

Electric Vehicles Beyond Mobility

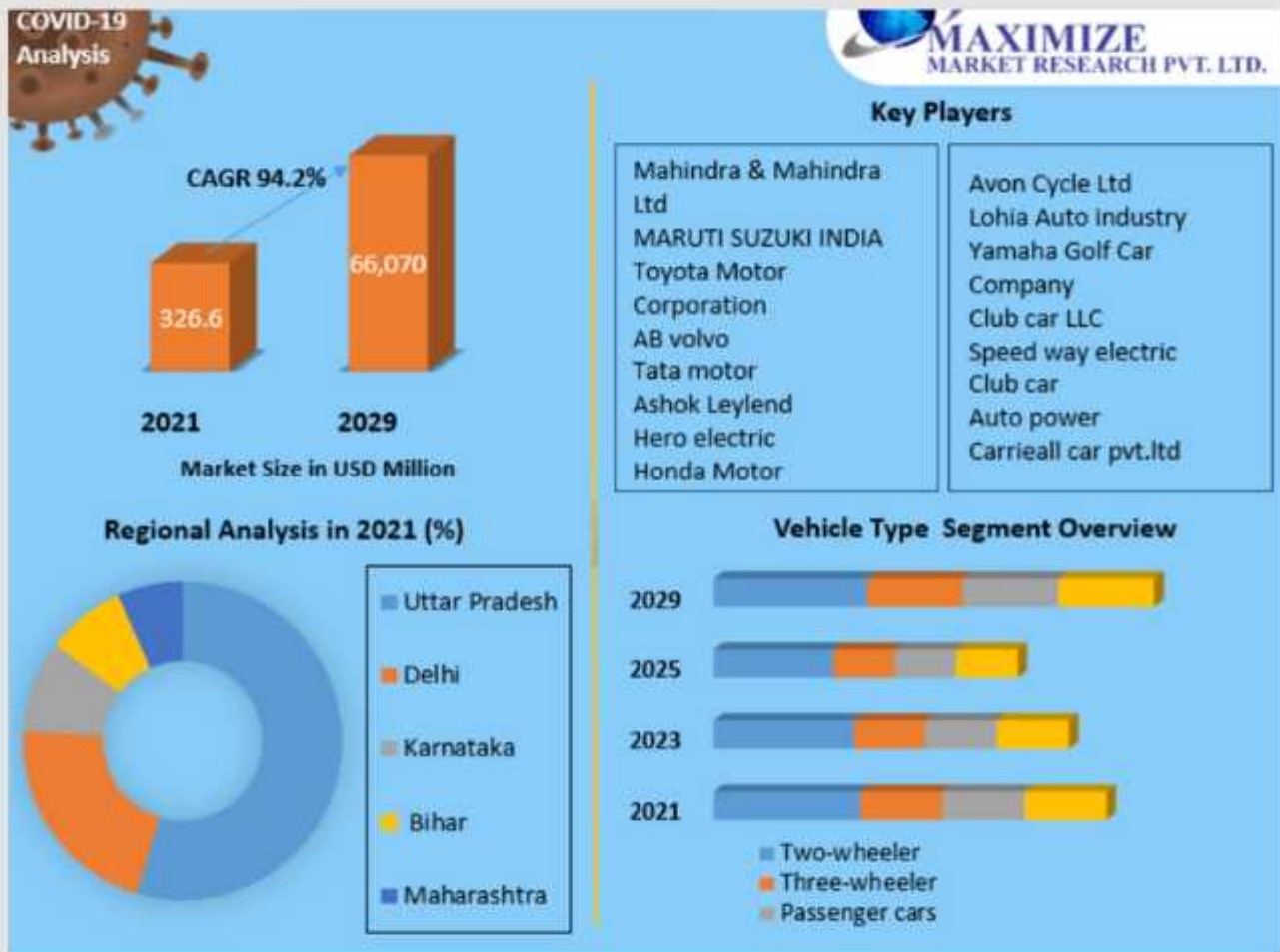
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Electric Vehicle Market of India

- Regardless of the country's ambitious targets, India's EV space is at a nascent stage. However, looking at it differently - [India offers the world's largest untapped market, especially in the two-wheeler segment](#). 100 percent foreign direct investment is allowed in this sector under the automatic route.
- Over the previous three years, EV sales have increased by more than 2,218 percent; in FY 2023 (until December 9), over 4,42,901 electric cars have been sold, compared to 19,100 in FY 2020.



