

Dissertation Proposal

- Solid Biofuel as a Promising Component of Financial Stability of the International Market and Trade of Fuel and Energy Resources -

Student's Name

ID Number

Name of Organization

Module Name and Code

Date of Submission

Total Number of Words: 1,549

Table of Content

I.	Title of Research Topic	3
II.	Introduction	3
	a. Aims of the Research	3
III.	Preliminary Literature Review	4
	a. <i>Brief Information on Solid Biofuels and Wood Pellets</i>	4
	b. <i>Growing Demand for Wood Pellets</i>	4
	c. <i>Production Equipments in Using Wood Pellets</i>	5
	d. <i>Importation and Exportation of Wood Pellets</i>	6
IV.	Methodology	6
	a. Research Questions and Objectives	6
	b. Research Design	7
	c. Primary Data Collection	7
	d. Secondary Data Collection	7
V.	Significance of the Study	8
VI.	Timescale	9
VII.	Resources	10
VIII.	References	10
IX.	Ethics	11
	<u>Appendix I</u> – Typical Data and Qualities for Different Biofuels	12
	<u>Appendix II</u> – Wood Pellets	13

Title of Research Topic

“Solid Biofuel as a Promising Component of Financial Stability of the International Market and Trade of Fuel and Energy Resources”

Introduction

There are quite a lot of commercial biofuels that are currently available in the local and international market. One of the most commonly used solid biofuel is the wood pellet. In relation to the increasing local and international demand for wood pellets, this study will examine the socio-economic impact of promoting the wood pellet production over the international market and trade of fuel and energy resources – particularly with regards to the use of wood pellets.

Aims of the Research

The research study aims to determine the possible future socio-economic impact behind the continuous promotion of wood pellets throughout the members of the European Union. In line with this, the research study will provide the readers with a clear overview behind the use of wood pellets followed by discussing the factors that will trigger or affect the increase or decrease in the demand and supply for wood pellets.

Considering that the production of wood pellets requires tonnes of sawdust as raw material (Egger & Oehlinger, 2009), demand for sawdust throughout the members of European Union would also increase. This will create a serious price challenge should the members of European Union become highly dependent over the use of wood pellets as one of their main sources of energy. Based on the pricing dilemma,

recommended solution on how the promotion of using wood pellets can sustain the financial stability of the international market and trading of fuel and energy resources will be tackled in details.

Preliminary Literature Review

Brief Information on Solid Biofuels and Wood Pellets

The sources of biofuel are wastes coming from the processing of wood products, pulp and paper, sawdust, charcoal, agricultural waste products, dried manure, and domestic refuse (renewableenergy.no, 2010). Solid biomass is often used as a raw material for biofuel. Using a finely grounded sawdust¹, solid biomass like the wood pellets requires the highest refining degree and compression (renewableenergy.no, 2010). (See Appendix II – Wood Pellets on page 13)

Unlike other sources of energy, solid biomass can be available either in convenient form like firewood or inconvenient form like sawdust, agricultural waste, or wood chips. As a source of energy, solid biofuel like wood pellets can burn directly in stove or furnace in order to produce heat or increase steam. (See Appendix I – Typical Data and Qualities for Different Biofuels on page 12)

Growing Demand for Wood Pellets

As of 2007, the 27 states of the EU members are capable of producing roughly 9 million tons of wood pellets in which the majority comes from Sweden (18.89 %),

¹ Sawdust or wood particles is preferred when producing pellets because it is easier to burn cleanly as compared with the use of agricultural products like straw, hay, miscanthus, or other energy crops which can be used to create 'agri-pellets' (Egger & Oehlinger, 2009).

Germany (0.1 %), and Austria (0.09 %) (The Bioenergy Site, 2010; Egger & Oehlinger, 2009). The demand for wood pellets is continuously increasing not only because of the influence of the European Union but also partly because of the signing of the Kyoto Protocols which focuses on the prevention of global warming through the implementation of a strict international clean air act (CBC News, 2007).

Back in December 2008, the European Parliament implemented a new directive which requires each of the EU members to create at least 20% of their electricity coming from the use of renewable resources by 2020 (The Bioenergy Site, 2010; Egger & Oehlinger, 2009; Forest Sector Advisory Services, 2009; Gold, 2009). Today, a total of 27 Member States of the European Union is aiming to meet the goal set by the European Union (The Bioenergy Site, 2010).

Production Equipments in Using Wood Pellets

The European Union's Government support in promoting the production of wood pellets has resulted in the increase in the number of installation of pellet stove from few hundred up to approximately up to 800,000 (The Bioenergy Site, 2010). Because of the European Union's requirements pertaining to the use of renewable energy sources, the MGT Power Limited – a UK-based energy firm decided to build a 295 MW biomass power plant in Northeast England (Forest Sector Advisory Services, 2009).

Other than pellet stoves, pellet boilers and utility-scale boilers can also be used in converting wood pellets into electricity (Egger & Oehlinger, 2009).

