



BHARAT FORGE



KALYANI

ANALYST MEET 2022



All Hands. One Goal.

Inclusive & Sustainable Development

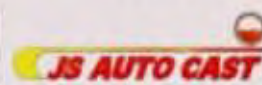


Power electronics and Micro electronics



PLANET POSITIVE

AN INITIATIVE BY KALYANI GROUP



BHARAT FORGE



KALYANI

BF INDUSTRIAL
TECHNOLOGY & SOLUTIONS LIMITED
(FORMERLY SANKHYA FORGE & TECHNOLOGICAL LIMITED)



KALYANI

KALYANI POWERTRAIN



KALYANI

TEVVA
MOTORS



KALYANI

Kalyani Strategic Systems Limited

ElectroForge



This presentation contains certain forward looking statements concerning Bharat Forge's future business prospects and business profitability, which are subject to a number of risks and uncertainties and the actual results could materially differ from those in such forward looking statements. The risks and uncertainties relating to these statements include, but not limited to, risks and uncertainties, regarding fluctuations in earnings, our ability to manage growth, competition (both domestic and international), economic growth in India and the target countries for exports, ability to attract and retain highly skilled professionals, time and cost over runs on contracts, our ability to manage our international operations, government policies and actions with respect to investments, fiscal deficits, regulations, interest rates and other fiscal costs generally prevailing in the economy. The company does not undertake to make any announcement in case any of these forward looking statements become materially incorrect in future or update any forward looking statements made from time to time by or on behalf of the company. No part of this presentation shall be reproduced, copied, forwarded to any third party either in print or in electronic form without prior express consent of the company.

BHARAT FORGE



Recap of 2019 Analyst Meet

2019 Analyst Meet Recap

Trends

- Structural shifts in Automobile Industry: Light weighting, EV, emission norms
- Govt's e-Mobility Drive : FAME II.
- Shared Mobility



Strategy

- Support Lightweighting & e-Mobility ✓
- Accelerate progress of technology players rather than big investments ✓
- Increase in Content/vehicle for BFL ✓



BFL investments

- Focus to remain frugal ✓
- To establish vertically integrated companies leading to significant cost advantages ✓
- Improve speed to market capabilities ✓

E-Mobility

- DC-DC Converters ✓
- VCUs ✓
- BMS ✓
- E- Motors ✓
- Controllers & Inverters
- Chargers ✓
- Telematics ✓

CLWT

- Structural Parts ✓
- Sub-Assemblies ✓
- E-Mobility Systems ✓
- Industrial Components ✓

Transmissions

- Components ✓
- Sub-systems ✓
- Complete Systems for EV ✓

Nano-Technology

- Waste to wealth ✓
- Ceramics and others ✓
- Nano for batteries ✓

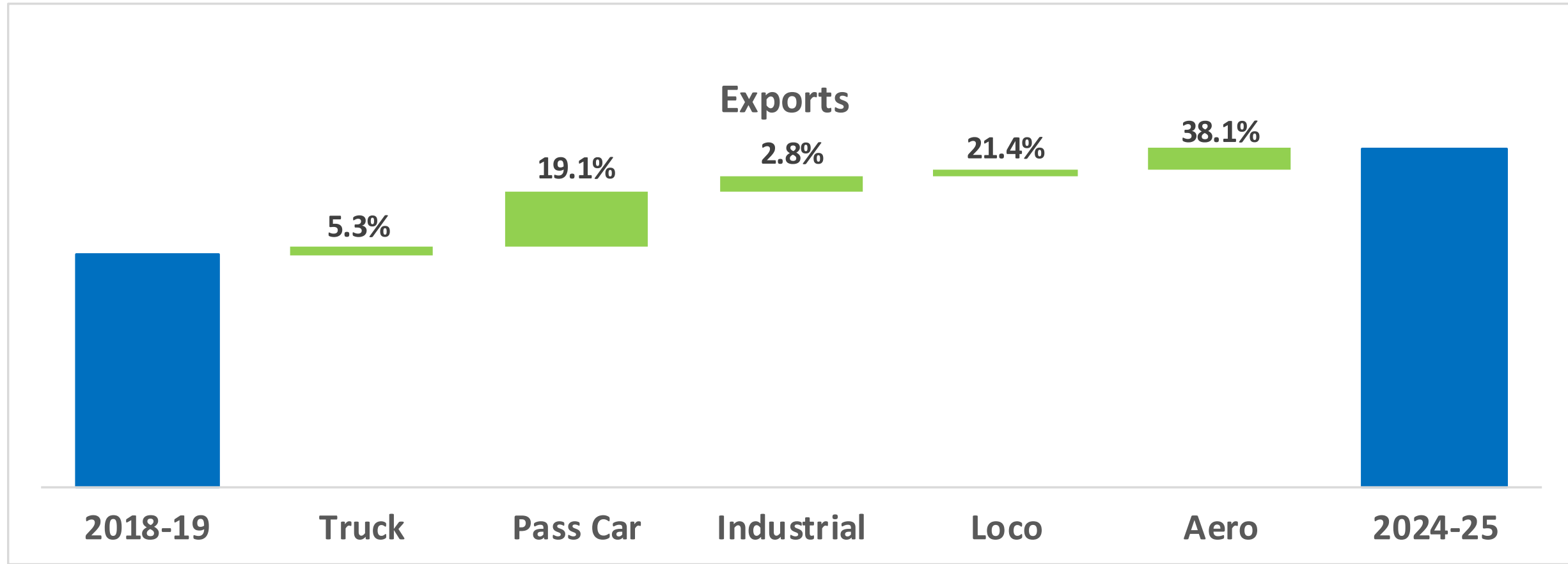
BFL COMPONENTS DIVISION

- Supply to inter companies (Tork, Tevva Motors)
- Supply to global OEMs
- LCC advantage
- Strong Technology Partner support

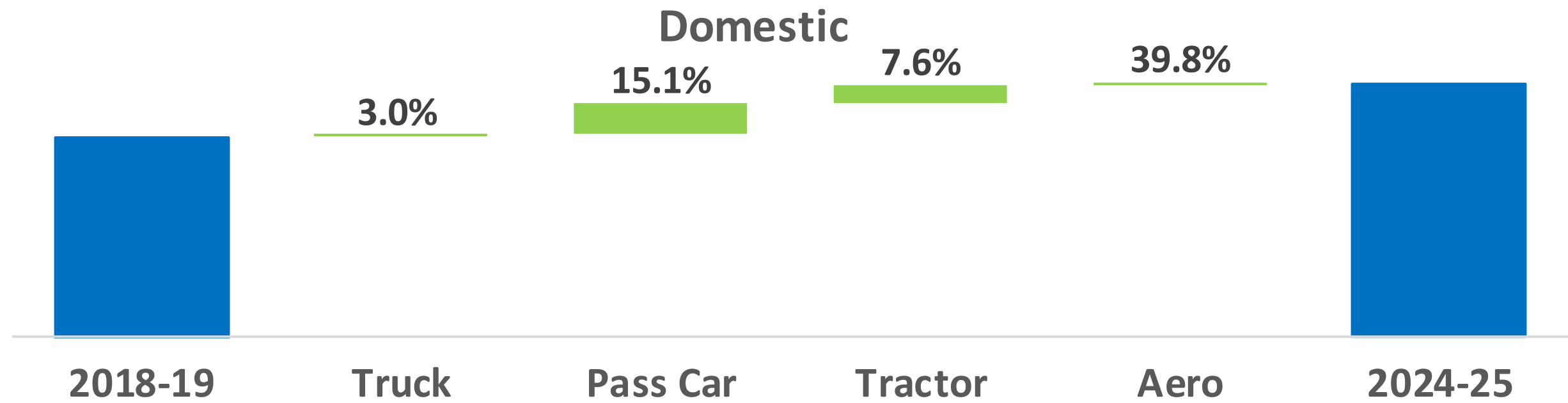
✓ - Completed
 ✓ - In-progress



2025 Projections: On Track To Surpass



**Projected
CAGR**



Product Overview | Defense & Aerospace

ARTILLERY SYSTEMS



Bharat 52 (155 mm)



ATAGS

PROTECTED VEHICLES



Armoured Personnel Carrier



Light Specialist Vehicle



Armoured Troop Carrier



Light Bullet Proof Vehicle



STRUCTURAL



FLAP TRACK



Trailing Arm

LANDING GEAR



FIXED WING



ROTARY WING



JET ENGINE COMPONENTS



IMPELLER



BLADES



BLISKS



DISC

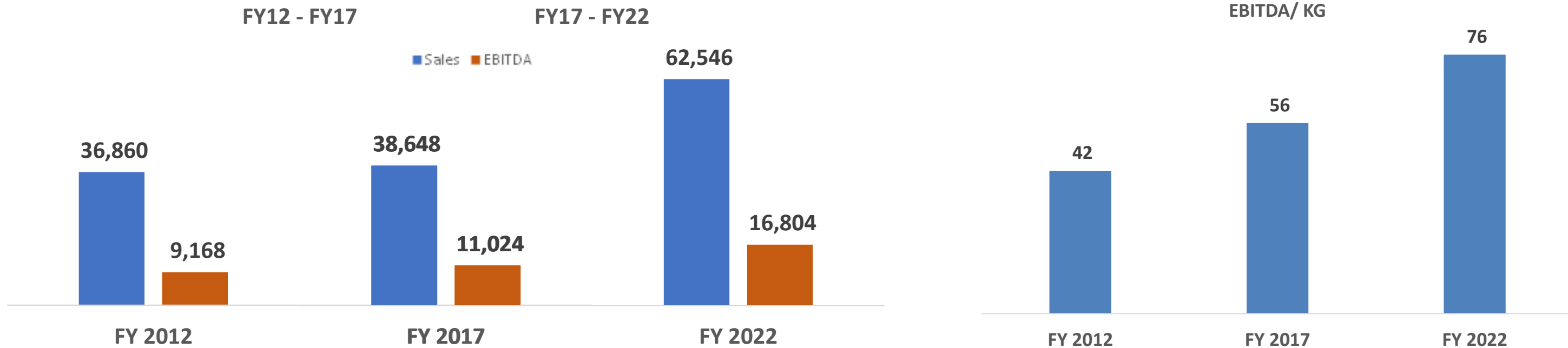


- Currently aluminum component business is approx. 15% of total turnover of overseas subsidiaries
- BFL group has undertaken expansion of aluminum business in different entities:
 - BF AT: 4th press line dedicated for aluminum business (SOP: 2020) ✓
 - CDP: Conversion of 1 press line from steel to aluminum (SOP: 2020) ✓
 - US: Invest in first aluminum line to cater US/German OEMs (SOP: 2021) ✓
- With this expansion in place, aluminum will contribute approx. 40-45% of revenue of overseas subsidiaries (2024) ✓

BHARAT FORGE



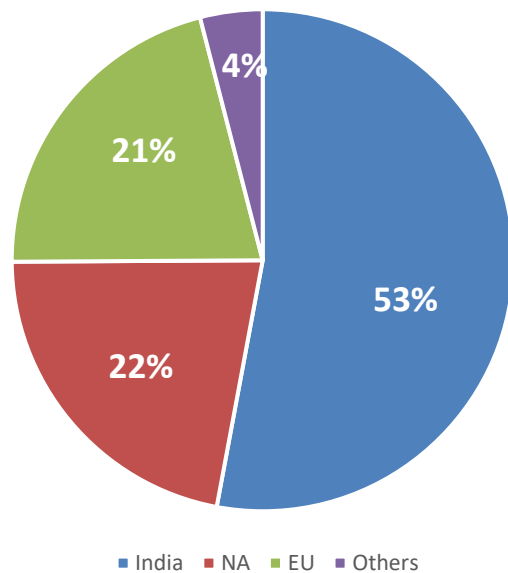
The Past decade: Financial performance



Particulars (CAGR)	FY 12 - FY 17	FY 17 - FY 22	FY 12 - FY 22	Consol (CAGR)	FY 12 - FY22
Sales	1%	10%	5%	Sales	5.2%
EBITDA	4%	9%	6%	EBITDA	7.1%

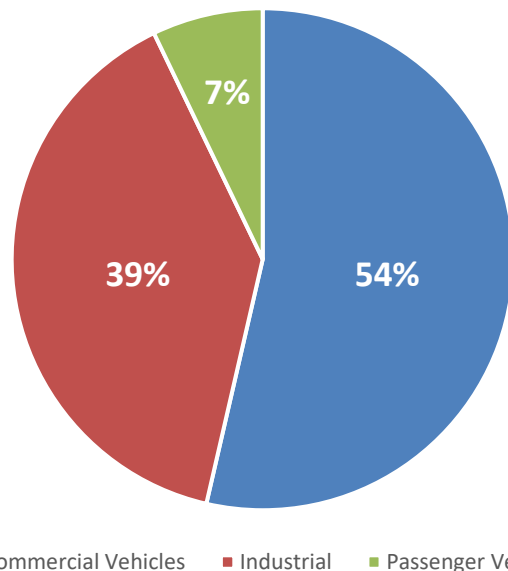
Sustained uptrend in operational profitability...
Product mix & Cost optimization

FY12 - Revenue by Geography



FY12 Revenue – Rs 36,860 million

FY12 - Revenue by Business

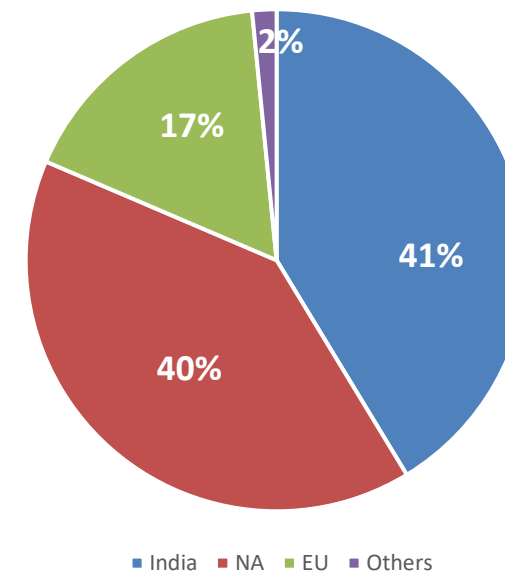


Commercial Vehicles Industrial Passenger Vehicles



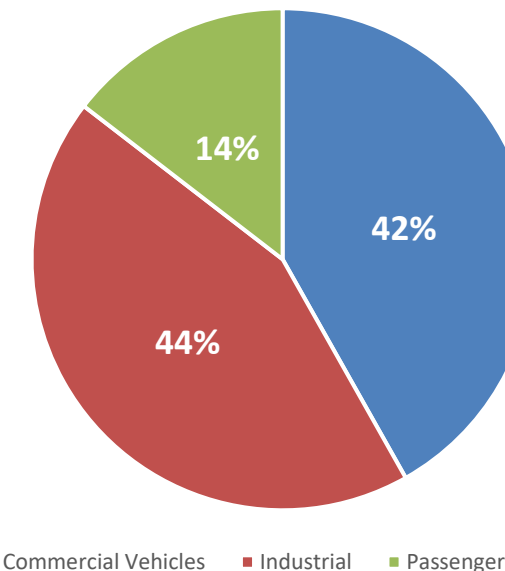
**Balanced revenue stream
NA exposure driven by broad based
growth**

FY22 - Revenue by Geography



FY22 Revenue – Rs 62,546 million

FY22 - Revenue by Business

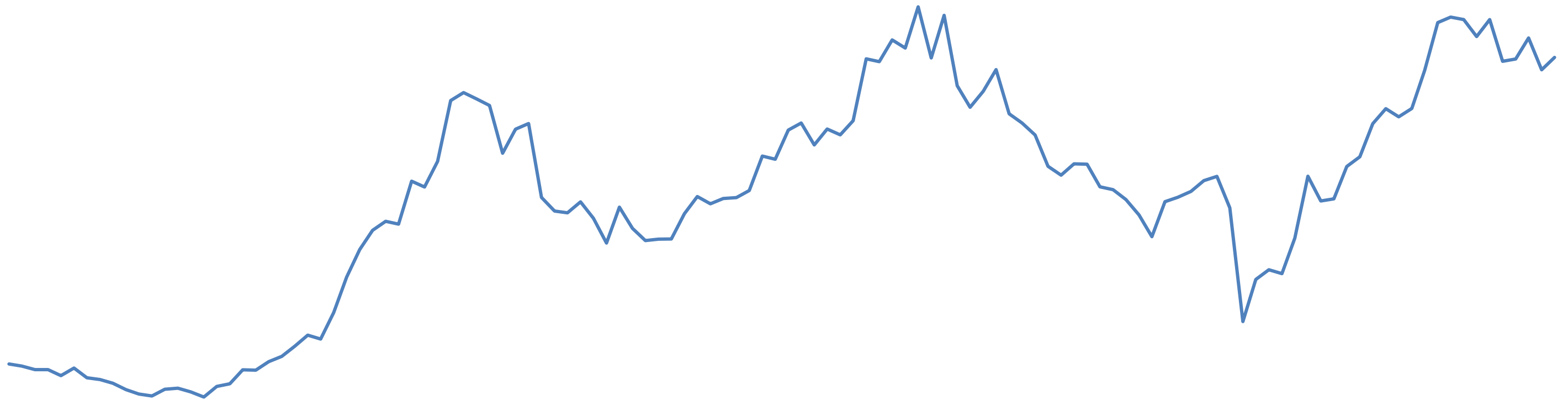


Commercial Vehicles Industrial Passenger Vehicles



3.5X growth in PV revenues

Share Price FY 2013 - FY 2022



- **15.9% CAGR over the past decade**
- **Zero Equity Dilution**
- **Consistent Dividend payout**

- Incubated Defence (2012), EV (2016) & Light weighting (2018) verticals.
- Consistent dividend Payout ratio @30%
- Invested close to Rs 4,500 crores in CAPEX
- Invested ~Rs 1,100 Crores in Subsidiaries
- Increased liquidity by ~Rs 1,500 Crores through the decade