- The federal government is also prioritizing the shift towards clean mobility, and recent moves to amend the [Faster Adoption and Manufacturing of Hybrid and Electric Vehicles in India](#) (FAME) II scheme to make electric two-wheelers more affordable, is a case in point. Under the phase two of the FAME scheme, as on July 11, 2022, about 469,315 electric vehicles were supported through demand incentives amounting to about [INR 18.69 billion](#). Approvals have been granted to 6,315 electrical buses and 2,877 [EV charging stations sanctioned in 68 cities across 25 states/Union Territories](#). [50 original equipment manufacturers \(OEMs\)](#), both start-ups and established manufacturers, have registered and revalidated their 106 EV models. There are [1,576 charging stations sanctioned for set-up across nine expressways and 16 highways](#).

Current Market Scenario

- Over the previous three years, EV sales have increased by more than 2,218 percent; in FY 2023 (until December 9), over 4,42,901 electric cars have been sold, compared to 19,100 in FY 2020.
- Additionally, according to official data, as of December 9, about 64 original equipment manufacturers (OEMs) of EVs have registered, and 7,47,000 EVs had been sold as part of FAME India Phase II. India now has 5,151 EV charging stations that are in use.

Business Opportunities

The EV push in India opens a plethora of business opportunities across three key segments – mobility, infrastructure and energy. These include opportunities in EV franchising, EV OEM market, battery infrastructure, solar vehicle charging and battery swapping technology among several others. According to NITI Aayog, the complete transition to EVs requires a total investment of US\$ 267 billion (Rs.19.7 lakh crore) in EVs, battery infrastructure and charging infrastructure.

Top players in India's car market

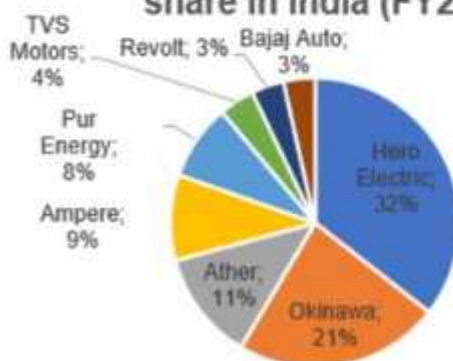
India's Electric Car Sales – April to September 2022 (H1 FY 2022-23)							
Electric car manufacturer	April	May	June	July	August	September	Total
Tata Motors	1812	2495	2724	2891	2765	2831	15,518
MG Motor India	245	247	235	268	316	280	1591
Hyundai Motor India	23	27	51	61	73	74	309
BYD India	21	42	49	44	45	63	264
Mahindra & Mahindra	13	9	19	26	17	112	196
BMW India	17	9	5	5	25	27	88
Audi	8	8	14	8	14	10	62
Porsche	4	5	4	7	7	13	40
Mercedes-Benz	11	5	3	2	4	7	32
Jaguar Land Rover India	3	7				1	11
Others	4	1	7	17	1	1	31
Total	2161	2855	3111	3329	3267	3419	18,142

OPPORTUNITIES

- India could be a leader in shared mobility by 2030, providing opportunities for electric and autonomous vehicles.
- Focus is shifting to electric vehicles to reduce emissions.
- The electric vehicles industry is likely to create five crore jobs by 2030.



Electric two-wheeler market share in India (FY21)



Electric PV market share in India (2021)



Why ?

Electric Vehicles

Zero Tailpipe Emissions

Driving an electric vehicle can help you reduce your carbon footprint because there will be zero tailpipe emissions. You can reduce the environmental impact of charging your vehicle further by choosing renewable energy options for home electricity.



