



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35

Accredited by NBA-AICTE and Accredited by NAAC – UGC with A+ Grade

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING



COURSE NAME: 19EEO305 /Renewable Energy Generation Technology

IV YEAR / VII SEMESTER

UNIT 3- WIND ENERGY

Topic 5 – Performance of Wind energy System



SUCCESSFUL STUDENT

Positive
Attitude

Professionally
Groomed

Socially
Interactive

Technically
Skillful



Source /origin of wind

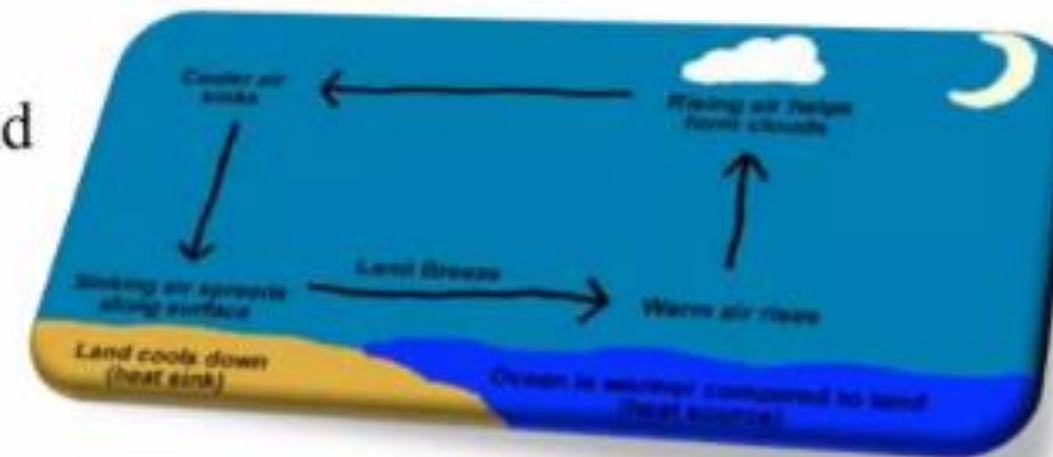
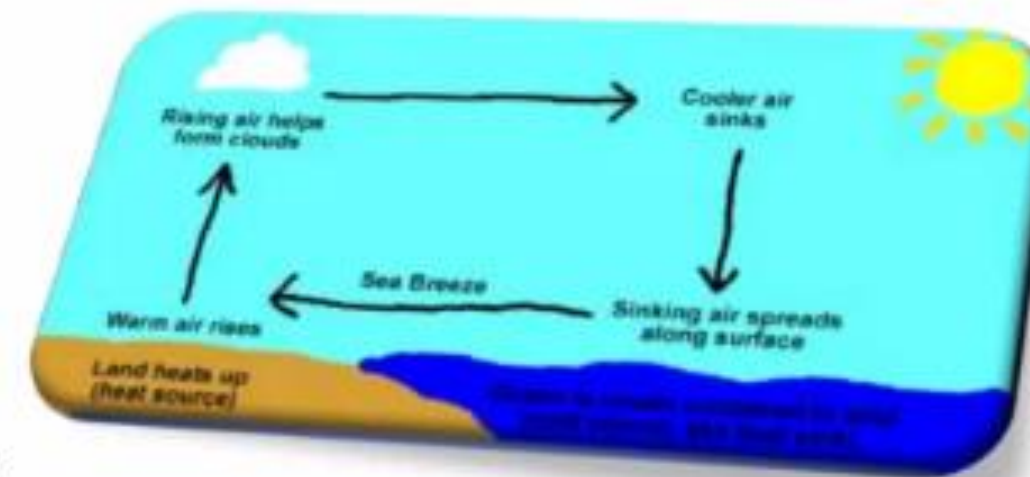
- The origin of winds may be traced basically to uneven heating of the earth's surface due to sun.

- Local wind
- Planetary wind

Local wind

- Localized uneven heating is responsible for local winds. Local winds are produced due to two mechanisms:

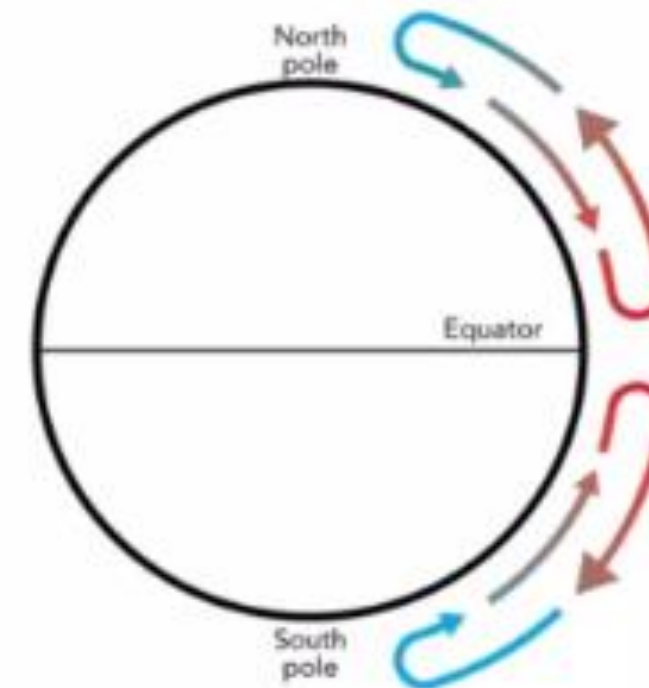
- i. Due to differential heating of land surface and water bodies due to solar radiation.
- ii. Due to differential heating of slopes on the hillsides and that of low lands





Planetary wind

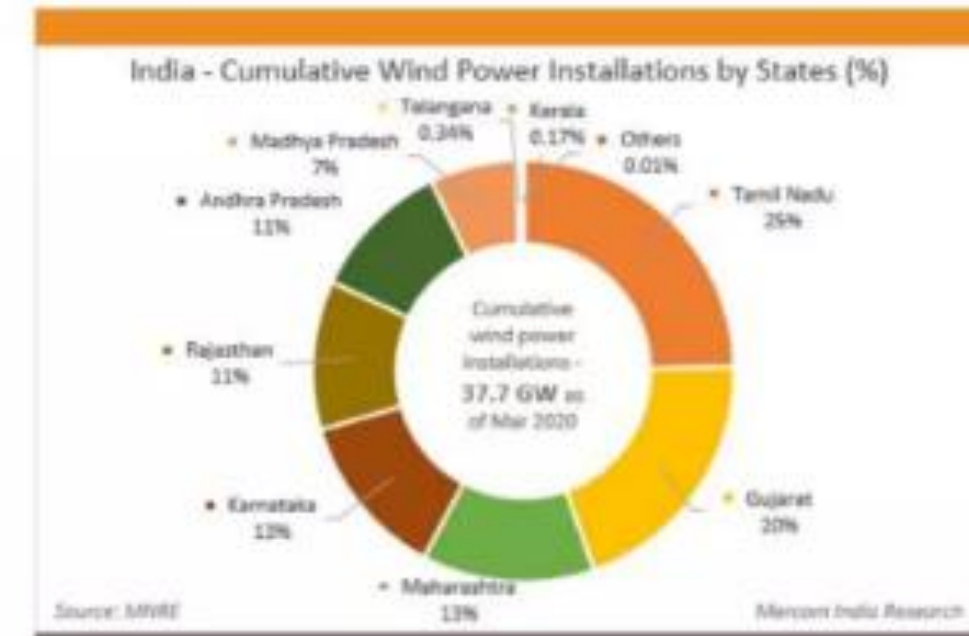
- Two major forces determine the speed and direction of wind on a global basis :
 - i. Due to differential heating of the earth at equatorial and polar regions. (Heat transfer)
 - ii. Spinning of earth about its axis produces a Coriolis force, which is responsible for deviation of air currents. (deflects the direction of wind)





Wind power installation data in India

- Tamil Nadu emerged as the leading wind installer accounting for nearly 25% of the cumulative wind installations as of March 31, 2020
- Gujarat emerged as the second leading state accounting for 20% of the total wind installations in the country.
- Maharashtra and Karnataka came third and fourth with 13% each, while Rajasthan rounded off the top five with 11% of the total cumulative installations.



