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Emissions, CAFE, Scrappage & Product Liability

BS VI Norms, CAFE Regulations, Vehicle Scrappage Policy 2021, Recalls & Consumer Protection

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Bhatt & Joshi Associates, Advocates & Legal Consultants

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CHAPTER ONE

Bharat Stage VI: Technical Framework, OBD and Real Driving Emissions

The Leapfrog Decision, WLTC Cycle, OBD-II Requirements, RDE Conformity Factors and In-Use Compliance

> *Bharat Stage VI — implemented from 1 April 2020 by leapfrogging BS V — represents the most significant emission regulatory upgrade in India's automotive history. Its implications for OEM compliance, vehicle design, and ongoing in-use monitoring extend far beyond the type approval test.*

1.1 The Policy Decision to Leapfrog BS V

The decision to skip BS V (the intermediate Euro V-equivalent standard) and transition directly from BS IV to BS VI was made on the recommendation of the Supreme Court's Environment Pollution (Prevention and Control) Authority (EPCA) and endorsed by the Union Cabinet in 2016,

compressing a typical five-year regulatory development into a four-year implementation schedule that required simultaneous transformation of vehicle technology, fuel supply, and testing infrastructure across India. The policy rationale for the leapfrog was compelling: air quality monitoring data from India's major cities showed particulate matter and nitrogen oxide concentrations far exceeding the WHO health guidelines, with vehicle emissions identified as a significant contributor; BS V would have provided only marginal air quality improvement because the Euro V NOx limits for diesel vehicles are only 28% lower than Euro IV, while Euro VI imposes a 90% reduction in NOx from the Euro IV baseline; and the cost and disruption of a two-step transition (BS IV to BS V, then BS V to BS VI) was assessed as greater than a single coordinated leap, particularly given that the vehicle manufacturers and fuel refineries would need to make comparable capital investments for either step. The concurrent transition of India's fuel supply to ultra-low sulphur (10 ppm maximum) BS VI grade diesel and petrol — essential for protecting the advanced aftertreatment systems (DPF, SCR) required for BS VI compliance from sulphur poisoning — required investments of approximately Rs. 28,000–30,000 crore by India's petroleum refining sector, representing one of the largest single infrastructure investments in the automotive emission transition.

The BS VI emission limits for M1 passenger cars are: 1.0 g/km for CO (down from 1.0 g/km in BS IV — unchanged); 0.1 g/km for total hydrocarbons + non-methane hydrocarbons (down from 0.1/0.068 in BS IV — roughly comparable); 0.06 g/km for NOx from petrol engines (down from 0.08 g/km in BS IV — 25% reduction); 0.08 g/km for NOx from diesel engines (down from 0.25 g/km in BS IV — a dramatic 68% reduction that necessitates SCR (Selective Catalytic Reduction) aftertreatment in virtually all diesel passenger cars); 0.0045 g/km for particulate matter from diesel engines (down from 0.005 g/km in BS IV); and 6×10^{11} particles/km for particle number from direct injection engines (a new parameter in BS VI that was not present in BS IV, addressing the ultrafine particle emissions from GDI/TGDI petrol engines which BS IV did not regulate). The combination of the NOx reduction for diesel vehicles and the introduction of particle number limits for petrol direct injection engines drove fundamental changes in vehicle powertrain technology: diesel passenger cars required the addition of Diesel Exhaust Fluid (DEF, commercially known as AdBlue) injection systems for SCR operation; petrol GDI engines required the addition of Gasoline Particulate Filters (GPF) to capture soot particles from the injector combustion zone. Both of these additions increased vehicle complexity, cost, and owner maintenance obligations (DEF must be refilled every 15,000–20,000 km; GPF requires periodic active regeneration), creating new vehicle service requirements that OEM service networks and independent workshops needed to be trained to handle.

The Worldwide Harmonised Light Vehicles Test Cycle (WLTC) — adopted as the mandatory test cycle for BS VI emission and fuel consumption measurements, replacing the NEDC (New European Driving Cycle) used in earlier BS standards — is a significantly more demanding test protocol that better represents real-world driving conditions. The WLTC consists of four driving

phases: Low (representing urban crawling at 7–15 km/h average), Medium (suburban driving at 26 km/h average), High (arterial road driving at 46 km/h average), and Extra High (motorway driving at 92 km/h average and maximum speed 131 km/h). The combined WLTC has an average speed of 46.5 km/h and a total distance of 23.27 km, compared to the NEDC's average speed of 33.6 km/h and 11 km distance. The higher speed and more dynamic acceleration profile of the WLTC means that turbocharged and direct injection engines that could reduce their emissions significantly during the gentle, steady-state NEDC test (by running in lean combustion modes) produce higher emissions during the more aggressive WLTC, requiring additional aftertreatment capacity or calibration changes. The WLTC also produces more representative fuel consumption figures than the NEDC: WLTC fuel consumption values are typically 20–30% higher than NEDC values for the same vehicle, better reflecting the fuel consumption that owners actually experience in mixed driving conditions.

1.2 On-Board Diagnostics: The BS VI OBD Framework

The On-Board Diagnostics (OBD) requirements under BS VI represent a significant expansion of the vehicle's self-monitoring obligations, requiring comprehensive real-time monitoring of every emission-relevant system and the storage and communication of diagnostic information about detected malfunctions. BS VI OBD requires monitoring of: the catalytic converter (both oxidation catalyst efficiency for CO/HC conversion and NOx catalyst (SCR) conversion efficiency); the oxygen sensors and air-fuel ratio sensors (upstream and downstream of each catalyst); the exhaust gas recirculation (EGR) system and valve function; the evaporative emission control system (EVAP) for petrol vehicles (monitoring the fuel vapour capture system integrity); the fuel system pressure and injector operation; the secondary air injection system (where fitted); the Diesel Particulate Filter (DPF) regeneration and loading; the DEF (AdBlue) supply and injection system for SCR vehicles; and the Malfunction Indicator Lamp (MIL) circuit itself. For each monitored system, BS VI OBD specifies the minimum performance threshold that must be detected — the so-called OBD threshold is 1.5 times the applicable emission limit, meaning that the OBD system must detect any malfunction that would cause the vehicle's emissions to exceed 1.5 times the BS VI limit, even if the malfunction would not push emissions above the limit itself.

