



Legal Implications Of Autonomous Vehicles: Analysing Liability Issues And Regulatory Challenges Posed By Self-Driven Cars

Author: Saanjh Inuganti

Designation: Student

Name of Organization/Department: Narsee Monjee Institute of Management Studies, Navi Mumbai,
Maharashtra, India.

Abstract: Evolution, ironic to its meaning, remains constant. It is a part of life, that leads to development. The world has witnessed numerous evolutions in every sphere from nature's creations of humans to artificial creations, made by evolving humans. One such significant evolution of a human made product which has created a buzz around the world is an autonomous vehicle. This article attempts to view the legal implications of autonomous vehicles in few of the other countries and suggest what could be adopted from them to draft laws to govern self-driven vehicles in India and combat the legal challenges.

Keywords: Fresh; Insightful; Practical; Thorough; Creative

I. INTRODUCTION

This idea was first envisaged in 1940 by Norman Bel Geddes, in his book "Magic Motorways" where he introduced the concept of an automated system controlled by radio signals embedded in roadways¹. The idea created a foundation to experiment in a new angle and develop what we see as autonomous vehicles today.

The first model of the automated vehicle is a self-driven car². It is equipped with a combination of advanced technologies such as sensors, radars, artificial intelligence algorithms etc. making it functional without human intervention. While this can help ease the load of driving, increase the speed of transportation, reduce traffic, increase accessibility, and save the additional financial costs of maintaining a traditional car, it raises the question of liability, increases the risks of relying on a machine in an enclosed space with no insurance and exposes humans to the grave danger of unpredictability and capabilities of these machines as we may not completely understand them ourselves.

¹ International Journal of Advanced Legal Research, Volume 5, Issue 4

² Trial Lawyers, Fischer Redavid, August 29, 2023

Furthermore, can self-driven cars successfully run in India? If so, for how long? With the wide range of geography, poor conditions of the Indian roads, unexpected pedestrian crossing, variety in demography of each state and the traffic caused by it are some of the primary factors to be considered before passing a legislation for autonomous vehicles³. Is a country, where reflexes and sensibility of humans fail to prevent deaths, ready in the next step of evolution for an invention with no spontaneity and rationality of its own?

More importantly, can Indian laws address the primary issue of liability in cases involving artificial intelligence? As the dependency on technology increases daily, its liability becomes vaguer. When laws of the country don't satisfy problems of liability in static machines or AI apps, how can they be sufficient for governing a moving automatic vehicle? Who should be held responsible if an automatic car crashes with a vehicle and causes an accident or worse, a death? The manufacturer, the owner, the local authorities, or the driver of the other vehicle? What if the other vehicle turns out to be a self-driven car as well?

II. EXISTING LAWS IN OTHER COUNTRIES

Germany

In the year 2017, Germany passed a legislation for autonomous vehicles, making it one of the first countries to do so. Their law made the manufacturer liable for an accident caused by a self-driven car upon technical failure or software error. The driver would only be held responsible if he/she could have taken control to prevent the damage but failed to do so. This approach works both ways, making the manufacturer and the driver both equally responsible based on the cause of the mishappening sparing no one with a free pass of zero liability. There are four levels of automation determining the amount of control given to the self-driven car, from level 2 to 5, automation increases and are named as follows⁴:

Level 2: Partial Automation

Level 3: Conditional Automation

Level 4: High Automation

Level 5: Full Automation

Germany had initially allowed only level 3 and 4 automated vehicles to run on roads and passed a legislation for them respectively. However, after a considerable amount of time and testing, it permitted up to level 5 of fully automated vehicles in the year 2021. For safety measures, Germany has introduced

³ International Journal of Advanced Legal Research, Volume 5, Issue 4

⁴ International Journal of Advanced Legal Research, Volume 5, Issue 4

strict and compulsory rules of installment of the electronic recording device, the black box for evidences in the grey area of liability of automobiles⁵.

Norway and Sweden

In the twin countries of Norway and Sweden where the culture, geography, demography, and ethnicity are similar, the regulation of autonomous vehicles differs. While Sweden went ahead for a framework in 2015 itself with a more detailed report, Norway began a year later with a much shorter and concise legislation. However, Sweden had an ordinance with no legislation in place. Naturally, Norway relied on Sweden's report on self-driven vehicles while designing their framework due to its intricacies. On 15th December, 2017, Norway, passed a legislation allowing self-driven cars on public roads with unique provisions of vehicles reaching a certain level of maturity only to be allowed for running and testing. It further specified entities willing to conduct any test drives of self-driven cars to submit an application with a detailed explanation about the process and conduct of testing to the respected authority⁶. The law covers safety measures and protects personal data of the driver while testing. In terms of liability, a responsible person must be appointed for overseeing operations, making them accountable for safety standards. If a vehicle is driven without any human intervention, then the testing entity or the company of autonomous vehicles becomes responsible for the damages caused. For a human driver taking control of the self-driven car, causes of an accident or death on road or in a public area will be the driver's responsibility. This approach balances the accountability between the driver, observer, and the manufacturing company.

