

# Alternative Energy Sources

Presented by:

Abdulelah Mohammed Alnasser

St. Mary's University

San Antonio, TX

**Table of Contents**

1.0 Introduction .....	2
1.1 Energy definition .....	2
1.2 Forms of energy.....	2
2.0 Alternative Sources of energy .....	2
2.1 Alternative Sources of energy for different activities .....	2
3.0 Types of energy source .....	2
3.1 Renewable sources of energy/ Environmental friendly sources/ Non-Conventional Sources of Energy .....	2
3.1.1 Top 10 sources of renewable energy .....	2
3.2 Non-renewable sources of energy/ Conventional sources of energy.....	3
3.3 Environmental friendly sources of Energy .....	3
3.3.1 Air (Wind Energy) .....	3
3.3.2 Off-line seacoast lines .....	3
3.3.3 Hydrogen Inner Earth Layers (Geothermal Energy) .....	4
3.3.4 Sun (Solar Energy) .....	4
3.3.5 Biomass (Alternative fuels) .....	1608
3.3.5.1 Biomass is growing source of energy.....	4
3.3.5.2 Worldwide production of Biomass .....	5
3.3.6 Water (Hydro-Electric Energy) .....	5
3.3.6.1 Dams for Hydro- Electric Energy .....	5
4.0 Ethical issues of alternative energy resources .....	5
4.1 Guarantee regarding the amount of wind: .....	5
4.1.2 Effect on the people .....	5
4.2.1.2 Wind Turbine Syndrome .....	5
4.1.3 Economic concerns .....	5
4.1.4 Impact of wind turbines on animal habitats .....	5
4.2 Ethical concerns of Water (Hydro-Electric Energy).....	6
4.3 Ethical concerns of Biomass (Alternative fuels) .....	6
4.4 Ethical concerns of Sun (Solar Energy).....	6
5.0 Top 10 sources of renewable energy.....	6
5.1 Tidal power .....	6
5.2 Wave power .....	6
5.3 Radiant energy .....	7
5.4 Compressed natural Gas (CNG).....	7
6.0 Non-Renewable Energy sources .....	7
6.1 Nuclear power.....	7
6.2 Oil .....	7
6.3 Coal .....	7
7.0 Evaluating energy sources .....	7
8.0 Need of Energy management .....	8
8.1 How can humans save energy?.....	8
9.0 Conclusion .....	8
Bibliography.....	9

# Alternative Energy Sources

## 1.0 Introduction

Energy is the main source of force and power is the ultimate source of power and influence (Baizhan, Meng, & Keith, 2006). People work with the energy and need energy to perform their routine tasks. Energy is the ultimate source of power; it is the force, power and the medium of performing the tasks. Although energy is not created, it changes the form and it is converted from one source to another. Humans have identified many sources of energy, and the types of energy, which are used for various purposes (Daniels P. L., 2005).

## 1.1 Energy definition

The Oxford dictionaries define energy as, the strength, power and the force required to perform a task. The Britannica encyclopedia defines energy, as the alternative source to perform any task. The Webster dictionary defines energy as the ultimate source of power and influence. Energy is the ultimate source to stay active and maintain the mental and the physical strengths. Physics defines energy as the ultimate capacity for doing a work. There are various types of energy and various sources from where energy could be obtained.

## 1.2 Forms of energy

Energy is sometimes stored to retain power for future use and the other forms of energy are non-renewable or they are not put into use again, although energy is neither created nor destroyed or turned (Chris & Hua, 2013), rather its forms are changed. Some of the forms of energy are:

- Gravitational energy
- Kinetic energy
- Potential energy Nuclear energy
- Heat energy
- Electrical energy
- Chemical energy
- Electromagnetic energy
- Solar energy
- Sound energy.

Humans use different forms of energy for different purposes; however, each form of energy has its own applications.

## 2.0 Alternative Sources of energy

In this modern and mechanized world, there are different sources of energy, which make humans work in daily life. (Chris & Hua, 2013) Those sources generate different power, and force to perform different tasks at various activities and at different periods. Those sources of energy do not always provide the type of energy humans need. Humans convert the source of energy to get the best use, and convert the energy sources to get better results. Whatever any source of energy harvests, (Daniels P. L., 2005) it results in the conversion of the source in the prescribed manner of energy required by human beings.