The practical implementation of BS VI OBD compliance requires OEM calibration engineers to develop OBD monitoring algorithms that: are sensitive enough to detect malfunctions at the 1.5× threshold (avoiding "false negatives" that allow non-compliant emission performance to go undetected and the MIL to remain off when it should illuminate); but not so sensitive that they generate excessive "false positives" (triggering MIL illumination for minor sensor variations or transient operating conditions that do not represent genuine malfunctions and do not cause real emission exceedances). Balancing the sensitivity trade-off is a technically demanding calibration challenge, particularly for the catalyst efficiency and oxygen sensor monitoring algorithms that must distinguish genuine catalyst degradation (requiring MIL illumination and workshop

service) from normal sensor ageing, altitude variations, and fuel quality variations that cause transient sensor reading changes without genuine emission impact. OEM warranty and service data from early BS VI model years has shown that OBD-related warranty claims — particularly MIL illuminations that bring vehicles to the workshop without a genuine mechanical fault being identified — have been higher than expected, reflecting both genuine calibration challenges and the "customer journey" complexity of explaining to vehicle owners the difference between a diagnostic indicator of a developing issue and a genuine drivability problem.

1.3 Real Driving Emissions: The RDE Framework

Real Driving Emissions (RDE) testing was introduced as a BS VI requirement to address the well-documented divergence between the emission performance of vehicles measured in the laboratory (under the WLTC test conditions) and their actual emissions on the road in real-world driving conditions. The "emissions gap" — between laboratory-certified emission levels and on-road actual emissions — was dramatically exposed by the Volkswagen "defeat device" scandal of September 2015, in which Volkswagen and Audi diesel vehicles were found to use sophisticated engine management software that detected the specific conditions of the official NEDC test cycle (based on wheel speed profile, ambient temperature, engine operating time, and other parameters) and switched the engine into a clean-running test mode during the test, while reverting to a higher-NOx operating mode in normal road driving. The subsequent investigation revealed that many other manufacturers' diesel vehicles also had significantly higher real-world NOx emissions than their certified levels, though through "optimisation" strategies rather than outright defeat devices — calibrating emission control systems to be most effective under the test cycle conditions and less aggressive (sacrificing some emission performance for fuel economy and drivability) in the wider range of conditions encountered in real road use.

RDE testing requires the manufacturer to test a vehicle on public roads across a defined range of driving conditions (including urban driving at low speeds with frequent stop-start, rural driving at moderate speeds, and motorway driving at higher speeds), ambient temperatures (broadly between 0°C and 35°C), and altitudes (up to 700 metres for the standard test, with provisions for extended altitude conditions), using a Portable Emissions Measurement System (PEMS) that directly measures exhaust emissions from the vehicle's tailpipe throughout the trip. The PEMS comprises an exhaust flow measurement system, an emission analyser, a GPS receiver for trip characterisation, and a data logging system that records second-by-second measurements of exhaust flow, emission concentrations, ambient conditions, vehicle speed, and power demand throughout the test. The resulting "Not-to-Exceed" (NTE) zone analysis evaluates whether the vehicle's emissions in the valid NTE windows of the RDE trip comply with the applicable limits when divided by the "Conformity Factor" — currently 2.1 for NOx (meaning the RDE NOx emissions are allowed to be up to 2.1 times the WLTC limit) and 1.5 for particle number. The conformity factor acknowledges that PEMS measurement uncertainty and the

unavoidable variability of real-world conditions means that exact WLTC limit compliance cannot be demonstrated through RDE testing, and provides a margin of tolerance above which RDE results constitute non-compliance.

1.4 In-Use Compliance Monitoring: Post-Registration Obligations

The BS VI emission framework's in-use compliance obligations extend beyond the type approval test to the vehicle's performance throughout its service life. The primary in-use compliance tool for BS VI vehicles is the OBD system, which continuously monitors emission system performance and illuminates the MIL when a malfunction that could cause emissions to exceed the OBD threshold is detected. Vehicles with an active MIL are technically non-compliant with the emission standards and should be taken to a workshop for diagnosis and repair — the BS VI standards require that the MIL-triggering malfunction be rectified before the vehicle continues to accumulate in-use emission hours. The roadside enforcement of OBD compliance — checking whether vehicles have active MIL signals — is technically simple (any OBD reader can query the vehicle's diagnostic system for active fault codes) but has not yet been systematically implemented in India's traffic enforcement infrastructure, though MoRTH has announced plans to incorporate OBD compliance checking into roadside enforcement protocols for commercial vehicles.