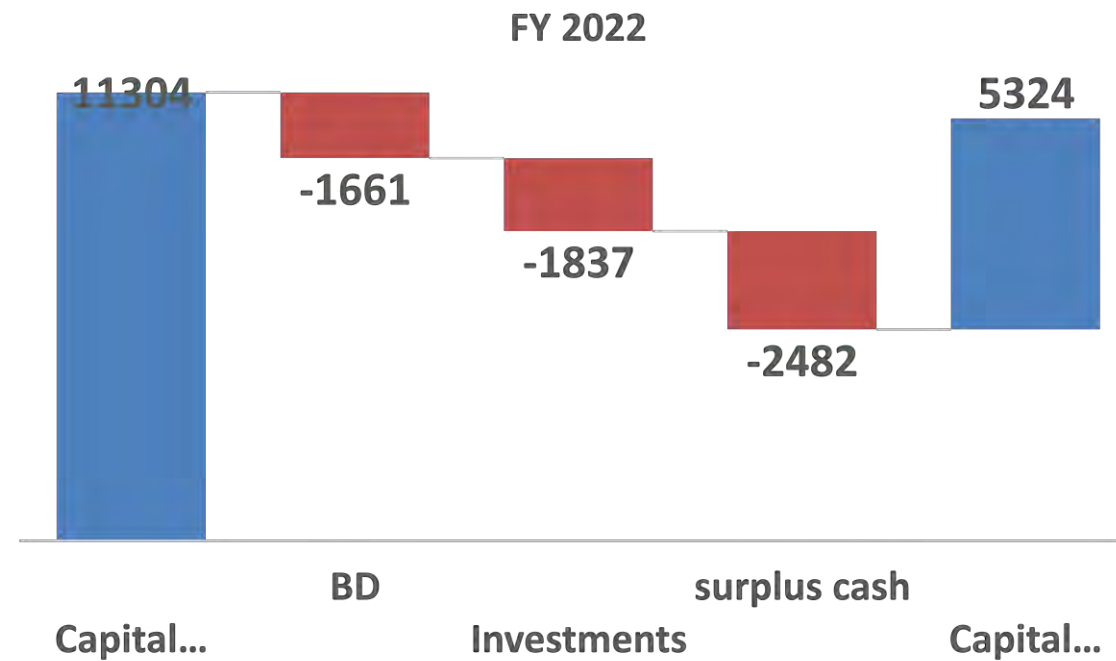
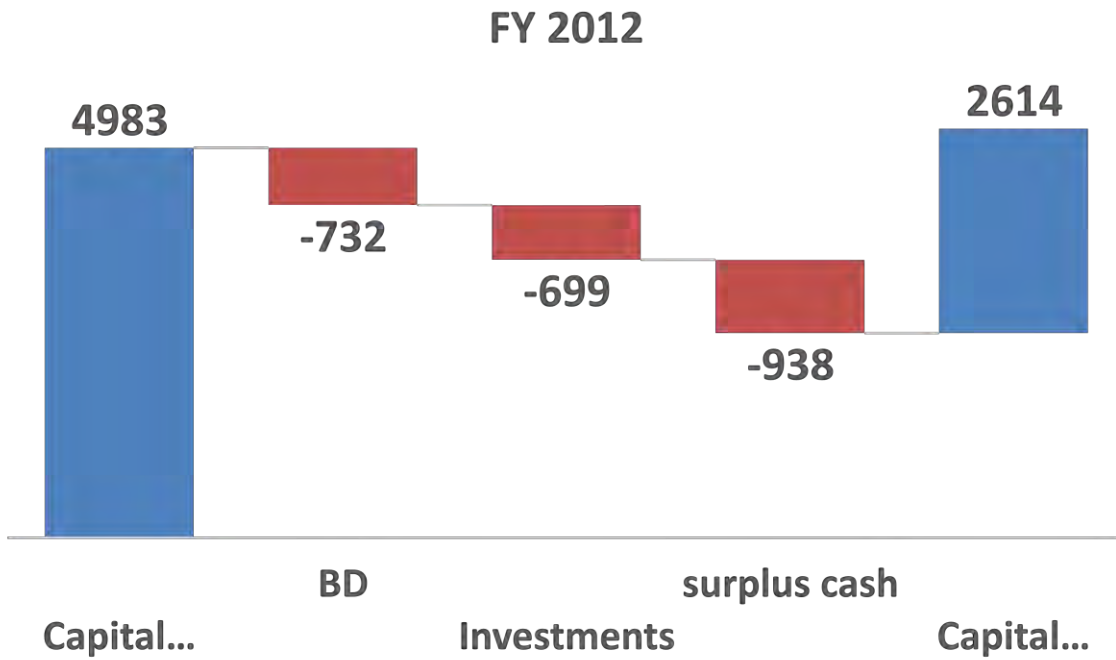
KALYANI

A Big transition was at play....



- Close to Rs 5,000 Crore accrual to Net Worth !
- Bill discounting increase led by Exports. **ZERO debtor default.**
- Long Term Loan actually reduced by Rs 120 Crores over the past decade.

.... Solid B/S creation and strong core ROCE

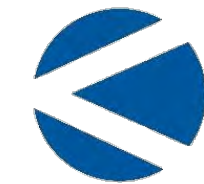


Particulars	FY 2012	FY 2022
D/E	0.92	0.32
D/E(Net of LTL)	0.49	(0.03)
Core ROCE%*	28.3%	28.6%
Consol Core op ROCE%*	19.8%	20.1%

* ROCE net of BD, Investments and Cash

Kalyani Strategic Systems Limited

BHARAT FORGE



KALYANI

Investor Presentation – Defence Business



Making In India for the world



Make I , Make II, SPV, iDEX Category Projects - Approval for design & dev. of 18 defence equipments by Indian industry

Prime Minister comments during a naval event.

Third Positive Indigenisation List

'Second Positive Indigenisation List'
108 items to promote self-reliance & defence exports

Around 68% of the capital procurement budget for defence will be earmarked for the domestic industry to promote **atmanirbharta** and reduce dependence on imports of defence equipment

Opportunities to be Leveraged upon

Defence Technology

IDEX PRIME

iDEX Innovations for Defence Excellence

TECHNOLOGY DEVELOPMENT FUND



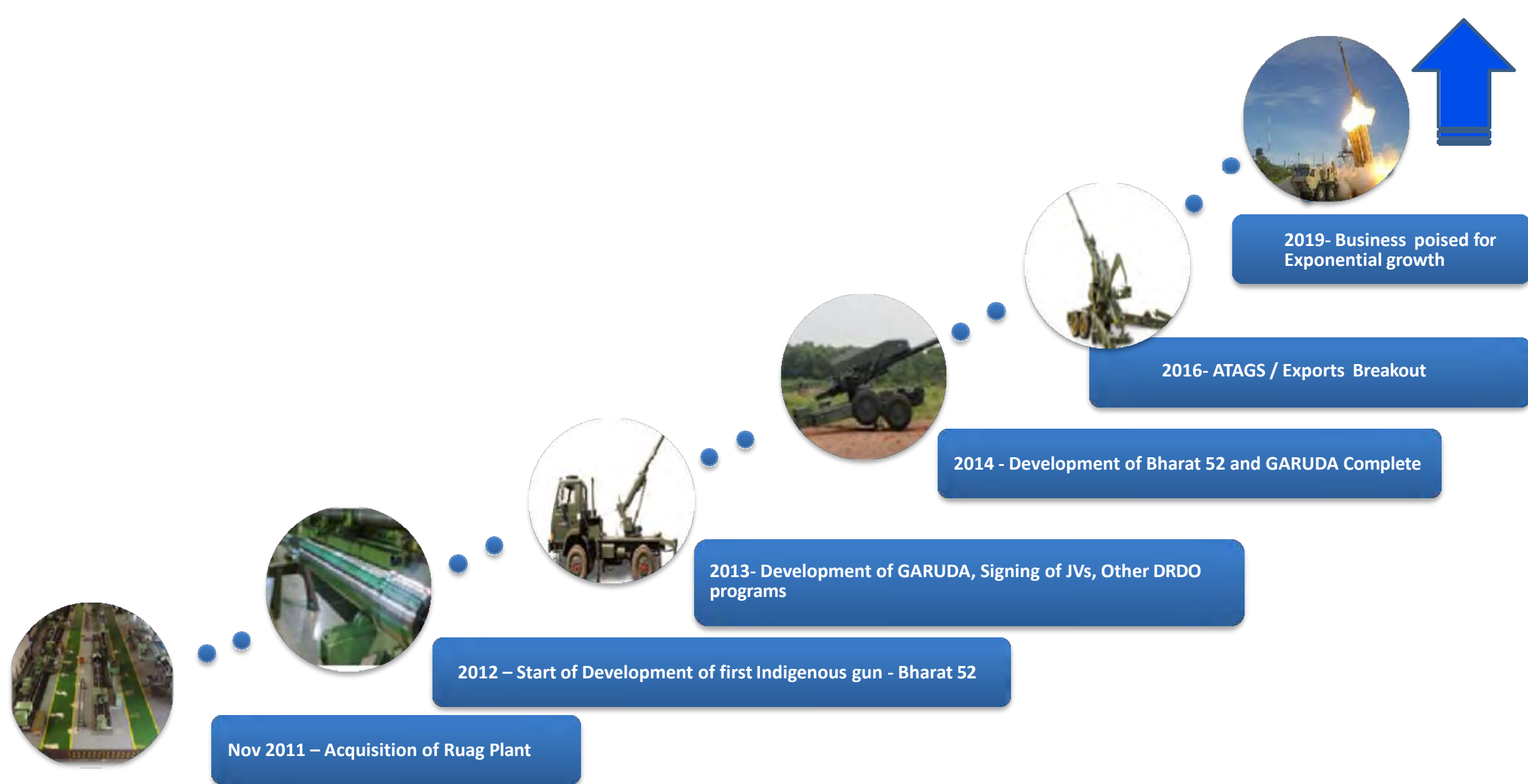
'We have developed the habit of being dependent on foreign countries for even the simplest products'



DEFENCE ACQUISITION PROCEDURE 2020
Giving Preference to Indian Industry



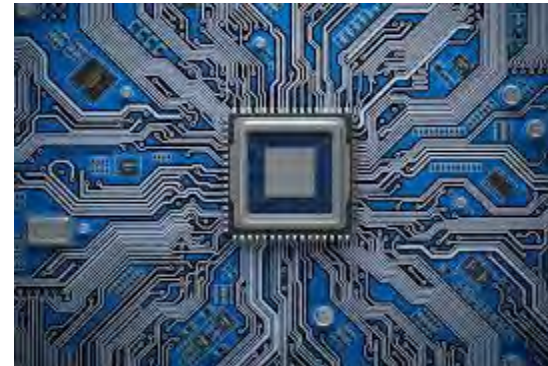
Nation is at an Inflection Point



Product



Technology Indian IP



Intellectual Property



Frugality



Accomplish more with less

Passion

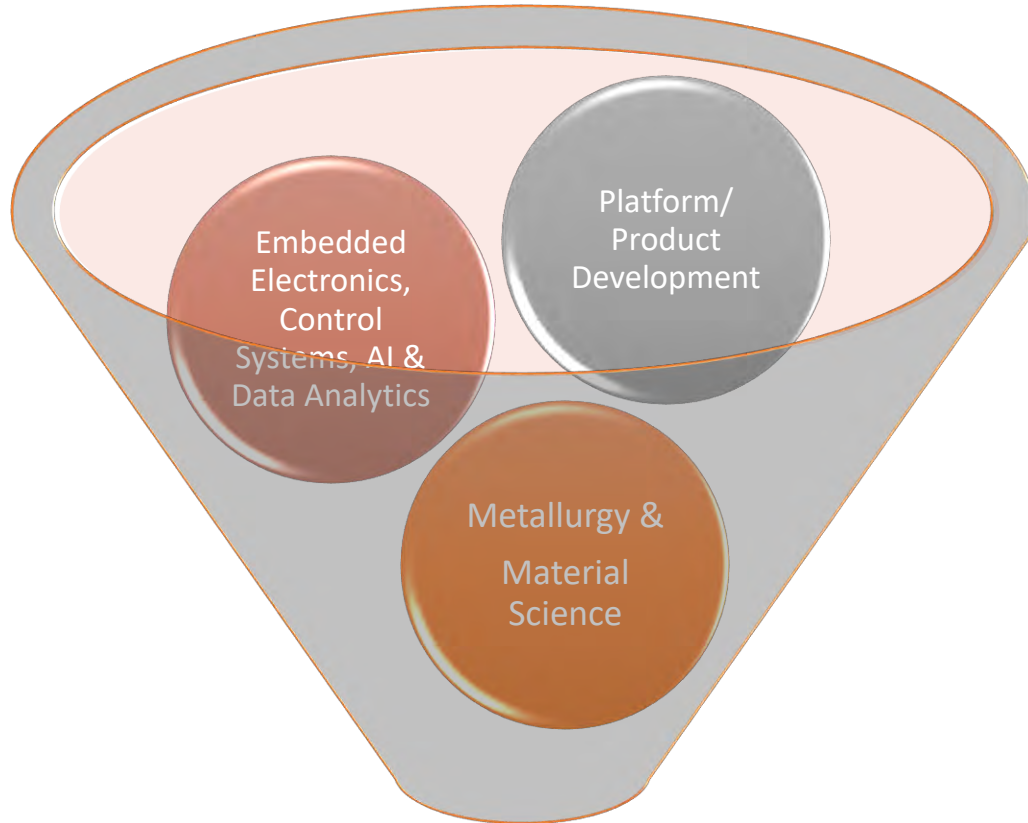


Commitment towards National Defence

Long Term View



Looking beyond the present to deliver future value



Full System Capability | Solutions Approach



Artillery Systems | Armoured Protected Vehicles | Spares & Ammunition | Marine Systems | Air Defence Systems | Small Arms | Air Defence



Metallurgy & Material Science

- Metallurgy
- Ordnance Manufacturing Capability
- Monocoque Hull Manufacturing
- Composite Manufacturing
- Metal Injection Moulding



Embedded Electronics, Control Systems, AI & Data Analytics

- Ballistics
- Embedded Electronics
- Automation and Control (Gun)
- Vectronics
- RF / Microwave
- INS / IOT Sensors
- Power Electronics
- Target Tracking System
- Big Data Analytics
- Stabilization Systems
- Sensor Fusion
- Way Point Navigation



Platform / Product Development

- System Engineering
- Product Development
- Unmanned Aerial Systems
- Unmanned Underwater systems
- Modular Vehicle Chassis development
- Soft-Recoil Technology
- CAE, CFD & MBD
- AIT & MRO

Business Value of Technology & IP
 (E.g.: ULH, Towed Gun, Monocoque Hull, Control & Automation, Ballistics, Sensor Fusion, E-Cars, ATAGS – Front Towing etc.)

“ Incubated in Defence but with wide Industrial applications ”

ARTILLERY SYSTEMS



ATAGS



Bharat ULH (Steel)



Garuda 105



MARG 155-BR



Bharat 52



ATAGS MGS



Bharat ULH (Titanium)



Bharat ULH (ER)



Bharat 45



MGS 6X6 *

PROTECTED VEHICLES



KM4



Armoured Troop Carrier



Armoured Personnel Carrier



Armoured Troop Carrier



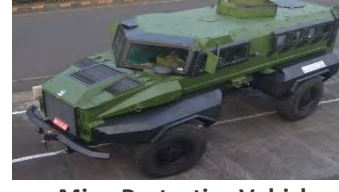
Light Bullet Proof Vehicle



Light Tactical Vehicle



Ultra Light Strike Vehicle



Mine Protective Vehicle



Drive Away Chassis



TC 9 *

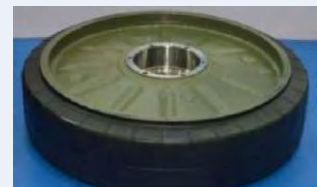
ARMOURED VEHICLES (MRO)



Mobility Solutions



Fire Power Solutions



Components

UNMANNED SYSTEMS



ECARS - UGV



Multi-rotor UAV



Autonomous Underwater Systems



Autonomous Underwater Systems

AMMUNITION (Only Empties)



40 to 155mm Ammunition



FSAPDS



Mortar Bodies



War Heads



Bomb Bodies

Core Business Line

Artillery Business

- Towed Gun
- Mounted Gun



Other Business

- Armoured Vehicle Spares
- Marine MRO
- NFM's
- Shells

Established Business Line

Vehicles Business

- Protected Vehicles
- Drive Away Chassis



Possible Future Business

- Precision Ammunition
- C4ISR Systems
- Ammunition
- Small Arms
- Marine
- Unmanned systems

New Business Line

- *Mix of Large Platforms and Steady State recurring revenue lines*

<p>ATAGS</p>	<p>MGS ATAGS – 8X8</p>	<p>ULH (High Strength Steel)</p>	<p>Garuda 105_v2</p>
			
<p>Successfully Trial Evaluated Awaiting Induction</p>	<p>Ordnance Successfully Test Fired</p>	<p>Successfully Test Fired</p>	<p>Successfully Trial Evaluated</p>
<p>BHARAT 52</p>	<p>BHARAT 45</p>	<p>ULH (Extended Range)</p>	<p>MaRG - BR (155mm /39 Cal)</p>
			
<p>Successfully Test Fired</p>	<p>Proven Weapon Platform</p>	<p>Ordnance Test Fired</p>	<p>Successfully Trial Evaluated</p>

