EGEA
Enhancing Green Economy

Co-funded by the
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COVID-19 IMPACT ON GREEN ECONOMY

NEWSLETTER EDITION-3

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AN ANALYSIS OF REPORTAGE AROUND THE IMPACT OF CORONAVIRUS ON THE ENVIRONMENT

Clean air in Delhi, clear waters in Venetian canals, and wildlife roaming the deserted streets of Japan. However, the question we must consider is, at what cost has this been achieved? As the world at large has fallen prey to the novel Coronavirus (Covid-19), nearly three billion people are under lockdown in their homes. In this historical turn of events, the human race, which once dominated the food chain –has now become the hunted, and the Coronavirus, a manifestation of nature–has become the hunter.

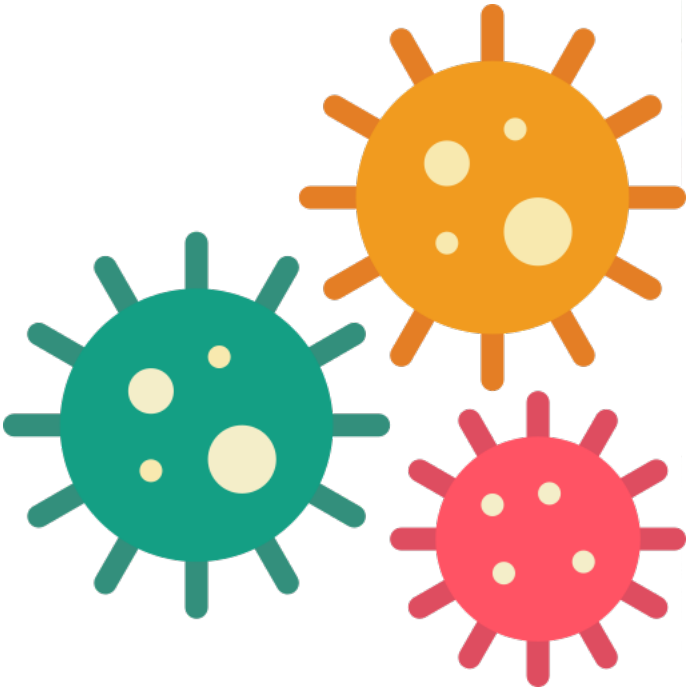
With nearly half of the world's population under lockdown as a result of this pandemic, all forms of travel – air, public transport, and railways are operating minimally, if at all. Simultaneously, with the closure of non-

essential industries in many countries, pollutant emissions (both airborne and waterborne), have fallen. **New Delhi, the infamous 'pollution capital' of India, experienced a 70% drop in Nitrogen Dioxide and PM 2.5 emissions. Meanwhile, Greenhouse Emissions within the European Union fell by a stunning 58% as compared to the period before the crisis.** Amusingly enough, environmentalists around the world who are sharing their delight (about this improvement) on social media are being accused of deriving sadistic pleasure from the

condition that the human race is facing.

Sadistic pleasure or not, it certainly is a wake-up call for policymakers – this lockdown has undoubtedly proven the extent of damage that is inflicted by mankind day after day upon our planet. While the present environmental situation is certainly pleasing, the reality is that it's not going to last. Whenever things return to normalcy, we will return to the rat race, pick up the batons where we left them, and yet again, compete in running towards the finish line. To nobody's surprise, we will find cars crowding the streets again; coal-powered industries releasing noxious fumes and chemical industries releasing toxic waste into the rivers and seas.

In its arrogance, the human race seems to believe that it will continue to evolve and that it will come up with creative solutions to the problems it faces, just like it previously has. With over three million confirmed cases of the Coronavirus globally, and no vaccine nor medicine, this is indefatigable proof that in a race between nature and mankind, nature will always win. Of course, while it's unlikely that this disease will wipe out the planet, it's certainly going to leave its mark on this planet and in the History books of those that occupy it. Scientists and environmentalists alike are far from celebrating. They're already foretelling that if not this disease, there will certainly be more to come which will try their hand at wiping out mankind. And if even they fail, we're here to keep damaging the planet until climate change wipes us out. Much like this disease, climate change is going to be our silent enemy – striking unpredictably, taking the world by storm – literally, through cyclones, floods, and earthquakes. The cherry on the cake is, it's because of our environmental encroachment



that we're facing this disease in the first place.

While there is an 'enviro-scientific' argument that scientists are working on, the media reported the crux of their argument, which is that increasing deforestation has led to a greater incidence of human-wildlife interactions. As wild animals are increasingly being driven

out of their habitats, they're adjusting to sharing their space – and diseases – with humans. Zoonotic diseases, that is, those diseases which are normally found in animals, are increasingly crossing the species barrier and are infecting humans. Much like other deadly viruses such as Nipah, Marburg, SARS, and Ebola, the Coronavirus too is believed to have crossed the animal-human species barrier through bats. Not only this, but research has also shown that those exposed to higher concentrations of air pollution

are more likely to suffer a fatality from Covid-19.

Day in and day out, people are tracking these fatalities, cases, and recoveries across the world. Sitting inside their houses, now more than ever, people are relying on technology to get their daily dose of information about this outbreak which has landed us in this previously unimaginable situation. This informationis being reported by journalists through social media, print, television, and digital news. Reporting Coronavirus is a challenge like never before – it's not like a natural disaster nor a conflict zone. The threat is from an invisible enemy – one which reporters can contract by touching surfaces on which the virus can survive for days at end, or through transmission from people the reporters come in contact with. In India's Mumbai alone, 53 TV reporters have contracted the life-threatening disease. Nevertheless, the media yet again has risen to face this challenge and continues to sustain the 24×7 news cycles to report on the disease.

While there's no doubt that the media is the unsung hero in facing this pandemic, heroes aren't perfect – even Superman wasn't immune to Kryptonite. All forms of media are primarily focused on the numbers of deaths, recoveries, and cases across the world. Indeed, the numbers are important, but isn't it at least as important to know how to prevent a repetition of a similar pandemic? Isn't it important to know what went wrong and what should be done to undo the damage?

Another possible explanation is the fact that the audiences themselves are not concerned or interested in consuming such information. Media organisations perceive the audience to be lacking interest in environment-

related reports and therefore do minimal stories on them. In turn, the audience doesn't know the facts nor understands the gravity of the situation and thus doesn't bother to know more. This cyclical nature of environmental reportage is a cause for serious concern. As Ms. Thiyagarajan

profoundly noted, “If the audiences want better quality programmes, they shouldn’t watch the show that they’re watching – this is where I blame the audiences. The fact that you tune in and watch – what motivates these channels to change? Nothing!”

The good news, however, is that it’s not an entirely gloomy picture. A recent survey revealed that there is a tremendous demand for an increase in environment and wildlife coverage. Slowly – be it very slowly, but surely, the demand for coverage pertaining to environmental issues is increasing. In an interview with Ms. Vidya Raja, a journalist with ‘The Better India’, she noted (in her personal capacity), “While organisations like Better India aren’t covering ‘news’ in the traditional sense, they’re doing a lot to further awareness about environmental and social causes by telling the stories of heroes doing their bit in their day to day lives.” She noted that with research showing the causal links between environmental degradation and the coronavirus, “media organisations are finding ways to increase outreach to audiences through innovative ways to invoke interest for such articles”. Observing that there is a preference for short, crisp, and to-the-point-reportage, she said that in light of this outbreak and its environmental impact, “the media is adopting new ways to approach to environmental journalism – whether through short interviews, aesthetic photojournalistic pieces, infographics et cetera. It’s really about trying new things to keep the audience engaged – some work, some fail, but we keep trying.”

