

CHAPTER I

INTRODUCTION

This chapter presents the introductory of the thesis. It includes background of this research, purpose of the research, thesis objectives, scopes of this research, the procedure conducting the research (research procedure), research plan (study plan), expected benefits, and last but not least, the methodology employed to conduct this thesis.

1.1 Background of the Research

At the moment, the energy crisis situation is faced throughout the world as a result of a sharp increased in crude oil price. With a decrease in supply (of both worldwide production and new discovery of crude oil sources), the demand of crude oil continues to escalate. This in turn causes the oil price to augment constantly. At the same time, it increases the vulnerability of the crude oil market; impacting countries which are dependent upon the energy. Consequently, as a result of the current energy crisis and the less supply – high demand trend projected by the IEA, these induce both the government and the private sectors to pay more attention towards other alternative energies (1).

Thailand, one of the dependent crude oil importers, has lost a substantial amount of trade balance due to the significant increased in price of the imported crude oil. Currently, Thailand is importing crude oil on an average of 131,849,315 million litres per day or accounts up to 48,125 million litres each year. When comparing between 2006 and 2005, it could be seen that despite a small increased only by 0.2% of the crude oil import quantity of 2006, the crude oil import value has gone up by almost 17%. In 2006, Thai's crude oil import expenditure was concluded at 753,783 million Baht, increased from 2005 that was concluded at 644,933 million Baht by 108850 million Baht or up to 16.87% (2). This is due to higher price of the crude oil in the world energy arena.

Thus, Thai government is now paying more attention towards other alternative energies. One of the potential alternative energies is biodiesel. Biodiesel is a renewable energy that could be produced from any vegetable oils, animal fats, or even waste cooking oil. It sometimes refers to as mono-alkyl esters of long chain fatty acids that conform to the specifications required by the country for use in diesel engines (3). Biodiesel is typically made by a chemical process called tranesterification, which relies on alcohol and catalyst. Biodiesel can be used in diesel engines with little or no modifications. It can be used as pure biodiesel or blended in any ratio with petroleum diesel fuel. Lastly, biodiesel is clean, environmental friendly, burns completely, easily biodegradable, and emits less pollutions than diesel oil when used in diesel engines (4).

With the promotion of the set-up of biodiesel production, Thai government (Ministry of Energy) has called for the research team from TMB Bank Public Company Limited to conduct a feasibility study. The result turns out to be that it is financially feasible to set-up biodiesel factory with the production capacity of 200,000 litres per day (5). To support the existing feasibility study, the exploration of critical success factors and the project planning in the set-up of biodiesel production plant would be practical and beneficial to the interested entrepreneurs.

1.2 Purpose of the Research

From the latest Energy Policy and Development Plan proposed to the Administration of Prime Minister General Surayud Chulanont on November 2006 (6), Thai government has a policy to promote alternative energies that are suitable for Thailand with the intention to reduce the energy import dependency. Additionally, Thai government has planned to support the policy study, research and development on the alternative energies so as to determine practical guidelines on alternative energies development of the country. Importantly, one of the short-term missions of the current government is to promote the participation in the community development regarding biodiesel production, which at the same time must be accord with the development under the Sufficiency Economy concept.

For these stated motives, with the support of the Thai government in establishing a biodiesel factory, the investigation of both the critical success factors and the project planning would be necessary and valuable.

1.3 Objectives of this Research

This research has two major objectives – firstly, to assess the critical success factors in the set-up of biodiesel factory, and secondly, to develop a project guideline and procedure for the construction of a biodiesel factory.

1.4 Scope of the Research

The research will focus solely on Thai's biodiesel industry.

1.5 Research Procedure

The research will be conducted as a following procedure:

- Literature study and data gathering on Thai's biodiesel industry
- Porter's Five Forces analysis
- SWOT Analysis
- Questionnaires
- Critical success factors identification
- Sensitivity analysis of critical success factors for feasibility study
- Project Time Management
- Project Resource Management
- Project Cost Management
- Conclusion
- Thesis completion

1.6 Study Plan

Table 1.1: Schedule of the research

| Program | Mar | Apr | May | Jun | Jul | Aug |
|-----------------------------------|-----|-----|-----|-----|-----|-----|
| 1. Literature surveying | | | | | | |
| 2. Porter's Five Forces analysis | | | | | | |
| 3. SWOT Analysis | | | | | | |
| 4. Questionnaires | | | | | | |
| 5. Success factors identification | | | | | | |
| 6. Sensitivity analysis | | | | | | |
| 7. Project Time Management | | | | | | |
| 8. Project Resource Management | | | | | | |
| 9. Project Cost Management | | | | | | |
| 10. Conclusion | | | | | | |
| 11. Thesis completion | | | | | | |

1.7 Expected Benefits

The expected benefits of this research are as follows:

- To understand the present situation and be able to forecast the future trend of Thai's biodiesel industry;
- To promote the set-up of biodiesel factory with the provision of both critical success factors and its construction plan.

1.8 Methodology used in the Research

This thesis will be generally divided into 2 key subjects of critical success factors and project planning. For the critical success factors, Porter's Five Forces, SWOT Analysis, and Questionnaires of Thai biodiesel industry and of the set-up of biodiesel factory would be analyzed. For project planning, in setting up a biodiesel factory, three knowledge areas composing of Project Time Management, Project Resource Management, and Project Cost Management will be conducted.

1.8.1 Critical success factors

- Porter's Five Forces
 - Threats of New Entrants
 - Intensity of Rival among existing Competitors
 - Bargaining power of Supplier
 - Bargaining power of Buyers
 - Threats of Substitutes

- SWOT Analysis
 - Strengths
 - Weaknesses
 - Opportunities
 - Threats

- Questionnaires

1.8.2 Project planning

- Time management

- Activity Analysis
- Work Breakdown Structure (WBS)
- Network diagram

- Resource management
 - People
 - Material
 - Plant and equipments
 - Contractors
 - Facility

- Cost management
 - Cost budgeting
 - Cost estimation
 - Cost plan