CH 429 **Petroleum and Petrochemicals** **(3-0-0-6)**

JULY-NOVEMBER 2024

Syllabus

Origin, formation and composition of petroleum, petroleum processing: fractionation, blending of gasoline, gasoline treatment, kerosene treatment, treatment of lubes, petroleum wax and purification; Thermal and catalytic processes: thermal cracking, catalytic cracking, catalytic reforming, naphtha cracking, coking, hydrogen processes, alkylation, isomerization processes; polymer gasoline, asphalt, upgradation of heavy crudes; Specialty products: industrial gases, liquid paraffin, petroleum jelly; Sources of petrochemicals; Synthesis of methanol, formaldehyde, acetylene, synthetic gas, ethanol, ethylene, ethylene glycol, vinyl acetate, acrylic acid and acrylates, acrylonitrile, acetone, acetic acid, chloroprene, vinyl chloride, vinyl acetate, acrylonitrile, propylene, butadiene, butanes, isobutene, adipic acid, adiponitrile, benzene, toluene, xylene, phenol, styrene, phthalic acid, phthalic anhydride and their applications in chemical industry.

Texts:

1. B. K. B. Rao, *Modern Petroleum Refining Processes*, 4th Ed., Oxford & IBH Publishing Co. Pvt Ltd., New Delhi, 2002.

2. P. Wiseman, *Petrochemicals*, John Wiley & Sons, 1986.

References:

1. R. A. Meyers, *Handbook of Petroleum Refining Processes,* 3rd Ed., McGraw-Hill, 2004.

2. S. Raseev, *Thermal and Catalytic Processes in Petroleum Refining*, Marcel Dekker, Inc., 2003.

General Class Time Table

Slot-wise Time Table Reference w.e.f July-Nov 2024 session

	8:00 – 8:55	9:00 – 9:55	10:00 – 10:55	11:00 – 11:55	12:00 – 12:55	1:00 – 1:55	2:00 – 2:55	3:00 – 3:55	4:00 – 4:55	5:00 – 5:55
Monday	A	B	C	D	F	F1	D1	C1	B1	A1
		ML1					AL1			
Tuesday	E	A	B	C	F	F1	C1	B1	A1	E1
		ML2					AL2			
Wednesday	D	E	A	B	G	G1	B1	A1	E1	D1
		ML3					AL3			
Thursday	C	D	E	A	G	G1	A1	E1	D1	C1
		ML4					AL4			
Friday	B	C	D	F	G	G1	F1	D1	C1	B1
		ML5					AL5			

Salient Points:

- **A, B, C, D, A1, B1, C1, D1 have 4 hours per week.**
- **E, F, G, E1, F1, G1 have 3 hours per week**
- **12-1 PM is the lunch break for those having theory courses in the afternoon.**
- **1-2 PM is the lunch break for those having theory courses in the forenoon.**

FULL COURSE PLAN

02 Quiz each 30-40 marks at interval of 2-3 weeks

Additional 01 assessment cum presentation

02 Assignments / presentation each 15 marks (3^{rd} and 7^{th} week)

Midsem exams – 02 hours

Endsem exams – 03 hours

FULL COURSE PLAN (Continued……)

Microsoft Teams group to be activated, please join

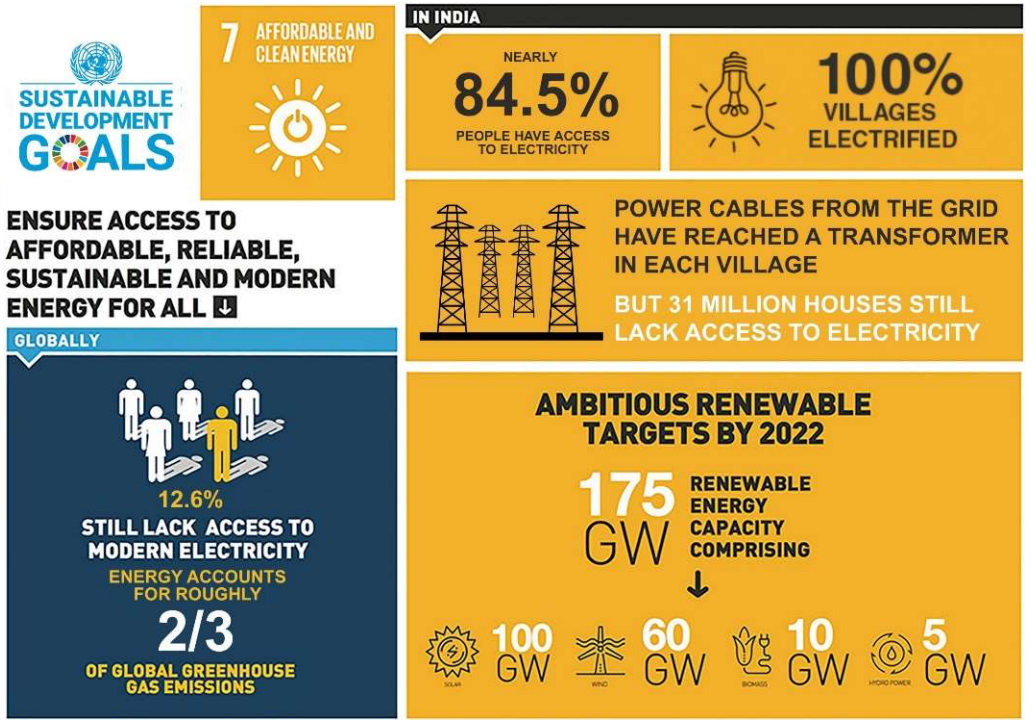
Whatsapp groups to be created, please join