## 2.1 Alternative Sources of energy for different activities

There are Alternative Sources of energy for different activities, every individual needs different types of energy to perform a task. (Chris & Hua, 2013) For example, omnivores get energy from consumption of herbs and meat (all types); herbivores get energy from herbs, shrubs, plants and trees; on the other hand, carnivores get energy from the meat they consume. (David & Htwe, 2010) A car needs kinetic energy to start and run on the road. This is the combination of fuel and energy release carbon dioxide in the air, which is ultimately a chemical energy source. The reaction of uranium through the effect of radioactive rays results in nuclear energy and presents lots of nuclear energy in the air. This nuclear energy is absorbed by the turbine and ultimately results in electric energy sources. Therefore, energy changes its forms and is used by human beings. (Bracho, 2000) An apple has potential energy to fall down on the ground and the earth processes the gravitational energy to keep people walking and talking on it.

## 3.0 Types of energy source

There are various types of energy sources; broadly, they are classified as the renewable and the non-renewable sources of energy (Daniel, Lacouture, & Roper, 2008)

## 3.1 Renewable sources of energy/ Environmental friendly sources/ Non-Conventional Sources of Energy

These are the environmental-friendly sources of energy. These sources do not create any imbalance situation in the atmosphere. (Daniels P. L., 2005) They least pollute the environment and are often created and reused by human beings to improve their lives. The main types of Renewable sources of energy are;

- Air (Wind Energy)
- Hydrogen Inner Earth Layers (Geothermal Energy)
- Sun (Solar Energy)
- Biomass (Alternative fuels)
- Water (Hydro-Electric Energy)

### 3.1.1 Top 10 sources of renewable energy

- Tidal power
- Solar power
- Wave power
- Hydroelectricity
- Radiant energy

- *Geothermal; power*
- *Compressed natural Gas (CNG)*
- *Nuclear power*

### 3.2 Non-renewable sources of energy/ Conventional sources of energy

Those sources of energy are used to obtain energy on a higher level, or at the major level of activity. (Daniels P. L., 2005) These are often converted into some toxic sources, which are sometime harmful to the nature. The main type of non-renewable sources of energy is:

- *Oil*
- *Coal*
- *Natural Gas*
- *Nuclear Energy*

### 3.3 Environmental friendly sources of Energy

The environment friendly sources of energy are those, which are offering the environment many advantages. (Graham, Roger, Benedict, & Peter, 2001) Those sources are the providing the environment the best outcome. (Chris & Hua, 2013) Humans are keen to make further innovation in the non-conventional sources of energy.

#### 3.3.1 Air (Wind Energy)

Winds energy is a greatest source of energy. It is obtained through the turbines and the windmills; it is converted into electric energy and mechanical energy. (David & Htwe, 2010) This is a cheapest source of energy, in which huge farms are erected with the windmills and those mills produce the wind energy through the revolving of fan in the windmills. (Makame, 2007) The energy obtained from a windmill is quite efficient it can even light one small house. The residential areas are often lighted with the help of windmills farms far away the resident (David & Htwe, 2010).

The oldest farms of windmills are in Denmark, and then up established the windmills in 2007. (David & Htwe, 2010) However, USA and China are focusing to gain the energy sources from windmills through the largest land- wind farms. They are constructing the land wind farms in the off-line seacoast lines.



#### 3.3.2 Off-line seacoast lines

These are the windmills farm developed in the sea, having the wind farms and producing the wind energy in the environment. (David & Htwe, 2010) Since the land is almost occupied by humans, there are less open farms; hence, the sea surface is being employed these days for the windmills. (Mohanty, 2011) Although these farms have not been so common because, they require many windmills on some particular distance or otherwise the energy shall require time to be transferred to the land.

##### 3.3.2.1 Requirement a wind farm

The wind farms require an area, which is open and frequently windy. (David & Htwe, 2010) However if some open area farms are erected with wind mills, or some grazing lands have wind mills they will result in lesser harmful source of wind energy (David & Htwe, 2010)

##### 3.3.2.2 World production of wind energy

- *The world survey of FY 2008 showed that 1.5 percent of electricity is produced through the windmills (Graham, Roger, Benedict, & Peter, 2001)*
- *Many countries are growing this source of energy (Daniel, Lacouture, & Roper, 2008)*
- *The electricity produced in Demark is 19 percent through the windmills (Makame, 2007)*
- *Spain produces 11 percent of its total electricity through the wind energy sources (Daniels P. L., 2005)*
- *Germany produces 7 percent of electricity through the windmills (Graham, Roger, Benedict, & Peter, 2001)*
- *USA is producing 28 % of its electric sources through the wing energy source*
- *China is producing almost 8 percent of its electricity through the windmills*

##### 3.3.2.3 Formidable Future of Wind Energy

The world council for wind energy states that almost 282 GWs of energy are produced each year through the windmills existing on the sea. President Obama underlined, on February 13 "that in 2012, (Graham, Roger, Benedict, & Peter, 2001) wind energy represented about half of new production capacities of electricity in the United States." (Makame, 2007) World Wind Energy Association (WWEA) and the Global Wind Energy Council (GWEC) are working to make the energy sources better.

