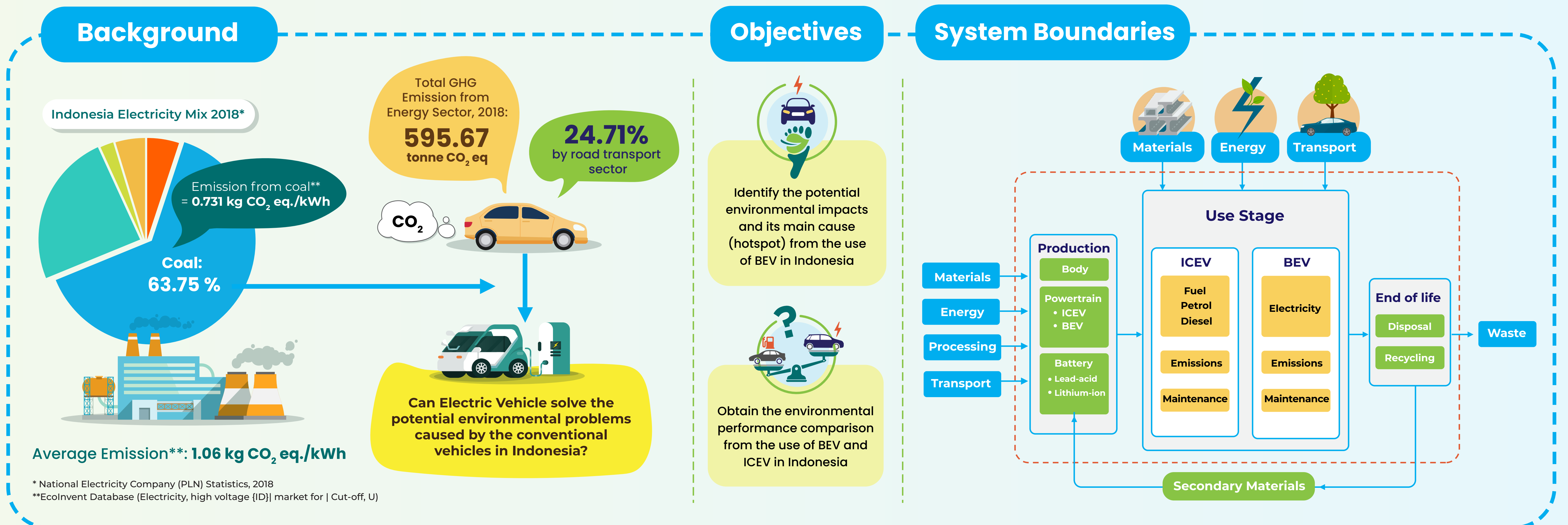


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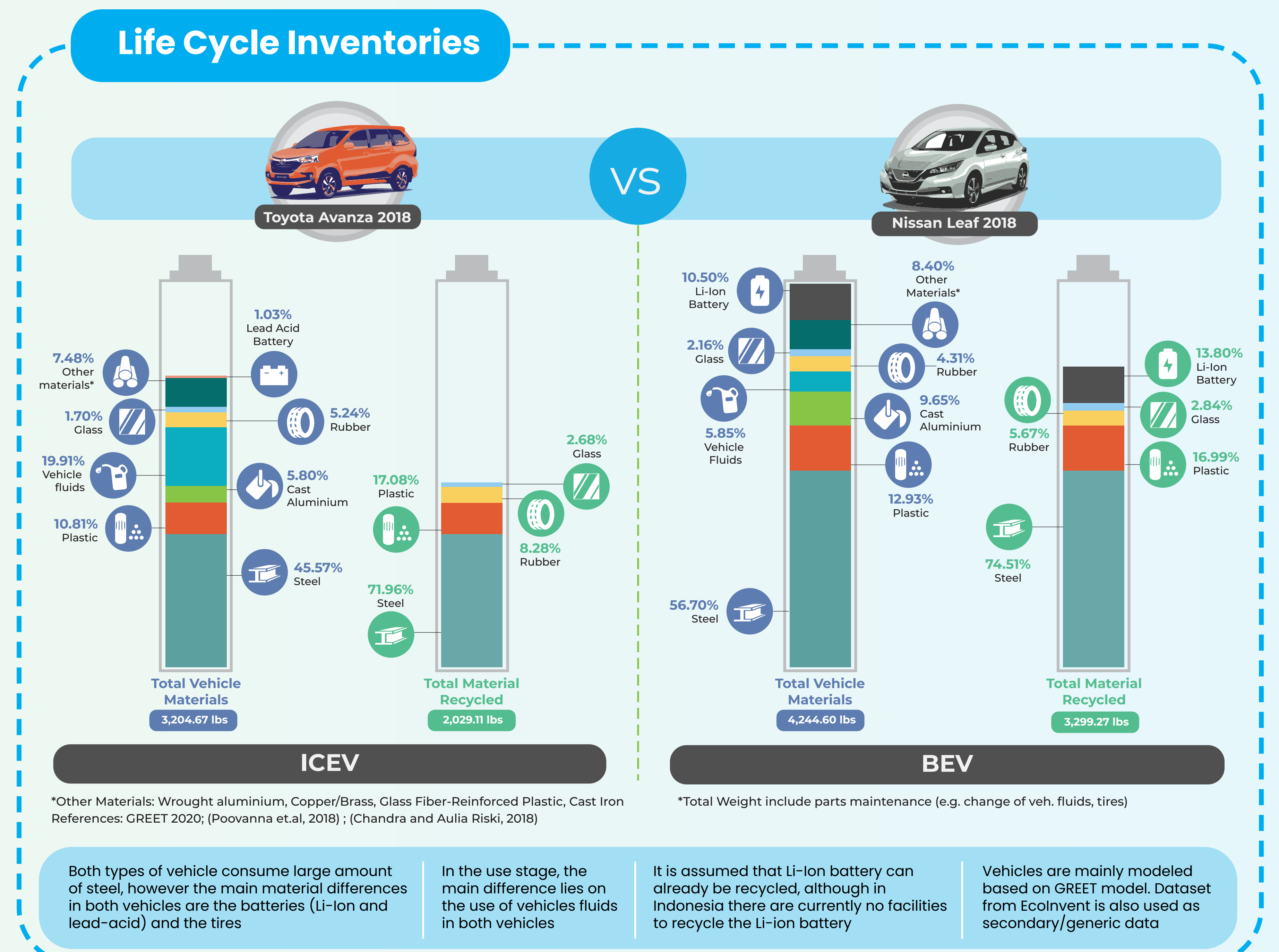
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General Information

ICEV	Time-related Coverage	BEV
2018	2018	2018
1 vehicle lifetime (equal to 150,000 vkm), to be used in Indonesia	Functional Unit	1 vehicle lifetime (equal to 150,000 vkm), to be used in Indonesia
Production Stage		
Body, Chassis, Transmission system, Powertrain system, Vehicle fluids, Tires	Production of materials	Body, Chassis, Transmission system, Powertrain system, Vehicle fluids, Tires
Lead-Acid Battery		Electronic controller, Traction motor, Li-Ion Battery,
Indonesia	Production Site	Japan
-	Transport to IDN	Yokosuka (JPN) → Jakarta (IDN), 5748 km, Transport by bulk ship
Use Stage		
Petrol (Global Average)	Fuel Use	Low voltage electricity mix (Indonesia average)
0.061 L/km	Fuel Consumption	136 Wh/km
Vehicle fluids change (39x engine oil, 19x windshield fluids, etc), tires (3x change)	Maintenance	Vehicle fluids change (19x windshield fluids), tires (3x change)
End-of-Life Stage		