Lower running costs

The running cost of an electric vehicle is much lower than an equivalent petrol or diesel vehicle. Electric vehicles use electricity to charge their batteries instead of using fossil fuels like petrol or diesel. Electric vehicles are more efficient, and that combined with the electricity cost means that charging an electric vehicle is cheaper than filling petrol or diesel for your travel requirements. Using renewable energy sources can make the use of electric vehicles more eco-friendly. The electricity cost can be reduced further if charging is done with the help of renewable energy sources installed at home, such as solar panels.



Low maintenance cost

Electric vehicles have very low maintenance costs because they don't have as many moving parts as an internal combustion vehicle. The servicing requirements for electric vehicles are lesser than the conventional petrol or diesel vehicles. Therefore, the yearly cost of running an electric vehicle is significantly low.



Petrol and diesel use is destroying our planet

The availability of fossil fuels is limited, and their use is destroying our planet. Toxic emissions from petrol and diesel vehicles lead to long-term, adverse effects on public health. The emissions impact of electric vehicles is much lower than petrol or diesel vehicles. From an efficiency perspective, electric vehicles can convert around 60% of the electrical energy from the grid to power the wheels, but petrol or diesel cars can only convert 17%-21% of the energy stored in the fuel to the wheels. That is a waste of around 80%. Fully electric vehicles have zero tailpipe emissions, but even when electricity production is taken into account, petrol or diesel vehicles emit almost 3 times more carbon dioxide than the average EV. To reduce the impact of charging electric vehicles, India is ambitious to achieve about 40 percent cumulative electric power installed capacity from non-fossil fuel-based energy resources by the year 2030. Therefore, electric vehicles are the way forward for Indian transport, and we must switch to them now.



Role Of Government

GOVERNMENT POLICIES AND INCENTIVES FOR ELECTRIC VEHICLES IN INDIA



Government Policies and Incentives for Electric Vehicles in India

Production-linked incentive schemes

In May 2021, the government rolled out a Production-Linked Incentive Scheme (PLI) for ACC Battery Storage Manufacturing, which will incentivize the domestic production of such batteries and reduce the dependence on imports. This will support the EV industry with the requisite infrastructure and will significantly cause a reduction in cost of EVs. On September 15, 2021, the government approved a PLI Scheme for the automobile and drone industry, which intends to incentivize high value advanced automotive technology vehicles and products, including 'green automotive manufacturing'. The PLI Scheme for the auto sector is open to existing automotive companies as well as new investors who are currently not in the automobile or auto component manufacturing business. The scheme has two components:

- (i) **Champion OEM Incentive Scheme:** This is a 'sales value linked' scheme, applicable on battery electric vehicles, and hydrogen fuel cell vehicles of all segments.
- (ii) **Component Champion Incentive Scheme:** This is a 'sales value linked' scheme, applicable on advanced automotive technology components of vehicles, completely knocked down (CKD)/ semi knocked down (SKD) kits, vehicle aggregates of 2-wheelers, 3-wheelers, passenger vehicles, commercial vehicles, and tractors etc.

POLICY SUPPORT

National Electric Mobility Policy 2025-

Firstly, many conventional automotive players and oil companies are investing heavily to boost EV demand to reach the aspirational goal. To name a few, Skoda revealed its plan to produce EVs locally in India in 2021, and Indian Oil Corporation stated its plans to create 22,000 EV charging stations over three to five years.

Secondly, the Indian government has also been implementing several programmes to encourage the growth of electric mobility, including 100 per cent FDI through the automotive route in the EV space, financial support through the Credit Guarantee Scheme for Start-ups (CGSS), tax breaks, and subsidies for consumers.

Thirdly, in 2021, investment into EV startups reached a record high, rising by about 255 per cent to reach \$ 444 Mn. About 500 startups spanning the whole EV value chain make up the Indian EV ecosystem, with 63 per cent of those startups solely dedicated to manufacturing.

- In September 2021, the Indian government issued notification regarding a PLI scheme for automobile and auto components worth Rs. 25,938 crore (US\$ 3.49 billion).

- The Automotive Mission Plan 2016-26 is a mutual initiative by the Government of India and the Indian automotive industry to lay down the roadmap for the development of the industry.



AUTO EXPO

- The [Auto Expo](#) has been laden with [EV showcases this year](#). As many as [16 new four-wheeled EVs](#) have been launched or displayed at the current edition of India's largest motor show! They came in the form of concepts, potential models for India and even some swanky-looking futuristic concepts.