In the south Asian countries like India, Pakistan, the southeastern regions from Hyderabad to Gharry, (Makame, 2007) the Indus valley are the common areas, where the windmills are installed. (Mohanty, 2011) Those areas are generating electricity through the windmills, in Pakistan more particularly; the northern areas have a high proportion of electricity supply through the windmills. Those countries are shortage of electricity supply, and are facing huge losses due to the inadequate supply of electricity in their country (Mohanty, 2011).

(Moshirian, 1998) The windmills may reduce the shortage of electricity in the country. The survey in 2012 showed that at least the world's 5 percent consumption could be met through the energy sources available through the wind energy sources, more particularly in the remote areas, of Pakistan and India; by 2013, (Moshirian, 1998) at least 500 villages shall be erected with windmills to gain electricity and meet the requirement of the country.

#### 3.3.3 Hydrogen Inner Earth Layers (Geothermal Energy)

(Daniel, Lacouture, & Roper, 2008) The earth is harvest with millions of natural resources by the nature. The movement of water in stream, the rivers, seas, and oceans are greatest source of energy. The surface of earth is filled almost 70 percent with water. (Moshirian, 1998) The floating and buoyancy on the land and surface of earth generates huge sources of energy. This is the source available in the ecosystem, through the Hydrogen Inner Earth Layers. (Graham, Roger, Benedict, & Peter, 2001) The layers inside the earth cooled over time, and the temperature dropped, and it became a task to sort out the mineral resources from the core of the earth. The density of the solids was more precious than the liquids. Thus, human being found the natural sources of energy in land (Moshirian, 1998).

### 3.3.3.1 Geothermal energy power plant

This type of energy is used to extract raw material adown from the earth. (Moshirian, 1998)The initial investment cost of this plant is high, and the operational cost is 50 percent of the initial investment, whereas the supply of hot water is the core requirement, which gets hot itself in the plant. (Makame, 2007)The plant is effectively used in the construction projects, renovation of buildings situated on higher lands, and in replacing an old plant. The geothermal plants are frequently used for the extraction oil, water, and mineral resources from the earth.



### 3.3.3.2 World energy production from geothermal energy

- The world is using the geothermal plant power 15 percent in the survey of total energy consumption released by the world environment society (Bracho, 2000)
- The energy produced by the geothermal sources of energy in 2008 was 1 percent for the world (Moshirian, 1998)
- The geothermal power stations are non-transits or are not dependents on the turbines or the other factors thus, they are considered as cheap sources of energy (Moshirian, 1998)
- The world is promoting to use the geothermal plants as they result out in 1- 8 Megawatts per 5 acres of land (Mohanty, 2011)
- More than 20 countries had installed geothermal power projects in 2011, and almost 35 projects are in process by June 2014 (Mohanty, 2011)

### 3.3.4 Sun (Solar Energy)

Sun is the source of energy, which is effective enough to produce large quantity of electricity. It is estimated, that one solar plant stores almost 5220 megawatts of energy, which can supply electricity to a small house for 2 days. (Makame, 2007)Photovoltaic (PV) is the power released by the sun, to produce energy. Sun is considered the greatest source of energy these days. It is the quickest source and provide high amount of energy.

#### 3.3.4.1 Photovoltaic Cells

Those are the cells, which absorb the energy released by sunrays, and use the energy source for producing electricity. (Makame, 2007)They are made up of semi-conductor material and produce energy in different sources and arrays. The Photovoltaic Cells module may vary in size, and the power outcome of the cell may vary according to the requirement (Makame, 2007).

(Baizhan, Meng, & Keith, 2006)The first solar cell was made by team of professors at oxfords, which absorbed the heat energy and later on the energy from the sun and convert the energy into useable source. Today, the use of solar cells is common to obtain energy and produce electricity.