Slides will be uploaded from time to time in Teams

50% for each faculty (Classes, Marks, etc.)

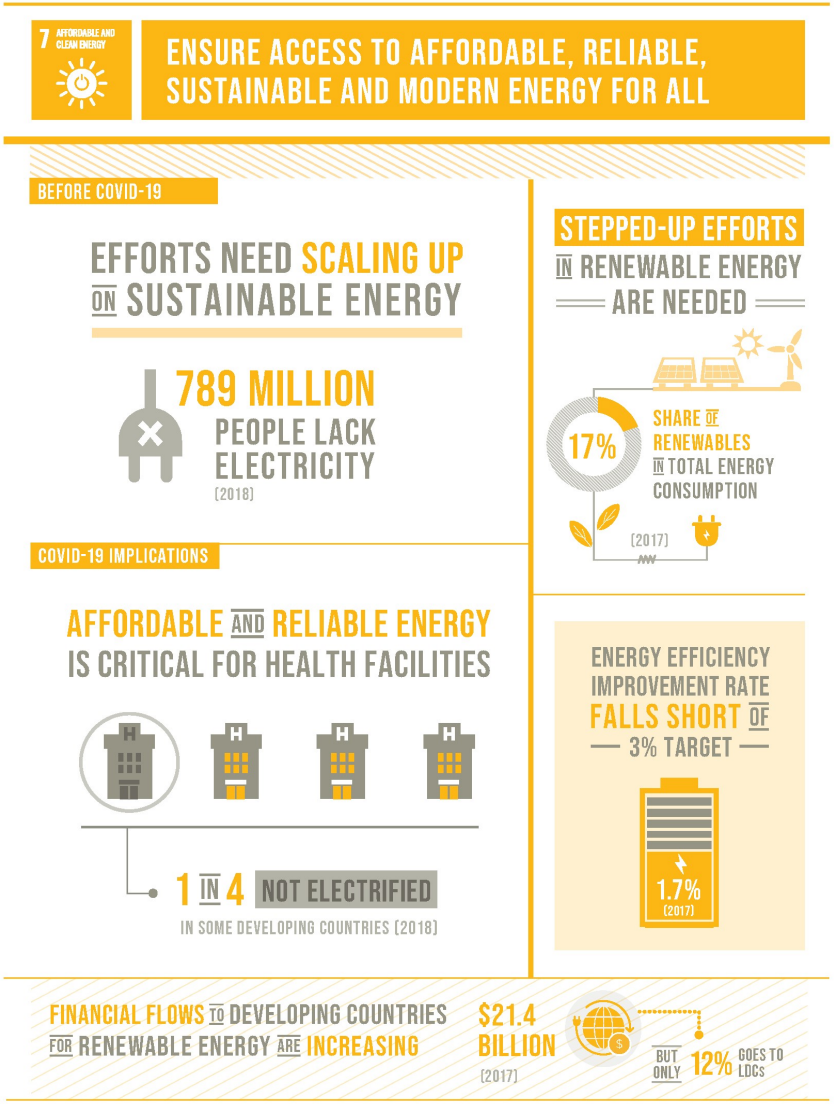
Attendance is compulsory

The SDG Goals



Paradigm Shift Towards Renewable Energy

Prioritize affordable and reliable /uninterrupted energy distribution for healthcare facilities



- Healthcare facilities not properly electrified
- Energy deficiency was found to be approximately 25%
- Another major quarter had unscheduled power cuts
- Not able to provide even basic essential health care services
- These deficiencies weakened the health care system
- Response to the current health crisis was very slow
- LDCs (Least developed countries) need to be provided more financial support to harness renewable energy

Promote sustained, inclusive and sustainable energy focused on healthcare, economic growth, full and productive employment and decent work for all.

