ELECTRICITY SHORTAGE PROBLEMS AND PROSPECT OF WIND TURBINES AS AN ALTERNATIVE ENERGY SOLUTION IN KARACHI INDUSTRIAL AREAS

LAHTI UNIVERSITY OF APPLIED SCIENCES
Master Degree Programme in International Business Management
Master's Thesis
Fall 2009
Muhammad Javaid Akhtar

Lahti University of Applied Sciences
Master Programme in International Business Management

Muhammad Javaid Akhtar

Electricity shortage problems and prospect of wind turbines as an alternative energy solution in Karachi industrial areas

Master's Thesis in
International Business Management

82 pages, 3 appendixes

Fall 2009

ABSTRACT

The purpose of the research was to analyze the energy shortage problems in Karachi industrial areas and to find wind turbine demand as an alternative energy solution in Karachi industrial areas for a prospective Finnish wind Turbine company to enter this potential market by knowing the current electricity crisis faced by the industrial customers in Karachi industrial areas.

The methodology of the study research was qualitative in nature based on semi-structured interviews largely within the main target groups such as the Industrial Customers, the Trade Associations in the industrial areas, the Alternative Energy Development Board (AEDB), the Board of Investment (BOI) Pakistan, the Meteorological Department Pakistan, Zorlu Energi Pakistan, and the Federation of Pakistan Chamber of Commerce & Industry (FPCCI). Data was gathered to analyze the current energy crisis faced by the industrial customers and to wind turbine demand in Karachi industrial areas. The study also focused to choose the most appropriate market entry mode.

It is concluded from the research that industrial areas in Karachi have vast potential for the wind energy solutions due to its ideal geographical location along with the coastal areas. The study findings suggest that the best entry mode recommended is subsidiary operations for the prospective Finnish wind energy company. Incentives are provided by the government of Pakistan to encourage foreign investment in the energy sector particularly in the wind energy.

The research findings also recommend a business model to have wind turbine business in Karachi. Foreign investors have to consider the social and economic values of the industries in Karachi in the recommended business model in order to achieve their goal. It is also recommended that the prospective Finnish company interested in wind energy business in industrial areas in Karachi has to consult all the stakeholders stated as target groups in the study to access to the end users of wind turbines in Karachi industrial areas.

Key words: Karachi, industrial areas, market entry modes, subsidiary, wind energy, alternative energy, business model.

Acknowledgement

In the Name of Almighty Allah, The Most Gracious, The Most Merciful.
First of all, the researcher would like to thank Almighty Allah, whose guidance and kindness have always been with him and it gave him the strength, and patience throughout the study.

Secondly, Special gratitude goes to the advisor Maija Romo, for her endeavor in advising during this study. Without her valuable suggestions and guidance, it would not have been possible for the researcher to make the research successful.

The researcher would also like to extend his heartiest thanks to Lahti University of Applied Sciences and all the faculty members for providing him an opportunity to complete his master study. Their help and assistance were a source of inspiration for the researcher.

The researcher would like to express his wholehearted thanks to all the respondents of this research and all his friends who have inspired, encouraged, and shared their time, knowledge and expertise, and gave valuable suggestions to make this endeavor a success.

Finally, the researcher would also like to extend a very special gratitude to his entire family members whose spiritual, moral, and financial support has always been with him during his studies. This provided the researcher strength and courage during the study period. Without their inspirational support, the researcher would have not completed this study.

Muhammad Javaid Akhtar
Lahti, Finland
December 4,2009

TABLE OF CONTENTS

1 INTRODUCTION

Electricity shortage has become the biggest problem of the people of Karachi for the last couple of years and the government of Pakistan has completely failed to meet the electricity demand of the residents of Karachi. Particularly, the industrial area in Karachi which has been the key player of the economic growth of Pakistan is facing the worst electricity problems of Pakistani history. This has a deep impact on the economy of Pakistan as industries are paralyzed due to hours of electricity breakdowns in their areas in a day and production is affecting the demand of the international market.

This electricity crisis has made the researcher to find out the current situation of energy in the industrial areas in Karachi and find out the demand and supply of energy in the industrial areas in Karachi as well as to explore the market for wind turbines in those industrial areas of Karachi as an alternative resource of energy which will not only provide the basic need of electricity, but also be environmentally friendly with the socio-economic and cultural values.

In this chapter, the background of the Karachi industrial area electricity crisis will be discussed in which overall energy demand and supply will be evaluated. The steps taken by the government of Pakistan and the organizations which supply electricity in Karachi will be discussed.

Research objective of the study will be discussed in this chapter in which the main research question and subsequent questions of which will be mentioned which will be answered during the empirical research. Limitations of the research will be a part of the research objective which will define the limitations of the research and the boundaries during the research process for the researcher.

A brief introduction to the theoretical framework that will be followed during the research will be given in this chapter which will define the resources of the theoretical data and information that will be used during the research.

Methodology for the empirical research will also be described in brief as a part of this study in which method research will be described and the key players for gathering the information and data about the research will be identified for the interview and to answer the survey questionnaire. These interviews will help the researcher answering the research question and subsequent questions to analyze the energy crisis in Karachi industrial areas and to explore the wind turbine demand in Karachi industrial areas.

Structure of the study will also be defined in this chapter which will give an idea about how the document will be structured and inclusions of the chapter will be described.

1.1 Background

Industries in Karachi are facing energy shortage problem these days and looking forward to different alternative solutions of energy to resolve the current electricity shortage. This is the major reason for the research and encouraged the researcher to get detailed information to provide a solution which is environmentally friendly and which can provide affordable alternative solutions to the industry.

The recent year's oil price hike and increase in oil consumption have made Pakistan energy think-tanks to explore the new means of alternative energy resources especially the renewable energy resources. Before finding a good business opportunity in Karachi, it is extremely important to know some basic facts about Pakistan energy and governments steps towards encouragement of foreign investment in the energy sector.

Pakistan's population is 172.8 million (2008 estimated) and it is growing at the rate of 1.99% per year (CIA-World Fact Book). Karachi represents the largest city

with 12 million inhabitants (National Public Radio, 2008). In recent years, Pakistan's GDP growth rate is 6 % (2008) having per capita income of $ 2480 per year. (Economist Fact Sheet, 2008, Oct 21st 2008)

Pakistan's current energy sector supply mix consists of oil 29.4 %, natural gas 50.3%, hydroelectric 11%, coal 8.1%, and nuclear 1.2% (Pakistan energy year book, 2005),(EIA, 2006). Pakistan's per capita electricity generation was 581 KWh. (World Fact Book, 2004)

The generation, transmission, distribution and retail supply of electricity in Pakistan is presently undertaken by two vertically integrated public sector utilities, with significant contribution to generate electricity from various private Independent Power Producers (IPPs). These utilities are the Water and Power Development Authority (WAPDA) and the Karachi Electric Supply Corporation (KESC). WAPDA supplies power to all of Pakistan except the metropolitan city of Karachi and some of its surrounding areas which are supplied by KESC. WAPDA is the largest Power utility of the country with a Customer base of over 10 Million.

In 2004-2005, annual consumption of electricity in the residential sector was about 1,920 kWh per customer, while annual consumption by each industrial customer was 73,379 kWh. Commercial customers consumed an average of 1,614 KWh per year per customer while agricultural customers consumed 33,344 KWh per year per customer. These figures are for the ex-WAPDA distribution companies – the customers in the KESC service area used more per customer on an annual basis. (NEPRA 2006b) Industrial energy consumption of Sindh industrial zones was 1027 Million KWh. (Energy Sector Assessment for USAID PAKISTAN, 2007)

Presently, the total installed electricity generation capacity in Pakistan is about 19,505 MW. In the total installed capacity, the public sector share is around 70%, and the private sector is 30%. An additional 6,428 MW are planned to be added to this installed electricity generation capacity by the year 2010 through the IPPs, including 700 MW of Wind Power. The rising share of private sector in electricity

generation and presence of some of the leading foreign and local companies in this business, are evidence of Pakistan being an ideal investment destination.

Currently there is no wind atlas available for Pakistan. The Pakistan Meteorological Department has conducted a detailed wind power potential survey of coastal areas of Pakistan which has identified the potential areas as wind corridor where economically feasible wind farms can be established. The Alternative Energy Development Board (AEDB) Pakistan is in the process of getting this data validated by the National Laboratory of Denmark. Potential areas cover 9700 sq. km in Sindh, with suitable average annual wind speed of 7 m/s at 30 meters height. According to the survey jointly conducted by the Meteorological Department Pakistan and the Alternative Energy Development Board (AEDB) Pakistan, the gross wind power potential of this area is 43000 MW; however, exploitable electric power generation potential of this area is estimated to be about 11000 MW. (AEDB, 2009)

The Central Board of Revenue, Government of Pakistan, Statutory Regulatory Order (SRO) No. 500(I)/2004 dated 12th June 2004 exempts all imported plants, machinery and equipment for renewable energy power generation projects (including Wind energy) from Sales Tax (http://www.aedb.org/re_sector.php).Currently AEDB Pakistan has established a wind farm in Sindh, Pakistan to generate 50 MW electricity with the help of a Turkish company ‘Zorlu Energi Pakistan’ using wind turbines. The Alternative Energy Development Board is also implementing a plan for indigenous manufacturing of micro wind turbines which would play a part in creating job opportunities and poverty alleviation in the country, as well as develop the technological database and infrastructure for manufacturing of wind turbines in Pakistan. (AEDB, 2009)

The Alternative Energy Development Board (AEDB) Pakistan has been assigned by the government of Pakistan with the target of producing 700 MW of wind power by the year 2010 and 9700 MW by the year 2030, through the private sector. Currently, there are 84 Independent Power Producer (IPPs) in the country, who are planning to install a 50 MW wind farm each, under the policy for devel-

opment of renewable energy for power generation 2006 issued by the government of Pakistan.

In view of the facts mentioned above, business opportunity in the wind energy and demand for wind turbines awaits the foreign investment and as Finnish companies are equipped with the latest wind energy technology which is environmentally friendly and low in cost and looking forward to invest and introduce this technology to the emerging market, the researcher found an opportunity which will be beneficial for both industries in Karachi and Finnish companies.

Furthermore, encouragement from the government of Pakistan to the foreign investment in the renewable energy sector particularly in the wind energy sector has encouraged the researcher to find out the business opportunities from the point of view of Finnish companies that produce the latest technology wind energy equipment and wind turbines which can produce energy with minimal wind requirements and produce maximum energy.

Karachi is the biggest industrial city of Pakistan and the only port city which is known as the backbone of Pakistan's economy. This produces almost 75 % of the total GDP of Pakistan economy. Nowadays, industry in Karachi is dying due to huge shortage of the electricity and desperately looking forward to the foreign investment in the energy sector. And in my view foreign investment in wind energy could give them a safe and reliable resource of energy at an affordable cost as compared to other energy resources which are a bit more expensive than the wind energy and this is a great opportunity for the investors to invest in wind energy.

1.2 Research objective, questions and limitations

The main objective of the study is to analyze the wind turbines' demand in the industrial areas in Karachi and to find the prospect of wind turbines as an alternative energy solution in Karachi industrial areas for a prospective Finnish

company who is equipped with the latest technology in wind turbines and is interested in expanding their business in Karachi.

Focusing on the main topic of the research, the research seeks to find the wind turbine demand in Karachi industrial areas and to utilize available resources. In this regard, technology is very crucial in order to provide quality uninterruptible electricity in the industrial areas in Karachi using the latest wind turbine technology.

In addition, the research will be focusing on providing quality services to meet the demand of both present and future generations in a way reducing the demand of traditional electricity resources which are unreliable and more expensive.

This study is also aims to plan supplying wind turbines in Karachi industrial areas in social and economic context of the industrial customers with developing the interest of the customers towards importance of environmentally friendly energy solution for the industries.

Such an ambitious goal of introducing the wind energy technology in Karachi industrial area is to provide a very environment friendly solution to their electricity shortage problem that will not only resolve the electricity shortage problem, but also provide an environmentally sound and peaceful solution as well as will help in reducing the budget of the industry they have been wasting with ear bursting diesel generators and other alternative energy solutions for years.

Research question

How much demand is there for wind turbines in the industrial areas in Karachi?

Subsequent questions

How much is the energy demand in industrial areas in Karachi?

What are the challenges of providing wind energy in industrial areas in Karachi?

What is the size of the Karachi region energy market?

What is the shortage of energy for Karachi?

What is the size of the Karachi Industrial area?

What are the legal aspects of implementing the wind turbines' business in Karachi for industrial use?

What are the risks in supplying wind turbines in industrial areas in Karachi?

How will the wind turbines' business development strategy be implemented in suitable social and cultural context in Karachi?

What alternative energy solutions are currently being used in the industrial areas in Karachi?

What is the wind situation in Karachi?

This research will focus on a specific industrial area's wind energy requirements. The research is focused on wind energy equipment supply in Karachi Industrial areas. The research will not reflect the total energy demand in Karachi; instead, it will provide only the demand for wind energy in industrial areas in Karachi.

1.3 Theoretical framework

Theoretical data will be gathered from different sources like previous research reports, newspapers, books, editorials, magazines, web sites and different weekly and monthly news bulletins of the trade organizations, particularly the trade associations of the industrial areas of Karachi. However, some of the secondary re-

search on the target market has already been done by the researcher by using the above mentioned methodology and will be included in the research.

As mentioned above, the objective of the research is to provide a sustainable business opportunity for a Finnish company interested in supplying medium scale wind turbines for industrial use in industrial areas in Karachi, research will also focus on some assumptions and consequences of internal and external economic forces which might affect the business plan.

In addition, previous research in the field of wind turbines' demand and supply in Industrial areas in Karachi will be reviewed and facts and figures mentioned in the research will be taken into consideration and further modified if necessary.

The competitive nature of the new world economy, information industry and the associated network society not only necessitate changes in the energy market and energy systems, but also shape a new style of future energy demand.

As a result, the cities have already begun to experience a transition from fossil fuel economy to a de-carbonized economy, associated with the recognition of meeting their growing energy demand in a sustainable way with the help of technology and innovation in advancing towards efficient energy systems integrated with new and renewable energy sources.

Therefore, in this study, energy demand and Wind energy as an alternative energy solution for industrial areas in Karachi will be described in accordance with the new market demand which will not only satisfy the needs of the customers but also fit in the socio-economic context and the cultural background.

Empirical comparison of energy consumption in the different industrial areas will be done in order to find out the energy load consumed in a particular industrial area to market the appropriate wind turbines in the area covering the different geographical locations and energy implications of different spatial structures.

1.4 Research approach

Qualitative approach is used as a research methodology. Primary and secondary research was collected during the study using this method of research. Primary research was gathered by surveying the targeted industrial areas in Karachi for wind energy demand and at the same time, interviews with the potential companies interested in using the wind energy as an alternative solution to their electricity shortage problems and other stakeholders of the study in the target market was conducted.

