ROLE OF WIND ENERGY AND SOLAR ENERGY FOR THE GROWTH IN THE FIELD OF AGRICULTURE

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ABSTRACT
The assets that can charge through human timescale like tides, geothermal heat, sunlight, rain, waves and wind are generally characterized as renewable energy. In the field of agriculture the renewable energy is characterized in 4 different territories like rural (off-framework) energy administration, electricity generation, motor fuels and water warming/cooling. To generate electricity and pump the water farmer used wind power. To give the power to customers and electric companies in current scenario on farms and ranches the developers installed huge wind turbines on farms. Solar energy is a type of energy bridled from the power and warmth of the sun's beams. It is renewable, and in this way a "green" source of energy. In this paper we take a review of wind energy system and solar energy system.

Keywords : Renewable energy; wind energy; solar energy; farms.

INTRODUCTION
Solar, biogas and wind energy are the types of renewable energy [1]. To give the farmers to a large scope of income the renewable energy can harvested forever [2]. As a cash crop on the farm the renewable energy can used to replace sold and fuels. In the system of farming the use of renewable energy can define in several contexts [3]. By taking the example of fossils fuel like oil can be non-renewable source of energy so for controlling pests and fertilizing the land the alternative ways should be find. This alternative way use the source of renewable energy as it should be free from chemicals [4] [5]. As the price of oil is raising day by day these types of methods can reduce the vulnerability of farmer. From generating the power to do many work of farmer through renewable energy are: powering processing operations, for irrigation for irrigation, lighting farm buildings, for livestock or for domestic use and many more. The energy like wind and water power, biogas, wood from sustainable sources, biomass and solar energy are including in common form of renewable energy [6].

II. WIND ENERGY IN AGRICULTURE
To power the farms by using the power generated through electricity a farmer can get power from wind energy.

Figure 1: Wind Energy
In the industry of wind to take the benefits of growth the ranchers and farmers are in a unique condition. The farmer can generate the wind power themselves, they can give the land on lease to the developers or by using wind they can generate the power for their farms [7]. To produce electricity and to pump water the farmer used wind power. To generate electricity and pump the water farmer used wind power. To give the power to customers and electric companies in current scenario on farms and ranches the developers installed huge wind turbines on farms [8]. Farmers can use the rest of the land for their crops. For generating the mill grain and pump water it has been using the traditional basic windmills by farmers. By now in these days to produce the electricity on their land they use modern wind turbines [9].

2.1 Static Source of income through turbine
It can see that for the farmer it is a stable source of earning because they give their land on lease for particular time period that may be the time of several years. The farmers can get the rent of land or they can generate the energy itself for their personal that indirectly save their money [10].

2.2 No effect on farming
Using of turbine does not affect the process of farming. On the majority of land the farmer can do the farming continuously.
1. It can improve the operation because several time it include the updation of existing roads or creating the new roads in the construction process.
2. From agricultural production generally ¼ to ½ of an acre of land taken for each turbine.
3. During construction if crops are damaged for the lost revenue it provide the reimburse through the developers.
4. Near turbine it can possible to do the farming after installing of turbines and related infrastructure.
5. Almost 98% of farm may free after installing the turbine and it can use for Farmers are able to continue farming the majority of their land. Ranching and farming.

2.3 Drainage and Drain Tiles
By mapping the network to minimize damage to drain tiles the developers plan ahead and whenever possible they avoid tiles [11]. During construction it can damage drain tiles by bulldozers and cranes. For repairing any damage drain tiles through the process of operating a wind farm and construction Wind developers partner with farmers and other landowners, and with the developer the provision is often usually covered in a lease agreement of landowner.

2.4 Dusting of crop
Near wires, trees, power poles and other obstacles it pilots routinely the dusting of crop every day. To accommodate it may require some additional maneuvering and to navigate around wind turbines are used as another structure. When compared with other basic obstacles they do not present significant new challenges [12]. Specific pilots and servicing land with turbines some company’s charges extra for crop dusting.