Importation and Exportation of Wood Pellets

Europe has been importing tons of wood pellets from other countries. During the first quarter of 2009, the European Union spent almost US\$100 million worth of wood pellets from the United States alone aside from MGT Power Limited's future plan of importing wood pellets not only from the United States but also from Brazil, the Baltic countries, and Scotland (Forest Sector Advisory Services, 2009). Other importers of wood pellets are Belgium, Denmark, Italy, and the Netherlands (The Bioenergy Site, 2010; Egger & Oehlinger, 2009). Among the well-known countries that are currently exporting wood pellets include Canada and Russia (Egger & Oehlinger, 2009).

Methodology

Research Questions and Objectives

The main objective of the research topic is to provide the players of renewable energy industry the recommended solution on how we can make maximize the use of wood pellets in order to sustain the financial stability of the international market and trading of fuel and energy resources.

The following questions will be used in addressing the aims and objective of the research study:

1. What is the possible future socio-economic impact behind the continuous promotion of wood pellets throughout the members of the European Union?
2. What are the factors that will affect the increase and decrease in the

demand and supply of wood pellets?

3. How can we effectively control price challenges in case the supply of available sawdust could not meet the sudden increase in demand?
4. What are the recommended solutions on how the promotion of using wood pellets could sustain the financial stability of the international market and trading of fuel and energy resources?

Research Design

A semi-structured interview questionnaire will be used as a template to ensure that all necessary questions will be asked during the personal interview with at least 2 entrepreneurs with the necessary expertise needed in this study.

To increase the validity of the research findings, the gathered secondary research findings will be used to enhance the analysis of the gathered interview results.

Primary Data Collection

There are a limited number of individuals with the expertise on the use of wood pellets. In line with this, a couple of entrepreneurs who are currently working in the use of wood pellets as sources of renewable energy will be requested to participate in a personally interview. Qualified interviewee should have at least 6 years of working experience in this field.

Secondary Data Collection

Since there is a limited available reading material concerning this topic, visiting

some of the fabrics where the pellets and equipment are produced is necessary. This strategy will be useful in describing the different cycles associated with the production and use of wood pellets.

Significance of the Study

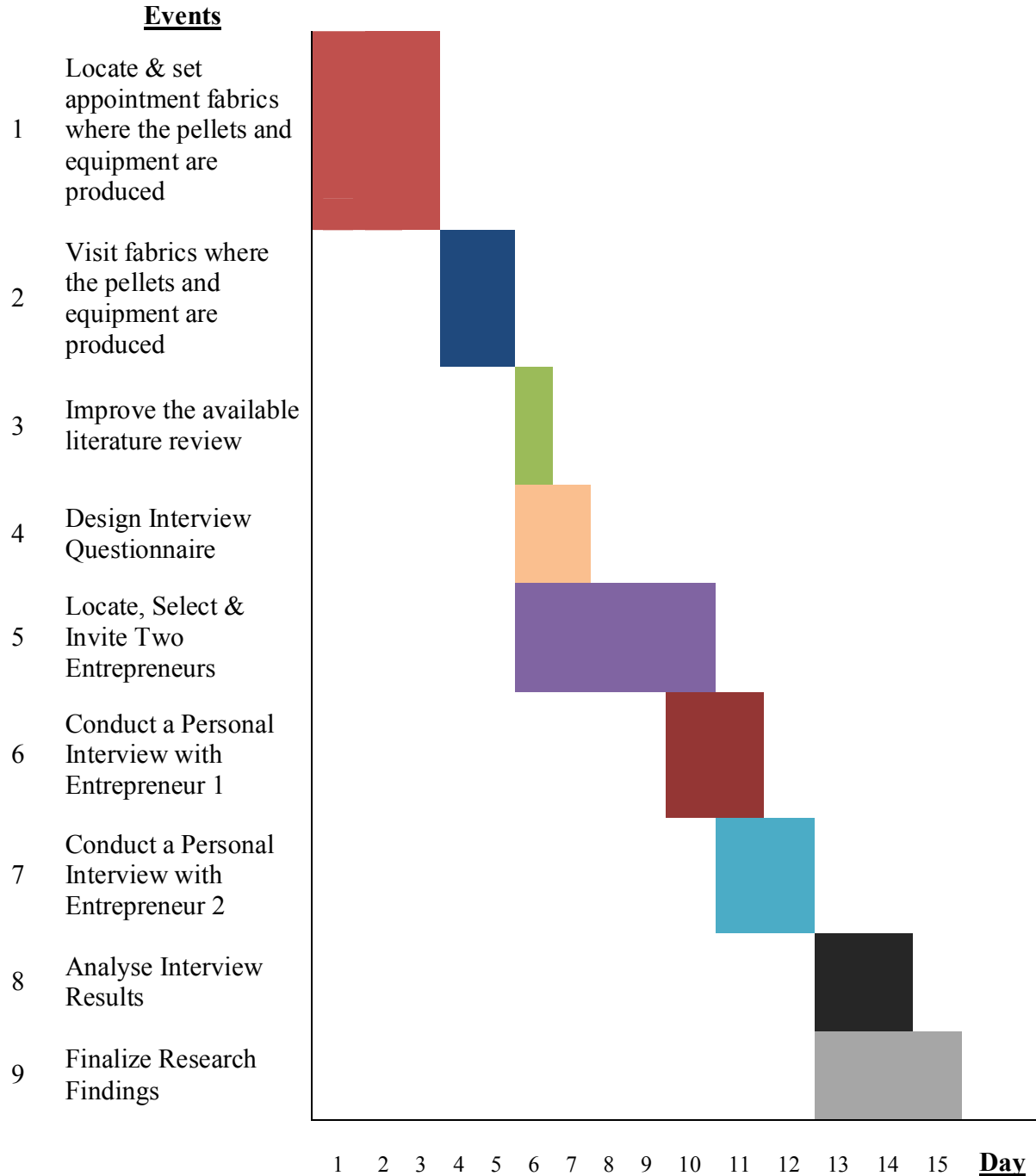
The availability of crude oil and conventional fossil fuel that we use daily takes a very long time before it is being replenish. For this reason, it remains inevitable for prices of the conventional energy resources to increase.