United Kingdom

Soon after, The United Kingdom, in the month of July, 2018, passed the 'Automated and Electronic Vehicles Act', significantly establishing, contrary to the dual approach of Germany, the liability of an accident or death caused by a self-driven car on road or public place in The Great Britain to be explicitly on the driver alone. Additionally stating that if the automatic car upon insurance, has caused an accident due to unauthorized updates or failure to update the software, the liability of the insurer decreases. The Act does not address the liability of the autonomous car company or AI system⁷, leaving room for the manufacturers and creators of the autonomous vehicles to walk away without the worry of bearing any responsibility and putting the primary blame on the driver of the autonomous car.

⁵ International Journal of Advanced Legal Research, Volume 5, Issue 4

⁶ Research in Transportation Economics, Volume 83, November 2020, 100967

⁷ International Journal of Advanced Legal Research, Volume 5, Issue 4

France

France followed by addressing the legal angle of autonomous vehicles via 'The French National Strategy on Development of Autonomous Vehicles' in 2018; considered to be a somewhat revised version of the Vienna Convention on Road Traffic⁸. The Badinter Law for addressing liability in traffic accidents finds the driver a victim of the accident as it was caused by circumstance and not because of the driver⁹. In cases of criminal liability, the PACTE Law holds experimenters responsible for accidents in cases involving self-driven cars¹⁰.

China

China, on the other hand, became active in this arena since 2015, passing a legislative framework for regulating Autonomous vehicles in 2021 by introducing a revised version of its 'Road Traffic Safety Laws' and the 'Shenzhen Draft Regulations'. The amendments hold the driver liable in cases of vehicle with manual control or system developer in accordance with the laws. For autonomous vehicles without any manual control, liability will be determined by the central government. According to The Shenzhen guidelines, when a vehicle has a driver, the driver holds responsibility and if the vehicle is driverless, the liability falls into the hands of the controller or owner. Apart from the overbearing responsibility of the driver, if the accident is caused due to a defect, the manufacturer will hold liability¹¹.

Japan

In 2022, Japan amended its 'Road Traffic Act', taking its first step to make a regulatory framework for autonomous vehicles¹². The amendment allowed Level 4 and 5 autonomous driving, which is high and full automation, with full automation permitted under specific conditions only. For Level 4 autonomic vehicles, owners of the said vehicle would be held accountable for bodily injuries unless exceptions can be proved such as vehicle default, system failure etc. In terms of Level 5 Automatic vehicles, provisions are still under discussion, however, upon an accident due to the defect of a vehicle, the compensation can be taken from the manufacturer.

⁸ Journal of Law and Mobility

⁹ CMS Law. (n.d.). Autonomous Vehicles Law and Regulation in France

¹⁰ Actuaia, France Pioneers Automated and Connected Road Mobility, 2018

¹¹ Shenzhen Special Economic Zone Regulations on the Administration of Smart and Connected Vehicles, August 1, 2022

¹² National Police Agency of Japan. (n.d.). Automated Driving

United States of America

The United States has most recently proposed a ‘National Highway Traffic Safety Administration’ as the ‘Automated Driving System Safety, Transparency and Evaluation Program’ for establishing guidelines for autonomous vehicles¹³. Under it, it’s developing a framework of shared responsibility amongst manufacturers, software developers, owners, drivers, and the users.

Australia

Australia is actively working on creating an end-to-end regulatory framework for autonomous vehicles which is expected to be introduced by the year 2026. The law is said to place responsibility for accidents or death involving cases of automatic vehicles on corporations such as the manufacturing companies, testing entities etc. rather than individuals such as the owner or driver itself¹⁴.

Countries such as Africa and Russia are in the developmental stages of a framework for autonomous vehicles in the future¹⁵.

