

# BENEFITS OF USING RENEWABLE ENERGY SOURCES FOR SMART CITY INITIATIVE IN MAHARASHTRA IN CARBON EMISSION REDUCTION PERSPECTIVE

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## ABSTRACT:

Considering newly elected state and national government and today's need for the world there is need of smart city and many other developments which may demand an more electrical power and this may put burden on the all state electricity board for increasing power demand. But the generation is limited due to limited natural resources this calls a need for renewable energy sources and integrating renewable with national grid is another big challenge. Our consent is carbon foot printing related to increased non renewable energy resources. In this paper methodology of carbon foot reduction is explained in great detail.

**KEYWORDS:** Carbon Foot Printing, Renewable energy sources, fossil fuels etc.

## INTRODUCTION:

The non renewable energy sources cannot be used for all needs of today's generation, as it may lack mechanical strength and source restriction in case of electrical energy. The biggest reason for this non conventional has much lower efficiency causing loss of natural resources and stocks, and it also emits large amount of carbon which is a green house gas. There are various methodological things which can be put together a transparent connection relating to energy poverty together with under development of non urban areas. To overcome this, a new strategy is developed termed as "energy ladder." Typical energy concept makes use of principal energy just before to change to may be an additional end use heats up. It may include energy form combustible renewable or may be some other resources. Bio mass energy in any plants used a difference as gas also becomes a fuel and it also has got a calorific value.

## RELEVANT THEORY:

Knowledge especially related to energy is published by international energy agency (IEA). IEA has meaning and it is governing establishment which may not be people with organization for economic co-operation and development (OCED) this data may

provide country wide energy knowledge regulated for the confirm of annual energy consumption. Truth related to combustible energy renewable together with remaining energy are considered to be based on very small surveys based on internet and it may or may not give any useful information of the situation to be considered. An IEA is the institute which monitors all this things e.g. waste production from the generation of electrical energy and it also shows difference in energy used their advantages and all other aspects related to used of electrical energy.

Few of the agencies are saying if we convert thirty three percent about remodeling of the nuclear plants is been consider very useful. If that plans come to action then it may happen that all hydroelectric power plants may come to end and all water can be utilized for the irrigation purpose. This may helpful in drought heated parts of Maharashtra, it will also helps in production of good quality crop for the farmers, which may raise the farmers price for particular crop production.

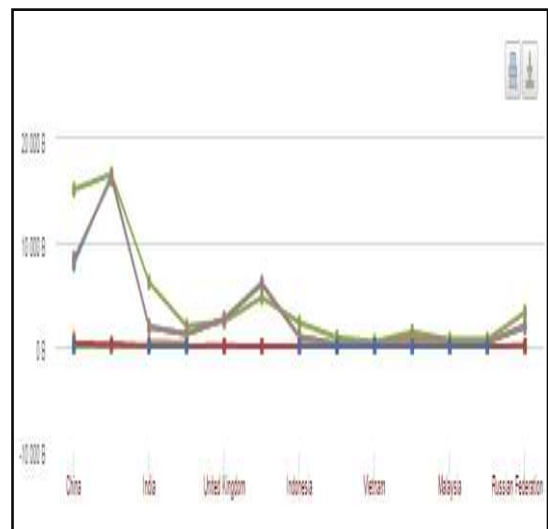


Figure 1: Energy Sector World Bank Data 2012

In developing countries electricity demand plays a very important role, and it mainly depends on progress of any country as electricity can be useful for market, transportation and many smart city initiatives of

Maharashtra state as well as India. A use of energy is increasing rapidly so the demand in electricity increasing which in turn increases the carbon emission.

Based on private agency report published in 2016 renewable may provide 19 percent of the energy. It is been estimated of 3 percent of can be useful for irrigation purpose. Moreover out of 100 percent of ocean water 23.7 percent of ocean water can be useful for the generation of electrical energy using a tidal power. The generation of biomass energy also has a tremendous potential approximately 9 %, 4% from hydro power and 2.5 % from wind. There are numerous jobs available with open renewable energy sector, it is predicted that if we use full potential of renewable energy we may get around 5% jobs available to today's youth in Maharashtra and India.

The problem associated with renewable energy is, the location, physical accessibility as compared to usage of fossil fuels. Fossil fuels plant can be set up almost anywhere on the land. This causes a major problem for the installation and development of renewable energy plants. In Maharashtra there are restricted sources of renewable sources and if we go for the smart cities, we may have to greatly depend on the usage of fossil fuels which may result in greater carbon emission as compared to energy generation by renewable sources.

#### ADVANTAGES OF RENEWABLE ENERGY APPROACH:

With increased access to energy for more concerned home based benefit and moreover electrical power working with state electricity boards can have a major impact on people living with rural areas people. Clean energy is a very important factor in the boost people's health. While implementing project like smart cities environment and facilities shall be also taken into consideration.

