CHAPTER 1

INTRODUCTION

This study seeks to examine various aspects of the fertilizer industry in Trinidad and Tobago. In particular however, it intends to explore three major areas. First of all, given the importance attached to the process of development in Third World countries, an attempt will be made to evaluate the impact of the fertilizer industry on the Trinidad and Tobago economy in terms of national development objectives. Development is viewed as a multi-dimensional process involving economic as well as social and political factors. Thus, a variety of issues will be investigated ranging from the impact on employment and government revenues to environmental concerns and issues of technology, politics and power. Secondly, the future outlook of the industry will be examined in an attempt to determine its future commercial viability. Such an exercise necessarily requires a survey of the world industry since the success of the domestic industry depends crucially on the structure of world demand. In this light then, a large part of the study will focus on a discussion of the world fertilizer industry. Lastly, an evaluation of government policy towards the Trinidad fertilizer industry is to be undertaken.

A study of this nature which seeks to investigate not only aspects of the fertilizer industry in Trinidad and Tobago, but also of the world nitrogen fertilizer industry at large is important for a number of reasons. First of all, the fertilizer industry is of special significance to the developmental process since it directly promotes both agricultural and industrial development. The early experiences of many developing countries which embarked upon a rapid drive to

industrialization as the key to induced economic growth have taught us that in the process of development, the agricultural sector is as important as the industrial sector. On the one hand, if the agricultural sector grows too slowly, it can restrict the growth of consumers' purchasing power and hence the domestic market for industrial products. If, at the same time the output of the agricultural sector is not large enough to meet the local demand for food, industrial growth will be thwarted by food shortages and high prices, and scarce foreign exchange may have to be channelled into financing food imports at the expense of imports of capital equipment, raw materials and component parts. On the other hand, inadequate development of the industrial sector can impede the growth of the agricultural sector. An expanding agricultural sector requires a steady supply of fertilizers, pesticides, agricultural machinery, storage facilities and so on. If these goods can be produced locally, they can form an important element of the emerging industrial sector. Thus, it is now widely recognized that the development of industry and agriculture are in no way alternative goals of development policy, but complementary and mutually supporting processes, for an imbalance between the growth of agriculture and industry can have unfortunate consequences on the growth of the economy as a whole. Given the dual aim of economic development then, that is, to enhance both industrial and agricultural development, the fertilizer industry holds a unique position in developing countries today since it has important links with both agriculture and industry.

Secondly, fertilizer is a critical input into agriculture and is important for raising the level of food production. Of the five physical inputs necessary to increase agricultural productivity - land, water, farm machinery, fertilizers and improved seed varieties -

fertilizer has been known to have the single largest effect on food production. Numerous studies are available which attempt to estimate the contribution of fertilizer to increased agricultural output over time or to estimate the proportion of current agricultural output which is accounted for by the fertilizer input. In general however, it is estimated that the application of one ton of fertilizer can increase the yield of food grains by five to ten tons. But the role that chemical fertilizer plays in increasing food production assumes added significance in the light of the impending food crisis. World food experts express deep concern over the present situation since current world food demand far outstrips supply. Additionally projections for the future indicate potentially large food deficits over the next fifteen years. The traditional approach to increasing production - expanding the area under cultivation - has only limited potential for the future. In many countries land is limited, and in those countries that do have unused land there is usually a lack of resources to bring it into production, so that increasing food requirements in the future will have to be met largely by increased production from land at present under cultivation. This implies that fertilizer use will have to accelerate rapidly in order to avert widespread famine. It is in this light then, that a strong appeal is being made by numerous international institutions (notably the Food and Agriculture Organization of the United Nations and the International Fertilizer Development Centre) to erect additional fertilizer production facilities, especially nitrogen fertilizer, since this is the most widely-used fertilizer in developing countries. If fertilizer could be made more readily available to developing countries, then its use will be stimulated considerably and the world food problem alleviated to a large extent.