In this regard, regional trade associations of the industrial areas were consulted and included for the study to access the potential prospective companies interested in using wind turbines as an alternative solution to their electricity shortage problems. These regional trade associations exist in all industrial areas in Karachi and most of the companies are the members of the association. The associations hold meetings every now and then to resolve the problems arising in the area and to discuss different issues related to the companies and the association. These associations have huge influence on the companies in their areas and they are very handy in gathering data and information about the demand for wind turbines in their prospective areas.

In addition, a structured questionnaire was designed and used as the survey tool for the research. The questionnaire was designed as per requirements of the Finnish companies which will be focused on the demand for wind turbines and tendency of the companies interested in using wind turbines as an alternative solution for their electricity shortage problem.

The questionnaire was distributed to the decision makers of the companies to collect information about the energy crisis in their area and the prospect of wind turbine as an alternative energy solution for their energy needs. Questionnaire was designed in a way that it answers the main research question as well as all subsequent questions of the research to find the demand for wind turbine in the Industrial areas. Separate questionnaire was designed for Federation of Pakistan Cham-

ber of Commerce & Industry (FPCCI), and Trade Associations of the industrial areas. Questionnaire for Federation of Pakistan Chamber of Commerce & Industry (FPCCI) was focused on the energy crisis in the industrial areas. In addition, information about the services provided by the organization to the foreign investors to facilitate the investors was gathered through these questionnaires. The questionnaire for Trade Associations was designed to find the information about their services to the industrial customer and the energy crisis in their respective industrial areas.

Questionnaire for industrial customers was focused on the energy crisis in their respective industrial areas and to collect information about the alternative energy solutions that are currently being used. It was also aimed at finding the cost of these alternative energy solutions. Furthermore, the information was gathered for the prospect of wind energy as an alternative energy solution for their energy crisis.

Since launching the wind turbine products is the core objective of the research, a sustainable marketing strategy has to be developed. For this purpose, marketing strategies of the leading companies in Karachi will be reviewed and possibly, interviews will be conducted with the marketing department heads about their marketing strategies.

1.5 Structure of research

The structure of the research will consist of five chapters. Chapter 1 includes an introduction part which also contains the background of the research in which the matters will be discussed which made the researcher work on the proposed subject.

The objectives of the research are mentioned briefly in this chapter followed by the research questions and limitations. Furthermore, theoretical framework of the research and the methodology that was used for research is described in order to move forward from the preceding chapters.

Chapter 2 is comprised of the theoretical aspects of the research in which theory used in the research is discussed in details and the references of the study or the previous study of the subject matter is pointed.

Chapter 3 deals with the research methodology. Method of research is described in this chapter and the focused target groups and the data collection method using different research method tools is highlighted and described in this chapter.

In chapter 4, the empirical data is analyzed. SWOT analysis mode is selected to analyze the market in order to find business opportunities from the point of view of prospective Finnish wind turbine companies. Finally, chapter 5 presents the conclusion of the research and recommendations for the business opportunities for the prospective Finnish company to establish wind turbine business in industrial areas in Karachi.

2 THEORY OF CURRENT MARKET SITUATION

This chapter deals with the theoretical background of the study which describes the theory available in the research area and also describes the current affairs about the electricity shortage problems in industrial areas in Karachi. Different industrial areas located in Karachi is identified and discussed in this chapter.

There are different ways of generating energy in Karachi; these energy generation criteria are discussed as energy production criteria in Karachi industrial areas which include national grid energy supplied by the Karachi Electric Supply Corporation (KESC). Other criteria such as Wind energy, Solar Energy, natural Gas, and the energy generation using diesel Generators are also described in this chapter.

As this study is focused on finding business opportunity for the prospective Finnish companies which deal with the latest technology in wind turbines, and are interested in investment in the target market, this chapter describes the entry mode criteria for the Finnish company to enter in the target market. This entry mode criteria is to find the best possible entry mode to enter in the target market for a safe and secured investment in the target country. In this regard, sales agent as an exporting entry mode is evaluated in this study. In addition, joint venture as a contractual market entry mode is also discussed and evaluated to enter in the market. Finally, the last option of having a fully owned subsidiary as a mode of entry in the Karachi market to supply wind turbines in industrial areas in Karachi is described.

2.1 Theoretical background

Karachi is the biggest city of Pakistan and the largest industrial city with 5 industrial areas named Federal B. Industrial Area (FBIA), Korangi Industrial Area (KIA), Sindh Industrial & Trade Estate (SITE), Landhi Industrial Area (LIA), and North Karachi Industrial Area (NKIA). These industrial areas are considered as the backbone of Pakistan economy and generate over 65% of the

total revenue of Pakistan annually (federal and provincial taxes, customs and surcharges). Industries in Karachi contribute 42% of their annual revenue in terms of Value Added Tax (VAT) to the government of Pakistan in large scale manufacturing (hotspots.pk/economy-of-Karachi, 2008). Karachi is also the most populated city of Pakistan with the population of over 12 million (National Public Radio, 2008) and the population growth rate is almost 2% per year. (CIA-World Fact Book 2009)

As the population of the country is growing at a rapid pace, the demand for electricity is also increasing heavily and the traditional grid power supply is not able to provide the required demand for electricity and the people of Pakistan are facing hours of electricity breakdown every day.(Geo News, 2009)

Particularly the industrial areas in Karachi are in deep trouble with this electricity shortage problem and the current alternative solution which is based on electricity generators is too expensive and environmentally not safe. Therefore, the need for alternative electricity such as wind energy is increasing which will not only be cost effective, but also very environment friendly to both the end users and the local community. Currently the industrial areas in Karachi are depending for their electricity needs on the only grid electricity supplier in Karachi which is Karachi Electric Supply Corporation (KESC) which is unable to meet the demand of the city, particularly industrial needs. Therefore, the industrial customers have no other choice than to look for alternative electricity solutions. (Geo News, 2009)

2.2 Energy demand and supply gap

The reason for the current energy crisis in Karachi is the huge gap between demand and supply. The only electricity utility provider in Karachi is Karachi Electric Supply Corporation (KESC). The secondary research shows that KESC has completely failed to meet the demand of the large metropolitan city of Karachi. It was also realized during the research that the country has enough resources and electricity generation capacity to meet the demand of the country,

but due to various political and operational reasons, these capacities or resources are not utilized efficiently. Being the backbone of the country's economy, the industrial areas of Karachi are largely affected by electricity shortage problems in Karachi. Therefore, the industrial customers are switched to other alternative solutions available in the market such as diesel and natural gas generators. (Trade Associations & Industrial Customers, 2009)

Still, the problems of the industrial customer are not yet over. They are paying a very huge price for these alternative energy generation solutions. These diesel generators are quite expensive and require continuous running cost. Due to this additional cost, the production cost for the industrial customer is also increased. The increase in the production cost has affected the industrial customers badly and made it very difficult to survive in the competitive market. Many of the industrial customers have lost large business due to unavailability of electricity in the industrial area because they were not able to meet the deadline to ship the buyer's order on time. (Industrial Customers, 2009)

Officially, the industrial areas in Karachi are exempted from load shedding (Trade associations 2009.) But still, hours of electricity breakdowns is faced by the industrial customers. KESC defines these breakdowns as technical and distribution line problems.

Table 1: Demand and supply of electricity in Pakistan

Supply and Demand of Electricity in Pakistan								
Supply and Demand Position: 2008-2020 (MW)								
	2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Existing Generation	15,903	15,903	15,903	15,903	15,903	15,903	15,903	15,903
Proposal / Committed Generation	530	4,235	7,226	10,115	10,556	13,307	13,520	14,607
Total Existing/Committed Generation	16,484	20,138	23,129	26,018	26,459	29,210	29,423	30,510
Expected Available Generation	13,146	16,110	18,503	20,814	21,167	23,368	23,538	24,408
Demand (Summer Peak)	16,484	17,868	19,352	20,874	22,460	24,126	25,919	28,029
Surplus/Deficit Generation	-3,338	-1,758	-849	-60	-1,293	-758	-2,381	-3,621

(Private Power and Infrastructure Board - Govt. of Pakistan, 2009)

Above mentioned table1, states the demand and supply of electricity in Pakistan which clearly explains the electricity shortage in Pakistan. This electricity

downfall is not just affecting the residential customers in Karachi but also has great impact on the industrial areas in Karachi and being a key player in Pakistan's economy, the industrial areas in Karachi are deep in trouble and industries are shutting down their operations and they are badly in need of alternative electricity solution.

For years, the residents of Karachi including industrial customers have been depending on Karachi Electric Supply Corporation (KESC) for their electricity needs as KESC is the only electricity provider in Karachi. In 2008 the demand for electricity in Karachi was around 2,200 MV while KESC was generating only 600 MV due to the closure of its many units in Karachi (www.paklinks.com/gs/pakistan). Due to this electricity shortage, KESC was forced to shut down the electricity supply in the city for many hours in a day.

Aside from this electricity shortage problem, some political issues were involved and due to the corruption in KESC, the management of KESC was not interested in increasing the electricity generation capacity but they kept promising to the customers that this electricity shortage is temporary and soon they will get rid of this electricity shortage and will have the electricity in access and there will not be ay load shedding in the future. But now consumers in Karachi particularly in industrial areas in Karachi do not trust KESC anymore and don't want to rely on KESC for their electricity needs and they are looking forward to other alternative solutions. (AEDB, 2009)

2.3 Energy production criteria

Currently, the available resources for energy generation in industrial areas in Karachi are composed of National Grid Electricity, Diesel Generators, Gas Generators, Solar Energy, and Wind Energy. The research will cover all these electricity generating resources in order to come up with the current energy resources of the country. The production capacity of these energy resources will be analyzed using current and future energy demand of the country. The gov-

ernment efforts towards developing the energy production using these energy resources will be defined. (Trade Associations, 2009)

2.3.1 National grid electricity

Karachi Electric Supply Corporation (KESC) is responsible to provide electricity to the residents of Karachi including industrial areas. As per NEPRA (National Electric Power Regularity Authority) act, KESC is also liable to generate, transmit, and distribute the electricity within the city. (NEPRA Act, 1997)

Since KESC is unable to meet the demand of residents of Karachi in general, and particularly to industrial customers, hours of daily electricity breakdowns have been experienced by the industrial customer on a daily basis. These heavy electricity breakdowns have made many industrialists either to wind up their business or to move their capital to other countries. Many decided to switch to other electricity generation resources to stay in the market. (Industrial Customers, 2009)

2.3.2 Solar energy

Pakistan is in an ideal location for solar energy generation. Solar energy has excellent potential in Pakistan and Pakistan receives solar radiation throughout the year with the average of 19 mega joules per square meter. The government of Pakistan initiated to generate energy from solar radiation and installed some solar panels in suburbs of Islamabad, the capital of Pakistan which is providing electricity to around 100 households on trial bases. (UNDP, 2009)

For various reasons, solar technology is not very well exploited in Pakistan. Firstly, due to high generation cost, secondly due to less marketing efforts by the government to create awareness and importance of this environment-friendly alternative solution. Lack of financial resources and technology has been also a major failure factor of this environment-friendly alternative energy

generation solution. Unavailability of this product in the open market and lack of services expertise has also been a key factor in neglecting this highly potential and environmental friendly source of energy. (AEDB, 2009)

2.3.3 Wind energy

Karachi is located along with the coastal area with sufficient wind speed to generate energy from wind. The average wind speed in the coastal areas in Karachi is measured 6-8 m/s and it is ideal for generating energy. The Alternative Development Board of Pakistan (AEDB) is planning to generate energy from wind and taken measures to solve the electricity shortage problem in Pakistan and encourage the foreign investors to invest and produce the electricity using wind energy technology. For this purpose, AEDB has already signed a contract with a Turkish company who will set up a wind plant with electric generation capacity of 50MW at the initial stage. In the future, they are planning increase the capacity up to 1200 MW. (AEDB, 2009)

Aside from these efforts at national level, AEDB Pakistan is also encouraging the foreign investors to invest in the private sector to generate electricity as an IPP (Independent Power Producer) to take part in the growth of Pakistan's economy. This will not only help the country to meet its energy demand, but also be beneficial from their business point of view and they can capture the market for their own company growth in the international market (AEDB 2009). At present, these wind energy products have not been introduced in the local market and no foreign company has marketed this product for industrial use.

2.3.4 Natural gas generators

Pakistan is rich in natural gas resources and produces natural gas in large quantity. These natural gas resources are controlled by the government. The government of Pakistan uses this natural resource for their energy needs and produces 50.3% electricity of total electricity generation. To resolve the current

electricity problems in Karachi, the government of Pakistan has recently authorized Sui southern Gas Corporation (SSGC) Pakistan to provide Natural gas to the industrial customers on priority basis who are interested in utilizing the natural gas to generate electricity for their industrial use as an IPP (Independent Power Producer).

Since the industrial area in Karachi is composed of both medium and large Industries and their electricity demand varies, not all the industrial customers can afford to be an IPP. Therefore, natural gas is also not reachable to all industrial customers. Therefore, they cannot avail the facility of using this less expensive electricity generation source of energy to run their business smoothly and to fulfill their energy needs.

2.3.5 Diesel generators

Since residents of Karachi are suffering from huge electricity shortage for the last couple of years and the government of Pakistan and KESC have failed to meet the electricity demand for the city the industrial consumers have left no other choice than utilizing diesel generators as a source of energy for their electricity needs. These diesel generators are so big and occupy a very large amount of space. Additionally, the generators are causing huge damage to the environment due to the large amount of carbon emission in the air and producing sound pollution. The industrial areas in Karachi are so huge and thousands of employees are working in the factories. Productions in the industries are very much affected by this problem. Sometimes, it is very difficult to communicate with each other within the company because of heavy noise created by these heavy duty generators. (Industrial Customers & Trade associations, 2009)

The recent oil price hike in the international market has made the electricity shortage problem in industrial areas in Karachi even worst. This leads to a substantial increase in the demand for the diesel generators as other alternative energy solutions mentioned above are either not promoted in the local market or quite expensive as compared to diesel generators. These diesel generators

have not only turned out to be a very expensive solution to generate electricity for industrial use, but also require a very huge running cost to maintain it. Due to heavy cost in running on these diesel generators, the cost of production has increased a lot. (Industrial Customers & Trade Association, 2009)

2.4 Entry mode criteria

Today, a number of entry mode options are available for the foreign investors to enter in the international market. However, the selection of entry mode in the international market sometimes can be extremely complex. The firms choose different market entry mode selection criteria according to their financial and management resources and the level of risk and control they intend to take in the foreign market. (Clarke & Wilson 2009, 220-223) Hollensen (2004, 279) has mentioned the same factors which influence market entry mode selection decision taken by a firm.

