

# COMMON CAUSE

www.commoncause.in

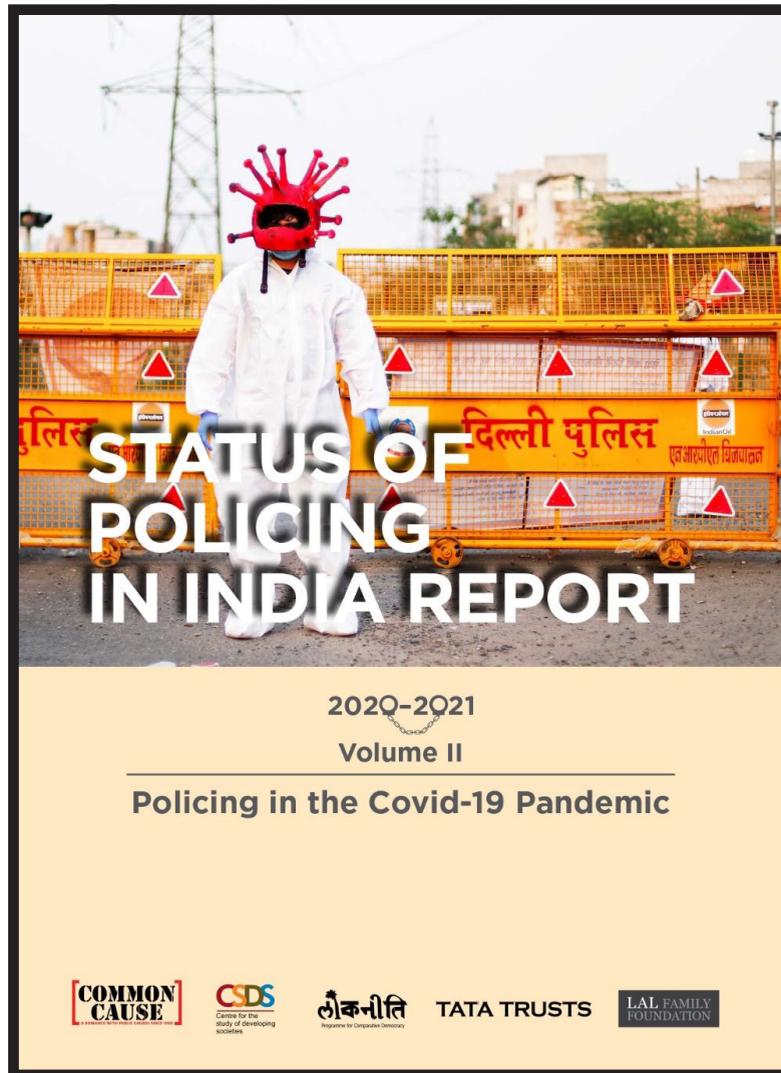
POLICY-ORIENTED JOURNAL SINCE 1982



E-vehicles may fight climate crisis but they come with their own cost to environment

Editorial: The Future is Here	03	Common Cause Events	17
The EV Ecosystem: Not so Revved Up?	04	Red Lights in the Green Journey	21
A Breath of Toxic Air	11	Green Vehicles have Dirt on them?	23
Common Cause Updates	15	The Real Cost of a Clean Ride	30

Please email us at [commoncauseindia@gmail.com](mailto:commoncauseindia@gmail.com) if you want a soft copy of the report.



Jointly prepared by Common Cause and its academic partner, CSDS, The Status of Policing in India Report (SPIR) 2020-2021, Volume II: Policing in the Covid-19 Pandemic, covers a range of citizen-police interactions during the lockdown, the handling of the crisis, and the emergence of new challenges for the law enforcement apparatus.

The report analyses data from a survey of common people and police personnel from Tier 1 and Tier II/ III cities of 10 states and Union Territories. It also looks at the media coverage of the nature of policing during the initial phases of the national lockdown.

Please email us at [commoncauseindia@gmail.com](mailto:commoncauseindia@gmail.com) if you want a soft copy of the report. A PDF can also be downloaded from [commoncause.in](http://commoncause.in)

Designed at GENESIS | [genesiadvt@hotmail.com](mailto:genesiadvt@hotmail.com) | 9810033682

# THE FUTURE IS HERE, WELL, ALMOST!

## Green Mobility Promises a Better World

Our collective environmental consciousness has never been better. Key concepts like carbon footprints or AQI are well understood even by school children. And yet, the demand for bigger, bulkier SUVs is shooting up. We appreciate that car-pooling is great for our future but we prefer to drive alone. This urban paradox is a perfect indicator of what ails our environment.

When we buy a bulky SUV, we visualise a cross-country cruise for the family but in reality, it ends up shuttling us between home and office. This means that we buy our vehicles according to our imagined, rather than real, requirements. In any case, our hypocrisy, is breathtaking. But that said, can something be done to follow our hearts without the guilt? This is why we love the idea of electric vehicles (EVs) or cars run on alternative fuels.

Our sense of hope is not vacuous. It opens up an impressive array of possibilities. The potential fuels vary from electricity to hydrogen cell and anything between natural gas and bio-diesels. This also makes it possible to drive our dreams without harming the environment. The early signs are visible in the astounding success of Tesla in the US. It is not uncommon to find electric cars zipping on the Indian roads. Soon enough, we can foresee trucks and even ships running on green fuels.

So, does that mean the end of the fossil fuel? Well, not yet, but we are definitely heading that way. While we do not treat our coal power plants or the diesel vehicles as dinosaurs as yet, a decisive beginning has been made in the direction of renewables. We can safely say that our world is in the middle of energy transition. For sure, things will be messy and disruptive in the beginning but the end product would benefit humanity. We are moving towards new standards of innovation, talent, and global cooperation.

A future defined by clean energy also means a break from the tensions of geopolitics of oil and gas and a huge relief for the oil-dependent economies. We have all witnessed how the energy crisis created by the Russian aggression in Ukraine has brought new tensions and pushed even secure economies of Europe into tailspin. For the poorer countries, it has brought mega inflation and food crisis. Clean energy, let us hope, will transform geopolitics of fuels into something more amicable and climate-friendly.

However, in our euphoria, we could be skipping some hard realities. The first and foremost is the real environmental costs of the new technologies driving EVs. How can we call them clean when they are run on power produced by high-emission coal or high-hazard nuclear plants? The batteries of EVs are also packed with hazardous materials and hidden costs. They also come with differential gains, i.e., benefits for the rich countries and miseries for others. The net-zero world as envisaged by the UN is possible but it needs compassion, joint efforts, and real hard work by the global community.

This issue of your journal discusses the costs and benefits of EVs. India has done better than many countries on the clean energy front but we have also abandoned some of our policy roadmaps like the National Electric Mobility Mission Plan and Niti Aayog's recommendations about zero-emission. Common Cause has filed a PIL in the Supreme Court for the implementation of these.

In the following pages you will find an informed discussion on these, and many more related issues. Like always, your feedback is welcome at [commoncauseindia@gmail.com](mailto:commoncauseindia@gmail.com)

**Vipul Mudgal**  
Editor

# THE EV ECOSYSTEM: NOT SO REVVED UP?

## An Update of India's Electric Transport Policies

Susmita Saha\*

*“Halat kharab ho rakkhi hai (We are in a dire predicament),”* says Pal Singh, 48. Singh, a resident of Delhi’s Mahipalpur is an autorickshaw driver who occasionally plies his son’s electric three wheeler in Vasant Vihar.

When asked if the shiny, new electric vehicle has brought him new hope, his litany of woes begin. The biggest problem is the lack of enough charging stations, he says. Even after three hours of charging, the vehicle just manages to cover roughly 100 km. “What if I get a booking for Anand Vihar, how do you think I can say yes?” he wonders.

Few charging points also translate into long queues. While the charging service itself is free, most drivers have to first contend with the long charging time of vehicles in front of the queue. Their own turn to charge, again for a hefty duration, comes only after others before them are done. “Sometimes my son has to spend the entire night to charge his three wheeler, as there are many before him. And it’s not as if the rickshaw will go more than 100 km if charged for a longer span,” rues Singh, adding that there are fewer rides to take up when mounting costs of food

and rented accommodation are already taking a toll.

### Policy Implementation on Ground

Yes, change is in the air. Even if there are lots of teething troubles, our commute will be electric in the days to come. Electric bus fleets have already hit the road and local governments are talking about sustainable public transport and making lifestyle changes on messaging apps. Even I received a Whatsapp invite from the Delhi government to try out their new e-buses that are pegged to be ‘zero pollution’ and ‘zero noise.’ For a metropolis, crowned as the world’s most polluted capital city for the fourth year in 2021, it was thrilling news.

But complete fleet electrification is still a long way off. Despite Delhi’s on-road vehicles making some headway in the green zone, transportation’s electric future continues to hang in the balance. The National Electric Mobility Mission Plan (NEMMP) was launched by the Government of India, way back in 2013. The document offered an outline for the faster adoption of electric vehicles and their manufacturing in the country.



*While a charging station in Vasant Vihar (top) can be seen catering to multiple electric vehicles, the absence of plentiful stations in other areas of Delhi result in frustrating queues for drivers*

\* Susmita Saha is Senior Research Analyst at Common Cause

Among its many objectives, enhancing the national fuel security, providing affordable and environmentally friendly transportation and enabling the Indian automotive industry to achieve global manufacturing leadership were key. Under the NEMMP 2020, there was also a target to achieve 6-7 million sales of hybrid and electric vehicles by the year 2020.<sup>1</sup>

Fuel security, as one of the defining goals of the plan, makes sense for India. Experts are firm that the faster acceptance of electric vehicles can significantly shrink the nation's import reliance and contribute to its wallet size: "India depends on imports for approximately 85% of its domestic oil consumption, and spends a third of its total import values on crude oil alone. If electric vehicles occupy 30% share in new vehicle sales by 2030, India's oil import bills could reduce by 15% by around INR 1.1 lakh crores in 2030 alone."<sup>2</sup>

In addition, the country needs transportation that can double as a climate solution more than ever before. A 2020 Factsheet developed by the University of Chicago says that India is the world's second most polluted country. Air pollution shortens the average Indian life expectancy by 5.2 years, relative to what it would be if the World Health Organization (WHO) guideline was met.<sup>3</sup>

Policymakers are hoping that



*Drivers of electric three wheelers complain about not being able to go long distances on a single charge*

accelerated electrification of transportation is the magic bullet to combat both pollution and the climate emergency. Energy itself is expected to get greener with fuel cell electric vehicles (FCEVs), powered by hydrogen, which the country has already started manufacturing.

But right now, the nation's green journey is both slow and at best, sputtering. Even in the Capital, both electric buses as well as

other electric vehicles are few and far between. A few charging stations can be seen strewn across the main thoroughfares, although some of them are not functioning. Occasionally stray cattle can be seen circling some of the empty and isolated charging points. With this kind of infrastructure, there haven't been too many converts. According to recent research by Accelerated e-Mobility Revolution for India's Transportation (e-amrit) portal in India, only 7,96,000 electric vehicles have been registered till December 2021, and only 1,800 charging stations have been installed in public places.<sup>4</sup>

Even auto driver Pal Singh concedes that the government needs to step on the gas to drive home its electric mobility ambitions: "The moment we picked up our EV, the EMIs have kicked in. No landlord will allow us to charge our vehicle at home.

**“ Experts are firm that the faster acceptance of electric vehicles can significantly shrink the nation's import reliance and contribute to its wallet size**

”

Till the time the government puts a proper infrastructure in place, we will continue to be miserable.”

## **Policies Offering a Green Roadmap**

Despite an early push given by way of a bouquet of encouraging policies, more focus is needed. As part of the NEMMP 2020, the Department of Heavy Industry came out with the Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles in India (FAME India) Scheme in 2015. The end goal? To promote manufacturing of electric and hybrid vehicle technology and to ensure its sustainable growth.

However, the push to electrify transport on the ground left much to be desired in the early days. As the Common Cause petition, filed in 2019, notes, there has been “Government’s failure to enact a suitable regime of incentives and disincentives to promote the adoption of ‘zero emission’ vehicles.”

The Common Cause petition explains why the FAME India scheme to implement NEMMP-2020, promulgated in 2015, fell woefully short: “Whereas NEMMP-2020 had envisioned that by 2020 India would adopt close to 7 million electric vehicles ..., as of January, 2019, only 0.263 million electric vehicles have been adopted in India...”

Crucially, the implementation scheme lacked financial muscle.

“ ***Policymakers are hoping that accelerated electrification of transportation is the magic bullet to combat both pollution and the climate emergency*** ”

“Whereas NEMMP-2020 had called for an investment of about 14,500 crores from the government...the total funds allocated thus far were 579 crores as against a total outlay of 850 crores,” stated the petition.

The second edition of the FAME scheme had stronger feet to stand on. The Department of Heavy Industry notified Phase-II of the Scheme on March 8, 2019, with the approval of the Cabinet. It had an outlay of Rs. 10,000 crore for three years, starting from April 1, 2019. Fast-tracking local manufacturing and incentivising purchase of electric mobility were drivers of this plan.

Yet barriers to faster adoption of electric vehicles remain. Manufacturers have remained anxious about the slow uptick of sales and have even called for government interventions at the policy level to generate demand. In 2021, manufacturers called for urgent action ahead of the upcoming Union Budget.