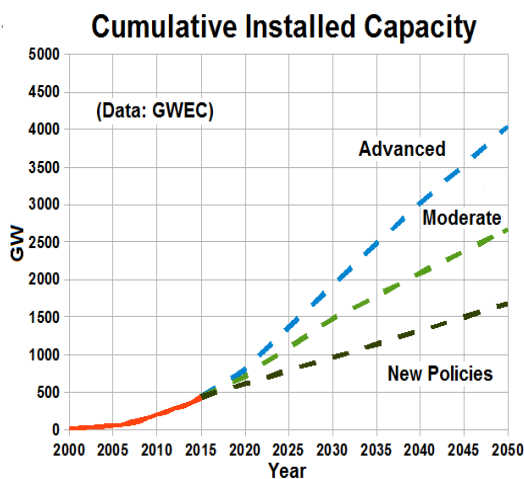


Figure 2: Worldwide installed wind power capacity forecast (Source: Global Wind Energy Council)

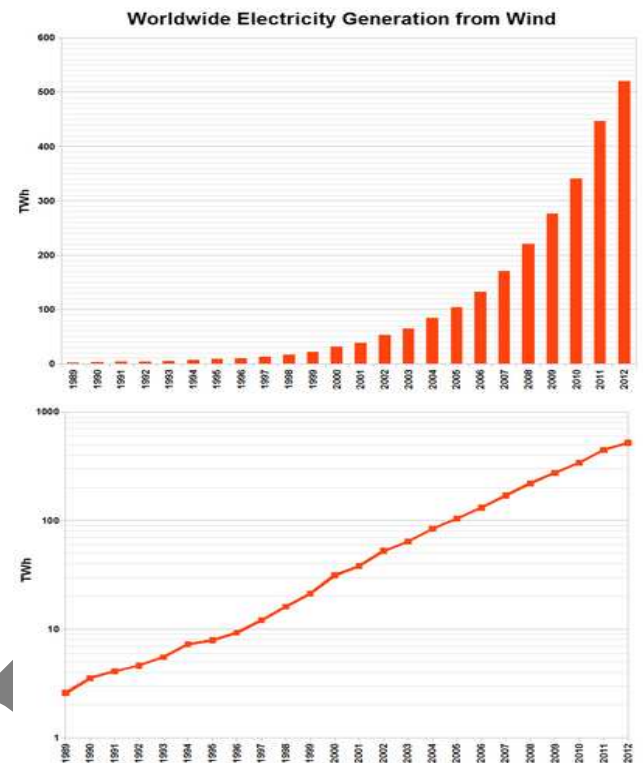


Figure 3: Worldwide wind generation up to 2012 (Source EIA, January 2015).

Table 1: Global wind farms

Wind farm	Capacity (MW)	Country	Turbines and model	Commissioned
London Array	561	United Kingdom	170 × Siemens S WT-3.7	2015
Greater Gabbard	402	United Kingdom	130 × Siemens S WT-3.5	2013
Anholt	300	Denmark	110 × Siemens S WT-3.5	2014
BARD Offshore 1	300	Germany	70 BARD 6.0 turbines	2014

Few surveyors have reported that by 2035, nuclear power may increase up to 105,000 metric tons of extreme fuel waste. While following dubious way, in some areas Germany also have worked and the same has been followed by Spain and Sweden and they are world rankers one for production of clean energy and in some they may wipe out production of nuclear energy for the purpose of generation of renewable energy and that can

be big thing happened in any country which may reduce global warming which will have global impact on the environment and same can followed by other countries for production of green energy.

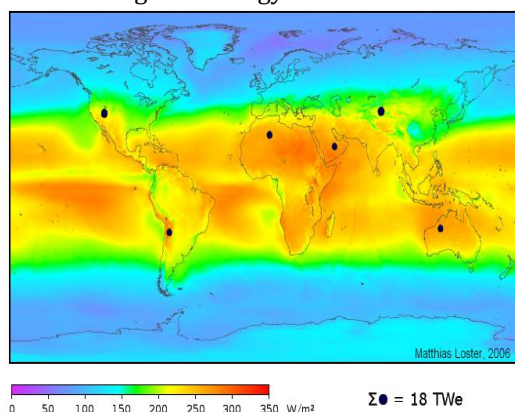


Figure 5: Global solar scenario

## CONCLUSION:

This paper has written in context of deciding the future path for the smart cities in India, especially concentration is given to Maharashtra state. As on today if few of the cities are going to smart city projects it is very important to get associated with other problem related to it. In this paper author had tried to deal with many other problems especially requirement of electricity for smart city projects start ups and its maintenance. As in Maharashtra there are few resources for renewable energy sources except solar, smart city projects may increase a carbon emission.

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