- Internal factors
- Desired entry mode characteristics
- Specific factors affecting transactions
- external factors

2.4.1 Internal factors

Internal factor that might affect the decision of selecting the right entry mode can be defined as follow categorizes as:

- Size of the organization:

Size of the company is also a very important factor in selecting the entry mode in the international market. Companies have to analyze that do they have enough human can financial resources to manage the operations across the border. (Clarke & Wilson, 2009)

According to Hollensen (2004, 280), small and medium sized organizations choose less risky market entry mode such as exporting or contractual mode because of their resource limitations. Because of the resource limitations, they prefer to select this less risky market entry mode. On the other hand, a multinational organization that is much larger in size and resources prefers to use foreign direct investment mode. This will give them full control over the operation and they will solely face the risk alone in the new market.

- International experience of the firm:

Professional experience of the company in the international or targeted market also has deep impact on the decision-making process in selecting the right entry mode. This experience can be market know-how, dealing experience with a completely new market and the people etc. (Clarke et al. 2009)

Another aspect that firms need to consider during their international process is their experience in the market. This experience can be the knowledge of the business environment of the target market. These experiences lead to reduction of cost and uncertainty in the international market. (Hollensen 2004, 281)

- Product characteristic:

Firms give consideration to the products they are going to introduce in the target market. They analyze whether the product they are going to sell in the international market has enough capabilities to generate revenue for the firm from the market. The nature of the product can be either physical or service based. (Clarke et al. 2009, 223-224) The characteristic of the product also has big effect on determining the cost of the product and provide advantages in determining the price in the international market. (Hollensen 2004, 281)

2.4.2 Desired entry mode charecteristics

According to Hollensen (2004, 283) & Clarke & Wilson (2009, 223), control, risk and flexibility are the desired entry mode characteristics that largely influence in decision-making in selecting the entry mode.

- Risk

Risk factor needs to be considered by the international marketers while selecting the entry mode in the target country. Firms need to consider the knowledge of the country, culture, politics, law, and customer's preferences are very important. The nature of the risk depends upon the selection of entry mode. For instance, less risk level is attached with exporting market mode as compared to contractual entry mode in which risk is shared with the partner overseas. (Hollensen 2004, 283)

- Control

Controlling the business across the border is never an easy task for any organization. Most organizations prefer to have strong control over the business in order to have complete grip on the business. Therefore, organizations have to have a very close look in the mode of entry which they think can provide maximum control over the business. (Muhlbacher, Dahringer & Leihs 1999, 432-433)

- Flexibility

Firms give consideration while choosing the most appropriate market entry mode which gives them the flexibility in the substantial capital investment in the international market. These criteria are considered crucial advantage when the firms consider withdrawing their investment from the market. (Hollensen 2004, 283)

2.4.3 Transection specific factors

Cost constraints are very much considered to evaluate the probabilities of production cost in the foreign market and comparing the same cost in the local market. (Hollensen 2004, 395)

2.4.4 External factors

Social and cultural difference, country risk/demand uncertainty, market size and growth, direct and indirect barrier, intensity of completion, and small number of intermediaries are the external factors mentioned by Hollensen (2004, 281-283)

- Socio and cultural differences

Mathur (2008, 497) explains that the social and cultural factor has huge effect on the demand of a product. For instance, an increase in working women in the target market boosts the sales of the different products such as household products. This is because the income of the house is doubled in a family and their purchasing power is increased. Organizations take advantage of the cultural behavior of the target market as a boost to their sales activities and market promotions during the cultural occasions in the international market. For instance, organizations in Pakistan boost their marketing activities during the holy month of Ramadan and Eid festival in which people spend all of their savings in buying leisure products such as household products.

International business differs from the business activities in the local market because of the social differences found in these countries due to cultural gap in the countries. These social and cultural differences can be found in social structure, religion, languages spoken, philosophy of the economy, and philosophy of the country. Religion is important in the sense that it guides and shapes individuals behavior in a particular religious practices and duties in the followers of the religion. Languages structure the way individuals perceive the world, it

therefore, helps define culture. In countries where more than one language is spoken it is more likely that there is more than one culture. Education is very important in defining abilities and productivities of the nation. (Lasserre & Schutte 2006, 169-173)

- Country risk/demand uncertainty

There are a number of risks known as country risks which are involved when an organization is willing to enter a new market for their expanding business operations. These country risks vary from country to country based on their political, economic, and legal factors. (Muhlbacher et al. 1999, 149)

- Economical

Firms normally consider the main economic indicators of the target market, in order to choose an appropriate market entry mode. Economic indicators such as per capita income, literacy rate, GDP growth rate and inflation are considered. Economies of the world can be divided into three categories based mainly on the level of per capita income (Mathur 2008, 25-26). Hollensen (2004, 181) describe them as less developed, newly industrialized countries, and advanced countries.

Less developed countries

The main characteristics of the less developed countries are countries which have GDP per capita income less than $3000. Furthermore, less developed countries have fewer manufacturing facilities and very poor infrastructure. Investors are reluctant to invest in the countries where real prospects for rapid economic developed is lacking.

Newly industrialized countries

Countries that fall under this category are the emerging industrial countries having capabilities or exporting high value finished goods in the international market. These newly industrialized countries have good infrastructure development and high growth. This factor creates difficulties in meeting the demand by both local and international customers.

Advanced countries

These countries have considerable GDP per capita income, strong and broad industrial base, high literacy rate, good development in the services sector and have sufficient investment to develop the infrastructure of the country.

- Political

Political factors can be defined as the likelihood that political factors will cause drastic changes in a country's business environment that can adversely affect the business environment. Economy and business face negative effects due to political and social unrest in the country. A firm considers this is political risk factor in evaluating the market before deciding to choose a country for their operations. Author further explains political risk such as outbreak of war, terrorism, boarder conflicts between the countries, political unrest and continuation of government's policies largely an alarming factor which is considers by the investors in choosing a particular country. The political factors are more commonly a big issue in the developing countries of the world. (Muhlbacher, Dahringer & Leihs 1999, 162-163)

- Legal system

In internationalization process, two or more countries are involved with completely different legal systems. There are more complications in their respective laws in international integration of the business than the applicable laws in their

domestic country. The organization interested in expanding their business in the international market has to know the broader principles of law which is applicable in implementation of their business in the target country. Usually, these legal systems consist of common law of the country and civil law. The organizations expanding their business in the international market must be aware of these laws. International organization such as European Union, United Nation, and SAARC are doing valuable efforts to harmonize different legal systems in world to eliminate the complexity in legal systems that is a hurdle in internationalization. (Burca, Fletcher & Brown 2004, 118-119)

Market size and growth

In the decision-making process of finalizing the entry mode in a certain country, market size and its growth rate plays a vital role. As the size of the market grows the level of market growth increases. Firms select the market entry mode according to the market size and its growth rate. If the market size is small, having less demand for the products and services, the firms choose the entry mode with least capital and risk factor involved. (Hollensen 2004, 282)

Trade barriers (direct and indirect)

Trade barriers are the regulations of a certain country in which the government regulates the imports of foreign products and services to protect and encourage and boost local organizations of the country. In this situation, the government issues the permit to the foreign companies in a trade which has less attraction in the market. (Burca et al. 2004, 245)

Hollensen classifies trade barriers into two categories which are called tariffs and non-tariffs. Tariff barriers are defined as charges and direct taxes applicable on the import of goods and services. (Hollensen 2004, 172), whereas non-tariff barriers are imposed by the government by putting limitation on the volume of imports to control the spread of the product in the market, in the form of quotas, quarantine etc. (Burca et al. 2004, 28)

Intensity of competition

During internationalization, companies not only face host countries local players as competitors but face intense competition from other foreign firms entering the same potential market to avail the opportunities. (Mathur 2008, 23) However, the companies that have high level of competition intensity at home are reluctant to enter in the new market and they avoid investing in the international market because they predict less profitability in the market. Therefore they avoid investing in any country with huge resources and commitments. (Hollensen 2004, 283)

2.5 Market entry modes

The world economy has increasingly developed the demand for internationalization. The companies in the developed countries having advance technology are expanding their business to less developed or under developed countries where they have huge demand of the technology and products. (Clarke et al. 2009, 220-223)

Through internationalization process, developed countries try to gain access to the natural resources of the developing countries to gain economies of scale by using their latest technology and machineries. (Hooley, Piercy & Nicoulaud 2008, 63)

According to Buckley & Ghauri (1999, 27), the trend of globalization has developed the interest of the large firms to start business operation in the international market. However, many small and medium organizations also gradually develop their strategy to become part of the international business community and to expand and grow their business across the border.

Organizations have different financial and managerial resources depending upon their size. Different market entry mode options are available for foreign investors to enter in the international market. Selecting the market entry mode

is a strategic decision depending upon the level of control and risk an organization is considering .The selection of entry mode in the international market sometime can be extremely complex. (Burca et al. 2004, 246-247)

Firms choose entry mode strategies based on level of control, risk, and their financial commitments. These factors largely influence on their decisions in selecting the appropriate market. Clarke & Wilson categorized these entry modes as: exporting, contractual, and investment entry modes. (2009, 228-229)

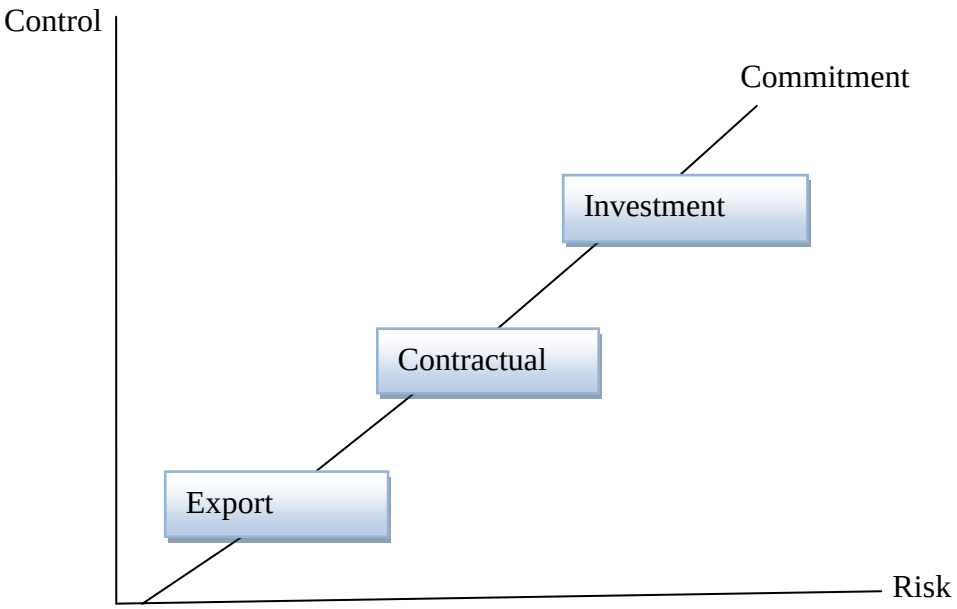

Figure 1: Mode of entry (Clarke & Wilson, 2009)

Figure 1 above illustrates three levels of investment in which the investor experiences different level of risk and control in the overseas market. As the mode of entry is shifted, the risk is also increased in the business operations. On the other hand, as the mode of entry is shifted upwards, organizations have more control over the business operations.

2.5.1 Export

Indirect mode of exporting can be used by companies that have fewer resources. Companies or the end users in the international market place their orders by using

different means available to them such as brochures, website, telephone etc. This mode of entry is considered less risky as compared to other entry modes in the market. Companies have no control over the market in this kind of mode of entry. Indirect exporting mode is considered a secured entry mode in which the payment is secured and there is no need to do marketing in the targeted country. However, in the direct market entry mode; organizations in the local market select the strategic partner in the target country in order to sell products in the target market. These strategic partners can be defined as an agent and a distributer in the target country. Unlike indirect exporting mode; the organizations are more involved with their foreign customers. Companies having longer term prospective chooses direct market entry mode which gives more control compared to indirect exporting. (Clarke et al. 2009, 204-205)

- Sales agent

Entry made through a sales agent by a foreign company is the cheapest and easiest way to penetrate any potential market. An agent can be an individual or an organization doing operations in the host country. An agent can work on a commission basis for the product and services they deal in for a foreign firm based on the terms of the contract between the foreign company and the sales agent in the international market. These sale agents are not employees of the local company; rather they provide services in selling the products of the parent organization in the market and get a curtain percentage on sales of the products. (Hollensen 2004, 298-299)

- Distributor:

Mostly the firms do not distinguish between the agents and the distributors because scale of operations is almost similar. Distributors work only for one particular firm whereas agents work for many companies. However, a distributor buys the products and adds its margin of profit and re-sells to the customers. On the other hand, the sales agent has to follow the foreign company’s policies and get com-

mission on sales of the product as per contractual agreement between the foreign company and sales agent. (Clarke et al. 2009, 205)

Advantages and disadvantages of having agents and distributors are almost similar. The biggest advantage of having these intermediaries in the target market are that companies in the local market use the sales force of these intermediaries in the host country. (Hooley et al. 2008, 361) Utilization of well experienced sales representatives of firm's intermediaries can be beneficial in long term for a successful foundation in the international market. (Muhlbacher et al. 1999, 461) However, these intermediate is have certain disadvantages such as agents/distributors only focus on the selling the products of the foreign companies for their commission and they provide the services to their buyers. The foreign company has no control over the operations of an agent but little control over the distributor. (Clarke et al. 2009, 205-207)

According to Hollensen (2004, 299), firms need to adopt certain evaluation and selection criteria for agents and distribution. These selection criteria include:

- Contacting the end user to suggest a suitable sale agent/distributor
- Pursuing recommendation from authorized bodies in the host country such as trade associations, Chamber of Commerce and other government departments
- By using commercial agencies
- By advertising in the renounced bulletins of the industry

2.5.2 Contractual

Contractual mode of entry is the mode of entry in an international market in which two organizations mutually agree in order to achieve a common goal. One of the market entry modes under contractual agreement is known as joint venture. A joint venture is collaboration between two organizations to achieve a common task beneficial for the business. The risk of the business is also shared between the collaborated organizations according to their share in the

joint venture. In joint venture, the collaboration of the two alliances forms a third company to exploit the strengths and resources of each for mutual benefits. (Mathur 2008, 36)

When a domestic organization expands its business in the international market in conjunction with an international partner is called “joint venture”. In joint venture, the domestic organization builds and operates a manufacturing facility in the target market to sell its products to the end users of the target market. The participation contribution of the partners in the joint venture varies as per contract between the partners. They share the benefits of the business as per contractual agreements. (Burca et al. 2004, 394)

Entering into the target market using the local partner allows the new entrant to get quick access to cheap factors of production and distribution network through the knowledge of a local partner. A good partner in the international market with a good reputation towards its customer can be significantly beneficial in generating revenue in the long term business prospective. (Muhlbacher et al. 1999, 466-467)

Hollensen (2004, 318-326) describes a few disadvantages of Joint venture relationship including the difficulty in finding a reliable and sound business partner who is willing to share risk and having similar objectives. When a conflict arises during the relationships companies find difficulties in managing them. Cultural differences have deep impacts in the joint venture and possibility of loss, flexibility and confidentiality affects the smooth running of operations.

