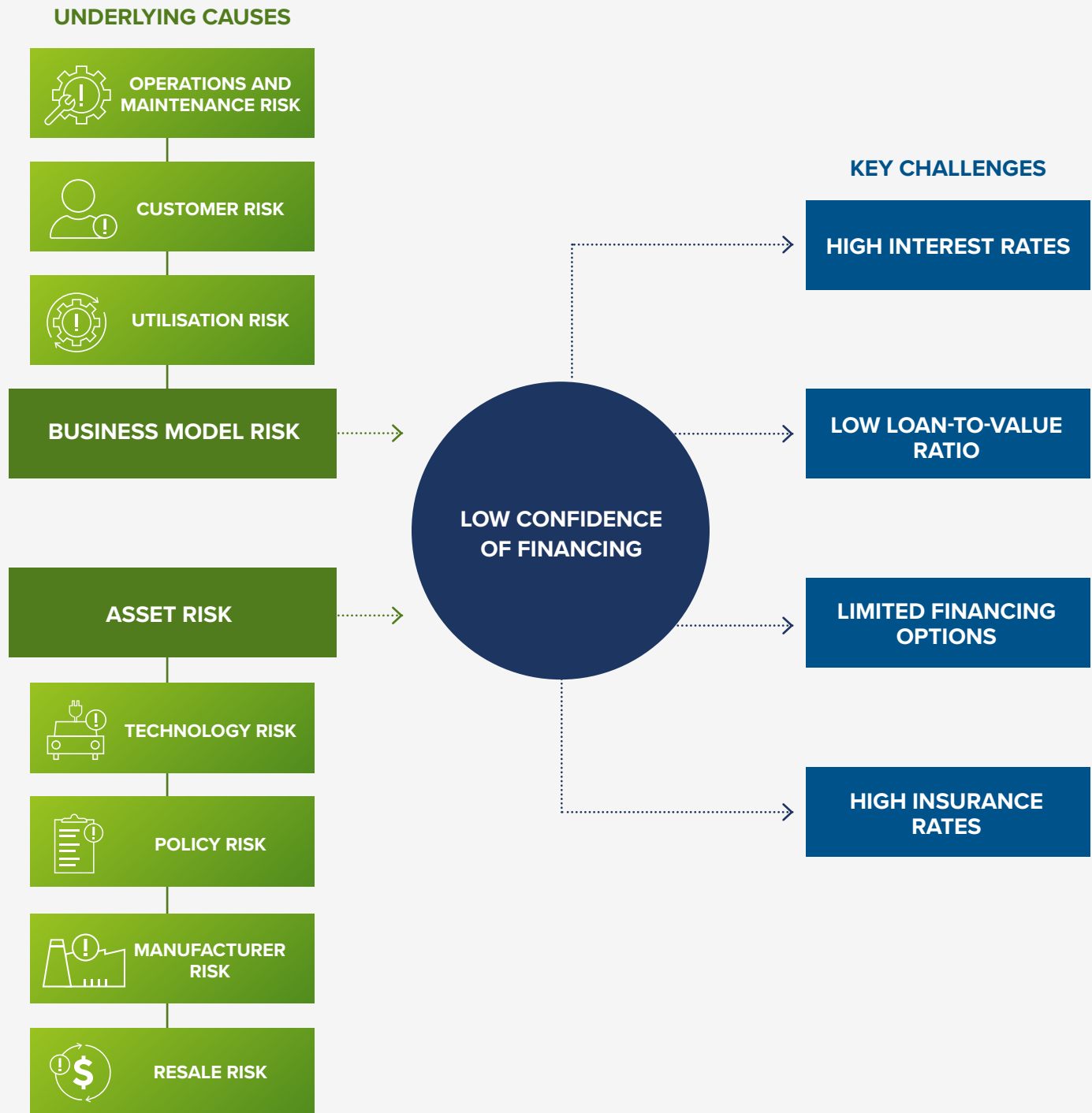


UNDERLYING CAUSES

The underlying factors to the above barriers can be categorised as asset risk and business model risk (Exhibit 7). Asset risk is directly associated with the vehicle being financed. Business model risk relates to the bankability of the borrower’s credit profile, expected utilisation, and operational patterns.

EXHIBIT 7: KEY CHALLENGES AND UNDERLYING CAUSES IN EV FINANCE



ASSET RISK

1. TECHNOLOGY RISK

FIs are risk averse due to the lack of reliable data on EV performance—in terms of range, asset life, maintenance requirements, load capacity, and more—especially in the Indian context.