• Maruti eVX Concept



60kwh battery pack offering over 500km of range. It is set to become the brand's first electric vehicle and the production model is expected to go on sale by 2025.

• Tata Harrier EV



It's in a near production-ready state and is based on a combination of the Omega-Arc and the Gen 2 electric/ICE platform. The Harrier EV will also sport an AWD layout with dual motors. They will also feature advanced features like connected telematics, vehicle-to-load capabilities

Hyundai Ioniq 5



- Hyundai was next and it launched the Ioniq 5, its EV based on the all-electric architecture named E-GMP.
- This '**World Car of the Year 2022**' is minimalist, both with its looks as well as its interior design language. But, with features like an augmented reality heads-up display, ADAS and dual screens, it's uber premium too.

Hyundai Ioniq 6



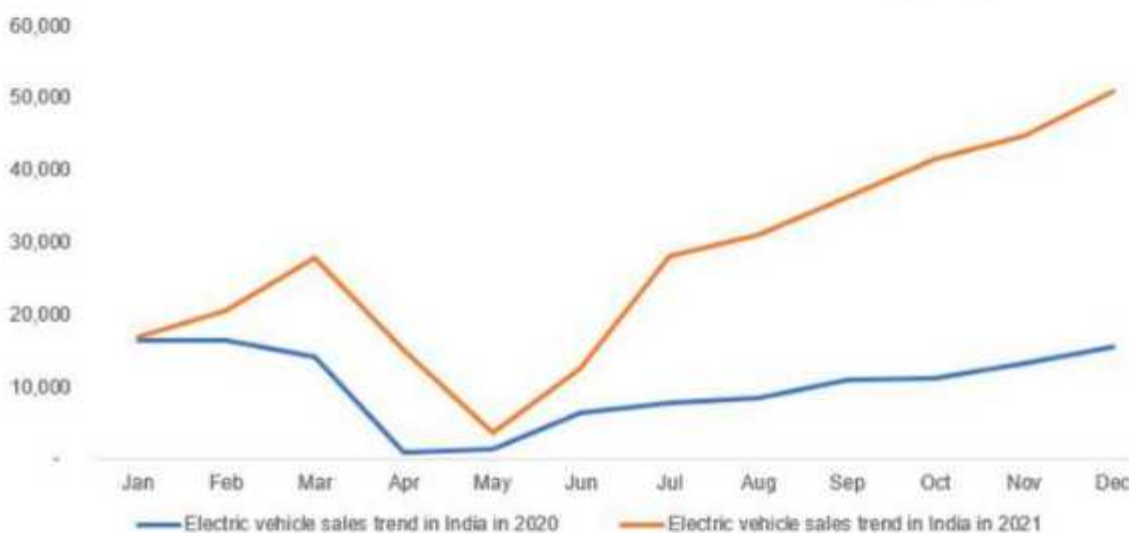
- The **Ioniq 6** is the sedan version of the Ioniq 5 and it's sleek and stealthy in this matte black colour.
- The powerful 325PS electric motor will ensure you do so and its low coefficient of drag (0.21 Cd) will let you do so for prolonged periods, thanks to its claimed range of up to 610km (WLTP).

Future Of EV In India

The growing EV Market in India

- **Adyant Simba XI-C**

With the increase in global warming, making environmentally friendly choices and preventing climate change are essential. Electric vehicle (EVs) is one such ecologically friendly choice. One of the primary drivers behind India's recent measures to accelerate the transition to e-mobility is the increase in prices for oil imports, rising pollution, and international pledges to battle global climate change. As a result, India committed to an aspirational goal of having at least 30% of private automobiles as EVs by 2030 at the Conference of the Parties 26 (COP26) Summit. The global electric vehicle (EV) market is developing at a rapid pace. According to EV volumes, overall electric vehicle reached a global share of 8.3% in 2021 from 4.2% in 2020 with 6.75 million vehicles on the road. This is an increase of 108% as of 2020. EVs are gaining attention across the globe as they