2.5.3 Investment

An investment can be made by having own subsidiary in the target market or by acquiring an existing company in the target market. A subsidiary is a form of foreign direct investment in which the investor gains the ownership of the resources of a foreign country. In this kind of entry mode, the investor has to transfer huge capital, technology and other resources in the target country. In

return, the investor gains full control over the operations and bears full risk and rewards. (Quick Mba)

This mode of market entry is selected by the organization who wants complete control over the business in the overseas market. Organizations such as multi-nationals' that have large resources select this market entry mode for quick market penetration. There are two ways types under subsidiary mode either to acquire a local company which is known as "acquisition" or build a company from scratch which is known as "Greenfield investment".(Hollensen 2004, 343)

Acquisition is the speedy way to enter the international market. It allows acquirer to get access to skilled human and other resources of the acquired organization. Acquisition of an organization also allows the enquirer company to access to the distribution network and quick access to the customers of the acquired company in the target market. It also helps the investor in reducing learning time and to compete with competitors. (Muhlbacher et al. 1999, 467-468) However, the author explains the flip side of acquisition in which cultural differences between the home country and the foreign company may cause conflicts and time consuming process in finding suitable company to acquire and in the negotiations process. According to Burca et al, certain legislations in some countries impose restrictions and certain conditions on a certain mode of entry in order to benefit a particular entry mode. (2004, 394)

The advantage of Green investment in the international market is that it has a deep impact on the customers in the market showing the commitment of the investing company that this acquisition was made for the long term prospect of the company which shows the commitment of the investor in the international market that they are willing to stay in the market for a long period. Operation as a green investment can be considered as a disadvantage in a sense that it takes a longer time to start the business operation and to build the image of the company in the international market. (Hollensen, 2004, 343)

3 RESEARCH METHODOLOGY

In this chapter, different perspectives on research methods are explained along with the justification of the specific choices I made for my study. Firstly a research purpose is presented followed by research approach, research strategy, data collection methods, target groups and data analysis is presented. Lastly validity and reliability issues are discussed and presented.

3.1 Research purpose

According to Saunders, Lewis & Thornhill (2003) there are three classifications of research: explanatory, descriptive and exploratory. Explanatory research is built on previous knowledge and theories to answer the research question. Explanatory research focuses on the reason a situation or behavior occurs and which cause produces which effect.

Descriptive research is used when there already exists a certain amount of knowledge on the subject matter in form of models. Within descriptive research there are limitations to research only a few aspects of the problem area, the description thorough and detailed and it can be description of each aspects or description of relations between several aspects. (Saunders et al. 2003)

Exploratory research is often expressed as a hypothesis. The main purpose with exploratory research is to gather as much information as possible within a specific problem area. A comprehensive view of the problem area is required by the researcher. Exploratory research deals with the new and undiscovered areas where little research has been done. (Collis & Hussey, 2009)

Research was mainly exploratory because the nature of the study is to explore the market in the target area to find potential customers and to present a feasible implementation plan in the target area. However, descriptive and explanatory research will be used to in order to cover all aspects of the research.

3.2 Research approach

Research can be conducted by using two different methods i.e. qualitative and quantitative methods. Selecting one method does not mean that the other research method is excluded from the research. Both methods can be used in conducting research in the market. The distinction between the two methods mentioned above is related to data treatment rather than the use of the research method. (Eriksson & Kovalainen, 2008)

Quantitative research methods transform the data to numbers and quantities. Furthermore statistical analysis is done based on data and information gathered during the research. Qualitative research methods on the other hand are the researcher's comprehension or interpretation of the data that stands in the foreground. This data cannot be transformed to numbers or quantities. (Hooley et al. 2008)

The researcher has chosen qualitative research approach for this research study, since the main purpose of this research is to gain more information on the current market situation and problems faced by the industries in Karachi with regards to their energy problems and prospective Finnish company by selecting the most favorable market entry mode in the target market.

3.3 Research strategy

Saunders et al. (2003, 109) states that a research strategy is divided into eight major categories such as:

- Experiments;
- Surveys;
- Ground theory;
- Ethnography;
- Action research;
- Cross-sectional and longitudinal studies;

- Case studies;
- Explanatory, descriptive and exploratory.

When the research only focuses on a few objects from various aspects, and the researcher uses ‘how’ ‘what’ and ‘why’ questions to answer the research question, then the explanatory, descriptive and exploratory research strategies will be the most appropriate for the research.

3.4 Data collection methods

According Saunders et al. (2003), there are six different ways from which data and information can be collected during the study research. These include documentation, interviews, direct observations, participation observation, archival records and physical artifacts.

There are two categories of data collection: primary data collection refers to the method in which the researcher gathers the data for a specific purpose/research by doing interviews, surveys, questionnaire or experiments whereas secondary data collection method refers to the method in which the data is gathered by some other researchers who have already conducted the research on the same area for some other purpose such as publications, database, internet or available hard copy.(Collis et al. 2009)

According Saunders et al. (2003) interviews can be subdivided in three categories:

- Structured interviews

In structured interviews, a predetermined questionnaire is used in which standardized and identical questions are asked to the respondent in order to gather information related to the research purpose or the data requirements for the specific research. In structured interviews, data provided by the respondent is tape recorded in order to maintain the quality of data or to avoid any data lost.

- Semi-structured interviews

In semi structured interviews, a list of questions is listed by the researcher by designing a survey questionnaire. These survey questionnaires may vary depending upon the focus groups in the research in their specific organizational context. During semi structured interviews, data and information provided by the respondent may be noted or possibly tape recorder in order to ensure to cover all the information and discussion.

- Unstructured interviews

This type of interview by the researcher is used to explore in-depth a general area in which the research is focused. In this type of interview there is no list of predetermined types of questionnaires. Rather a clear opinion of the respondent is obtained on the aspects of the research which is required to explore. In this kind of interviews, the respondents are free in expressing his knowledge and experience about the subject matter of the research, behavior and beliefs.

According to Collis et al. (2009), there are two types of questions, open ended and close ended. In close ended questions the respondent has to choose from predetermined options to answer the question. However in open ended questions the respondent is free to answer the questions in his own words.

In this research the researcher has used qualitative research method using face to face interviews with the target groups using both unstructured and semi-structured interviews based on open ended questions. This is considered to be important to gather data and information from the target groups giving them a freedom to express their knowledge and experience in this research context. Interview language during the research was mostly in Urdu, the national language of Pakistan whereas, on some occasions, English language was also used during the interviews in accordance to the preference of the interviewee.

- Target groups

The empirical data was collected through different target groups and they were contacted for interviews and survey questionnaire. These target groups are well organized in the city and have great influence on the market. (Saunder et al. 2003)

Research was done using the interviews and surveying the target market using survey questionnaires to the respondents. An appointment was taken from the respondents for interviews and to answer the questionnaires.

- Trade Associations

Karachi is the biggest and most-industrialized city of Pakistan. There are 5 industrial areas in Karachi. These industrial areas are so huge and each industrial area has thousands of companies in it. Each industrial area has its own trade associations. These trade organizations in industrial areas in Karachi are founded by the local community of those industrial areas and all the factories/companies are the members of these trade organizations. These trade organizations have great influence on the local community and are well aware of the problems of their members and it is their responsibility to provide solutions to the problems of the community and guide the community to resolve all the issues in their respective industrial areas.

As mentioned above, most of the business community in those areas is member of those trade organizations, so these trade organizations hold monthly board and general member's meetings and discuss the issues in their areas and try to resolve their problems.

Personal interview with the top officials of each trade organization was conducted during the research. A survey questionnaire was also given to the top officials of the trade associations to collect information about the electricity problems in their respective area and what are the solutions to their electricity

shortage problems in the areas. In the questionnaire and during the interview, the researcher focused to find out the answers to the research question and subsequent questions of the research and other related information valuable for the research.

- Industrial Customers

These industrial customers are the key features of the research and their views on the electricity shortage problems in their respective areas are extremely vital in the research process. A separate survey questionnaire was designed and given to the top officials of the company to answer the questionnaire and share their views on the electricity shortage problems in their areas and what is their thinking about the alternative solutions to those problems.

Each industrial area in Karachi consists of thousands of manufacturing and service provider companies which are operating round the clock in producing products and services. These companies include local manufacturers as well as the multi-national companies that employee thousands of employees who are working in three different shifts.

Since it is too difficult to visit all the companies in the industrial areas to gather information about the energy demand and supply in their respective areas, certain criteria was chosen to select companies for interviews. In this regards, top 10 companies in each industrial area according to the size of the company and the employee strength were selected to answer the survey questionnaire and for the interview in order to understand their views on the electricity shortage problems and the alternate solution and expenditure over the alternative solution they have been using.

- The Federation of Pakistan Chamber of Commerce & Industry (FPCCI)

The Federation of Pakistan Chamber of Commerce & Industry (FPCCI) is a federal trading body and trade associations and local Chamber of Commerce

are its members. The responsibilities of Federation of Pakistan Chamber of Commerce & industry include facilitating the local and foreign investors in different sectors in Pakistan. It also organizes the general trade mission in the foreign countries and welcome foreign investment arriving in Pakistan from other countries.

During the research in the target market, the researcher held meetings with the officials of FPCCI to collect information about the energy crises in industrial areas in Karachi. The researcher also gathered information about the services they provide to the industrial customers to facilitate for their business operations.

Since one of the responsibilities of the FPCCI is to facilitate the foreign investors in Pakistan, the researcher also asked questions regarding the business operations and wind turbine business opportunity in the industrial areas in Karachi. Legal issues were also discussed during the interviews with the respondents of FPCCI.

- The Board of Investment (BOI) Pakistan

The Board of Investment (BOI) Pakistan is a government body which act as a focal point of contact for prospective investors, both local and foreign to provide all necessary information regarding investment in Pakistan. The board of Investment (BOI) is responsible for promotion of investment in all sectors of economy in Pakistan. BOI also facilitates local and foreign investors in speedy materialization of their projects in Pakistan. BOI is also responsible of evaluating visa applications and security clearance of the foreign investors.

During the study, the researcher selected BOI for interview to collect information about the investment in the energy sector in Karachi industrial areas. In addition, information was collected regarding legal issues in business operations in Karachi.

- The Meteorological Department Pakistan

The Meteorological Department Pakistan functions under ministry of defense, Pakistan. The Meteorological Department Pakistan (PMD) is both scientific and service department. It is responsible of providing country-wide weather information for variety of interests and numeric public activities and projects which require weather information. Meteorological Department Pakistan (PMD) is also responsible to investigate the factors responsible for global warming, and climate change. (PMD, 2009)

The researcher selected Meteorological Department Pakistan for interview to collect wind information in Karachi industrial areas. During the interview, information was gathered on wind measurement procedures, duration and locations.

- The Zorlu Energi Pakistan

Zorlu Energi Pakistan is a Turkish company operating in Pakistan to build a wind farm of 50 MW. Zorlu Energi Pakistan has signed an agreement with Alternative Energy Development Board (AEDB) Pakistan to build the wind farm and operate on Build, own, and operate basis. The researcher selected Zorlu Energi Pakistan to collect information about their operation in Pakistan and to discuss the mode of entry to have wind turbine business in Pakistan.

- The Alternative Energy Development Board (AEDB) Pakistan

The Alternative energy Development Board (AEDB) Pakistan is an autonomous body attached to the Cabinet Division of Pakistan. The alternative Development Board (AEDB) was established to act as a central agency for development, promotion, and facilitation of renewable energy technologies, formulation of plans, policies, and development of technological base for manufacturing wind energy equipment in Pakistan to meet the energy demand in the country. The AEDB is also responsible of renewable energy generation in the country. In this regard, AEDB has been working with the Meteorological Department Pakistan to ensure

energy generation using renewable technology. The AEDB is also responsible to identify to wind potential areas in the country and to facilitate foreign investors in energy sector in Pakistan using renewable technologies.

Therefore, the researcher selected the Alternative Energy Development Board (AEDB) Pakistan to collect information about facilities provided by the board to the foreign investors and possibility of wind energy business in Karachi industrial areas.

3.5 Sample selection

A sample selection technique enables the researcher to focus on limited target groups rather than the whole population of the study area. From the research point of view it is impractical for the researcher to select the whole population of the focus groups. Therefore, planning to use a predominantly qualitative and quantitative strategy can help the researcher in collecting of the data. Furthermore, sampling can reduce the risk of losing data and information and provide more focus within the area of study as well as saving time. (Saunder et al. 2007)

Due to limitations of the research and time constraint, the researcher selected specific target groups who were somehow related to the industrial customers directly or indirectly. These target groups were very much associated with the industrial customers and had vast knowledge on the energy crisis faced by the industrial customers in Karachi. In addition, some of these target groups such as Board of Investment Pakistan (BOI), and Federation of Pakistan Chamber of Commerce & Industry (FPCCI) were responsible to facilitate the foreign investment in the country. Therefore, these target groups were very important to collect information from the investment point of view.

Wind is the most important factor to have wind turbine business in any target area. In order to collect wind data, the researcher selected Meteorological Department Pakistan. Meteorological Department Pakistan is responsible for the

weather forecast throughout the country and measures wind speed all over the country in different locations at different given time. Meteorological department Pakistan has also done a survey with alternative energy Development Board (AEDB) Pakistan and Zorlu Energy Pakistan to identify the wind Corridor around the country to utilize available wind from the environment to generate electricity using wind turbines.

3.6 Data analysis

Analyzing the qualitative data has some implication in both the collection methods of data from the target groups and its analysis. It is very important in analyzing the qualitative data to obtain in-depth results associated with the study area. Qualitative data gathered during the research has to be standardized in such a way that it's easier to analyze the data. This can be done by classifying the data and information into various categories. (Collis et al. 2009)

In this study, the data gathered from the field research was categorized and simplified in a meaningful form. During the interviews, the researcher also took note some of the information provided by the respondents. The researcher also used observation method during the interviews in which information was analyzed by observation of the respondents. For example, some respondents were hesitant to provide some information but gave some idea about those particular questions and answered in such a way that their name is not conceived from the information.

3.7 Reliability and validity

Reliability of the data and information gathered during the research is a very important aspect of the findings of the research. The reliability of the data reflects as a credibility of the data and information provided by the respondents and from the original sources. User has to analyze the reliability of the data gathered during the research. (Muhlbacher et al. 1999)

According to Saunders et al. (2003), to verify the validity of the data, the researcher has to find the evidence of the information gathered during the research and ask him-self if the conclusion of the findings is valid and reliable.

Therefore, in this research, quality of data has been managed through careful analysis and by understanding the respondent's point of view on the electricity shortage problems in their respective areas. To maintain the quality of data and information, interviews during the research were tape recorded and at the same time notes were taken to make it in a documentary form in order to maintain the reliability and validity of the information provided by the respondents.

Since data gathered from the respondents was in raw form, the researcher identified the key issues from the information provided by the respondents and classified them into categories to obtain meaningful information according to the requirement of the study.

4 ANALYSIS

In this chapter, market analysis is discussed. This analysis is based on the personal interviews with officials of the different stakeholders in the target market. Analysis was done with the help of a survey questionnaire distributed to the same target groups.