CHAPTER TWO

CAFE Regulations: Fleet CO2 Management and Compliance Strategy

Phase I and Phase II Standards, Compliance Computation, Super Credits, Penalties and Portfolio Optimisation

> *India's CAFE (Corporate Average Fuel Efficiency) regulations impose fleet-level CO2 management obligations on every vehicle manufacturer and importer above the minimum sales threshold. This chapter provides a comprehensive analysis of the CAFE framework and its commercial implications for OEM product and fleet strategy.*

2.1 Legal Basis and Coverage of CAFE Regulations

The Fuel Consumption Standards for Passenger Motor Vehicles in India — commonly known as the CAFE Standards or Corporate Average Fuel Efficiency Regulations — were notified by the Ministry of Road Transport and Highways in September 2017 under the authority of the Energy Conservation Act, 2001 (which empowers the Central Government to specify energy consumption standards for vehicles and buildings). The CAFE Regulations apply to all manufacturers and importers of M1 category passenger motor vehicles (defined as vehicles with not more than eight seats in addition to the driver's seat) who sell or import 1,000 or more vehicles in India in a given financial year — a threshold that covers virtually every active OEM and importer in the Indian market, since even relatively small imported brand programmes typically exceed 1,000 annual sales. The Regulations apply to vehicles measured at "kerb weight" on the basis of the WLTC CO2 certification value obtained during type approval — the same certification process that produces the fuel consumption figure disclosed in the vehicle's marketing materials and required by the Consumer Protection Act's fuel efficiency disclosure obligations.

Phase I CAFE standards (applicable from FY2017-18 through FY2021-22) required each manufacturer's fleet average CO2 to be at or below 130 g/km — a standard that was achievable for most manufacturers given their existing product portfolios, since average fleet CO2 emissions for Indian passenger car fleets were already broadly in this range due to the high proportion of small, fuel-efficient cars in the Indian market relative to markets like the United States or Australia where larger, less fuel-efficient vehicles predominate. Phase II CAFE standards (FY2022-23 through FY2026-27) set a tighter target of 113 g/km — a 13% reduction from Phase I that requires more active portfolio management, particularly for manufacturers with a significant proportion of large-displacement or high-power vehicles in their Indian sales mix. The 113 g/km Phase II target is comparable to the CO2 targets being applied in major automobile markets during the same period — it is broadly aligned with the trajectory of the

European Union's CO2 fleet targets (which progressively reduced from 130 g/km in 2015 to 95 g/km in 2021) and China's fuel consumption standards — reflecting India's participation in the global effort to improve automotive fuel efficiency and reduce transport sector CO2 emissions.

The penalty for failure to achieve the CAFE fleet average target is Rs. 25,000 per vehicle sold in the non-compliant year for every gram per kilometre by which the manufacturer's fleet average exceeds the applicable limit. For a manufacturer selling 500,000 vehicles annually in India whose fleet average CO2 is 5 g/km above the Phase II limit of 113 g/km, the annual penalty exposure is: 500,000 vehicles × 5 g/km excess × Rs. 25,000/vehicle/g = Rs. 625 crore. This penalty magnitude — potentially hundreds of crores for large-volume manufacturers with fuel-inefficient portfolios — creates a genuine commercial imperative for active CAFE compliance management that goes well beyond nominal technical compliance. The penalty is assessed and collected through the CAFE compliance verification process administered by the Bureau of Energy Efficiency (BEE) under the Ministry of Power, with the manufacturer required to submit annual CAFE compliance reports to BEE within 90 days of the end of each financial year, supported by vehicle-level CO2 certification data and sales records verified by an independent auditor.

2.2 Fleet Average CO2 Computation: Methodology

The CAFE fleet average CO2 computation requires each manufacturer to: identify every vehicle model variant sold (registered) in India during the financial year; determine the WLTC-certified CO2 value (in g/km) for each variant from the type approval documentation; weight each variant's CO2 value by the number of units of that variant registered during the year; and sum the weighted CO2 values divided by the total number of vehicles registered to arrive at the fleet average. The mathematical formula is: Fleet Average CO2 = Σ(CO2_i × Units_i) / Σ(Units_i) where i represents each vehicle variant sold. The practical implementation of this computation requires OEMs to maintain a comprehensive and accurate database of: every vehicle model variant's WLTC CO2 certification value (which may vary between engine options, transmission options, and body configurations of the same model); and every vehicle's actual specifications at the time of sale (to match each sold unit to its correct certified CO2 variant). Discrepancies between the variant specification used in the CO2 database and the actual specification of sold vehicles (for instance, if a model sold with an optional higher-performance engine configuration is incorrectly attributed the CO2 value of the base engine) can produce CAFE compliance calculations that are either too optimistic or too pessimistic relative to the correct value.

The CAFE computation is further complicated by the treatment of vehicles at year-end boundaries (vehicles ordered in one financial year but delivered and registered in the next), vehicles exported from India (which should be excluded from the CAFE denominator since they are not registered in India), and vehicles returned to the manufacturer or scrapped before registration (which should be excluded from the sales count). The CAFE Regulations'

methodology for handling these boundary cases is specified in guidance issued by BEE, but the practical data management requirements are substantial for large-volume manufacturers who process hundreds of thousands of vehicle transactions annually across complex distribution networks involving manufacturer-to-distributor, distributor-to-dealer, and dealer-to-customer supply chains.

2.3 Super Credits and Electric Vehicle Incentives

The CAFE Regulations provide a "super credit" mechanism for electric vehicles and plug-in hybrid electric vehicles that allows these vehicles to count as more than one unit in the CAFE compliance calculation, effectively reducing the fleet average CO2 below the level that would be achieved if they were simply counted as zero-CO2 vehicles in the standard fleet average formula. The super credit factor for battery electric vehicles (BEVs) and fuel cell electric vehicles (FCEVs) is specified in the CAFE Regulations as a multiplier of 2 — meaning that each BEV or FCEV sold counts as 2 vehicles in the denominator of the fleet average calculation, while contributing zero CO2 to the numerator. The practical effect is: for a manufacturer with an existing fleet average of 115 g/km (2 g/km above the Phase II 113 g/km limit), the sale of one additional BEV effectively reduces the fleet average by twice the amount that would be achieved by simply adding a zero-CO2 vehicle, accelerating the path to CAFE compliance beyond what the vehicle's intrinsic zero-emission performance alone would achieve. The super credit mechanism creates a specific commercial incentive for OEMs to prioritise Indian introduction and volume growth of BEV models: each BEV sale not only contributes a zero-CO2 unit to the fleet average numerator but also provides an additional denominator credit, creating a "double benefit" for CAFE compliance that can justify EV introduction ahead of the commercial timeline that BEV economics alone would support.