The Society of Manufacturers of Electric Vehicles (SMEV) even asked Finance Minister Nirmala Sitharaman to “either rejig the FAME II scheme or reintroduce FAME I, saying the programme meant to promote EVs in its second avatar has been able to achieve less than 10 per cent of its target.”<sup>5</sup>

The government, on its part, has announced measures aimed at encouraging EV purchases. During this year’s Union Budget, the Finance Minister revealed the government’s plan to come up with a battery swapping policy, targeted to decrease upfront EV price tags. On May 9, the Niti Aayog published the draft battery swapping policy for public consultation. The policy aims to support the faster adoption of EVs in the electric scooter and three-wheeler electric rickshaw segments as battery swapping is generally used in smaller vehicles with smaller battery packs. This becomes especially relevant, if policymakers want battery swapping to be the springboard to boost demand.

Unaffordability of electric vehicles, as compared to their polluting counterparts, have long remained a barrier for faster adoption, argue stakeholders. To that end, the draft battery swapping policy lists several proposals. Among many measures, it has prescribed “offering incentives to electric vehicles (EVs) with swappable batteries, subsidies to companies manufacturing swappable

batteries, a new battery-as-a-service business model, and standards for interoperable batteries..."<sup>6</sup>

Also, it seems the government is eager to resolve the complaints of long charging downtime put forward by the likes of Pal Singh. Battery swapping, hoping to detach charging and battery usage, will go a long way in cutting down the charging downtime.

From safety standards to battery as a service, the draft policy attempts to cover most concerns. It has prescriptions for higher safety nets for end users, given that a host of electric bikes went up in flames across India recently. Sensing that these widely publicised incidents could scare away potential buyers and put brakes on the country's plans to electrify its transport fleet, the draft policy has specified stricter regulation for battery norms. According to it, "The Policy will only support batteries using 'Advanced Chemistry Cells' (ACC), with performance that is equivalent or superior to EV batteries supported under the FAME-II scheme."

Yet, the wheels-on-battery revolution isn't really keeping pace with the global sprinters. Despite clocking an upswing in sales, the pace of green mobility in the country is slower than biggies like China and the US. By 2040, just 53% of new automobile sales in India will be electric, compared with 77%

**“Manufacturers have remained anxious about the slow uptick of sales and have even called for government interventions at the policy level to generate demand”**

in China, according to research provider BloombergNEF.<sup>7</sup>

Hence, there's an urgent need to catch up, given that we are already battling the twin scourges of high oil imports and climate change devastations. To smoothen the journey of buyers and encourage a faster switch, the draft policy also focusses on ensuring interoperability for the end-users, by asking for end-to-end compatibility between batteries and other components of the swapping ecosystem.

Lately, the government has also approved the PLI (Production-Linked Incentive) scheme for the automobile and the drone industry, with a budgetary outlay of Rs 26,058 crore to incentivise electric vehicle (EV) and fuel cell EV manufacturing.<sup>8</sup> Although aimed at improving local manufacturing capabilities and foster rapid production of environmentally cleaner vehicles, the scheme has generated a mixed response.

The scheme's steep qualification criteria will keep away specialised Indian manufacturers of electric two and three wheelers, feel EV makers. An automaker must have a group-level revenue of at least ₹10,000 crore and have made a minimum investment of ₹3,000 crore in fixed assets to qualify for this scheme. Critics feel that the scheme is not inclusive enough as it will favour legacy players and will not be beneficial to start-ups in the pure-play two wheeler space.<sup>9</sup>

Despite the grievances, auto majors of every denomination have a skin in the game. From Goliaths like Tata Motors, Mahindra Electric Mobility and Hero Electric to newer brands, including Ather Energy, Okinawa and Simple Energy, everyone is now a part of India's massive transport decarbonisation plan. The Union government, along with the states are helping them move in top gear. At least 15 Indian states have either approved or notified EV policies, with six more states in the draft stage. States like Delhi, Gujarat, Maharashtra, and Meghalaya are focusing on demand incentives, whereas southern states and Uttar Pradesh are focusing on manufacturer-based incentives.<sup>10</sup>

## Global Best Practices

One thing is for sure. The global transport domain is being redefined by electric vehicles and India is a market unlike any other. The Paris Agreement,

which has given the world a shove to cut out greenhouse gas emissions, will just be a broken promise, if the much-polluting transport sector does not transform in a fast and meaningful way.

In addition, India has the potential to become a giant global manufacturing hub of EV components. That can only happen if the policy environment stays ahead of the global curve. We can follow in the footsteps of nations that are making big strides in electric mobility transition and learn from their best practices.

Following are the countries that have set targets and proposed strategies that accelerate mobility transition and offer tangible policy roadmaps to an EV-driven future. For many of these countries, the strategies are a clever mix of government financial incentives, infrastructure and technology development support, financial mechanisms and much else.

**Norway:** Norway has been among the big success stories of the clean mobility world. “Almost sixty-five percent of new passenger cars sold in Norway in 2021 were electric; in addition, 22% were plug-in hybrids. Put differently, only 14% of new cars were sold without a plug.”<sup>11</sup> The purchase incentives provided by the country for EVs are strong as well. Also, Norway has been giving tax incentives from way back in 1990. According to

“ **Unaffordability of electric vehicles, as compared to their polluting counterparts, have long remained a barrier for faster adoption, argue stakeholders** ”

the report ‘Best practices in electric mobility,’ by the United Nations Industrial Development Organization (UNIDO), Norway charges an import or registration tax for all cars which can reach about 10,000 Euros or more depending on the CO2 emissions. BEVs (Battery Electric Vehicle) are completely exempt from this tax. In addition, BEVs are exempt from paying 25 per cent VAT charged at the time of purchasing or when leasing an electric vehicle. Road tolls are mostly exempt for EVs in Norway. This exemption may be phased out, however it will still continue to be less than 50 per cent of the charge for ICE (Internal Combustion Engine) vehicles.<sup>12</sup>

**China:** Deployment of fast charging networks is also a key to building EV sales momentum. The above UNIDO report states that many stakeholders in China, including the government, local government and utilities, have been active in quickly building a fast DC charging infrastructure

network in the country. What’s more, the fast charging infrastructure deployment resulted in huge electric vehicle uptake.

In 2017, China had around 83,000 publically accessible fast chargers and 130,000 publically accessible slow chargers. That same year, China had the largest electric car stock at 40 per cent of the global total, with an auto market share of 0.2 per cent. Electric cars sold in the Chinese market more than doubled the amount delivered in the United States, the second-largest electric car market globally.<sup>13</sup>

**Japan:** Public charging infrastructure has been taken seriously by Japan as well, as a means to promote electric vehicles as a sector.

In 2013, the government came up with the Japan Next Generation Vehicle Charging Infrastructure Deployment Promotion Project to offer financial back-up to charging stations around cities and highway rest stations in 2013 and 2014. The Development Bank of Japan tied up with Nissan, Toyota, Honda, Mitsubishi, and power company TEPCO to build the Nippon Charge Service (NCS), a nationwide network of charging stations, now operated as a private joint venture.<sup>14</sup>

**European Union:** Accelerating local manufacturing lay at the heart of India’s policy frameworks around EVs. However, some manufacturers

feel that the sluggish deployment pace of EVs in the country can be attributed to slower evolution of the domestic component manufacturing market.<sup>15</sup>

On the other hand, regions like the European Union are stepping up efforts to build a strong battery industry. An International Energy Agency (IEA) report says that there's something called the European Battery Alliance to promote local competitive and innovative manufacturing.

In early 2021 the European Commission had a funding package of EUR 2.9 billion to strengthen the spine of a pan-European research and innovation project, in the context of the entire battery value chain. Labelled the European Battery Innovation, the project will be bolstering 12 countries through 2028. "Poland is positioning itself as a central EV manufacturing hub for Europe: in early 2020 the European Investment Bank supported the construction of a LG Chem Li-ion battery cells-to-packs manufacturing gigafactory in Poland."<sup>16</sup>

**New Zealand:** Legislation to enforce stringent regulations on vehicle emissions is an important factor to fast-track transport electrification. The IEA report 'Global EV Outlook 2021,' also speaks of partnerships forged between the New Zealand government and private sector to greenlight low emissions transport projects. In 2020, the government and the private

sector co-financed 45 new low-emissions transport projects, including charging infrastructure and BEV trucks.<sup>17</sup>

There's also a February 2021 draft advice package from New Zealand's Climate Change Commission that recommends a number of policies to accelerate the uptake of electric LDV (Light Duty Vehicle)s, including banning the import, manufacturing or assembling of light-duty ICE vehicles from 2030.<sup>18</sup>

## Conclusion

The volumes of green vehicles being put out on the world's busiest thoroughfares are surpassing expectations every day. The sale of electric cars (including fully electric and plug-in hybrids) increased twofold in 2021 to 6.6 million, with more now sold each week than in the whole of 2012, according to the latest edition of the annual Global Electric Vehicle Outlook. The number of electric cars on the world's roads by the end of 2021 was about 16.5 million, triple the amount in 2018.<sup>19</sup> There is no doubt that the green transport transition is both real and imminent. But it is also true that it will take place at different speeds across advanced and developing economies.

A lot of factors can contribute to an even faster transport decarbonisation, including continued policy support, efforts to reduce the lifetime costs of owning an EV, serious decline in battery costs that

lead to higher upfront costs of vehicles and much more. In fact, India could do way better in this transportation revolution if it also includes trucks in the policy spotlight and incentive reinforcement ambit currently offered to two and three wheelers, cars and buses. The country boasts of more than 2.8 million trucks plying over 100 billion km per year. They may constitute about 2% on-road vehicles, but these heavy-duty vehicles contribute about 40% of emissions and fuel consumption from road transport. Electrification of trucks through fiscal incentives, regulatory targets on emissions, innovative business models and public-private partnerships could change the game in favour of clean transportation.<sup>20</sup>

One thing needs to be absolutely clear. India cannot afford to ignore the nightmares of climate change, including wildfires, heatwaves, floods and cyclones any longer. Creating new capabilities in the EV sector, boosting fuel security and reducing fossil fuel imports, while looking at this world-wide transport transition as an opportunity, is the only way to win this race.

**Image Courtesy:** Susmita Saha and Divyanshoo Singh

## Endnotes

- 1 Ministry of Heavy Industries & Public Enterprises. (2019, July 8). Implementation of National Electric Mobility Mission Plan. *Press*

- Information Bureau. Retrieved June 20, 2022, from <https://bit.ly/3tHNYA7>
- 2 Ghosh, U. (2022, March 22). Soaring oil prices may fuel EV sales, save oil imports worth INR 1 lakh crore for India by 2030. *ETAuto.com*. Retrieved June 20, 2022, from <https://bit.ly/3mY8EjA>
  - 3 Air Quality Index-Fact Sheet. EPIC-India. (2020). Retrieved June 20, 2022, from <https://bit.ly/3tLYxBY>
  - 4 Khan, I., & Mehta, Y. (2022, February 18). How Can India Ensure a Higher EV Adoption Rate. *Inc42*. Retrieved June 20, 2022, from <https://bit.ly/3y6x94y>
  - 5 PTI. (2021, January 25). Budget 2021: Society of Manufacturers of Electric Vehicles calls for rejig of FAME II. *The New Indian Express*. Retrieved June 20, 2022, from <https://bit.ly/3QusoZA>
  - 6 Barik, S. (2022, April 21). Explained: What are the key proposals in Niti Aayog's draft battery swapping policy? *The Indian Express*. Retrieved June 20, 2022, from <https://bit.ly/3xBCGgc0>
  - 7 Saxena, R. (2022, April 5). India's EV Sales Seen Doubling Led by Battery-Powered Scooters. *Bloomberg.com*. Retrieved June 20, 2022, from <https://bloom.bg/3N4A2ai>
  - 8 Sorabjee, H. (2021, September 15). PLI scheme for auto sector gets green signal, big gains for EVs and FCEVs. *Autocar Professional*. Retrieved June 20, 2022, from <https://bit.ly/3n30Fli>
  - 9 Barik, S. (2021, September 20). India's Rs 26000 Cr PLI Scheme for auto manufacturing cuts out EV startups. *Entrackr*. Retrieved June 20, 2022, from <https://bit.ly/3O5BdHO>
  - 10 PTI. (2021, December 16). Electric vehicle mkt to see investment of Rs 94000 cr in next 5 years: Report. *The Economic Times*. Retrieved June 20, 2022, from <https://bit.ly/3O5BdHO>
  - 11 Bu, C. (2022, January 7). Lessons From Norway About How to Switch to Electric Vehicles. *Time*. Retrieved June 20, 2022, from <https://bit.ly/39EXwol>
  - 12 Best Practices in Electric Mobility. United Nations Industrial Development Organization (2020). Retrieved June 20, 2022, from <https://bit.ly/3zLyP4F>
  - 13 Best Practices in Electric Mobility. United Nations Industrial Development Organization (2020). Retrieved June 20, 2022, from <https://bit.ly/3zLyP4F>
  - 14 Emerging best practices for electric vehicle charging infrastructure. International Council on Clean Transportation (ICCT). (2017). Retrieved June 20, 2022, from <https://bit.ly/3zPyvSv>
  - 15 Moerenhout, T. (2021, July 28). Is India Ready for an Electric Vehicle Revolution? International Institute for Sustainable Development. Retrieved June 20, 2022, from <https://bit.ly/3zSXtAf>
  - 16 Global EV Outlook 2021: Accelerating ambitions despite the pandemic. IEA. (2021). Retrieved June 20, 2022, from <https://bit.ly/3xKRjQ6>
  - 17 Global EV Outlook 2021: Accelerating ambitions despite the pandemic. IEA. (2021). Retrieved June 20, 2022, from <https://bit.ly/3xKRjQ6>
  - 18 Global EV Outlook 2021: Accelerating ambitions despite the pandemic. IEA. (2021). Retrieved June 20, 2022, from <https://bit.ly/3xKRjQ6>
  - 19 Press Release (2022, May 23). Global electric car sales have continued their strong growth in 2022 after breaking records last year. IEA. Retrieved June 20, 2022, from <https://bit.ly/3y52ZhU>
  - 20 Bhatt, A., & Yadav, A. (2022, May 21). Where Are India's Electric Trucks? *The Wire*. Retrieved June 20, 2022, from <https://bit.ly/3tNjcWI>

# A Breath of Toxic Air

## Common Cause Petition on Green Mobility

Swapna Jha\*

Air pollution has again been named the greatest threat to human health in India in 2022, as it reduces life expectancy by five years.<sup>1</sup> The United States-based think tank which came out with the report, also offers some comparisons to dial up the horror. It hints that five years is an extraordinary number, given that child and maternal malnutrition cuts down average life expectancy by about 1.8 years, while smoking by 1.5 years.<sup>2</sup>

Yes, these are just numbers. They send human rights watchdogs scrambling to put the house in order and set corrective measures in motion. The release of the report has been followed up with a flurry of action.