Industrial areas in Karachi are suffering from huge electricity shortage problems these days which is affecting the productions in the industrial areas. To collect information about the current energy crisis, data regarding the energy situation in the industrial areas in Karachi is analyzed in this chapter to find the business opportunity from the prospective Finnish company's point of view. This market situation will be very helpful in knowing the current market situation and to know the respondent's point of view on the energy crisis.

Another very important aspect of wind turbines' business in Karachi, it is very important to know the wind situation in Karachi. Therefore, to find out a valuable business opportunity in Karachi, wind data in Karachi for the last couple of years is presented and analyzed.

Market for wind turbine business from the Finnish company prospective in the target market is analyzed using SWOT analysis model. SWOT analysis model is helpful in finding business opportunities and possible threats as an external business environment for the investor company in the target market whereas, the strengths and weaknesses of the firms is analyzed as an internal factors of the organizations willing to invest in the target area.

Selected market entry mode is also discussed in order to justify the selection of market entry mode. Proposed business will also be analyzed in this chapter.

4.1 Current market situation

To know the current market situation from the business perspective in supplying wind turbines in industrial areas in Karachi, e researcher interviewed the officials of the Alternative Energy Development Board (AEDB) Pakistan, The Federation of Pakistan Chamber of Commerce & Industry (FPCCI), Board of Investment Pakistan (BOI), Zorlu Energi Pakistan, trade associations in the industrial areas in Karachi, and the industrial customers in their respective industrial areas.

During the interview, the respondent at the Alternative Development Board (AEDB) Pakistan stated the current market situation in the target area. According to the respondent, industries in Karachi are largely affected due to the energy crisis. The respondent further explained that AEDB is very much concerned with the energy crisis and trying to resolve the energy problems. In this regard, AEDB is already working on a mega project with Zorlu Energi Pakistan.

In this project, Zorlu Energi Pakistan will set up a wind farm to generate 50MW electricity on Build, Own, and Operate (BOO) basis in the initial phase. According to the respondent, AEDB has been working in a very sustainable and systematic way to explore the vast renewable potential across the country in order to develop affordable, secured, and environment friendly energy foundation for the country.

The respondent also said that AEDB welcomes the foreign investment in Pakistan and is always ready to facilitate the foreign investors in renewable energy sector in Pakistan. The respondent said that completion of this project will help reducing the energy crisis in the country. The government of Pakistan and AEDB is planning to accelerate the project and expanding the energy generation capacity using wind energy. In future, AEDB is planning to expand the wind energy generation up to11000 MW.

When asked about the electricity shortage problems in Karachi, the respondent replied that Pakistan is suffering from the worst energy crisis in the history for the

last few years. The respondent also mentioned that only in 2006, Pakistan lost around $6 million due to load shedding and energy shortage problems. Therefore, huge business potential awaits the foreign investors to invest in the energy sector in Pakistan. To encourage the foreign investors in the energy sector in Pakistan, the government of Pakistan has announced many incentives to the foreign investors in the energy sector. All renewable energy products are exempted from sales tax and custom duties (AEDB, 2009)

Table 2: Electrical Energy Sector Overview

Energy generation sources in Pakistan 2009

Thermal (fossil-fuels)	12,478 MW	64.12%
Hydel	6,480 MW	33.30%
Nuclear	462 MW	2.37%
Renewable	40 MW	0.21%
Total	19,460 MW	100%

(AEDB Pakistan, 2009)

The above mentioned table 2 illustrates the energy generation by different sectors in Pakistan. The table shows that Pakistan has largely been depending on the thermal or fossil fuel energy to meet the country's energy demand. It contributes over 64% of total energy generation capacity in the country. Pakistan is currently generating 6,480MW energy using thermal technology. It contributes 33.30% to the total installed capacity of energy. Pakistan is a nuclear power country, but it is not utilizing its nuclear facilities to generate electricity in spite of huge energy crisis in the country. Pakistan is producing only over 2% electricity using nuclear technology. The contribution of renewable energy sector is less than 1% of total energy generation in the country.

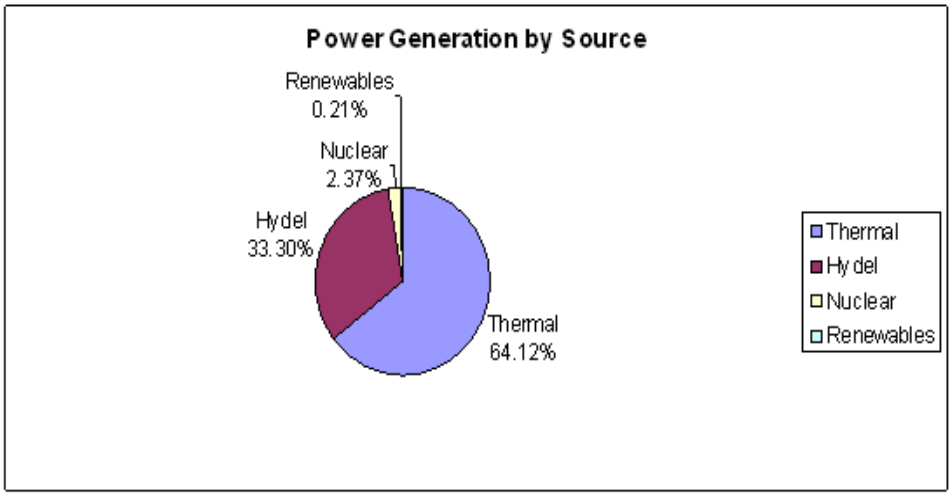

Figure 2: Power generation by source
(AEDB, 2009)

During the interview, the respondent also stated that Pakistan has an installed capacity of 19,460 MW whereas the demand of electricity is only 18,000 MW. Unfortunately, installed energy generating units are not fully operational that is why the country is having a electricity shortfall of 2,000MW. Karachi is alone suffering from 200MW power shortage.

During the field research, the researcher also held a meeting with the official of Board of Investment (BOI) Pakistan and conducted an interview. Several questions were asked during the interview with regards to foreign investment in Pakistan in the energy sector. When asked about the investment in energy sector in industrial areas in Karachi, the respondent at BOI said that Pakistan is a heaven for investors in energy sector. He added that Government of Pakistan is encouraging the foreign investors in the energy sector to fill the energy demand and supply gap of the country by utilizing the natural resources of the country such as solar and wind.

The respondent also mentioned during the interview that the government of Pakistan has established BOI to facilitate the local and foreign investors in order to provide safe and secured investment in Pakistan. Therefore, BOI is always there to facilitate the foreign investors. The respondent further added that government of Pakistan is encouraging foreign investors in energy sector and given the BOI clear

instructions to simplify the investment process to facilitate and encourage the foreign investors in the energy sector.

The respondent at BOI also provided data of foreign investment is different sectors for the last 9 years in Pakistan and the foreign investment inflow in the country to show the current foreign investment trend in Pakistan. This investment trend can be valuable for the prospective Finnish wind turbine companies who are willing to invest in the energy sector in Pakistan.

Table 3 : Foreign Investment inflows in Pakistan ($ Million)

Year	Greenfield Investment	Privatization Proceeds	Total FDI	Private Portfolio Investment
2001-02	357	128	485	-10
2002-03	622	176	798	22
2003-04	750	199	949	-28
2004-05	1,161	363	1,524.00	153
2005-06	1,981	1,540	3,521.00	351
2006-07	4,873.20	266	5,139.60	1,820
2007-08	5,019.60	133.2	5,152.80	19.3
2008-09	3,719.90	-	3,179.90	-510.30
Jul-09	200.10	-	200.10	-4.50
Total	**18,683.80**	**2,805.20**	**20,949.40**	**1,812.50**

Note: Pakistan's Fiscal Year runs from 1st July till 30th June.
(BOI Pakistan, 2009)

The above mentioned table provides the data of investment inflow in Pakistan for the last 9 years. The data shows a substantial increase in total Foreign direct Investment (FDI) over the last 5 years. Same increasing investment inflow trend is followed in the Greenfield investment for the same period of time. Privatization in the country has also been encouraging for the foreign investors in Pakistan. This privatization process has contributed large amount of investment in the country with the increasing contribution of $2,800 million for the last 9 years. This in-

vestment inflow data is quite encouraging to the foreign investors and shows the business opportunities in the target country.

Table 4: Sector Wise FDI Inflows ($ Million)

Sector	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Oil & Gas	80.7	268.2	186.8	202.4	193.8	312.7	545.1	634.8
Financial Business	(34.9)	3.6	207.4	242.1	269.4	329.2	930.3	1,864.9
Textiles	4.6	18.5	26.1	35.4	39.3	47.0	59.4	30.1
Trade	13.2	34.2	39.1	35.6	52.1	118.0	172.1	175.9
Construction	12.5	12.8	17.6	32.0	42.7	89.5	157.1	89.0
Power	39.9	36.4	32.8	(14.2)	73.4	320.6	193.4	70.3
Chemical	20.3	10.6	86.1	15.3	51.0	62.9	46.1	79.3
Transport	45.2	21.4	87.4	8.8	10.6	18.4	30.2	74.2
Communication (IT&Telecom)	NA	12.8	24.3	221.9	517.6	1,937.7	1,898.7	1,626.8
Others	140.9	66.2	90.4	170.1	274.0	285.0	1,107.2	764.5
Total	**322.4**	**484.7**	**798.0**	**949.4**	**1,523.9**	**3,521.0**	**5,139.6**	**5,409.8**
Privatization Proceeds	-	127.4	176.0	198.8	363.0	1,540.3	266.4	133.2
FDI Excluding Pvt. Proceeds	**322.4**	**357.3**	**622.0**	**750.6**	**1,160.9**	**1,980.7**	**4,873.2**	**5,276.6**

Note: Pakistan's Fiscal Year runs from 1st July till 30th June.

(BOI Pakistan, 2009)

The table 4 above explains the foreign investment in different sectors in Pakistan. The table illustrates that these is a constant increase in investment in power sector in Pakistan for the last 5 years. A slight decline in the power sector investment is observed in the table in year 2007-08. According to the respondent at the board of Investment (BOI) Pakistan, this decline was due to political uncertainty during that period.

During the empirical research, the researcher also approached to the trade associations in the industrial areas to collect data and information about the current mar-

ket energy situation. The trade associations in Karachi industrial areas are an influential body over the industrial units in their respective industrial areas. Therefore, the researcher approached to the official of trade associations for interview and distributed the questionnaire to respond to the questions related to the research.

During the interview with the respondent, the researcher came to a conclusion that the industrial areas in Karachi were exempted from load shedding. (Trade Associations, 2009) But in spite of the exemption from load-shedding, the industrial customers were facing hours of electricity break downs every day. Electricity Supply Corporation defines these un-scheduled breakdowns as faults in the distribution lines.

To fulfill their energy demand, the industrial customers are forced to use alternative electricity resources like diesel and gas generators which are quite expensive. These generators increase the manufacturing cost due to expenditures over the fuel and natural gas. (Industrial Customer, 2009) Because of these additional manufacturing costs, the industries in Karachi are in deep trouble in the competitive market and losing business in the international markets. Therefore, when asked about the wind turbines' business opportunity, the respondents at all trade organizations in Karachi industrial areas welcome the proposal of supplying wind turbines in industrial areas in Karachi and said that the industry will obviously accept the wind turbine solution to generate electricity for industrial use as long as the cost of the turbines and it's maintenance cost is less than the cost of their current alternative solutions.

Industrial customers, the main target group of the research were approached for interview and to respond to the survey questionnaire. For this purpose, ten industrial customers in each industrial area were chosen having criteria of a well renounced and reputed organization in the respective industrial areas. These industrial customers were also victims of energy crises in industrial areas and like others; they had no choice but to use the most expensive alternative energy solution to survive in the market. They were also using diesel and natural gas for their elec-

tricity need and were paying huge amount for this. These industrial customers had a daily electricity consumption of 70,000 KW to 4 MW. (Industrial Customer, 2009) Karachi Electric Supply Corporation has completely failed to need their demand. Although, industrial areas were officially exempted from load shedding, but still an average of 6 to 8 hours of electricity breakdowns were observed in a day. For these reasons, none of the respondent companies in the industrial area was using electricity provided by the KESC. Rather, all of them were using their own diesel and gas generators to meet their electricity demand. Most of the industrial customers were using diesel generators for their energy needs which were quite expensive. For instance only Siemens Pakistan which had a daily electricity consumption of 27,000 KWh and their monthly expenditure over the diesel generators were over RS 100 million (€88370.45)1€=113.16 Rs on 26-08-2009). (Siemens Pakistan, 2009)

This extra expenditure on electricity generation has largely increased the manufacturing cost of the products, which has not only increased the product prices, but also has given disadvantage in the competitive market. During the interview, all of the industrial customers replied positively to adopt wind turbines as alternative solutions to their electricity needs as long as the initial and maintenance cost of the turbines are less than the current diesel generators cost. They are also willing to adopt environmental friendly power generation solution as their current diesel generators emissions huge sound pollution and occupy large amount of space. During the research, the researcher also conducted an interview with the officials of Federation of Pakistan Chamber of Commerce & Industry (FPCCI). The respondent at FPCCI described the current market situation as the worst energy crises in Pakistan in last decade. The respondent further said that the current government has taken measures to resolve the energy crises. The respondent added that FPCCI is an apex body that work as a bridge among government, foreign investors, and the traders in the local market. Therefore, FPCCI can help interested foreign investors in their business operation in Karachi.

4.2 Wind situation in Karachi

The researcher also conducted an interview with respondent of the Meteorological Department Pakistan to obtain detailed information about the wind speed data surrounding the target area. The Meteorological Department Pakistan has collected wind data in 44 different locations in Singh and Baluchistan at different heights of 10, 30, and 50 meters for 3 years (2003-2005). During the data collection, it was observed that at 50 meter height, an annual average of 4.2 m/s wind potential was available. It was also observed that during six months from April to September the wind speed is more than 5 m/s and the highest wind speed was measured in the month of June which climbed 6.9 m/s. This measurement was taken every hour at PST (Pakistan standard Time). (Meteorological Department Pakistan, 2009)

Table 5: Wind data of Karachi for the last 3 years

Monthly wind speed at Karachi in 3 years												
Months	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
AWS10m	0.7	0.7	2.1	2.7	3.7	4.2	3.6	2.6	2.3	0.7	0.4	0.5
AWS30m	1.7	1.9	3.2	4.3	5.5	5.8	5.2	4.5	4.1	1.5	1.2	1.8
AWS50m	2.3	2.5	3.9	5.2	6.6	6.9	6.5	5.7	5.1	2.0	1.6	2.4

(Meteorological Department Pakistan, 2009)

4.3 Energy demand and supply gap analysis

The current energy crisis in Karachi is due to a huge gap in demand and supply of the electricity. During the interview, the respondent at FPCCI explained that currently Karachi is facing around 200 MW electricity shortages, which is causing hours of daily electricity break downs. The respondent further described that the current energy demand of Karachi is 2000MW whereas; Karachi Electric Supply Corporation is able to provide only 1800 MW.