Just like the media is evolving their methods of reporting, the human race needs to evolve its means of sustainable living. Economists have portrayed a dismal picture of the international economy. As per IMF statistics, all countries other than India and China are going to have negative growth rates. Simultaneously, the International Conference on Climate Change - COP-26, has been postponed as a result of the coronavirus outbreak. With their economies under pressure, countries will likely compromise on their environmental norms and perhaps even violate their Nationally Determined Contributions established under the Paris Climate Agreement. However, now more than ever, countries need to strike a balance between sustainability and economic pressures. If they bend backwards to support their economies at the cost of the environment, there will soon be no economies to revive. After all, humans can only return to the rat race if they have the Earth to run on.

5 THINGS TO KNOW ABOUT HOW CORONAVIRUS HAS HIT GLOBAL ENERGY

The global energy market is experiencing its biggest shock in 70 years. Coronavirus has caused energy demand to plummet, dwarfing the impact of the 2008 financial crisis and leading to a record decline in carbon emissions, a new report from the International Energy Agency states.

Based on analysis of 100 days of data, the IEA projects that global energy use in 2020 will fall by 6% in what it calls a “historic shock to the entire energy world”. That’s the equivalent of losing the entire energy demand of India, the world’s third largest energy consumer.

Here are five things to know about the dramatic fall in energy demand brought on by the pandemic.

• Renewables bucked the trend

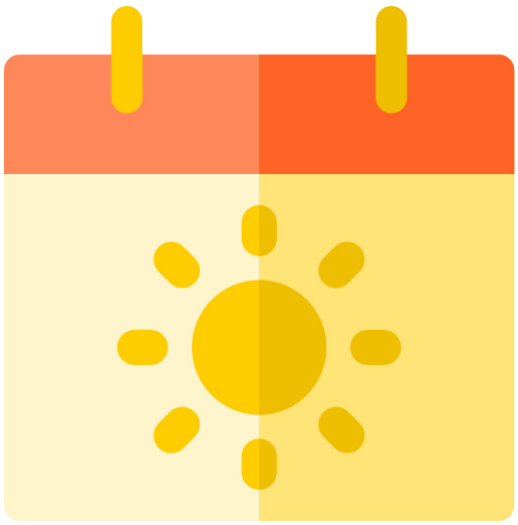
Renewables were the only energy source to see demand grow in the first quarter, partly driven by new wind and solar installations coming on stream this year. They increased their share of the energy mix largely because they cannot adjust their output to match demand, according to the IEA.

Renewables made record high contributions to electricity generation in Belgium, Germany, Hungary, Italy and the United States.

Falling costs of production and a pipeline of new renewable energy projects will see the sector increase its share of electricity generation throughout the year, says the IEA.

With falling fossil fuel demand and rising renewable use, the agency forecasts the biggest ever fall in CO2 emissions. Annual emissions are likely to match levels from ten years ago, with the fall in output six times steeper than the previous record reduction following the financial crisis in 2009.

• Every day is Sunday



Analysts say that demand in the global electricity market has “resembled that of a prolonged Sunday”, with the pattern of energy use on weekdays more like that normally seen at the end of the week. They add that a gradual easing of lockdowns will not produce an immediate rebound in demand as economic activity will remain depressed.

IEA analysis of data for 30 countries through to mid-April shows that the level of energy demand is driven by the length and severity of lockdowns imposed. Where a full lockdown is in force, energy demand has dropped by a quarter but partial lockdowns produce an average 18% drop.

In addition to the stringency of the lockdown, the IEA says the makeup of a country’s economy also determines how badly energy demand is impacted with the worst effects being felt by nations with a large services sector.

• Energy demand has collapsed everywhere

Global energy demand for the first quarter of this year fell by 3.8% compared to last year, the IEA says. With more than half of the world's population (representing 60% of global GDP) under lockdown, the IEA says the impact on energy use will depend on how long restrictions continue.

Assuming only a gradual easing of lockdown measures, the IEA says global energy demand could fall by 6% this year. The decline would be more than seven times the impact of the 2008 financial crisis, bucking the trend for growing energy demand over the last five years.

China, with eight weeks of lockdown early in the year, saw the biggest fall in energy demand, down 7% up to the end of March.

In the United States, demand was down 6% in the first quarter of the year but the IEA says this was partly due to a milder winter before restrictions took effect.

Energy use in Europe fell by similar levels, but in Italy, which for some weeks was the epicenter of the European outbreak, electricity demand dropped by over a quarter. Since full national lockdown has been imposed in India demand has dropped by almost 30%.

• Coal and oil were the hardest hit

Fossil fuels bore the brunt of the fall in demand and the hardest hit energy source was coal. Restrictions on economic activity pushed global coal demand down by 8% in the first quarter of 2020, mostly down to a drop in electricity needs. Industrial coal demand also fell, especially in China as its coronavirus restrictions halted factory production.

Restrictions on travel contributed to a 5% fall in demand for oil, with fewer cars on the road and a sharply reduced demand from the shipping industry. As airlines grounded their fleets worldwide and countries closed their airports to all but repatriation and cargo flights, jet fuel requirements fell by over a quarter in March.

• It won't be over anytime soon

The IEA forecasts that energy demand will contract by 6% this year, the biggest percentage drop for 70 years. Oil consumption alone will fall 9% - back to 2012 levels. Coal will be hit almost as hard, although a post-lockdown recovery in China is expected to partially offset cuts elsewhere in the world. Gas will be hit by reduced industrial activity and nuclear will track reduced energy demand. Only renewables will grow, extending the lead on coal-fired generation that was established in 2019.

GLOBAL TRANSITION TO RENEWABLE ENERGY

With manufacturing suspended and human activities restricted due to the worldwide lockdown imposed since the pandemic to contain the virus, air pollution levels have seen a sharp decline. With economic activities taking a hit, global greenhouse gas emissions too, have seen a significant drop in the initial months of 2020.

According to the Global Energy Review 2020 by the International Energy Agency (IEA), global CO2 emissions are expected to decline by 8 per cent in 2020 to the levels of 10 years ago. The study stated that this would be the largest ever year-on-year reduction in emissions and six-times larger than what was recorded during the 2008 financial crisis.

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And it is this change that has motivated climate change activists to advocate more strongly for a rapid transition to renewable energy to sustain this singular positive impact of an otherwise one of the most terrible crises that humankind has had to face in decades.

Another report by IEA released last year, expected the renewable energy sector, which has seen rapid growth in recent years, to grow by 1,200GW or 50 per cent in the next five years driven mainly by solar power.

The report also predicted renewable energy sources to account for 30 per cent of the total global electricity generation by 2024, a 4 percentage-point increase from 2019 levels.

However, with the global economy under its deepest recession in nearly a century and oil prices registering record lows, uncertainty looms large over how governments across the world would react when they begin fixing the damages caused due to the pandemic.

Dr Peter Fox-Penner, Director of Institute for Sustainable Energy at Boston University expected the pandemic and economic crisis to, in fact, accelerate the transition to clean energy in the long-run.

“The crisis has given people all over the world a deep feeling that global environmental and health threats can be real, and must be dealt with in advance, rather than waiting for them to become emergencies. This, in turn, is making the business and government sectors think about how to accelerate the clean energy transition,” he said adding that he expected renewable energy activity to eventually hit a faster path than it was on before the crisis, as business restarts.

Addressing the issue of stagnation in the industry in the immediate future, Professor Fox-Penner explained: “I agree that some government

stimulus and restart policies will slow down the transition in the near-term. [For instance], the Chinese have relaxed their electric vehicle mandates and the US has wrongheadedly rolled back auto fuel economy standards. I think there is going to be a ‘new normal’ after the crisis that has less travel and, therefore, fewer transport emissions, but electricity use will continue to

grow and travel will gradually return."