“ **Common Cause has been striving to redirect the gaze of policymakers towards recognising health and clean environment as fundamental rights of citizens** ”

The National Human Rights Commission took suo motu cognisance of media reports on the US think tank study, asking the Union Ministry of Environment, Forest and Climate Change to respond to it.<sup>3</sup>

Research reports, time and again, have put the dangers of air pollution in black and white. Yet the narrative around it stays rhetorical. Common Cause has been making efforts to address the failure of government policies to incentivise the adoption of electric vehicles in the country. It has also been striving to redirect the gaze of policymakers towards recognising health and clean environment as fundamental rights of citizens.

In the following paragraphs, we list selected extracts from the petition filed by Common Cause, Centre for Public Interest Litigation and Jindal Naturecure Institute to ensure the protection of the citizens' right to health and clean environment guaranteed under article 14 and 21 of the Constitution.

To make tangible strides in decarbonising the transport sector, the petition filed in the Supreme Court in 2019, sought directions for the implementation



*Non-functional charging stations within months of installation in Vasant Kunj and Vasant Vihar areas reveal the current inadequacies in the public EV charging infrastructure*

of the recommendations of the National Electric Mobility Mission Plan (NEMMP), 2020. The policy roadmap was promulgated in

\* Swapna Jha is Senior Legal Consultant at Common Cause

2012 by the Ministry of Heavy Industries (nodal agency for the automobile sector).

The petition also prayed for the implementation of the recommendations of the report titled 'Zero Emission Vehicles: Towards a Policy Framework,' which was brought out by the Niti Aayog in September, 2018. The report had a battery of suggestions to address climate change events, air pollution and bring down the cost of fossil fuel imports.

Our plea lists various inadequacies in the implementation of the NEMMP. Although the government promulgated the Faster Adoption and Manufacturing of (Hybrid & Electric Vehicles in India (FAME India) Scheme in 2015, offering subsidies to consumers, it failed to mandate demand and build charging infrastructure. These are the two critical bottlenecks in the wide scale adoption of electric vehicles, as per consumer surveys conducted by an IIM Ahmedabad-UNEP study.

The petitioners also highlighted other crucial gaps in the scheme. The NEMMP had called for an investment of Rs 14,500 crore from the government to kickstart the demand and creation of charging infrastructure for green vehicles. However, in December, 2018, the government informed the Parliament that it had thus far allocated less than Rs 600 crore over a period of seven years towards the entire scheme.

**“ Governmental apathy and inaction in shifting to cleaner modes of transport is responsible for virtually turning our cities into ‘gas chambers’ ”**

Following are the edited and curated extracts from the petition, that trace the role of electric vehicles in cutting greenhouse gas emissions and improving air quality, India's green ambitions, the tragic health outcomes of pollution and other reasons to catalyse the adoption of electric vehicles. The complete petition can be read here: <https://bit.ly/3No2les>

### **The Petition:**

#### **India's Green Pledges**

Electric vehicles (EVs) are the preferred technology to alleviate the effects of pollution both in terms of the total 'life cycle' cost of ownership and 'life cycle' emission of pollution vis-a-vis fossil fuel based vehicles. The burning of fossil fuels has been leading to a rapid build-up of carbon and related green house gases into the atmosphere leading to the problem of global warming, climate change, and air pollution.

The Paris Agreement on Climate

Change ratified by India in 2016, requires the member countries to make binding commitments to curb carbon dioxide emissions to keep global average temperatures from rising above 1.5°C as compared to the pre-industrial years. India has committed to reduce its carbon emission intensity —emission per unit of GDP —by 33-35% from 2005 levels over 15 years. However, being the 3rd biggest emitter in the world, we as a nation, have been failing to curb the emissions. The unchecked increase in emissions is partly attributable to emissions from fossil fuel based vehicles. Unabated emissions from fossil fuel based vehicles has led to severe air pollution in our cities. Governmental apathy and inaction in shifting to cleaner modes of transport is responsible for virtually turning our cities into 'gas chambers'.

#### **Violation of Right to Health**

Pollution resulted in more than 23 lakh premature deaths in India in 2019, highest in the world, a study in The Lancet Planetary Health journal has revealed.

World Health Organization's report titled 'Air Pollution and Child Health: Prescribing Clean Air' shows that nearly all Indian children—98 per cent—breathe the unsafe air that exceeds WHO guidelines. Early exposure to air pollution affects brain and neurological development, and lung function.

## Niti Aayog on EVs

Historically, mobility and fossil fuels have been inextricably linked, with electric vehicles being successful only in a few niche markets. However, over the last decade, a collection of circumstances has conspired to create an opening for electric mobility to enter the mass market. As per Niti Aayog's report 'Policy Framework on Zero Emission Vehicles,' these forces include:

“(i) Climate change: The prospect of rapid global temperature increase has created the need for a reduction in the use of fossil fuels and the associated emissions. India has committed to cutting its greenhouse gas emissions intensity by 33% to 35% below 2005 levels by 2030.

(ii) Advances in renewable energy: Over the last decade, advances in wind and solar electricity generation technologies have drastically reduced their cost and introduced the possibility of clean, low-carbon and inexpensive grids. India proposes to add 175 GW of renewable energy capacity by 2020 and to achieve 40 per cent of its electricity generation from non-fossil sources by the same year.”

### Falling Costs

The Ministry of New & Renewable Energy has informed the Cabinet that record low Solar and Wind tariffs at Rupees



*Cab drivers wait for excruciating hours to charge their vehicles*

2.44/ unit have already been achieved<sup>4</sup>. This is much lower than the average tariff for coal or gas based power plants. As of March, 2018, total installed capacity of renewable energy is 69.2 GW, whereas total installed capacity of conventional sources of energy as of June, 2018, is 346 GW. India is on course to meet the target of commissioning 175 GW of renewable energy, including 100 GW of solar and 60 GW of wind power by 2022.

### Global Best Practices

Developed economies such as EU, USA, Japan, Nordic Countries, as well as developing economies such as China and India have all included EVs in their policies to lower their carbon emissions.

### India's Electric Vehicle Policy

Broadly, the comprehensive NEMMP-2020 was prepared after extensive research

and consultation with all stakeholders. It was promulgated by the nodal agency for the automobile sector i.e. the Ministry of Heavy Industries in 2012. The Plan already recommended the necessary incentives and disincentives. It aimed to achieve national fuel security by promoting hybrid and electric vehicles in the country. There was also an ambitious target to achieve 6-7 million sales of hybrid and electric vehicles year on year from 2020 onwards.

The policy was to provide fiscal and monetary incentives to kickstart the ZEV (zero-emission vehicle) industry. The thrust of the policy was to allow hybrid and electric vehicles to become the first choice for the purchasers. This would help replace the conventional vehicles and thus reduce liquid fuel consumption in the country from the automobile sector.

However, the FAME India scheme of 2015 fell woefully short of adopting the recommendations of NEMMP-2020. As a result, the objectives of the NEMMP-2020 have been defeated. The NEMMP-2020 envisioned that India would adopt close to 7 million electric vehicles by 2020, if its recommendations were adopted. However, as of January, 2019, only 0.263 million electric vehicles had been adopted in India pursuant to the FAME India scheme. FAME India's data shows that the 0.261 million electric vehicles sold thus far have resulted in total fuel savings of 39358338 litres and total reduction in CO<sub>2</sub> emissions of 98270937 kg.

### Prayers

Among many things, we prayed for directions to the government to adopt and implement the recommendations made under NEMMP-2020 and those of the Niti Aayog in its Zero Emission Vehicles policy framework. The implementation should specifically pertain to demand creation, creation of requisite charging infrastructure, and system of 'feebate.' There should be multiple measures initiated in this regard, including mandating assured demand and providing demand side incentives to consumers to bridge the gap in initial cost of

“**We prayed for directions to the government to adopt and implement the recommendations made under NEMMP-2020**”

acquisition. The government should also set standards for charging infrastructure, create requisite charging infrastructure for buses at bus depots, as well as in appropriate densities in the cities etc.

### Orders

Taking note of the petitioners' contentions, a Bench of then Chief Justice of India Ranjan Gogoi and Justice Sanjiv Khanna ordered the government to apprise it of the status of implementation of the FAME-India scheme in March 2019. Unfortunately, this important petition has been lying in the cold storage for quite some time.

### Conclusion

The World Health Organization calls air pollution a “public health emergency.”<sup>5</sup> Everyday toxic air is killing people and causing neonatal disorders. We do not need to look at studies to experience the suffocation and unease from inhaling toxic

urban air. Why no effective pollution controls are initiated despite the Capital breathing in poisonous air every day is anybody's guess. Since its 2018 report, even the Niti Aayog, in other successive action plans and campaigns ('Breathe India' etc) has highlighted the urgency of a green transport switch. This is prescribed as an antidote to air pollution and the climate crisis. The government needs to listen. Or the death and disease burden will weigh too heavy.

**Image Courtesy:** Divyanshoo Singh and Anshi Beohar

### Endnotes

- 1 Air Quality Index-Fact Sheet. EPIC-India. (2020). Retrieved June 29, 2022, from <https://bit.ly/3tLYxBY>
- 2 Air Quality Index-Fact Sheet. EPIC-India. (2020). Retrieved June 29, 2022, from <https://bit.ly/3tLYxBY>
- 3 Scroll Staff. (2022, June 25). Centre gets NHRC notice on report that air pollution shortens lifespan of Indians by five years. *Scroll.in*. Retrieved June 29, 2022, from <https://bit.ly/3AdBmVj>
- 4 Dash, J. (2018, November 14). India to attract investments worth \$80 bn in renewable energy: Report. *Business Standard*. Retrieved June 29, 2022, from <https://bit.ly/2Tca4XH>
- 5 Gupta-Smith, V., & Neira, M. Episode #66 - Air pollution, a public health emergency. World Health Organization. (2022). Retrieved June 29, 2022, from <https://bit.ly/3bCwChS>

# COMMON CAUSE UPDATES

## Supreme Court Cases

**Petition to Completely Ban Export of Iron Ore:** Common Cause filed a writ petition in April 2021, to completely ban the export of iron ore (whether in the form of pellets or otherwise). Alternatively, it sought the levy of export duty of 30%, on the export of iron ore in all forms, including pellets (except pellets manufactured and exported by KIOCL, formerly known as Kudremukh Iron Ore Company Limited). The petition also prayed to initiate proceedings under Section 11 of the Foreign Trade (Development & Regulation) Act, 1992 and Section 135(1) of the Customs Act, 1962. In addition, it sought the levy of appropriate penalty as per law against mining companies exporting iron ore pellets in contravention of the provisions of India's export policy. By exporting iron ore pellets, they have been evading the duty chargeable on the commodity. In addition, the petition prayed for a thorough and independent investigation into the role of public officials in allowing the same. Notice was issued on September 24, 2021, directing the respondents to file their response within four weeks from the date of the order. The UOI filed its response on November 11, 2021, which was taken on record by the Court. The Union of India was directed

to provide a copy of the counter affidavit to the counsel for the petitioner. Rejoinder affidavit, if any, was directed to be filed, in the meantime. The matter was taken up on February 18, 2022 when upon hearing the counsel, the Court ordered the matter to be listed on March 9, 2022 for final disposal. Further date was granted in the matter on March 22, 2022.

However, on May 21, 2022 the government increased the export duty from 0% to 45% on iron ore pellets.

### **Petition Challenging Constitutional Validity of Sedition:**

Sedition a colonial law, used to suppress dissent by the British in India, continues to be heavily abused by the law enforcement authorities against citizens for exercising their freedom of speech and expression.

