

Green Energies: A New Hope with Challenges

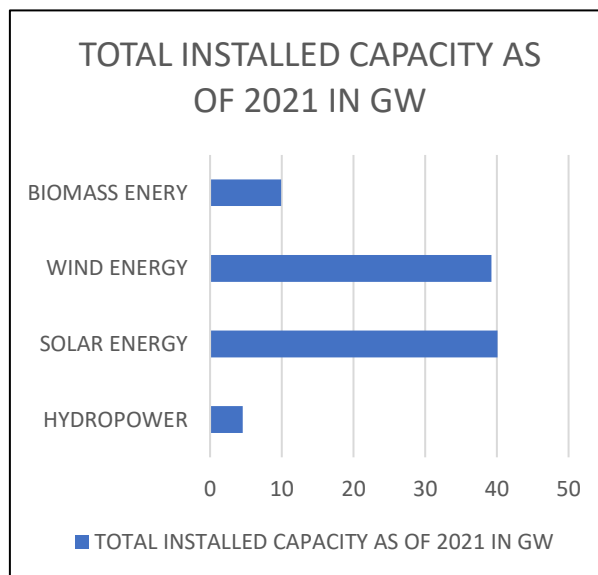
– Ashish Gaurav, B.Sc., 2nd Year

Since the dawn of civilization, we have always looked towards an endless source of energy. Later it gave rise to the idea of sustainability, since we realized that we can no longer rely on the petroleum because it may end someday sooner or later. Besides, we have also paid a high price in the form of environmental degradation, due to the emission of different gases in the consecutive processing and use of petroleum. Hence, we realized that we need to transit towards a more sustainable source of energy which ensures zero emission in the environment.

With the advent of 21st Century, the whole world started facing the consequences of the climate change due to increment of greenhouse gases in the earth's atmosphere. Followed by the need in 2015, 195 countries came forward and committed to reduce their CO₂ emissions in the COP21 conference. In the conference, new energy transition initiatives were officially launched.

This is when we came up with a concrete option which can easily replace our needs of petroleum. Anything which ensures sustainability with guaranteed zero emission in the environment can be termed as an “eco-friendly product”.

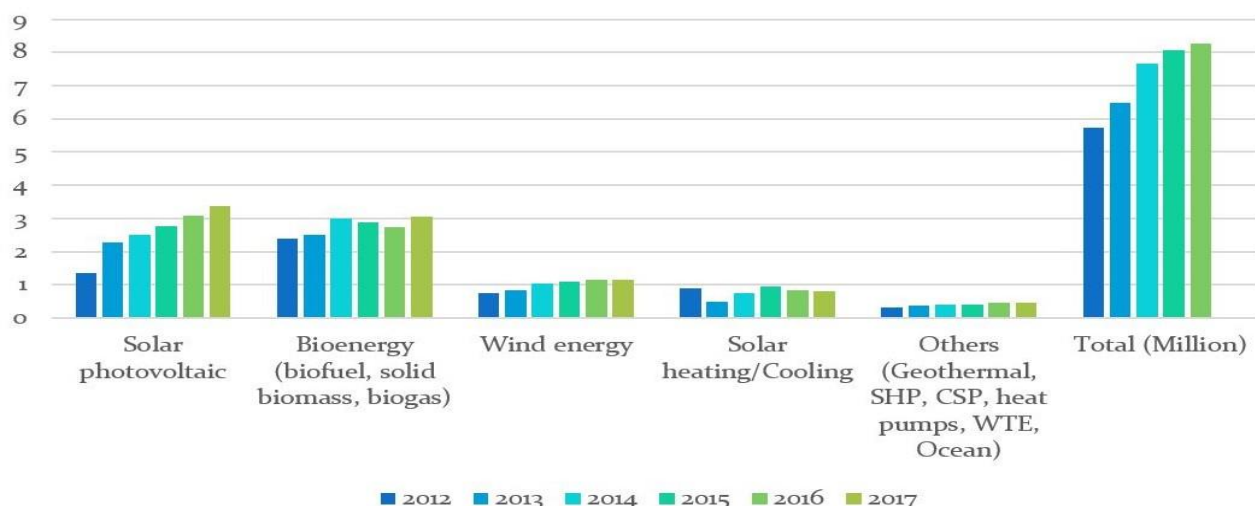
With the decrease in petroleum dominance, there is a noticeable shift towards renewable energies, paving the way to ‘Green Energy’ in order to make our planet great again. In the present era, we have numerous sources of energy. Among them, the energy sources which are generated from natural renewable resources are



recognized as Green Energy. These Green Energies are sometimes also referred as clean energies as they are claimed to emit no or very less emission on the planet. Making them, environment friendly source of energy. Meanwhile, with an urge to adhere more and more green energies,



Sources (Million Jobs)



We have enormously installed different plants contributing to biomass, wind, solar and hydropower in order to make it economical and cheaper. India owns the 4th most attractive renewable energy market in the globe. As per the reports dated June 2018, India intends to reach 225 GW of its power capacity through renewable resources by 2022 with an exceeded target from 175GW. The other parts of the globe are also working parallelly to achieve the same strength of energy sustenance. The table in fig 3.3 showing the global status report 2018 of installed renewable energy capacity of the world.

It was also anticipated that the establishment of the renewable energy sector in a country can create a large number of domestic jobs in the upcoming years as it touched 10.3 million jobs in the year 2017. China, Brazil, USA, India, Germany and Japan are such exceptionally leading countries in such employment.

Green Energies and e-technological

technology are the most advanced environment friendly faces known to mankind, but is it the end of the question or do we have some more challenges to face which we aren't considering in the race towards sustainability or we digging new holes of problems to step in?

To achieve a state of energy fulfilment via the green pathway we need



equipment ranges from large turbines, windmills to small solar and battery cells. This directly indicates a large-scale manufacture of these equipment, which completely relies on the rare minerals

like cobalt, nickel, silicon and rare earth metals like lanthanides, scandium and yttrium.

As the rare earth elements are abundantly found in the Earth's crust, unevenly dispersed in a wide area and are usually found in low concentrations making the extraction process uneconomically exhausting. At this point renewable sources of energies fail to cope up with the zero-emission policy.

Mining and extraction of the rare earth metals too causes land-use exploitation, environmental and ecological burden on earth as the mining process uses extreme energy-intensive processes resulting in CO₂ emission in the atmosphere and toxins into the ground. Other challenges come at the time of waste management. Human technology unable to find any proper and economic way out to recycle and treat the rare earth metals yet. This is the second major concern for the



continuous availability of the resources. But still it isn't as heavy as the price we have paid for fossil fuels and its impact on the planet.

Meanwhile, we hope that advancement in the current available technologies will surely strike out the enlisted challenges faced by the Green Energies over time and reduce the indirect environmental hazard through proper management of mines and extraction process of the rare earth metals. Thus, we take a step towards the greener, clean and better future.