

PROBLEMS OF HYDERABAD TO RELY ON WIND ENERGY

India faces formidable challenges in meeting its energy needs and in providing adequate energy of desired quality in various forms in sustainable manner and at competitive prices. It will not be easy for all the Indians to bear the thought of zero electricity one day. Not only the energy needs, India needs to sustain an 8% to 10% economical growth rate over next 25 years, if it is to eradicate poverty and meet human development goals. I am considering only the poverty case because I feel that it is the first step to make our country green. To deliver these goals by 2031-32 and to meet the lifetime energy needs of all citizens, India needs, at the least, to increase its energy supply by 3 or 4 times and electricity generation by 5 to 6 times as per 2003-04 census. By 2031-32 power generation capacity must increase to nearly 8, 00, 000 MW from the current 1, 60, 000 MW. By these figures we can probably figure out the intensity of the problem. Meeting the energy challenge is of fundamental importance to India's economic growth imperatives and its efforts to raise its level of human development.

Now I will present a case study of Hyderabad city regarding its development in different areas. The city has been developing in terms of needs of people like medicinal needs, financial support, basic requirements like food, water, shelter, etc, from the Nizam's time and it was easily viable place from the nearby villages. Since then it has been a very important place. Its importance was further enhanced by the Nizams and Nawabs who ruled the place for centuries.

Urbanization and drastic development of real estate was one of the main reasons for Hyderabad's development. By the growth of urbanization the demands of the people are also increasing. Mainly the upper middle class section of society is demanding large amount of basic utilities for their living. With all of these increasing rapidly the electricity consumption has also gone up. In the past few centuries it has become more like a concrete jungle. Houses have come up tremendously, people from villages and small towns have started living here because of the better employment opportunities and high wages. so the population of the city has gone up tremendously.

Primarily we need to address the electricity problem because 99% of our daily life is connected with it. We need to switch on to the renewable green energy source as soon as possible. And if we are negligent in this matter we need to pay for, our lives. This step towards alternate sources of electricity can relieve us from dangers like Global warming through subsequent depletion of Ozone layer. The main purpose of these projects should be to construct, operate, maintain and aggregate wind power projects in India and use for captive purpose to reduce greenhouse gas emissions.

Alternate energies like Solar, Wind, and Bio-gas etc are environment friendly which has abundant potential in our country to generate alternate electricity. Wind energy is the most important of all these. This is used in some important cities throughout the globe. For e.g.: New York City which is near the sea in North America has many advantages for producing electricity through wind energy. It has 75 MW Hard Scrabble Wind Power Project which starts delivering emission free electricity by the end of this year. This will feature 37 American made wind turbines which would stand on 100 towers. In the light of devastating oil spill in the Gulf of Mexico and lack of federal action on climate change the New Yorkers felt that it is time to set green house gas emissions limit. So the people there have produced a bill on it which is Global Warning pollution control act. On this basis it will start producing emission free electricity and the project would be ready for use very soon.

This has provided employment opportunities to many construction job workers for its construction. Moreover this will reduce the cost of electricity production which is very beneficial in this recession period.

In our country Tamil Nadu state has the highest production of wind power. It produces up to 25MW of energy by wind. This year alone they increased to 150MW of installed capacity of wind power during the Eighth plan with private sector contributing at least half of the production.

A group of wind turbines in the same location for the production of electric power are called wind farms. In these locations individual turbines are interconnected with a medium voltage power collection system and communications network. At a sub-station this medium voltage electrical current is increased in voltage with a transformer for connection to the high voltage transmission system. There are some basic requirements for wind farm installation, they are as follows:

Location Planning:

At first step we need to select an area for installation. This is done using a quantity called Wind Power Density (WPD). It is a calculation relating to the effective force of the wind at a particular location, frequently expressed in terms of the elevation above ground level over a period of time. It takes into account velocity and mass. The areas where wind farms are built are generally non-residential, due to noise concerns and set back requirements.

Wind speed:

As a general rule wind generators are practical if wind speed is 10 mph or greater. An ideal location would have a near constant flow of non-turbulent wind throughout the year, with a minimum likelihood of sudden powerful bursts of wind.

Access:

Access to the power grid is also a factor. Further from the power grid, the more transmission lines will be needed to span from the farm directly to the power grid.

