International Journal of Advanced Technology in Engineering and Science
Vol. No.3, Special Issue No. 01, November 2015
www.ijates.com
ijates
ISSN 2348 - 7550

SOLAR ENERGY, ITS CHALLENGE AND CONSTRAINTS FOR THE SUSTAINABLE DEVELOPMENTIN PRESENT SCENARIO

M.Wasi Baig[1], M.Shafi Baig[2], M.M.Khan[1]

[1,3]*Integral University Campus Shahjahanpur (India)*

[2]*Scholar, Maulana Azad Urdu University, Hyderabad (India)*

ABSTRACT

As the population and development activities increase,the requirement of the energy (demand) will also increase. If this trend of continuous exploitation of energy sources will take place, then soon these sources will be exhausted in near future.so we need to look for the alternative of conventional sources of energy and the best alternative sources are the non-conventional energy sources which is also call renewable sources.

In present scenario solar energy can play a very important role for the sustainable development.

In this paper we will study what are the challenges and solution of solar energy in present scenario.

Keywords: MSMEs, NGOs, MSEs,

b) Aim and objective of this paper:-

- Overview of India's renewable energy scenario
- Challenges and solution of solar energy for the sustainable development
- Overview of Energy security
- To guide people towards solar energy
- To motivate entrepreneur for solar related products.
- Opportunity for identification of appropriate technology.
- To create awareness about industry structure before starting business.
- To promote micro, small and medium enterprises (MSMEs) towards solar energy.

I. INTRODUCTION

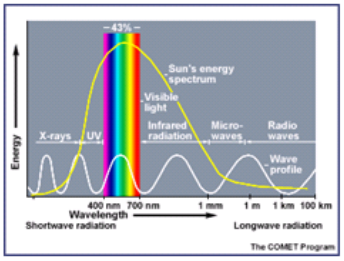
A renewable energy system converts the energy found in sunlight,wind,falling water,sea wave's geothermal heat or biomass into a form;we can use this energy in the form of heat and electricity.Most of the renewable energy comes either directly or indirectly from the sun.

Every day, the sun radiates an enormous amount of energy. This energy comes from within the sun itself. The sun is a big gas ball made of hydrogen and helium. The sun produces energy in a process call nuclear fusion. The high pressure and temperature in the sun's core cause hydrogen atoms to split apart. Four hydrogen nuclei combine or fuse, to form one helium atom, producing radiant energy in the process.

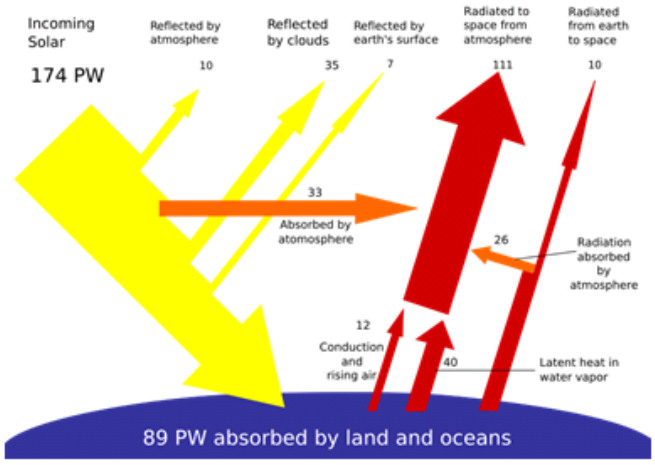
ijates
ISSN 2348 - 7550

What is Solar Energy?

- Originates with the thermonuclear fusion reactions occurring in the sun.
- Represents the entire electromagnetic radiation (visible light, infrared, ultraviolet, x-rays, and radio waves).