The interaction between the CAFE super credit mechanism and the PLI scheme's incentive structure creates a compounding commercial incentive for OEMs to maximise BEV sales in India. An OEM who sells a BEV in India receives: the BEV's market revenue (which may be supported by FAME/PM E-DRIVE demand incentives if the vehicle qualifies); PLI incentive payments at the highest incentive rate (13–18% of incremental BEV sales value, depending on the OEM's PLI category); a GST benefit (at 5% rather than 28%+ for a comparable ICE vehicle); and a CAFE super credit (reducing the fleet average CO2 by twice the normal effect). This multi-dimensional policy incentive stack makes BEV market development in India simultaneously commercially attractive (through PLI, FAME, and GST) and strategically necessary (through CAFE compliance). The combined incentive value for a mid-range BEV selling at Rs. 25 lakh ex-showroom can represent Rs. 8–12 lakh of government-backed financial benefit per unit across all incentive dimensions, fundamentally reshaping the commercial economics of EV market development relative to ICE alternatives.

CHAPTER THREE

Vehicle Scrappage Policy 2021: Legal Architecture and Implementation

Policy Rationale, RVSF Framework, ATS Infrastructure, Fitness Testing, OEM Incentive Obligations and End-of-Life Vehicle Law

> *India's Vehicle Scrappage Policy 2021 creates a comprehensive framework for retiring old, polluting vehicles and incentivising their replacement. Its legal architecture spans vehicle fitness testing, scrappage facility regulation, environmental compliance and commercial incentive obligations for OEMs.*

3.1 Policy Rationale and Legislative Architecture

The National Vehicle Scrappage Policy, announced by the Ministry of Road Transport and Highways in August 2021, addresses a critical gap in India's vehicle regulatory framework: the absence of a systematic mechanism for retiring vehicles that have aged beyond their useful life, deteriorated below roadworthy standards, or are emitting pollutants substantially exceeding current standards. India's vehicle fleet in 2021 included approximately 51 lakh (5.1 million) vehicles over 20 years old (primarily private motor cars), of which a significant proportion were assessed by MoRTH to be in poor mechanical condition, consuming significantly more fuel than newer equivalents, and emitting pollutants at levels 5–15 times higher than current BS VI standards. The continued operation of these high-polluting, high-fuel-consuming older vehicles is a direct burden on India's air quality improvement efforts and on national energy security (since inefficient older vehicles contribute disproportionately to petroleum consumption relative to their share of vehicle-kilometres travelled).

The Motor Vehicles (Registered Vehicle Scrapping Facility) Rules, 2021 notified under the Motor Vehicles Act, 1988 create the regulatory framework for Registered Vehicle Scrapping Facilities (RVSFs) — the authorised entities empowered to deregister and dismantle end-of-life vehicles. An RVSF must obtain registration from the state government (administered through the state transport authority) under the MV Rules, 2021 and must comply with: infrastructure requirements (secure vehicle storage, safe vehicle handling equipment, fluid drainage and collection systems, hazardous material storage complying with Hazardous Waste Rules); environmental requirements (collection and proper disposal of all vehicle fluids including engine oil, transmission fluid, coolant, fuel, and refrigerant; collection and disposal of traction batteries, catalytic converters, and airbag initiators; management of paint, glass, and rubber waste); operational requirements (maintaining records of all vehicles received and processed, issuing Certificates of Vehicle Scrapping, and reporting to VAHAN); and technical requirements (using

approved methods for vehicle depollution and dismantling that prevent environmental contamination). The RVSF model is designed to formalise and improve the vehicle end-of-life processing industry, replacing the largely unregulated informal dismantling sector (which processes the majority of India's end-of-life vehicles today) with a professional, registered, and environmentally compliant alternative.

The Certificate of Vehicle Scrapping (CVS) issued by an RVSF upon processing an end-of-life vehicle is the key commercial instrument of the scrappage policy, since it is the document that entitles the previous vehicle owner to claim the incentives available from the OEM (when purchasing a replacement vehicle) and from the state government (road tax concessions and registration fee exemptions). The CVS contains: the vehicle's registration number; the VIN (Vehicle Identification Number) of the scrapped vehicle; the date of scrapping; the RVSF's registration details; and a de-registration confirmation number from the VAHAN database confirming that the vehicle's registration has been cancelled. The chain of custody from vehicle owner to RVSF to VAHAN database to CVS issuance must be secure and auditable, since the CVS is a transferable document that could be fraudulently issued for vehicles that have not actually been scrapped — a risk that requires robust verification mechanisms at both the RVSF and the VAHAN integration level.

3.2 Automated Testing Stations: The Fitness Testing Revolution

The Automated Testing Station (ATS) framework — a central pillar of the Vehicle Scrappage Policy — represents the most significant reform of India's vehicle fitness testing infrastructure since the introduction of the Certificate of Fitness (CoF) requirement for commercial vehicles under the Motor Vehicles Act. The existing CoF system, administered through the RTO network, is characterised by: subjective manual inspection (where inspector judgment rather than objective measurement determines fitness outcomes); significant variation in inspection quality between RTOs (reflecting differences in inspector training, equipment, and institutional culture); limited detection capability for critical safety failures that require dynamic testing (such as brake effectiveness, which cannot be reliably assessed by visual inspection alone); and high susceptibility to corruption (manual inspection by a single inspector at an RTO with limited transparency creates conditions for informal payments to influence the inspection outcome). The ATS framework addresses all of these weaknesses through technology-driven, standardised, automated testing.