Altitude:

The wind blows faster at higher altitudes because of the reduced influence of drag. Typically, the increase of wind speeds with increasing heights follows a wind profile power law, which predicts that a wind speed rises proportionally to the seventh root of altitude. Doubling the altitude of a turbine, then it increases the expected wind speeds by 10% and the expected power by 34%.

Wind park effect:

The wind park effect refers to the loss of output due to mutual interference among the turbines. Wind farms have many turbines and each turbine extracts some of the energy of the wind. Where the land area is sufficient turbines are spaced 3 to 5 rotor diameters apart perpendicular to the prevailing wind and 5 to 10 rotor diameters apart in the direction of prevailing wind, to minimize efficiency loss.

These are some factors. The main advantage of wind power production is wind power consumes no fuel and emits no air pollution, unlike fossil fuel power sources. The energy consumed to manufacture and transport the materials used to build a wind power plant is equal to the new energy produced by the plant within a few months of operation. While a wind farm may cover large area of land, many land uses such as agriculture are compatible.

Not only New York even United Kingdom plans to use wind energy methods to produce electricity. Our city Hyderabad can also think about alternate electricity generation. First coming to its geography it is situated on the Deccan Plateau and it has an average elevation about 536 M above sea level. Most of the area has a rocky terrain.

Coming to its topographical conditions it has a tropical wet and dry climate that borders on a semi arid climate, with hot summers from late February to early June, the monsoon season from late June to

early October and a pleasant winter from October to early February. Hyderabad gets 32 inches of rainfall every year on an average.

Our city has also taken some steps towards renewable energy production. There is a government organization called the Non-conventional Energy Development Corporation of A.P. Limited (NEDCAP) which is currently working on this. Present Chief Minister Shri.K.Rosaiah has asked NEDCAP to prepare a policy document on solar energy and Wind energy for effective implementation within a month though it has not been done so.

Out of 2,290 MW of power to be generated by biomass based, wind, small hydro, municipal solid waste, industrial waste based energy projects by 2013-14. Wind based projects would generate 1,808 MW officials informed. Government has already announced new wind power policy and offered tariff of Rs.3.50 per unit for a period of 10 years from the date of commissioning the project. As many as 32 locations were notified for wind power development. According to an assessment made by MNRE based on wind monitoring studies, the gross wind power potential in the state was estimated at 8,968 MW.

Now we will study the problems faced by Hyderabad in wind power development.

- The population has grown rapidly and because of extensive urbanization our city has no non-residential areas for wind farms.
- Because of lack of awareness among the general public the mind-set of the people has not yet changed.
- The wind park effect will be more in our city due to lack of space.
- Environmental danger to birds and bats by erecting wind turbines has been a concern in many locations.
- Due to less understanding between different sections of society regarding these matters we cannot think of short term goals.
- The government a negligent role in this matter. It is introducing many schemes and policies but implementing none.
- The government is not encouraging the private sector to invest in such projects.
- Due to criminal wastage of electricity and determination of its importance.
- In my point of view the waves that come from the cell phone towers are also responsible for turbulent wind flow.

Some of the advantages of having wind energy projects are as follows:

- Contribution towards government's objective for 10% incremental capacity for renewable energy resources.
- Contribution towards meeting deficit energy supply in our city.
- Reduction of green house gases through development of renewable energy technology.
- Reducing average emission intensity, average effluent intensity and average solid waste intensity of power generation in the system.
- Conserving natural resources including land, water, minerals, forests and ecosystems.
- Develop the local economy and creating jobs and employment particularly in rural areas.
- Increasing income security for vulnerable sections of society.

The main goal of these wind projects should be to construct, operate, maintain, and aggregate wind power projects in India and use for captive purpose to reduce greenhouse gas emissions. These goals are held responsible on mainly three sections namely government, the society and the youth.

Firstly we need to recognize high energy consumption areas. Educational institutions like universities, industrial areas, software hub high-tech city, hospitals, secretariat and assembly buildings, etc, consume more power. In these places a specific zone should be recognized for the installation of small wind turbines preferably on top of the buildings or at some elevation. If the above solution is not possible then the total area should be encircled with wind turbines. These steps can be done with the help of technology which students should enhance within them. We should force the government to go for urban forests, leave lung spaces for better wind flow and restrict the vertical growth of the city. Then we can achieve a environment friendly energy production.