One Stop for all Artillery Solution Requirements

Kalyani M-4



Inducted in Indian Army

Exported

Kalyani Maverick



Successfully Tested by Indian & Military Agencies

TC 6 : Light Tactical Vehicle



Successfully Tested by Indian & Military Agencies

Ongoing supplies for 50+ vehicles

TC 6 : Garuda 105



Successfully Trail Evaluated

TC6 : Light Bullet Proof Vehicle



Tested by Indian Army & VRDE

Ultra Light Strike Vehicle



Successfully Tested by Indian Military Agencies

Mine Protected Vehicle



Successfully Tested by Indian Military Agencies

Armoured Personnel Carrier



Successfully Tested by Indian Military Agencies

Exported

Armoured Troop Carrier



Successfully Tested by Indian & Sri Lankan Military Agencies

Exported

TC 8 : Light Armour Troop Carrier



Platform Tested by Indian Military Agencies

WHEELED VEHICLES & TRUCKS PLATFORMS (3 Ton to 20 Ton)

- Military Logistic trucks /Load Carriers
- Speciality Vehicle's (MGS/BEL)
- Special Purpose Vehicle
- Bullet Resistant Vehicles
- Mine /Blast Resistant Vehicles
- Command Control Vehicles



WHEELED ARMORED FIGHTING VEHICLES (15 Ton to 25 Ton)

- IFV – Amphibious
- WAFV - Amphibious
- BMP (APC)
- Command Control Vehicles
- Recovery Vehicles



TRACKED VEHICLES / TANKS TRACKED RECOVERY VEHICLES (25 Ton to 45-50 Ton)

- Light Weight Tank
- FICV
- FRCV



KALYANI M4 - Autocar India

https://www.youtube.com/watch?v=N8lAqIP7uc&ab_channel=AutocarIndia



Independence Day Special! Kalyani M4 - The ultimate multipurpose vehicle
We're commemorating the occasion of India's 76th Independence day with an outing in the Kalyani M4, an Armoured Personnel Carrier built for our armed forces. Shapur Kotwal is the man behind the wheel.
2,506 Views | 3 months ago

Running Gear

- Road Wheel
- Tracks
- Sprocket
- Road Wheel arm
- Supporting Wheel
- Suspension



Ordnance

- Barrel (100mm, 120mm & 155mm)
- Breech
- Muzzle brake



Powertrain

- Crankshaft
- Connecting Rod
- Turbocharger / Superscharger
- Cylinder Liners



Ammunition

- 100mm to 155mm Shells (Only empties)
- Kinetic Ammunition FSAPDS



Driveline

- Gearbox



MRO

- Maintenance, Repair & Overhaul of all armoured vehicles platform



UNMANNED GROUND VEHICLE (UGV)



UNMANNED AERIAL VEHICLE (UAV)



UNMANNED UNDERWATER VEHICLE (UUV)



Wheeled

Speed: Up to 20 kmph (manual drive), up to 10-15 kmph (autonomous missions)

Climbing capability: 45° slope (max)

Operation: Up to 48 hours continuous (battery + generator), up to 6 hours continuous (silent mode)

Tracked

Multi-role Modular UGV with applications like

- Weaponized Strike
- Ordnance Disposal
- Support Intelligence Operations

Hybrid Diesel Engine Drive
 Pulling Force – 21,000 N
 Max Speed – 20 Km/h
 Runtime Electric – Upto 15 h
 Runtime Hybrid – Upto 1.5 h

Multi Rotor (VTOL)

- Maximum Take off weight 150 Kg
- Multi-pay load, Multi-mission drone
- Rapid deployment – Plug and fit assembly
- Multi Payload Capability - Heavy Weight Logistic Payloads
- Flexible and modular with fast payload swap

Loitering Ammunition

- TBRL Loitering Munition Program
- 95 birds in 13 category of Loitering to be developed
- These birds are payload dropping and homing-on type
- Most of these drones are vertical takeoff and landing types, and some are canister launch type

Expendable Underwater Targets

- Simulates Submarine for Torpedo Firings/Training
- Active self-propelled unit launched from ships, submarine or helicopters

Autonomous underwater Vehicle - MAG

- Ship/subs signature being measured at UW ranges

Mobile Target Emulator

- Simulates submarine target, Active self-propelled Decoy
- Defence Counter Measure from active/passive homing incoming Torpedo

PRINCIPLES

Kalyani Strategic Systems Limited (KSSL), wholly owned subsidiary of Bharat Forge Limited (BFL), being a global engineering and technology organization with significant interest in Defence & Aerospace, aims to contribute to India's strive towards self-reliance (Atmanirbhar Bharat). While meeting the national and global security needs through engineering and innovation, BFL is committed to undertake this with full consciousness towards our "EthOSS" - "Ethical Organizational & Societal Sustainability" pledge

"ETHOSS" – OUR PLEDGE

Customer & Partners – *We wish to serve all our Customers, both in India and internationally, in their bid to achieve effective deterrence to any threat on their integrity and we aim to create sustainable relationships with our Partners in this endeavor. Our pledge however is to engage honorably and ethically with the **Right Customers/Partner** and in the **Right Way.***

PRODUCTS-*We have not and will not engage in development, manufacturing or distribution of weapons/systems restricted by international conventions (**Personnel Land Mines, WMD, Cluster Munitions etc.**)*

- *There will be continuous efforts towards developing better products / establishing better processes so as to have minimum impact on the environment*



Growing Responsibly

BHARAT FORGE



Aerospace

Integrated Systems & Projects

- **Gas Turbines** - Marine, Aerial (Microturbines & APUs)
- **Turbomachinery** - Aerospace, IC. Engines-Railways, Submarines, Tanks



Sub-Assemblies

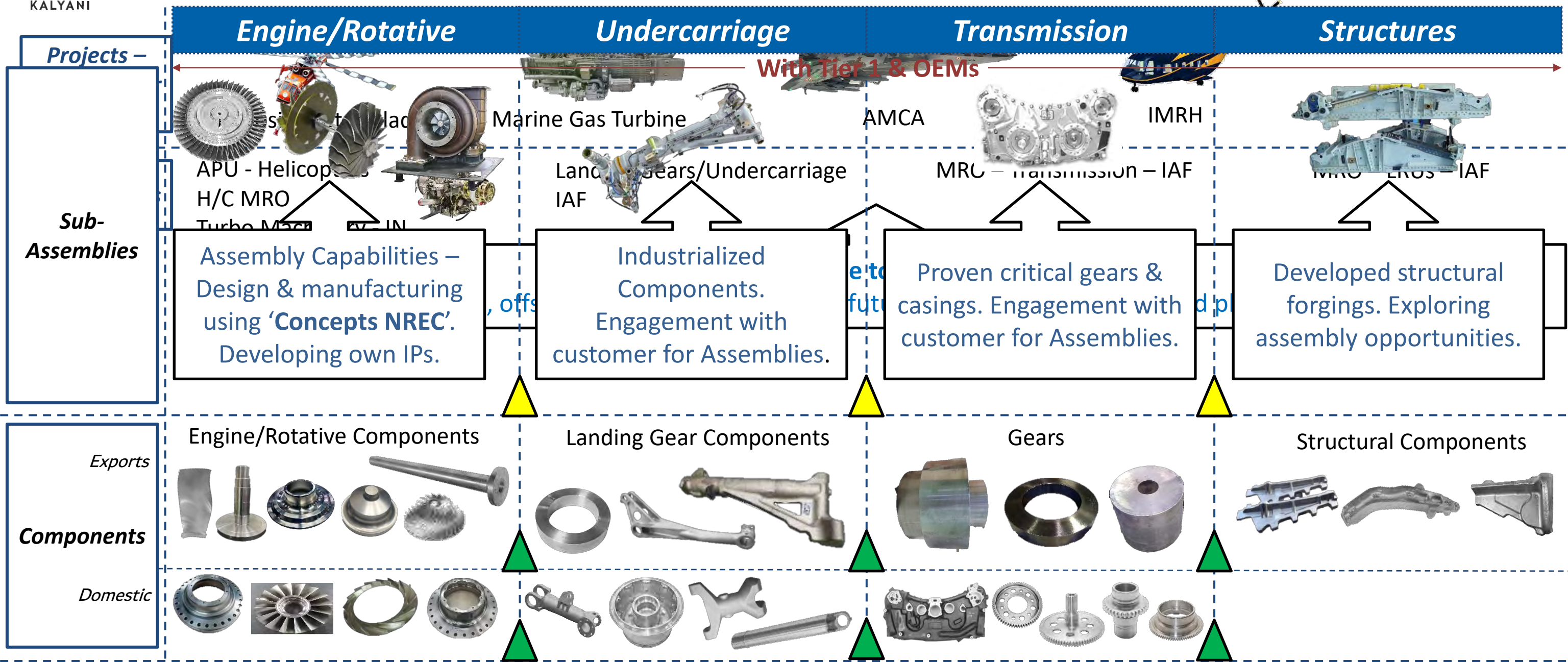
- **Undercarriage**
- **Transmission System**
- **LRUs** for Engines, Rotary Wing & Fixed wing Platforms



Components

- **Engine Rotative's, Transmission, Undercarriage & Aircraft Structural**
- **Commercial Aviation** - Exports
- **Defence Aviation/GTs**- IAF & IN Indigenization & HAL





- **Vertical Integration Strategy** – Growing from a forging component business to a system development – Tier III / II to Tier I
- **Leverage domestic product portfolio** to penetrate exports market
- **'Make in India'** – Indigenization of spares & MRO for IAF/IN



KALYANI

Aerospace Business – Focus areas

BHARAT FORGE



Composite Rotor Blade



Marine Gas Turbine



AMCA



IMRH

Projects – Atmanirbhar Bharat

MRO/Spares

APU - Helicopters
H/C MRO
Turbo Machinery - IN



Landing Gears/Undercarriage
IAF

MRO – Transmission – IAF

MRO – LRUs – IAF

Enhanced scope to do MRO/Spares & Integrated sub-systems
Indigenization, offset opportunities for present & future platform programs

Engine/Rotative

Undercarriage

Transmission

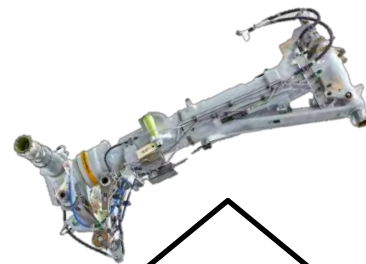
Structures

With Tier 1 & OEMs

Sub-Assemblies



Assembly Capabilities – Design & manufacturing using **'Concepts NREC'**. Developing own IPs.



Industrialized Components. Engagement with customer for Assemblies.



Proven critical gears & casings. Engagement with customer for Assemblies.



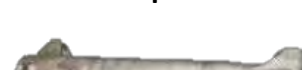
Developed structural forgings. Exploring assembly opportunities.

Exports

Engine/Rotative Components



Landing Gear Components



Gears



Structural Components



BHARAT FORGE



Global Aluminium Strategy

Pune, 9th December 2022


A Compelling Market Opportunity for Aluminum

BFAL is well positioned to benefit from several key industry tailwinds which supports demand for castings and forgings

MARKET LANDSCAPE


- 1

- **Increasing auto production rates** - as supply chain issues abate and the world recovers from COVID-19, global lightweight vehicle sales are expected to recover to pre-pandemic levels




- 2

- Automotive industry has been **steadily increasing aluminum pounds per vehicle ("PPV")** to reduce weight for both internal combustion engine ("ICE") vehicles and electronic vehicles ("EVs")
 - Initial gains have been made in replacing steel with aluminum body sheet, but there are many further applications such as **battery enclosures and structural components** in electric vehicles




- 3

- Leading global auto OEMs have begun to **transition production from ICE to EV**, which have **more aluminum content per vehicle**
 - **90% of the top 20 OEMs** have publicly stated 2030 EV production goals




- 4

- BFL's **early investment in aluminum forging capability** has led to the development of a **robust product portfolio of lightweight products** positioned to capture meaningful market share, particularly with the **premium auto OEMs**
 - Forging capabilities are complemented by an **established and growing castings business**



- 5

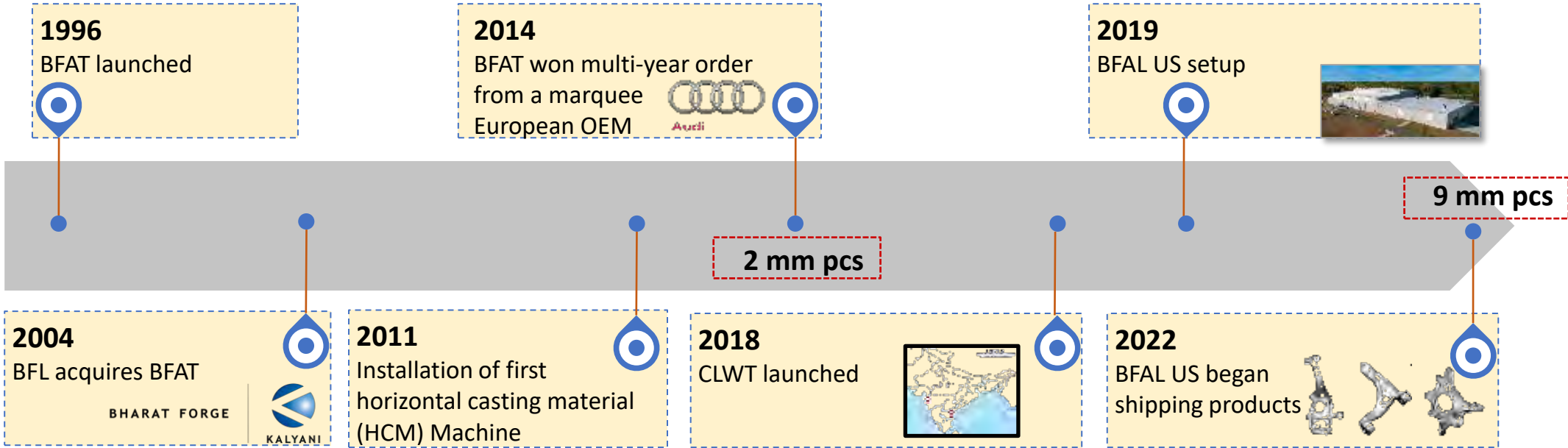
- BFAL's **robust technology and proprietary processes** allow its products to outperform peers



Overview of BFAL's History

BFAL has a long track record of launching new businesses in distinct markets across geographies; the creation of a holding company to manage these assets will enhance focus and drive growth

TIMELINE AND KEY MILESTONES



COMMENTARY

- Over 20 years of history in the aluminum forgings industry; proven technology and financial profile support investment
- Current market trends support investment and focus on the opportunity in forgings and castings
- Proven team with global reach across the US, India and Europe

Bharat Forge Aluminum Overview

BFAL anticipates to comprise four plants leveraging relationships with marquee OEM customers, and portfolios of key products

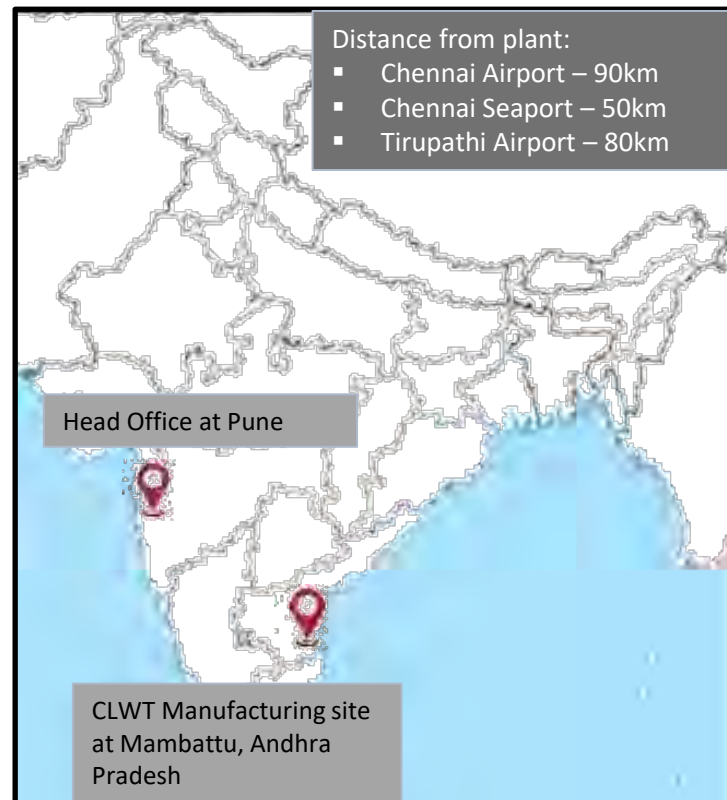
	BFAT	BFALUS	CLWT
	Forging	Forging	Casting
Overview	<ul style="list-style-type: none"> Aluminum forging facility located in Germany, established in [1996] Holds multi-year contracts with marquee European OEM customers Demonstrable ramp in financial profile, with EBITDA margin doubling over the last 10 years, and now at ~20% 	<ul style="list-style-type: none"> Aluminum forging facility located in Sanford, USA Launched in 2019 and began shipping product in 2022 HPDC¹ technology for structural and transmission components In-house engineering and design capabilities Specialized in lightweighting, Aluminum forging, HPDC, machining, foundry, assembly 	<ul style="list-style-type: none"> Aluminum casting / lightweighting facility located in India, launched in 2018 Key products across categories: powertrain, chassis, EV motors and EV battery housing Specialized in Die Casting, Hydroforming, Carbon Fiber, Foundry, Light Tooling
Capacity	<ul style="list-style-type: none"> 7.0mm pcs 	<ul style="list-style-type: none"> 2.0 mm pcs 	<ul style="list-style-type: none"> 2,400 tons
Products	<p>Front LCA Wheel Carriers Knuckles Knuckles Front LCA</p>		<p>T/M Support Bracket Battery Housing for E2W Engine Mtg. Bracket LH Rocker Cover</p> <p>Engine Mtg. Bracket RH Cooler Cover Escalator Steps Motor Housing for E2W</p>