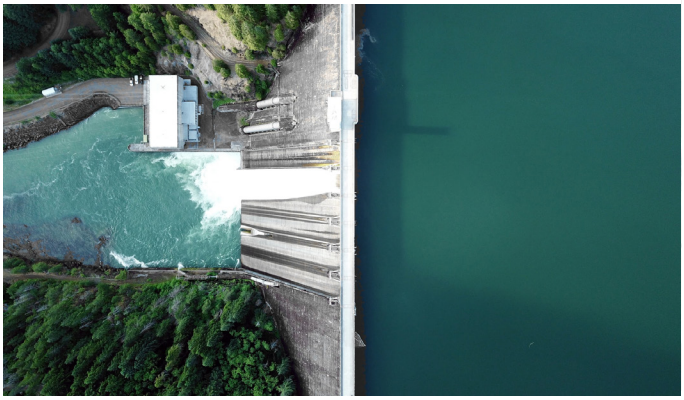
While most studies expect renewables to witness growth in 2020 albeit at a slower pace compared with previous years, concerns remain over a global increase in emissions after the crisis is contained as economies look for recovery.

The IEA report noted that global emissions usually tend to rebound after a crisis has passed. "And if the aftermath of the 2008 financial crisis is anything to go by, we are likely to soon see a sharp rebound in emissions as economic conditions improve," said Dr Fatih Birol, the executive director of IEA, at the launch of the report last week.

These concerns are valid. After the financial crisis of 2008, global emissions had rebounded by 2010 to levels higher than ever recorded before as countries depended heavily on fossil fuels to stage a quick recovery from recession .

However, "governments can learn from that experience by putting clean energy technologies – renewables, efficiency, batteries, hydrogen, and carbon capture – at the heart of their plans for economic recovery, said Dr Birol adding that investing in those areas can create jobs, make economies more competitive, and steer the world towards a more resilient and cleaner energy future.

Even though the improvement in pollution levels and decline in emissions may not be something to be too elated about in the face of terrible disruptions caused by the pandemic, it does reaffirm the importance and the need to urgently switch to renewable energy sources.



4 MILLION WIND ENERGY SECTOR JOBS BY 2030

Renewable energy sector is observing a remarkable growth in a time when global energy demands have dropped to an all time low, thanks to COVID-19.

One such important renewable energy is also seeing an increase in use and as per a recent insight might form the source of living for up to four million people directly and indirectly, across the globe by 2030.

Wind energy sector has been hailed for this remarkable potential by the Global Wind Energy Council (GWEC) recently. A prerequisite for wind energy to have such a wide employment base is that its deployment should take place at the necessary rate.

“Wind energy has been a major creator of skilled jobs and community benefits. Direct and

indirect jobs in wind energy sector will more than triple from 1.2 million in 2018 to nearly 4 million globally by 2030," the global industry body said in a recent statement.

GWEC also mentioned how wind energy can play crucial role for economies to revive from the COVID-19 impact. The renewable source of energy will provide governments across the globe to reshape their economies in a more sustainable manner.

As per GWEC, the wind energy sector generated over $652 billion investments from 2015 to 2019. An additional investment of $207 billion is expected by 2030 if the installed wind capacity reaches more than 2,000 gigawatt (GW) by the time.

Harnessing wind energy for a nation's energy demands will provide job opportunities, clean and affordable power, energy security as well as a sustainable economic recovery post COVID-19, mentions GWEC.

As countries resume operations after months-long lockdown due to the COVID-19 pandemic, use of renewable energy is increasingly coming into trend.

Simultaneously, the demand for fossil fuels decrease as oil prices drop to a historic low in the US. Amid the transition, it might just make sense to step up on the rate of change and use cleaner energy for all human needs.

SURGE IN POACHING OF ENDANGERED SPECIES

Poaching has surged during the coronavirus pandemic as illegal hunters take advantage of the lockdown to kill more endangered wildlife in remote areas, experts are warning.

Rhinos in Africa, giant ibises in Asia and wild cats in South America have all been targeted while tourists have stayed away.

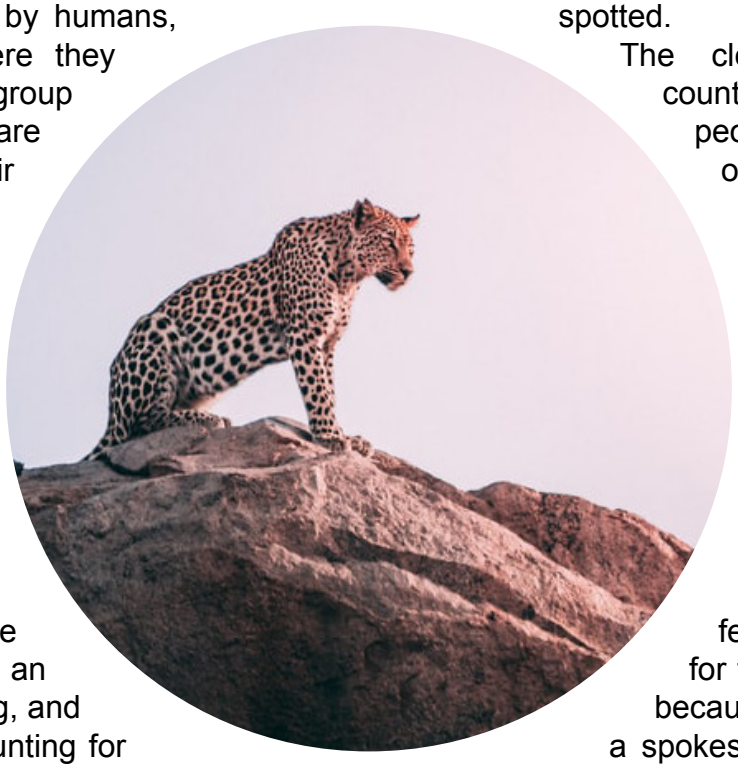
The sudden fall in tourism income has also deprived wildlife reserves and national parks of a reliable funding stream to further protect animal populations.

At least nine rhinos have been killed in South Africa, and at least six in Botswana since the lockdown, CNBC reported. “It’s a bloody calamity. It’s an absolute crisis,” said Map Ives, founder of Rhino Conservation Botswana.

In Colombia, poachers have been killing

more jaguars, pumas, and ocelots, according to conservation organisation Panthera.

The big cats had been venturing into areas normally overrun by humans, such as beaches, where they were at greater risk, the group said. It's feared farmers are killing them to protect their livestock.



In Cambodia, three giant ibises – which accounted for up to 2 per cent of the world's population – drank poison thought to have been set up by poachers, who have become more active in southeast Asia.

In India, there have been reports of an upsurge in tiger poaching, and of people are illegally hunting for various kinds of deer. Snares and electrical wires were used to trap other wild animals, too, it was reported.

Before the coronavirus pandemic, regular tourist parties in the world's conservation zones used to deter hunters who feared being spotted.

The closure of industry in countries rich in wildlife has put people out of work, which on top of the tourism drop, is a "double whammy", according to the Noah's Ark Foundation, a South Africa-based conservation organisation.

Its experts fear organised poaching of elephant ivory could be next.

"People poach to feed their families, and for the most part only do so because they need to," said a spokesman for the foundation, which is fundraising for impoverished communities around the world to stop them poaching wildlife.

17% DECLINE IN GLOBAL CARBON EMISSIONS DUE TO LOCKDOWN

The coronavirus-triggered lockdown has led to a steep fall in global carbon emissions by 17% in early April as compared to 2019 levels with India's emissions dropping by 26 per cent, according to a study.

An international study published in the UK-based journal National Climate Change showed that the world experienced a sharp decline in carbon emissions between January and April, compared to average levels in 2019, and could decline anywhere between 4.4 per cent to 8 per cent by the end of this year.

"That figure would mark the largest annual decrease in carbon emissions since World War II," researchers said.

The study confirmed that the impact of the confinement on annual emissions in 2020 is likely to lead to the largest single annual

decrease in absolute emissions since the end of World War II.

Besides India, other countries like the UK and the US reduced 30.7 per cent and 31.6 per cent emissions, respectively. In China, the emissions reduced by 23.9 per cent, the study revealed.