Insurers are reluctant to insure what may be considered unproven vehicles and components due to unknown risks associated with short- and long-term use. The lack of guarantees or warranties from manufacturers exacerbates these issues.

In the past five years, battery technology has advanced significantly, and EV technology continues to improve. Some FIs are concerned that the assets they are financing today could become obsolete in the future, similar to smartphone technology.

2. POLICY RISK

Boosting FI confidence will increase lending and other forms of financing to the EV sector. FIs are keen to see durable and effective national- and state-level policies. Clarity and certainty around policies that support vehicle segments through TCO parity will help. Lack of awareness on the details of national- and state-level policies, and challenges accessing incentives result in increased risk perception around EV financing.

The geopolitical risk to global EV supply chains could also contribute, especially in a post-COVID economy. This may trigger a ‘wait and watch’ approach rather than the proactive financing and investment needed.

3. MANUFACTURER RISK

While the EV market is growing, only a few EV OEMs are established and proven. Most OEMs lack historical data on product performance and service. Additionally, FIs may not have onboarded newer OEMs on formal lending procedures.

OEMs may be selling EVs at low or negative margins, due to the high capital cost of EVs, creating a risk associated with their balance sheets.³⁶ Cumulatively, this presents FIs with the risk of lending for an unfamiliar, untrusted asset.

4. RESALE RISK

EVs have a reduced resale value due to the nascent ecosystem and a lack of a secondary market. In some segments (e.g., e-rickshaws), although a secondary market exists, it is unstructured, and the residual value of vehicles is still unproven. Financiers are at risk if borrowers default, as the repossessed vehicle would be collateral for resale. This directly contributes to higher interest rates and low LTVs.

Other risks associated with EVs—such as major policy changes or poor technological performance—also contribute to FIs fearing even lower resale values.



BUSINESS MODEL RISK

UTILISATION RISK

EVs have a high capital cost with low operating expenses. This is different from ICE vehicles, where variable costs are high. As a result, EVs are most viable at high utilisation levels. For commercial operators, the bankability of an EV is dependent on the FI's confidence in projected cash flows. This requires the establishment of new business models in India.

For example, public charging infrastructure is still being built in most cities. For fleet operators, utilisation depends on drivers being able to use these charging stations. Charging at home is not always an option for drivers, given grid reliability and parking challenges. Such uncertainty and risk can lower FI confidence in financing fleets for this use case.

CUSTOMER RISK

Individual drivers need to opt for formal financing due to the high upfront cost of EVs. Having previously never borrowed from the organised sector, they lack credit history that guarantees their ability to pay back loans. FI criteria, such as personal and family history, place of residence, or education level may not be inclusive to first-time borrowers, increasing the risk they represent.

OPERATIONS AND MAINTENANCE RISK

Operational aspects of EV use—such as battery replacement, voltage fluctuations, or technical requirements of charging infrastructure—are yet to be understood in India. The vehicle's lifecycle may be shortened by a lack of awareness around maintenance requirements and patterns, reducing bankability. Improper maintenance due to the absence of trained mechanics is also likely to reduce an EV's resale value.

ECOSYSTEM CHALLENGES

OPERATIONAL AND LOGISTICS COSTS

The vehicle financing industry is composed of a vast number of small FIs run mostly through local branches across India. They rely on manual labour to collect documents and award loans. Many FIs, especially NBFCs, have high OPEX, on account of door-step collections and sales force payouts.

Changing products and procedures will need to penetrate to all levels and all geographies within India. However, reorientating and retraining existing employees in EV financing will present FIs with resource and time constraints.

NBFC LIQUIDITY ISSUES

The NBFC sector has been facing a liquidity crunch since late 2018 following the bankruptcy of Infrastructure Leasing & Financial Services (IL&FS). This has tightened funding for vehicle financiers, prompting a reduction in lending and increased risk aversion in the sector.³⁷