Extensive Product Development Capabilities

Leading Research & Development at CLWT

CLWT will allow BFAL to innovate and design various casting products quickly to meet customer needs

OPERATING FOOTPRINT



MANUFACTURING CAPABILITIES

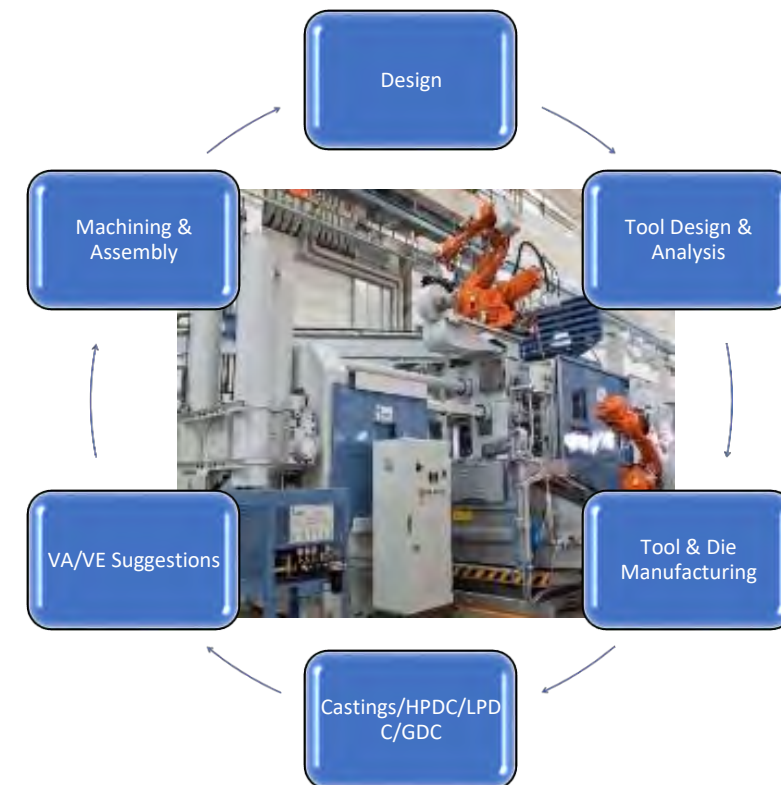
Technologies

- High Pressure Die Casting
- Gravity Die Casting
- Low Pressure Die Casting

1100 T to 4200 T HPDC Machines

Annual Capacity: 2,400 Tons

Product range: 0.75 kg to 30 kg

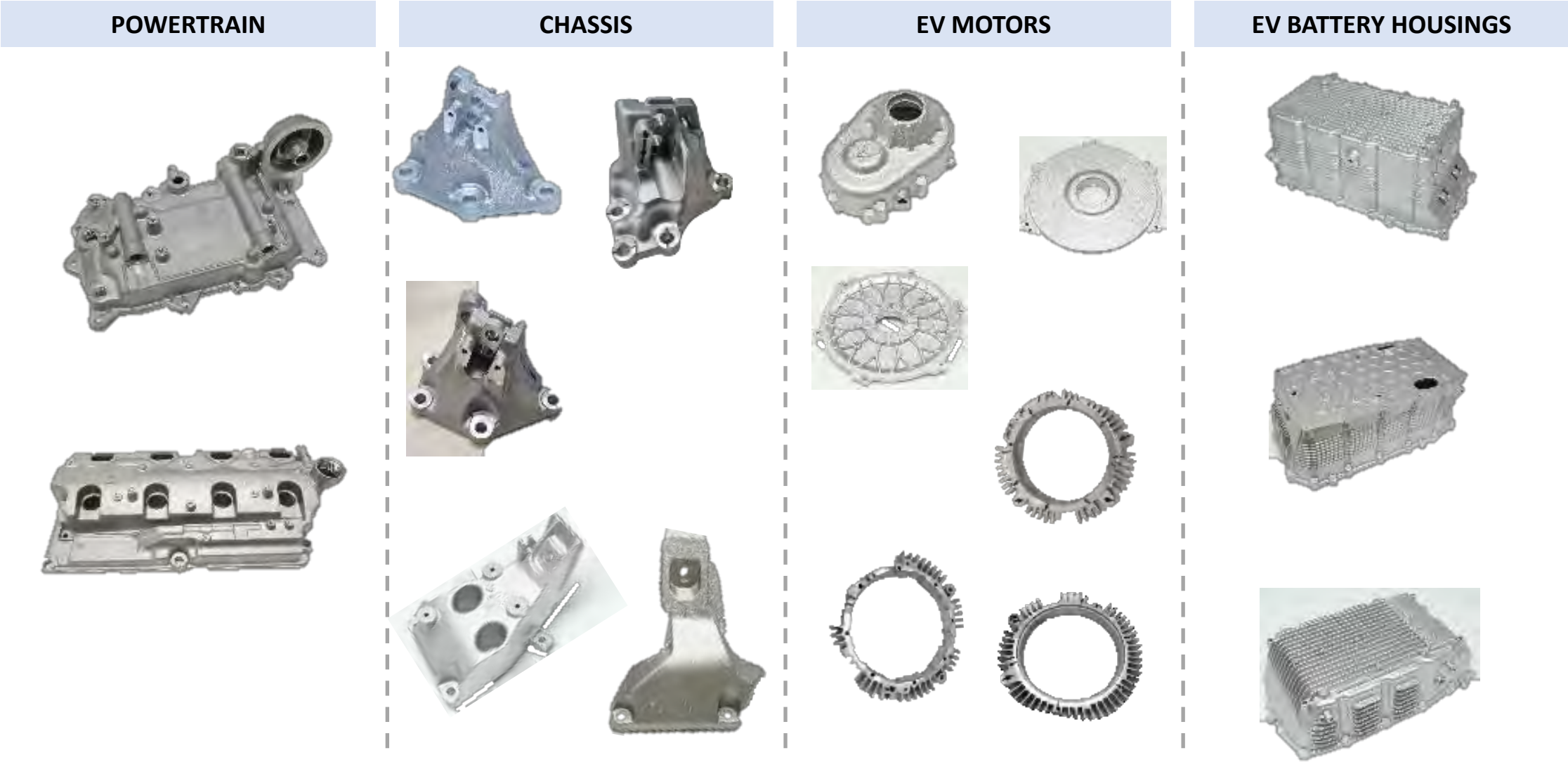


Full System Lightweighting Solution Provider

Extensive Product Development Capabilities

CLWT Delivers Key Products in Aluminum Lightweighting

CWLT's mission-critical products are well-diversified across the parts spectrum and position the business to capitalize on the secular shift toward lighter-weight aluminum, as well as electric vehicles more broadly



CLWT Designs Mission-Critical Products to Address Lightweighting Needs Across the Vehicle

Strategic Investments in Global Footprint

Meaningful capital has been invested to establish a global footprint to support planned growth; locations strategically placed in close proximity to top customers

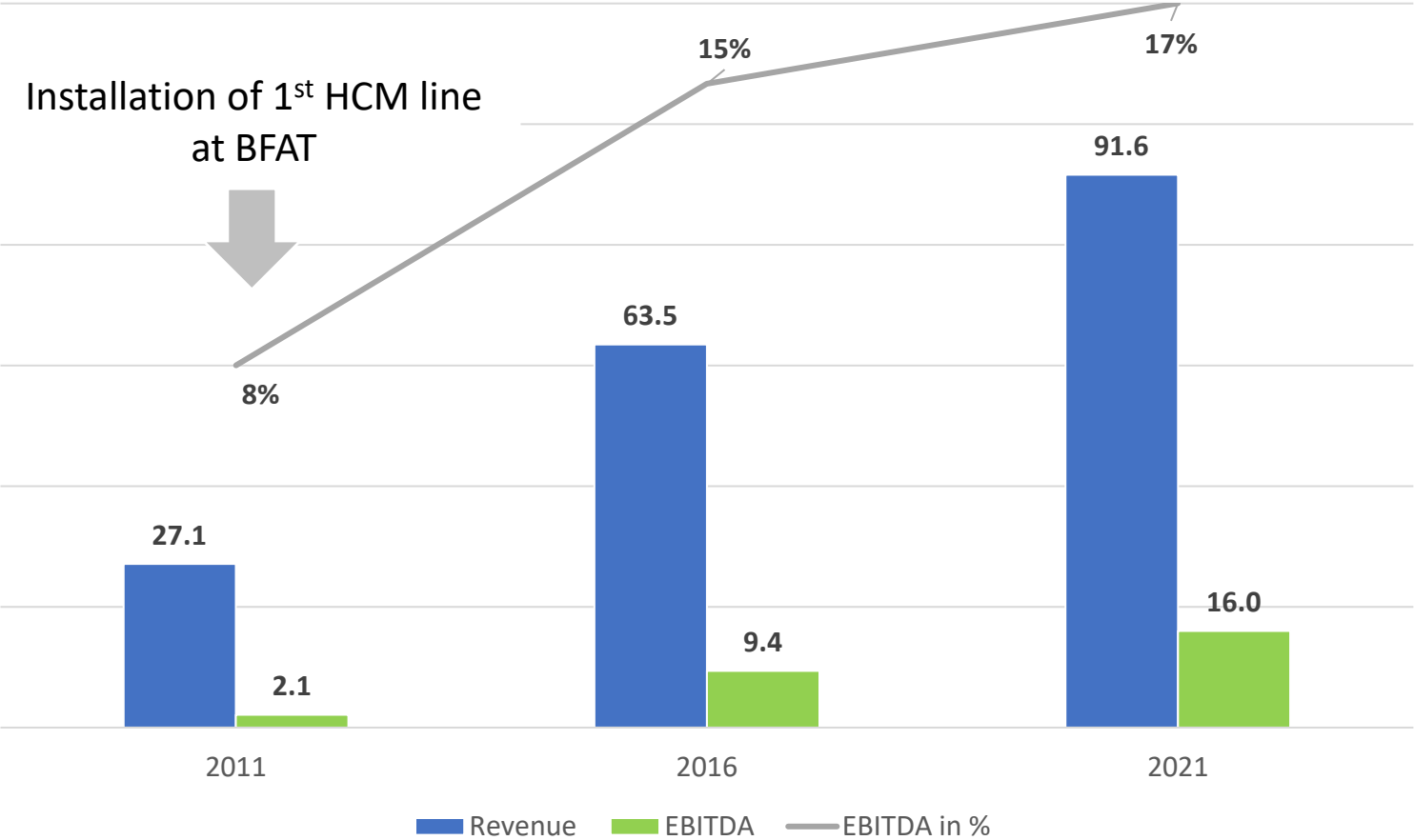
GEOGRAPHIC OVERVIEW



BF Aluminum Strategy – Based on BFAT 10-years Journey

BFAT’s successful ramp highlights the potential in BFAL’s other facilities

BFAT HISTORICAL PERFORMANCE (\$MM)



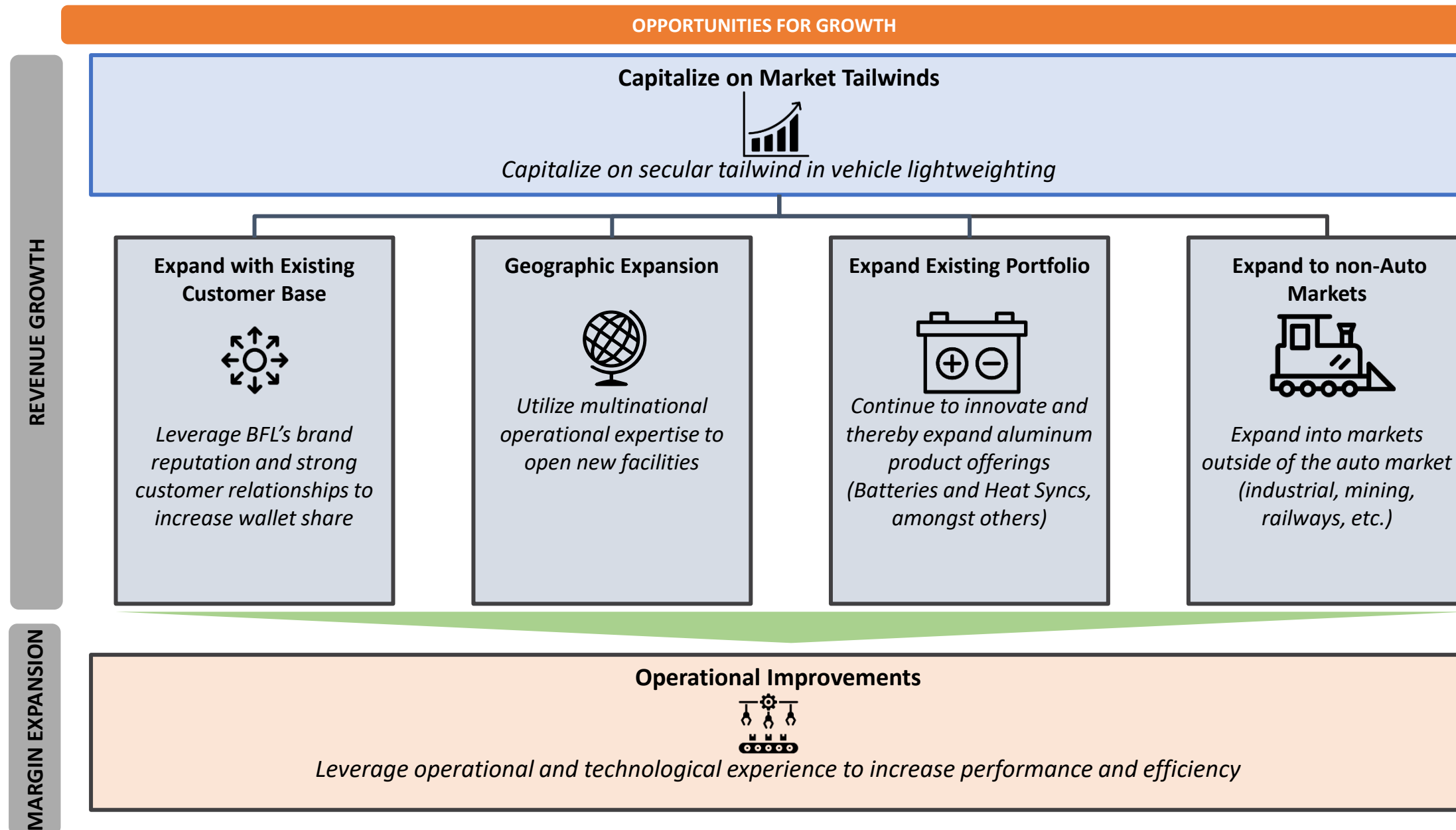
Key Messages

- **15+ years** experience in the Aluminum Forgings space
- **Leading & critical** supplier of aluminum forgings for premium brands in Europe
- **13% CAGR growth** in revenues
- **22% CAGR growth** in EBITDA
- **Doubling of EBITDA margin** over the period in reference
- Utilizing **Clean, Green & Efficient** processes

➤ **HCM Process and further investments in Aluminum Production contributed meaningfully to EBITDA Margin Expansion**

BFAL has Multiple Growth Levers

BFAL has multiple levers to grow above and beyond what is in the financial forecast



BF Aluminum Strategy – BFALUS

Impressions of the New Plant in Sanford, NC



BF Aluminum Strategy – BFALUS

Impressions of the New Plant in Sanford, NC - HCM Melting Furnaces & Casting Modules incl. Racking



BF Aluminum Strategy – BFALUS

Impressions of the New Plant in Sanford, NC - Forging Line incl. Billet Heating & Heat Treatment, Shot Blasting & Testing & Lab