An ATS lane performs a sequence of automated tests without requiring the vehicle to stop or the owner to be present for most tests: the vehicle drives through the lane at prescribed speeds, with sensors automatically measuring: wheel alignment (laser-based measurement of toe, camber, and caster angles); brake effectiveness (roller brake testers that measure braking force at each wheel independently, detecting asymmetric braking that indicates a worn or seized brake component); suspension damping (shaker plates that excite the suspension at its natural

frequency and measure the damping response, detecting worn shock absorbers); headlamp aim and intensity (photometric scanners that measure the headlamp beam direction and luminous intensity); exhaust emission (a probe inserted into the exhaust pipe measures HC, CO, CO2, and O2 concentrations for petrol vehicles, and smoke opacity for diesel vehicles); vehicle dimensions and height; and tyre tread depth. The ATS computer system records all test results, cross-references the vehicle's registration data from VAHAN, and generates a fitness report within minutes of the vehicle completing the test lane. A vehicle that passes all tests receives an ATS fitness certificate; a vehicle that fails on any parameter must be repaired and return for re-testing before a fitness certificate is issued.

3.3 OEM Commercial Obligations Under the Scrappage Policy

MoRTH's notification of the Vehicle Scrappage Policy included a direction to automobile manufacturers to offer a discount or incentive on the purchase of a new vehicle by customers who scrap an older vehicle at an RVSF and present a valid Certificate of Vehicle Scrapping. While this direction does not have the force of a binding legal obligation in the manner of a statutory regulation (MoRTH's notification was in the form of an advisory/directive rather than a statutory rule), virtually all major OEMs have voluntarily established scrappage incentive programmes in response, recognising both the policy alignment value and the commercial opportunity of the scrappage-linked incentive as a purchase stimulus. OEM scrappage incentive programmes typically offer: a cash discount of Rs. 10,000 to Rs. 50,000 on the purchase of a new vehicle within a specified period of receiving the CVS (shorter timelines — typically 6 to 12 months — to drive urgency); the discount is typically applied at the dealership as a reduction in the vehicle's ex-showroom price, reimbursed to the dealer by the OEM; and in some programmes, the incentive is layered with other promotional benefits (exchange bonuses, seasonal offers) to create a cumulative financial benefit for the scrap-and-replace customer.

The legal structuring of OEM scrappage incentive programmes requires attention to: GST compliance (the scrappage incentive discount may need to be reflected in the dealer's invoice as a post-supply price reduction under the GST framework, with potential implications for the output GST computation); income tax treatment (whether the scrappage incentive is a deductible marketing expense or a capital subsidy affecting the vehicle's cost basis for depreciation purposes); consumer protection compliance (the terms and conditions of the scrappage incentive programme must be clearly communicated to customers to avoid CCPA unfair trade practice scrutiny); and competition law compliance (the terms of the dealer incentive reimbursement for scrappage-linked discounts must not create pricing obligations on dealers that could be characterised as resale price maintenance — the incentive should be structured as a manufacturer-to-consumer subsidy channelled through the dealer, not as a mandatory discount that dealers are required to apply).

CHAPTER FOUR

Vehicle Recall Regulations 2021: Mandatory Framework and OEM Obligations

Voluntary and Mandatory Recall Procedures, Timeline Requirements, Consumer Notification, Penalties and International Coordination

> *The Automotive Recall Regulations 2021 transformed India's previously voluntary recall landscape into a legally mandated framework with criminal penalties. For OEMs, understanding every procedural obligation is non-negotiable compliance infrastructure.*

4.1 The Recall Regulatory Framework: From Voluntary to Mandatory

Prior to the enactment of Section 110A of the Motor Vehicles Act (inserted by the 2019 Amendment) and the consequent notification of the Automotive Recall Regulations, 2021, vehicle recalls in India were entirely voluntary — manufacturers could and did initiate recalls in response to safety defects identified through engineering investigations, complaints from owners, regulatory actions in other markets, or supplier quality notifications, but there was no statutory obligation to initiate a recall, no specified timeline for consumer notification, and no penalty for failure to act on a known safety defect. This voluntary framework reflected India's traditional regulatory approach of relying on manufacturer responsibility and reputational incentives rather than mandatory regulatory requirements for post-sale product safety, an approach that was consistent with the pre-CPA 1986 consumer protection environment but increasingly anachronistic as India's consumer market matured and as the international consensus on mandatory recall frameworks (led by the United States' NHTSA mandatory recall requirements, the European Union's General Product Safety Directive, and Australia's mandatory recall provisions) solidified. The catalyst for India's mandatory recall framework was partly the global Takata airbag inflator recall (the largest automotive recall in history, affecting approximately 100 million vehicles worldwide including a significant Indian fleet) and partly the general legislative momentum of the 2019 Amendment which sought to address multiple long-standing gaps in India's motor vehicle safety regulatory framework.

The Automotive Recall Regulations, 2021 define a "recall" as: any systematic action by a manufacturer to correct a safety defect — defined as any condition in a motor vehicle or motor vehicle equipment that creates an unreasonable risk of accident or injury to persons — or to bring a non-conforming vehicle into conformity with applicable Federal Motor Vehicle Safety Standards (CMVR/AIS standards in the Indian context). The definition is broad enough to cover: recalls initiated by the manufacturer on its own initiative (voluntary recalls); recalls directed by the Central Government through MoRTH following a safety investigation (mandatory recalls);

and recalls initiated in response to a coordinated safety campaign by an overseas regulatory authority (such as NHTSA in the United States or Transport Canada) where the same safety defect affects India-market vehicles. The Regulations require the manufacturer to initiate a recall when it "determines" that a safety defect exists in a vehicle — the word "determines" is significant, as it creates an objective trigger for the recall initiation obligation that arises when the manufacturer's own evidence and analysis reaches a conclusion about the existence of a defect, regardless of whether the manufacturer subjectively accepts the conclusion or prefers to continue investigating.

