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 2 – Types of wind energy systems

SUCCESSFUL STUDENT

Positive Attitude

Professionally Groomed

Socially Interactive

Technically Skillful

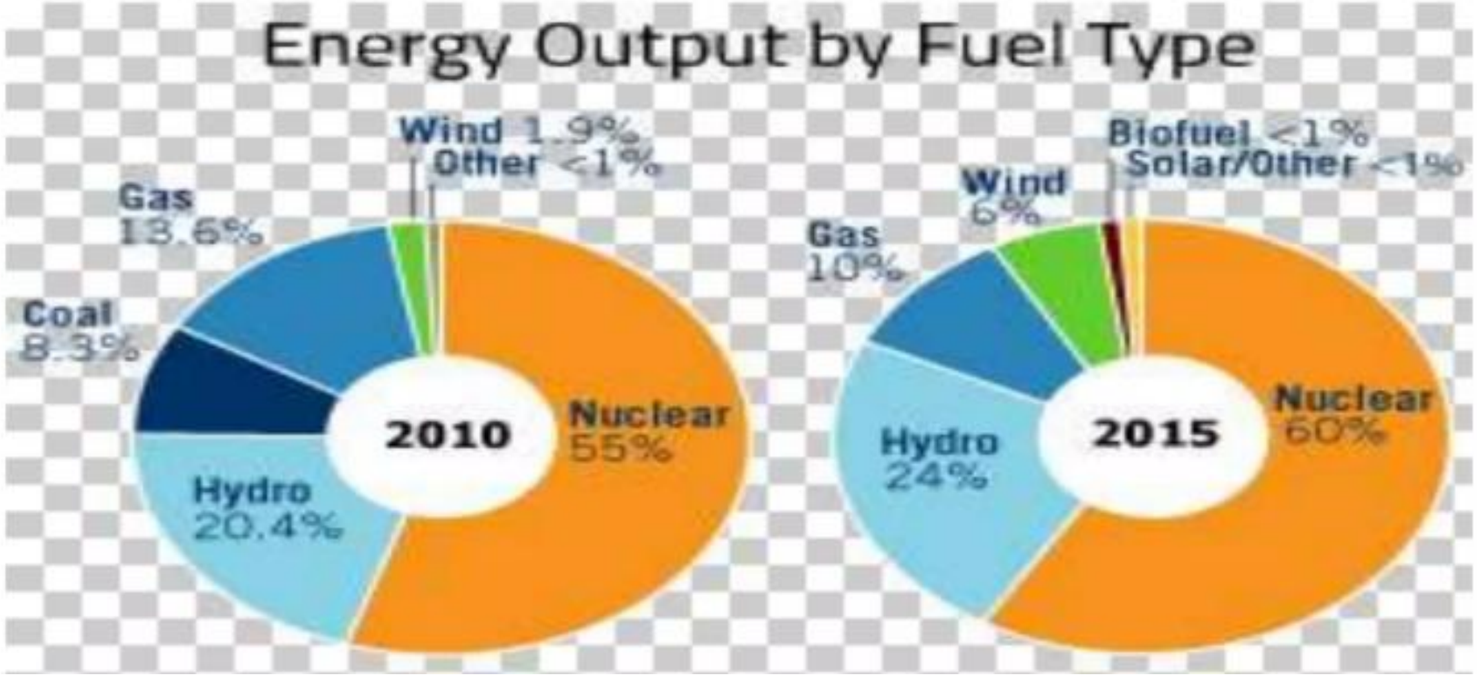
Introduction to Wind

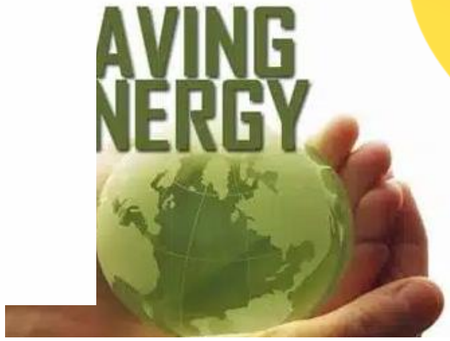
- Wind – Atmospheric air in motion.
- It has become an energy source.
- Sun produces 4 x 10^{26} joules of electromagnetic radiation every second that is radiated into space.
- About 2% of the sunlight that falls on the earth is transformed to wind energy.
- Wind provides around 1% of the world's electricity

Growth rate

- The **worldwide total** cumulative installed **electricity generation capacity** from **wind power** amounted to 432,883 MW.