III. INDIA

As of now, Indian vehicles are governed by The Motor Vehicles Act of 1988 which was amended in 2019, Central Motor Vehicles Rules 1989, Environment Protection Act 1986, The Road Transport Corporations Act 1950, Insurance Act 1938, The Carriage by Road Act 2007, The Goods and Service Tax Act 2017, The Indian Penal Code 1860 now the Bhartiya Nyaya Sanhita 2024, State Specific Motor Vehicles Taxation Acts, The Consumer Protection Act of 2019. Let’s look at how each of these acts regulate vehicles in India:

1. **The Motor Vehicle Act, 1988 (Amended 2019):** The Motor Vehicle Act of 1988 alongside the amended version of 2019 is the primary legislation that regulates motor vehicles in India. It creates the foundation by covering the basic aspects of registration, age limit, licensing, compensation, penalties, violations etc.
2. **Central Motor Vehicles Rules, 1989:** Lays down the standards of operation, construction, pollution, driver’s conduct etc.
3. **Environment Protection Act, 1986:** As the name itself suggests, governs environmental concerns. Inclusive of norms such as fuel quality, timely checks, level pollutions etc.

¹³ National Highway Traffic Safety Administration, December, 2024

¹⁴ Smithslawyers.com, July, 2024

¹⁵ National Transport Commission, 2022

4. **The Road Transport Corporations Act, 1950:** Applies to state owned transport companies and thus regulates state transport undertakings.
5. **The Insurance Act, 1938:** This act ensures mandatory insurance to vehicles and provisions of the MV act for third-party liability coverage.
6. **The Carriage by Road Act, 2007:** regulates transportation of goods on roads, ensuring liability of carriers and their registration.
7. **The Goods and Service Tax Act, 2017:** The GST act regulates the financial side of the vehicles by applying sale and transportation expenses on them.
8. **The Indian Penal Code, 1860 (now the Bhartiya Nyaya Sanhita, 2024):** Addresses offenses of negligence, rash driving, over-speeding, hit-run, or any other violations.
9. **State Specific Motor Vehicles Taxation Acts:** States individually impose taxes on vehicles, for instance, Maharashtra. This Act regulates the additional state charges.
10. **The Consumer Protection Act, 2019:** The Consumer Act, true to its name, safeguards the rights of consumers/buyers in the vehicle market. This includes charges for defects, errors, malfunctions, false/fake information leading to fraud etc.

India hasn't yet formulated regulations for governing autonomous vehicles¹⁶. Making a legal framework for these vehicles comes with a set of challenges of its own.

IV. RECOMMENDATION & SUGGESTIONS

There are various levels of automation in an autonomous vehicle. India isn't yet completely equipped for full automation vehicles on its roads. However, for the lesser levels of automated vehicles, it may have scope by either amending the existing legislations or introducing an entirely new legislation for them. A few amendments that can be made in the existing legislations are as follows:

1. **Broadening the Definition:** Section 2 of the MVA, which defines a vehicle can be re-defined by widening their scope of nature. These definitions include only traditional vehicles and can be amended to include autonomous vehicles as well.

¹⁶ The Times of India, 18th December, 2023

2. **Restricting the Eligibility Criteria to own an Autonomous Vehicle:** While autonomous vehicles are self-driven and automatic, depending on the level of automation, anyone with high income would be able to purchase and run it. This could be inclusive of underage kids who are from an elite or rich background. There must be a restriction on under-age individuals owning an autonomous vehicle since they may not have the maturity to completely understand it. Thus, a provision must be added for only people attaining the age of 18 to own an autonomous vehicle.
3. **Mandatory Charging Stops in Minimum Distances:** As per the guidelines of the Ministry of Road Transport and Highways, the minimum distance between two petrol stations is generally 300 meters in plain and rolling terrain in non-urban areas for undivided carriageways, and 1000 meters for divided carriageways as per certain state guidelines¹⁷. Once an autonomous vehicle comes into the picture, it won't need petrol pumps in regular intervals. While there are autonomous vehicles of petrol and battery, majority of these vehicles are run by batteries. These batteries would require to be charged. Thus, an amendment that accommodates mandatory charging points for autonomous vehicles in a minimum distance is crucial.
4. **Grounds for Disqualification of Owning an Autonomous Vehicle:** Section 19 mentions grounds for disqualification of a driver's license¹⁸. These can be amended to 'Grounds for Disqualification of Owning an Autonomous Vehicle.' Since there will be an owner instead of a driver in an autonomous vehicle, license will be completely out of the picture and a new criterion would be required for the person owning the vehicle. Grounds for disqualification could be no records of test-driving conducted, poor maintenance etc.
5. **Strict Enforcement Agencies:** A committee that enforces and regulates the laws made keeps checks on abatement is a necessity for both traditional and autonomous vehicles. This clause can be added in the legislation titled 'Appointment for Motor Vehicle Officers' in the amended version of Section 213 of the MVA act, 2019¹⁹.
6. **Awareness on Autonomous Vehicles:** If Autonomous Vehicles do get a legislation to run on roads, the buyers will be unaware of using them. Autonomous vehicles are a newly emerging concept and its practicality is still being tested. For an average human to buy a vehicle that is automatic without knowing its mechanism is foolish. This would also end the business before it begins. Thus, it's essential for people to be aware of its risks as well as advantages. The legislation could be amended to mandate awareness on autonomous vehicles. This can be done via a MCQ test on awareness on autonomous vehicles before a learner's license.