The 3-day notification requirement — requiring the manufacturer to notify MoRTH within 3 working days of "determining" that a safety defect or non-compliance exists — is the most legally consequential timing requirement in the 2021 Regulations, and its compliance requires careful calibration of the manufacturer's internal safety decision-making process. The "determination" of a safety defect is typically not a single discrete event but a process: it begins with the identification of a potential concern (through warranty claim analysis, field reports, or engineering investigation), progresses through increasingly specific investigation and analysis, and culminates in a formal safety conclusion. The legal question is: at which point in this process does the manufacturer "determine" that a defect exists for the purpose of triggering the 3-day notification clock? The Regulations do not define a specific procedural threshold for "determination," leaving it to the manufacturer's good faith judgment — but a manufacturer that delays notifying MoRTH by extending the investigation phase beyond what the accumulated evidence supports risks a finding of regulatory non-compliance if the eventual notification date is challenged as belated relative to the date on which a reasonable person in the manufacturer's position would have "determined" the defect.

4.2 Consumer Notification Requirements

Consumer notification under the 2021 Recall Regulations must be completed within 7 working days of the recall decision for voluntary recalls. The notification must reach the registered owner of every affected vehicle in India, identified from the VAHAN national vehicle registration database cross-referenced with the VIN ranges of the recalled population. The mandatory notification channels are: registered mail to the address of record in VAHAN; email to the registered email address (where available in VAHAN); SMS to the registered mobile number (where available); and a prominent recall notice posted on the manufacturer's India website, maintained for the duration of the recall campaign. The content of the consumer notification must include: a plain language description of the safety defect and the risk it creates; a specification of the affected vehicle population (make, model, year of manufacture, VIN range); whether the vehicle is safe to continue operating while awaiting the recall remedy or whether immediate action (restriction of use, avoidance of specific conditions, or discontinuation of driving) is required pending the remedy; the specific remedy to be applied (repair, replacement

of component, software update, or inspection and conditional repair); the expected timeline for dealer scheduling and remedy completion; how to contact the nearest authorised service point for recall scheduling; and an explicit statement that the recall remedy will be provided at no cost to the vehicle owner.

4.3 Penalties for Recall Non-Compliance

Section 182A of the Motor Vehicles Act, as inserted by the 2019 Amendment, provides the penalty framework for recall non-compliance: a manufacturer who knowingly fails to comply with a recall order issued by MoRTH under Section 110A, or who manufactures or sells a vehicle knowing it to be defective in a manner likely to cause harm, is liable to: imprisonment for a term which may extend to one year; a fine which may extend to one crore rupees; a fine which may equal three times the cost of the vehicle, whichever is higher; or any combination of imprisonment and fine. The "three times the cost" alternative penalty is particularly severe for premium and luxury vehicle manufacturers: for a luxury vehicle selling at Rs. 2 crore, the three-times penalty is Rs. 6 crore per vehicle. If a recall involves 1,000 luxury vehicles (a modest recall population for a premium brand with a manufacturing defect), the maximum penalty exposure at the three-times rate is Rs. 600 crore — a penalty magnitude that would materially affect the financial statements of even large multinational companies' Indian subsidiaries. The criminal penalty of imprisonment (which applies to the responsible individuals within the company, including directors and senior management officers who were responsible for the decision not to comply with the recall order) adds a personal accountability dimension that has significantly sharpened OEM legal teams' attention to recall compliance obligations.

CHAPTER FIVE

Product Liability and Consumer Protection

CPA 2019 Framework, CCPA Powers, NCDRC Jurisprudence, Misleading Advertising and OEM Risk Management

> *India's consumer protection framework has been transformed by the CPA 2019's introduction of no-fault product liability and the CCPA's proactive enforcement authority. This chapter provides a comprehensive analysis of the legal risks and strategic responses for automobile OEMs and importers.*

5.1 Product Liability: The Three-Category Framework

The Consumer Protection Act, 2019's product liability provisions (Sections 82–89) establish India's first comprehensive statutory no-fault product liability regime for manufactured goods, replacing the prior framework under which consumers had to establish manufacturer negligence through general tort law (a legally demanding and practically difficult standard). Section 83 defines three categories of product liability action — manufacturing defect, design defect, and failure to warn — each with a specific burden of proof on the consumer plaintiff that must be met to establish liability. A manufacturing defect claim requires the consumer to show that the specific vehicle is materially different from its design specification or from the standard of comparable vehicles of the same type (the deviation from specification is the defect); a design defect claim requires the consumer to show that the vehicle's design creates an unreasonable risk of harm that could have been reduced by a reasonable alternative design (the design itself is the defect, affecting all units equally); and a warning defect claim requires the consumer to show that the failure to provide an adequate warning or instruction about a known risk caused the harm (the communication failure is the defect). The no-fault nature of the framework means that once the consumer establishes defect and causation, liability follows without the need to prove that the manufacturer was careless or unreasonable in its design, manufacturing, or communication process — a standard that reflects the CPA 2019's policy choice to place the burden of product safety on manufacturers rather than on consumers.