"The first peer-reviewed analysis of the drop in carbon emissions during the COVID-19 lockdown has shown that daily emissions decreased by 17 per cent or 17 million tonnes of carbon dioxide globally during the peak of the confinement on April 7, dropping to levels last observed in 2006.

"Emissions from land transport accounted for almost half (43 per cent) of the decrease, while power generation accounted for 19 per cent, industry for 25 per cent and aviation for 10 per cent," it said.

The authors tested for three scenarios of easing out of the lockdown later this year, and found that the world could be on course for a 4-7 per cent drop in the total emissions by the end of 2020.

"The UNEP report says decreases in greenhouse gas (GHG) emissions of 2.7 per cent per year are needed to keep warming well below 2 degrees Celsius and 7.6 per cent per year to keep below 1.5 degrees Celsius.

"But the decrease in emissions this year will not do much to impact climate change, as it is extremely small compared to the emissions accumulated so far and compared to the emissions cuts needed to tackle climate change," the study said.

The authors warn that the rush for economic stimulus packages must not make future emissions higher by delaying new green deals or weakening emissions standards, and COP26 remains a vital milestone in this effort.

GREEN SUPERHEROES

POOJA JAIN

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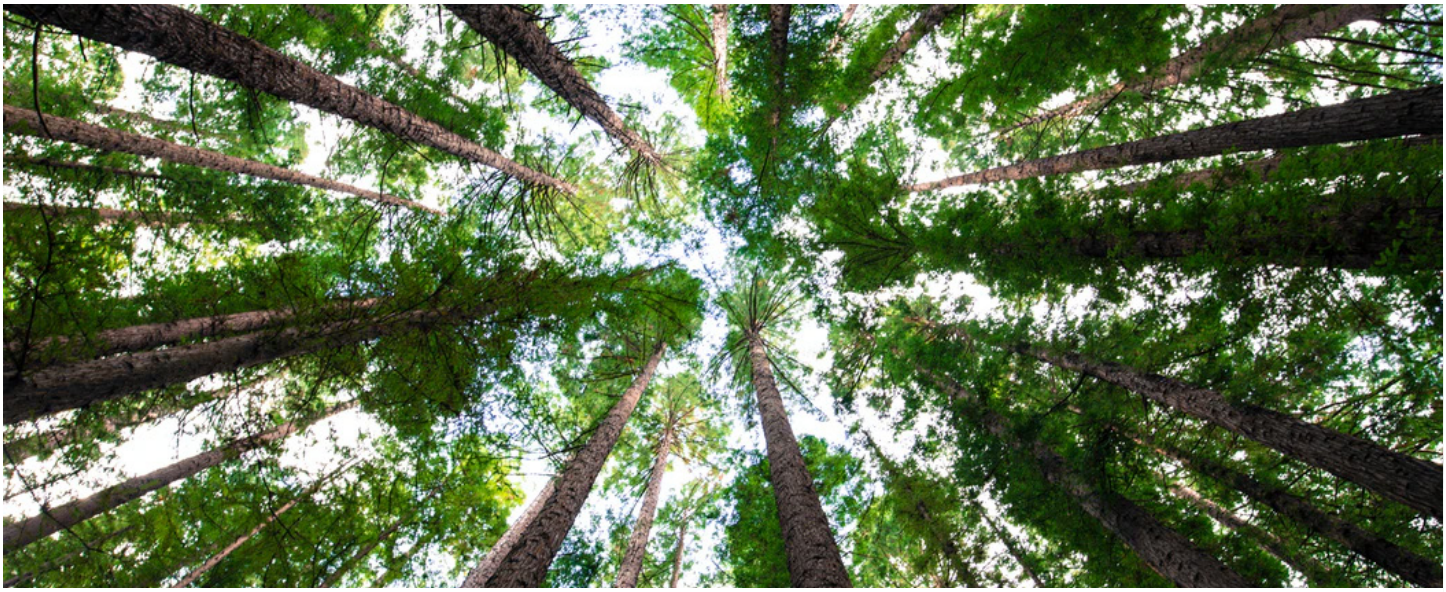
Finding my way back to my Mother Earth.

As a kid, I loved science and the diagram of the vermicomposting and bio compost unit stayed with me for long. My school took us for nature treks and I was part of the nature club too. These activities got me to experience the abundance of nature and appreciate it too.

For my professional career without much thought of 'why' I decided to pursue Finance. In that process my distance from nature grew.Everything in finance is a profit and loss statement. As a human race we haven't fully understood the cost we are paying for damaging the environment even though the it's humongous.I started suffering from PCOS and this forced me to look into my sourceof food. I realized that industrialization has left nothing untouched and every element of the planet has been disrupted from its natural balancewhich got me to start working at the source, our environment. How can I make my environment better and make the lives of people around me better and also restore the environment are some questions that I dealt with at a small level. This exposed me to circular economy. The basic and easiest 1st step seemed- waste segregation at source into dry and wet waste and composting of the wet waste.

I enrolled my entire 90 flat society into doing this. If we would just start doing this basic thing, it would be a great base for any environmental awareness and action in my immediate environment. I did not know how to act on it for a long time, wasn't sure why people would listen to me. So, I connected with people who already undertook this step, met afew experts and learned from their journey. Also visited some societies to understand what composting methods they were using and the cost to benefit ratio. Then I approached the BMC (MUNICIPAL OFFFICE, governmental body) ward officer to understand what support would be available to my society if we started in house composting of our wet waste. After all the data collection, I approached my Society Committee with a project thatshould be implemented for the welfare of our society and as a contribution to multi fold well-being possible and the socio-economic benefits it had. It was hard to explain and convince at the beginning about segregation and composting and the resources that would be required for it. They had their doubts on residents agreeing to it and it being an added responsibility on them. Thus, I created a team of youngsters from the society itself that could help us out and support this. I took the committee members to visit a society that was already doing

this for some inspiration and showed them the possibility of organic gardening, and a cleaner environment that would be possible through this. (a mini field trip for them)and boom, there we were...finally aboard!



We decided to conduct a seminar for the members of the society on the importance of segregation and the impact this step could have like – no more dumping in already full landfills, support of swacchbharatabhiyan, better health for people staying near these dumping grounds, production of manure, better work environment for sanitization workers, better health for the planet and all of us and then we began implementation with support from the local MLA (political leader). We faced challenges during implementation initially as only a handful of houses dedicatedly followed it. I called for quotations for composting equipment of various types- manual, electrical, semi electrical and of various price points and after much consideration of price, environmental impact, maintenance, life, etc we decided to go for the manual one.We educated the waste pickers of our society on segregation and gave them a right to deny collection if not segregated. We also educated the house helps on how to segregate. We have already produced 3 batches of khaad (Natural fertilizer, manure) and prevented tones of wet waste from going to the landfills. Our next steps are to tie up with a dry waste segregation facility and recycler so that our dry waste is also well taken care off. Still there are people who don't segregate or make mistakes, being patient and constant engagement is key, so I am never giving up on them.

This basic step has started a conversation through which our society members have come forward for carrying out organic plantation in the society. It provided for education on e-waste segregation and bio medical waste segregation. Currently we are setting up a system for segregation and collection of bio medical waste which also includes covid-19 waste like mask, gloves etc.

This project made me fall back in the arms of Mother Nature. Just a small behavior changes from our end and we got to be a part of a multifold impact cycle including property tax rebate for our society. I have gotten in touch with 3 more societies in my lane and encouraged them to also start segregating and composting so that we can be a zero-waste lane.