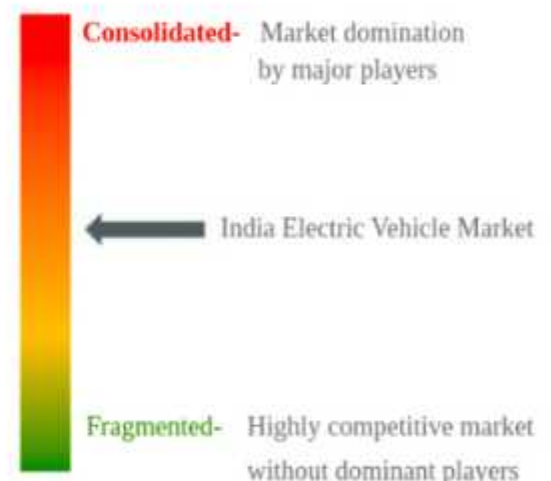


help reduce emissions and depletion of natural resources. The Indian EV market is also evolving fast as close to 0.32 million vehicles were sold in 2021, up 168% YoY. India largest population in the world and is one of the fastest growing economies in the world. The Indian

start-up ecosystem is rapidly advancing with new companies every day. With rapid urbanization, pollution, traffic congestion, lack of parking space, rising air pollution levels, long commute times and pressure on public infrastructure are some of the challenges which are compelling India towards electric mobility. Promotion of

Electric vehicle in India and the use of alternative sources of energy in order to reduce import dependence & pollution. The Indian government has set a target of installing 175 GW of renewable energy capacity by 2022 and 450 GW by 2030. The last three or four years witnessed substantial investments accelerating EV development and adoption across the country. EV sales in India hit 156,000 in 2019-2020, up from 130,000 in 2020. As the country has set ambitious renewable energy targets for the next decade, a sizable growth in EV sales for the past year is encouraging. Over 18 million gasoline two-wheelers are sold annually, demonstrating the underlying potential of two-wheeler EV growth. Out of the 156,000 EVs sold in 2019-2020, up 20 percent yearly, two-wheelers accounted for 152,000 of the total sales. This was followed by cars and buses, with sales hitting 3400 and 600, respectively, compared to FY2019's 130,000 units comprising 126,000 two-wheelers, 3,600 cars, and around 400 buses. This could be attributed to: A highly competitive market, Low-speed electric scooters drive sales, Impact of Covid-19 on urban mobility, Rise of EVs in commercial fleets, An incentive for EV purchases The India Electric Vehicle Market is moderately consolidated, with the top five companies occupying 53.49%. The major players in this market are Audi AG, Hyundai Motor India, Mahindra & Mahindra Ltd, MG Motor India Pvt. Ltd. and Tata Motors.

Market Concentration



Source: Mordor Intelligence

ACHIEVERS



JAYATI JAIN

60th National Roller Skating
Championship Bengaluru' 2022
Held from: 11th to 22nd December, 2022
Category: Junior Girls
Team: Haryana
Won Gold Medal.



ARHAN BISHT

- won in basketball district match and then got selected for states.
- In volleyball qualified till semi finals in zonal selected for the district match and won the districts and then got selected for states in volleyball.
- Sports Day - won 2 golds and 1 bronze. 1 gold in 100m, 1 gold in 200m and bronze in relay.



SHAURYA CHAUDHARY

- District Badminton Championship, Panchkula 23/06/2019 to 25/06/2019 U-17 Singles
- Runners up in District Badminton Championship, Panchkula in U-17 Doubles
- Won the District Badminton Championship, Panchkula in U-15 Doubles

BHAVAN VIDYALAYA PANCHKULA



E-MAGAZINE

**XI-D
JANUARY
EDITION**

THERAPY: MIGHT WORKS!