The practical application of the no-fault product liability standard in automobile cases requires OEM counsel to focus on: the defect definition (is the alleged condition actually a "defect" within the statutory definition, or is it a performance characteristic within the normal range of variation for the vehicle category?); the causation link (did the alleged defect actually cause the consumer's harm, or was the harm caused by driver error, road conditions, or other factors unrelated to the vehicle?); the defences available under Section 87 (was the defect present at the time the vehicle was put into circulation, or did it arise later through misuse, unauthorized

modification, or normal wear?); and the remedy quantum (what level of replacement, refund, or compensation is appropriate given the nature of the defect and the harm caused?). The interaction between the CPA 2019's product liability framework and the Motor Vehicles Act's recall framework creates a complementary regulatory landscape: a product liability finding in a consumer forum case may alert MoRTH to a systemic defect requiring a mandatory recall, and conversely, a MoRTH recall order is strong evidence of the existence of the defect in any product liability proceedings before the consumer forum.

5.2 CCPA Automobile Sector Actions

The Central Consumer Protection Authority has exercised its investigative and enforcement powers in several automobile sector cases since its establishment in 2020, establishing enforcement precedents that OEM marketing, sales, and customer service teams must understand as practical compliance constraints. The CCPA's guidelines on misleading advertising in the automobile sector (issued as an advisory in 2021 and reiterated in subsequent enforcement communications) address: fuel efficiency advertising (requiring that advertised fuel consumption figures are the ARAI WLTC-certified values and that advertisements include a prominent disclaimer that actual mileage may vary; prohibiting the use of ideal-condition or highway-only fuel efficiency figures without disclosing the test conditions); safety rating advertising (requiring that NCAP safety ratings cited in advertising specify the test protocol (Euro NCAP, Bharat NCAP, Global NCAP), the test year, and the specific market variant tested, since safety ratings for the same model may differ between the European and Indian variants if they have different airbag counts, structural specifications, or safety feature configurations); and "India's safest" or "five-star safety" claims (requiring that such claims be based on a recognised current test protocol for the India-market specification and not on tests conducted on a different specification or under an outdated protocol).

The CCPA's authority to file class action complaints on behalf of a class of consumers (Section 35(1)(c) of the CPA 2019) has created a new threat dimension for OEMs facing systemic consumer issues: where the CCPA identifies a pattern of consumer harm affecting a large number of vehicle owners (such as a systematic fuel efficiency shortfall across a model range, or a recurring defect that is not being adequately addressed by the manufacturer's warranty programme), the CCPA can initiate a class action before the NCDRC on behalf of all affected consumers simultaneously, potentially resulting in a single consolidated proceeding with aggregate damages that could be far larger than any individual consumer claim. This class action mechanism — new to Indian consumer protection law in the CPA 2019 — has been recognised as a significant addition to the legal arsenal against large-scale consumer harm, and OEM customer service and quality management teams have been directed to treat the risk of CCPA class action as a factor in their prioritisation of consumer complaint resolution and recall programme execution.

CHAPTER SIX

Environmental Compliance, Battery EPR, and the Future Regulatory Landscape

Environmental Clearances, Battery Waste Management Rules 2022, Extended Producer Responsibility, and BS VII Horizon

> *Environmental compliance for automobile manufacturers extends far beyond emission standards to encompass manufacturing facility clearances, battery lifecycle management, EPR obligations, and the emerging climate liability landscape.*

6.1 Environmental Clearances for Automobile Manufacturing

The expansion or establishment of automobile manufacturing facilities in India requires compliance with a multi-tier environmental regulatory framework administered primarily by the Ministry of Environment, Forest and Climate Change (MoEFCC) and the State Pollution Control Boards. The Environmental Impact Assessment (EIA) Notification, 2006 — notified under the Environment (Protection) Act, 1986 — categorises automobile manufacturing plants as "Category A" projects (requiring central level Environmental Clearance from MoEFCC's Expert Appraisal Committee) where their investment capacity exceeds Rs. 500 crore or their built-up area exceeds 20,000 sq. m., and as "Category B" projects (requiring State-level clearance from the SEIAA) for smaller installations. The EC application process requires: preparation of a comprehensive Environmental Impact Assessment report covering the facility's projected air, water, and land pollution impacts, the demand for land, water, and energy resources, the socio-economic impacts on surrounding communities, and the proposed mitigation and management measures; public consultation meetings in the project-affected area (typically a 5 km radius around the facility) where local communities can raise objections and the project proponent must respond; review by the Expert Appraisal Committee; and issuance of the EC with specific conditions that the facility must comply with throughout its operational life.

For automobile manufacturing facilities, the specific environmental compliance conditions in the EC typically address: air emission standards for paint shop booths (VOC emissions from solvent-based paints), press shops (metal dust), and vehicle testing facilities (exhaust emissions during on-site testing); water treatment requirements for the electrocoating (e-coat) and phosphating process effluents, which contain heavy metals (zinc, nickel, manganese) and phosphates that require specialised treatment; solid waste management for paint sludge, metal process sludge, and used solvent containers (which are classified as hazardous wastes under the Hazardous and Other Wastes Rules and must be disposed of through CPCB-authorised treatment, storage, and disposal facilities — TSDFs); and energy efficiency requirements specifying maximum specific

energy consumption (per vehicle produced) that the facility must achieve and report annually to the SERC and MoEFCC. The environmental compliance audit process — conducted by the EIA Notification's mandated half-yearly compliance reporting mechanism — requires the facility to submit detailed compliance reports to the MoEFCC or SEIAA every six months, documenting performance against each EC condition and disclosing any exceedances or non-compliances detected during the period.

