# Energy transition: How did it all start?

As we all have heard, *'The energy transition'* is a term that has been circling around everywhere nowadays. You might have an idea about the reason for energy transition and the issues with climate change. But the actual symbolisation can be quite deeper than the generic front we have.

[1] According to the surveys done in the late 20th century, it is noted that the access to modern fuels is more of a problem along with the fuel prices in large places of Asia and Africa, especially while considering the consumers in urban areas, which makes them lean more towards biomass fuels than the conventional or modern carbon-based fuels. During that period, in Sri Lanka, the ratio of kerosene to firewood prices rose from 1.8:1 to 5:1. The fraction of urban households that used kerosene fell from 31% to 14%; meanwhile, the firewood usage increased from 58% to 65%.

The governmental policies subsidise fuels like kerosene or butane, aiming to increase the demand. But, rather than that, the demand for the biomass fuels was increasing since the subsidies were mainly targeted at the middle-income households that could have used these fuels regardless of the subsidies, which implies that the low-income households that use the biomass fuels primarily are less benefited from the schemes.

It is suggested that improving transport and storage facilities, along with supply and financial support, would be helpful for the energy transition towards modern fuels.

**The first energy transition**[2]

The foremost energy transition from wood to fossil fuels was driven by the urbanisation of the British in the 1700s. Despite the lack of accessibility in the rural areas, the transition was in full swing in the 19th century, in general, thanks to the Industrial Revolution, which promoted the usage of kinetic energies like water and wind as the main sources of energy.

The growth of the diesel engines and oil industries further reinforced the transition towards fossil fuels due to the difficulty in handling and the scarcity of firewood.

In 1925, Brazil has utilised bioethanol as an alternative transportation fuel. The produced bioethanol from biological sources like sugarcane and corn and blended it with gasoline. During World War II, the prices of petroleum had been decreased drastically, which shifted the attention towards bioethanol until the oil crisis surged in the 1970s.

In the last three decades of the 20th century, France began displacing their dependency on oil, which was imported from the Middle Eastern countries. Almost over 70% of the energy supply was through oil in France during that time. There were 58 nuclear reactors built during the last few decades of the 20th century, and it reduced the demand for oil from 5 million tonnes of oil equivalent (MToe) to 100 MToe by 2008. Now, after the United States, France is the second-largest producer of nuclear power in the world. Although the total consumption of nuclear power in France (43%) surpasses that of the United States (8.5%), which makes France highly independent from the usage of fossil fuel.

**From Coal to Renewables**

According to [*British Ecotricity*](https://www.ecotricity.co.uk/) estimates, “The world consumes 11 billion Tonnes of Oil Equivalent fossil fuels each year. Crude oil stocks are diminishing at a rate of more than 4 billion tonnes per year, which means our known oil reserves will run out in just over 53 years. If we raise gas production to meet the energy gap left by oil, our known gas reserves will deplete within 52 years. When we increase output to compensate for depleting oil and gas reserves, our known coal supplies could disappear in 150 years.”[3]

**Intergovernmental Panel on Climate Change (IPCC) 1988**

The [IPCC](https://www.ipcc.ch/) was established in 1988, by United Nations Environment Programme (UNEP) and the World meteorological Environment Programme (UNEP), endorsed by UN General Assembly, to focus on the suggestions and the state of the climate change in the world. Since 1988, the IPCC has distributed six assessment reports about the climate change, along with numerous comprehensive reports on methodology and technical papers.[4]

The assessment reports were illuminative and paved a great pathway for the improvements and awareness of the climate change, among the countries. It also emphasized the significance of the global warming and the need for the energy transition.