Common Cause filed a petition in 2021, challenging the constitutional validity of sedition under Section 124A of the Indian Penal Code, 1860, as being violative of Articles 14, 19(1)(a), & 21 of the Constitution of India.

In *Kedar Nath Singh v State of Bihar*, the constitutionality of this Section was tested and upheld. The offence of sedition was presumed to be complete if the activities tended to create public disorder or disturbance of law

and order or public peace.

In its welcome order on May 11, 2022, the Supreme Court granted interim stay on the use of the provision by governments. It suspended pending criminal trials and court proceedings under Section 124A (sedition) and allowed the Union of India to reconsider the law of the colonial times.

The order stated that the Union of India had agreed with the prima facie opinion expressed by Supreme Court, that the rigors of Section 124A of IPC is not in tune with the current social milieu. Rather, the Section was intended for a time when India was under the colonial regime. The Union of India, in its May 9, 2022 affidavit, had agreed to re-examine and re-consider the provision of section 124A of the Indian Penal Code before the Competent Forum. The Court adjudicated that it would be appropriate not to continue the usage of the aforesaid provision of law by the governments. In addition, it said that the persons accused in fresh cases were free to approach courts for relief, which were asked to examine these cases, taking into account the present order passed as well as the clear stand taken by the Union of India.

The matter is likely to be listed in the third week of July.



Common Cause is in the vanguard of India’s anti-corruption movement and the fight for stronger public institutions since the 1980s. We make democratic interventions through PILs and bold initiatives. Our landmark PILs include those for the cancellation of 2G licenses and captive coal block allocations, against the criminalisation of politics, for Internet freedom and patients’ right to die with dignity. Please visit [commoncause.in](http://commoncause.in) for more information on our mission and objectives. We also run special programmes on police reforms and cleaner elections.

Common Cause runs mainly on donations and contributions from well-wishers. Your support enables us to research and pursue more ideas for a better India.

Now you can donate using our new payment gateway.

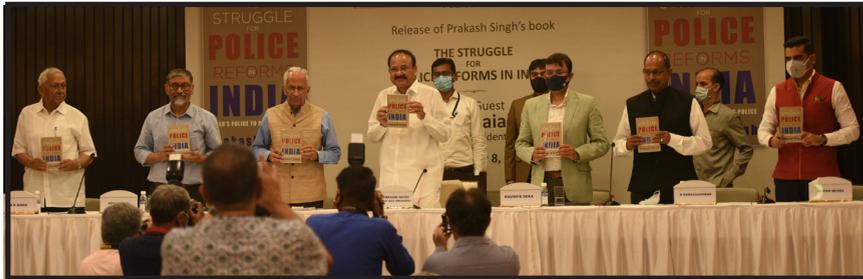
You may also deposit directly into our bank account (details are given below) and send us an email at [commoncauseindia@gmail.com](mailto:commoncauseindia@gmail.com), providing information such as donor’s name, address and PAN number for issuance of the donation receipt.

**Name: Common Cause**  
**Bank: IndusInd Bank**  
**Branch: Vasant Kunj, New Delhi**  
**S.B. Account No.: 100054373678**  
**IFSC Code: INDB0000161**  
**Address: Common Cause,**  
**Common Cause House, 5, Institutional Area,**  
**Nelson Mandela Marg, Vasant Kunj, New Delhi - 11 00 70**  
**(Phone numbers: 011 26131313 and 45152796)**

# COMMON CAUSE EVENTS

Book Release: The Struggle for Police Reforms in India -- May 8, 2022

Abhishek Rana\*



Speakers at Mr Prakash Singh's (third from left) book launch event included the Vice President of India Mr M Venkaiah Naidu (fourth from left), Mr N Ramachandran (second from right) and Dr Vipul Mudgal (second from left), among others



Mr Prakash Singh (centre) spoke about the importance of the Supreme Court judgment of 2006 in the history of police reforms in India

“In the beginning, if somebody had told that this (struggle for police reforms) is not going to end even in your lifetime, may be I would not have embarked on the project,” rued Indian Police Foundation (IPF) Chairman Mr Prakash Singh, former DGP, UP, Assam and BSF, at the launch event of his book *The Struggle for Police Reforms in India*. The event was hosted by IPF, in collaboration with Common Cause and Rupa Publications at the India International Centre on May 8, 2022.

The book is a treatise on the protracted but determined struggle undertaken by Mr Singh to bring about police reforms in the country. It is set against the historical backdrop of the origin of the Indian Police, while following the institution's journey from the British rule to the post-Independence era. Capturing the struggles of diverse sections of people and groups, the book offers insights into the author's efforts to bring about transformational changes in the Indian police force.

The speakers at the event included the Vice President of India Mr M Venkaiah Naidu, IPF President Mr N Ramachandran, Dr Vipul Mudgal, Director, Common Cause, former DGP Mr NK Singh, Executive Editor, *India Today*, Mr Kaushik Deka and Mr Kapish Mehra, Managing Director, Rupa & Co.

Mr Ramachandran, in his welcome speech, appreciated the efforts of the Vice President in his support of IPF and acknowledged how Mr Naidu has spoken very strongly in favour of good governance, good policing and reforms in the police force time and again.

The Vice-President acknowledged that the political will to usher in police reforms is lacking at various levels. He surmised this to be true as many states haven't undertaken police reforms despite the matter being taken up at the Supreme Court and a decisive judgment. “I suggest that administrators, politicians and bureaucracy at various levels read this book, and try to do whatever is possible at their level,” he said.

Dr Mudgal discussed how the cause of police reforms should be everybody's business and not just the concern of retired police officers and selected politicians.

\* Abhishek Rana is an intern at Common Cause

“India cannot become a super power, with an antiquated and brutal police force,” he said.

Mr Deka pointed out that although police forces are often blamed for being slow, the reverse can be seen in isolated cases. He cited the instance of the Assam Police arresting one Gujarat MLA within 24 hours of filing an FIR, after travelling 2000 miles. “In this environment, the book is a timely reminder for

the police forces on what they should exactly do.” He added: “The bitter truth is that political interferences have become blatant. Lack of infrastructure and adverse working conditions are crippling the efficiency of the police forces in the country.”

Despite a consistent deluge of news documenting the arbitrary and brutal acts of the police force, the need to forge ahead with transformation from within

was felt by everybody. Speakers also conceded that the drawn out battle for police reforms hasn’t been a fruitless exercise. “Whenever the history of police is written, the Supreme Court judgment would be permanently there,” said Mr Singh. He went on to conclude that one of the biggest gains from the crusade has been the arousal of public consciousness on the need for police reforms in this country.

## Meeting on the India Justice Report ---- May 17, 2022

**Radhika Jha\***

Common Cause hosted a meeting on the India Justice Report (IJR) on May 17, 2022. Apart from Common Cause, the IJR team had participants from the Commonwealth Human Rights Initiative (CHRI) and Vidhi Centre for Legal Policy. The highlight of the meeting was a discussion with the Director cum Chief Forensic Scientist of the Directorate of Forensic Science Services, Mr SK Jain.

The agenda of the meeting was to explore the amount of information on forensic science laboratories and infrastructure available at the national as well as the state level. This would help the team decide on the possibility of including forensic sciences as a separate pillar for access to justice in the forthcoming edition of IJR.

Mr Jain gave a presentation on the scope, objective and

functioning of the forensic science laboratories in the country and provided a comprehensive picture of the various technologies available and in use at these facilities. He also explained how the forensics departments are interlinked with various police departments as well as the judiciary, during the investigation of a case. Various limitations of the forensics infrastructure and their functioning in the country, particularly at the

state and district levels were deliberated on. The presentation was followed by a question-and-answer session, in which questions related to the ground reality and accessibility of information were raised. The meeting concluded with the IJR team presenting a set of questions to Mr Jain regarding the capacity of forensics departments in the states, which he promised to forward to the relevant authorities and provide crucial data to the team.



*Director cum Chief Forensic Scientist Mr SK Jain gave a presentation on the scope, objective and functioning of the forensic science laboratories in the country.*

\* Radhika Jha is Research Executive at Common Cause

## MIRA Coalition Meeting --- May 13, 2022

Anshi Beohar\*



Mr Nikhil Dey (standing) of Mazdoor Kisan Shakti Sangathan highlighted the need for strengthening accountability in the extractive sector

As a member of the steering committee of Mineral Inheritors Rights Association (MIRA), Common Cause participated in a full-day MIRA Coalition Meeting on May 13, 2022. In order to strengthen MIRA, roundtable discussions were conducted with specific inputs from members on core areas of work.

Mr Sreedhar Ramamurthi (EnviroNics Trust), Mr Rahul Basu (Goa Foundation) and Mr Nikhil Dey (Mazdoor Kisan Shakti Sangathan), among others, highlighted various issues concerning the extractive sector. They discussed themes of transparency, accountability,

use of funds, environmental costs and human exploitation in the extractive sector and debated whether mining at such gigantic scales was needed at all. Nishant Alag of EnviroNics Trust

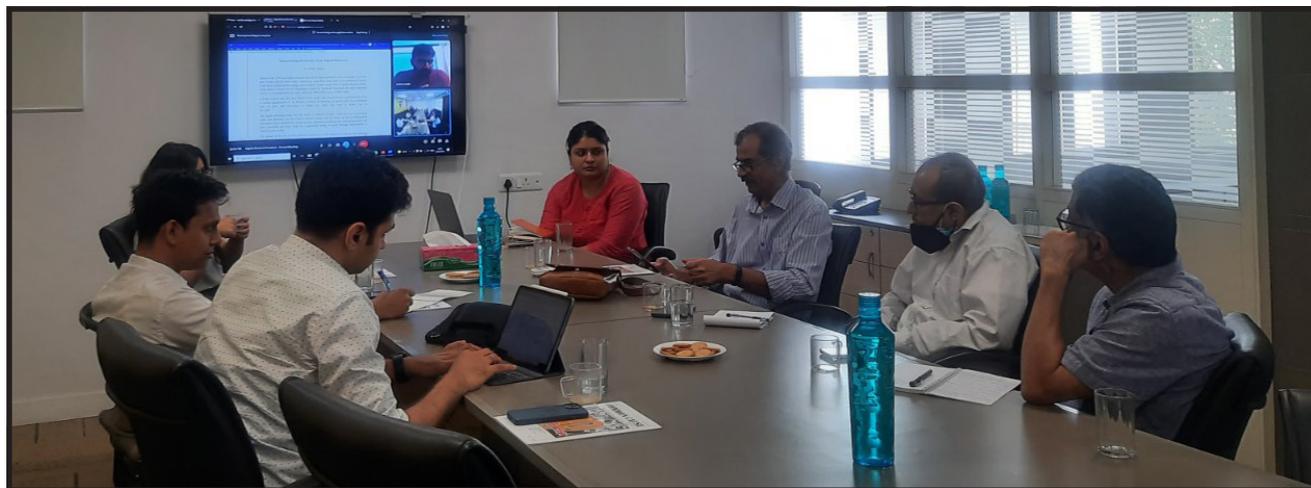
“ **Discussions were held on themes of transparency, accountability, use of funds, environmental costs and human exploitation in the extractive sector** ”

talked about ways to ensure the efficient use of funds with the District Mineral Foundation for the benefits of mining-affected communities.

MIRA is an emerging coalition of diverse civil society groups and networks in India, working towards ensuring democracy, social justice, equity, transparency, and accountability in the extractive sector governance. It advocates for a country with a fair and effective governance over minerals and natural resources, which are a shared inheritance with the state as trustee for the people, especially future generations.

---

\* Anshi Beohar is Legal Consultant (Research) at Common Cause



*The Common Cause-IFF discussion explored the impact of digital platforms in influencing electoral processes*

The Common Cause team held a meeting with the Internet Freedom Foundation (IFF), the Association for Democratic Reforms (ADR) and the Free Software Movement of India (FSMI) on May 20, 2022 at the Common Cause House. The discussion was around the impact of digital platforms in influencing electoral processes and the safeguards that need to be put in for its regulation and monitoring. The meeting was attended by Maj Gen Anil Verma (Retd), Head, ADR, Dr Vipul Mudgal, Director, Common Cause, Mr Apar Gupta, Executive Director, IFF, Mr Prateek Waghre, Policy Director, IFF and Mr Srinivas Kodali of FSMI, among others.

The meeting covered various issues under the larger umbrella

“ ***The meeting covered various issues under the larger umbrella of digital conduct during elections, including a detailed report that may be submitted to the Election Commission of India***

of digital conduct during elections, including a detailed report that may be submitted to the Election Commission of India. Discussions veered on topics such as engagement strategies with opposition parties,

MPs and state governments, the nature and mode of public awareness campaigns, and the long-term possibility of approaching the Court for guidelines on the issue. Logistical concerns were also touched upon, such as the other potential collaborators for the campaign, funding strategies for a sustainable advocacy effort, short term as well as long-term timelines and other possible advocacy tools.

” There was a consensus on the need for widespread advocacy around this issue. It was also felt that we should be able to cover issues such as hate speech on digital platforms. It was decided to prepare a report and involve more civil society organisations in the upcoming brainstorming.