- An increase of 17% compared to the previous year. **Global wind power** installations increased by 63,330 MW, 51,447 MW and 35,467 MW in 2015, 2014 and 2013 respectively.

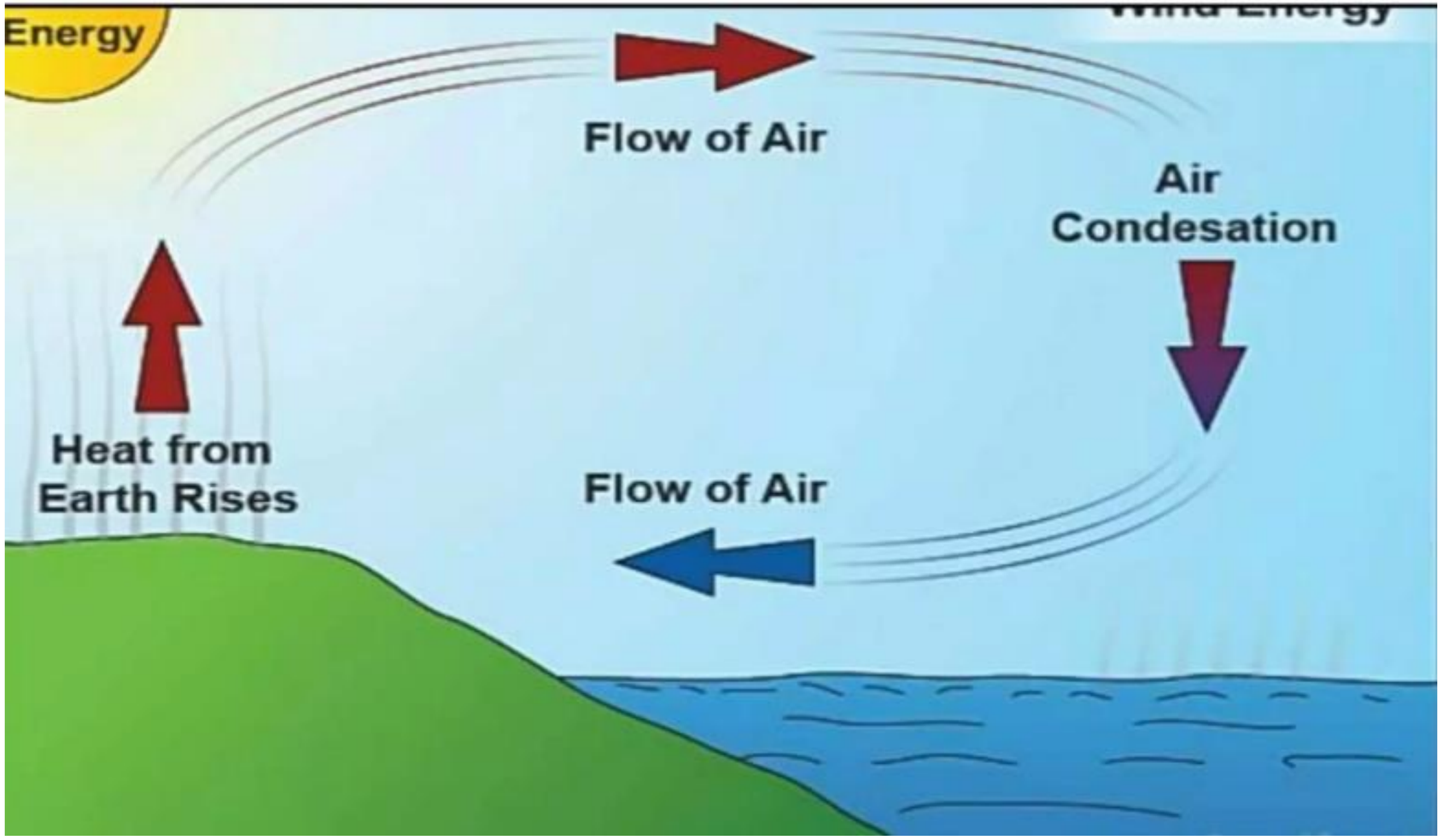




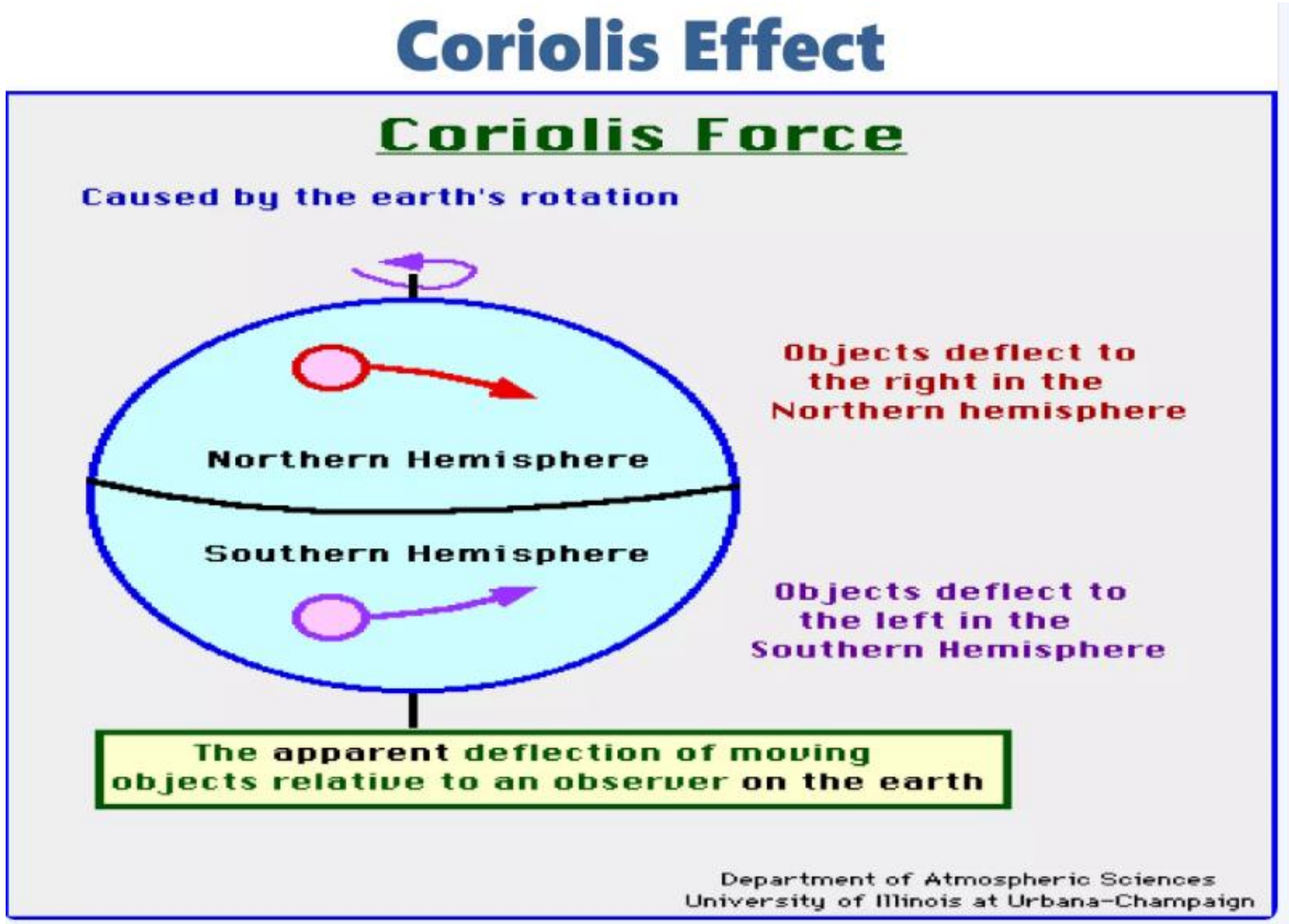
Process of Wind Creation

- Wind is caused by differences in the atmospheric pressure. When a difference in atmospheric pressure exists, air moves from the higher to the lower pressure area, resulting in winds of various speeds.
- The two major driving factors of wind patterns are the differential heating between the equator and the poles (difference in absorption of solar energy) and the rotation of the planet.
- Each second, the sun releases an enormous amount of radiant energy into the solar system.
- Some of it reaches the earth:
  - strikes the equator directly (giving it the most radiation)
  - diffuses along the Northern and Southern Hemisphere
  - the poles receive the lowest amount of radiation

Wind formation



Coriolis Effect



ASSESSMENT

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!!