

**DEVELOPMENT OF GIS BASED MODEL FOR
SITE SELECTION OF INDUSTRIAL ZONE
(A case study on Kesbewa Divisional Secretariat Division)**

by

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SITE SELECTION OF INDUSTRIAL ZONE**

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by

G.M.T.S. Fernando

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DECLARATION

The work described in this thesis was carried out by me under the supervision of Dr.Ven. Pinnawala Sangasumana and Ms. C.H. Edussuriya and a report on this has not been submitted in whole or in part to any university or any other institution for another degree/Diploma.



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ABSTRACT

Site selection criteria of industrial zones have been involved to many fields including economic, social and environment of each country. Thus, at present there are enormous data volume and complex criteria for the site selection of industrial zones that course much more difficulties for decision making. This task can be simplified by combining Geographic Information System (GIS) and multi-criteria decision making techniques. Traditionally, there have been two major concerns for initial industrial estate site selection. One was the large number of potential project sites being proposed that must be investigated. Another concern was how the criteria for site evaluation were chosen and quantitatively defined.

In this study, a GIS based model was proposed to screen for the most suitable location for establishing an Industrial Zone in Kesbewa Divisional Secretariat Division. In this model, selected set of criteria were used. Seven criteria according to the study area were chosen based on literature reviews together with consultation of expertise. Following this, attribute values of the criteria were entered into a multi-criteria decision making scheme by using GIS model. A suitability map was created using the weighted overlay method of the model to show sites that met all the requirement. The selected areas were considered with sub criterions to get final decision.

As the results of the study there is no any excellent suitable area for establishment of industrial zones in study area. Two lands were selected as very good and after considering the sub criterions only one land was selected as suitable for establishing an Industrial Zone with restrictions.

According to this study, I can conclude that GIS analysis and output model of the research could be used to speed up the site selection process and to get the more accurate outcome.

CHAPTER ONE

CHAPTER ONE

Introduction

1:1 Introduction

Economic Development is fundamentally a process of structural transformation from traditional agriculture to modern agriculture, industries and services. Especially after the industrial revolution, industrial development has become a base of the economy in each country. Industrialization began in 19th century around the central Europe and was gradually spread towards Asia and other regions of the world. Rapid development of the industrial field caused to rapid distribution of the industries as well. But Most of the investors face high transaction costs because of a lack of infrastructure and weak institutions on the one hand and, people and environment are influenced in various fields by the Industrial pollution on the other. In that phase, the industrial zone began to be constructed with the aim of creating a space where industry could be removed from population centers, with all the facilities and infrastructure has been given.

The concept of industrial zones originated from the United Kingdom. The Trafford Park Estates Limited, UK, established in 1896 was the first industrial zone in the world. Spread over an area of 1,183 acres, it is still the largest industrial zone in Europe. Following the example of UK, the US, European and developing countries also began establishing industrial zones. Today the phenomenon of industrial zones is widespread and its benefits well known. Developing economies including India, China, Vietnam and Thailand have experienced rapid industrial growth achieved through focused development and professional management of industrial zones. In understanding the link between economic growth and industrial zones, the case of China needs exploration because of its rapid and sustained growth over the last two decades. Zeng stresses the significance of China's Special Economic Zone (SEZ) towards attaining economic development although Chinese SEZ is an umbrella term that covers economic, trade and development zones as well as the National Industrial Parks (NIP). In 2006, SEZs contribution to national employment was only 2%. But the 52 NIPs in China accounted for 5% of total GDP, 15% of exports and 22% of total FDI (Foreign Direct Investment)

inflows. The total actualized FDI for the NIPs in 2007 was US\$17.3 billion while the number of NIPS had increased to 69 by April 2010. Thus China's economic growth strategy, attraction of foreign investment and new technologies, employment generation and exports is driven by the NIPs (Zafar Hajra, 2012).

The development of industrial zones has spread to most countries in the world, particularly in the second part of the 20th century, and According to a survey carried out by the International Development Research Council (UNEP, 1996a), there were more than 12,000 industrial zones in 90 countries in 1996. Growth in the developing countries of Asia has been very rapid, and recent estimates indicate that there may now be more than 20,000 industrial zones globally with 2,000 in China and over 500 estates in other parts of the region. The number of industrial zones is therefore clearly increasing worldwide with a particular interest in the industrializing countries. Some industrial zones are very small zones (5 ha) located in rural areas, perhaps on the outskirts of a small town and managed by the municipal authorities. Others are extremely large industrial complexes, such as the Jebel Ali Free Zone in Dubai, which covers more than 100 km² and contains more than 1600 tenant companies (UNEP, 2002).

Location of industry is concerned with the least cost location, so that again transport costs are a crucial element in the location decision. A German economist, Alfred Weber devised the theory of industrial location, in 1909. In the early part of the industrial revolution factories developed in areas that were already producing manufactured goods. These were the places where woollen textiles were produced in farmhouses on farms that bred the sheep. But the end of the 19th century, transportation facilities were very broad with Constructed canals and the Railways. That enabled industrial location to free itself from raw material sites. This trend continued with roads and vehicles in the twentieth century, but water transport and especially the sea, remained dominant for long distance transport of industrial goods. Weber's analysis came at the point where railway networks had developed to their ultimate extent. He was therefore concerned with the balance of location between raw material site, the market for manufactured goods, and transport.