WE ALL EXPERIENCE STRESS, ANXIETY, MOOD SWINGS AND OTHER FORMS OF EMOTIONAL DISTRESS AT ONE POINT OR ANOTHER IN OUR LIVES. MOST OF THE TIME, WE CAN BOUNCE BACK EVENTUALLY. BUT SOMETIMES WE MIGHT NEED A LITTLE EXTRA HELP TO DO SO. "OUR EMOTIONS, THOUGHTS AND THINGS WE DO HAVE A DIRECT EFFECT ON OUR ENERGY, PRODUCTIVITY AND OVERALL HEALTH," SAYS DR LINDSEY GILLER, A CLINICAL PSYCHOLOGIST. THEREFORE, IT IS CRUCIAL TO PAY ATTENTION TO YOUR MENTAL WELL-BEING AND ASK FOR HELP IF YOU FEEL LIKE THINGS ARE GETTING OUT OF HAND. THERE IS A LOT TO TALK ABOUT THERAPY IN MEDIA BUT MOST PEOPLE HAVE LITTLE KNOWLEDGE ABOUT WHAT THERAPY IS AND HOW IT CAN HELP IN PEOPLE'S LIFE. THERAPY IS SOMETHING WHICH HELPS SUPPORT MENTAL HEALTH AND WELL-BEING. IN THERAPY ONE UNDERSTANDS, EXPLORE HIS OWN THOUGHT PROCESS, FEELINGS, BEHAVIOUR, HELPS GAINING SELF-CONFIDENCE, DEVELOP SKILL TO OVERCOME CHALLENGES. MAINLY YOU SHOULD REACH THE SIDE OF WHAT IS AFFECTING YOU AND WHY. THE THERAPIST MIGHT ASK YOU QUESTIONS TO INSPIRE YOU TO SPEAK OUT AND UNDERSTAND WHAT YOU ARE GOING THROUGH. THERAPY DOES NOT DISMISS ISSUE WHEREAS IS HELPS ONE TO INDICATE THEM AND FIND THE SOLUTION FOR IT IN A WAY IN WHICH YOU ARE MENTALLY GOOD AND JOYFUL. IT IS A WAY TO HELP PEOPLE UNDERSTAND THEMSELVES BETTER AND FIND WAYS TO IMPROVE THEIR LIVES.

NAINA

IMPORTANCE OF TEACHERS IN LIFE

IN SANSKRIT, THERE IS A GURU MANTRA-

गुरुर्ब्रह्मा गुरुर्विष्णुः गुरुर्देवो महेश्वरः। गुरुः साक्षात् परं ब्रह्म तस्मै श्री गुरवे नमः

IT MEANS THAT A GURU OR TEACHER IS A REPRESENTATIVE OF THE TRINITY (BRAHMA-VISHNU-SHIVA). ONE WHO CREATES, IMPARTS KNOWLEDGE AND DESTROYS THE DARKNESS THAT PREVAILS WITHIN. WE COULD HAVE NEVER STOOD WHERE WE ARE TODAY, WITHOUT OUR TEACHER'S. TEACHERS ARE THE PILLARS OF SOCIETY. THEY ARE THE BUILDING BLOCKS OF THE NATION'S FUTURE. THEY INSPIRE US TO BRING ABOUT THE BEST IN OURSELVES AND SERVE THE COUNTRY. WITHOUT TEACHERS, THERE ARE NO LAWYERS, NO DOCTORS, NO ADMINISTRATIVE OFFICERS, NO RESEARCHERS AND SCIENTISTS. TEACHERS SUPPORT US AND GUIDE US THROUGH OUR PATH TOWARDS A BRIGHTER FUTURE. DR APJ ABDUL KALAM, ONE OF THE FINEST SCIENTISTS AND MOST IMPORTANTLY A GREAT TEACHER OF THE COUNTRY SAYS, "TEACHERS ARE THE BACKBONE OF ANY COUNTRY, THE PILLAR UPON WHICH ALL ASPIRATIONS ARE CONVERTED INTO REALITIES." TEACHERS ARE A BLESSING IN DISGUISE. THEY HELP US IN BUILDING OUR CHARACTER AND SHAPE OUR PERSONALITIES. THEY FORM THOSE CRUCIAL STEPPING STONES THAT ULTIMATELY GUIDE US TO THE PATH OF JOY, HAPPINESS, AND SUCCESS. THE TEACHERS OF BHAVAN VIDYALAYA ARE THE FINEST GEMS WHO ARE AN EXEMPLARY EXAMPLE OF GRIT, GREAT VALOUR AND OPTIMISM. THEIR TEACHING IS BEYOND EXCELLENCE WHICH IN TURN ENCOURAGES STUDENTS TO LEAVE NO STONE UNTURNED WHEN IT COMES TO DOING THEIR HARD WORK AND BRING LAURELS OF THIS PRESTIGIOUS INSTITUTION.