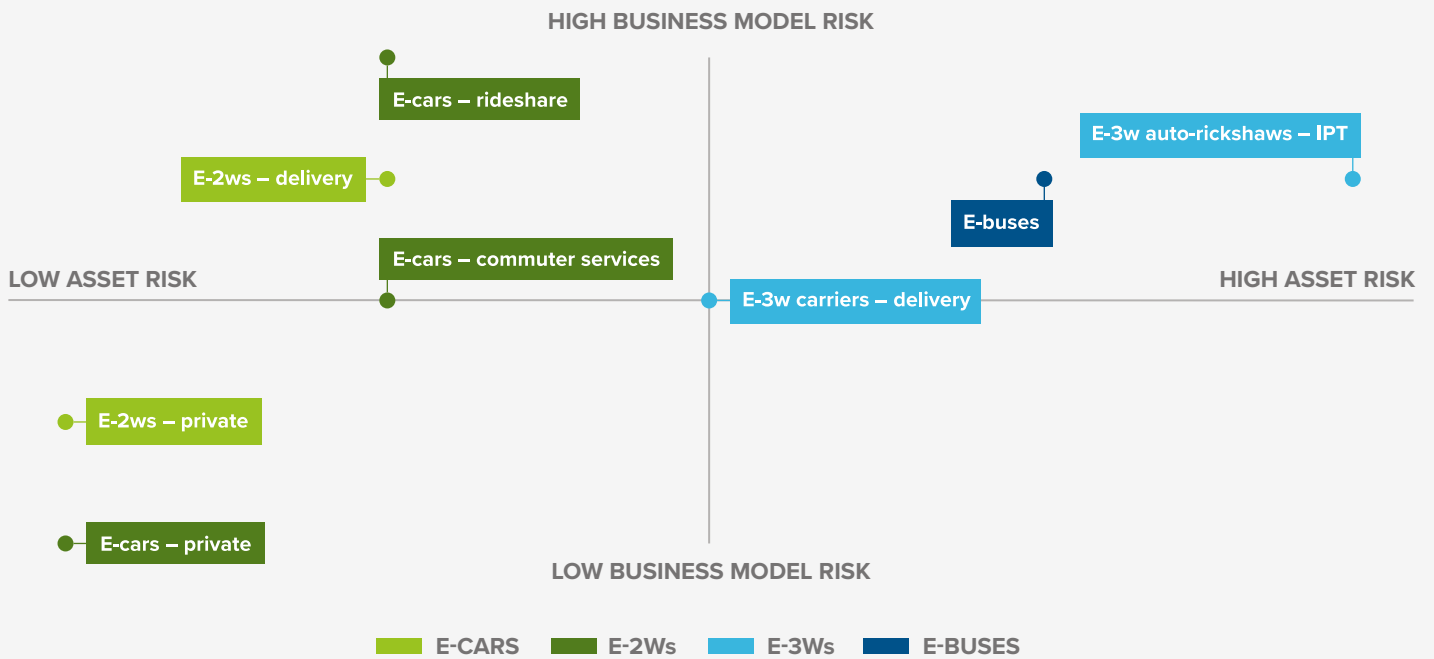
New fintech-based EV lending models such as Delhi-based RevFin and Bengaluru-based Three Wheels United (TWU) enable access for high-risk customers. Eventually, they may need access to low-cost finance from larger banks, lest they fall prey to the same problems faced by NBFCs today.





SEGMENT AND USE CASE ASSESSMENT

EV segments and use cases present different considerations. Additionally, varying degrees of asset and business model risk are associated with them (see Exhibit 8).



EXHIBIT 8: ANALYSIS OF BUSINESS MODEL RISK VS. ASSET RISK ACROSS SEGMENTS AND USE CASES



SEGMENT OR USE CASE	ASSET RISK	BUSINESS MODEL RISK
 E-2Ws – private E-2Ws – delivery	E-2Ws are a simpler and more mature technology with compelling economics. They garner strong policy support and theoretically have a higher-than-average resale value due to a larger customer pool. E-2Ws have low asset risk overall. However, delivery operators have expressed concerns over reliability, resulting in higher asset risk.	Private e-2W customers are likely riskier to lend to than private e-4Ws customers. E-2W and e-3W delivery drivers with assured utilisation contracts contribute to lower business model risk.
 E-3W auto-rickshaws – intermediate public transport (IPT) E-3W carriers – delivery	IPT e-3Ws may have higher technology and manufacturer risk compared to other categories, including e-3Ws for delivery. Lack of reliable performance data and technology nascency are contributing factors.	Lack of guaranteed demand and utilisation may result in high business model risk. IPT drivers are also comparatively more disaggregated, increasing the likelihood of default (nearly 30 percent). E-3Ws lack repair and maintenance networks, except in North India (Bihar, Delhi, Uttar Pradesh), adding to the high business model risk.
 E-cars – rideshare E-cars – commuter services E-cars – private	E-4Ws have the lowest asset risk due to large established OEMs. However, e-4Ws used for ridesharing and commuter services have a higher asset risk. They are utilised more and therefore have lower resale value.	E-4W commuter services are likely to have a lower business model risk. Optimised routes and the ability to meet minimum utilisation help achieve TCO parity. For e-4W rideshare, the economics depends on hitting 200-plus km/day, which might not be feasible. ³⁸ This increases the risk around utilisation and profitability.
 E-buses	E-buses are likely to have higher asset risk brought on by higher cost and uncertain resale value.	E-buses benefit from a minimum guaranteed run. However, customer risk is likely to be higher because of poor credit and repayment histories.