I have attended few cleanups and was aware that Ganpati festival celebrations are a huge havoc on the oceans. Me with two other active environmentalists,made a proposal to

Municipal corporation of Mumbai last year for greener Ganpati festival celebration and recommend waste segregation and composting at ward level and use of Ammonium bicarbonate solution in the artificial ponds (for visarjan) to melt Plaster of Paris idols rather than dumping them in the sea. (by-products being ammonium sulphate - fertilizer and calcium hydroxide - used in making chalks & bricks).A scientist from the National Chemical Laboratory of India had come

out with this, so we got in touch with here and understood the ins and out of the process, its safety and result. After much effort of making the proposal a reality, I managed a meeting with the solid waste management head of Mumbai for the same. The proposal was sent out as a recommendation to all wards of Mumbai as it wasn't made well in advance. The Worli ward of Mumbai did carry it out in 2019. In 2020 PoP idols are banned for good in Maharashtra. Now the environment will also celebrate with us!

I was selected for a climate change workshop organized by a platform called Youth kiAwaaz. There they educated us on the power of social media in uniting masses for a campaign and cause a change. We were taught how to make social media campaign and were given an opportunity to make one related to climate change. There I met a group of likeminded environment lovers and action takers. The campaign that I made there was on 'grant of special budget for setup of EV charging stations across the country and power sources of electricity for these stations to be from renewable energy sources.

Now I want to make a full-time career in Sustainability. I have started this course called 'Sustainable cities'- sustainable development goal 11 of the world.I want to use my knowledge of finance too towards making an impact on the environment. I have a long way to go as an individual and I also have to overcome a lot of my ingrained behaviors that are destructive to the environment. But I am committed to it! Nature is truly unconditionally loving and giving. I love mothernature so I will stand up for it. I believe if you do a little for the planet, the benefits of it are going to outweigh the effort of your action in terms of financial and social impact so there's no reason to not do it.

CHIRAG JOSHI

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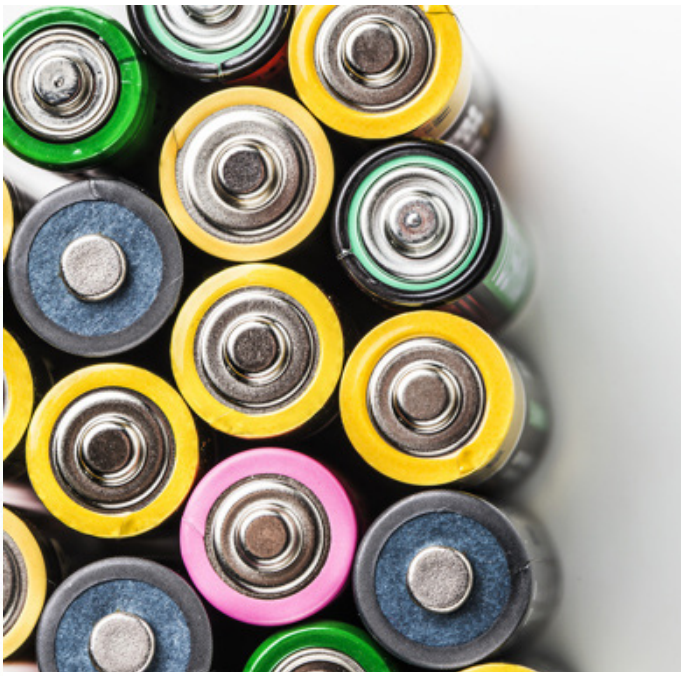
I'm a 22-year-old Business Graduate working in the Electric Vehicle Industry in India since the age of 18. I was brought up in Bangalore city, so naturally I got very interested and captivated by the idea of starting up early on in life. I tried my hand at a couple of things before I stumbled upon the world of EVs and decided to pursue it. At the time I did not know I would end up making it my entire life but as time passed I became increasingly passionate about this industry and the impact it can have on the world. It presented me with a once in a lifetime opportunity to be in a space that will change the way people will travel forever. This idea mesmerized me as I



am a person for whom knowing his impact on the world is necessary, and the bigger & more positive it is, the more I am passionate about doing it. The aim from the beginning was to build a business in this space and the idea of what I wanted to do keep evolving as I came across different people and understood the space. I knew I was not an engineer so I did not focus on building an EV (contrary to most people at the time in the industry). After a year and half in I defined how I wanted to uniquely contribute to this space, I wanted to build a business that would make it easier for people to shift to electric vehicles. This meant I was going to be a consumer focused person trying to understand what is it that normal people, outside of the industry think of it and how is it that we can convince them to shift to electric vehicles. Through multiple interactions with all kinds of people and putting out content around EVs on Social Media for a year I realized that all people care about is great & superior products that make their lives better. They do not care (most of them) if it's good for the environment or not. This was a big realization as it went against how most people were doing business in this space. They were trying to convince people on the notion of EVs being better for the environment and in the process delivered shit products that let people down and this was bad for the industry as a whole (exactly what happened a decade earlier with cheap Chinese made 2 wheelers sold in the country).

My aim in life is to build products & services that make people WANT to shift to EVs. That's the level of innovation required to do this job and I know it's going to be a long game. We are trying to go against a 100-year-old system (automotive + oil & gas) that more or less governs the way the world works. We can't make it happen in 5 – 10 years.

The challenges I faced till now were plenty, from doubt around the entire EV space to my own inexperience and age and family financial conditions. But as an entrepreneur I have enjoyed tackling all these problems first hand.

• Industry Challenges

The biggest challenges today in the industry are a combination of poor EVs, lack of clarity from the govt. and infrastructure support from parallel industries. People don't understand that making a person shift from an ICE vehicle onto an EV is not as simple as putting out an EV with similar performance and price. The reason a person today chooses a Honda Activa over an Ather electric scooter is because of the easy fuel availability, host of financial assistance & insurance availability, second hand market to sell it back in & proper know how & comfort of seeing it around them. This is what is called "infrastructure" that is seriously lacking in the EV world. There are not enough EVs available on road for people to see so they don't know how an EV looks & runs. There is a huge problem of lack of charging station infrastructure in the city that is essential to have the EVs up and running. The financial industry has no interest in financing EVs at scale at this point (major drawback). There are no second hand markets available which banks can look at and be sure of to estimate the value of an asset and therefore extend finance to people. Add to this the obvious problem of sub-standard Electric Vehicles manufactured by people which is the part that shows and turns people off. So if you really look it is a massive collaboration problem, people aren't willing to come together proactively and support each other to grow the industry and overcome these challenges. Everyone is trying to compete on non-scalable parameters. This is where as Ohm Mobility we want to be a player that allows diff. stakeholders to come together in a way that allows us to build a compelling offering for the end consumer to shift to EVs and never go back (not trying to plug it in, but this is just the truth).

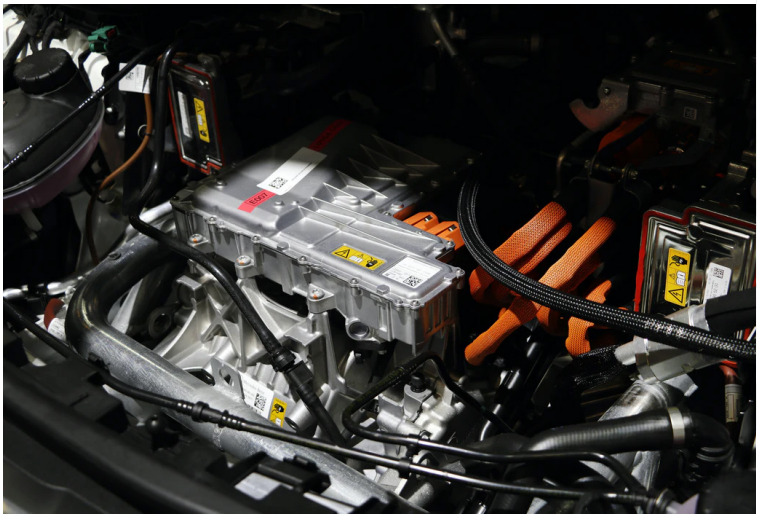
• EV Functioning

An Electric Vehicle is a fairly simple and straight forward technology. An Electric Vehicle has 2 major components – A motor that allows it to move forward and a battery that provides it the energy to move forward. That's all. This simplicity is what makes EVs very less complicated to build & operate. But due to low economies of scale the upfront price is high as of now. Although the price is declining fast due to the fall in the price of batteries (40-50% of the cost of Vehicle). The last 6-7 years has seen battery prices decline to almost half of what it was previously. An electric vehicle being completely run on electricity has major advantages in terms of being highly connected internally & externally. Internally every component of the vehicle has sensor and every micro difference in the functioning of its essentials parts is captured and reported to the brain of the vehicle. This helps in things like predictive maintenance and can also help reduce cost of repair and potentially save people from accidents. Externally Electric Vehicle due to the time we live in are extremely connected with the internet and have a lot functionality dependent on it. Therefore, at all times most of them will be connected to the internet (eg. Ather 450 scooter). This helps in high level of tracking and monitoring driving behavior of people and in case of fleet services it can help in route optimization and increase asset utilization.

