



Global Vehicle LiB Market Study Update

Global Study

Detroit/Munich, April 2012

Roland Berger
Strategy Consultants

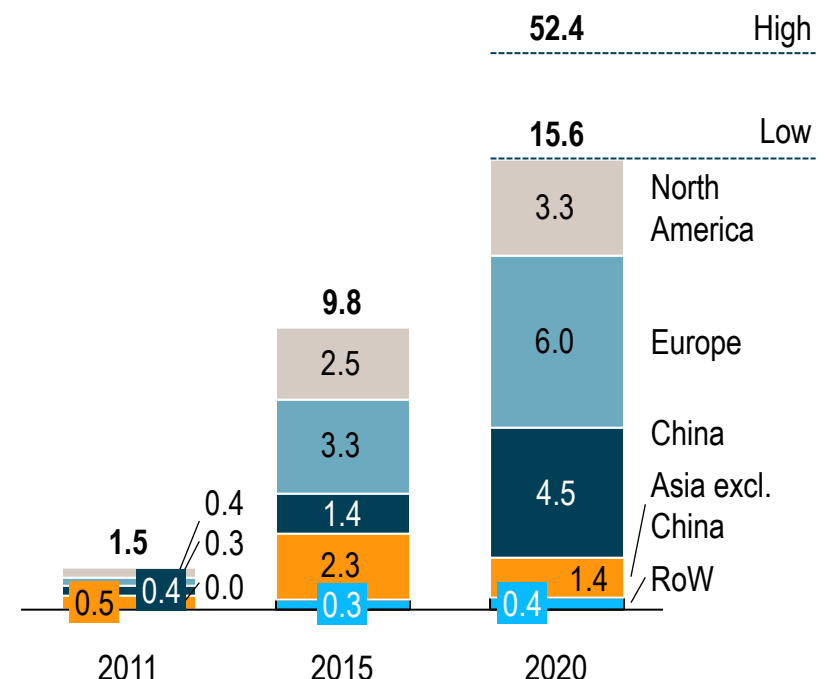
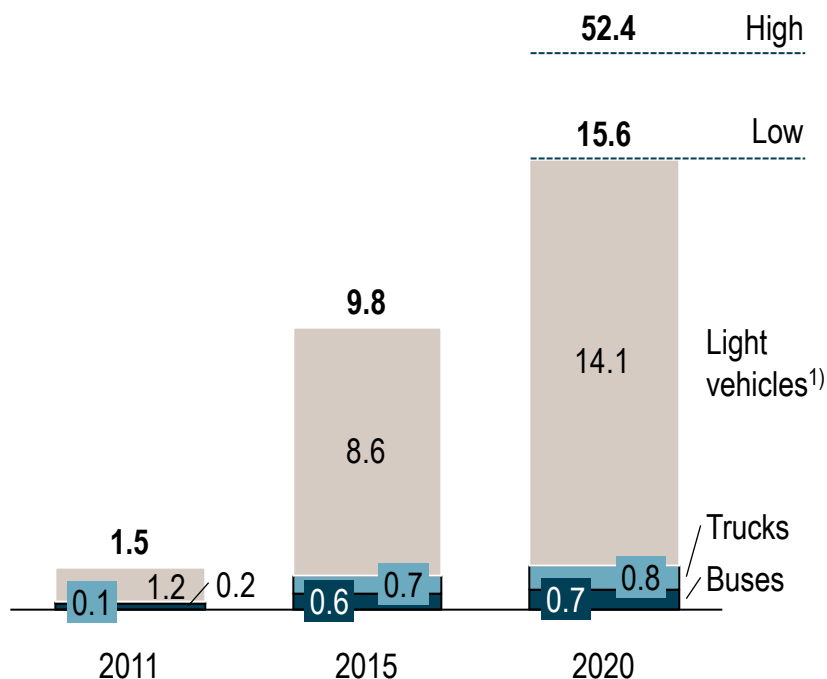
Management summary

- > The **global automotive Li-Ion battery market** is forecast to grow from **USD 1.5 bn** to **USD ~10 bn** by 2015
- > Further growth to **>USD 50 bn** forecast in the **2020 high scenario**
- > **Light vehicles** will **dominate** the market development – over **80%** of total value in 2015
- > **Truck** market will be driven by electrification of **class 3** and **class 4** pickup and delivery trucks
- > **China** will account for over **80%** of the **bus** market value
- > As the market takes off, **five frontrunners** will dominate, though after 2015, 1-2 additional LiB suppliers could become key players
- > **Consolidation** has already started, as predicted by earlier Roland Berger reports, and **pricing pressure is evident** in newer contracts

We expect the global LiB market to be USD 9-10 bn in 2015 – Light Vehicles dominate and high growth in China after 2015

LiB market size – by vehicle class [USD bn]