Thirdly, in the specific case of Trinidad and Tobago, a study of

the fertilizer industry is important from the point of view of evaluating the performance of different development strategies. The first fertilizer complex set up in Trinidad, Federation Chemicals Ltd. (Fedchem), was constructed in 1959 by the multinational firm, W.R. Grace & Co. for the manufacture of ammonia, urea and ammonium sulphate. The introduction of this industry was based squarely on the Lewis strategy which recommended an export-led type of industrialization and accorded a prominent role for foreign capital as a means of fostering development within the economy. Recently, two additional companies have been formed to manufacture nitrogen fertilizers - Trinidad Nitrogen Co. Ltd. (Tringen) and Fertilizers of Trinidad and Tobago Ltd. (Fertrin) - while feasibility studies are being conducted to set up a third plant. Fertrin is due to come on stream soon while Tringen has been operating since 1977. These fertilizer plants however, form only a small part of an overall industrialization strategy currently being undertaken in Trinidad and Tobago - a resource-based kind of industrialization. Briefly, this strategy is based on exploiting the comparative advantage in natural gas as a cheap source for aluminium smelting; a reductant for iron ore; and a feedstock for petrochemicals and nitrogen fertilizer. Nitrogen fertilizer production has been receiving particular emphasis since it is a heavy user of natural gas. By undertaking an analysis of the entire industry, we can (i) assess the performance of the Lewis strategy as it relates to the fertilizer industry and, (ii) examine some of the critical issues associated with resource-based industrialization generally.

Fourthly, the fertilizer industry deserves careful study as an industry in itself. The nitrogen fertilizer industry offers many potential benefits in the way of linkage-creation since ammonia has many industrial applications as well as agricultural. Ammonium nitrate is

used as an industrial explosive; urea is used for making urea-formaldehyde plastics; ammonium chloride is important in the manufacture of dry batteries; and ammonium phosphate is used as a fireproofing agent. Thus, in many countries the fertilizer industry provides the nucleus for a broadly-based chemical industry. On another level, the fertilizer industry provides an interesting study in terms of the particular experiences of the industry. The nitrogen fertilizer industry is widely-known for its extreme fluctuations over time, and is characterized by long periods of oversupply and depressed prices followed by brief periods of shortage.

Lastly, a study of this nature is crucially important for Trinidad and Tobago since the fertilizer industry now occupies a very central position in the economy. At present, tremendous amounts of financial resources are being channelled into the expansion of this sector and it is estimated that by 1983 total capacity of ammonia in Trinidad and Tobago will be around 1.3 million tons per year. In this light then, it is very important to gain an understanding of the industry as a whole and in particular, to obtain some idea of the future course of the industry and its potential as a revenue-earner.

The organization of the study then, is as follows: Chapter 2 provides some background information on the evolution of the international fertilizer industry, including its consumption, production and trade patterns over time. Chapter 3 contains a discussion of the industrialization strategies adopted and currently being pursued, while Chapter 4 provides information relating to the development of the domestic industry. Chapter 5 attempts to analyze some strictly economic issues in the industry - output determination, costs, prices, profits and investment. This analysis is important for it provides some necessary background data

for Chapter 6.

Both Chapters 6 and 7 can be regarded as the 'core' chapters of the study. The central concern of Chapter 6 is an assessment of the contribution of the fertilizer industry to the Trinidad and Tobago economy. The effects of the industry on the output and the composition of output, employment, transfer of technology, socially-available capital, structural transformation, the environment and the distribution of income, wealth and power are investigated. Based on the results of an examination of this wide range of issues, an overall evaluation is made. Chapter 7 takes a different slant and presents a global view of the world industry in the future - both in the medium-term and in the long-term. Numerous factors are examined which are expected to have an influence on the world industry. The dynamic factor of technological change and its likely impact is taken into account. The prospects for the domestic industry are then discussed in the light of these developments.

Chapter 8 deals with an evaluation of government policy while Chapter 9 summarizes the main highlights of the entire study and discusses the implications thereof.