ELECTRIFYING THE FUTURE OF HEAVY TRANSPORT

FEASIBILITY REPORT

Large-Scale Electric Bus Manufacturing Project

Capacity: 1,000 Electric Buses per Month

Republic of Indonesia

Prepared for:
Government of Indonesia, Development Finance Institutions, Strategic & Institutional Investors

Prepared by:
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1. Executive Summary

This feasibility report evaluates the establishment of a **mega-scale electric bus manufacturing ecosystem in Indonesia** with a production capacity of **1,000 electric buses per month (12,000 buses annually)**. The project is designed to support Indonesia's long-term objectives for **public transport electrification, fuel import reduction, industrial localization, and carbon neutrality**.

The facility will manufacture **12-meter and 18-meter electric buses**, integrated with **advanced battery systems, high-efficiency motors, intelligent controllers, and BSHFMF's proprietary Intelligent Backup Support System (IBSS)**. The IBSS technology significantly enhances operational range, reduces charging dependency, and improves fleet reliability—especially critical for large urban and intercity networks.

The project is **technically viable, financially strong, and strategically aligned** with Indonesia's EV roadmap and industrial development goals.

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2. Strategic Rationale for Indonesia

2.1 National Transport & Energy Context

- Population: **270+ million**
- Rapid urban growth and severe congestion in Jakarta, Surabaya, Bandung, Medan
- High dependence on imported diesel fuel
- Large public transport fleets operated by government entities

National Policy Alignment:

- Net Zero emissions target by **2060**
- Public transport electrification mandates
- Promotion of local EV manufacturing
- Reduction of fuel subsidies and foreign exchange outflow

2.2 Market Demand Outlook

- Conversion of city buses, BRT systems, and intercity fleets
- Airport, tourism, and logistics transport electrification
- Replacement of aging diesel fleets

Estimated Demand:

- **60,000–80,000 electric buses over 7–10 years**
- Immediate large-volume demand from Jakarta and provincial governments

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3. Project Scope & Capacity

3.1 Production Capacity

Item	Specification
Monthly Output	**1,000 Electric Buses**
Annual Output	**12,000 Electric Buses**
Shift Pattern	3 Shifts / Day
Operating Days	330 Days / Year
Plant Utilization (Yr-1)	70% (ramp-up)
Full Capacity	From Year 3

3.2 Product Portfolio

- **12m Urban Electric Bus**
- **18m Articulated Electric Bus**
- Optional variants for:
  - BRT
  - Intercity transport
  - Airport shuttle services

4. Technical Specifications (Standard 12m Bus)

- Length: 12 meters
- Passenger Capacity: 70–85
- Battery Capacity: 350–420 kWh
- Motor Power: 250–350 kW
- Range (Base EV): 300–350 km
- **Extended Range with IBSS:** Operational reliability equivalent to **1,600–2,000 km**
- Charging: Depot + fast charging
- Climate: Fully tropicalized for Indonesia

5. Manufacturing Ecosystem (Fully Integrated)

The project establishes **four major manufacturing units**, ensuring cost control, supply security, and localization.

5.1 Bus Assembly Plant

Processes:

- Chassis fabrication
- Robotic welding
- Body assembly & painting
- Interior fit-out
- Electrical & drivetrain integration
- End-of-line testing

Key Equipment:

- CNC laser cutting
- Robotic welding lines
- Automated paint shops
- Conveyorized assembly lines
- Dynamic road simulators

5.2 Battery Manufacturing & Pack Assembly Unit

Technology:

- Lithium Iron Phosphate (LFP)
- Designed for hot & humid climates

Processes:

- Module assembly
- Pack integration
- BMS & thermal system integration
- Safety & lifecycle testing

Capacity:

- 4.5–5.0 GWh annually

5.3 IBSS Manufacturing Unit (Proprietary – BSHFMF)

Scope:

- Backup energy system assembly
- Power electronics manufacturing
- Software & firmware integration
- Load and endurance testing

Strategic Advantage:

- Reduced charging infrastructure dependency
- Increased fleet uptime
- Lower total cost of ownership (TCO)

5.4 Motor & Controller Manufacturing Unit

Products:

- PMSM / BLDC motors
- Smart controllers & inverters

Processes:

- Automated stator winding
- Rotor assembly
- Controller PCB manufacturing
- Dynamometer testing

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6. Land & Factory Requirements

Item	Specification
Total Land Area	80–100 acres
Covered Factory Area	~250,000 sqm
Warehousing & Logistics	~70,000 sqm
Testing Tracks & Yards	~50,000 sqm

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7. Capital Expenditure (CAPEX)

7.1 Total Investment Estimate

Component	Cost (USD)
Land & Site Development	60 million
Factory Buildings	180 million
Bus Assembly Lines	220 million
Battery Manufacturing (GWh-scale)	260 million
IBSS Manufacturing Unit	85 million
Motor & Controller Unit	120 million
Utilities & Power Infrastructure	75 million
Engineering, IT & Automation	50 million
Total CAPEX	**1.05 Billion USD**

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8. Operating Expenditure (Annual OPEX)

Item	Cost (USD/year)
Raw Materials & Components	3.1 billion
Labor (6,500+ staff)	210 million
Utilities & Maintenance	120 million
Logistics & QA	95 million

Item	Cost (USD/year)
Administration & Insurance	60 million
Total OPEX	**3.585 Billion USD**

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9. Manufacturing Cost & Sales Economics

9.1 Cost per Bus

Component	USD
Battery Pack	85,000
Motor & Controller	25,000
IBSS System	15,000
Chassis & Body	70,000
Electronics & Interior	30,000
Labor & Overheads	20,000
Total Cost per Bus	**245,000 USD**

9.2 Revenue & Profitability

Item	Value
Average Selling Price	320,000 USD
Gross Profit per Bus	75,000 USD
Annual Revenue (12,000 buses)	3.84 billion USD
Annual Gross Profit	900 million USD
EBITDA Margin	22–24%
Payback Period	5–6 years

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10. Employment & Localization Impact

- Direct Jobs: **6,500–7,000**
- Indirect Jobs: **15,000+**
- Localization Potential: **60–70% by Year 5**

- Supplier ecosystem development (steel, electronics, plastics)

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11. Government & National Benefits

Economic Savings

- Diesel import reduction: **USD 1.2–1.5 billion/year**
- Fuel subsidy savings
- Foreign exchange conservation

Environmental Impact

- CO_2 reduction: **~900,000 tons/year**
- Significant noise reduction in urban centers

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12. Risk Analysis & Mitigation

Risk	Mitigation
Capital intensity	Phased investment
Technology risk	Proven platforms + IBSS
Demand volatility	Government procurement contracts
Energy supply	Dedicated depots & renewables

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13. Conclusion

The **1,000 electric buses per month manufacturing project in Indonesia** represents a **transformational industrial investment**, positioning Indonesia as a **regional EV manufacturing hub**. With strong government backing, bank financing, and private investment, the project delivers **sustainable mobility, economic growth, and long-term profitability**.

Contact Information

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