It is important to increase the supply of fuel and energy resources in the local and international market. Because of the sudden increase in the demand for renewable energy resources, it necessary for us to study the socio-economic impact of promoting the wood pellet production over the international market and trade of fuel and energy resources – particularly with regards to the use of wood pellets.

Other than the use of solar and wind energy resources, demand for wood pellet is equally growing fast. Since the burning of wood pellets is even more efficient that the use of solar panels and windmills, Gold (2009) stated that “wood pellets are the least expensive way to meet European renewable-energy mandates”.

Timescale

In a short span of two weeks, the following schedule will be used:



Resources

To complete the research requirements, I have personally contacted my friend who happens to work with MGT Power Limited. Because of the distance, a phone call is necessary to get in touch with a couple of individuals who has the expertise in this field.

With regards to the fabrics where the pellets and equipment are produced, I have already contacted several companies and informed them about my research proposal. I will just set an appointment with them for my visit once the research proposal has been approved.

References

CBC News. (2007, February 14). Retrieved May 11, 2010, from Kyoto and beyond:

<http://www.cbc.ca/news/background/kyoto/>

Egger, C., & Oehlinger, C. (2009, April 7). *Renewable Energy World*. Retrieved May 12, 2010, from Burning Issues: An Update on the Wood Pellet Market:

<http://www.renewableenergyworld.com/rea/news/article/2009/04/burning-issues-an-update-on-the-wood-pellet-market>

Forest Sector Advisory Services. (2009, August 25). Retrieved May 11, 2010, from US producing wood pellets for Europe: <http://forestindustries.eu/content/us-producing-wood-pellets-europe>

<http://forestindustries.eu/content/us-producing-wood-pellets-europe>

Gold, R. (2009, July 7). *The Wall Street Journal*. Retrieved May 11, 2010, from Wood Pellets Catch Fire as Renewable Energy Source:

<http://online.wsj.com/article/SB124691728110402383.html>

renewableenergy.no. (2010). Retrieved May 11, 2010, from Solid biofuels :

<http://www.renewable.no/sitepageview.aspx?articleID=177>

The Bioenergy Site. (2010, January). Retrieved May 11, 2010, from Frame of reference in the European Policy: <http://www.thebioenergysite.com/articles/503/wood-pellet-market-shows-growth>

Ethics

Before starting the official interview with the selected respondents, it is ethical to personally seek their approval and explain to them the main purpose of the study. When conducting the interview, interviewer should keep in mind that a strategic questioning is highly correlated to the accuracy and validity of the survey results. It means that data that has been collected through an interview process and other data gathering techniques should always be appropriate to the research question of the study. Therefore, it is necessary for the interviewer to properly prepare the type of questions to be asked with the nurses (Richards, 2006; 2003).

With regards to the analysis and interpretation of the gathered primary information, the researcher will analyze the qualitative research findings together with the gathered secondary data. This will minimize the risk of gathering bias result.

***** End *****

Appendix I – Typical Data and Qualities for Different Biofuels

Combustibles	Ash	Water	Specific weight	Effective heat value	Effective heat value
	% of dry weight	% of total weight	(kg/lm ³)	(MWh/ton)	(MWh/lm ³)
Wood, birch	0,8	20	430	4,1	1,76
Wood, spruce	1,3	20	345	4,1	1,41
Wood chips, pine	1,5	55	390	1,9	0,73
Wood chips, spruce	2	55	355	1,9	0,69
Industrial chips, raw	1,8	55	300	1,9	0,55
Industrial chips, dry	0,3	20	200	4,1	0,82
Planer chips	0,5	15	100	4,6	0,46
Sawdust	0,5	44	230	2,7	0,63
Bark, coniferous wood	3	50	280	2,3	0,65
Return logs	15-20	20	265	3,8	1
Pellets	1	8-12	650	4,8	3,1
Briquettes	0,7	10-12	600	4,3	2,6
Wood powder	0,5	5	280	4,9	1,4
Bark	2,5-3,0	55	280	2,1	0,6

Source: renewableenergy.no, 2010

Appendix II – Wood Pellets



Source: renewableenergy.no, 2010