KHUSHBU CHADHA

**TEACHERS PAINT OUR MINDS,
AND GUIDE US WITH THEIR BEAUTIFUL
THOUGHTS,
SHARE OUR ACHIEVEMENTS,
AND ADVICE ON OUR FAULTS.**

**THEY INSPIRE A LOVE,
OF KNOWLEDGE AND TRUTH,
AND THEY LIGHT A SACRED PATH,
THAT LEADS TO OUR SUCCESSFUL YOUTH.**

**OUR FUTURE BRIGHTENS, WITH EACH
LESSON YOU TEACH,
YOU, MY TEACHERS ARE THE ONES WHOM I
PRACTICE AND PREACH,**

**HOW THANKFUL I'M FOR ALL YOUR
GUIDANCE,
YOU LISTENED TO ALL WHAT I SAID IN MY
SILENCE.**

KHUSHBU CHADHA

WOMEN SAFETY IN INDIA

SAFETY OF WOMEN IN INDIA HAS BECOME A MAJOR ISSUE IN INDIA NOW. THE CRIME RATES AGAINST WOMEN IN THE COUNTRY HAVE ONLY RISEN TO A GREAT EXTENT. WOMEN THINK TWICE BEFORE STEPPING OUT OF THEIR HOMES, ESPECIALLY AT THE NIGHT. WOMEN IN INDIA HAVE BEEN GIVEN EQUAL RIGHTS AS MEN; HOWEVER, PEOPLE DO NOT FOLLOW THIS RULE. THEY CONTRIBUTE TO THE GROWTH AND DEVELOPMENT OF OUR COUNTRY; STILL, THEY ARE LIVING IN FEAR. WOMEN ARE NOW ON RESPECTED POSITIONS IN THE COUNTRY, BUT IF WE TAKE A LOOK BEHIND THE CURTAINS, WE SEE EVEN THEN THEY ARE BEING EXPLOITED. EACH DAY WE READ ABOUT HORRIFIC CRIMES BEING COMMITTED AGAINST WOMEN IN OUR COUNTRY LIKE IT'S A NORM.

THE LIST OF CRIMES AGAINST WOMEN IS QUITE LONG, TO SAY THE LEAST. ACID ATTACK IS BECOMING VERY NORMAL IN VARIOUS PARTS OF THE COUNTRY. FURTHERMORE, DOMESTIC VIOLENCE AND HONOR KILLINGS ARE VERY COMMON. THE WIFE STAYS IN AN ABUSIVE RELATIONSHIP BECAUSE OF THE FEAR OF SOCIETY. THE FAMILY KILLS THEIR DAUGHTERS IN THE NAME OF HONOR TO KEEP UP WITH THE REPUTATION OF THEIR FAMILY. SIMILARLY, FEMALE FOETICIDE IS YET ANOTHER COMMON CRIME. DUE TO THE REGRESSIVE THINKING, PEOPLE KILL DAUGHTERS BEFORE THEY ARE BORN.

ALTHOUGH THE LIST OF CRIMES IS VERY LONG, WE CAN TAKE MEASURES TO ENSURE WOMEN'S SAFETY IN OUR COUNTRY.

FIRSTLY, THE GOVERNMENT MUST MAKE STRINGENT LAWS THAT ENSURE THE PUNISHMENT OF CRIMINALS IMMEDIATELY.

FAST TRACK COURTS MUST BE SET SO THE VICTIM GETS JUSTICE INSTANTLY. THIS WILL SERVE AS A GREAT EXAMPLE FOR OTHER MEN TO NOT COMMIT CRIMES AGAINST WOMEN.

MOST IMPORTANTLY, MEN MUST BE TAUGHT TO RESPECT WOMEN FROM AN EARLY AGE. THEY MUST CONSIDER WOMEN AS EQUALS SO THEY DON'T EVEN THINK OF HARMING THEM.