#### 3.3.4.2 World production of Solar Energy

The production of electricity through the solar cells was 47 over the entire world in 2011. The percentage has risen in total to 55 percent by March 2013. (Makame, 2007)The survey made by the society of solar emery control showed that this percentage shall rise to double almost by the end of 2014. (Moshirian, 1998)Since solar energy is the cheapest source of energy.

- 63% of global solar cell production occurred in China in 2012 (Graham, Roger, Benedict, & Peter, 2001)
- 64% of global solar module production occurred in China in 2012 (Daniel, Lacouture, & Roper, 2008)
- 95% of global solar cell production occurred in Asia in 2012 (Moshirian, 1998)
- 86% of global solar module production occurred in Asia in 2012 (Makame, 2007)

#### 3.3.4.3 Solar energy sources in the South Asian Countries

The South Asian counties are lacking in production of full electricity voltages in their countries to meet the requirement of their country. Countries like Pakistan and India are shortage of electric sources and they have huge load shedding each day, which results in lower productivity of the industry and the textiles. (Makame, 2007) The energy absorbed by the land through sun is 14 percent in this way a solar cell is estimated to store 3,000 EJ of energy in one year. (Mohanty, 2011)The world is moving towards the modern source of energy available to humans and making it less costly so that more and more humans can take advantage of it

#### 3.3.4.4 Cost of solar energy sources

"It costs approximately 500 USD to supply electricity to a medium village with solar lanterns, however the electricity supply to the villages costs approximately 1000 USD, (Mohanty, 2011) thus, the trend is being promoted to use solar lanterns or solar cells to provide light to the villages. In country like Pakistan, more than 25,000 people in more than 72villagesare taking the advantage of those projects (Makame, 2007).

The cost of a solar cell is estimated to be 0.04 USD per day and the estimated life span is 10 years approximately. (Daniels P. L., 2005) All a solar cell needs is the sun light to work effectively; it stores the energy, which is used later on. It has been estimated by an analysis published by Deutsche Bank that the electricity production by the solar cells shall increase to 16 GWs by 2016.

### 3.3.5 Biomass (Alternative fuels)

Biomass is a collective term used for the biological wastes in the earth. The garbage, dead bodies, industrial wastes, the human waste are the fertilizers, later on they are valuable form of energy. (Mohanty, 2011)This energy source is not limited by the climate or any other condition. This type of energy is stored by power engines and the generators.

#### 3.3.5.1 Biomass is growing source of energy

This dead biological material is used as fuel or as an industrial produce, this is used to burn and generate fuel, it is used in producing fibers, heat, and chemicals. (Mohanty, 2011) The biomass released by the industries contain a variety of material as well as many other species, like hemp, corn, poplar, miscanthus, switch grass, sugarcane, willow, sorghum, as well as a variety of tree species, ranging from eucalyptus to oil palm (palm oil) (Makame, 2007). The use of biomass industry is increasing day by day as the outcome is sources of energy as well as many other products in the industry.

#### 3.3.5.2 Worldwide production of Biomass

Biomass industry covers up almost 0.5 percent of the USA fuel industry. This industry is producing fuel and providing different kind of raw material for the overall production in the country (Makame, 2007).

The survey showed that 30 percent of the land area is covered with biomasses, out of which 95 percent are forests and 5 percent are covered with plantation.

	Forest area (ha) (10 <sup>6</sup> )	Volume (m <sup>3</sup> /ha)	Volume (m <sup>3</sup> ) (10 <sup>9</sup> )	Woody biomass (tonne/ha)	Woody biomass (tonne) (10 <sup>6</sup> )
Africa	649	72	46	109	70
Asia	547	63	34	82	44
Europe	1039	112	116	59	61
North and Central America	549	123	67	95	52
Oceania	197	55	10	64	12
South America	885	125	110	203	179
World	3869	100	386	109	421

Source: (Daniel, Lacouture, & Roper, 2008)

### 3.3.5.3 New Hope Plant partnership program in USA

This partnership is considered as a step forward towards the promotion of biomass waste in the country. (David & Htwe, 2010) This plant is expected to run by Dec 2013; it will reduce the use of oil in the states and shall provide the energy sources as well as electricity.

