

# reNEWable INDIA

GREEN REVOLUTION 2.0

Clean up. Green up.



Imagine a world where you wake up in a smart green home and go to school in a self-driving electric vehicle to another smart green building. Meanwhile at home, the washing machine automatically turns on when the electricity prices are at the lowest point during the day and turns off when the prices are high. The light bulbs, air conditioner, refrigerator, and any electrical device in your house can be turned on or off from your phone with an app and can be set to operate at the most efficient setting. The house is powered by solar panels on the roof and there is a battery system which gets charged so that the power consumed from the electric grid is minimised at night when no solar power is available. You can also use the battery system to charge your electric vehicle. You can make money when you are not using your electric car by selling power from your electric car to the grid when electricity prices are high. All of this is not in the distant future but is happening right now. The technology has been developed and is in the process of being commercialised and integrated to create smart, green cities.

## TYPES OF RENEWABLE ENERGY

Energy efficiency and renewable energy generation are effective solutions to tackle climate change – an issue which affects all of us significantly. There are different types of renewable energy generation possible, of which, the most popular resources in India are wind, solar, hydro and biomass. Wind power is generated by converting air flow into electricity through turbines. Windmills have been in use for centuries to pump water and grind grain but they do not produce electricity. Solar power generation involves conversion of sunlight into electricity. This concept can be employed in calculators, lanterns and water pumps apart from large generating stations. Hydro power is obtained by harnessing the power of moving water in rivers by building dams or small canals to direct the flow of water through a turbine. Biomass is renewable organic waste which would be left in landfills or burned openly if not used. It may include scraps of wood, manure, forest debris and other organic wastes. Biomass is burned to heat water and the steam produced is channelled through turbines to generate electricity.

## ADVANTAGES

The advantages of renewable energy generation have been reiterated often: zero fuel cost and removing dependence on exhaustible supplies of fossil fuels, which keeps energy prices stable and carbon footprint low. Most importantly, it is environment friendly and leads to sustainable development. The reasons for lacklustre interest in renewable energy until recently can be attributed to relatively higher capital cost (cost in setting up the power plant), ambiguous or absent policies and regulations, inadequate accuracy in forecasting solar and wind output, lower efficiency of power conversion and lack of awareness. There were concerns that the electric grid cannot accommodate a large percentage of renewable resources. These concerns have been invalidated by countries like Germany, Denmark, Uruguay and Scotland which have successfully generated about forty percent or more of their electricity needs through renewable resources.

India's solar power potential is 5000 trillion kWh annually. That's about 30 times the world's annual energy needs.

## GROWTH IN INDIA

India's renewable energy sector is growing at a fast pace. India accounts for 5.8 percent of the world's total wind power generation and is the fourth largest producer of wind power in the world. By 2022, India plans to add 175 Gigawatt of renewable generation – which is almost 55 percent of the current installed capacity (meaning: the expected full-load output of a power plant). Renewable energy generation was close to 30 percent of the installed capacity as of July 2016, so there is a long way ahead. With Indian cities occupying almost half the spots in the list of most polluted places in the world, the government's ambitious renewable energy target is justifiable.

India's solar power generation quadrupled between 2014 and 2017. 175 GW can power an additional 100 crore average Indian homes.

## YOUR ROLE

As a developing country, India does have many challenges in implementing a large amount of renewable energy in the electricity grid. However, with rising pollution levels and increasing energy requirements India needs a focused approach at all levels to ensure that we reduce our carbon footprint. As citizens, we can participate in this process by utilizing LED lights, energy certified refrigerators, washing machines and air conditioners, roof-top solar installations wherever possible and preventing wastage of electricity. Every unit of energy saved is energy generated. Be responsible, be smart and go green!

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