The respondent at ADEB also gave the same figures of demand and supply in Karachi. The respondent further blamed the only electricity provider of Karachi for this energy crisis in Karachi. He added that the non production policy of KESC due to high generation cost and utilization of very old transmission network by KESC is the main reason of this energy crisis.

According to respondents at various industrial customers, the electricity demand in the industrial areas in Karachi varies and depends on the production of the goods in the industry and the orders they get from the local and international buyers. In different seasons, the energy demand is different. The respondents at various industries also said that the electricity demand also depends upon the size of the organization. Different companies in the industrial areas operate in several shifts therefore, the energy demand in each company in the industrial areas different.

4.4 Energy production criteria analysis

During the field research, the researcher evaluated the current energy production criteria the industrial areas in Karachi. For this purpose, the researcher selected trade association the industrial areas and 10 industrial customer from each industrial areas in Karachi. These industrial customers were from different types of industries such as: pharmaceutical industry, textile industry, leather industry, engineering industry, and consumer products industries.

The respondent at all the 5 trade associations in Karachi said that the energy crisis in Karachi, particularly in industrial areas in Karachi has forced the industrial customers to use alternative energy solutions available in the market to meet their electricity demand in order to survive in the market. The current available energy recourses of energy in Karachi industrial areas are national grid electricity, diesel generators natural gas generators. Wind energy and solar energy markets are under development and currently on trial basis. The government of Pakistan has started some wind energy and solar energy projects on trial basis in different locations in the country.

National grid electricity

National grid electricity is provided by Karachi Electric Supply Corporation (KESC) in Karachi including industrial areas. Due to energy crisis in Pakistan, KESC is not able to meet the energy demand of the city and has to cut down the electricity supply and start load shedding for an average of 6 to 8 hours a day in the industrial areas.

During the interviews with the industrial customers, the respondent described that the electricity crisis in industrial areas is so huge that either they have to wind up their business and transfer their investment to some other country or to switch to other alternative solutions which are easily available in the market. The majority of the respondents said that although they are still connected with the grid electricity and paying in electricity bills, but they are not using the grid electricity and they are depending on the alternative energy solution to meet their energy demand. The respondents also complained about fraud in metering and billing system of KESC. They explained the situation that KESC meters show wrong consumptions in the meters and KESC is overcharging them to generate excess revenue. They said that they are already fed up with the grid electricity therefore, now they completely depend on their own electricity generation using alternative energy resources.

Diesel generators

Respondents at the industry mentioned that diesel generators are the most commonly used alternative energy solutions by the industrial customers to generate electricity for their electricity requirements. They further describe that these generators are so capital intensive and their high running cost depends upon the usage and frequent diesel prices. This increase the cost of production affects in meeting the export targets. In return their revenues are decreasing and it is hard to stay in the competitive market.

During the research, the respondents from the industrial customers said that their expenditures over the fuel in using diesel generators range between Rs.400, 000 to 700,000 (€ 3500 - 6000) monthly depending upon the size of the organization and energy consumption.

Natural gas generators

Natural gas generators are one of the most common alternative solutions used by the industrial customers. Respondents of trade associations and industrial customers defined that Natural gas generators are a comparatively cheaper alternative energy generation solution but only few larger organizations in the industries are presently using.

The respondents at the industrial customers further explained that only larger organizations are currently using natural gas generators because of some restrictions on using natural gas for industrial use. Firstly, the company that wishes to use natural gas for their energy use in industrial areas has to meet certain criteria to get natural gas at a discounted price. Secondly, the companies have to register themselves as an Independent Power Producer (IPP) in Karachi Electric Supply Corporation and have to get a license as an Independent Power Producer (IPP) entity. According to the respondents, it is a long procedure to obtain the license of IPP and smaller organization cannot afford get IPP license and they have to stick to diesel generators for their energy needs.

Respondents of large organizations who are using gas generators for their energy need described that although natural gas is the most economical energy solution, and Pakistan is rich in this natural resource of energy, sometimes they face problem in term of gas pressure provided by the gas supplier. They also expressed that these gas generators are very expensive and require huge running cost which is largely affecting the production cost of their products.

Wind energy

Geographically, Karachi is located in an ideal location for generating wind energy where vast potential of generating wind energy is available. The respondent at the Alternative Energy Development Board and the representative of Zorlu Energi Pakistan described the potential of wind energy solution as the most attractive and progressive solutions in the near future.

The respondents at trade associations and industrial customers consider wind energy solutions quite expensive. They also said that in-availability of wind energy solution in the market is one of the reasons why they are not using it for their energy need. They further said that if this product is widely available at a reasonable cost, they are willing to adopt this solution for their energy needs.

4.5 External factor analysis

During the field research, the researcher asked questions to respondents about the external factors that might affect the business operations. Detailed knowledge and data was obtained about these external factors from the respondents which need to be considered by the potential new entrant in this market. These external factors are described as social and economic differences between the local and international companies, country risk and demand uncertainty, market size and growth, trade barriers in the target country, and the intensity of competition in the target market.

Social and cultural differences

During the research the respondents described the current market awareness situation with regards to environment-friendly energy solutions. The respondents from trade associations and the industrial customers explain that the industry is well aware of the increasing importance of renewable energy resources and willing to adopt a solution which can meet their electricity requirements. The respondents

also showed their interest in using these renewable energy options and to take part to save the environment.

However, some respondents from the industry were not convinced about the potential of renewable energy solution options. They showed reluctance to switch from their current electricity option to proposed renewable electricity generation solutions due to high switching cost.

Country risk/demand uncertainty

The researcher approached the Board of Investment Pakistan and Federation of Chamber and Commerce & Industry in order to obtain the information about the country risk and demand uncertainty situation which might affect the interest of the foreign investors willing to invest in different sectors especially the renewable energy sector.

- Economical

The economical situation of the country was explained by the respondents at the Board of Investment (BOI) Pakistan and the Federation of Chamber and Commerce and Industry (FPCCI). They both were very optimistic about the continuity of the economic growth of the country which was very promising during the last five years. They explain important economic figures which are mainly considered by the foreign companies when they decide to invest in any particular target country such as per capita income, GDP growth rate, Literacy rate and inflations.

They further explain that even though Pakistan is a developing economy, full of natural resources which need to be explored to boost the economy of the country. In this regard, the utilization of its natural environmental resources and foreign investment in the energy sector in Pakistan can be very helpful in further economic growth of Pakistan which will not only be beneficial for the people of Pakistan, but ultimately it will also benefit the foreign investors in their business growth and their internationalization process.

Table 6: The major economic factors of Pakistan

Economic Factor	2005-06	2006-07	2007-08	2008-09
Per Capita income	$836	$921	$1042	$1046
Inflation	7.5%	5.9%	8.4%	17.8%
GDP growth/year	5.8%	6.8%	4.1%	2.4%
Literacy rate	54%	55%	56%	-

(Ministry of Finance, Government of Pakistan, 2009)

Table 6 shows the major economic factors of Pakistan for the last 4 years. These factors include per capita income, inflation rate of Pakistan, Gross Domestic Product growth rate, and literacy rate during 2005-6 to 2008-9. In this table, the per capita income has a substantial increase during the mentioned period as well as inflation rate. The GDP show stability during 2005-6 to 2007-8. However, the literacy rate reflects the moderate improvement during the above-mentioned period.

- Political

With regards to the political situation of Pakistan, all the respondents described the political situation of the country as sound and safe from the foreign investment point of view. Particularly industrial areas are politically quite safe and attractive with huge business growth opportunities from the point of view of the foreign investment. The respondents further explain that since the restoration of democracy in Pakistan many foreign investors have shown their interest in investing in Pakistan due to the positive steps by the political government towards foreign investment in the energy sector in Pakistan. The current government has taken some major measures in encouraging foreign investors by opening markets in Pakistan in different sectors and assuring the investors regarding their safe investment and giving them many incentives such as eliminating the quota and exceptions on imports of renewable energy products.

- Legal system

To collect information on legal system in Pakistan on foreign investment in energy sector, the researcher approached Board of Investment (BOI) Pakistan and the Federation of Pakistan Chamber of Commerce & Industry (FPCCI). The respondent at BOI explained that they have been working and facilitating foreign investors in different sectors in Pakistan to provide legal guidance in business operation in Pakistan. According to the respondent at FPCCI, the FPCCI has been working to simplify the legal issues on foreign investment in the country. In addition, legal process has been simplified by the FPCCI in order to start energy business in the country. The FPCCI has given different rights and concessions to the investors to operate in the country and to take part in economic growth of Pakistan within the legal system of the country.

Market size and growth

According to the Alternative Energy Development Board representative, Pakistan has a vast potential for wind energy generation particularly in the coastal areas in Sindh including Karachi and Baluchistan. Particularly in the province of Sindh they have initially identified 54000 MW of electricity generation capacity using the different sizes of wind turbine. The respondent also mentioned that the market size for wind energy product is so huge and increasing with an impressive growth rate due to impressive measures taken by the current government in order to develop energy sector in the country to meet the energy demand of Pakistan. Industrial areas in Karachi are so huge. Each industrial area has thousands of companies in the area. The organizations in the industrial areas operate round the clock in several shifts to produce goods to meet the demand of both local and international markets. According to the respondent at AEDB, this huge market size has huge business growth opportunity in wind energy sector.

The respondent also described that the AEDB with the help of government of Pakistan has issued around 80 Letters of Interest (LOI) to different local and

foreign companies to invest in wind electricity generation projects in order build Pakistan economy and to avail business growth opportunities in the country.

Trade barriers (direct and indirect)

The respondent at the Alternative Energy Development Board (AEDB) Pakistan mentioned that in order to promote the renewable energy sector, the government of Pakistan has taken aggressive measures to attract the foreign and local investors in the energy sector to import the latest wind energy products, technology and machinery in order to explore and utilize renewable energy resources of the country to meet the current and future energy needs from environmentally friendly sources to protect the environment and to reduce their import expenditures on oil import to meet the energy needs.

The respondent mentioned that the government has exempted the sales tax and custom duty on renewable products in order to encourage the investors in the energy sector, whereas, the government has imposed a minor trade barrier on imports by applying 5% tariff on assembled renewable energy solutions.

Intensity of competition

The respondents at AEDB, BOI and FPCCI described that the intensity of the competition in renewable energy is quite low at present because these products are newly introduced in Pakistan and no company is currently manufacturing the renewable energy products locally. According to the respondents they are expecting intensive competition in this sector in the near future but not at present.

SWOT Analysis

Table 7: SWOT analysis of wind energy of Karachi industrial areas

SWOT Analysis	
Strengths • High quality technology & product • Willingness to invest in the target market	Weaknesses • No previous experience of target market • Relatively expensive technology • High Initial cost
Opportunities • Business growth • Tax exemption on the products • Rapid return on invest-ment • product awareness by the customers • suitable environment • Increasing demand and supply gap • Sufficient wind availabil-ity	Threats • Variance in wind speed • Political unrest • frequent change in govt. policies • Variance wind speed in the target market

Strengths

- High quality technology & product

The biggest strength of the Finnish company from the investment point of view is that companies in Finland are equipped with the most advanced wind turbine technology. Their recent advancement in the wind turbines products has largely reduced its weight. Now these advanced wind turbines can produce maximum

energy at a wind speed of 2 m/s at a height of 30m. This gives a competitive advantage to the Finnish companies who are willing to invest in the energy sector in Pakistan.

- Willingness to invest in the target market

As European wind turbine markets are already saturated, the manufacturers are willing to sell their products in developing countries where people are suffering from the energy crisis and need foreign investment in the energy sector to meet their energy demand. This willingness to invest across the border is strength for the Finnish wind turbine manufacturers.

Weaknesses

- No previous experience of target market

Finnish wind turbine manufactures like Win Wind Ltd and Eagle Windpower have no previous business experience in the target market. The market environment of Karachi industrial areas for these companies is completely new and different. The social and cultural values are also quite different in the market as compared to the European markets. These social and cultural differences can be considered as a weakness for the Finnish investor who is willing to enter in the target market to supply wind turbines in industrial areas in Karachi.

- Relatively expensive technology

The empirical research shows that the Wind turbine market in the target area is quite very price conscious. It was quite clearly observed during the field research in the target area. It was also observed during the research period that Finnish wind turbines are a bit more expensive than those of Chinese and other European wind turbine products. This gives a competitive weakness to the Finnish manufacturers of wind turbine. Even so, the technology of the Finnish product would be far better than those of Chinese products, The Finnish wind

turbine companies will have to compete in terms of prices against the other competitors.

Opportunities

- Business growth

Huge electricity shortage problems in industrial areas in Karachi give the Finnish wind turbines manufacturers a wide open business growth opportunity. The Business environment particularly in Karachi is quite sound and secured. Aside from this, various government and non government organizations have assured during the field research that they will welcome the foreign investment in energy sector in Karachi and they are always ready to guide the investors in business operations in Karachi.

- Tax exemption on the renewable energy products

To encourage the foreign investment in the energy sector in Pakistan, the government of Pakistan has announced sales tax and custom duties exemption. Under Statutory Regulatory Order (SRO) No. 500(I)/2004 dated 12th June 2004 all renewable energy products are exempted from sales tax and custom duties.

- Rapid return on investment

The demand for energy in Karachi is so huge and currently there are no local or international company operating in Karachi in wind turbine business. Therefore, there is no competition in the target market. If investment is made to provide wind turbines in the industrial areas, one can expect rapid return on investment.

- Product awareness by the customers

The field research in the target market through interviews and survey questionnaire suggest that the target groups are already well aware of wind energy products. They show willingness to adopt the environment-friendly technology. It gives a great opportunity to the investors in wind turbines to invest in Karachi and enjoy the benefits of their investment.

- Suitable environment

From the environment point of view, the researcher realized during the research and interviews with the respondent groups that the environment of the target area is quite good and friendly. The infrastructure of the target market is quite developed and people of Karachi are quite aware of the importance of environment friendly energy solution and they are willing to welcome the opportunity to change their old non environment friendly diesel generators to environment friendly wind turbines.

- Increasing demand and supply gap

In spite of almost daily promises made by the KESC and, the WAPDA official that there would be no load shedding in the next month and KESC and WAPDA will meet the electricity demand, there is still increased demand and supply gap in Pakistan particularly in industrial areas in Karachi. Now industrial customers are not accepting any excuses made by KESC. They stopped depending on power supplied by KESC and depending on their own electricity generation through diesel and natural gas generators. This increased demand and supply gap opens great opportunities to the foreign investors in energy sector in Pakistan.