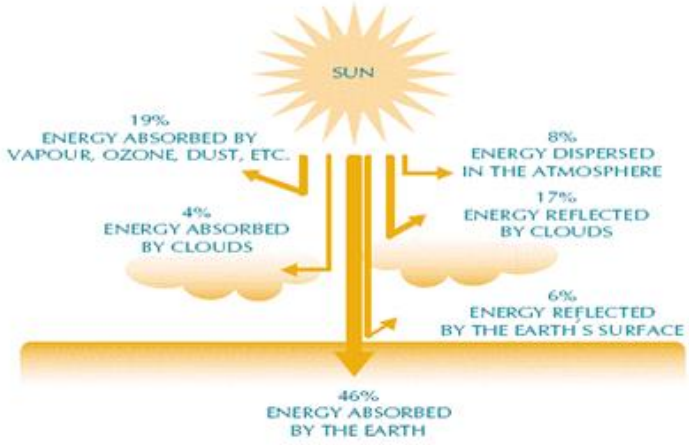


Breakdown of incoming solar energy



http://en.wikipedia.org/wiki/File:Breakdown_of_the_incoming_solar_energy.svg

Radiant Energy



ijates
ISSN 2348 - 7550

II. CHALLENGES & CONCERNS OF ENERGY

- Energy access
  - Increasing energy supply for sustained economic growth
  - Energizing rural areas
  - Socio-economic development
- Energy security
  - Energy import vulnerabilities
- Ensuring long-term sustainability of energy use
- Climate change

III. WHY SOLAR CONSUMERS ARE RAPIDLY INCREASES IN URBAN AREA

- Rapid pace of urbanization
- Use of commercial energy increasing rapidly in residential and commercial sectors
- Electricity supply plagued with black-outs and brown-outs
- Community services e.g. health, drinking water, education suffer due to lack of energy services

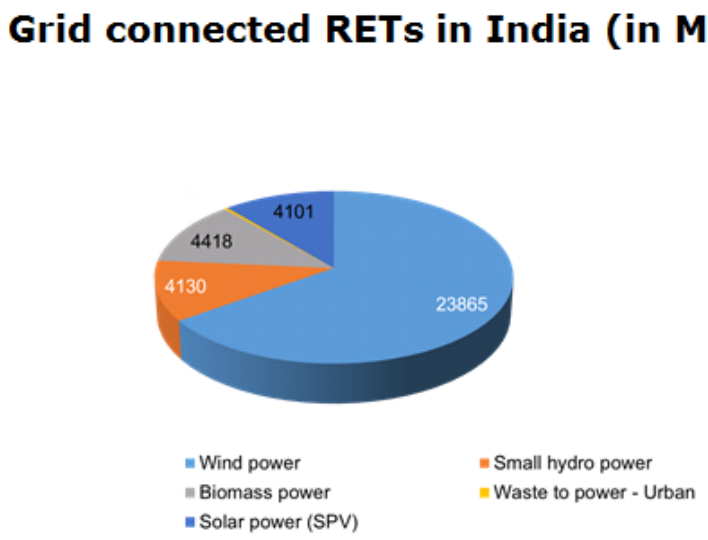
IV. ABOUT ENERGY SECURITY

- Energy security
- At the national level
- At the village level
- Energy security is not only about the risks of fuel supply disruption
- Energy security also pertains to fuel price volatility.The real risk of volatile energy prices - unpredictable & cause economic activity to decline
- India is endowed with good renewable energy resources like solar, wind, and biomass
- Even at village level, use of locally available resources is preferable than using fuels transported from the far-flung areas.
- Renewable energy is more appropriate as the resources are diffused and decentralized.

V. WHY RENEWABLE ENERGY IS NECESSARY?

- The demand for energy in the country has been growing rapidly
- The current trends indicate clearly that the country would be facing constraints in indigenous availability of conventional energy resources.
- Inability of the conventional systems to meet growing energy demands in an equitable and sustainable manner.
- Need to efficiently and economically meet the energy needs of all the citizens, particularly the rural poor.

ijates
ISSN 2348 - 7550



VI. ABOUT SOLAR ENERGY

- Solar energy is the ultimate source of energy from millions of years and it is a renewable energy.
- This energy consists of radiant light and heat energy from the sun.
- Out of all energy emitted by sun only a small fraction of energy is absorbed by the earth.
- Just this tiny fraction of the sun's energy that hits the earth is enough to meet all our power needs.
- Using present solar techniques some of the solar energy reaching the earth is utilized for generating electricity etc.….
- Even then the energy demand met by using solar energy is very less.