6.2 Battery Waste Management Rules 2022 and Automotive EPR

The Battery Waste Management Rules, 2022, notified by the Ministry of Environment, Forest and Climate Change, establish the Extended Producer Responsibility (EPR) framework for batteries — including automotive batteries (both conventional lead-acid 12V batteries and EV traction batteries) — requiring manufacturers, importers, and dealers to take responsibility for the collection and recycling of batteries at end of life. The Rules apply to: battery manufacturers (who manufacture batteries in India for sale); battery importers (who import batteries or battery-powered products); and battery dealers (who sell batteries at retail). For EV traction battery manufacturers and EV OEMs (who are deemed to be battery producers by virtue of incorporating batteries in their vehicles), the EPR obligations include: registration with the Central Pollution Control Board (CPCB) as a producer under the Battery Waste Management Rules; filing of annual production and sales data with the CPCB; achieving minimum battery collection and recycling targets (expressed as percentages of the previous year's production volume, stepping up progressively to 70% by FY2025-26 for lithium-ion batteries); submitting annual EPR compliance reports to the CPCB; and purchasing EPR certificates from registered battery recyclers to demonstrate compliance where the producer's own collection programme falls short of the mandated target.

The practical compliance pathway for EV OEMs under the Battery Waste Management Rules requires: establishment of a consumer take-back programme for EV traction batteries at end of vehicle life (typically through the authorised dealer and service network); contracts with CPCB-registered battery recyclers for the collection and recycling of taken-back batteries; systems for tracking and documenting the collection and recycling of each battery (identified by its serial number) from the consumer take-back point through the recycling process to the final material recovery; and annual reporting to the CPCB of the total traction battery production/import volume, the total traction batteries collected and recycled, and the EPR certificates obtained to cover any shortfall between collection achievement and the mandatory target. The development of a compliant EV battery take-back and recycling infrastructure is both a regulatory requirement and a commercial opportunity: the materials contained in an end-of-life EV traction battery (lithium, cobalt, nickel, manganese, and copper in an 80 kWh pack worth Rs. 8–12 lakh at current material prices) have significant commodity value, and OEMs who establish efficient battery collection programmes can capture this commodity value through battery refurbishment

(repurposing degraded traction batteries as stationary energy storage) or material recovery (processing batteries to recover critical minerals for re-use in new battery production).

6.3 BS VII Horizon and Future Emission Regulation

India has not yet formally announced a BS VII emission standard or a transition timeline, but the direction of global emission regulation — towards zero or near-zero tailpipe emissions, mandatory real-world compliance monitoring, and comprehensive in-use performance requirements — makes some form of BS VII framework inevitable within the next decade. The likely content of a BS VII framework for India, based on the trajectory of the European Union's Euro VII regulation (adopted in 2024) and India's engagement with the UNECE WP.29 regulatory development process, would include: elimination or substantial reduction of the NOx conformity factor for RDE testing (potentially requiring on-road NOx emissions to comply with the WLTC limit without a 2.1× allowance, necessitating further improvement in SCR catalyst efficiency, urea injection control, and engine-out NOx calibration); introduction of sub-23 nm particle number limits (addressing ultrafine particles from GDI engines that are not captured by the current PN23 measurement protocol); brake and tyre wear emission standards (new parameters addressing non-exhaust particulate emissions that contribute significantly to urban air quality impacts); extended emission system durability requirements (requiring emission compliance to be demonstrated over a longer distance and time period than currently specified); and enhanced in-use emission surveillance provisions (such as mandatory remote OBD monitoring by regulatory authorities and consumer access to vehicle emission performance data).

For OEM product planning, the BS VII horizon creates a technology investment imperative that must be addressed in current vehicle platform development decisions. Vehicle platforms being designed today for launches in the 2026–2030 period will be operating in the BS VII regulatory environment for most of their commercial lifetimes, and their emission control architecture — combustion systems, aftertreatment sizing, OBD monitoring capability, and calibration philosophy — must be designed to accommodate the anticipated BS VII requirements as well as complying with current BS VI standards. The cost of retrofitting a BS VI-designed engine and aftertreatment system to meet BS VII requirements after the fact is substantially higher than designing BS VII compatibility into the original platform — making early investment in BS VII-ready technology a commercially rational decision for OEMs with long product development cycles even before BS VII is formally mandated. OEM counsel advising on regulatory risk management should ensure that their clients' product development governance processes explicitly consider the anticipated BS VII regulatory environment as a design input, particularly for powertrain architectures (diesel with SCR and DPF, petrol GDI with GPF) where the emission control systems are the most technically and commercially challenging to upgrade post-design.

Booklet VI — Complete Coverage Summary: India's emission, efficiency, scrappage, recall, and product liability regulatory framework has been comprehensively strengthened across every dimension in the period 2017–2024. BS VI with WLTC cycle testing, OBD-II monitoring, and RDE requirements sets technically demanding emission compliance standards that require sophisticated engineering responses. CAFE Phase II's 113 g/km fleet average target, super credits for EVs, and Rs. 25,000 per vehicle per g/km excess penalties create a strong commercial imperative for fleet-level CO2 management. The Vehicle Scrappage Policy 2021 establishes a systematic ELV management framework with ATS infrastructure, RVSF regulation, and OEM incentive obligations. The 2021 Recall Regulations transform recall from a voluntary practice to a mandatory regulatory obligation with criminal penalty exposure. The CPA 2019's no-fault product liability framework, CCPA's investigative authority, and NCDRC's evolving jurisprudence create a demanding consumer-facing compliance environment. Battery Waste Management EPR obligations impose significant product lifecycle management responsibilities on EV OEMs. The BS VII horizon requires forward-looking technology investment today to ensure regulatory preparedness in the 2027–2032 period. Practitioners advising automobile sector clients must master this complete regulatory framework and its evolution trajectory to provide commercially effective and legally sound guidance across every dimension of vehicle product, fleet, and lifecycle management.