TOOLKIT OF SOLUTIONS TO MOBILISE FINANCE

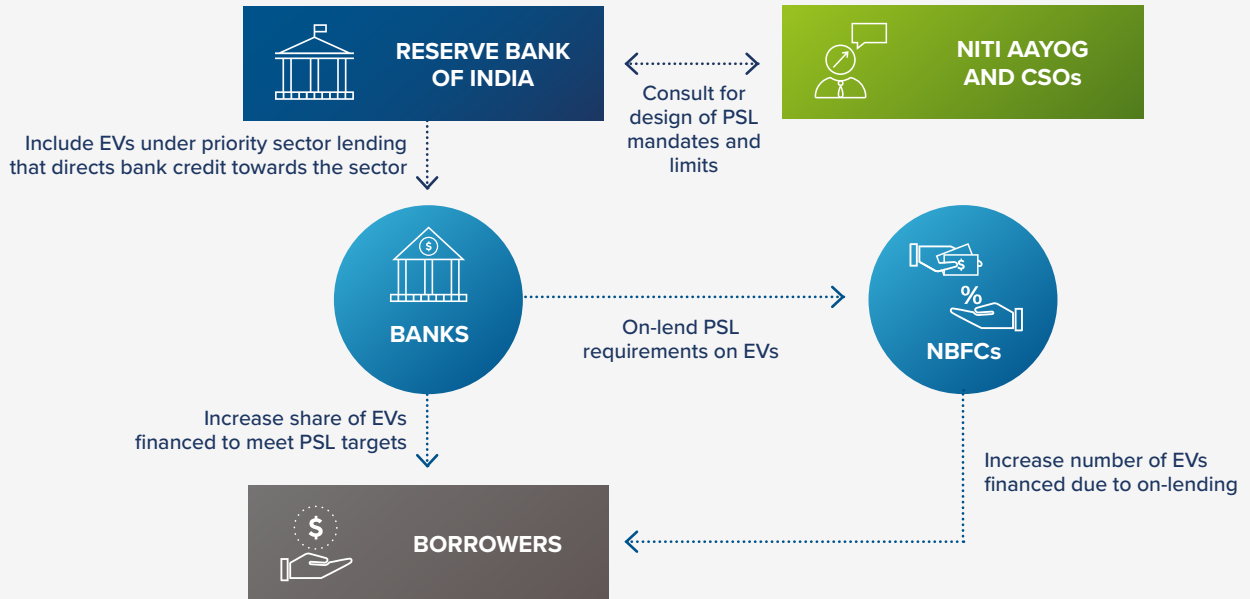
TARGETED INSTRUMENTS

End-user financing for EVs can be mobilised through financial instruments that directly address challenges and reduce risks in the short, medium, or long term.

INSTRUMENT	CHALLENGES AND RISKS ADDRESSED	KEY STAKEHOLDERS	OUTCOME
SHORT TERM			
Priority sector lending	Limited financing options	Central government, FIs	Increased access to capital
Interest rate subvention	High interest rates	Central and State governments, FIs	Lowered cost of capital
MEDIUM TERM			
Product warranties and guarantees	Technology risk, manufacturer risk	OEMs, FIs	Lowered cost of capital
RISK-SHARING MECHANISMS			
Government and multilateral-led	Technology risk, manufacturer risk, utilisation risk, resale risk	Central and State governments; FIs; national, bilateral and multilateral development banks	Lowered cost of capital and increased access to capital
Fleet operator-led	Technology risk, customer risk, utilisation risk	Fleet operators, FIs	Increased access to capital
LONG TERM			
Secondary market development	Resale risk, policy risk	Central and State governments, OEMs, FIs	Lowered cost of capital