- Sufficient wind availability

Karachi is a coastal city of Pakistan along with Arabian Sea. This ideal location for wind energy gives an opportunity for foreign investors in the energy sector in Karachi. Although, the wind speed in Karachi is not at the excellent level as defined under International Wind Power Classification, still, with the latest improved medium range wind turbines, which require just 2 m /s at a height of 30 m, fulfill the required speed to generate electricity efficiently. (Meteorological department, 2009)

Threats

- Variance wind speed

As per wind data provided by Meteorological Department Karachi, the wind speed in Karachi varies in different months during the year. This variance in wind speed may cause insufficient performance of wind turbines. But the respondent at Meteorological Department Karachi explained that if the larger wind turbine is installed and we are able to get even 25 % output from it, it can be beneficial for the companies. (Meteorological Department Pakistan, 2009)

- Political unrest

Basically, Karachi is politically safe in terms of political situation is concerned. However, political unrest in other parts of the country might be threatening to some of the foreign investors who are not aware of the target market and the political situation of the target country. The democratic government is so often thrown out by the military in Pakistan. This leads to change in the government policies which are always a threat for the foreign investors in Pakistan.

- Frequent change in government policies

As the government changes in Pakistan so often, the government policies are also changed so frequently. This could also be a threat for a Finnish company to invest in Pakistan. But during the research, the researcher observed that due to huge energy crisis in Pakistan, all political parties emphasize in developing the energy sector using renewable energy to meet the current and future energy demand of the country. The observations of the researcher during the research suggest that the chances of change in energy policies are little, but still exist.

- Law & order situation

Due to various social and political reasons, over all Pakistan and in particular Karachi, the law & order situation has been worst. This law & order situation has always been threatening foreign investors and repelling foreign investors to invest in Pakistan. Since Pakistan has been a part of international coalition in war against terror, Pakistan is largely affected by the terrorist attack in Pakistan. Therefore, foreign investors are hesitant to invest in Pakistan. Fortunately, Karachi not affected badly during combat with terrorist and political and environmental situation has been very sound from investment point of view. Internal political situation has been very well under control due to some sensible political policies of the local city government. Local city government seems to be very enthusiastic in developing industrial areas of Karachi. Many efforts have been taken by the local city government to develop these industrial areas such as building the infrastructure within the city in order to swift moment of the goods produced in the industrial areas to the shipping yards.

4.6 Entry mode analysis

During the field research, data and information was collected about different energy modes in the target market to find out the best possible entry mode to invest in Karachi industrial area. For this purpose various government and private organizations were targeted for interview. These target groups were the

Board of Investment (BOI) Pakistan, the Federation of Pakistan Chamber of Commerce & Industry (FPCCI), the Alternative Energy Development Board (AEDB) Pakistan, the trade associations in the industrial areas, and the Zorlu Energi Pakistan.

4.6.1 Sales agent

Since wind energy product is quite new in Karachi, there is no organization dealing in wind turbines. Additionally, there are no expertises in wind turbines who can take a risk to invest in wind turbines' business. It was also observed during the interviews that it requires huge amount of investment as wind turbines are quite expensive, it would be a difficult task to find an agent who can take responsibility to sell the wind turbines in industrial areas in Karachi and to take challenge of achieving sales target. Therefore, it was concluded that having a sales agent in target area is not a valuable option for the investors.

4.6.2 Joint venture

Questions were asked to the respondent about the option to enter in the target market having a coalition with a reputable business entity. Again, the researcher was unable to get positive response from the respondent. The reason is again the same. The wind turbine product is quite new to the market and it requires huge investment. That is why, until now, no one has even thought about doing this business in Karachi or we can say that no one has accepted the challenge to sell this expensive product in the target market. It would be such a difficult task to find a reliable partner in the target market for wind turbine business. Social and cultural differences between Pakistan and Finland might also be a hurdle in having a coalition as a joint venture in Karachi.

The respondents at Board of Investment Pakistan (BOI) and Federation of Pakistan Chamber of Commerce & Industry (FPCCI) said that currently there is no local or international company in the target market which is dealing in wind turbines. Therefore, the foreign company cannot find a local partner which has

expertise in wind turbine business in the target market. So it is not suitable to enter in the market by having joint venture at present. Otherwise, inexperience of the local partner in the joint venture might result in failure of the business in the initial stage of the investment.

4.6.3 Subsidiary

As the above mentioned market entry modes are not suitable to enter the target market and might be very risky, the only option left to enter in the target market is to enter in the market as an own subsidiary. The respondents at Board of Investment Pakistan BOI), Pakistan Chamber of Commerce & Industry (FPCCI), and Alternative Energy Development Board (AEDB) Pakistan agreed that the best possible entry mode in entering the Pakistan energy market to setup own subsidiary. The respondents further added that this way the investors can fully control the organizational activities as well can afford to invest larger amount in the business in order to get greater benefits out of the business. They also said that if the investment is made intellectually and resources are utilized intelligently, there is a very good business growth opportunity in the long term investment.

4.7 Recommended business model analysis

The objective of the recommended business model is to suggest the business model to a prospective Finnish company willing to invest in the Karachi industrial areas. This business model also suggest to procedures to approach to the target customers in the target market and the other stakeholders in the market. This recommended business model is designed to supply the wind turbines in the industrial areas in Karachi and to find out the best mode to enter in the market. The proposed business model is designed carefully keeping in mind both the social and economic aspects of Pakistan and the absolute demand of wind turbines in industrial areas in Karachi.

The business model is designed for a prospective Finnish company equipped with the latest wind turbines' technology and is interested in expanding their business in Pakistan which has great potential in the energy sector business and investment and offering greater opportunities to the investors in wind energy.

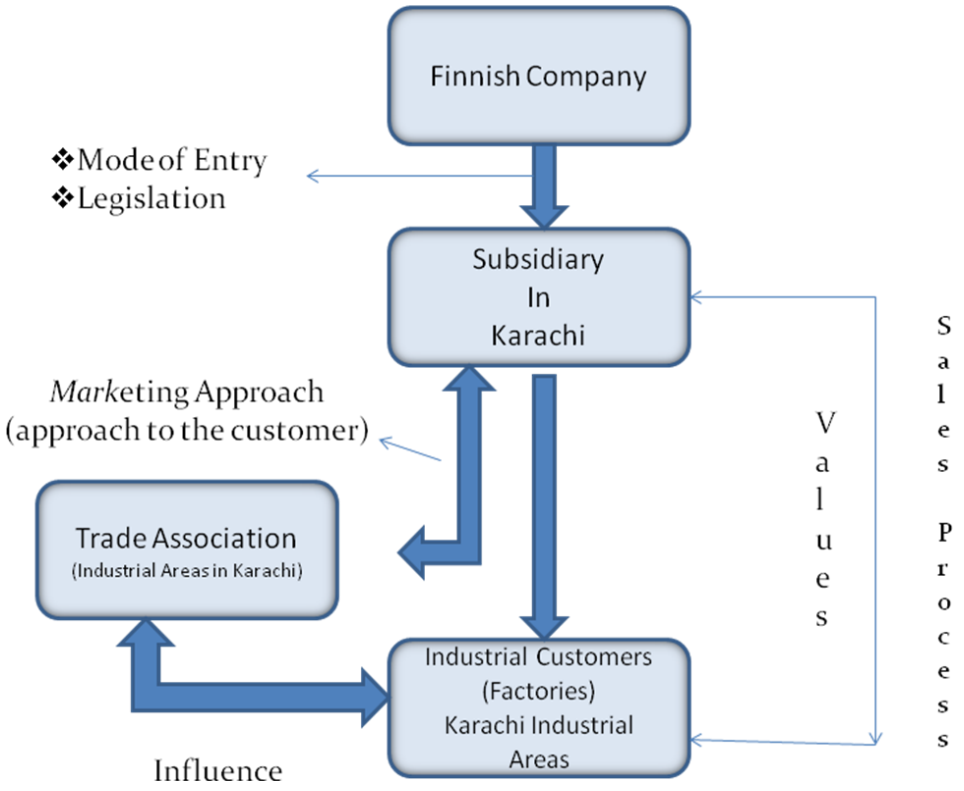

Figure 3: Recommended Business Model

In this business model, prospective Finnish company decides to setup its own subsidiary operation after evaluating all three options of market entry modes in the target market to sell its wind turbines products. This evaluation was based on the empirical research of the target market. All the entry modes were analyzed during the research to find the best possibility to enter in the market. Preset criteria were followed to determine the best possible market entry mode in the target market. Based on the research it is concluded that the best way to enter in the Karachi market is to setup a subsidiary in Karachi which will be controlled by the head office in Finland. All the legislative issues regarding setting up the subsidiary will be managed by the head office.

The trade association in industrial areas in Karachi which has great influence in those areas will be consulted to gather information about the companies in their areas. Interviews will be conducted with the board members of the prospective industrial areas and the wind turbines' product will be introduced through these industrial areas.

The subsidiary will directly be involved in the sales process and will report all the management and sales activities to the head office in Finland.

5 CONCLUSIONS AND RECOMMENDATIONS

In this study, the main objective was to analyze the energy demand of the industrial areas in Karachi and to find the prospect of wind energy as an alternative energy solution design to an implementation plan for supplying wind turbines in industrial areas in Karachi for a prospective Finnish company equipped with the latest wind turbines technology. In this regard, the most important aspect of the study was to understand the current market energy situation and to explore the market demand for wind turbines as an alternative energy solution in the socio-cultural and economic condition of the target area.

For data and information collection, the researcher selected a target group as per demand and objectives of this study. The focussed target groups belong to the local bodies who are directly or indirectly involved with the subject matter of the study and who can be crucial in facilitating the new entrants in the target market. The selected target groups consist of: Alternative Energy Development Board (AEDB) Pakistan, Meteorological Department Pakistan, Board of Investment Pakistan (BOI), Federation of Pakistan Chamber of Commerce & Industry (FPCCI), Zorlu Energi Pakistan, trade associations operating in all 5 industrial areas in Karachi, and obviously industrial customers in industrial areas in Karachi because the main prospective client will be the industrial customers.

The study is qualitative in nature. Interviews were conducted with the target groups using open ended (unstructured) questionnaire to collect information from the target groups. The interviews were also tape recorded to ensure quality of data provided by the respondents and to avoid losing valuable information of the interviews. Interviews were conducted in Urdu and English.

During the interviews with the respondents of the Board of Investment (BOI) Pakistan and the Federation of Pakistan Chamber of Commerce & Industry (FPCCI), the researcher discussed the legislative issues on foreign investment in the country and government policies regarding promotion of renewable energy in the country. Data was gathered about wind energy potential in the target area from

the Alternative Energy Development Board Pakistan. The data and information provided by the above-mentioned target groups suggest that the current market is facing a huge energy crisis nowadays and government has taken valuable measures to resolve the current energy crisis in Karachi.

On the basis of data provided by the industrial customers and Trade associations of industrial areas, it can be concluded that the current alternative solutions used by the industrial customers such as diesel generators and gas generators are very expensive and have huge running cost which increases the production cost. Therefore, it is very hard to compete in the market due to this additional cost. Currently, wind energy and solar energy products are not available in the local market. That is why the industrial customers cannot use these energy resources to generate electricity. It can further be concluded from the data provided by the respondents that the market is well aware of the importance of this environment friendly energy solution and if the wind turbines are marketed properly in the industrial area, the investor with long term prospective can capture the market which has greater business growth opportunity in the future.

Wind is the most important factor in generating energy using wind turbines. During the interview with the respondent at the Meteorological Department Pakistan, the researcher also discussed the possibilities of wind energy generation using medium scale wind turbines in the industrial areas in Karachi. After evaluating the information and data provided by the respondents, conclusion can be drawn that the industrial areas in Karachi have sufficient wind speed to generate electricity with medium scale wind turbines and it can be very helpful in meeting the energy demand of the industry.

With regards to the external factors of the market environment, the researcher concluded that the current market is politically suitable and government is encouraging the local and foreign investors in the energy sector in order to meet the country's energy demand. For this purpose, the government of Pakistan is developing a renewable energy sector with the help of the Alternative Energy Development Board and exploring the wind potential areas all over the country.

The Alternative Energy Development Board (AEDB) Pakistan has already started a project with Zorlu Enerji Pakistan. In the initial phase, Zorlu Energi Pakistan will generate 50MW electricity using wind turbines that will be connected in the national grid which will help reducing the electricity shortage in Pakistan.

During the study, the researcher also tried to evaluate the most appropriate entry mode in the target market. For this purpose, the researcher collected information from different sources such as respondents from the Board of Investment (BOI) Pakistan, and the Federation of Pakistan Chamber of Commerce & Industry (FPCCI). After carefully analysing the data provided by the respondents, the researcher came to a conclusion that the best possible entry mode in the target market is a subsidiary mode which provides long term benefit to the company with complete control on the business with future prospective.

On the basis of findings of this study, the researcher has no hesitation to recommend that the market of Karachi industrial area has strong potential from all aspects including the demand of the wind energy product, wind situation in Karachi industrial areas, the legislative concessions and incentives provided by the government to encourage the foreign investors to invest in the energy sector.

- Recommendation for further study

Since this study was focussed only on the industrial customers in industrial areas of Karachi, the findings do not reflect energy demand of the whole Karachi city. Aside from the specific target groups of this study, other groups are also affected by the energy crisis in Karachi such as residential customers. Residents of Karachi belong to the middle class and upper class community who can easily afford the wind energy products. Therefore, the researcher would recommend further research targeting residential customers as prospective wind turbine clients.