\* Radhika Jha is Research Executive at Common Cause

# RED LIGHTS IN THE GREEN JOURNEY

## Main Findings of a Vital UN Report

The electric car revolution is happening now. More and more countries around the world, especially advanced economies are cruising on the green lane, even as heat wave alerts are being sounded across Europe. No one dares to deny that the present climate crisis is the greatest challenge facing civilisation and the time to act was yesterday. But as more and more cars, buses, two and three wheelers – in fact electric vehicles of all configurations --- rev up and hit the roads, new batteries powering these automobiles need to come off assembly lines. Therein lies the conundrum. These batteries are slated to fuel a new transit revolution, but they will also be energised by scarce and expensive metals, yet to be harvested. Their potential to act as a salve for a wounded, smouldering planet is mired in environmental and social costs, inevitably shelled out by poorer nations that are being mostly denied the spoils of the new war on fossil fuels (This issue has been discussed in detail in the next article by Anshi Beohar). Lithium-ion batteries (LIB), the dominant technology, is pushing for the mining of chemical elements with ruthless consequences.

Following are excerpts from the United Nation's report 'Commodities at a glance:

Special issue on strategic battery raw materials,' that bring together basic information regarding LIB, mainly its components, LIB manufacturing countries, raw materials used and impact of production activities on the environment. To read the full report, click here: <https://bit.ly/3xdKUww>

### Historical Background of Battery Raw Materials

The principal materials used in LIBs are cobalt, lithium, manganese and graphite (allotrope of carbon).

#### Cobalt

Cobalt is the key element in several forms of clean energy production technology applications...

Cobalt occurs in the earth crust or sometimes relatively near the surface, mostly in combination with nickel and/or copper. The world terrestrial cobalt resources are estimated to be about 25 million tons. Most of these resources are in sediment-hosted stratiform copper deposits in the Democratic Republic of the Congo and Zambia (Africa's copper belt); nickel-bearing laterite deposits in Australia and nearby island countries and Cuba; and magmatic nickel-copper sulphide deposits hosted in mafic and ultramafic rocks in

Australia, Canada, Russia, and the United States.

#### Lithium

Lithium is highly reactive with water and forms strong hydroxide solutions, yielding lithium hydroxide and hydrogen gas. Lithium hydroxide is used in the production of cathode materials for lithium ion batteries... Lithium is also formed in brine deposits as lithium chloride salts. The main type of brine deposit mined for lithium is found in interior saline drainage basins...

Lithium resources are mainly concentrated in Chile, Bolivia and Argentina, also known as the lithium triangle. Over 50 per cent of lithium resources are believed to be located in the lithium triangle. Total world resources are estimated to be about 62 million tons...The largest lithium reserves are in Chile, which holds approximately 58 per cent of the world total. Australia and Argentina hold approximately 19 per cent and 14 per cent in the form of rock and brine deposits respectively...

A substantial part of lithium is used in the fast-growing sector of rechargeable batteries. For example, lithium salt, such as LiPF<sub>6</sub> in an organic solution, is used as an electrolyte in lithium-ion battery technology. The application of lithium in batteries

ranges from small rechargeable batteries used for electronic devices such as mobile phones, laptops, cameras to high power rechargeable lithium storage batteries for electric vehicles and power storage.

### **Natural graphite**

The total identified world graphite resources are estimated to be approximately 1.5 billion tons of which approximately one-half is flake graphite. Global graphite reserves are estimated at 300 million tons. The largest reserves of natural graphite are in Turkey, China and Brazil accounting for about 31 per cent, 25 per cent and 24 per cent respectively of the world total...

The use of graphite is growing in emerging renewable technology such as large-scale fuel cell, anodes in rechargeable batteries, solar cells and nuclear reactors, which indirectly contributes to the mitigation of GHGs.

### **Manganese**

The total world land-based manganese resources including reserves and rocks sufficiently enriched in manganese to be ores in the future are large but unevenly distributed across the earth. The largest resources of land based manganese are in South Africa accounting for about 74 per cent of the world total, and Ukraine accounts for about 10 per cent...

Land-based world manganese reserves are estimated at 760

million tons, with South Africa, Ukraine and Brazil accounting for almost 63 per cent of the total...The most important non-metallurgical application of manganese is in disposable and rechargeable batteries. It is favoured in cathode chemistries in the LIB because it offers energy density, power output, thermal stability, faster charging time, and shelf life. More recently manganese is increasingly being used in making cathode materials in NMC lithium ion batteries.

### **Production of Raw Materials**

A few countries dominate production of the raw materials used in LIBs: cobalt is mainly produced in the Democratic Republic of the Congo, lithium in Australia and Chile, graphite in China and Brazil, and manganese in South Africa and Australia.

### **Drivers of Production**

The underlying factor influencing the increasing production of cobalt, lithium, manganese and natural graphite is the rising demand for electric vehicles. The latter, in turn, is largely driven by policies that encourage the mitigation of greenhouse gases coupled with incentives for zero-and low-emissions vehicles, economic instruments that help bridge the cost gap between electric and conventional vehicles and support for the deployment of charging infrastructure...

### **Challenges of Exploitation**

The exploitation of raw materials discussed in this report can have social and environmental implications. For example, most of the cobalt supplied to global markets originates from the Democratic Republic of the Congo, of which 20 per cent comes from artisanal mines where child labour and human rights issues have been identified. Up to 40,000 children are estimated to be working in extremely dangerous conditions, with inadequate safety equipment, for very little money in the mines in Southern Katanga. The children are exposed to multiple physical risks and psychological violations and abuse, only to earn a meagre income to support their families...

The two forms of lithium mining (brine and rock extraction) also present social and environmental risks. For example, indigenous communities that have lived in the Andean region of Chile, Bolivia and Argentina (which holds more than half the world's supply of lithium beneath its salt flats) for centuries must contend with miners for access to communal land and water.

The mining industry depends on a large amount of groundwater in one of the driest desert regions in the world to pump out brines from drilled wells. Some estimates show that approximately 1.9 million litres of water is needed to produce a tonne of lithium.

# GREEN VEHICLES HAVE DIRT ON THEM?

Mining Key Ingredients of EV Power packs is Costly

Anshi Beohar\*

The Sustainable Development Goals (SDGs) offer a blueprint to achieve a better and more sustainable future for all<sup>1</sup>. They address challenges such as poverty, inequality, climate change, environmental degradation, peace and justice at a global level. Of these SDGs, Goal 7 talks about ensuring access to affordable, reliable, sustainable and modern energy for all. Therefore, global efforts are needed to discontinue fossil fuels as the major energy source to achieve this goal.

Achieving global climate goals also follows a clear plan of action. The world must decarbonise to that end. Adoption of electric vehicles is one of the easiest routes to reach this green destination. What underpins the electric vehicle ecosystem? Improved air quality, reduced greenhouse gas emissions and a better planet to live in.

But setting your sights on a fossil-fuel free future is one thing. Holding the hands of communities through a just energy transition is another. Putting an end to the fossil fuel economy and looking ahead to a decarbonised future may be noble goals but that path is often littered with deep



human exploitation, including deplorable child labour practices, as well as horrific environmental risks.

## Green Vehicles and their Emissions

It's true that one cannot exist in the present world and deny that it is paralysed by a climate crisis. Automobiles with internal combustion engines (ICE) produce direct emissions through the tailpipe, as well as through evaporation from the vehicle's fuel system. All of it contributes to air toxicity that is choking the planet. Equally hazardous is the extraction of fossil fuel.

On the other hand, electric vehicles, plug-in hybrid electric

vehicles (PHEVs), and hybrid electric vehicles (HEVs) produce lower tailpipe emissions while battery electric vehicles (BEVs), running only on electricity, have zero tailpipe emissions and are generally more efficient.

Therefore, it is in everyone's interest to spur the growth of an electric fleet, slated to become more green as time passes. In fact, India's first draft of the Battery Swapping Policy 2022, released by Niti Aayog,<sup>2</sup> creates a framework for greater interoperability while safeguarding the innovation potential for and efficiency of the EV battery ecosystem. This is a substantial push for faster EV adoption. A sharp increase in the

\*Anshi Beohar is Legal Consultant (Research) at Common Cause

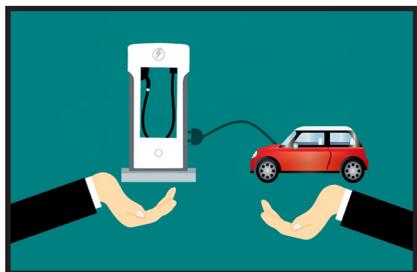
sale of electric vehicles has also been observed this year.<sup>3</sup>

## Hunger for Battery Raw Materials

However, large-scale adoption of EVs, despite its undeniable role in climate change mitigation, will also mean something else. It will entail a meteoric rise in investments to secure key minerals essential to clean energy technologies, such as batteries. Cobalt, lithium, nickel and 'rare earth elements' are the most commonly considered transition minerals.

Make no mistake. Historically, mining of key components to build the powerful pillars of modern civilisation has neither been just, nor fair. Already, mining of metal and minerals like nickel, cobalt, lithium, manganese, aluminium, etc. is on the rise with soaring demand. As expected, the extraction activities of precious minerals powering electric batteries have also been accompanied with news reports of human rights abuses, environmental harms and widespread corruption.

As the global appetite for transition minerals grow ravenous, the scenario gets bleaker for most members of



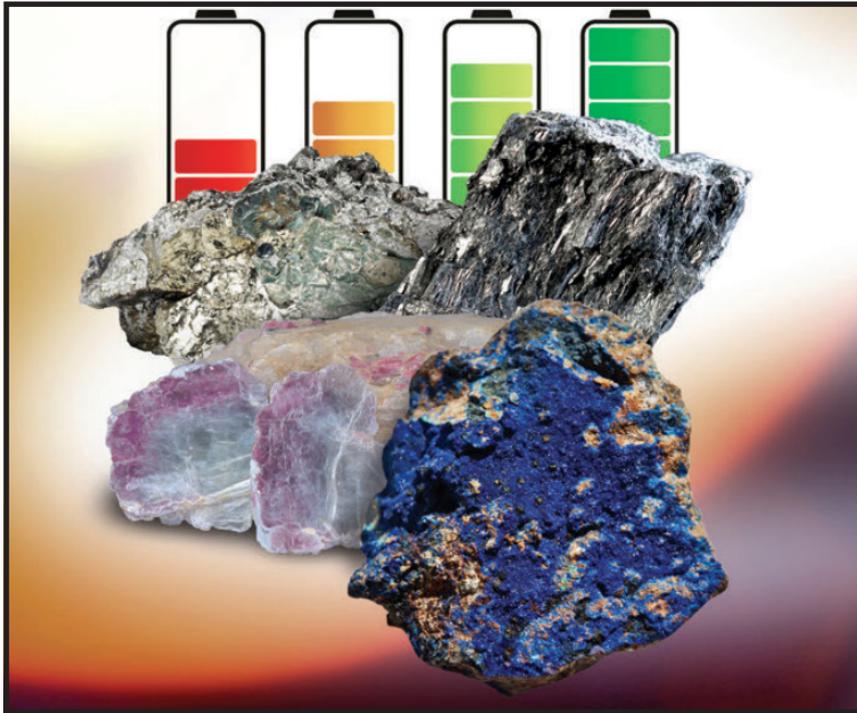
communities sitting on the natural deposits. The scale of demand, as well as human misery is unimaginable, as policymakers fear missing the deadline to decarbonise transit. Global lithium demand could increase by 40 times by 2040, and demand for other battery metals like cobalt, nickel, manganese and rare earth elements (REE) is also set to exponentially rise.<sup>4</sup> Simultaneously, several investigations into the living and working conditions of miners in these regions paint a dystopian picture. Miners have lamented: "The salary is very, very small. ... The mine makes so much and we make so little."<sup>5</sup> Accounts have surfaced about abysmal labour practices: If miners take a day off, they claim that money is deducted from their wages. If they are sick and miss more than two days in a month, more money is cut.<sup>6</sup>

Miseries such as these are inflicted regularly upon some of the poorest people in the world. The UNCTAD (United Nations Conference on Trade and Development) noted that mining for battery ingredients is often done in developing countries (report link provided in the previous article). Over 60% of cobalt is mined in the Democratic Republic of the Congo, the nation rife with human rights abuses, chief among them being child labour in mines and public health concerns. Over 50% of the global lithium resources are

at the lithium triangle, Chile, Bolivia and Argentina, where indigenous communities are facing challenges to their life, livelihood and livestock due to contamination of surface water, groundwater depletion, soil contamination and overall environmental degradation caused by lithium mining.

