1.2.5 Institutional factors	43
CHAPTER II	RESERVIOR CHARACTERISTICS AND IRRIGATION SYSTEM OF SOUTH NAWIN DAM	45
2.1	Seasonal Variation of Impoundment Area	45
2.2	Spatial Distribution of Canal Network System	63
2.3	Hydrological Conditions of Canal	71
2.4	Geomorphic Conditions of Canal	75
CHAPTER III	CHANGES OF AGRICULTURE LAND USE PATTERN AFTER DAM CONSTRUCTION	79
3.1	General Land Cover of Study Area	79
3.2	Land Cover and Land Use Classification from Remote Sensing Data	85
3.3	Land Use and Land Cover Cassification of the Study Area	85
3.3.1	Agriculture land	93
3.3.2	Fallow agriculture land	113
3.3.3	Uncultivated land and others land	117
CHAPTER IV	CHANGES OF CROP PATTERNS AFTER DAM CONSTRUCTION	120
4.1	Cereal Crops	120
4.2	Fruits and Vegetables	138
4.3	Industrial Raw Material Crops	143
4.4	Oilseed Crops	148
4.5	Pulses and Other Crops	163

CHAPTER V	SPATIAL AND SEASONAL VARIATIONS OF IRRIGATED WATER SUPPLY FOR CULTIVATION	168
5.1	Spatial Variation of Irrigation Water	168
	5.1.1 Water supply along the canal	169
	5.1.2 Amount of water supply in the study area	173
5.2	Seasonal Variation of Irrigation Water	179
CHAPTER VI	IMPACTS OF SOUTH NAWINDAM UPON AGRICULTURE	182
6.1	Physical Impacts	182
6.2	Human Impacts	183
6.3	Economic Impacts	187
CHAPTER VII	FINDINGS AND SUGGESTIONS	190
CONCLUSION		196
REFERENCES		202
APPENDICES		