Production of biomass in South Asian Countries

- In the South Asian countries, the plants and the animal bodies are converted into biomasses. (Daniel, Lacouture, & Roper, 2008) This makes up almost 45 percent of land in the south Asian countries (Chris & Hua, 2013)
- Biomass energy is used for a short term strategy (Daniel, Lacouture, & Roper, 2008)
- Almost 55 cubic tons of biomass is produced in the South Asian countries by the dead animal each year (Graham, Roger, Benedict, & Peter, 2001)
- Those countries are producing 150 million cubic meters of biomass each year.
- Poultry and the inorganic wastes produce more than, 100 million cubic of energy each year
- The production of energy through the biomasses has doubled itself by 2013
- The survey showed that if production of energy continues from the biomasses, it could be a substitute to the natural gas and the oil (Makame, 2007)

### 3.3.6 Water (Hydro-Electric Energy)

The energy obtained from water reserves is a common source of producing electricity. This source of energy is considered as important for the development of the country. Through hydro energy sources, more electricity could be produced and thus, the consumption of oil, coal, and fuel may be reduced. (Makame, 2007) Many countries use the water resources to produce electricity. Canada ranks the highest in producing electricity from their hydropower. USA is the second largest producer of electricity from the water resources.

#### 3.3.6.1 Dams for Hydro- Electric Energy

In the dams, the direction of the water is often changed. The hard flow of water produces the electricity. (David & Htwe, 2010) Countries are making more and more dams to store water and to produce electricity. Besides, producing electricity dams help to store water and supply when required, to control the flood situations, and manage the supply of water in the country. This source is cheapest and is reliable source for the production of electricity.

#### 3.3.6.2 Worldwide production of Hydro- Electric Energy

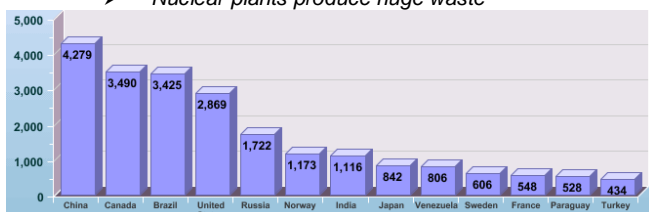
- ✓ World's 7 percent of energy is produced through the water resources (Graham, Roger, Benedict, & Peter, 2001)
- ✓ Hydropower is the most important and widely used renewable source of energy (Bracho, 2000)
- ✓ China is the largest producer of hydroelectricity, followed by Canada, Brazil, and the United States (Makame, 2007)
- ✓ Approximately two-thirds of the economically feasible potential remains to be developed.
- ✓ Hydropower represents 19% of total electricity production.
- ✓ Untapped hydro resources are still abundant in Latin America, Central Africa, India, and China (Graham, Roger, Benedict, & Peter, 2001)
- ✓ The world's largest dam is the Itaipúa dam in south America, connected with Parana river and stores 14000 megawatts of water (Mohanty, 2011)
- ✓ The three Gorges dam stores 22,500 megawatts of water, is situated in China, it is supposed to store the largest capacity of water.

#### 3.3.6.3 Advantages of hydro electro power

- Less burning of fuel and coal
- Water is stored
- Reliable source to use water
- The technology plays the most important role in reducing the green house affect emissions

#### 3.3.6.4 Disadvantages of hydro electro power

- Only a limited number of dams could be build
- They have huge maintenance and renovation cost
- Nuclear plants produce huge waste



Source: (Makame, 2007)

## 4.0 Ethical issues of alternative energy resources

Following are the ethical issues related to energy sources which are being discussed in brief hereunder.

#### **4. 1 Guarantee regarding the amount of wind:**

There is lack of guarantee regarding the amount of wind within the specific day and this cause the severe problems especially when the only source for the generation of electricity is wind. Different researchers and the people argue that through switching the wind power there is lack of significant impact on the carbon emission. The reason behind this is the competition with conventional fossil fuel production. On the other hand, in some places where wind farms are established there is a significant reduction related to the carbon dioxide emissions due to the models. According to prediction of scientists, through reduction in this emission, the use of wind energy, will continuously increases.

#### **4.1.2 Effect on the people**

Another ethical issue is related to the effects on human who are living in the nearby areas where the turbines and other farms are built. Most of the people also prefers sight of farms and turbines "*pleasant and optimistic*" because they thought that it is the sign of independence of energy as well as local prosperity. On contrary, some people argue that the tall, large turbines is not fruitful because it ruin the landscape and emit noise. Due to these troubles, there is interference in the daily life styles.

#### **4.2.1.2 Wind Turbine Syndrome**

Most of the people are complaining for Wind Turbine Syndrome. They argue that due to existence of this, there are facing the problems such as sleep disturbance, headache, ringing/buzzing, and dizziness. Furthermore, people also facing the problems of memory due to wind turbines in the areas.

