

Living up to the promises made at Paris

Green cover and renewable energy can help meet COP 21; BS VI & EV can help clean the air

Defining Pollution

The pollution problem needs to be understood in two perspectives i.e. bad air quality, especially in our cities and Green House Gas (CO₂) emissions.

Bad air quality is primarily a result of Particulate Matter (PM 2.5), Nitrogen Oxides (NO_x), Hydrocarbons (HC) and Carbon Monoxide (CO). Particulate matter (PM) causes smog and lung ailments, NO_x also causes smog, acid rain and ground level ozone, HC & CO are largely taken care of by the current generation of vehicle after treatment systems.

Bad air quality has also been the reason behind the various agencies springing into action and criticizing vehicles and auto industry for pollution. Air quality issues should get sorted once BS VI is rolled-out and mechanisms for real world pollution monitoring and enforcement are in place. In fact **with the advent of these technologies, the air coming out of the tail pipe will be cleaner than the air we normally breathe within our homes in cities!** (Just that it won't have any oxygen in it). It will, however, be some time before the vehicle parc is dominated by BS VI compliant vehicles and the old vehicles are scrapped.

AIR POLLUTION	
 <p>Bad Air Quality Caused due to</p> <ul style="list-style-type: none"> HC Hydrocarbons CO Carbon Mono Oxide NO_x Nitrogen Oxide PM 2.5 Particulate Matter 	 <p>Green House Gases</p> <ul style="list-style-type: none"> CH₄ Methane CO₂ Carbon Di Oxide No_x equivalents Nitrogen Oxide equivalents

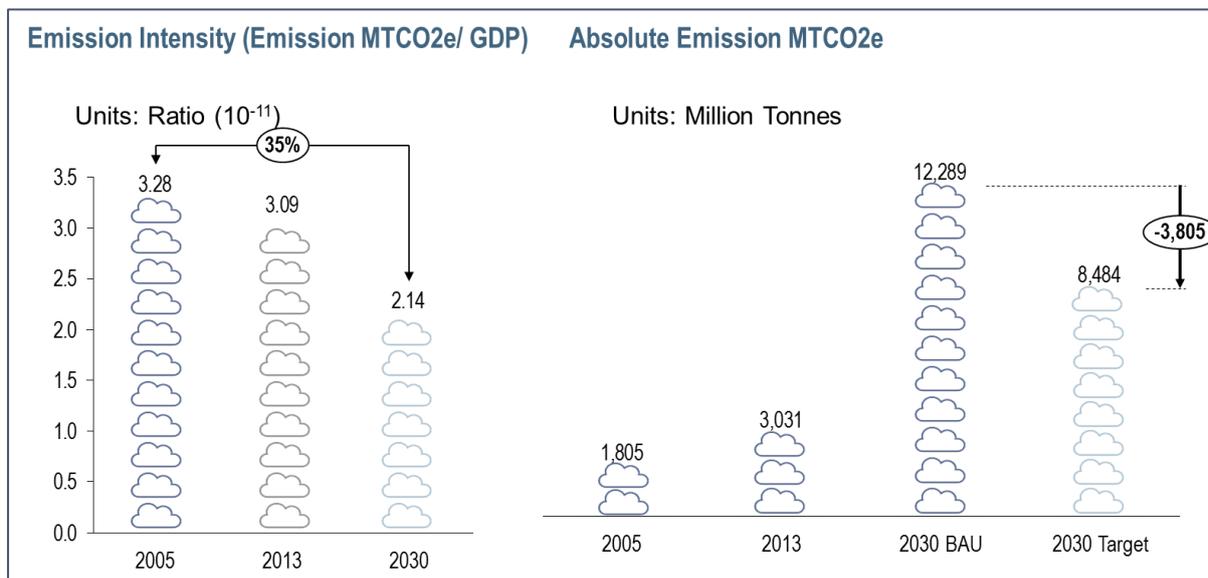
In addition, construction and road dust related issues will also need to be fixed. Taken together, these measures will hopefully, help resolve health issues in our cities (especially the fog during winters in North India). This coupled with the advent of Electric Vehicles will further help clean up the air.

The other form of pollution is GHG or Green House Gases largely caused by (CO₂). These are the ones responsible for global warming and the Paris Climate Agreement was signed to ensure temperatures till 2030 do not rise more than 1.5°C to 2°C over pre industrial levels.

India & the Paris Climate Agreement (COP 21)

India is a signatory to the Paris Climate Agreement and has agreed to reduce the emission intensity defined as Actual emissions divided by GDP (at constant Local Currency Unit (LCU)) by 33- 35% below 2005 levels. Therefore, while emissions will increase in absolute numbers, the intensity target will help drive measures to limit the increase.