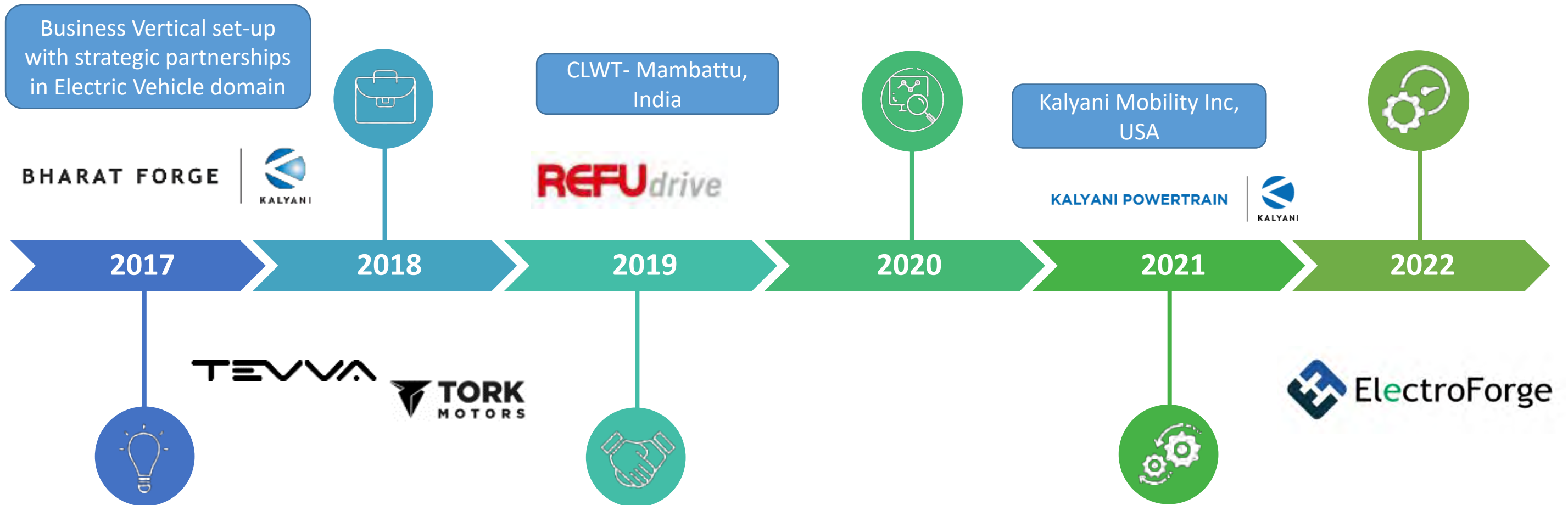


Kalyani Powertrain Limited

e-Mobility presentation for 2022 BFL Analyst meeting

BFL Analyst meeting | 09th Dec 2022

Bharat Forge | e-Mobility Journey



KPTL: e-Mobility Business update

Kalyani Powertrain Locations



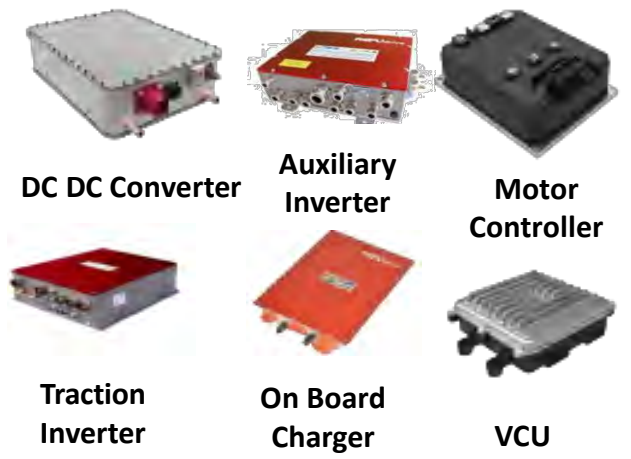
KPTL: e-Mobility Business update

Product Portfolio and Capabilities

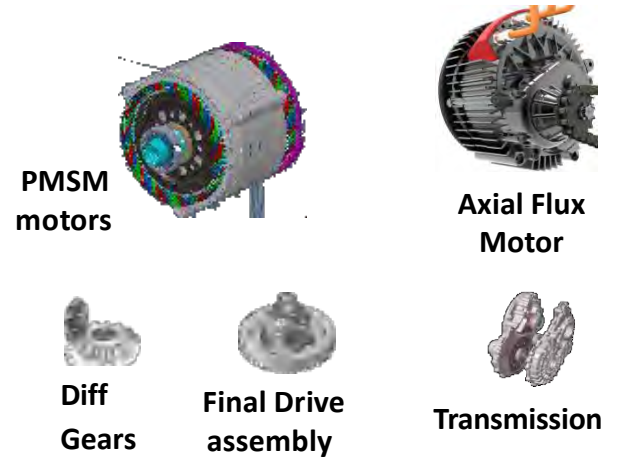
Advanced Technologies
Embedded Systems
Data Analytics
Artificial Intelligence (AI)
Telematics & Remote Diagnostics
Connected Vehicles
V2G & V2V Charging
Advanced Cell Chemistries
Nano Technology

Product Portfolio aligned to EV markets

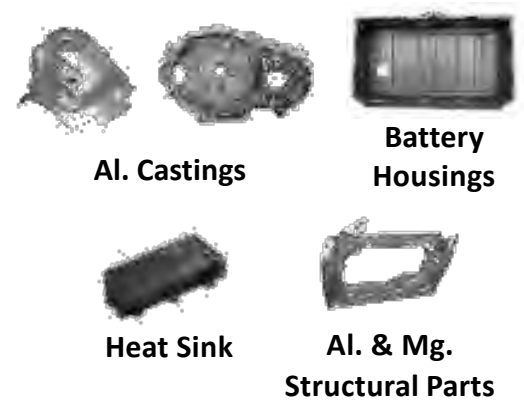
Power Electronics



Traction / Drivetrain



Mechanical (Light Weighting)



Energy Storage



Future products (2025)

- H2 Fuel cell based powertrain solutions
- Advanced Electric Chassis
- H2 Fuel Cell Membranes
- Advanced e-Axle
- Carbon Fiber Composites
- Sodium ion Battery
- Hydrogen Cylinders

KPTL: e-Mobility Business update

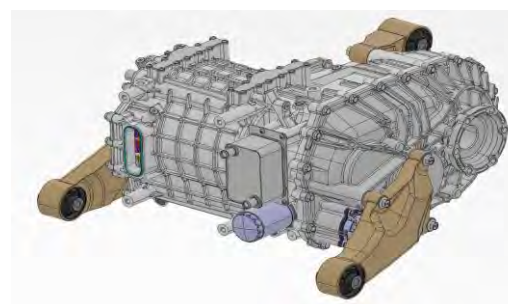
Electroforge JV status update



- JV with Harbinger Motors “**ElectroForge**” unveiled on 14th Sep’22 at **Detroit Auto show**
- Electroforge will operate from India for **high volume production** and cater to requirements of
 - a) Harbinger for their Skateboard Chassis
 - b) India Domestic Market – both OEM & Retrofit
 - c) Global Auto OEMs and new age customers

ElectroForge products – eMotor, EDU

- For Bus and MHCV segments
 - **Modular design** with competitive specifications
- Product Beta build in progress
 - **Alpha sample** testing completed
- Motor Mfg. lines design – WIP
 - **SOP target Q4 FY23-24**
- JV agreement and product offering definitions in progress



KPTL: e-Mobility Business update

Business Verticals

PLI Covered



Electronic Components Manufacturing

Make in India for global markets; Automotive Grade Power & Control Electronics



Commercial Vehicle Re-Powering

Immediate market necessity for existing mid-life Trucks / Buses



2W e-Bike & 3W Kits (TORK Motors)

White labelled manufacturing to harness inherent Kalyani group manufacturing excellence



Traction Drives, EDU & E-Axles

In-house development and manufacturing of EV traction drives



* eMotor

KPTL: e-Mobility Business update

TORK Motors Update

- ✓ 500+ happy customers till date
- ✓ Pune's first **experience centre** inaugurated on 26th Nov'22
- ✓ **Dealers appointed** in Hyderabad; Bangalore & Chennai
- ✓ **YTD PAN India online Bookings: 4,637 Bikes** (registered leads: 19K)

- ✓ **FAME-II certificate** received on 19th Oct'22
- ✓ **Cumulative Mileage** covered **619,000 KM**
- ✓ **No Field Complaints, Recalls or Fires** till date



CO-CO First Experience Centre in Pune



KPTL: e-Mobility Business update

Unit-1 (contract mfg.): Plant readiness status update



First Micro-factory for e2W & e3W Kits mfg.

Asset Lite model: Chakan – Phase II, Pune

Plant SOP : Q1 / 2023

Manufacturing of :



e-Motor



Battery pack



Bike Assembly



KPTL: e-Mobility Business update

CV Re-Powering business update

STATUS : 6.12.2022

- ✓ KPTL- Repowered Commercial Vehicle in N3 Category – 1st of its kind to get AIS123 (EV Retro-fitment) Certification in India
- ✓ Full load mileage accumulation – cumm. **11500+km** as on date
- ✓ **2 vehicle platforms and 3 model variants** and end use applications ready for field deployment
- ✓ Field deployment at Customer lined-up, Route study comp
- ✓ Service network – 5 workshop locations established
- ✓ Program extension for Bus Retro-fitment started



KPTL: e-Mobility Business update

Unit-2 (CV Re-Powering): Plant readiness status update



- ✓ CV Repowering Pilot Plant : **Chakan Phase II, Pune**
- ✓ Capacity : **1000 CV Conversions / Annum**
- ✓ 10 Production bays, 3 Inspection bays
- ✓ With additional scope for e-CV kitting
- ✓ Plant SOP : **Q1 / 2023**

Products:



e-CV Kit



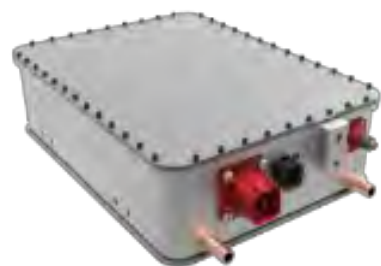
Re-Powered e-Truck



Re-Powered e-Bus

KPTL: e-Mobility Business update

Electronic Components business update – Power & Control tgt. products



High Voltage DC-DC Converter

4 kW, 650VDC to 24VDC:

First Application : Electric HCV

1st patent filed on Architecture

Pilot Customer - Vehicle trials started

Serial production : Q1/23



Vehicle Control Unit (VCU)

Platform Hardware ready, EMI/EMC Certified

First Application : Electric CV

USP: CCS2 Charge Controller integrated

Serial production : Q2/23



48V Motor Controller (MCU)

Platform Hardware ready

First Application : e2W (Tork)

USP: Integrated VCU

SOP : Q2/23



Auxiliary Dual Invertor (Dragonfly)

Project – co development with REFU

USP: Automotive Grade, wide application for Truck & Bus

Local Supplier Value Chain

SOP: Q2/23



KPTL: e-Mobility Business update

Unit-3 (Electronic Components): Plant readiness status update

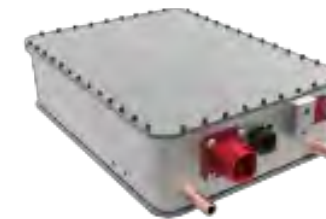


State of the art Electronic Manufacturing Plant

- ✓ EMS Solution under 1 roof: SMT, Conformal & Box assy line
- ✓ SMT Line from reputed m/c OEM's to arrive by Dec'22
- ✓ Chakan Plant: Clean room with ESD protection
- ✓ Automotive Grade / IEC Qualified Electronic Products
- ✓ Plant SOP : Q1 / 2023

Products :

PCB-A for various products; VCU, DC-DC, OBC, Invertors, Motor Controllers, BMS.



KPTL: e-Mobility Business update

Overall Business Plan “Strong Growth opportunity across segments”

- ✓ **Clearly defined Market Go-To strategy, working as per plan**
- ✓ **Growth opportunities in all market segments & EV business verticals**
- ✓ **Market launch confidence via product testing & validation**
- ✓ **Building team competency & Right sizing to realize the business vision**
- ✓ **Focused Projects Execution & Volume ramp-Up**

BHARAT FORGE



Investor Presentation – JS Autocast

Foundry –SIPCOT Erode



Machine Shop-Coimbatore



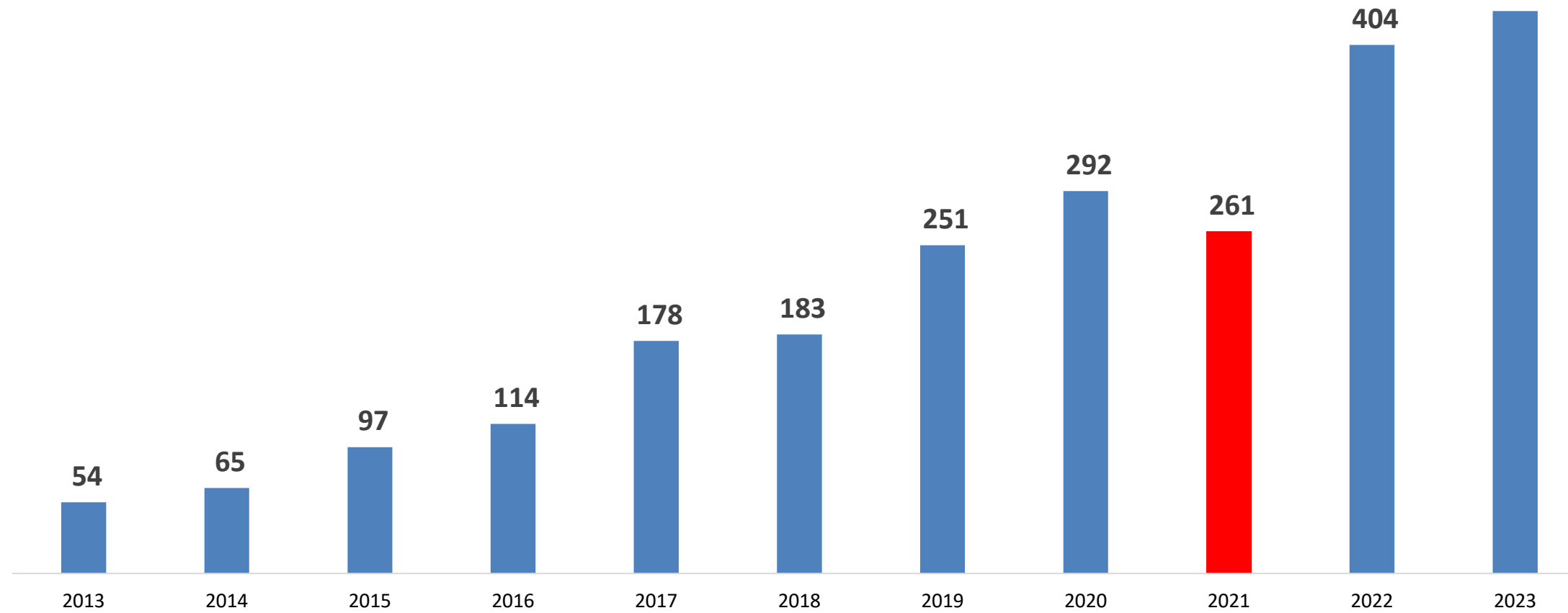


Overview: JS Autocast



- **18-year-old young company**, initially supplying to the automotive sector.
- Leading manufacturer of high-grade machined ductile iron castings, which find applications in wind energy, hydraulics, automotive and power generation sectors.
- Manufactures machined castings of up to ~400kgs (small size) using green sand molding process
 - over 50 % of products are exported
 - 100% of products are machined in-house
 - Provides sub- assembly services for select customers.
- Fully-integrated manufacturing setup with in-house design, melting/ molding, machining, metalizing/ painting, testing, and packaging
 - **Unit -I in Coimbatore (2005)** – Designing, core making, melting, molding, testing facilities and 96 CNC machines for machining
 - **Unit-II in Perundurai (2020)** – core making, melting, molding, heat treatment facilities
- **Combined capacity of ~ 72,000 MTPA (SIPCOT) + 28,800 MTPA (Coimbatore)**
- **Direct single source supplier to reputed domestic and global customers. 100% SOB with major customers.**

Revenue (Rs Crores)



- **37% CAGR since inception**
- **23% CAGR in the past decade**
- **Annual growth in revenues continuously over the past decade barring Covid 21 lockdown.**



Uniqueness of JSA



- Full-service supply capability
- Expertise in manufacturing and handling unique grades and critical components. “ We take up what others regret”
- Leader in small sized wind turbine castings
- New product development: First Time Right
- Environment conscious plant with focus on certifications and quality



The Road ahead

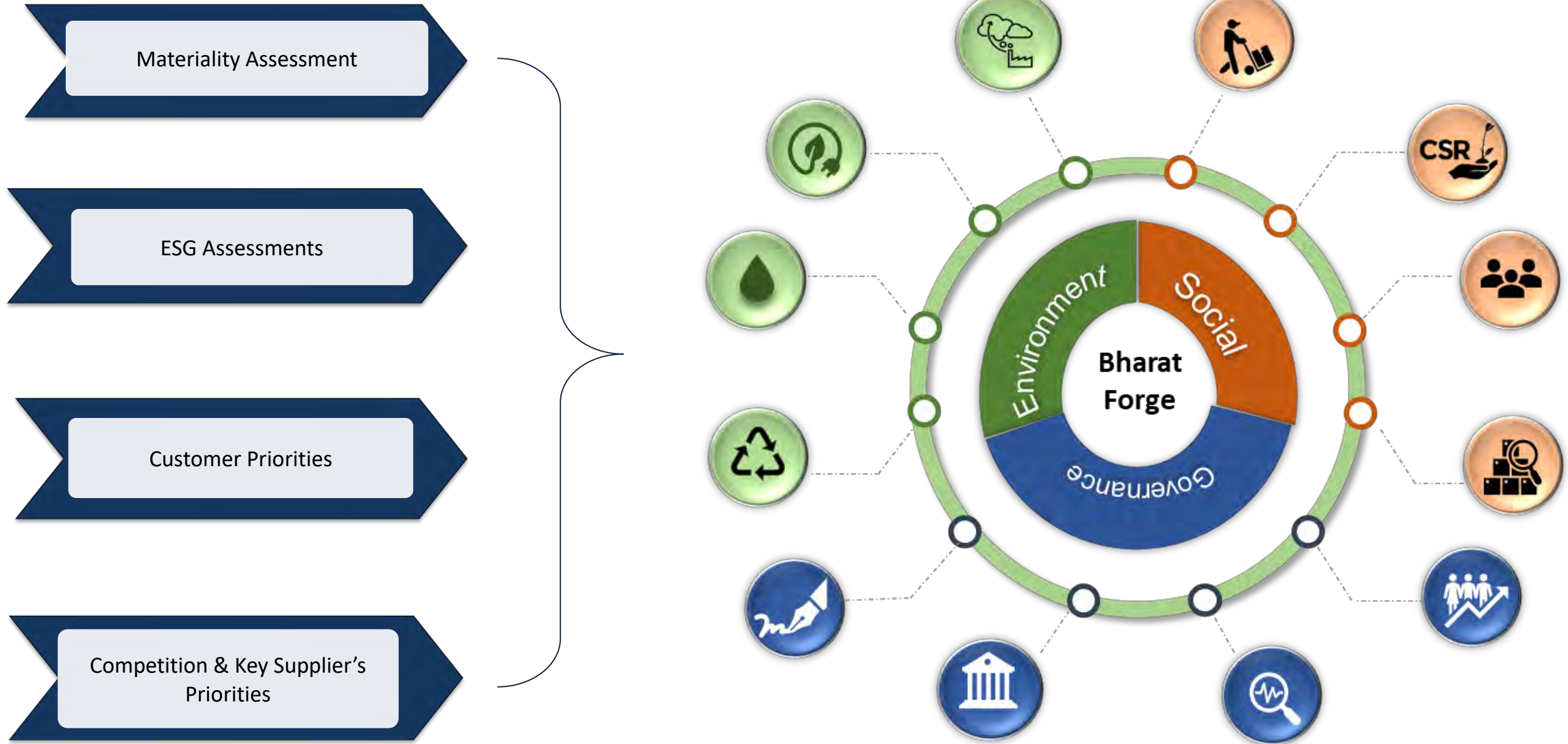


- Growth from Key Existing Customers
- Growth from Newly Acquired Customers
- Growth from Hydraulics, Earthmoving and off-Highway Segments
- Investing in New Technology leveraging KCTI & KCMI facilities
- Green Castings using 100% Renewable Energy
- Expand product portfolio across small & medium castings