While we dream of a carbon-neutral future, clean air and pollution-free roads, the costs continue to be borne by the have-nots historically. Impoverished populations of resource-rich regions continue to face gross human-rights violations, ruinous poverty and health hazards. Miners regularly inhale toxic dust and experience terrible health outcomes owing to long exposure to pollution from both mining and smelting operations. For instance, the extraction of nickel, predominately mined in Australia, Canada, Indonesia, Russia and the Philippines have had negative impacts on surrounding populations. Both sulphide and laterite nickel mining are associated with pollution and human rights abuses, especially for indigenous peoples, from Russia to New Caledonia.<sup>7</sup> High doses of another element, cobalt, produced in countries like Congo, Zambia and Cuba, have been associated with lung disease and heart failure. There are already investigations on cobalt's possible link to cancer.<sup>8</sup>

It is the same story that gets



*The extraction of minerals powering electric batteries has been accompanied with news of human rights abuses and environmental harm.*

repeated often, and frequently in cycles. Wealthier parts of the world are in pole positions to participate in economies powered by new technologies (a green one this time), while poorer people continue to turn the wheels of change, while being rewarded with destroyed landscapes, contaminated water and disease burden. As the electric vehicle juggernaut rolls on, so do destruction of natural resources, livelihoods and communities. Lithium mining in Chile's Salar de Atacama is said to have consumed 65% of the region's water. In Argentina 33 indigenous communities have resisted the advance of lithium mining with disputes over their consent and decreased water

for humans, livestock and crop irrigation. In Chile there were protests and court cases by the indigenous peoples of the Atacama Salt Flats over access to water and a lack of consent.<sup>9</sup>

No one denies that the switch from fossil fuel to renewable-energy propelled sustainable transportation is the need of the hour. But we will miss the whole point if the transition isn't just or safe. The report 'A Material Transition' goes on to say: "Any transition that focuses only on switching fossil fuels with renewable energies, without addressing the undemocratic and unequal ways energy is produced and accessed, will do little to address the structural issues at

the heart of the climate crisis."<sup>10</sup>

## Is all Electric Power Clean?

As long as fossil-fuel continues to generate electricity, thinking of EVs being powered completely by clean fuel wouldn't be correct. We cannot disregard that electric power plants also produce emissions. A significant percentage of electricity generated still comes from burning fossil fuels. Right now, only 36% of global electricity generation is reliant on renewable and nuclear sources of energy. And if we look at the overall energy consumption patterns, which includes transport and heating, renewable and nuclear sources of energy contribute less than 16%<sup>11</sup>.

So, the large chunk of coal generated power in the present scenario contributes to pollution in a big way. About 50% of the Indian power plants do not meet the 100% fly ash utilisation target even two decades after MoEF&CC regulations<sup>12</sup>. Among the states with large coal-based power capacity, Chhattisgarh, Uttar Pradesh, Madhya Pradesh, Andhra Pradesh, Maharashtra and Odisha have a huge backlog, and the improper disposal significantly contributes to air pollution.

In addition, studies suggest that in regions that depend heavily on fossil fuels like coal for electricity generation, EVs may not demonstrate a strong

well-to-wheel emissions benefit. Well-to-wheel emissions include all emissions related to fuel production, processing, distribution, and use of the vehicle. The actual emission-reduction benefits associated with plug-in electric vehicles are also dependent on multiple other factors, such as the electricity generation fuel mix, the time of day (charging), the vehicle type, etc.<sup>13</sup>

## **Green Mobility: Hazards and Challenges**

The EV ecosystem brings hope as humanity stands precariously balanced against a climate disaster. However, its inherent limitations and perils also need to be under intense scrutiny. It is the only way experts can access clear metrics, data and insights to guide their redressal action. For instance, lithium-ion batteries have structural vulnerabilities. They are very sensitive to extreme temperatures and must not be overcharged or over-discharged<sup>14</sup>. Also, these batteries must never be exposed to water as lithium is extremely reactive with water.

Recently, India saw several instances of EVs going up in flames. The Ministry of Road Transport and Highways tasked DRDO's (Defence Research Development Organisation) lab CFEES (Centre for Fire, Explosive and Environment Safety) to investigate the issue. Additionally, the transport minister has assured strict action against

negligent parties, including imposition of penalty and recall of the defective vehicles.<sup>15</sup> The preliminary findings have identified issues with batteries and the use of low-grade parts/products in nearly all of the automobiles involved in the incidents.

The battery woes do not end here. Batteries, near the end of their life, also become hazardous.<sup>16</sup> They need to be disposed of and recycled carefully. Defunct batteries may contain cobalt, lithium, manganese oxide, nickel, electrolytes, etc. Metals like lithium spontaneously react with moisture and can cause explosions.

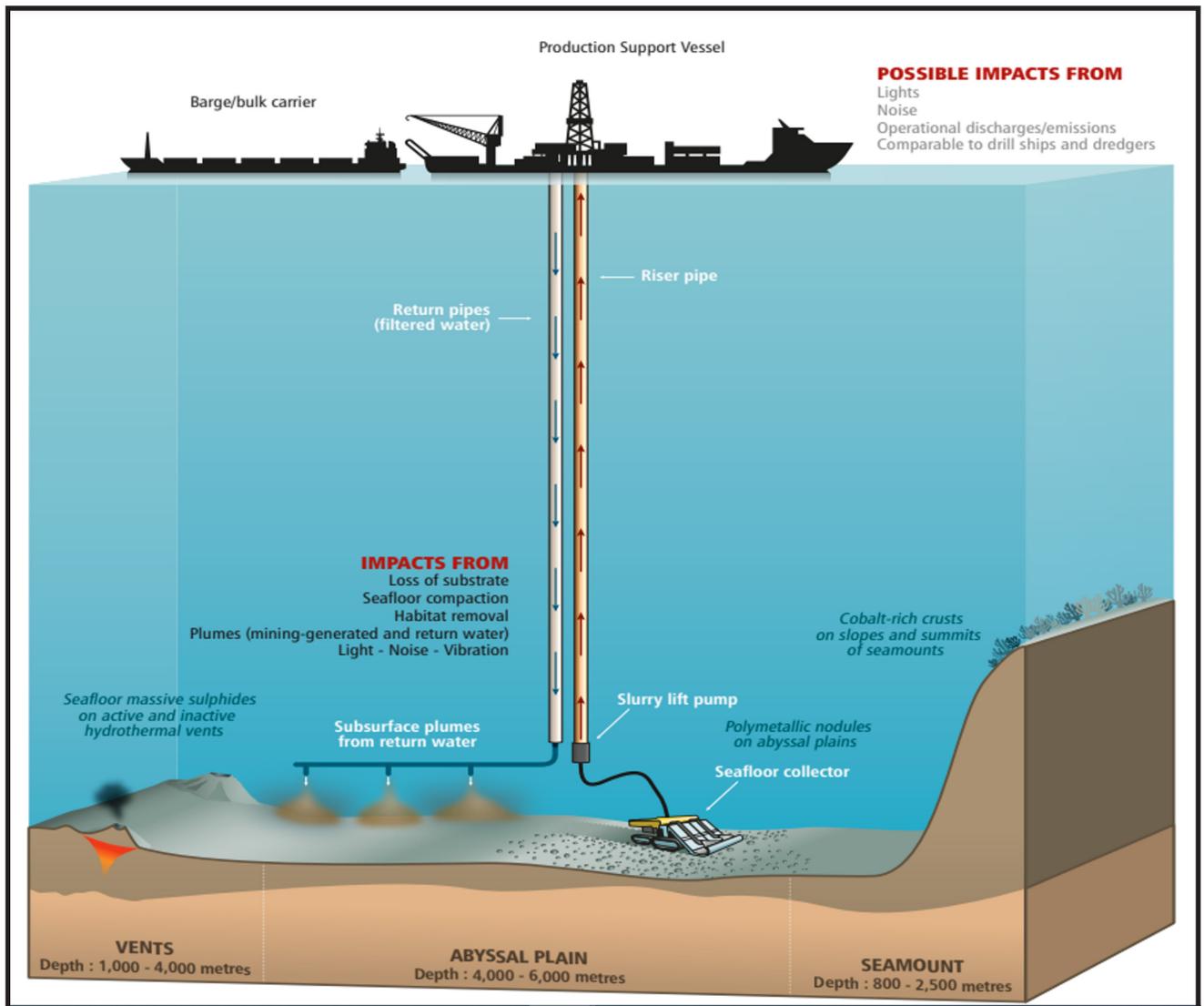
## **Deep Sea Mining: An Ocean of Trouble?**

We have already discussed the threats of land-based mining. But new and uncharted areas are also on the radar of mining companies, as the cause of clean energy batteries is furthered. The deep ocean floor is carpeted with rocks that contain green technology minerals such as copper, nickel, manganese and cobalt. To harvest these key components from the rocks or polymetallic nodules, a deep-sea mining industry is already in the works. There are reports of some countries and companies hoping to commence mining in international waters as soon as 2023. This may have far-reaching consequences, fear critics and conservationist groups.

Already coordinates of the green transition metals of the ocean are available. In the Clarion-Clipperton Zone of the Pacific Ocean, large deposits of polymetallic nodules were found that cover vast areas of the seafloor.<sup>17</sup> These orbs contain high manganese and iron hydroxides along with nickel, copper and cobalt as well as magnesium, silica, etc.<sup>18</sup> The system used for collection of these metals and minerals is operated remotely and the greater depth in seabed poses higher challenges. The nodules are harvested from the ocean floor and the collected material is pumped to a surface vessel.<sup>19</sup> Once this material reaches the ship, it undergoes processing and the waste content is then discharged near the seafloor.

This process emits light, sound and disturbs the sub-sea life, including any marine life in the area. Additionally, the machinery used in the process will emit pollutants in the water as well as in the air. These activities would not only affect marine life and seabed geomorphology but they will also contribute heavily to the anthropogenic disasters in the oceans<sup>20</sup>.

However, policymakers are keen on meeting their ambitious green targets and may be foreseeing a transition mineral shortage. Last July, India's Ministry of Earth Sciences received an approval for the "Deep Ocean Mission", with a view to explore the deep ocean for resources and



A schematic diagram showing the process and impact of deep sea mining

develop deep sea technologies for sustainable use of ocean resources.<sup>21</sup>

Despite trying to survive in a burning planet everyone needs to keep in mind that oceans are the last frontier against exploitation of natural resources. Whatever industry proponents may say about the safety and lower carbon footprint of deep sea mining, the uncertainties

around biodiversity loss and other dangers accelerated by such processes cannot be ignored. These activities have to be strictly regulated and at best, avoided. The United Nations has proclaimed 2021-2030, a Decade of Ocean Science for Sustainable Development to support efforts to reverse the cycle of decline in ocean health and create a framework

to improve the conditions for sustainable development of the ocean<sup>22</sup>. Even global auto and tech giants are taking a step back. Companies like Google, BMW, Volvo, Samsung SDI, etc. have taken a strong stand against the use of minerals sourced from the ocean and have encouraged a moratorium on deep-sea mining.<sup>23</sup>

## Recycle: Coming Full Circle

Environmentalists have been searching high and low for an answer to combat the shortage of critical minerals, without causing large-scale ecosystem devastation. The solution to address both the giant piles of battery wastage and the challenges of new extraction seems to lie in recycling.

Due to Indian policies supporting EVs, the sales penetration is expected to increase to 30% for private cars, 70% for commercial cars, 40% for buses and 80% for two wheelers (2Ws) and three wheelers by 2030<sup>24</sup>. EVs will hit the roads faster for other reasons too. Increased awareness about the environment and other market forces could make us have 1,45,000 tonnes of used EV batteries by 2030.<sup>25</sup> The global lithium-ion battery market size was valued at USD 41.97 billion in 2021<sup>26</sup> and the Indian lithium-ion battery market was valued at USD 1.66 billion in 2020 and is predicted to reach USD 4.85 billion by 2027<sup>27</sup>.

The sweep and scale of this market can only be rationalised if governments and industry leaders give top billing to recycling. It may not address the stratospheric market demand singlehandedly at present, but can bring down the load of freshly-mined clean energy minerals. According to a report commissioned by Earthworks, assuming that 100% of dead

EV batteries are collected for recycling and mineral recovery rates, especially for lithium, recycling itself could meet up to 25% of the EV industry's lithium demand and 35% of its cobalt and nickel needs by 2040.<sup>28</sup>

The world is going through what can be called a 'perfect storm.' The third and final section of the IPCC (Intergovernmental Panel on Climate Change)'s Sixth Assessment Report, has sounded the red alert on climate action, saying that in 2010-2019, the average annual greenhouse gas (GHG) emission levels were the highest in human history. It prescribed the urgency of immediate and deep emissions reductions across all sectors to limit global warming to 1.5 degree Celsius above pre-industrial levels.<sup>29</sup>

In such a 'do or perish' situation, electric mobility needs to be sustainable at all costs. Fresh mining of transition materials, with serious ethical and ecological fears, fly in the face of a circular battery economy and hence, a regenerative planet. Perhaps, we will do well to follow the experts, who say that circularity "carries the solutions countries and businesses need to meet their climate goals, safeguard the Earth's resources and protect all people. It's time for a circular economy."<sup>30</sup>

**Image Courtesy:** The image on page 25 has been taken from a document published by United Nation Conference on Trade and

Development (UNCTAD).

Commodities at a glance: Special issue on strategic battery raw materials UNCTAD. (2020). Available at: <https://bit.ly/3xdKUww>

The image on page 27 has been taken from a document published by International Union for Conservation of Nature and Natural Resources (IUCN), Gland Switzerland, in collaboration with Gallifrey Foundation.