REFERENCES

Buckley, Peter J. & Ghauri, Pervez N. (1999).The Internationalization of the
--------. firm: A Reader, 2nd Edition, Thomson, London
Clarke, G. & Wilson, I. (2009) International Marketing, 1st Edition, McGraw-
--------. Hill, Glasgow
Collis, J & Hussey, R. (2009).Business Research: A practical guide for
--------. under graduate & postgraduate students.3rd Edition, Palgrave
--------. MACMILLAN, London
De Burca, S., Fletcher, R. & Brown, L. (2004). International Marketing:
--------. An SME Perspective, Prentice Hall, London
Eriksson, P & Kovalainen (2008), Qualitative Methods in Business Research.
--------. Sage Publications Ltd. London
Hollensen, S (2004). Global Marketing: A decision-oriented approach,
--------. 3rd Edition, Prentice Hall London
Hooley, G., Piercy, Nigel F & Nicoulaud, B.2008, Marketing Strategy and
--------. Competitive Positioning, 4th Edition, Prentice Hall, London
Lasserre, P. & Schutte, H. 2006, Strategies for Asia Pacific: meeting new
--------. challenges, 3rd revised updated Edition, Palgrave Macmillan,
--------. Great Britain
Mathur, U C.2008.International Marketing Management: Text and Cases.
--------. SAGE TEXT, India
Muhlbacher, H., Dahringer, L. and Leihs, H. (1999) International Marketing:
--------. A global Prospective, 2nd Edition, International Thomas Business
--------. Press, London
Saunders, M., Lewis, P. & Thornhill, A 2003, Research Methods for Business
--------. Students, 3rd Edition, FT Prentice Hall

Electronic references

Alternative Energy Development Board (AEDB) Pakistan, 2009
http://www.aedb.org/re_sector.php Accessed on February 5, 2009
CIA, 2009
https://www.cia.gov/library/publications/the-world-factbook/print/pk.html-(population) Accessed on April 15, 2009
Economist Fact Sheet, 2008, October 21, 2008
Energy Sector Assessment for USAID Pakistan 2007
www.**usaid**.gov/pk/downloads/eg/PEDP.pdf
Geo News, 2009.
Khan, K. (2009).Geo News: Aaj Kamran Khan Ke Saath. Viewed on 25-05-2009 at 2210 PST
Hotspots, 2009
www.hotspots.pk/economy-of-Karachi Accessed on May 23 2009
Karachi Chamber of Commerce & Industry, 2009
www.karachichamber.com Accessed on March 25, 2009
National Electric Power Regulatory Authority, Pakistan (NEPRA), 2009
www.nepra.org.pk/index.htm
National Public Radio, 2009
www.npr.org/templates/story/story.php?storyId=91083375
Paklinks, 2009
www.paklinks.com/gs/pakistan Accessed on April 28, 2009
Private Power and Infrastructure Board - Govt. of Pakistan, 2009
www.ppib.**gov**.pk/
QuickMBA, 2009
www.quickmba.com/strategy/global/marketentry/ Accessed on June 22, 2009
Sui Southern Gas Corporation, Pakistan (SSGC), 2009
www.ssgc.com.pk Accessed on February 16, 2009
United Nations Development Program (UNDP), 2009
http://tcdc.undp.org Accessed on April 13, 2009

Interviews:

Akhtar, Nadeem (2009). Project Manager, Board of Investment Pakistan.
--------. Interviewed on 26-08-2009
Ali, Khurram (2009). Economist, Federation of Pakistan Chamber of
--------. Commerce & Industry, Karachi (FPCCI). Interviewed on 24-08.2009
Dr. Hasni, Fakhir (2009). Chairman, Department of Mechanical Engineering,
--------. NED University, Karachi. Interview on 01-07-2009
Hassan, Syed Mumtaz (2009). Project Manager, Zorlu Enerji Pakistan.
--------. Interviewed on 06-08-2009
Hussain, Arif (2009). Programmer, Pakistan Meteorological Department,
--------. Karachi. Interviewed on 02-09-2009
Rashid, Abdul (2009). Director, Pakistan Meteorological Department, Karachi,
--------. Interview on 19-08-2009.
Sarwar, Rana (2009). Superintendent, Alternative Energy Development Board
--------. (AEDB) Pakistan. Interviewed on 23-07-2009
Uroos, Afshan (2009). Economist, Federation of Pakistan Chamber of
--------. Commerce & Industry (FPCCI), Karachi. Interviewed on 24-08.2009

Interview with Industrial Customers (Landhi Industrial Area)

Ahmad, Bilal (2009). Director, Bilal Industries Pvt. Limited, Karachi.

--------. Interviewed on 07-07-2009

Ahmed, Abrar (2009). Director Technical Support, Younus Textile Mills,

--------. Karachi. Interviewed on 03-08-2009

Ali, Sardar A. (2009). Manager Technical Support, Dawlance Private Limited,

--------. Karachi. Interviewed on 31-08-2009

Haider, Shamim M. (2009). Nakshbandi Industries Ltd., Karachi.

--------. Interviewed on 11-08-2009

Iftikhar, Syed (2009). Factory Manager, Gul Ahmed Textile Mill Limited,

--------. Karachi. Interviewed on 03-08-2009

Javaid, Muhammad (2009). Finance Manager, J&M Fashions, Karachi.

--------. Interviewed on 10-08-2009

Memon, Rafiq (2009). Deputy Manager Maintenance Department, Pak

--------. Suzuki Motor Company Limited, Karachi. Interviewed on 27-07-2009

Rahim, Abdul (2009). Factory Manager, General Tyre and Rubber Company of

--------. Pakistan Limited, Karachi. Interviewed on 01-09-2009

Raza, Ikram (2009). Contractor, Abbott Laboratories Pakistan Limited,

--------. Karachi. Interviewed on 24-08-2009

Yousfani, Mudassar (2009). Assistant Maintenance Manager, Salfi Textile

--------. Mills Limited, Karachi. Interviewed on 05-09-2009

Interview with Industrial Customers (Korangi Industrial Area)

Ahmed, Anwar (2009). Director, ASL Paper Mills, Karachi.

--------. Interviewed on 05-08-2009

Ahmed, Jamal (2009). Factory Manager, Eastern Textile (Pvt) Ltd, Karachi,

--------. Interviewed on 16-09-2009

Jahangir, A. (2009). Purchase Manager, Sonafi Aventis Pakistan Limited,

--------. Karachi. Interviewed on 12-09-2009

Muhammad, Miskeen (2009). Factory Manager, Al-Meera apparel (Pvt) Ltd.,

--------. Karachi. Interviewed on 13-08-2009

Rehan, Sadaf (2009). Manager IT, Merit Packaging Limited, Karachi.

--------. Interviewed on 21-08-2009

Rehmani, Z. (2009). General Manager, Artistic Denim Mills Ltd., Karachi.

--------. Interviewed on 10-09-2009

Rizwan, Abdul (2009). Manager Electrical, English Biscuit manufacturer

--------. (Private) Limited, Karachi. Interviewed on 21-08-2009

Rizwan, S.(2009). Factory Manager, Lakson Tobacco Co. Ltd., Karachi.

--------. Interviewed on 28-07-2009

Shahzad, Abid (2009). Manager Operations, Hilal Confectionary (Pvt) Ltd.,

--------. Karachi. Interviewed on 29-07-2009

Siddiqi, Saad Syed (2009), Director Production Systems, XPondCard,

--------. Karachi. Interviewed on 13-08-2009

Interview with Industrial Customers (SITE Industrial Area)

Ahmed, Irfan (2009). Consultant, Alabid Exports, Karachi.

--------. Interviewed on 03-09-2009

Ahsen, Fawad Syed (2009). Plant Manager, Eastern Garments Pvt. Ltd.,

--------. Karachi. Interviewed on 05-09-2009

Anwar, Naseem (2009). Director, Tulip Towel Industries, Karachi.

--------. Interviewed on 27-07-2009

Chawla, Suleman (2009). CEO, Alpha Containers Industries, Karachi.

--------. Interviewed on 10-09-2009

Jabran, Muhammad (2009). Factory Manager, Arbi Industries, Karachi.

--------. Interviewed on 05-09-2009

Khan, Zameer (2009). Plant Manager, Hino Pak Motors Pvt. Limited, Karachi.

--------. Interviewed on 28-072009

Marfani, Shabbir (2009). Accounts Manager, Razi & Sons, Karachi.

--------. Interviewed on 20-07-2009

Pasha, Junaid (2009). Factory Manager, Union Fabrics Pvt. Ltd., Karachi.

--------. Interviewed on 06-07-2009

Pervez, Ahmed (2009). In-charge power house, Siemens Pakistan Engineering

--------. Co. Ltd., Karachi. Interviewed on 26-08-2009

Siddiqui, Jamil (2009). Plant Manager, Pepsi Cola International Pvt. Ltd,

--------. Karachi. Interviewed on 05-08-2009

Interview with Industrial Customers (Federal B.A. Industrial Area)

Aftab, Junaid (2009). Manager Quality Assurance, Fashion Arts International,
--------. Karachi. Interviewed on 10-08-2009

Ahmed, Riaz (2009). Manager Finance, Global Marble Industries Pvt. Ltd,
--------. Karachi. Interviewed on 01-07-2009

Ali, Muzammil (2009). Accounts Manager, Libra Engineering Pvt. Ltd,
--------. Karachi. Interviewed on 21-07-2009

Imran, Sharif (2009). Production Manager, Royal Automobiles Pvt. Ltd,
--------. Karachi. Interviewed on 12-08-2009

Khan, Rasheed (2009). Administrator, Shezan International Limited, Karachi.
--------. Interviewed on 28-08-2009

Mirza, Shamim (2009). Manager Procurement, Lucky Tex Pvt. Ltd, Karachi,
--------. Interviewed on 26-08-2009

Mumtaz, Shahid (2009). Procurement Manager, Unity Textile Pvt. Ltd,
--------. Karachi. Interviewed on 08-07-2009

Munir, Muhammad (2009). Factory Manager, Afroz Textile Industries Pvt. Ltd,
--------. Karachi. Interviewed on 04-08-2009

Raza, Aamir (2009) Manager Operations, Al-hadi Textile Pvt. Ltd. Karachi,
--------. Interviewed on 24-08-2009

Ur-Rehman, Atiq (2009). Factory Manager, KB Industries, Karachi.
--------. Interviewed on 23-07-2009

Interview with Industrial Customers (North Karachi Industrial Area)

Ahmed, Farooq (2009). Manager Accounts, Billtex International Pvt Ltd,
--------. Karachi. Interviewed on 02-07-2009
Ali, Liaquat (2009). Procurement Manager, Iqbal Dying Mills, Karachi.
--------. Interviewed on 25-06-2009
Amreen, Munawar (2009). Manager Operations, Asian Paint Industries
--------. Pvt. Ltd., Karachi. Interviewed on 13-07-2009
Jamali, Assadullah (2009). Managing Director. Ansari Textile Industries,
--------. Karachi. Interviewed on 31-08-2009
Mansoor, Imran (2009). Factory Manager. Al-Karam Textile Mills Ltd,
--------. Karachi. Interviewed on 21-08-2009
Riaz, Ahmed (2009). Factory Manager. Globe Impex Pvt. Ltd., Karachi.
--------. Interviewed on 21-07-2009
Rizwan, Siddiqui (2009). Manager Accounts, International Automotive
--------. Engineering Pvt. Ltd., Karachi. Interviewed on 06-08-2009
Shahbaz, Furqan (2009). Factory Manager, Silver Textile Pvt. Ltd., Karachi.
--------. Interviewed on 04-07-2009
Teepo, Imran (2009). Managing Director, Teepo Industries, Karachi.
--------. Interviewed on 19-06-2009
Waseem, Nimra (2009). Partner, Nimra Garments Pvt. Ltd, Karachi.
--------. Interviewed on 24-06-2009

APPENDICES

Appendix 1: Interview questions for the trade associations of industries in Karachi, Pakistan.

Appendix 2: Interview questions for the Federation of Pakistan Chamber of Commerce & Industries (FPCCI).

Appendix 3: Interview questions for the industrial customers in the industrial areas in Karachi, Pakistan.

Appendix 1: Interview questions for the trade associations of industries in Karachi, Pakistan.

Date:

Name:

Designation:

Duration at current position:

Trade Association:

- Korangi Industrial Area (KIA)
- North Karachi Industrial Area (NKIA)
- Landhi Industrial Area (LIA)
- Sindh Industrial & Trade Estate (SITE)
- Federal B. Area Association of Trade & Industry

1) How many members are registered in your organization?

Answer) ----------

2) What are the sources of electric used by your member?

Answer) ----------

3) How much is the demand and supply of energy in your area?

Demand ---------- Supply---------- Deficit----------

4) How much is the average electricity consumption per member in your area?

Answer) ----------

5) What are the alternative sources of electricity to their electricity shortage problems? Please check

Solar panel----------Wind turbines-------Diesel generators--------Others ---------

6) How many hours a day load shedding do you have in your area?

Answer) ----------

7) Do you have any plan to provide green alternative energy solutions to your member companies?

Yes,

No,

If yes, what?

Answer) ----------

8) Do you have any idea about wind energy?

Answer) ----------

9) In your opinion, what are the benefits and advantages/disadvantages of having wind turbines as an alternative source of energy in your company?

Answer) ----------

10) Are you willing to accept wind energy as alternative solutions to your electricity shortage problems?

If yes, why?

If not, why?

---

11) Would you describe the current electricity shortage problems in your area?

Answer) ----------

12) Would you describe the measures taken by your association to resolve the current electricity shortage problems faced by the member companies in your area?

Answer) ----------

Appendix 2: Interview questions for the Federation of Pakistan Chamber of Commerce & Industry (FPCCI).

Date:

Name:

Designation:

Duration at current position:

1) What are the services provided by your organization?

Answer) ----------

2) How could your organization assist in establishing a business in Karachi?

Answer) ----------

3) What is current government policy regarding foreign direct Investment in renewable energy sector?

Answer) ----------

4) What is the procedure to start foreign subsidiary operations in Karachi?

Answer) ----------

5) What are legislative requirements regarding:

   Taxation

   Labour

   Work permits

   Foreign currency issues

   Capital issues

   Trade marks

   Company registration issues

   Land and property rights

   Please provide the relative documents.

6) What are the business opportunities in wind energy sector in industrial areas of Karachi?

Answer) ----------

7) Karachi industrial areas are facing huge electricity shortage problems, what measures you are taking to resolve this energy shortage problem?

Answer) ----------

8) How are you going to encourage FDI in wind energy sector?

Answer) ----------

9) How do you see the future of FDI in wind energy sector in Karachi?

Answer) ----------

10) What is your opinion of supplying electricity using wind turbines in industrial areas in Karachi?

Answer) ----------

11) What are the measures taken by the Government to provide environment friendly energy solutions in the industrial areas in Karachi?

Answer) ----------

12) Is there any project under Consideration regarding electricity supply using wind turbines in the industrial areas in Karachi?

Yes,

No,

If yes, please mention what kind of project is under consideration?

Answer) ----------

13) By when do you think this project will be operational?

Answer ----------

14) What are the benefits of registration in your organization?

Answer) ----------

15) How your organization does facilitate its member organizations in terms of providing solutions to their problems?

Answer) ----------

Appendix 3: Interview questions for the industrial customers in the industrial areas in Karachi, Pakistan.

Date:

Name:

Designation:

Duration at current position:

Name of organization:

Location:

1) How many employees do you have in your company?

Answer) ----------

2) How many shifts there are in your company?

Answer) ----------

3) What is the source of electricity being used in the company?

Answer) ----------

4) How much is the approximate daily consumption of electricity in your company?

Answer) ----------

5) How many hours a day do you have electricity break down?

Answer) ----------

6) Would you describe the current electricity crises faced by your company?

Answer) ----------

7) How this electricity shortage problem has effected operations of your company?

Answer) ----------

8) What are the alternative solutions to the electricity shortage problem your company is currently using?

Answer) ----------

9) Are you satisfied with the current electricity supplier and electricity backup solutions?

   Yes,

   No,

   If no, why?

Answer) ----------

10) Have you ever considered replacing your current non environment friendly electricity sources to environmental friendly source of electricity?

Answer) ----------

11) What is your expenditure on running back up electricity solution?

Answer) ----------

12) What are the damaging effects of this power shortage on your business?

Answer) ----------

13) What is your opinion about using wind turbines to provide electricity in your organization?

Answer) ----------

14) Are you willing to adopt wind energy as alternative solutions to electricity shortage problems?

   Yes,

   No,

   If yes, Why?

   If no, Why?

   ---

15) In your opinion, what are the advantages/disadvantages of having wind energy as an alternative solution to current electricity shortage problems?

Answer) ----------