• EV Purchase, Operating & Lifespan

Once purchased the electric vehicle is much cheaper to operate than a gasoline vehicle. The operating per km cost of an EV is 10 times less than that of a gasoline car. The asset can even breakeven in cost over a period of time if used extensively. The way EVs become truly cheaper for people is if they put it to maximum use. The higher the asset utilization the quicker will the cost be recovered. Therefore EVs are seen to be more useful to the commercial segment now than for the consumer segment. We believe this too and are positive that the commercial segment will take off first in EVs. This is also because of another reason – immediate pain point. An individual consumer faces no immediate pain point currently with his vehicle that an EV will solve, therefore converting him/her will be difficult in the early days. Here EVs help solve an immediate pain point and therefore become useful in the short term as well.

The best EV products in the industry are less than 2 years old and therefore we haven't seen them run for long to know the exact lifespan of a vehicle. Although many people believe the product is useful as long as the battery lasts and most batteries for vehicles (2 & 3 wheelers) claim 1000 charge cycles (i.e. Battery can be charged a 1000 times before it drops in efficiency from 100 – 80%). This means that a 3-year lifespan. But then again we don't know if the battery degrades to an extent where it cannot be used further or can it be used for another 1 – 2 years before it becomes completely useless.



• Environmental Impact of EVs

Electric Vehicles are not pollution free vehicles; they are zero emission vehicles. EVs definitely pollute when you take into consideration their manufacturing and disposing the battery after being completely used. But what they really help in is bringing down vehicular emission to a complete zero s they emit no greenhouse gasses to run. This in itself is huge because vehicular pollution accounts for 70% of all pollution in India. What EVs are doing is starting the process of end to end sustainability (from manufacturing to disposing) in the world. With the end product being less polluting, efforts will naturally start building around sustainable ways of manufacturing, operating & disposing the asset as well. This is the Revolution EVs are going to bring in to our world. A world where all human activity does not nearly result in the degradation of the planet as it is right now and hopefully allowing to better the planet. There is only advantage of shifting to sustainable ways of transportation and EVs are the first stepping stone to it. There are some short term disadvantages but they dwarf in the front of the immense benefits that EVs can bring into the world. It's going to be so big that it's hard for us to even imagine all its benefits today. (Much like we did not know what kind of benefits the internet could bring to us, because it's an entirely new paradigm).

• Role of Higher Education Institutes

Higher Education Institutes have a huge role to play in this revolution. They are the ones that prepare future generations to work in the world and contribute to making it better. I hope these institutions can bring in the concept of sustainability into their courses in a very practical way (not from a FYI standpoint) so that students learn what it means to do thing sustainably and how it can be done. There need to be case studies included of companies making it happen in the world currently, there needs to be people from these companies as visiting faculties that tell these stories and its importance to students so that they aspire to do similar and better work when it's their chance. Institutions have to do a better job at communicating the importance of doing things sustainably and showing how it can be done along with providing necessary skills to them to work in industries like ours. Good human capital is going to go a long way in helping the industry push forward and gain momentum. Someone like me had to find his way into this industry, not everyone has that level of conviction towards this cause, so they won't go out of their way to work in it. It's similar to what we have to do in the industry, build an infrastructure that allows students to get educated about sustainability, get trained in the necessary skills and get easily placed in companies in the industry.

If we have to make this revolution to the magnitude of the computer revolution, we have to have the Government, Private Companies & Educational Institutions come together in a similar fashion as they did in the 20th century.

ABHIIR BHALLA

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In primary school, we used to attend Environmental Awareness Classes on a biweekly basis, in which I would find myself in the last row, choosing to scribble doodles, scarcely paying attention. 11 years later, today, I've completed 8 years as a youth environmentalist and have worked with prominent organisations at both, the national and international levels. Amusing as it may sound to hear a 19-year-old say this – it's not been an easy journey. If anything, my age is responsible for making the path traversed an even more difficult. This is the story of my growth from being the stereotypical bored, ignorant, environmental averse child to being the founder and coordinator of an environmental campaign that's been running successfully since 4 years now.

The journey began in middle school where I became a member of the 'Paryavaran Club' (Environmental Initiatives Club) in my school and began to attend the weekly meetings. At those meetings, I realised that the Club was all talk and no work, or rather no work for juniors. Simultaneously, I was diagnosed with a form of Bronchitis, which isn't life threatening but every year since I can remember, I have had to use the nebuliser for my choked up airwaysaround the months of October-January, when Delhi's air pollution peaks.Air pollution as a topic sparked my interest &my seniors began to take note of my work as I was steadily rising up the ranks, leading intraschool then interschool activities and projects. In high school, I was elected to the student council to lead Environmental Initiatives& 2 years were crucial in my development – I learnt skills, increased my network of like-minded people to work with and began to train my juniors to ensure that the work didn't stop even after I graduated. Working on audits with the Centre for Science and Environment India for 5 years, I learnt how I could make my school campus more environment friendly and sustainable. In my final years of high school, after 4 years of persuasion by me and my predecessors, we managed to convince our school to install solar panels – nearly the entire campus is now powered by renewable energy !

I attended many Government-organised conferences on climate change, in some of which I even participated as a panellist. I also underwent a 2-month long 'Care for Air' training to be a Student Ambassador to spread

awareness regarding air pollution and affect change. In 2018, World Environment Day was hosted by India, and I participated in a 3-day long conference of the United Nations Environment Programme where I also appear on a panel with the then-UNEP Director, Erik Solheim. While air pollution was my personally driven area of work, I was equally interested in other aspects such as waste segregation, renewable energy and sustainability. I also worked with the World Wildlife Foundation, Kids for Tigers and Sanctuary Asia on wildlife conservation, and was awarded the prestigious Token of Appreciation by the National Tiger Conservation Authority of

India.

My biggest project, 'Swachh Chetna' – a collaboration between the Delhi Metro Railway Corporation and public, private and NGO schools – was focused around cleanliness, plantation and awareness drives. Leading over 300 volunteers in over 3 years, we cleaned areas around metro stations across the city and carried out awareness campaigns through street plays and flash mobs. We planted over 200 saplings at Metro officers' residential colonies and outside metro stations in a bid towards mitigating air pollution.

None of this was as easy as it sounds. Age bias plays a crucial factor. Most people reading this, even now, would think "what does a young boy know about the challenges of the world?" Yet, to establish a multi-entity cooperation between a State-Central shared Government organisation like the Delhi Metro and to sign a Memorandum of Association with various schools is particularly challenging, especially for a 17-year-old. All of this was done while juggling school classes and assignments. In fact, I was so invested in my environmental activities that there was a marked dip in my academic performance.Environmental activities weren't particularly helpful for my social life either. What's more important to a teenager? Even some of my closest friends were very amused by this aspect of my life. My enthusiasm for environmental conservation was degraded and compared to that of a glorified school gardener, "there goes Bhalla to straighten every blade of grass in the football field". For many years, I heard comments like this, but if anything, it only strengthened my resolve to make my mark in the world of environmental conservation.

