A REVIEW ON SOLAR BASED SYSTEM FOR IRRIGATION AND SMALL VILLAGES

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Abstract: For home appliances or irrigation, diesel generators pumps are widely use where there is no WAPDA supply or in remote area some factories install thermal or nuclear plant which harms the environment and cost a lot. It cost a lot to farmer because fuel is expensive and their transportation charges, generator repair cost and short life. Also it's pollute environment. Due to theses reason diesel generators are replaced by Renewable energy source. Solar system (photovoltaic) is one of the most renewable energy source that is used instead of diesel generators in agriculture field. This system is widely used in remote area for different purpose where there is no electric supply. Its cost one time and is long lasting. It is clean energy, don't produce carbon dioxide, noise less, low maintained and operation cost and is renewable energy source free of cost.

Introduction: Old technologies run on non-renewable resources which disturb ecological balance in the world. Many countries uses non-renewable sources for the production of electricity for domestic and industrial use as well as for agriculture. These all greatly effect ecological system.

ELECTRICTY PRODUCTION FROM COAL PLANT

Solar system can be use as alternative method, which is renewable source, free of cost as well as environment friendly. So we can use solar system for production of electricity on large scale for domestic and industry use as well as for agriculture purpose [1].

SOLAR IRRIGATION PUMP SYSTEM

People living in high location, where it is impossible to supply grid electricity instead of this solar system can be used to provide them electricity to make their life easy [2].

There are some remote area which lack powers. People living there are poor and cannot effort diesel generators and government cannot provide them power due to large distance from the main city [3]

Diesel generators are commonly used for agriculture purpose. These system provide electricity where it is needed. There are some drawbacks in this system as follow:

- Diesel or petrol has to be transient to the required area, which causes a lot charges due to large distance.
- Noise and air pollution, which disturb the environment.
- After few running hours generators break down and maintained required or oil of engine to be change.[4]

SOLAR DISEL GENERATOR

Problem statement:

Siruavani is a small district and famous for waterfall and is tourism place. Old generation are living there, main occupation is cultivation and major source of income. People are so poor they cannot effort electricity and government cut off electricity supply. Few farmer has installed diesel generator but diesel generators eats almost there profit.98% of people cannot afford diesel generators. If solar system is provide to them there would be high productivity from the fields [1]. In research paper [3] El Salvador is a small poor country. They cannot effort high cost electricity. Solar system is proposed for them.

In paper [5] similar case have been discuss for village in Haiti for supply of power. Solar system grid in Rompin, Pahang in Malaysia talk about it [6].It is alike what we have propose but for home appliances.

Similarly in research paper [7] and [8], hybrid system for Salvador is proposed. Solar system for sewing factory is proposed in India village [9] and [10].

Methodology:_ All the research paper are using same technology of solar system in different ways in remote area where there is no power as well as in those area where electricity cost is high.

In research paper [1], river is passing which is major source of irrigation. Farmers are feting water from river trough diesel generator with the help of pumps. Now instead of diesel generator, the power is supply through solar system. Which is one time cost and less maintained [12].

Similarly in research paper [4].

In research paper [2], village Haiti power is supply to the homes through solar system for basic needs and using MPPT [11].

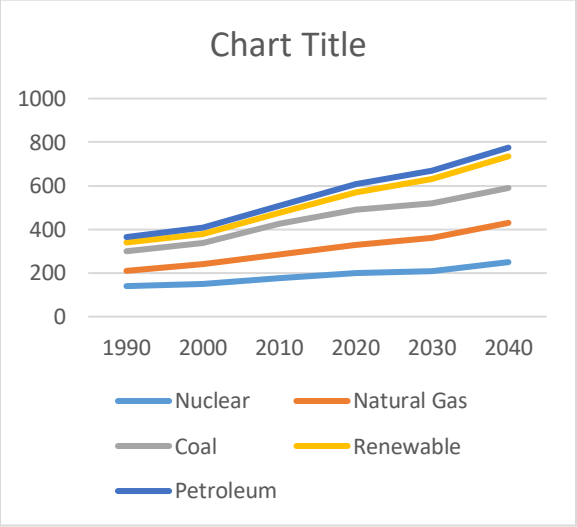
SOLAR SYSTEM

In research paper [3], using hybrid system which consist of diesel generator as well as solar system. If there is no sunlight than diesel generator will be used.

Comparisons between the methodologies:

Solar System For irrigation					Solar hybrid system for irrigation			
S.no	Components	Qty	Cost	Total	Components	Qty	Cost	Total
1	Solar PV modules	1	50000	50000	Solar PV modules	1	50000	50000
2	Inverter	1	30000	30000	Inverter	1	30000	30000
3	Mounting Structure	1	15000	15000	Mounting Structure	1	15000	15000
4	Pump	1	22000	22000	Pump	1	22000	22000
5	Cables	1	6000	6000	Cables	1	6000	6000
6	Other items	1	20000	20000	Diesel Generator	1	65000	65000
7					Other Items	1	50000	50000
			Total	143000			Total	238000

Table 1-PV cost for irrigation [1] and solar hybrid system [3]



Comparing Energy Resources, Uses and Trends

CONCLUSION:

For irrigation system in village Coimbatore, India different test have been perform in lab. A solar system design is implemented and power needed for irrigation field is calculated and different equipment's use in solar system is decided for installing [1].

Small grid system was design and install in village huts in Thoman Haiti. This system was design to give supply to home appliances like LED bulb, cell phone charger etc. for daily consumer load [2]

Solar-hybrid system will cost 0.96 kWh and system life will be 25 years, if it is well maintained. Cost is higher as compared to grid power but there are other factors to be noted. Difficult to bring power at remote area and cost of poles and conductors. Not possible to fix the fault, if there is fault in line. Grid power is unstable due to losses at a long distance. Remote areas in Berlin having grid power have complaints that if there is storm or other natural disaster, blackout remain for days. Almost 48 % is cost of distribution lines which is eliminated and cost of PV system is minimum [3].

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