#### **4.1.3 Economic concerns**

The wind resources are also facing the economic concerns regarding the implementation of wind energy. Besides, of just noticing the cost of construction of turbines; nearby areas buildings, homes and other plaza will lost their economic value due to the construction of turbine. The most important concern regarding the mountains of North Carolina is effects of turbine on the travelling and tourism. For this, the turbines have to work effectively while these are presented within the windy places because the mountains are not the perfect places for wind. In addition to this, the economist also thought that turbines are not economical because it ruins the landscape and due to this, there is a decrease in tourism (Brown, 2012)

#### **4.1.4 Impact of wind turbines on animal habitats**

Most of the environmentalists are having the concerns with the impact of wind turbines regarding the animal habitats such as Bats and birds. Due to the existence of turbine, many birds and animals are facing the face of death through fast-moving rotating blades. The recent example is existed in the Eastern North California where an alternative energy company Iberdola Renewables is existing and is developing the plans to establish 49-turbine wind farms. Due to existence of farm, 15000 homes in North California can avail the power supply. In addition to this, these will reduce fossil fuel generation and provide revenue and jobs to the skilled and expertise people. The side effect is, the farm is near to wild life refuge and it can affect migratory pathways and foraging areas of birds (Ethical Issues and Controversies, n.d)

#### **4.2 Ethical concerns of Water (Hydro-Electric Energy)**

The hydro electrical power is the most cleanest and environmental friendly resource for energy gain along with having capability of altering damages. However, the major problem is; it brings the changes in the quality of water. Due to the nature of system. Sometimes the water is taking higher temperature and there will be lack of oxygen contents, experience of siltation. In addition to there is gains in phosphorus and nitrogen contents. Another ethical issue is; it is barrier for the aquatic life of rivers. There is a great impact on Salmon and spawn which is migrated every year to upstream. A part of problem is resolved but there is need of consideration.

#### **4.3 Ethical concerns of Biomass (Alternative fuels)**

Through the usage of pyrolysis or combustion, the air is becoming more and more burning and creates global warming due to the generation of Carbon -Dioxide. Due to extraction power, nitrogen oxides release which also particulate and volatile organic compounds in to the air as well. Due to this the people are showing the concerns related to health especially the labors or nearby areas citizens. Another ethical issue is related to the usage of land, that the researchers and economists should use the lands for the production of food or for the energy production because of the countries in the world are suffering from famines within the normal circumstances. Therefore, the issue is; is it suitable that most of the countries are facing hunger and producing energy power.

#### **4.4 Ethical concerns of Sun (Solar Energy)**

It is fact that the solar energy is better as compared to other energy systems. But it is low in the efficiency and there is need of large areas of land. Ethically, most of the people do not get the homes due to non-availability of land and therefore they are living on the roads and other places with difficulty. Due to this reason the prices of land is also high because when there is low supply of goods then the prices are increasing and the people do not have to power to pay it. Furthermore, the entire system of project of solar system itself is facing high costs.

### **5.0 Top 10 sources of renewable energy**

#### **5.1 Tidal power**

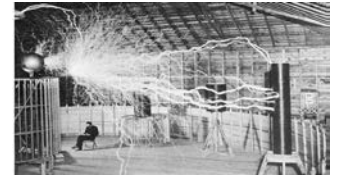
The huge waves and the large tides are a source of energy and producing electricity. The sea tides are the source of generating huge revenues. (Graham, Roger, Benedict, & Peter, 2001)The wave energy many be unpredictable but the energy produced by the tide can light even 8000 houses a day. Most of the wave energy counters generate power, electricity and save the other resources for the country. The deepest tide will provide electricity to 5,000 homes, which are 15 meters high and 25 meters long. This could state as the "a wind farm u under sea."

#### **5.2 Wave power**

(Daniel, Lacouture, & Roper, 2008) A wavelength is about A 40 kW buoy has 52 feet (16 m) long and a diameter of 12 feet (4 m), with just about 13 feet of the unit rising above the ocean surface. Using the three-point mooring system, they are designed to be installed one to five miles (8 km) offshore in water 100 to 200 feet (60 m) deep. (Graham, Roger, Benedict, & Peter, 2001) A wavelength supplies energy and produce electricity and many other sources of energy for the masses. It is g used by many nations to meet the requirement of their country's electricity needs.