2.5 Calculate the Wind Energy
The generated power multiplies with the time in which it running the wind turbine to calculate the energy of wind turbine. Several wind turbines generate power on different speed of wind so it is difficult to multiply it with time. It is consider on a particular location at the wind location. The data is taken from [13]. The following graph shows the estimation of wind energy. At the location wind speeds were predominant shown in figure 2. The graph is known as frequency distribution. Though out the year it is seen that stronger wind speeds are less frequent.
Solar energy is a type of energy bridled from the power and heat of the beam of sun. It is renewable, and in this way it is consider as a "green" source of energy. Each day the energy that getting by the earth from the sun is countless. The energy that we see in the form of natural gas, oil and coal is the energy that is equal to sunlight of only 20 days. In many areas of agriculture it can use the solar energy such as for warming the home and offices, for greenhouse, for drying the crops and grains etc. In dairy operations the solar water heaters provide hot water. As compared with electric power lines solar power systems are less expensive [15].

3.1 Solar Power Energy Conversion Process
The Energy that used through conversion of solar energy is known as Solar Power Energy. By suing battery, solar panels, inverter and charge controller the process of conversion take place.
Solar Panels
For conversion of light into electric current (DC) the photovoltaic cells or solar panels use photovoltaic effect. This system is known as Solar Power System. Wafer-based-crystalline silicon or silicon is used for solar panel. Either in mono crystalline or in poly crystalline cells the Photovoltaic cells are placed. To create the module some photovoltaic cells are connected to each other and it is known as solar panel.

Battery System
They used rechargeable electric battery or auxiliary cell to comprise framework of battery. Gel-cell-deep cycle and lead acid batteries are used. During daytime batteries are used for storing the power. By the use of inverter the solar panel can generate the power in evening time.

Charge Controller
For Turing on or off the charge controller is used. For the condition of overcharge and under charge they used the shielding of battery.
From the panels of solar power to store power controller switches the battery at day time. And to the load by using inverter at the evening time they supplies power.

**Inverter**

For the conversion of DC power to AC power inverter are used. And to load they provide the AC power supply.

**Figure 8: Inverter**

**Figure 9: Solar panel for home appliances**

### 3.2 Utilizing the sun energy in farming

In many ways it can use the solar energy in the field of agriculture, like reducing the pollution, saving the money and increase the self-reliance. Some applications of solar energy in agriculture field are given bellow:

#### 3.2.1 Irrigation system Controlled by solar power

Instead of using electric lights the use of natural sun light is the most common way of using the solar power. Many building and offices are creating by using solar power plates. It can save the money by using many sun-lighting options and skylights.

To livestock buildings and warming the home the heat of sun can be used. By using fans and heat boxes the active solar heating system can save the fuel and warm the air. In passive solar panel it can take the benefits of sun light automatically [14].

#### 3.2.2 Grain Drying and Crop drying

In the application of solar energy the sun is used for drying the grain and crops. It take less time while using the solar drying equipment, and it also do not harm weather, pests and birds.

**Figure 10: Grain drying**

In a basic solar dryer it includes a solar collector, screened drying trays or racks and a shed. To dry the crops a fan or natural convection provides hot air.

#### 3.2.3 Greenhouse Heating
To maintain constant temperatures the greenhouses depend on gas or oil heaters, but generally it is relies on sun for lighting. To store and collect the heat a solar greenhouse utilized the building materials. On a cloudy day or in the night for using heat is retains through insulation. Basically the solar greenhouse places in south with few or no windows, while it is well insulated in northern side. As a backup a oil heater or gas can use.

![Figure 11: Greenhouse heating](image)

### 3.3.3 In agriculture using solar photovoltaics

By using PV solar panels to generate electricity it can use the sunlight. For providing the electricity as compare with conventional methods this is a cost-friendly approach. It is beneficial in the remote areas especially where there existing difficulties in setting the power transmissions [16].

### CONCLUSION

The benefits that can charge through human timescale like tides, geothermal warmth, daylight, downpour, waves and wind are commonly portrayed as inexhaustible energy. To control the homesteads by utilizing the power produced through power a rancher can get control from wind vitality. In the business of wind to take the advantages of development the farmers and ranchers are in a one of a kind condition. The rancher can create the breeze control themselves, they can give on rent to the engineers or by utilizing wind they can produce the power for their farms. In numerous territories of horticulture it can utilize the solar energy, for example, for warming the home and workplaces, for nursery, for drying the harvests and grains and so on. In dairy activities the sun powered water warmers give high temp water. As contrasted and electric electrical cables sunlight based power frameworks are more affordable.

### REFERENCES

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