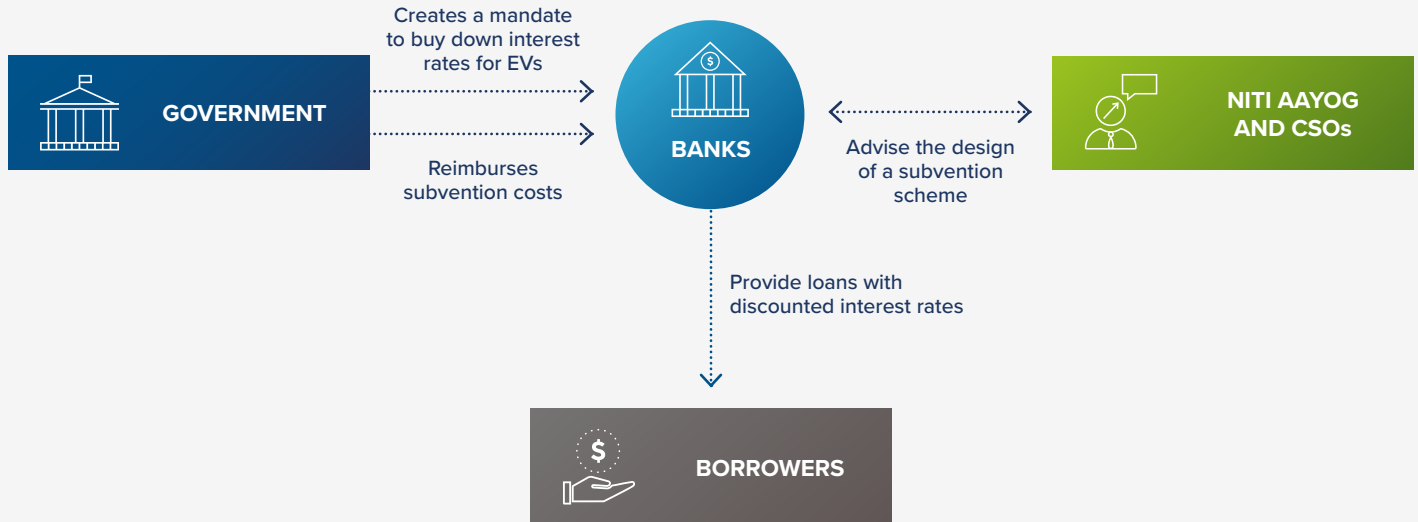


**SHORT TERM
PRIORITY SECTOR LENDING**



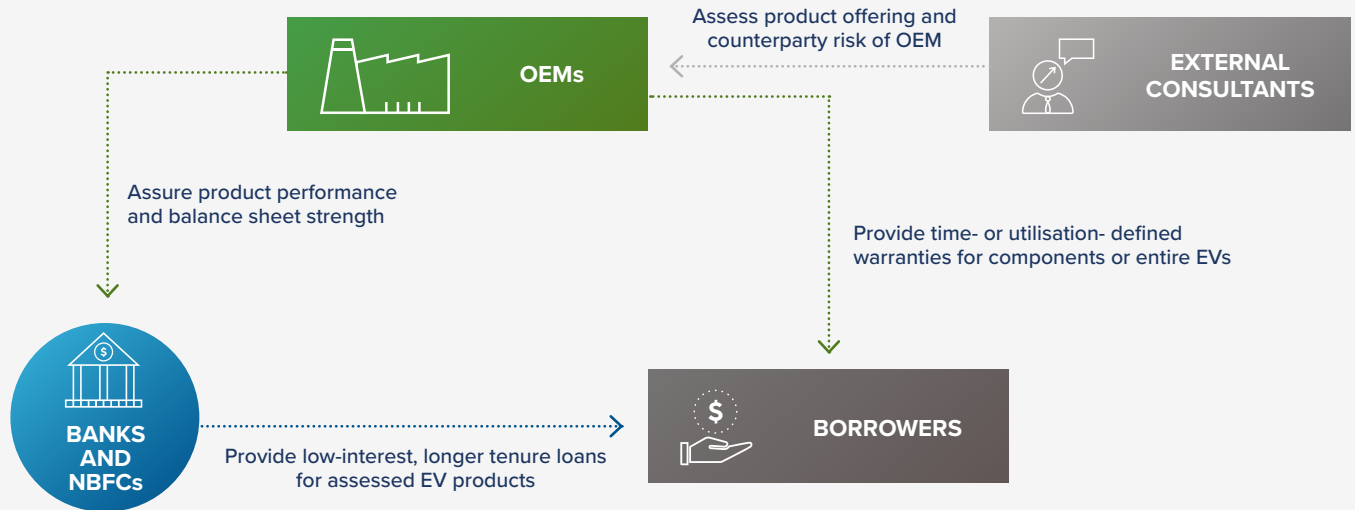
SOLUTION 1: PRIORITY SECTOR LENDING	
OVERVIEW	<ul style="list-style-type: none"> The Reserve Bank of India’s (RBI) Priority Sector Lending (PSL) requires that banks deploy 40 percent of net credit in sectors that align with national priorities and inclusive development. PSL certificates are issued when banks write loans to priority sectors. Banks with surplus loans to priority sectors (i.e., above 40 percent) can sell PSL certificates to banks with a deficit of the same.
BENEFITS	<ul style="list-style-type: none"> Banks would be incentivised to add EV financing to their PSL portfolios and help develop a long-term funding source for the sector. PSL certificates will also reduce the cost of capital for early movers such as fintech companies and catalyse non-captive vehicle financiers.
STATUS	<ul style="list-style-type: none"> Since 2015, the priority sector includes renewable energy based on recommendations from the Internal Working Group. Bank loans for renewable energy (up to INR30 crore) are eligible for PSL classification. The limit for individual households is INR10 lakh.³⁹ Led by SBI, PSU banks in 2019 requested PSL recognition for retail lending to EVs in 2019. FICCI and NITI Aayog have also advocated for the same.^{40,41}
KEY CONSIDERATIONS AND NEXT STEPS	<ul style="list-style-type: none"> PSL inclusion needs to be initiated simultaneously with initiatives that focus on reducing risks associated with EVs—such as product warranties, risk-sharing mechanisms, and secondary market development. Together, they will increase the banks’ confidence in offering attractive interest rates. The benefits of the intervention can be maximised by creating an EV-specific PSL target. As with the renewable energy PSL guidelines, internal lending limits for individual owners and fleets could be introduced. These could depend on the economic life of the vehicle.