VII. IS INDIA'S 2022 SOLAR TARGET OF 100 GW FOR REAL?

- Solar fundamentals are so compelling in India that the sector is bound to grow with India likely to become one of the largest solar markets globally in the next 3 years.
- The 100 GW target is split between 60 GW of utility scale projects and 40 GW of rooftop and other small grid-connected projects.
- Both central and state governments have announced a number of schemes and policies to accelerate solar project development.

VIII. ADVANTAGES OF SOLAR ENERGY

- Clean
- Sustainable
- Free
- Provide Electricity to Remote Places

IX. CHALLENGE AND CONSTRAINTS OF SOLAR ENERGY PRODUCTS

High capital cost:-Despite the fact that the price of solar phothovoltaic technology has been coming down over the years it still remains economically un available for the power generation purposes.

Manufacturing process:-

Solar PV cell manufacturing is a technology-intensive process requiring high expertise.so it is challenging for new entrants to replicate the success of companies having a long standing in the PV market.

Raw material and waste products:-

Disposal of the same is challenging process. some of the material (Like cadmium) used for producing solar PV cells are hazardous and other raw materials like plastics used for the packaging of the cells are non-biodegrable,thereby impacting the environment.

Environmental cost:-

A large amount of land required for the utility –scale solar power plants-approximately one square kilometer for every 20-60 MW generated.

X. CONCLUSION

As we know energy is the gift of nature to mankind in various form and this enrgy help us to do work and make all movement. We are mostly depends upon non renewable energy sources which is going to be exhaust soon in near future. Hence we need to to look other sources of renewable energy in which solar energy is best for the sustainable development.

REFERENCES

[1] Friss-Christensen, E. and K. Lassen, 1991, Length of the solar cycle, an indication of solar activity closely associated with climate, Science 254, 698-700.

[2] Fröhlich, C. and Lean J, 2004, Solar radiate output and its variability: evidence and mechanisms, Astron. Astrophys. Rev., 12(4), 373-320.

[3] Haigh, J.D., 2004, The effect of solar variability on Earth's climate, Philos. Trans. R. Soc. Lond., A361, 95-111.

[4] Hathway, D.H. and Wilson R.M., 2004, Solar Physics, 224, 5.

[5] Kopp, G. and J.L. Lean, J.L., 2011, Geophys. Res. Letters, Frontier article, Vol. 38, L01706.

[6] Lean, J., Beer, J. and Bradley, R., 1995, Geophys. Res. Lett., 22, 3195.

[7] Lockwood M. and Fröhlich, C., 2008, Proc. Roy. Soc., Lond.

[8] Michnowski, S., 1998, Solar wind influences on atmospheric electrical variables in Polar Regions, Journals of Geophysical Research, 103(13), 948

[9] Price, C., Rind, D.,1990, The effect of global warming on lighting frequencies in proceedings of the 16th conferences on severe storms and atmospheric electricity, AMS, Kannaskis Park, Alberta, Canda, P.748-751.

[10] Svalgaard, L., Cliver, E., Kamide, Y., 2005, Geo Res.Let., 32, 01104. [11] Wilson, R.C., 1997, Total Solar Irradiance trend during solar cycle 21 and 22, Science, 277, 1963-5.

[11] Berth,J.L.,C.S.Dyer, and E.G., Stassinopoulos,(2003), Space atmospheric and Terrestrial radiation environments,IEEETrans.Nucl.Sci.Vol 50.No3.pp.466-482.

[12] Cowely,S.W.H:1982,"The causes of convection in the Earth's Magnetosphere:A Review of Development During the IMS,Rev.Geophys.Space Phys.20,531-565.

[13] Daly,E.J.,I.Daglis,Ed.,(2004),Outlook on space weather effects on space-crafts",NATO Science series:effect of space weather on Technology infrastructure, Kluwer Vol:176,pp.91-108.

[14] Davis,K., and D.M.,Baker,(1964),Ionospheric effects observed around the time of the Alasken earthquake of March 28,1964,J.Geophys.Res,70,2252-2253