BHARAT FORGE



Investor Presentation – ESG



- Scope 1 (35%) & Scope-2 (60%) lesser emissions by 2035
- 50% lesser Carbon footprint by 2035
- Carbon Neutral by 2040

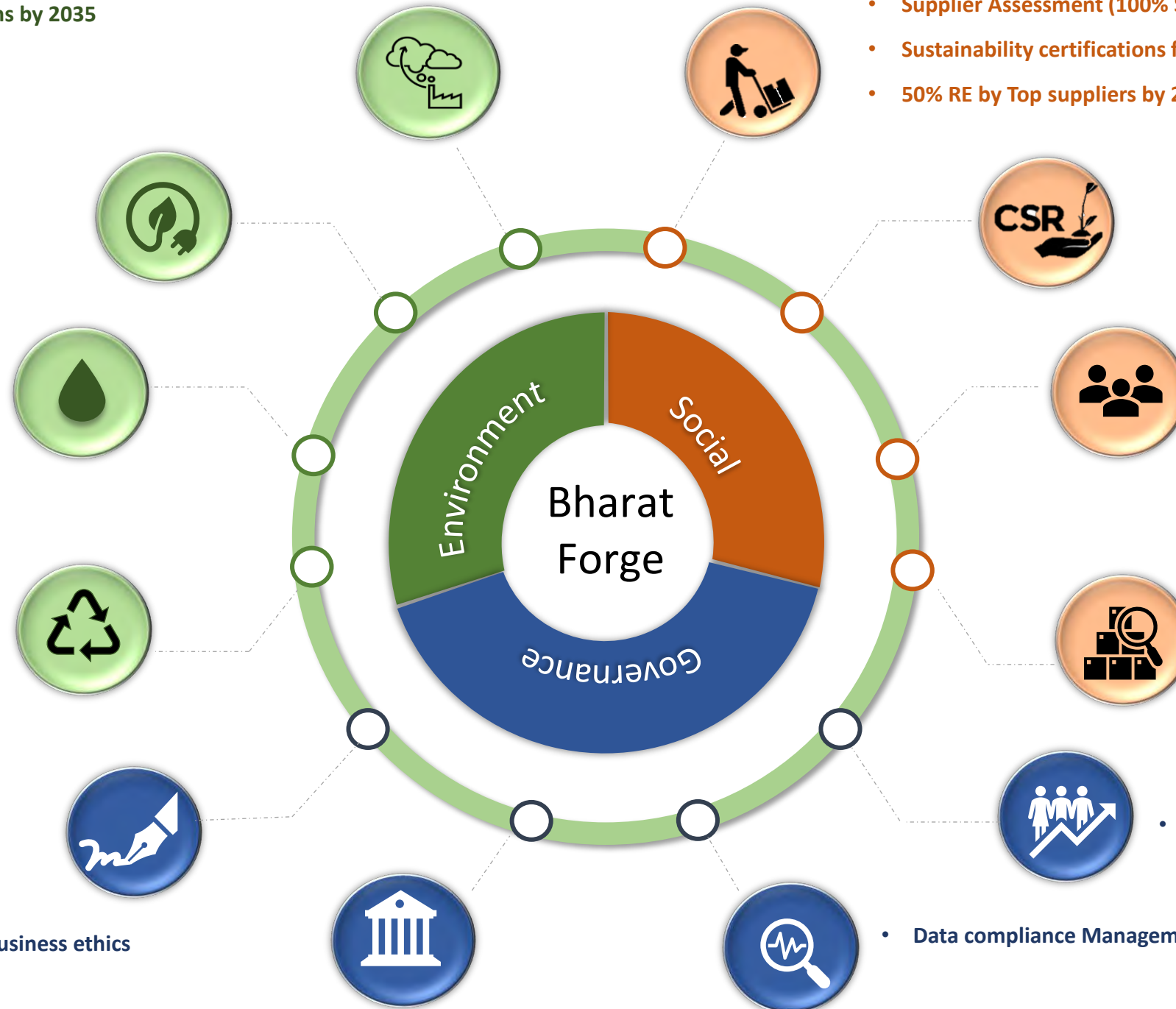
- 40% reduction in Energy Intensity by 2025
- Energy Efficiency 2%/Annum YoY till 2030
- 80 % RE by 2035

- 35% lesser freshwater by 2025
- Water Positive by 2035

- Zero Waste to Landfill by 2025
- 50% Sustainable Packaging by 2030
- 50% Secondary RM by 2030

- UN Global Compact Signatory

- 100% employees trained on Human Rights & Business ethics
- Robust compliance management system



- Supplier Assessment (100% Suppliers) by 2023
- Sustainability certifications for Suppliers (EX:ISO 14k / 45k / 50k)
- 50% RE by Top suppliers by 2030

- Plant 1Million Trees by 2030
- Zero accident & occupational illness
- 50% reduction in RIF & LTIFR by 2023
- Mandatory Trainings completion by 2023
- Critical target groups upskilling by 2025
- >75% in Employee Satisfaction by 2025

- LCA for all the products by 2025
- 30% lesser CO2 in Freight / Unit produced by 2035

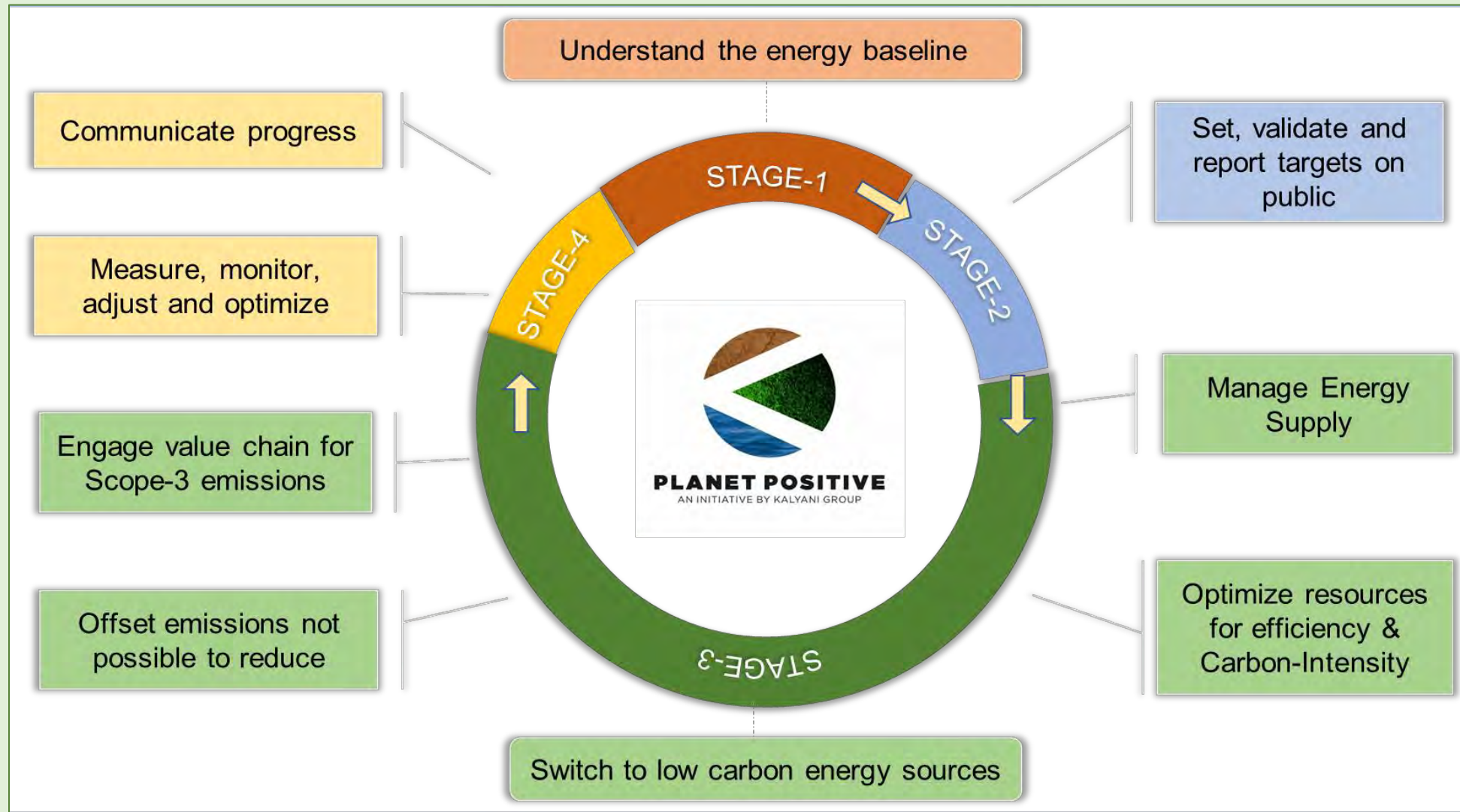
- 20% women in leadership positions by 2030

- Data compliance Management System effectiveness assessment by 2023

* 2019 is considered as Baseline

BFL Decarbonization Roadmap

- Implement ISO 50001 Certification
- Monitoring using Industry 4.0 Platform
- Connect & Coach Suppliers for RE Conversion / Energy efficiency
- Explore Renewable Energy Certificates (REC) for balance RE share



- Monitoring using Industry 4.0 Platform
- Minimize losses in the Energy consumption
- Energy efficiency by audits / assessments & implementation of projects
- Reusable Packaging
- Waste Reduction

- Clean Technologies – Oil to LPG/PNG to Electricity for Furnaces
- Renewable Energy through Group Captive / Open Access
- Conversion of systems - Fork-lifts (EV)

Environment



- Mapping & Certification by external agency



- Climate Change strategy (*RE / Energy Efficiency / Clean Technology*)



- Water Consumption Monitoring & control



- Sustainable packaging / Waste reduction & recycling

Social



- ISO Certifications - 14k, 45K, 27K, 50K (*in progress*)
- Sustainability Assessment of Key Customers



- Supplier code of conduct revision
- Supplier Ethics & Sustainability Assessment



- Initiatives & Quantitative indicators aligned with ESG



- Strengthen Safety Walkthrough / Safety Induction
- Near Miss Reporting /work permits

Governance



- ‘Introduction to ESG’ for Key Stakeholders



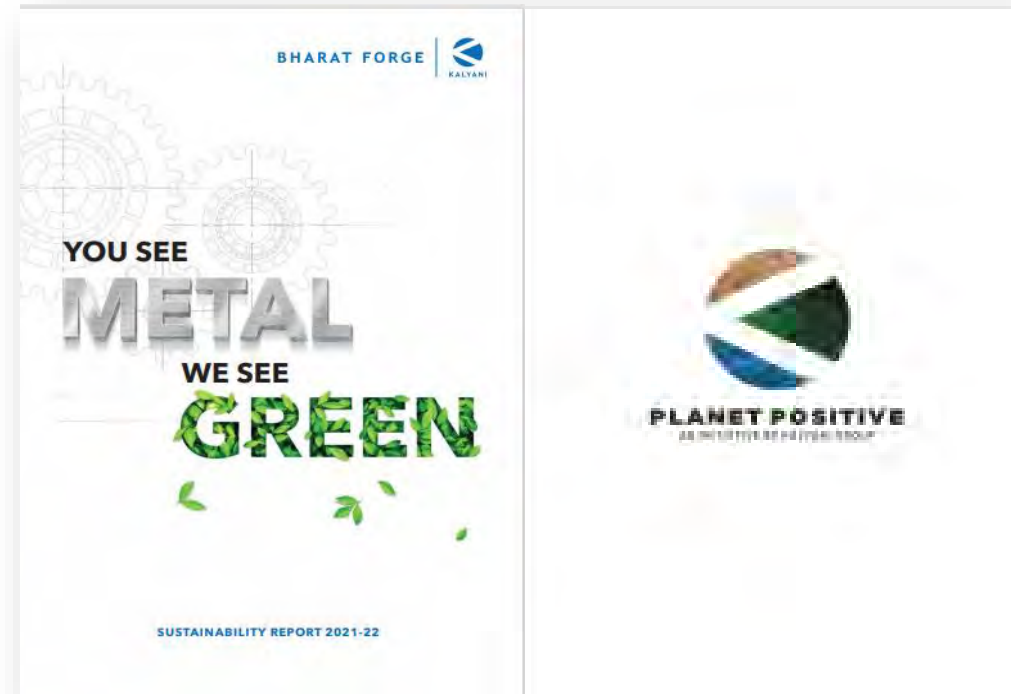
- Active on Social Media #BFLESG #Sustainability
- Webpage revamp & Promo video



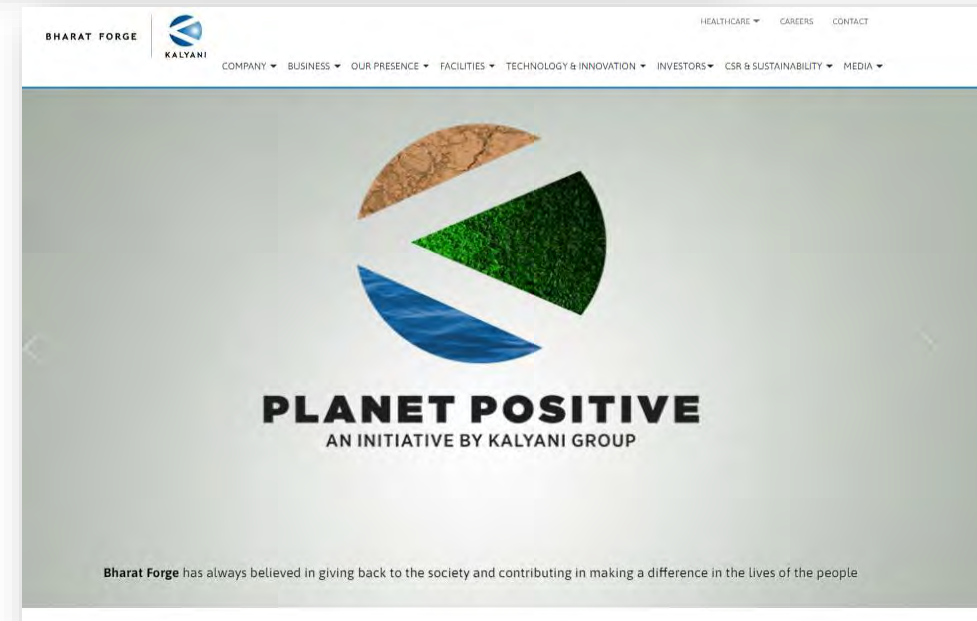
- BRSR (2021-22) submission to SEBI
- Sustainability Report (2021-22) assured by 3rd Party



- Policies - Human Rights, Anti-Corruption, Anti-Bribery, Taxation
- Mandatory Trainings - Business Ethics, Code of conduct, Human Rights, Cyber security, POSH



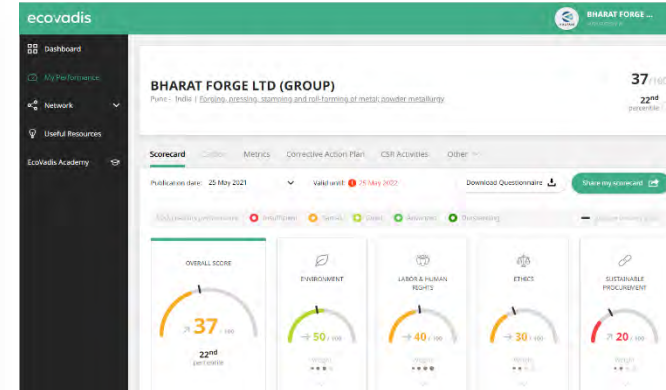
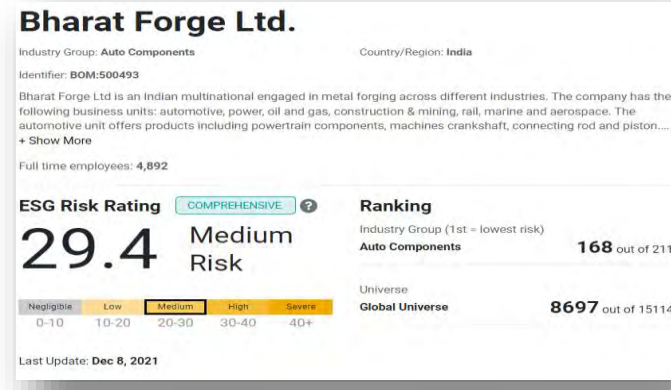
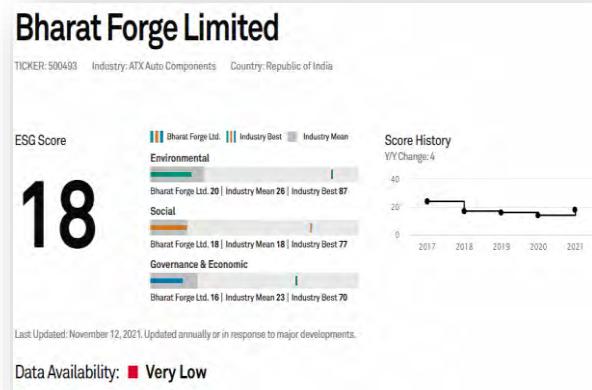
Sustainability Report – 2021-2022