INTEREST RATE SUBVENTION



SOLUTION 2: INTEREST RATE SUBVENTION	
OVERVIEW	<ul style="list-style-type: none"> • Interest rate subventions or buydowns improve the affordability of loans. The government bears the balance interest rate through associated banks. • Subvention schemes function as subsidies on commercially offered interest rates. By discounting tens of basis points, they deliver significant savings on compound interest over the loan’s tenure. • A popular intervention at the national level, subvention has already been implemented in the agriculture, education, handlooms, and housing sectors. At the state level, interest rate subvention is a part of the Delhi EV Policy.
BENEFITS	<ul style="list-style-type: none"> • Subvention schemes effectively function as subsidies on commercially offered interest rates.
STATUS	<ul style="list-style-type: none"> • The Delhi EV Policy’s interest rate subvention scheme is in its early stages. Implemented through the DFC and other empanelled banks, the scheme buys down up to 5 percent of the interest rate on e-autos and e-carriers.
KEY CONSIDERATIONS AND NEXT STEPS	<ul style="list-style-type: none"> • States implementing or developing EV policies should consider interest rate subvention. • To achieve long-term impact on the sector, states can pair subvention with supporting instruments. For example, pairing it with secondary market development will help improve the confidence of FIs and reduce perceived risks.

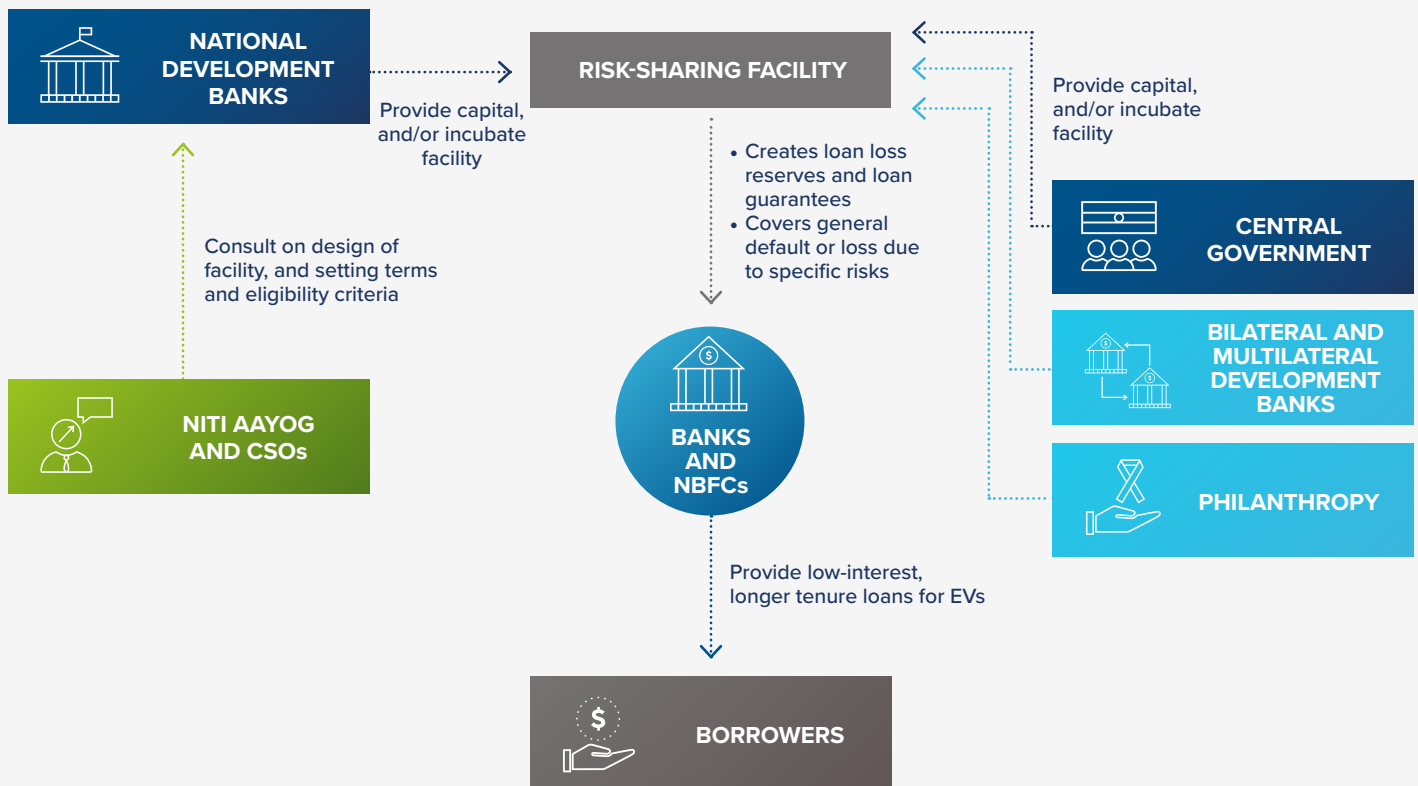
MEDIUM TERM PRODUCT GUARANTEES AND WARRANTIES