Today, as I'm about to enter into my second year of college, a lot has changed, but there's a lot that hasn't changed. Year after year, I see (and even participate in) similar televised debates during October-January regarding air pollution. It's the same political blame game, the same inaction and unfortunately, the same 2 million deaths every year due to the snail slow action (or perhaps even inaction) on air pollution in India. Motivated by international figures like Greta Thunberg, many more young people have begun to take up the cause. The sad part is,

many of them are doing it only for their college resumes. For 2-3 years they'll plant a tree here and there, speak a few words, take a picture and then disappear – a new way the environment is being exploited. Nevertheless, there's also many people out there who are working day after day to bring about real change.

My latest project is to carry the Swachh Chetna model forward, and I've proposed it to several corporate giants and MNCs, all of which have expressed a keen interest in it. With new research proving that environmental degradation has played a large part in the emergence of the current Coronavirus crisis, we must strengthen our determination to carry forward our work. My own plans for cleanliness and awareness drives have come to a screeching halt but I'm turning

to exploit the internet – environment discussion related Zoom calls, webinars and outreach to maximise awareness and outreach.

The unfortunate reality is that the International Media doesn't pay enough attention to environmental debates. Interest has certainly increased and thus so has coverage, but it still isn't enough. Environmentalists like myself are always looking for a platform – podcasts, panel discussions, television debates, et cetera to spread the word and involve people. It's time the world knew that the human race has turned our own planet against us. Having worked with national and international organisations, I'm looking to continue to work with like-minded individuals – professors, students, businesses – no matter the industry, provided they're looking to work collectively to secure a better future for all of us. If you'd like to reach out to me, here's my email address abhiirbhalla@gmail.com

KAYOZ DADYBURJOR

Everyone that has ever known me will say that I am unquestionably an introvert. So, it is always surprising to people when they see pictures of me protesting, or videos of me addressing a crowd or an individual. Quite frankly, it's a question I can't answer either. I did not start my environmental journey with any intentions of getting into activism- be it online, or in the real world. I was never into politics

or diplomacy. However, the more one reads about environmental issues and injustices; the more one starts to have battles of morality and ethicswithinone'sownmind.

I first realisedthatmaybe I cared a little more than my fellow classmates when I started voluntarily reading my environmental studies textbooks. I never 'enjoyed' my classes per se, but somewhere deep down I knew that I considered it to be much more than just another subject I had to score well in and forget. I used to go home anxious after my environmental studies lectures; this was because all my teacher did was explain how industries are doing something, which is leading to something; it was all just a cycle of the same thing over and over again, every single year. The reason I was getting more 'climate anxious' by the day, was because those textbooks were only feeding me (a child) problems. My knowledge of how bad different kinds of pollutions are kept increasing, and so did my anxiety. I had made myself believe the world was ending, and there wasnothing I could do about it.

That iswhere the system went wrong. It only presented problems; no solutions. How is a kid supposed to study well for a 'bright future', if they are constantly learning about how insecure that very future is? To live a life where my ideologies matched the way I live on this planet; I started making changes. Gradually, small changes to my lifestyle turned into big ones. I have learnt countless lessons on the way- lessons that I have implemented elsewhere as well. One of the very important ones is, it is okay to succumb to materialistic desires from time to time. Aspiring to become an environmentalist, I started doing everything with the environment in mind.

One of mydecisions, whichwas more of an unplanned sub-conscious switch, was switching to a vegetarian diet. Now, however I only eat 'plant-based' food. I had originally planned to go vegan after moving out aftera single 5-minute video of a dairyfarm, whichmade me go veganovernight.I startedthinking about

living a low-waste life because along the way, my consciousness made me mull over where my waste was going. The conclusion was that dustbins are a scam. Just because something is not in my sight anymore, doesn't mean it won't harm the environment long after I'm gone. There is no "away" when someone throws something in the bin. On this journey of discovering where mywasteactuallywent, I discoveredcomposting.

I went to a 'soil brewing' workshop where I learnt how ignored and important composting actually is. It is also something that someone with a very busy and hectic life can do at home to do their part. I strongly believe in practising what you preach. So after a rather long time, I finally started feeling entitled to start holding people accountable for being wasteful or reckless when it came to the environment. In India, itdefinitelyisodd and canbeconsideredverydisrespectful to havesomeonethatshalfyourageto becallingthem out publicly.

I've had my fair share of debates already, people trying to mock me is much more common than one may think; but it is high time we start holding each other accountable for our destructive actions, and we cannot keep waiting for someone else to, we cannot get people's opinions or social statuses in to the picture if we all share the same dying planet. Some may consider it rude, but I do not think asking a stranger to pick up the litter they threw is authoritative, but rather a necessity at this juncture. That is just one example; the changes we can make just by holding each other accountable are countless. After such ideologies came into place, activism did not remain an option. The people that need to be held accountable the most are the people in power.

Takingadvantage of being 16, and a lot of inspiration from Greta Thunberg, I startedattending/supportingStrikes on fridays. I became the coordinator for my city, and that is how Fridays For Future(FFF) addedanotherchapter in Mumbai. We had a lot of(first)strikeswith the same three people over and over again. I was unhesitantly putting up all these strikes on social media. By our tenth week, we had about fifteen people that had started joining us. It has been over a year since we started FFF INDIA, and now we have over thirtychapters all around the country.

This taught me that a few people with the same goal, along with passion and persistence, can in fact create change. In the climate movement, age really does not define a person, if it did, then FFF today would not be run by a few hundred teenagers.

KUNAL SHAH

I was born and raised in India and moved to the United States of America in 2017 for my further education. I was studying for my Master's in International Business and that's when during an international challenge I got the idea of Solar Farming. Coming from India Solar energy was heard of but not implemented upto its utmost potential. Developing and brainstorming for ideas in the line of sustainable business development along with environmental effects we found solar energy to be the most efficient and useful form of energy and then the question was what part of the world. The main reason for implementing this idea was to harness sustainable form of energy into a meaningful way along with development of the society and its parameters. The aim of doing this was to give back to nature what we have got in the purest form and also to develop

something more sustainable in the long run where coming generations do not need to worry about replenishing it.

We were four partners all from different sectors and specialized field brainstorming to form this idea into a reality. Myself coming from a finance background, my main goal was to get the users of this service the product at the cheapest and affordable rate than the current form of their usage. We came up with three different ideas- a solar powered food cart, solar power charging station and solar farming i.e. electrifying the households directly.

There were various challenges to be faced moving forward and the first one being country to select where this would be of good use and efficiently put through. We had to narrow down nations where solar energy was available in abundance. Countries shortlisted were Ghana, Ivory Coast and India. Then the next step of reasoning was why this country and how will it impact the society. So while answering and testing the market scenario Ivory coast was ruled out as it is a country that has thermal and wind energy plans already in place or being tested. India has some amount of solar energy penetration and so Ghana was taken into consideration as it was a country that had availability of resources, but the idea and implementation was not executed.

- **CHALLENGES**

The main challenge faced was actually travelling acquiring all the equipments at the right price and making it suitable for the neighborhood. Also entering a country this backward and language being a barrier it was necessary to include someone as a consultant who was a local person, speaking the local native language and also educating them on the importance, help and how solar energy can help in development of their society. Educating and impacting the society on accepting the change was the biggest challenge and so a presentation on how solar energy works and what our idea was all about was something to be done at every step-in influencing people to accept us.