Deep seabed mining: A rising environmental challenge. IUCN and Gallifrey Foundation. (2018). Available at: <https://bit.ly/3NaPaCS>

## Endnotes

- 1 Take Action for the Sustainable Development Goals. (2020, September 19). the United Nations. Retrieved May 23, 2022, from <https://bit.ly/3zQSkbY>
- 2 Draft Battery Swapping Policy, 2022. Retrieved June 2, 2022, from <https://bit.ly/3y1kKia>
- 3 Baruah, R. (2022, June 9). GST Council may bring rate on lithium cells on par with EVs. *Mint*. Retrieved June 2, 2022, from <https://bit.ly/3zLts5q>
- 4 Renewable energy at what cost?: A closer look at DRC's nascent lithium sector. Global Witness (December 2021). Retrieved May 26, 2022, from <https://bit.ly/3HGii3J>
- 5 Patisson, P. (2021, November 8). 'Like slave and master': DRC miners toil for 30p an hour to fuel electric cars. *The Guardian*. Retrieved May 30, 2022, from <https://bit.ly/3HFIWL6>
- 6 Patisson, P. (2021, November 8). 'Like slave and master': DRC miners

- toil for 30p an hour to fuel electric cars. *The Guardian*. Retrieved May 30, 2022, from <https://bit.ly/3HFIWL6>
- 7 A Material Transition: Exploring supply and demand solutions for renewable energy minerals. War on Want (March 2021). Retrieved June 1, 2022, from <https://bit.ly/39AuA1d>
- 8 Watts, J. (2019, December 18). How the race for cobalt risks turning it from miracle metal to deadly chemical. *The Guardian*. Retrieved May 30, 2022, from <https://bit.ly/3OjZQQQ>
- 9 A Material Transition: Exploring supply and demand solutions for renewable energy minerals. War on Want (March 2021). Retrieved June 1, 2022, from <https://bit.ly/39AuA1d>
- 10 A Material Transition: Exploring supply and demand solutions for renewable energy minerals. War on Want (March 2021). Retrieved June 1, 2022, from <https://bit.ly/39AuA1d>
- 11 Ritchie, H., Roser, M., & Rosado, P. (2020). Electricity Mix. Our World in Data. Retrieved June 9, 2022, from <https://bit.ly/3zNy4b4>
- 12 An Ashen Legacy: India's thermal power ash mismanagement. Centre for Science and Environment (2020). Retrieved June 2, 2022, from <https://bit.ly/3HAOzcx>
- 13 Kukreja, B (2018). Life Cycle Analysis of Electric Vehicles. Retrieved May 25, 2022, from <https://bit.ly/3xxaug8>
- 14 Banerji, S. (2021, December 14). How to prevent electric vehicles from catching fire? India's answer-- Dial AIS 156. *ETAuto.com*. Retrieved May 27, 2022, from <https://bit.ly/3zOYTvv>
- 15 ET Auto. (2022, April 21). EV fires: Gadkari calls for mandatory recalls, stringent penalty for errant companies. *ETAuto.com*. Retrieved May 27, 2022, from <https://bit.ly/3xFBryf>
- 16 Gupta, S. (2021, January 18). Rare earth metals are used extensively in clean energy technologies. But how safe are they? *DownToEarth*. Retrieved June 1, 2022, from <https://bit.ly/39zBa89>
- 17 Vanreusel, A., Hilario, A., Ribeiro, P. A., Menot, L., & Arbizu, P. M. (2016). Threatened by mining, polymetallic nodules are required to preserve abyssal epifauna. *Scientific Reports*, 6(1), 1-6. Retrieved June 1, 2022, from <https://bit.ly/3b7oJk9>
- 18 AMC Consultants. (2021, March 17). Technical Report Summary: Initial Assessment of the NORI Property, Clarion-Clipperton Zone. Retrieved May 27, 2022, from <https://bit.ly/39GjDLp>
- 19 Sardelis, S., Oester, S., & Liboiron, M. (2018, January 10). An Overview of Seabed Mining Including the Current State of Development, Environmental Impacts, and Knowledge Gaps. *Frontiers*. Retrieved June 4, 2022, from <https://bit.ly/2o0FMZ7>
- 20 Deep seabed mining: A rising environmental challenge. IUCN and Gallifrey Foundation. (2018). Retrieved June 3, 2022, from <https://bit.ly/3NaPaCS>
- 21 Cabinet Committee on Economic Affairs (CCEA). (2021, June 16). Cabinet approves Deep Ocean Mission. *Press Information Bureau*. Retrieved June 2, 2022, from <https://bit.ly/3MZRYMM>
- 22 The Ocean Decade - The Science we need for the Ocean we want. Retrieved May 23, 2022, from <https://bit.ly/3y7u9F6>
- 23 Meier, L. (2021, June 10). Instead of mining the deep sea let's recycle our electronic waste. *UN Today*. Retrieved June 2, 2022, from <https://bit.ly/3zOCIWp>
- 24 Shifting gears: the evolving electric vehicle landscape in India. KPMG Assurance and Consulting Services LLP. (2020, October). Retrieved May 26, 2022, from <https://bit.ly/3bdaA4S>
- 25 Desai, P. (2022, March 29). Time ripe for EV battery recycling ecosystem. *Deccan Herald*. Retrieved June 2, 2022, from <https://bit.ly/3y5Lga8>
- 26 Lithium-ion Battery Market Size, Share & Trends Analysis Report by Product (LCO, LFP, NCA, LMO, LTO, NMC), by Application (Consumer Electronics, Energy Storage Systems, Industrial), by Region, and Segment Forecasts, 2022-2030. Grand View Research. (2022). Retrieved May 24, 2022, from <https://bit.ly/3n3ForG>
- 27 Lithium-ion Battery Market - Growth, Trends, COVID-19 Impact and Forecasts (2022-2027). Mordor Intelligence. (2022). Retrieved May 24, 2022, from <https://bit.ly/3HBj6SG>
- 28 Reducing new mining for electric vehicle battery metals: responsible sourcing through demand reduction strategies and recycling. Institute for Sustainable Futures. (2021). Retrieved May 24, 2022, from <https://bit.ly/3xLl0hs>
- 29 Ghosh, S. (2022, April 7). IPCC report shows a greater need for increased climate action. *Mongabay-India*. Retrieved May 23, 2022, from <https://bit.ly/3OnPdNj>
- 30 Circularity Gap Report. Circle Economy. (2022). Retrieved May 23, 2022, from <https://bit.ly/3N5EJ3x>

# THE REAL COST OF A CLEAN RIDE

## Green Energy Goals and Recycling Policies Must Go Hand in Hand

Shambhu Ghatak\*

The official missive is clear on renewable energy. Word has been out quite early that India's renewable power capacity is the fourth largest in the world and is growing at the fastest speed among all major countries.<sup>1</sup> This is, of course, not breaking news. The transition to a cleaner energy source, aimed at putting brakes on the worsening air quality and warming of the planet, has been in the works.

On the power front, in 2015-16, the Government of India had set a target of achieving 175 Gigawatt (GW) of renewable energy capacity by 2022, which was later indicated to be enhanced to 450 GW.<sup>2</sup> If the large hydro installed capacity is taken into consideration (45 GW by February 2021), then India's non-fossil energy capacity is 139 GW — close to 38 per cent of installed capacity.<sup>3</sup>

But renewable energy is not the panacea for all the existing environmental ills. Of course, a giant's share of combatting the climate crisis will have to be shouldered by renewables, but the sector itself has been lying in the eye of a storm, as it sets off a Pandora's box of problems in the current climate of just energy



*The harm caused by the renewable energy sector to man, animal and nature is also quite alarming*

transition. Its negative impacts cannot be discounted even if weighed against its arsenal to resist the worst effects of global warming. There are immediate concerns about the decline of jobs, an uncertain future and livelihood insecurity pivoted around an ecosystem of energy transition but also issues of re-skilling and generating new employment for a staggering informal workforce deployed in both the standalone fossil fuel industries and sectors (cement, steel, thermal power etc.) reliant on them. Policymakers will have to hit the ground running, while addressing these concerns.

But renewable energy's direct negative impact on the ecosystem and other stakeholders are equally alarming. This article analyses the harm caused by the renewable energy sector to man, animal and nature through arbitrary land allotment, loss of wildlife habitat, depletion of forest cover in small and big ways. It also discusses why clean energy waste can be really dirty when they reach the end of their lifecycle and why safe waste disposal or recycling policies need to be in place before setting ambitious green energy goals.

---

\* Shambhu Ghatak is Senior Associate Fellow at Common Cause

## Challenges of Renewable Energy Expansion

With India acting on its commitment related to the Intended Nationally Determined Contributions (INDCs), it's prudent to question the halo around the renewable energy sector and take cognisance of its various adverse impacts. The lack of adequate policies and legislation around this lightning-fast energy transition is taking a heavy toll on multiple stakeholders, including rural communities. In some cases, relief comes by way of judicial orders but in others, men and wildlife lose their traditional common land with no redressal. Following are some examples.

- 1. Solar power plant construction in forest areas:** A media report detailing the electrocution of 18 elephants by lightning in Kandali Proposed Reserve Forest in central Assam's Nagaon district on May 13, 2021 led to an expert investigation and the findings being accepted officially.<sup>4</sup> A 10-member team of wildlife experts and veterinarians found that the 18 elephants had died due to electrocution by lightning. After a detailed study, laboratory reports nullified the presence of anthrax-like bacilli and any toxins or its metabolites in the submitted samples. The report had been prepared by the North Eastern Regional Disease

“*In its order issued last year, the Apex court had called for action in potential habitats, expanding the protection area and the cost burden for the companies*”

Diagnostic Laboratory (NERDDL) in Guwahati with meteorological inputs from the North East Satellite Application Centre at Umiam in Meghalaya. Wildlife activists, however, doubted the autopsy report, which was made public and accepted by the Assam Environment and Forest Minister. The green activists in Assam blamed the construction of the 15MW solar power project at Mikir Bamuni Grant for

the elephant deaths. They alleged that the fencing around 93 acres of the solar power project land blocked the traditional movement route of the elephants. It compelled these wild animals to take a detour, which finally led to their electrocution. Following this event, Apurba Ballav Goswami, a Golaghat-based wildlife activist lodged an FIR at the Samaguri police station in Nagaon district asking for an independent probe. In addition, Bhaskar J Barua, a wildlife photographer and conservationist, questioned the post-mortem report and found technical flaws in it.<sup>5</sup>

- 2. Threat to Great Indian Bustards:** Loss of wildlife habitats is a recurring theme in the modern world, characterised by a relentless pursuit of profitability through unsustainable infrastructure projects. The



*The non-fossil energy sources do not provide easy answers either*

fallout of this extreme, unhinged greed is not only a compromised ecosystem for the wildlife, but also a shrinking one. The Great Indian Bustard (GIB), an endangered bird, is facing a risk to its life, owing to fatal collisions with power lines of the newly established wind and solar power parks.<sup>6</sup> Journalist Shuchita Jha writes that the sacred groves of the Degrai Oran in Jaisalmer and nearby areas are few of the last remaining habitats of the GIB.<sup>7</sup> But, wind farms and solar parks in the area have been found to have encroached upon the grasslands, the traditional habitat of these nearly extinct birds. To protect the habitat of the GIB and prevent the species from going extinct, wildlife conservationist MK Ranjitsinh Jhala had filed a petition in the Supreme Court in 2019. He pleaded that the power generating companies be asked to lay underground wiring in the sacred groves, given that only 150 of the critically-endangered species are reportedly left in the country.<sup>8</sup>

In its order issued last year, the Apex court had called for action in potential habitats, expanding the protection area and the cost burden for the companies. The two-judge bench ruled that the priority

should be to save the near extinct birds, irrespective of the cost factor. But big businesses are rarely seen taking responsibility for their contribution to ecosystem collapses. Although the Supreme Court order of April 19, 2021 asked for transmission lines in Rajasthan and Gujarat to go underground, the companies behind these renewable power projects, pointed out that this would cost them US\$ 4 billion additionally. Their representatives claimed that if the transmission lines go underground, about 20 GW of awarded solar and wind projects would be jeopardised. Subsequently, the Supreme Court has asked a three-member high-level committee to file a report “indicating what steps have been taken for compliance with the directions contained in the judgment of this Court”.<sup>9</sup>

**3. Public land for solar power companies:** Sustained protests against takeover of common property resources by renewable energy companies have now become frequent across the country. One of the instances of resistance is a petition filed by locals, at the Rajasthan High Court in June 2021. In this case the Court ordered the cancellation of the allotment of public utility land in Jaisalmer to

the Adani group-owned company Adani Renewable Energy Park Rajasthan Ltd (AREPRL).<sup>10</sup> The state government of Rajasthan had allotted 6,115 bighas of land at Nedan village near Pokhran in the Jaisalmer district in 2018 to set up a power plant owned by AREPRL. The Rajasthan High Court’s division bench also directed the state government to conduct a survey of the land parcels allotted to AREPRL as well as Essel Surya Urja Company of Rajasthan Ltd (ESUCRL) in three villages - Nedan, Ugras and Nagnechinagar. It further ordered to cancel the allotment on these land parcels, if any part of them is found to be allotted on land for public utilities. The court order made sure that the rights of the petitioners, other khatedar tenants and the land of public utilities were not infringed on account of land allotments to ESUCRL and AREPRL. The Rajasthan High Court ordered that the entire exercise, pursuant to the

“ ***Desert ecology is getting disturbed due to the establishment of solar parks. Sharp edges of the solar panels pose a threat to camel lives*** ”

order, be completed by the state government within six weeks from the date of receipt of the certified copy of the order.