SOLUTION 3: PRODUCT GUARANTEES AND WARRANTIES

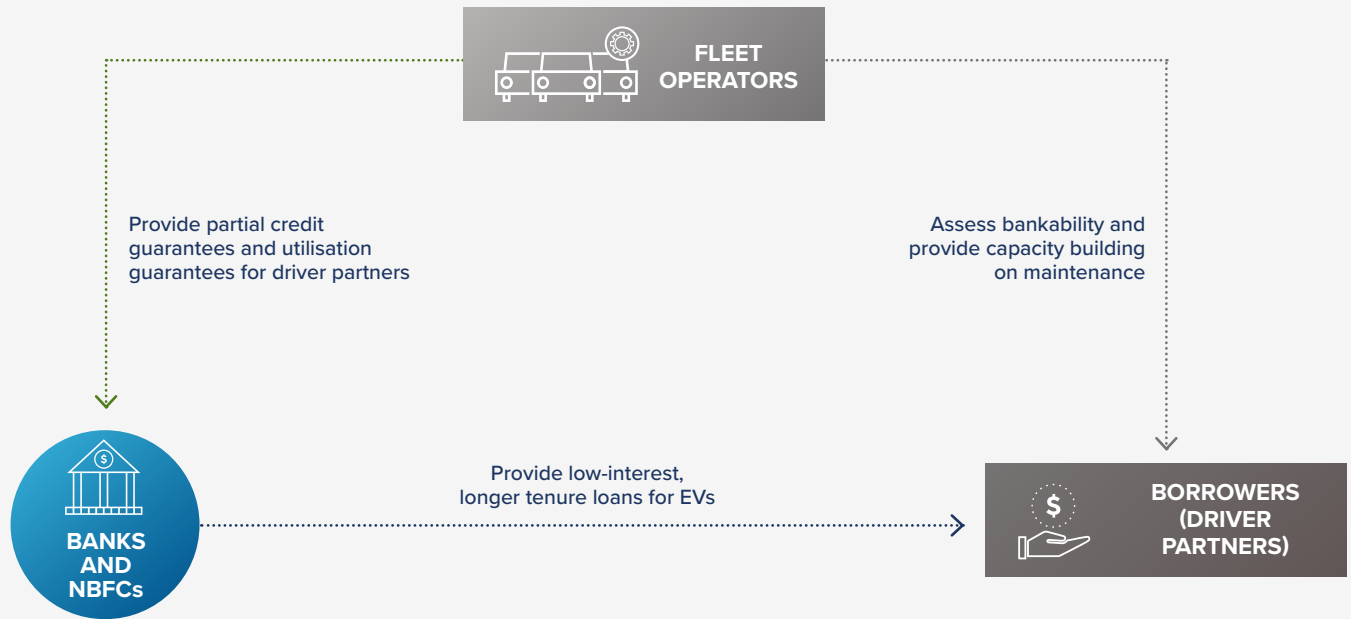
<p>OVERVIEW</p>	<ul style="list-style-type: none"> • Product guarantees create partnerships between OEMs and FIs. OEMs assure the performance of their vehicles, while FIs create dedicated financing lines for these products. • OEMs offer product warranties to buyers. They assure the vehicle’s quality, covering the costs of repairs and replacements of specific parts for a predetermined period or utilisation.
<p>BENEFITS</p>	<ul style="list-style-type: none"> • Guarantees leverage relationships between OEMs and FIs, and an OEM’s balance sheet. This helps reduce technology and manufacturer risk associated with lending to EVs. • Warranties similarly enable attribution of possible product failure to the OEM rather than the borrower. They also reduce OPEX of EV owners, by covering the cost of repair and/or replacement.
<p>STATUS</p>	<ul style="list-style-type: none"> • Many e-rickshaw models have established guarantees, such as between Lohia Auto Industries (an OEM) and IndusInd Bank. • Electric cars that offer warranties include Hyundai Kona (five years, unlimited kilometres), and Tata Nexon EV (eight years or 1.6 lakh kilometres, whichever is earlier).
<p>KEY CONSIDERATIONS AND NEXT STEPS</p>	<ul style="list-style-type: none"> • The industry and FIs can consult each other on designing minimum product guarantees and warranties for various EV segments. Such minimums would increase buyer and financier confidence.

