**Problem Statement**

**AIM:**

To develop the problem statement for predicting the energy output of wind turbine based on weather conditions.

**INTRODUCTION:**

Wind power is the process of harnessing energy from the movement of the wind and converting it to useful forms of mechanical power and electricity. Today, most wind energy comes from turbines – essentially giant windmills. The wind turns two or three of the turbine's propeller-like blades around the turbine's rotor.  The rotor is connected to a main shaft, which spins a generator to create electricity. Here the production of the energy is highly dependent on the speed of the wind. The speed of the wind can be predicted from the weather forecasting and this enable us to calculate the production of energy from the Turbine.

In order to predict the energy production of the wind farm it is necessary to undertake the following tasks:

* Predict the variation in the long-term wind speed over the site at the hub height of the machines, based on the long-term speeds at the mast locations;
* Predict the wake losses that arise as a result of one turbine operating behind another- in other words in its wake; and
* Calculate or estimate the energy produced from the turbine.