

Q.What do you mean by renewable energy? What are potential problems India is facing in development of 450 GW of renewable energy target? (10 marks)

Renewable energy is energy from sources that are naturally replenishing but flow-limited; renewable resources are virtually inexhaustible in duration but limited in the amount of energy that is available per unit of time.

It includes sources such as [sunlight](#), [wind](#), [rain](#), [tides](#), [waves](#) and [geothermal heat](#). Renewable energy stands in contrast to [fossil fuels](#), which are being used far more quickly than they are being replenished.

Body:

India is looking forward to achieve the target of 450GW of renewable energy by 2030. But there are certain challenge including:

- **High initial cost of installation:** One of the biggest challenges in RE development is the high initial cost of installation. While development of a coalbased power plant requires around Rs 4 crore per MW, the investment required for wind and solar power-based plants is significantly higher. A wind based plant, with capacity utilisation of 25%, requires an investment of Rs 6 crore per MW. The actual investment, at more efficient capacity utilisation of 80%, works out to Rs 18 crore per MW. Similarly, the investment in a solar base ..
- **Weather dependence :** Most RE systems are weather dependent; thus, factors like number of sunny days, wind condition, monsoon, tide level, supply of biomass, etc play an important role in feasibility of the system. Plant availability is not predictable as in case of conventional plants.
- **Social acceptance** of renewable-based energy system is still not very encouraging in urban India. Despite heavy subsidy being provided by the government for installation of solar water-heaters and lighting systems, its penetration is still very low.
- **Manpower training** is another grey area. Currently, the Indian power sector is facing severe trained manpower shortage. Skill upgradation of the existing manpower and training of new professionals are essential
- **Poor mapping data of res potentials in comparison with the**

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environment : Although India is blessed with abundance of renewable energy potentials such as wind, solar, hydro, biomass, etc., the level of utilization is extremely poor.

- **Lack of adequate user awareness:** RES penetration is yet to reach the critical stage of mass awareness creation to enable greater number of the populace to buy into the concept and then see it as a must have though it is still at its infant stage.

Conclusion: Based on the present global economic growth rates, fossil fuel energy resources may last a generation or two, at the most, before they are exhausted. Therefore, the future of our energy needs lies in renewable energy resources. The use of these resources, rather than an increase in fossil fuel supplies, should be encouraged through new diplomacy that takes into account the needs and resources of all concerned. Given the vast potential of renewable in India, all it needs is comprehensive policies and a investor friendly regime to be global leader in clean and green energy.

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