Installed wind capacity by state as of 31 October 2019^{[27][24]}

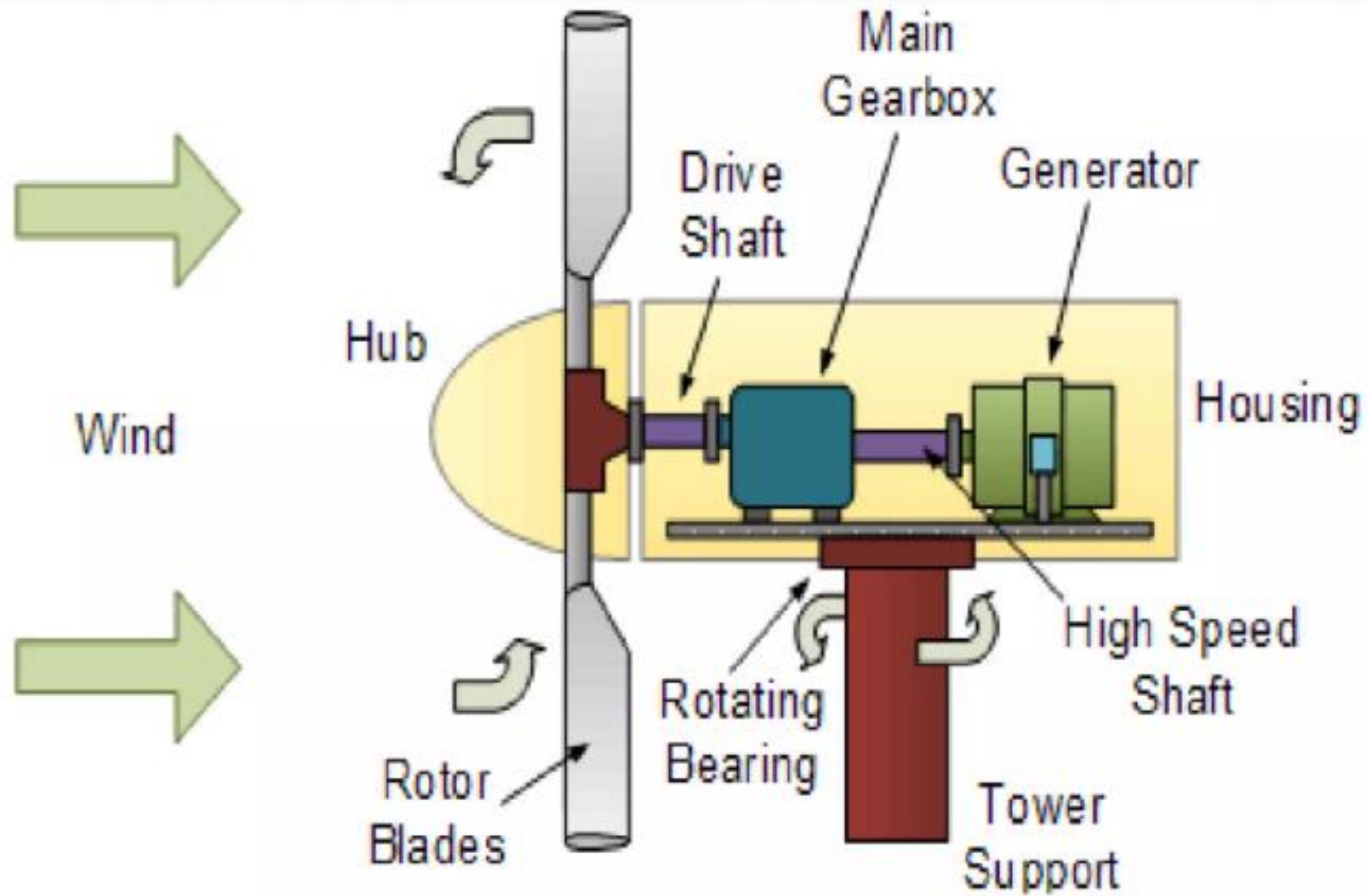
State	Total Capacity (MW)
Tamil Nadu	9231.77
Gujarat	7203.77
Maharashtra	4794.13
Karnataka	4753.40
Rajasthan	4299.73
Andhra Pradesh	4077.37 ^[28]
Madhya Pradesh	2519.89
Telangana	128.10
Kerala	62.50
Others	4.30
Total	37090.03



Wind turbine

- A device that converts kinetic energy to electrical energy is called wind turbine







ASSESSMENT



publicdomainvectors.org





REFERENCE



Reference Book:

1. S.P. Sukhatme, 'Solar Energy', Tata McGraw Hill Publishing Company Ltd., New Delhi, 1997. (UNIT II)
2. G.N. Tiwari, 'Solar Energy – Fundamentals Design, Modelling and applications', Narosa Publishing House, New Delhi, 2002. (UNIT II)
3. S.M. Muyeen," Wind Energy Conversion Systems: Technology and Trends", Springer 2012. [UNIT III]

Text Book:

1. G.D. Rai, 'Non Conventional Energy Sources', Khanna Publishers, New Delhi, 2006. (UNIT I - V)
2. D.P.Kothari, K.C.Singal and Rakesh Ranjan,"Renewable energy sources and Emerging Technologies", PHI Pvt. Ltd., 2009. (UNIT I-V)



THANK YOU!!