WHEN YOU CONSIDER SOMEONE INFERIOR, YOU TEND TO OPPRESS THEM. IF THIS THINKING GOES AWAY, HALF OF THE CRIMES WILL AUTOMATICALLY END.

AADIL

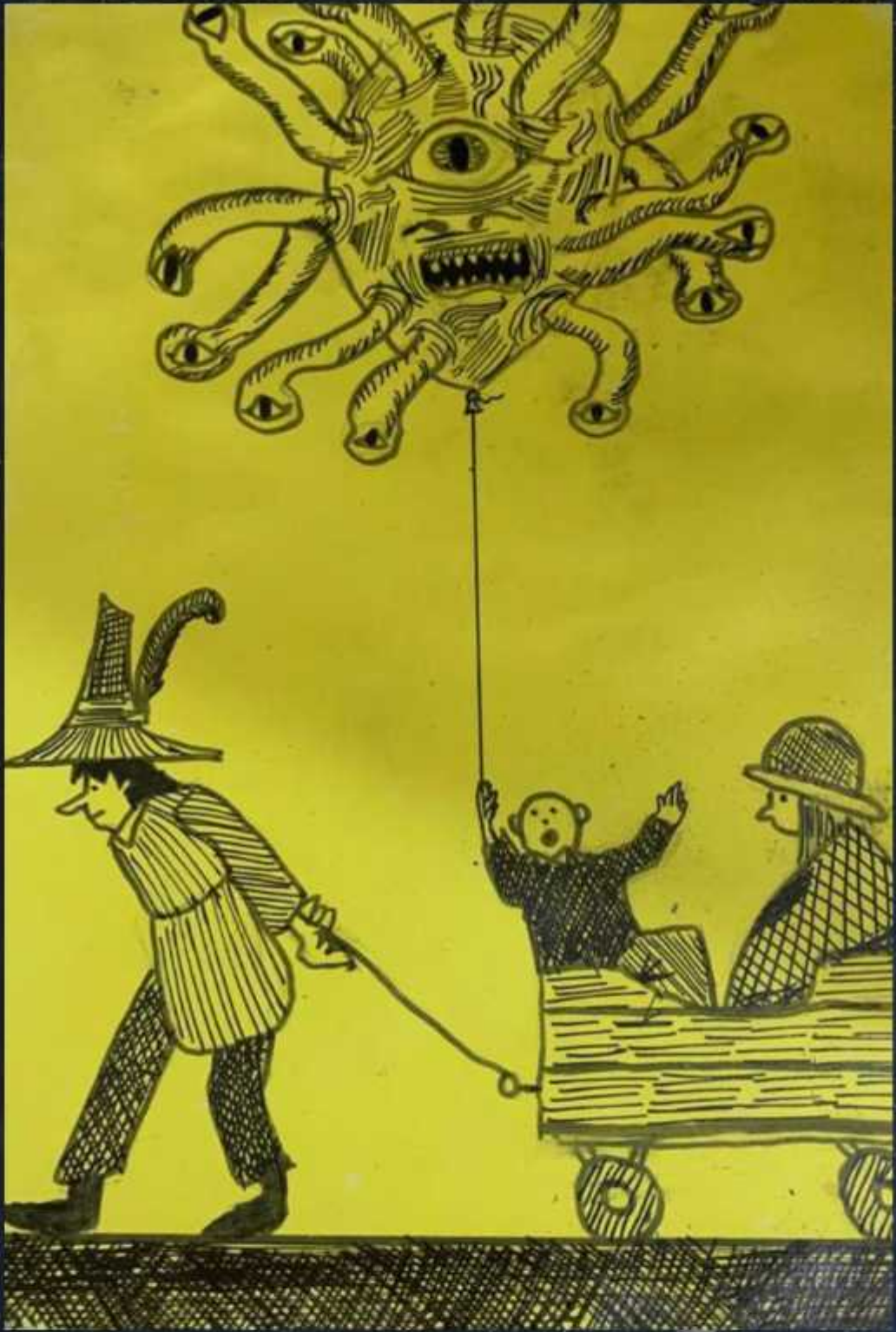
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