### 5.3 Radiant energy

This is the flow of energy produced by the flow of electricity within two or more sources. Nikola Tesla invented this source in 1916, when he was studying about the earliest magnetic waves. (Mohanty, 2011) He was keen to pay more attention to the subject. Even today, the subject is under research.



### 5.4 Compressed natural Gas (CNG)

This is most innovative form of energy source in the globe. More and more economies are using natural gas resources to improve the situation of their country and to save the other resources available in the country. (David & Htwe, 2010) This resource is an excellent substitute to fuel and oil in cars, buses and the other factories. The resource is widely used in the countries, which lack in production of oil, fuel, and gas.

## 6.0 Non-Renewable Energy sources

### 6.1 Nuclear power

This is the form of energy produced by the nuclear reactions. The form of energy is release by the nuclear fusion and the nuclear actions. (Mohanty, 2011) In 2007, the countries like France, USA, and Japan had produced almost 14% of the world's total supply of electricity, altogether it accounted for 56.5% of the total production of nuclear energy emitted.

The Reprocessing of the nuclear energy source can actually produce almost 95% energy sources for the globe. (Mohanty, 2011) The production may increase if the countries pay more attention towards the production of the nuclear energy sources. Uranium and plutonium are main elements in the releasing of nuclear energy. Thus, it is considered as a non-renewable source of energy.

The survey in 2011 showed that there is approximately 439 nuclear power reactors operation in overall globe. The proportion could be highly seen in the countries of USA and UK. (Mohanty, 2011) The World Nuclear Association reported, that the global production of nuclear energy in 1980s was recorded almost up to, 1 GW of nuclear power every 17 days on average, and it has been estimated that this figure shall reach to every 4 days.

### 6.2 Oil

Oil is the common natural resource of UAE and the gulf countries. Crude oil is one of natural resource, which the countries need the most. (Graham, Roger, Benedict, & Peter, 2001) Oil is the key product for the success and development of the country. The survey showed that Current Oil Production in the World: 81,820,404.59 barrels per day (bbl/day) (Graham, Roger, Benedict, & Peter, 2001).

The OECD survey showed that almost 212 countries of the world are exporting oil and engaged to produce oil to meet their local demands. Many economies are trying to find more energy source to make the production and other industrial units. Although oil is being substituted with the coal and gas resource. However, those resources do not produce the same output as oil's (Graham, Roger, Benedict, & Peter, 2001).

(Mohanty, 2011) The Arab countries are rich in oil well; they export oil and purchase all other consumer goods for their masses. Thus, oil makes up the best resource for production and other activities in the globe. (David & Htwe, 2010) The daily cut of oil in the globe is up to 1.1 mm, this industry is generating almost 115 USD a day, and the production of oil per day is approximately, 92m.

### 6.3 Coal

Coal is the black gold. This is the source available in many countries of the world. Coal is the natural resource used for industries to make production of electricity, used in industries, run the transportation. (Graham, Roger, Benedict, & Peter, 2001) Thus, the production of coal is said to be a blessing for the country. The world's largest country in the production of coal is China, which produces almost 3549 Mt of coal per annum. The production of the other countries in the FY 2012 is as following:

PR China	3549Mt	Russia	359Mt
USA	935Mt	South Africa	259Mt
India	595Mt	Germany	197Mt
Indonesia	443Mt	Poland	144Mt
Australia	421Mt	Kazakhstan	126Mt

Source: Source: (Daniels P. L., 2005)

Total world coal production reached a record level of 7831Mt in 2012, increasing by 2.9% in comparison to previous year.

## 7.0 Evaluating energy sources

There is various sources of energy besides the sources mentioned. (Makame, 2007) Man is looking for the sources of energy, which are able to generate the maximum outcome with the minimum loss to the surroundings. The factor of evolution also depends that on which sources the energy is used for. If energy is required for the regular tasks, it will be obtained from the daily diet. The choice of energy level is affected by the level of application of energy. Although, each aspect has its own advantages and disadvantages.