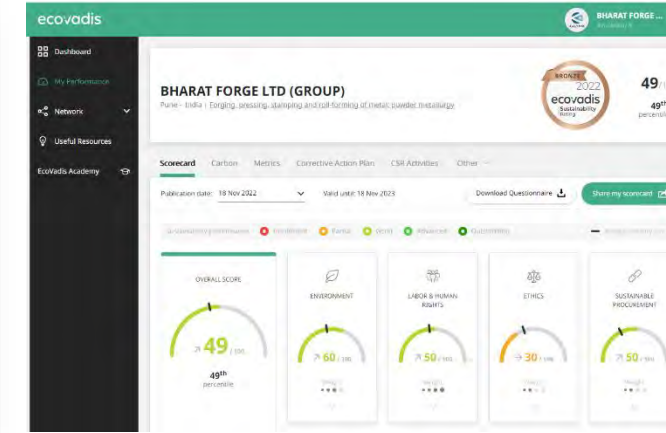
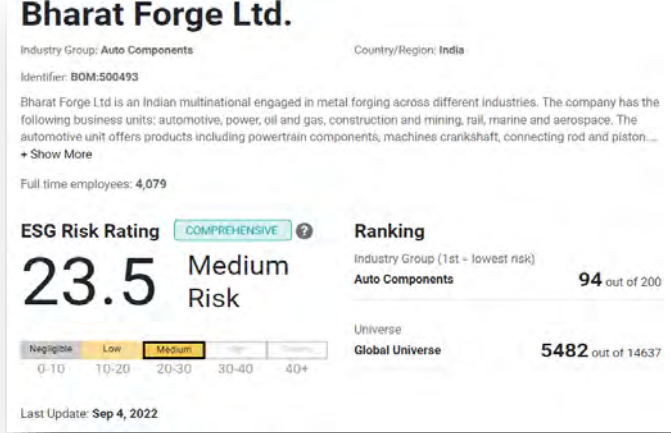
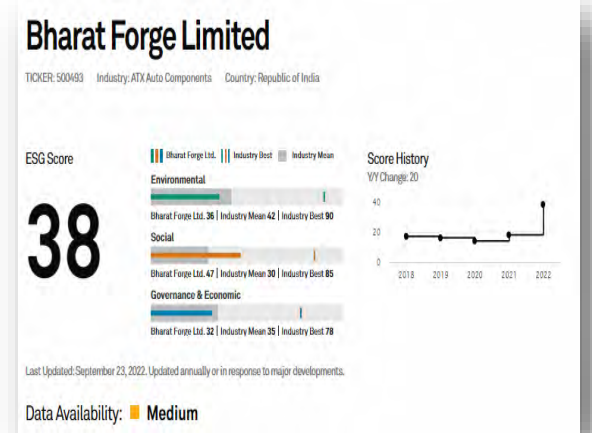
BFL – ESG Webpage



2021



2022



Response	Year	Status	Score
Climate Change 2021	2021	No Response	F
Water Security 2021	2021	No Response	F
Climate Change 2020	2020	No Response	F
Water Security 2020	2020	No Response	F

Results Awaited

Environment

- Energy (Electrical) reduction by 2% YoY vs 2019 Baseline (260GWh) – **5.2 GWh Reduction**
- Renewable Energy – **50% in 2023** (PPA in place)
- Water (freshwater) – 15% against 2019 BL (7.7 Lakh KL) – **1.15 Lakh KL**
- Specific Waste – 15% reduction vs 2019 BL (0.43) – **0.37 / MT Prod.**
- ISO 50001 Energy Management System Certification – **Mar 2023**



- Carbon Footprint Mapping & 3rd Party Validation
- PCF & LCA for Key Products (Green Forging)
- Validation of Climate strategy by SBTi
- Focus on Sustainable packaging

Social

- Supplier Ethics & Sustainability Assessment - **161 Critical suppliers**
- Accident & Occupational Illness - **Zero**
- Mandatory Trainings completion – **For all employees**
- Critical target group upskilling – **35%**
- Employee Satisfaction survey – **Completion for 2022-23**
- Tree Plantation - **1 Lakh Trees**



- Integration of ESG into CSR Projects
- Enhancement of Safety culture among workforce
- ESG in Product Design & Supplier / Contractor selection
- Policies–Sustainability, Energy, Bio-Diversity, Deforestation, D&I
- Remain active in Social Media #BFLESG #Sustainability

Governance

- ‘Introduction to ESG’ - **For all Key Stakeholders**
- BFL Sustainability Initiatives promotion - **Among all stakeholders**
- Data compliance management system effectiveness - **Assessment**
- Memberships - **UNGC, SBTi, ASI, FMC**



- Improve BFL ESG Scores in DJSI / MSCI / CDP / Sustainalytics
- ESG Led Marketing
- Carbon credits trading
- Strengthen Risk Management process
- Regular communication to all stakeholders including customers

BHARAT FORGE



COMPONENTS BUSINESS

Analyst Meet: 9th Dec, 2022



68%

Exports

60+

Global Customers

40+

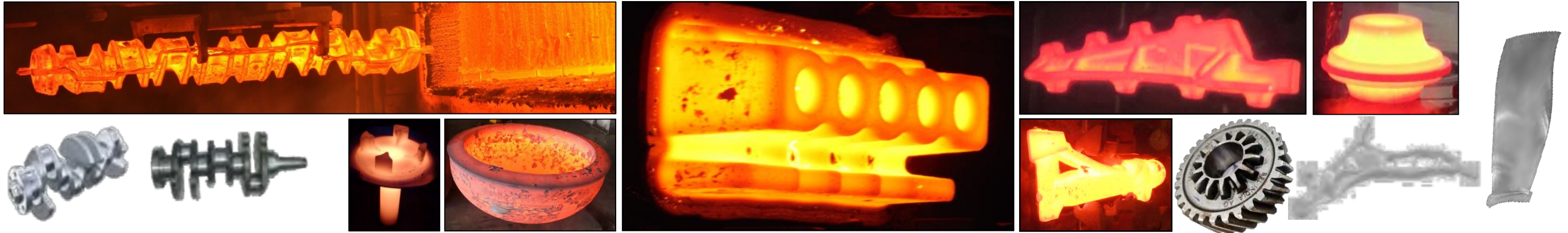
Domestic Customers

15

Plants globally

700K TPA

Global Forging Capacity



50+ years

Manufacturing Experience

30+ years

Exporting Experience

70%

of Revenue shipped as Finish Machined

Materials

Highly Engineered Steel, Aluminum, Titanium

Weights

1 kg – 2500 kg (CD)
Up to 50,000 kg (OD)



Reliable



Trusted



World-class



Digitalized



Planet Positive



✓ Drive 60+% HD CVs in US & EU; also in APAC and S. America

✓ Drive 2.7 Mln+ new PVs annually

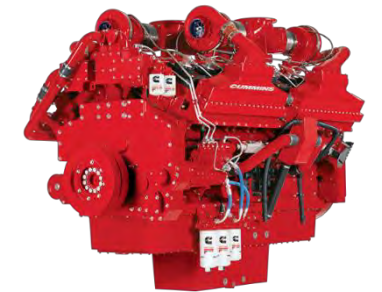
✓ Drive severe-duty construction vehicles

✓ Reliably operate standby power for hospitals, nuclear energy, data centers

✓ Support high efficiency Frac operations

✓ Fly business jets; take off & land commercial flights

✓ Power marine applications





Commercial Vehicles

All CV OEMS'
(except China)



Passenger Vehicles

All leading
PV OEMS' including some
E-Vehicles



Industrial Segments

Major OEMS' across
indicated segments



Global Supplier of the Year



Quality for the Year



Supplier of the Year



Performance Leader



Sustainability Initiatives Lead



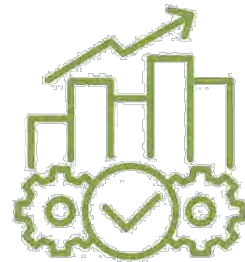
Partner level performance



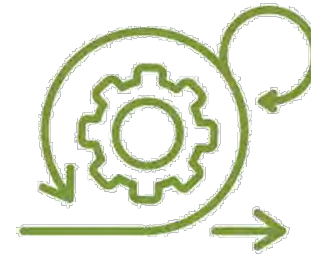
Business alignment – Gold



**CUSTOMER
FIRST**



**THE RIGHT
CAPACITY**



**THE RIGHT
AGILITY**



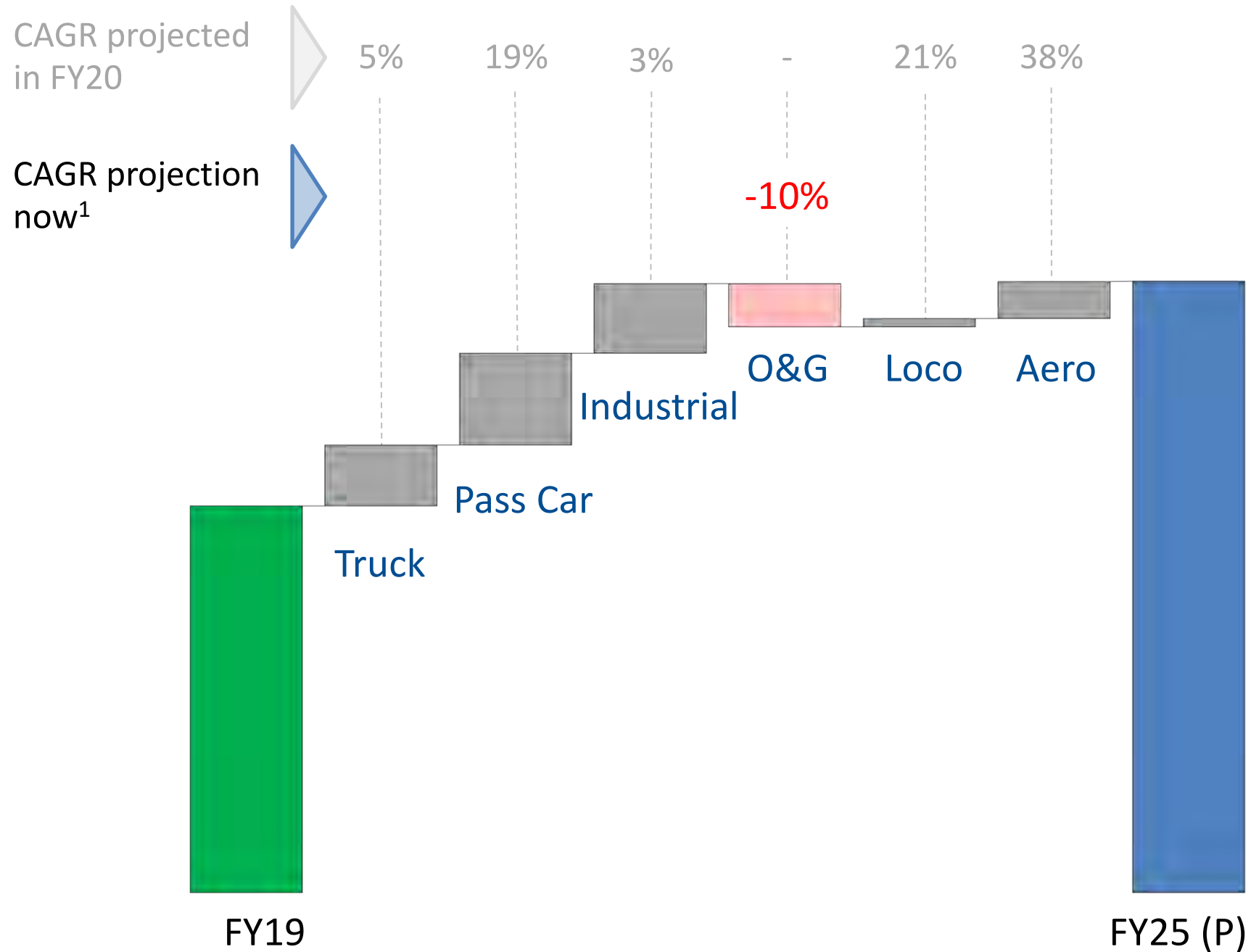
**NEW PRODUCTS
& INNOVATION**



**LEANEST
COST**

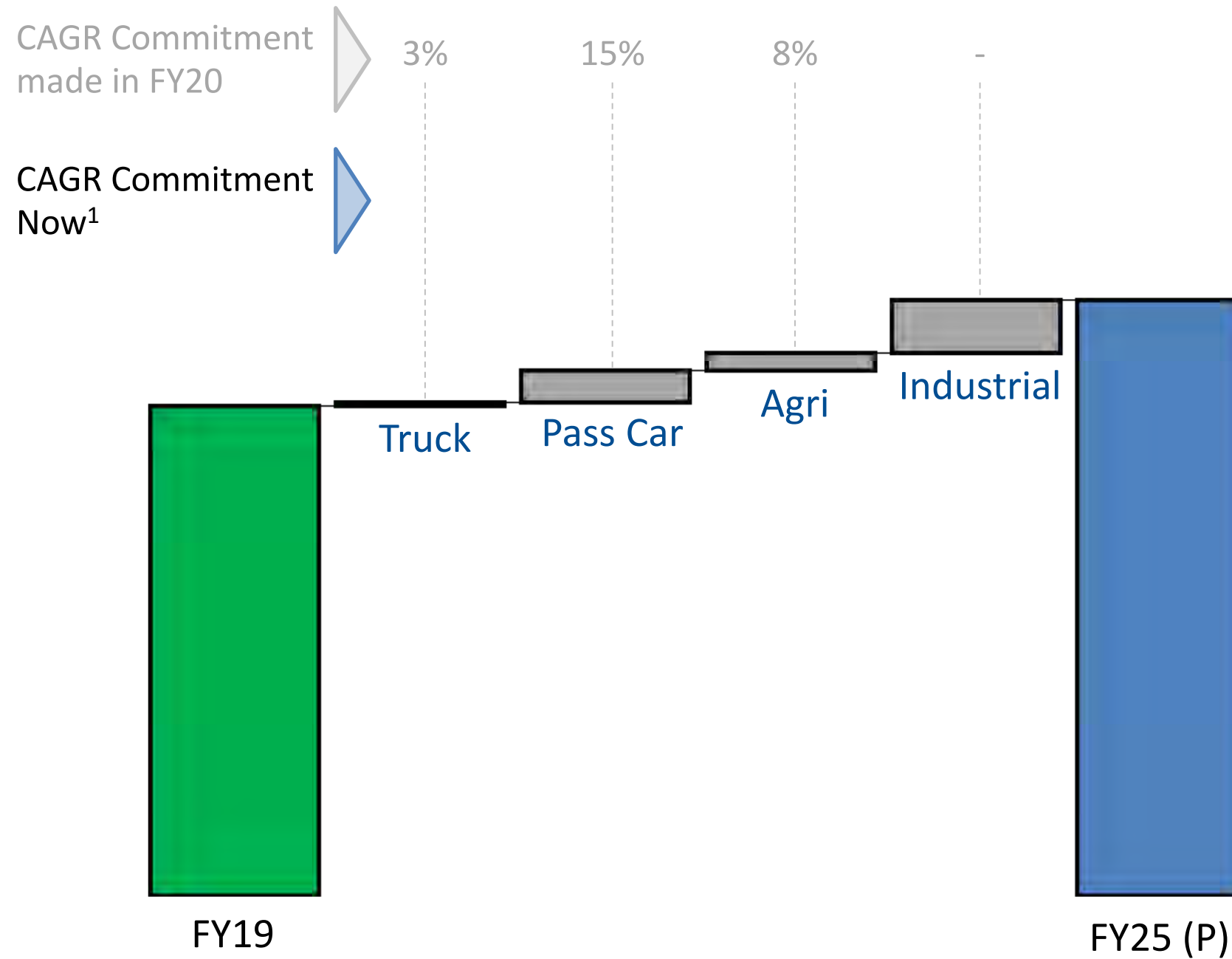
STRONG FOCUS ON EXECUTION, DESPITE ADVERSITY