• WHY SOLAR FARMING

Solar energy is the easiest and the most natural form of energy that is available in abundance and with no barriers depending on the climatic conditions, a common misconception of solar energy not being available during rainy and gloomy weather, which is not true as solar energy does not only mean the rays but also includes the heat in the atmosphere. Solar

panels available in the current market have the technique of radiating and absorbing heat from the environment. During the pilot run we observed and educated the user families about the maintenance procedures and how to switch it to saver mode when not in use so as to store it for use after sunset. The idea of providing electricity to small secluded villages for 24 hours a day at a subsidized rate with more efficiency and reducing their fear of UV and cancerous radiations was something that helped us in accelerating and putting the idea in full production.

The solar panels have a life span of about 15-18 years with proper maintenance and usage. Investment being minimal and also involving the local government and getting financial aid to encourage more users was something that helped us scale our market penetration.

• ENVIRONMENTAL IMPACT

Solar energy has a huge impact on environment as we can recycle every part of the panel including the cables after wear and tear without wasting and increasing landfill. Also, it is a free form of use and cheapest form of energy available in abundance. From an investment perspective the ROI is as low as 12 months from the savings from switching to this form. It also helped us in development of the society by generating jobs for women. Partnering with local NGO's and educating the younger generation about renewable and sustainable form of energy and thereby penetrating into the households is easier.

• ROLE OF THE GOVERNMENT AND EDUCATION SYSTEM.

Include different forms of coursework pertaining to social responsibility, environmental hazards and solutions to it rather than the problems faced, and also encourage students to start on a small scale to protecting natural resources which are depleting and taking environment into consideration while using any form of resources or energy.

MEDIA COVERAGE

Novel tech uses sunlight to degrade toxic waste

PNS ■ NEW DELHI

Liquid waste management is a major challenge for many industries globally, especially those in the manufacturing space, owing to the extensive use of chemicals, the researchers said

Scientists have developed an efficient, economical, and environment-friendly technology that uses sunlight to degrade toxic liquid waste, an advance they say could significantly reduce the waste-management costs of industries.

The technology, developed by the researchers from Lovely Professional University (LPU) in Phagwara, Punjab involves photocatalytic degradation -- a chemical reaction that involves the absorption of light -- using nanoparticles as catalysts.

The technique is extremely efficient for the degradation of toxic organic chemicals produced by companies across sectors like pharmaceuticals, textiles, pesticides, paper, paints, and other chemical industries, according to the study published in the Asian Journal of Chemistry.

Liquid waste management is a major challenge for many industries globally, especially those in the manufacturing space, owing to the extensive use of chemicals, the researchers said.

These industries produce several kinds of liquid wastes which can cause serious environmental damage, like water and soil pollution, ground water contamination, and landfill contamination, if not treated properly, they said.

The researchers, which included Mandeep Kaur, an M.Sc. student at LPU, and Assistant Professor Chandan Adhikari, noted that a huge amount of liquid waste is produced in India due to the presence of a large number of industries.

They noted that the country's Central Pollution Control Board (CPCB) has set standards and guidelines regarding disposal of liquid waste.

However, because of the high cost, most of the industries do not follow the proper waste management techniques to prevent the pollution caused by hazardous waste, they said.

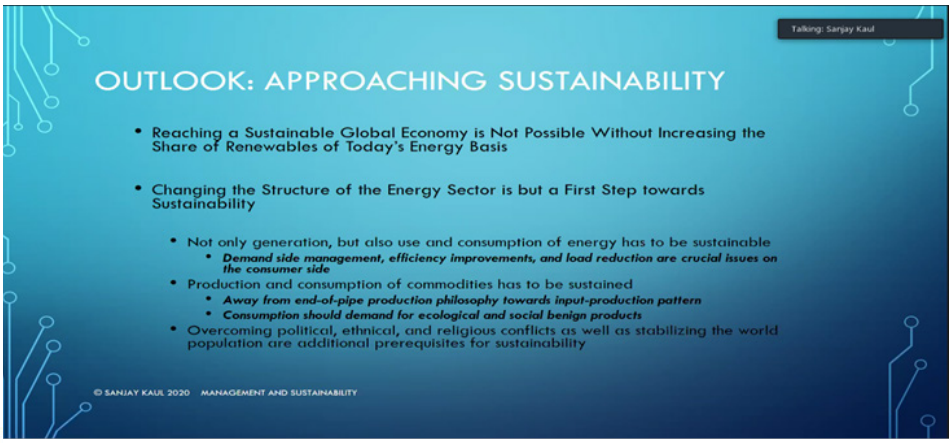
Currently, the industry spends about INR 120 to degrade one litre of liquid waste, according to the researchers.

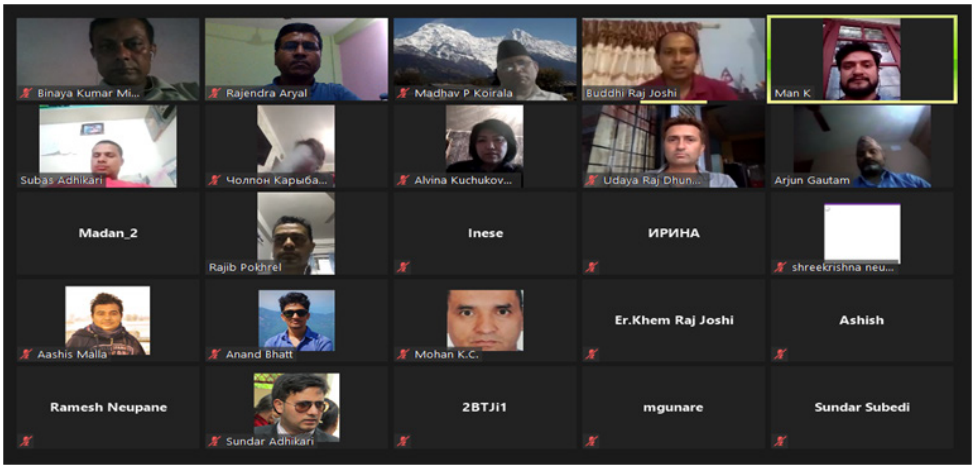
TOPICS COVERED ON SOCIAL MEDIA

- Uttar Pradesh, India, to set up an ultra-mega renewable energy park in the state.
- Ahmedabad-based startup, Ishitva Robotic Systems, has come up with AI Robot which automatically segregates waste.
- Ugandan Entrepreneurs Are Turning Plastic Waste into COVID-19 Face Shields.
- Tata Power Renewable Energy to develop a 120 MW solar project in Gujarat, India.
- Andhra Pradesh to develop a 10 GW mega Solar Power project for the benefit of the farmers.
- China, India and America installed 8.7 GW of Solar Capacity in Q1 2020.
- UK based Startup, Bio-bean, is turning tons of used coffee grounds into Biofuel.
- India overtook Japan as the fifth largest hydropower generator in the world with an installed capacity of 50.07 GW.
- Duo from Bhopal Make 40% Cheaper E-Scooters That Cost Just Rs 5 For 80 Km.
- Indian startup, Bluecat Paper, is contributing to green economy by making Tree-Free paper with farm and textile waste.
- BMW Group India has committed to convert its Chennai branch to 100% green electricity by the end of 2020.
- In a move to utilize surplus capacity in the power sector, the government launched a pan-India real-time market of electricity.
- Villages in Sunderban, India lights up with the help of Solar Power soon after cyclone.
- Konark Sun Temple in Odisha, India to be powered by Solar Energy.
- 27 government schools, colleges in Ludhiana, Punjab to be solar powered under the Ludhana Smart City Project.

WEBINAR

Recently Pokhara University has organized the online webinar program on Management, Sustainability and Green Economy (Strategy, Planning and Resources). The more than 50 participants from Pokhara University, Tribhuvan University, Partner University from Kyrgyzstan, India including faculty, Students, professionals and media person joined the vitual meeting. Prof. Dr. Sanjay Kaul highlighted about the Power Sustainibility in HEI for academic advancement and Prof. Dr. Madan Koirala indicated the Scope of Green Economy in HEI of Nepal.





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