	Coal	Oil and oil products	Natural gas	Hydro	Geo-thermal	Solar and wind	Biomass	Electricity	Total
Indonesia	36.780	60.084	34.392	971	6.036	0	52.385	0	190.647
Malaysia	8.854	25.833	34.654	558	0	0	2.885	-195	72.589
Philippines	6.329	13.434	3.032	736	8.782	5	7.662	0	39.980
Singapore	8	19.989	6.757	0	0	0	0	0	26.754
Thailand	14.225	41.919	28.304	698	3	0	18.535	307	103.991
Vietnam	9.890	13.332	5.456	2.570	0	0	24.538	0	55.787
<b>ASEAN-6</b>	<b>76.087</b>	<b>174.591</b>	<b>112.595</b>	<b>5.533</b>	<b>14.820</b>	<b>5</b>	<b>106.005</b>	<b>112</b>	<b>489.748</b>
Percentage	16%	36%	23%	1%	3%	0%	22%	0%	100%

Supply of energy in the South Asian Countries in FY 2012

Source: (Graham, Roger, Benedict, & Peter, 2001)

## 8.0 Need of Energy management

"It means saving energy in businesses, public-sector/government organizations, and homes: said by president Obama in a public conference.

The natural resources are precious and thus they are costly. The countries are trying to find the best substitute of the natural resources, through which the environment shall not be affected. (Graham, Roger, Benedict, & Peter, 2001) Thus, the natural resource is the core of the country's progress and development. Almost every country of the world is blessed with some natural resources, and they are even looking for substitutes and other energy sources to increase the production and ultimately the revenues for the country. Thus, managing the energy sources available in the country is very important aspect.

### 8.1 How can humans save energy?

- *Save Energy in the Home by Air Drying Your Laundry*
- *Keep the air flow vents on your electric heaters clear of obstructions*
- *Run your heating for just one hour less every day*
- *When buying new appliances, be sure to purchase energy-efficient energy- star labeled models.*
- *Turn down your thermostat by one degree and you could save up to £65 a year*
- *Use compact fluorescent lamps. You can lower your lighting bill by converting to energy-efficient low-wattage compact fluorescent lighting and fixtures.*
- *Awareness of the public regarding the saving of energy source*
- *Establishing some ethical rules in this regard*
- *Awareness on the social media web site shall be also important*
- *Celebrating the world environment day, i.e. Dec 14 every year.*

## 9.0 Conclusion

Summing up of all, it could be stated that there are alternative sources of energy available in almost all the countries of the world. The important aspect is the identification of the energy resource and the management of the resource available. In addition, the energy management is another important issue, which must be considered. Today, man is more concerned to develop more and more sources of energy; along with the sources, managing the available sources of energy in the most particular manner is also important.

### Bibliography

- Baizhan, L., Meng, L., & Keith, M. (2006). Energy issues in Chongqing. *Management of Environmental Quality: An International Journal* , 24 (3), 342-353.
- Bracho, F. (2000). consequences for oil producing countries. *journal of futures studies, strategic thinking and policy* , 2 (4), 379- 390.
- Brown, D. (2012). *ethics and climate*. Retrieved September 17, 2013, from Wind Power Ethics: <http://blogs.law.widener.edu/climate/2012/08/27/wind-power-ethics/>
- Chris, K., & Hua, W. (2013). China's new energy vehicles: value and innovation. *JOURNAL OF BUSINESS STRATEGY* , 34 (3), 13-20.
- Daniel, C., Lacouture, K., & Roper, O. (2008). Renewable energy in US federal buildings. *Emerald Group Publishing Limited* , 27 (2), 173-186.
- Daniels, P. L. (2005). Technology revolutions and social development. *International Journal of Social Economics* , 32 (4), 454-482.
- Daniels, P. L. (2005). Technology revolutions and social development. *International Journal of Social Economics* , 32 (4), 454-482.
- David, P., & Htwe, T. (2010). Development failure and the resource curse: the case of Myanmar. *International Journal of Sociology and Social Policy* , 30 (2), 269- 276.
- Ethical Issues and Controversies*. (n.d). Retrieved Septmeber 17, 2013, from <https://sites.google.com/site/enviroethenergysources/ethical-issues>
- Graham, T., Roger, F., Benedict, I., & Peter, L. (2001). Building materials selection: greenhouse strategies for built facilities. *International Journal of Social Economics* , 19 (3), 139- 149.
- Makame, M. O. (2007). Adoption of improved stoves and deforestation in Zanzibar. *Management of Environmental Quality: An International Journal* , 18 (3), 353-365.
- Mohanty, M. (2011). New renewable energy sources, green energy development and climate change. *Management of Environmental Quality: An International Journal* , 23 (3), 264-274.
- Moshirian, F. (1998). National financial policies, global environmental damage and missing international institutions. *International Journal of Social Economics* , , 25 (6), 1225- 1270.