**4. Camel feed destroyed:** Grazing lands and water resources, available earlier in the Orans i.e., sacred groves, have also fallen prey as demand for industries producing renewable power rises. These common access grounds are being usurped at a fast clip by companies owning solar power parks.<sup>11</sup> Due to the disappearance of grazing lands, Raikas, the traditional camel herders of Rajasthan, are facing livelihood insecurity. Land, where pastoralists took their camels for grazing across generations, has become inaccessible after the establishment of solar parks.<sup>12</sup> On top of that, the solar power parks have not been able to generate adequate jobs for the local population in Rajasthan. Many desert trees like ‘kumut’, ‘khejari’, ‘rohida’, ‘kair’, ‘jal’ and ‘bordi’ on which the camels feed, have been removed by the renewable power project companies.<sup>13</sup> Desert ecology is getting disturbed due to the establishment of solar parks. Sharp edges of the solar panels pose a threat to camel lives.

These examples show how the establishment of solar



*Safe waste disposal or recycling policies need to be in place before setting ambitious green energy goals*

parks and wind farms without a proper consultative process can affect various stakeholders and the local environment and ecosystem.

### **Waste Management as a Sustainable Solution**

Among other things, policy researchers and environmental activists are worried about the following aspects of renewable energy:

- a. Decommissioned solar panel management:** Although solar panels can last for decades if they are properly cleaned and maintained, their output reduces after some years. Once solar panels are decommissioned, they are dumped directly in the landfills or shipped from the developed countries to third world countries.<sup>14</sup> It is done so because the process

of safe disposal or recycling of solar panels is costly and time-consuming. Heavy metals in solar panels such as lead and cadmium may enter groundwater and harm plant lives, affect soil fertility, and disrupt livelihoods. Such metals also pose health hazards to human beings. After the valuable silver and copper are extracted from the photovoltaic (or PV) cells, the contaminated

“ **Heavy metals in solar panels such as lead and cadmium may enter groundwater and harm plant lives, affect soil fertility, and disrupt livelihoods** ”

“ ***Recycling of EV batteries is harder and more complicated than the recycling of batteries that power mobile phones and other electronic gadgets*** ”

glass and plastic casings are burnt in cement furnaces. Although solar panels are mostly used in China and the US, only producers in Europe are held accountable for their solar waste. Ideally, the cost of recycling should be included in the price of solar panels in order to reduce the waste and environmental impact of the panels.<sup>15</sup>

- b. Recycling and reuse of EV batteries:** Due to the skyrocketing demand for electric cars and EVs in India, around 1.45 lakh tonnes of used lithium-ion batteries would need to be recycled by the year 2030.<sup>16</sup> Recycling and reuse of EV batteries would ensure domestic availability of lithium, graphite, cobalt and nickel, and eventually bring down the cost of EV batteries despite the country having minimal reserves of these minerals. Presently the country imports bulk of the lithium-ion batteries

from China. Recycling of EV batteries is harder and more complicated than the recycling of batteries that power mobile phones and other electronic gadgets. It is not economic to recycle EV batteries, as per some experts. However, others think that the reintroduction of recycled metals and components back into the supply chain of EV batteries would reduce cost and complement the import of rare earth metals from countries where they are found in abundance. This would also save us expensive foreign exchange. Reuse or repurpose of EV batteries is also possible in mobile-phone towers or power stations. Unsafe disposal of lithium-ion batteries (used in EVs as well as mobile phones and other consumer electronics) straight into the landfills would be both an environmental threat and an opportunity lost.<sup>17</sup> Used batteries contain toxic and/or flammable materials, which can set off fires if handled by untrained persons in the informal waste-management sector. Unsafe disposal of lithium-ion batteries can also contaminate soil and water. Recycling, recovery and repurposing of lithium-ion batteries, instead of dumping them in the landfills, can create a circular economy.

Waste management is a significant step, which India

needs to take while transitioning from a fossil-fuel based economy to a renewable energy one.

## Conclusion

Nations of the Global South are often compelled to adopt or purchase sub-optimal technologies during technology transfers handed out by developed countries. India, being a huge technology market should have significant bargaining power in a globalised world. Following kindergarten economics, a marketplace can dictate the product. So, we should have policies and regulations that are technology agnostic but can determine the output tailor-made for our context. For instance, solar panels usually have a technical lifetime of 20-25 years. They turn into waste after that period. If we use more solar panels for renewable energy generation currently, we can expect huge piles of waste after two decades.

Strangely, the waste solution does not bother anybody at present. In the legally binding power purchase agreement (PPA), signed between the distribution companies (discoms) or purchaser and the project developer, there is complete absence of a significant clause. There is no pledge that makes it mandatory for the developer to recycle or dispose the end-of-life waste in an environment friendly manner. If such a clause is absent, then the cost of safe waste disposal or recycling is

“ **Used batteries contain toxic and/or flammable materials, which can set off fires if handled by untrained persons in the informal waste-management sector** ”

not held to be the responsibility of the developer. Also, it is not included in the financial planning of the project. In such cases, one should not be joyful about low bid values for renewable energy projects, assuming that solar energy is dirt cheap. Instead, there is an urgent need to internalise the social and environmental costs, especially in the generation of solar energy. The renewable energy policies should ensure adoption of suitable technologies that have substantial supply security as well as recyclability (the latter is essential for material sustainability). We need to talk more about end-use regulations so that India is able to adopt technologies with both supply security as well as better recyclability.<sup>18</sup>

**Endnotes**

1 Koundal, A. (2020, November 26). India’s renewable power capacity is the fourth largest in the world,

says PM Modi. *ETEnergyworld.com*. Retrieved June 20, 2022, from <https://bit.ly/39xcDAR>

2 Third Biennial Update Report to The United Nations Framework Convention on Climate Change. Ministry of Environment, Forest and Climate Change Government of India. UNFCCC. (2021). Retrieved May 24, 2022, from <https://bit.ly/3yYy156>

3 Emission Intensity Tracking: On The Road To COP 26. Centre for Science and Environment. Retrieved May 24, 2022, from <https://bit.ly/3sX1cbF>

4 Special Correspondent. (2021, June 4). Lightning killed 18 elephants in Assam: report. *The Hindu*. Retrieved May 24, 2022, from <https://bit.ly/38JYFLm>

5 Barua, B. J. (2021, June 10). Death of 18 Elephants by Lightning: Unearthing a Web of Lies. *The Quint*. Retrieved May 26, 2022, from <https://bit.ly/3t1IcsD>

6 Singh, R. K. (2021, June 16). The Great Indian Bustard and India’s Renewable Energy Challenge. *NDTV.com*. Retrieved May 24, 2022, from <https://bit.ly/3GsLOVm>

7 Jha, Shuchita (2022, April 5). Supreme Court seeks update on power cables at Great Indian Bustard’s habitat. *Down to Earth*. Retrieved May 25, 2022, from <https://bit.ly/3wNlfKN>

8 Vaidyanathan, A (2021, April 19). Supreme Court Appoints Experts Panel on Protecting Great Indian Bustard. *NDTV.com*. Retrieved May 24, 2022, from <https://bit.ly/3LO4RPM>

9 Jha, S. (2022, April 5). Supreme Court seeks update on power cables at Great Indian Bustard’s habitat. *DownToEarth*. Retrieved May 25, 2022, from <https://bit.ly/3wNlfKN>

10 NDTV. (2021, June 30). Rajasthan High Court Cancels Allotment Of Public Utility Land To Adani Group Power Project. *NDTV.com*. Retrieved May 25, 2022, from <https://bit.ly/3PL59di>

11 Singh, S., & Sultana, K. S. (2022, February 3). Camels in Crisis: The ‘ship of the desert’ in Rajasthan on the verge of drowning. *Gaon Connection English*. Retrieved 2022, from <https://bit.ly/3PLfx51>

12 Nagaraj, A., & Srivastava, R. (2022, March 6). Photo essay: India’s solar energy boom has left some communities worried for their future. *Scroll.in*. Retrieved May 25, 2022, from <https://bit.ly/3wSlsvh>

13 Times News Network. (2021, July 5). Jaisalmer: Solar power ‘surge’ in desert threatening lives of camels. *Times of India*. Retrieved May 25, 2022, from <https://bit.ly/3sXXOgZ>

14 Kumar, M. R. (2022, May 23). The Afterlife of Solar Panels. *The Wire Science*. Retrieved May 25, 2022, from <https://bit.ly/3wOCSde>

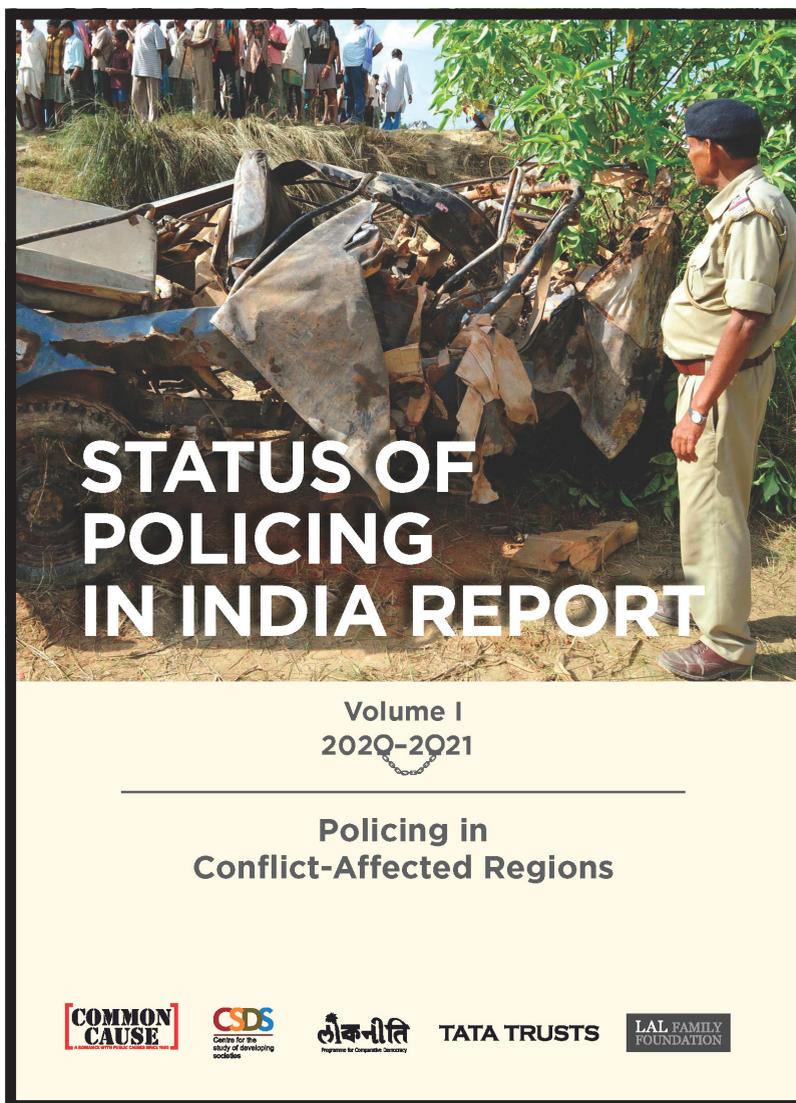
15 Kumar, M. R. (2022, May 23). The Afterlife of Solar Panels. *The Wire Science*. Retrieved May 25, 2022, from <https://bit.ly/3wOCSde>

16 Desai, P. (2022, March 29). Time ripe for EV battery recycling ecosystem. *Deccan Herald*. Retrieved May 2022 26, 2022, from <https://bit.ly/3LL9FW1>

17 Ghanekar, N. (2021, April 18). India’s Looming Electric Vehicle Challenge: Spent Batteries. *IndiaSpend*. Retrieved May 26, 2022, from <https://bit.ly/3LL9FW1>

18 The ideas of Samrat Bagchi -- an expert on energy -- that he shared with participants during a training programme on climate change, has been used in this paragraph.

Please email us at [commoncauseindia@gmail.com](mailto:commoncauseindia@gmail.com) if you want a soft copy of the report.



Jointly prepared by Common Cause and its academic partner, CSDS, the report is a study, focussing on 'Policing in Conflict-Affected Regions.' It studies the nature and practice of policing in areas that are facing forms of extremism, insurgency or militancy.

SPIR 2020-21 is in two volumes. The first volume studies how policing in violence-affected regions is perceived by common people and the police personnel. It conducted face-to-face surveys at 27 districts in 11 states and Union Territories, including four North-Eastern states, and large parts of central India affected by left-wing extremism. The study also analyses official data released by government agencies.

Please email us at [commoncauseindia@gmail.com](mailto:commoncauseindia@gmail.com) if you want a soft copy of the report. A PDF can also be downloaded from [commoncause.in](http://commoncause.in)

---

Printed & Published by Vipul Mudgal on behalf of Common Cause, 5 Institutional Area, Nelson Mandela Road, Vasant Kunj, New Delhi 110070, Printed at PRINTWORKS, C-94, Okhla Industrial Area, Phase - 1, New Delhi - 110020  
Editor-Vipul Mudgal Tel No. 26131313, 45152796, email: [commoncauseindia@gmail.com](mailto:commoncauseindia@gmail.com), website:[www.commoncause.in](http://www.commoncause.in)

---