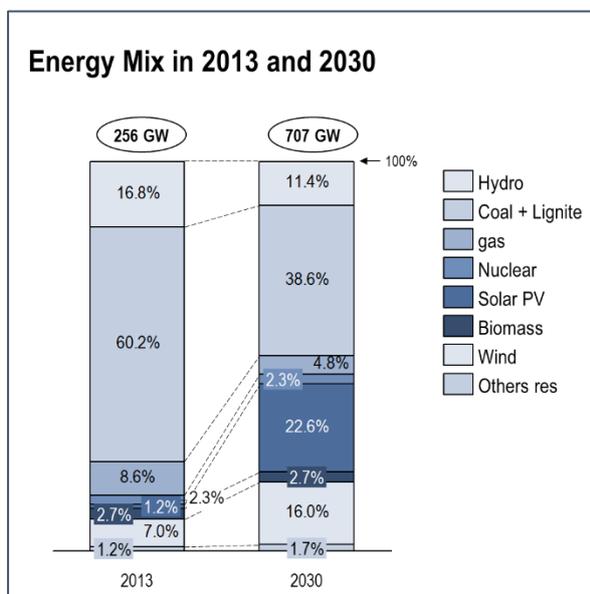
Emissions stood at 1,805 MTCO₂e (Metric tonnes of Carbon Dioxide Equivalent) in 2005 and increased to 3,031 MTCO₂e in 2013, however, the COP 21 commitments will help limit these to 8,484 MTCO₂e by 2030.



Source: cait.wri.org, World Bank, INDC report and NRI analysis

Targets & achievement potential with measures already committed

In order to limit the emission to 8,485 MT CO₂e level for achieving the COP 21 target, the country has set forth a Renewable Energy Mission whereby ~ 45% of the energy generations will be through renewable means by 2027. In addition we have committed to creating a carbon sink of 2 – 3 Bn MT CO₂e through new plantations of trees and other forms of vegetation.

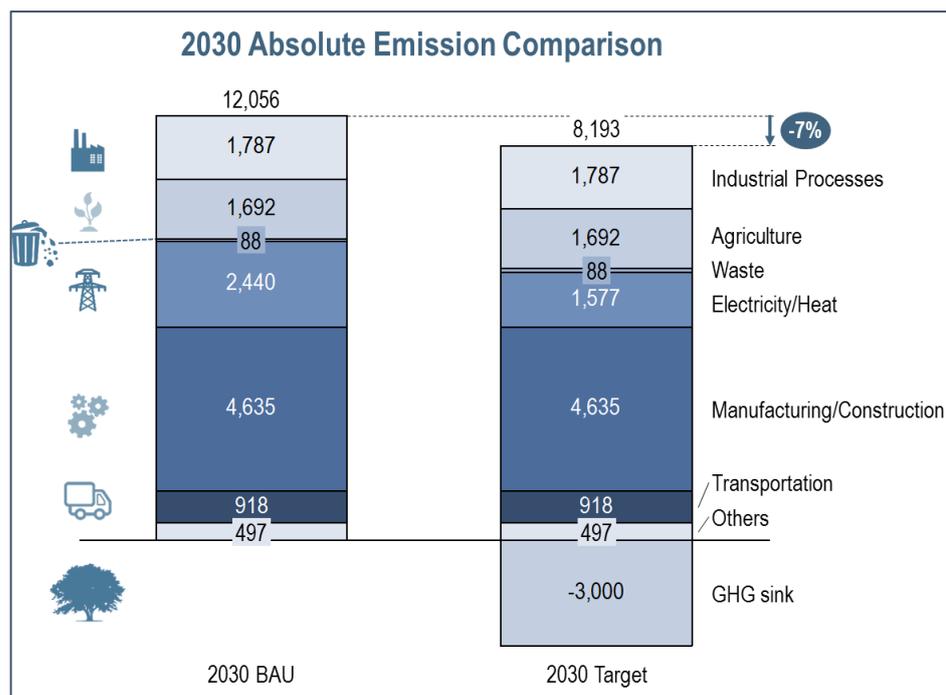


Source: India Energy Outlook, National Electricity Plan and NRI analysis

While today most of our energy production is fossil fuel dependent with coal and gas accounting for ~70% ; Renewables made up a mere 10% (in 2013) of the total energy mix. The Renewable Energy Mission was hence formulated to move our energy generation to more environmentally sustainable means. Solar energy would account for bulk of the renewable energy generation followed by wind energy. All these measure are expected to limit the share of fossil fuels in the energy mix to just ~40% in 2030.

The second committed measure at COP 21 is development of a carbon sink through tree and forest cover. This indeed is a great step and will help address not just the issue of pollution but will have associated benefits too. Some of the additional benefits of this would be acting as a filter for fine dust particles in cities and thereby aiding the improvement in air quality, preventing soil erosion in hill-sides and also leading to an increase in rainfall (as per some recent studies).

With these measures in place, the COP 21 targets for 2030 seem achievable even though emissions from several sectors would go up (in line with their respective growth rates) as shown in the 2030 Business as Usual (BAU) Case. It can also be seen that the transport sector's contribution to Carbon emissions is lower than the other sectors which is probably why it does not figure in our commitments at COP 21.



Promising a Greener Future

On account of COP 21, we should be able to see a much greener and cleaner environment by 2030. The advent of Electric vehicles would add to the benefits and help us in achieving future Climate Agreement targets. This shall ensure India gets recognised as a beacon of hope in the ever warming globe.

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