¹⁷ Government of India, Ministry of Road Transport and Highways

¹⁸ Motor Vehicle Act, 1988 and 2019

¹⁹ Motor Vehicle Act, 2019

Apart from the suggested amendments in the already existing legislation, a new legislation can also be designed. While India is in its phase of developing laws for autonomous vehicles, here are some key takeaways from the legislations made by other countries which can be adopted by India in its new legislation:

1. **Liability:** It's commonly known that India has a no-fault liability under section 140 of the MVA act wherein compensation must be paid without proving negligence. For autonomous vehicles, India can adopt a dual or multi-liability approach from Germany, Norway, and Japan. Via this approach, owners can be made liable when manual instructions were not followed, or an accident that could have been avoided if its actions could have been controlled timely. Manufacturers would be held responsible for software failure or technical glitches whereas testing agencies and operators can be made liable during trials or for 1 year immediately within a trial. Additionally, a black box can be mandated in every autonomous vehicle to verify liability or the root cause of an accident in area of grey zones.
2. **Clear Definitions:** A distinguished set of definitions for system developers, AI users, coders etc. could be adopted from legislations of USA and China to help reducing complexities during accidents occurring beyond physical makers/entity. This includes accountability for missed software updates or mandating regulatory safeguards for algorithmic decisions.
3. **User Awareness:** UK and USA have necessitated awareness for autonomous vehicle users. This ensures that the user has knowledge of the limitations and role they play involving an automatic vehicle. To introduce a similar provision in India, apart from including this on legislations and papers, this could be introduced in educational systems as part of robotics/electronics/computers. Otherwise, prior to purchasing an autonomous vehicle, a user-education session could be conducted. USA and UK have introduced special insurance policies for automobiles. This is also an adoption that could be considered by India.
4. **Safety and Data Protection:** From Norway and countries in Europe, an increasingly holistic safety and privacy system can be designed for the protection of drivers and passengers in the autonomous vehicle. These standards can be designed to align with the international benchmark of privacy and safeguards. From Norway, India can also take specifying entities willing to conduct any test drives of self-driven cars to submit an application with a detailed explanation about the process and conduct of testing to the respected authority.
5. **Level-based Automation:** Germany and Japan follow a level-based automation for regulating autonomous vehicles. This legally treats vehicles of varied automation differently from L2 to L5. India can similarly adopt for a 0-5 level of automation and design responsibilities according to each level. With

an increase in the automation, the liability must also increase. Thus, L2 to L4 for learners or inter-mediate permit rollout and only L5 for full/permanent permit with stricter regulations could be enforced.

6. **Corporate Accountability:** Initiated by Australia, corporate accountability ensures that large entities are held liable for negligence and defaults instead of overloading the risks on individuals entirely. Thus, for errors of production, feature installments etc. the responsibility will be distributed. These corporate entities can also be made to give insurance or compensation accordingly.
7. **Oversight Centralization:** Like USA and China, India can have a centralized committee for governing autonomous vehicles with regional sub committees/bodies looking at the state-wise regulation of these vehicles. This caters for a national yet a regional control over common issues of traffic, unexpected pedestrian crossing, etc. while handling regional differences.
8. **Timely Reviews:** India, from Japan can adopt the clause of regular reviews for future proofing of autonomous vehicle. This helps laws to be updated with the growing technology and evolving society. It is important to make this review mandatory for instance every 2-3 years or if possible, annually. This reviewing should be done by a body of academicians, AI experts, manufacturers, automobile users, companies, and other related bodies for a sufficient review time to time.

V. CONCLUSION

In conclusion, while autonomous vehicles seem to be a good idea, there are multiple challenges in the legal and judicial field that make it a distant possibility. However, if these challenges are dealt with efficiency and a legislation is made from the best provisions of other countries, like how our constitution was made- indeed the best in the world, the laws that govern autonomous vehicles will be the next best thing happening to India.