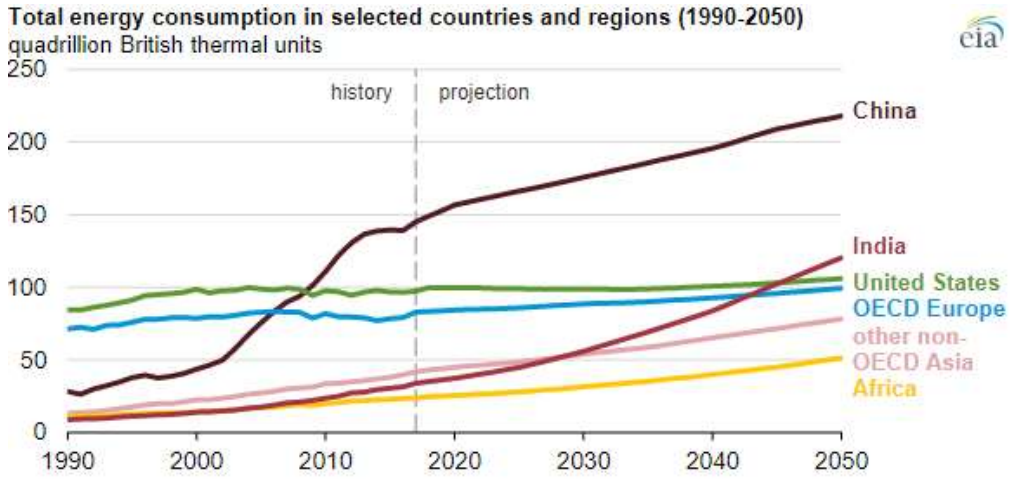
Summary of GOAL 7-Affordable and Clean Energy

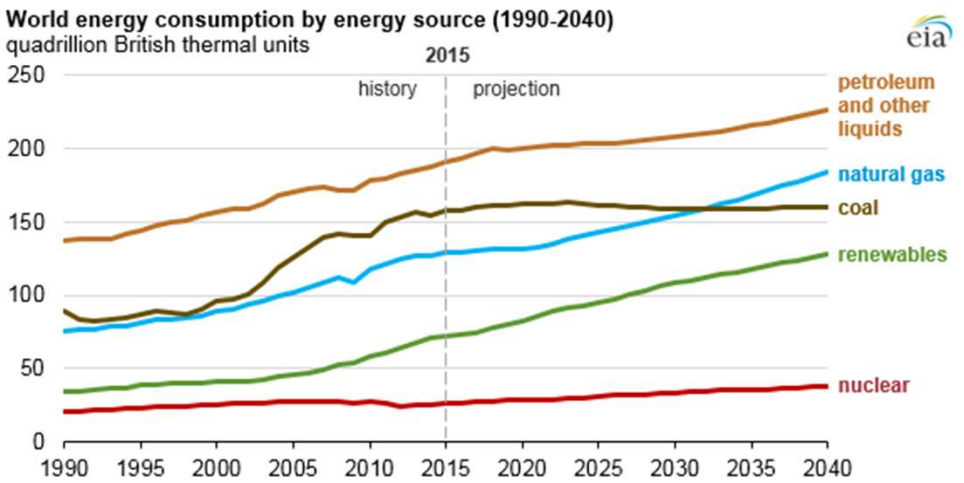
- By the year 2030 the **Goal 7** of the **SDGs** aims –

To correct the enormous energy imbalance by ensuring that everyone has access to affordable, reliable, and modern energy services.

To expand energy access, it is crucial to enhance energy efficiency and to invest in renewable energy.

Why renewable energy?





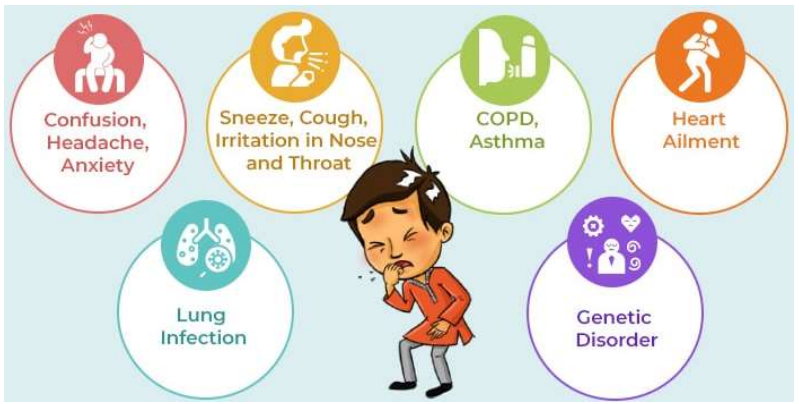


Figure: (a) Total energy consumption in selected countries, (b) World energy consumption by energy source, and (c) Pollution due to fossil fuel and its harmful effect.

U.S. Energy Information Administration, International Energy Outlook 2019 , U.S. Energy Information Administration, World Energy Outlook 2017 https://altheia.com/analyzing-air-pollution-and-its-effects-on-our-health/ , https://www.deccanherald.com/city/11-yrs-kspcb-helpless-tackling-707468.html, https://www.aqi.in/blog/tips-to-control-your-indoor-air-quality/