**Kyoto Protocol 1997**

The apprehension towards the climate change directed the world towards Kyoto Protocol in 1997, which has the limits and emission control targets for technologically advanced countries that must be achieved by the end of 2012. In 1992, 189 countries made an international treaty known as [United Nations Framework Convention on Climate Change (UNFCCC)](https://unfccc.int/) after realizing the complications of Global warming, that adopted its legal framework in June,1992 at the *“Rio Earth Summit”*. Despite the adoption, the GHG emissions continued to grow, which enforced the requirement for a stricter protocol, also taking account of the negotiations from the member countries, which is the “[*Kyoto Protocol*](https://unfccc.int/process-and-meetings/the-kyoto-protocol)” in 1997.[5]

The protocol was supposed to be endorsed by at least 55 countries, which represent at least minimum of 55% emissions in 1990, was achieved by the endorsement of Russia in 2004. Although, The United stated did not sanction the objectives. [6]

**European Union-Emission Trading Scheme (EU-ETS)**

The [European Union-Emission Trading Scheme (EU-ETS)](https://climate.ec.europa.eu/eu-action/carbon-markets/eu-emissions-trading-system-eu-ets/about-eu-ets_en) is one of the key landmarks for the energy transition and interest towards climate change. It was launched in 2005, to bring the overall EU emissions down and generating income to utilize for the green transition. It is the world’s first and recognised as largest carbon market.

The EU-ETS is basically a “cap and trade” policy. The cap is the limit on the total amount of GHG emitted by the industries, according to the scope of the scheme. It is gradually brought down or decreased every year, to reduce the overall emissions and reach the climate goals. The allowance of the carbon emission is sold in auctions and possible to be traded. The allowance gives right to emit a certain amount of carbon, e.g., one allowance is equivalent to one tonne of CO2 equivalent.

When the cap decreases, the supply of the allowances sold will also decrease in the EU carbon market.

By 2023, the scheme has helped to decrease the emission up to 47%, in comparison with 2005.

So, in simple Terms, if I have 5 allowances now, I can emit up to 5 tonnes of CO2 equivalent. The overall cap is set to 10 allowances. So, the market only has up to 10 allowances. If I already emit 5 allowances and I have surplus of 5 allowances, when the overall cap goes down, the demand and price of the allowances will increase. So, I can sell it for the industries that emit more CO2 and require more allowances. When the overall cap goes down, the number of free allowances issued, will also decrease. But, If I have more allowances, I can emit CO2, up to the allowances I possess, and it is valid until EU cancels them all.

If I have less allowances, and the cap goes down, let’s say I have 6 allowances, the cap is set to a total of 4 allowances in total, but my emission is 12 tonnes of CO2 equivalent, I need 6 more allowances. So, it makes the demand of the allowance increase, so does the price. It makes me either reduce my emission by 6 tonnes of CO2 equivalent or buy the allowance from an Industry which has surplus, for high price. Even if I utilise my allocated allowances, I might still be scarce of the required allowance, because of my heavy emission of CO2.

*In short, Surplus allowances= Financial advantage*

*Deficit allowance= Either bring the emission down or buy the allowance for high price.*

**Paris Agreement 2015**

The [Paris Agreement](https://unfccc.int/process-and-meetings/the-paris-agreement) was announced in the UN Climate Conference (COP21), that happened at Paris, France. It implies that the countries that adopt the agreement should reach a goal of “Increase in the global average temperature to well below 2℃ above the pre-industrial levels and pursue efforts to limit the temperature increase to 1.5℃ above pre-industrial levels.” It was adopted by 195 Parties in the COP21, in December 2015.

Due to the seriousness of the climate change, the world leaders have further limited the increase of the overall temperature to 1.5℃ while reaching the end of this century. The Paris Agreement has been acted as a breakthrough in the global climate change process, which brings all the nations together to work on the climate change and brought the impacts of the Global warming to the light.

**Conclusion**

At the end, the interest towards the Climate Change and Global Warming has been simmering in the background for longer. But, the recent EU-Emission Trading System and The Paris agreement forced the importance of the energy transition to light, to protect the overall environment from drastic temperature changes. Following that, The IPCC released a special report on the effects of global warming of above 1.5℃ above the pre-industrial levels which stated that even with the pledges of Paris agreement are supplemented with challenging increases in the scale, the action would need to achieve net zero CO2 emissions in less than 15 years. Despite that, the temperatures still required to remain below the 1.5℃ threshold. It reinforces what we already know that the actions towards the climate change or transition to sustainable fuels need to be prioritized to achieve emission reduction by the end of 2030.[7]

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