Recycling in Indonesia or Steel, Plastic, Glass, and Rubber	End-of-life	Recycling in Indonesia or Steel, Plastic, Glass, Rubber, and Li-Ion battery



Results

Impact Categories	Method	Units	ICEV	BEV
Global warming potential (GWP)	IPCC 2013 100a	Ton CO ₂ eq	43.5	43.8
Human Toxicity Potential (HTP)	CML-IA Baseline	Kg 1.4-DCB eq	4.13E+04	1.18E+05
Abiotic Depletion Potential (ADP)	CML-IA Baseline	Kg Sb eq	7.20	22.70
Ozone Depletion Potential (ODP)	CML-IA Baseline	Kg CFC-11 eq	5.41E-03	1.99E-03
Acidification Potential (AP)	ReCiPe 2016 Midpoint (H)	Kg SO ₂ eq	96.10	204.36

Potential Impacts

Legend: Production (Green), Use Stage (Red), End-Of-Life (Blue)

Conclusion

- The use of BEV with average Indonesia's electricity mix is found to have higher GWP, HTP, ODP, and AP compared to the use of ICEV.
- In overall, the cause of potential negative impacts from BEV is mainly resulted from the production stage, while in ICEV is resulted from the use stage.
- The use of BEV in Indonesia might not give a better environmental performance compared to ICEV due to the electricity mix profile in Indonesia.
- Unless Indonesia migrates to renewable energy BEV might not be a sustainable transportation option for Indonesia.