RISK-SHARING MECHANISMS (GOVERNMENT AND MULTILATERAL-LED)



SOLUTION 4: RISK-SHARING MECHANISMS (GOVERNMENT AND MULTILATERAL-LED)	
OVERVIEW	<ul style="list-style-type: none"> Risk-sharing mechanisms help expand financing by creating guarantees or facilities that partly or entirely cover loan repayment risk. The loss covered could be from general default, regardless of the cause, or due to specific risks.
BENEFITS	<ul style="list-style-type: none"> The model distributes risk associated with an asset class in the short term. FIs get an opportunity to build trust in technology, manufacturers, and business models. Depending on the design of the risk-sharing facility, the model can also mitigate customer risk.
STATUS	<ul style="list-style-type: none"> Andhra Pradesh's Partial Risk Guarantee Funding for Energy Efficiency scheme will help FIs (eight banks and three NBFCs) finance energy efficiency in sectors such as industries, buildings, and agriculture.⁴² The Indian Renewable Energy Development Agency (IREDA) is setting up a 'green window'. Through loan-loss reserves and loan guarantees, they seek to improve the risk-return profile of clean energy projects, including EVs.⁴³
KEY CONSIDERATIONS AND NEXT STEPS	<ul style="list-style-type: none"> National and multilateral development banks, and CSOs can design risk-sharing mechanisms for consideration, at the behest of GoI.

RISK-SHARING MECHANISMS (FLEET OPERATOR-LED)



SOLUTION 5: RISK-SHARING MECHANISMS (FLEET OPERATOR-LED)

OVERVIEW	<ul style="list-style-type: none"> Fleet operators (and asset-light final-mile delivery companies) can share default risk with FIs by providing partial credit guarantees for full-time driver partners. They can also offer utilisation guarantees to driver partners.
BENEFITS	<ul style="list-style-type: none"> Fleet operators who understand technology and utilisation are better positioned to assess the bankability of driver partners. Additionally, fleet operator-led risk-sharing leverages the relationship between drivers and fleet operators, and the fleet operators’ balance sheet to reduce customer risk proactively. Assured vehicle use, through utilisation guarantees, will help achieve TCO parity, and further reduce risk.
STATUS	<ul style="list-style-type: none"> The GCC model—developed by NITI Aayog and recommended by DHI for e-bus procurement under FAME II—has a provision in the contract known as ‘minimum guaranteed run’. The provision provides operators of an e-bus service with a utilisation guarantee for a predetermined number of kilometres per day, per route, to help overcome utilisation risk.
KEY CONSIDERATIONS AND NEXT STEPS	<ul style="list-style-type: none"> The employment duration of drivers should be considered when guaranteeing their EV loans.