BFL 2.0 WILL BE THE KEY ENABLER

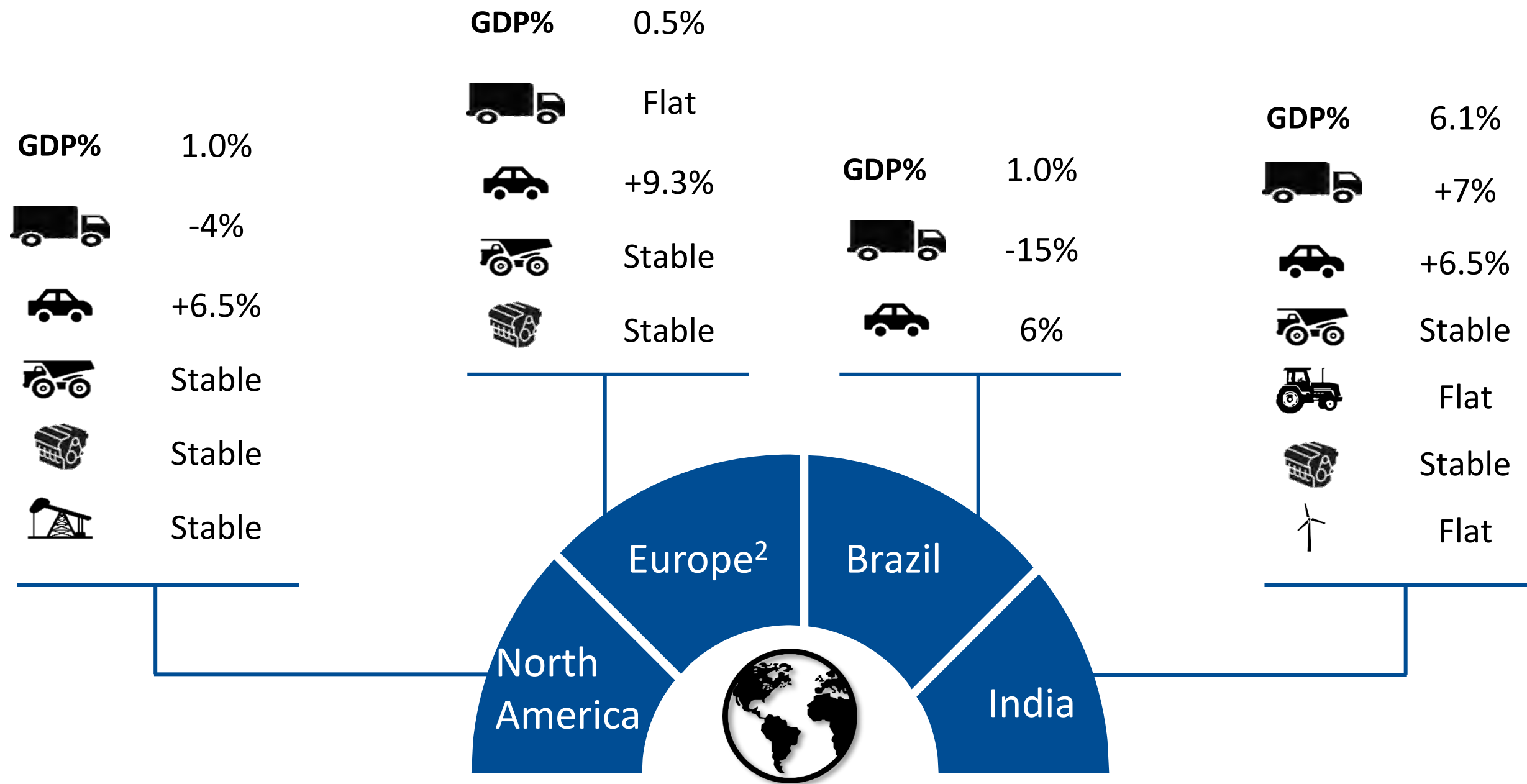


- ✓ **70%+ of FY25 projected business is already secured**
- ✓ **Market share expected to further increase in core products**
- ✓ **Increased penetration in PV and Aero segments**
- ✓ **Diversifying into construction & mining sector**

1. Basis current TIV projections for FY25



1. Basis current TIV projections for FY25

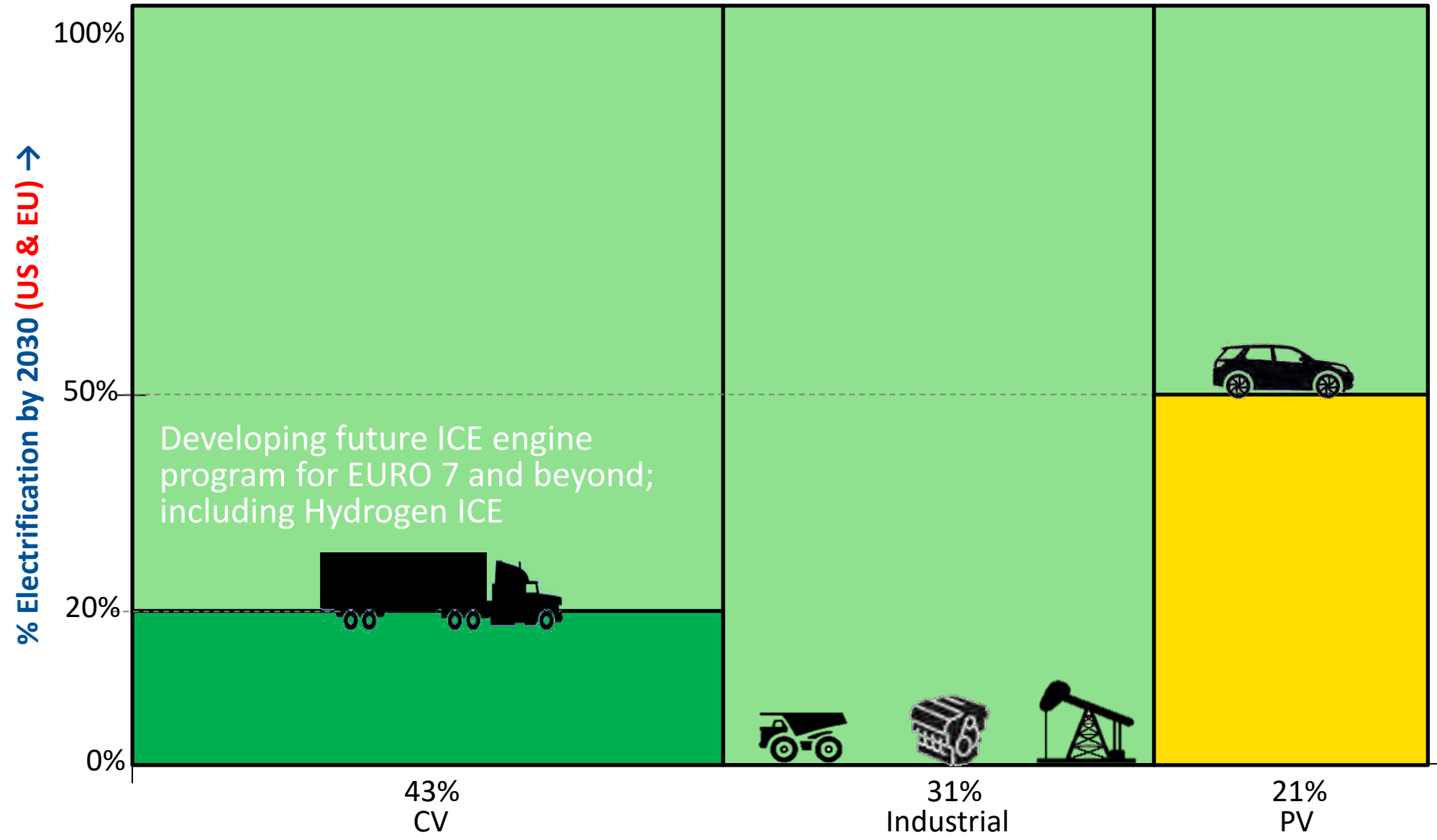


1. Sources: Reports by IMF ACT, AFS, ACEA, SIAM and internal projections basis discussions with customers
 2. Europe numbers are expected to have significant uncertainty

FY23 Vs FY22 for India
 CY23 Vs CY22 for Rest of world

2030 View: Expected penetration of Electrification¹

✓ Limited impact expected in core areas till 2033-34



Developing future ICE engine program for EURO 7 and beyond; including Hydrogen ICE

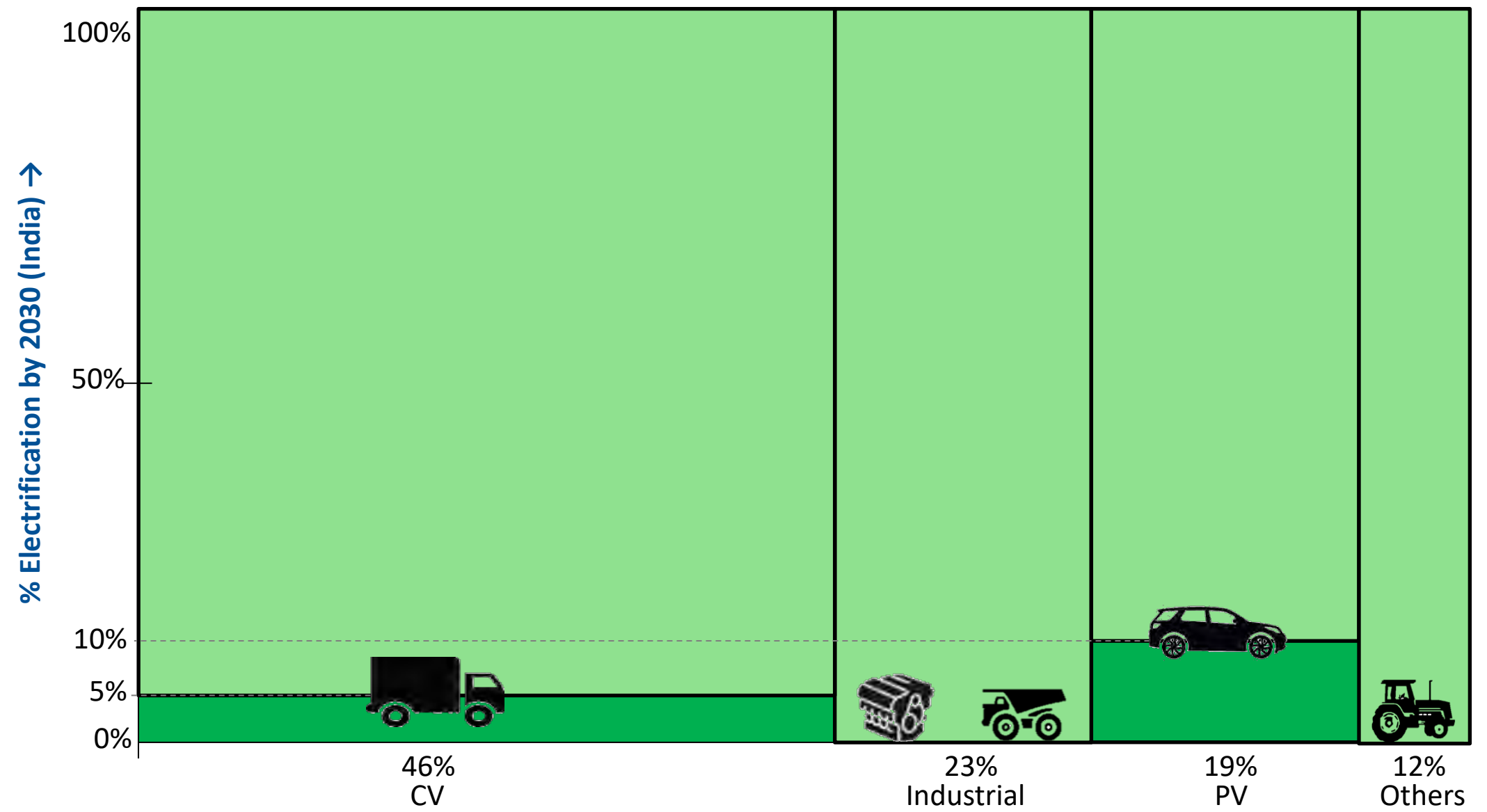
BFL's Exports Revenues²

- No impact expected
- Expected impact not significant
- Expected impact significant

1. Mckinsey Report: "The future of mobility: Transforming to be ahead of the opportunity", Sep 2022
 2. Basis FY23 H1 revenue mix (Components BU); others contribute 5% to revenue
 3. BFL assessment, basis Platform-level discussions with customers

2030 View: Expected penetration of Electrification¹

- ✓ Only 3W & 2W to see significant EV transition
- ✓ Among pass cars, EV transition to be slower in SUV segment³



BFL's Domestic Revenues²

- No impact expected
- Expected impact not significant
- Expected impact significant

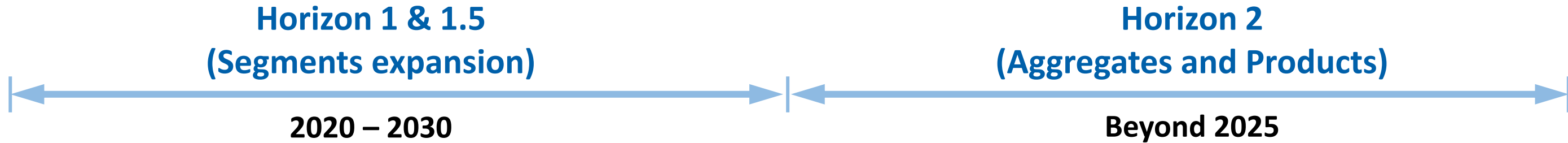
1. Mckinsey Report: "The future of mobility: Transforming to be ahead of the opportunity", Sep 2022

2. Basis FY23 H1 revenue mix (Components BU)

3. BFL assessment, basis Platform level discussions with customers

- ✓ **20X growth expected in Indian Auto Components Industry, including CV**
- ✓ **Auto industry expected to be \$2 Trillion, with 30% Exports**
- ✓ **6X growth expected in PV volumes**
- ✓ **Significant industrial growth expected, driven by infra growth in India and China+1 localization**

BFL will aim to maximize the growth



BFL 2.0 WILL BE THE KEY ENABLER

- ✓ Maximize Asset Utilization
- ✓ Quantum Increase in Productivity
- ✓ Operate at Leanest Cost
- ✓ High Focus on Market Share
- ✓ Consolidation via M&A

Priorities

LTA's till 2035

Alignment with Customer Strategy

Future Programs awarded in CV, PV

Global Expansion

Customer Partnerships

M&A

Future ICE
Hydrogen ICE

USMCA

China +1
Europe +1

BFL 2.0 WILL BE THE KEY ENABLER

Components + Industrial

✓ Increase Value Content

Priorities

Grow Customers & Segments

Expand Markets Geographically

Transition to Products

Electrification Components

✓ Support KPTL Products
✓ Supply to Global OEMs

Priorities

Innovation

Velocity

Aerospace

✓ Grow Aerospace Components

Priorities

Engines

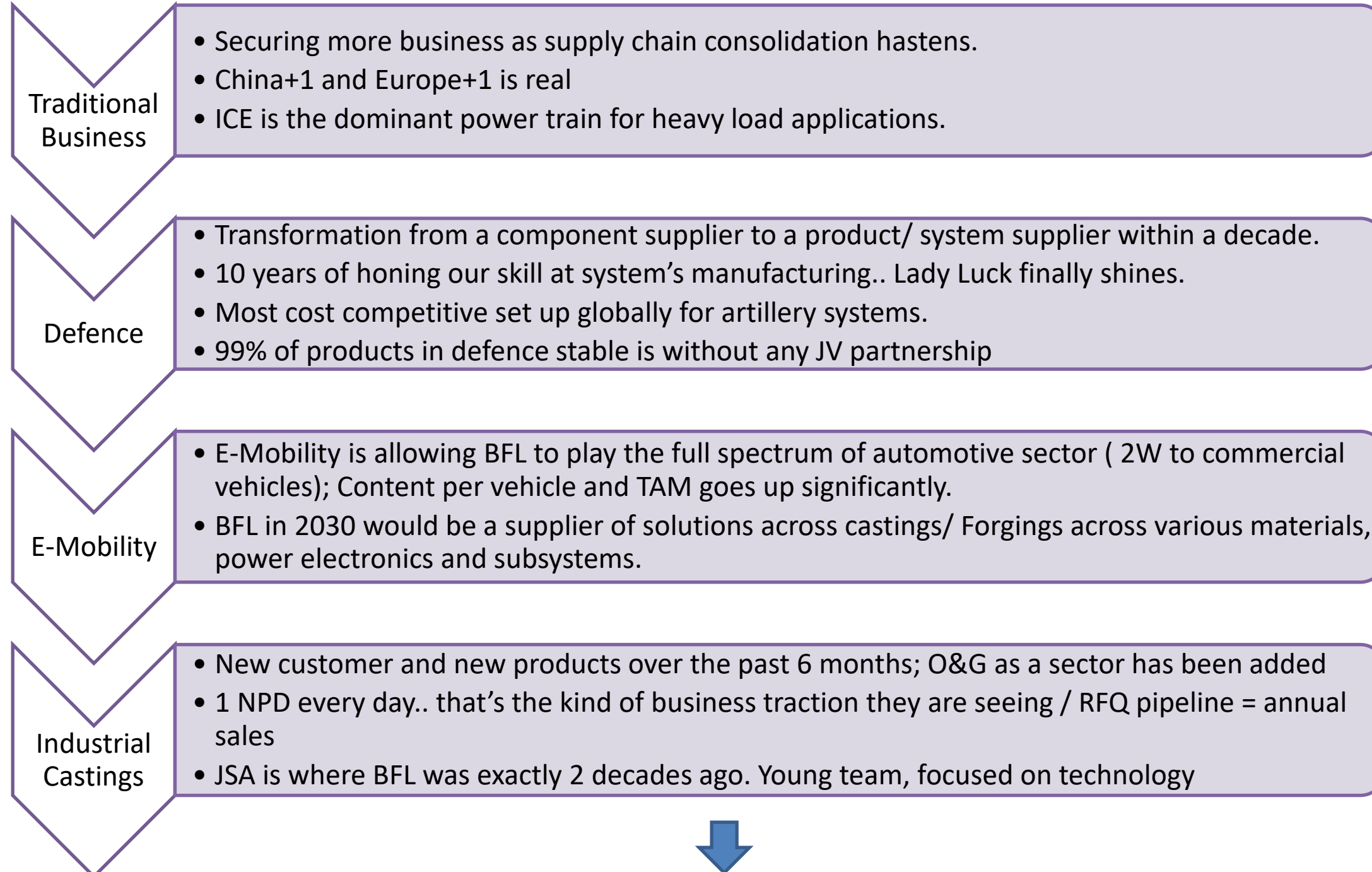
Aero Structures

Landing Gears

BFL 2.0 WILL BE THE KEY ENABLER

Vision 2030: Capability Driven Strategy

Salient features of BFL 2.0



Material, Metallurgy and metal forming is the fulcrum for all the success we are witnessing; it is enabling us to move up the product & system value chain involving AI, IoT & Digital technology – **This will define the future of manufacturing**



Revenues

- 12 - 15% CAGR
- Balanced revenues stream across components & products.

Consol EBITDA%

- 20%+ as the businesses grow/turnaround.

Consol ROCE%

- 500 bps improvement from FY22 levels of 20%.

Capital Allocation

- Organic & In-organic growth
- Dividend at 30%+

BHARAT FORGE



KALYANI

Let's outdo the future, together!