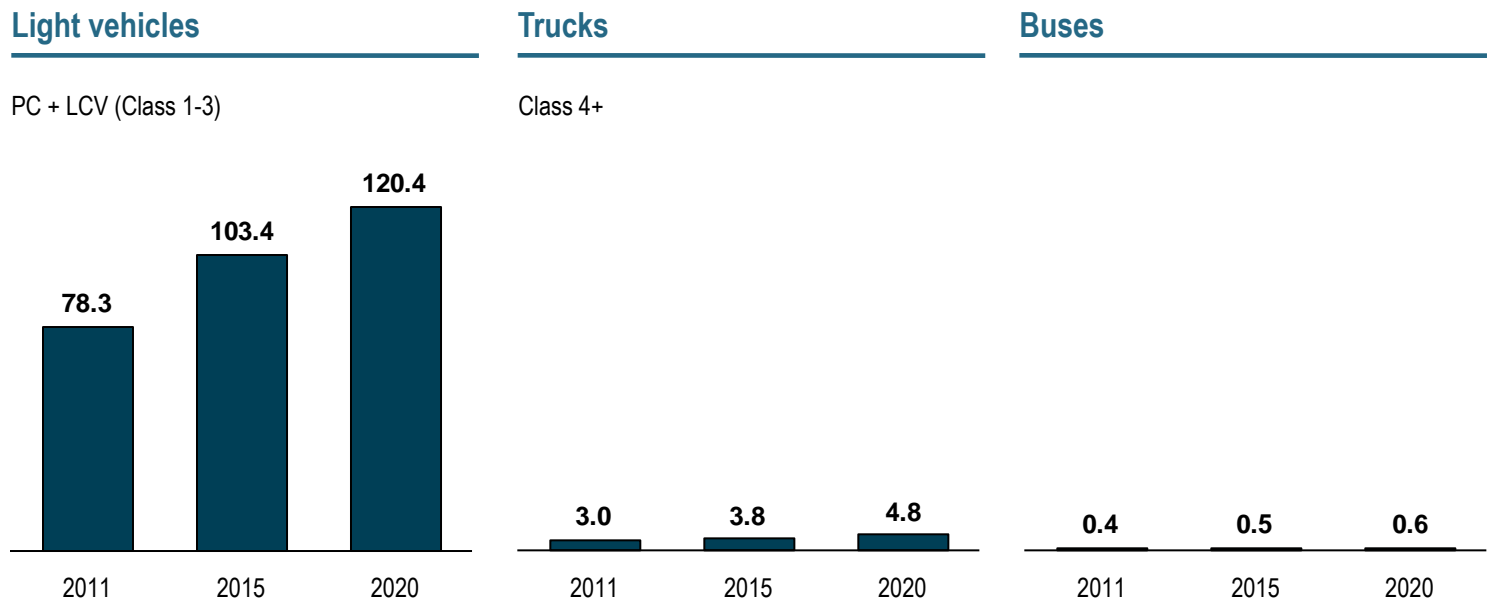
LiB market size – by region [USD bn]



1) Light vehicles = passenger cars + light commercial vehicles (class 1-3)

Light vehicles dominate the xEV market because of the large volume base and relatively high penetration rates

Total vehicle build and penetration rate assumptions by vehicle class [m units]



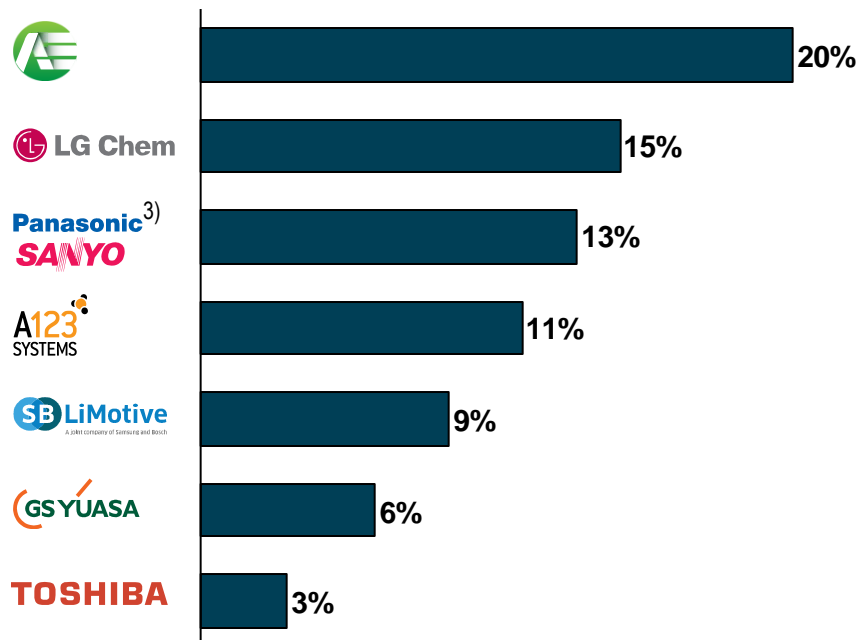
	PENETRATION											
	Low		High		Low		High		Low		High	
EV/PHEV [%]	0.1%	0.8%	2.2%	8.2%	0.1%	0.6%	0.8%	1.5%	0.4%	1.5%	2.4%	3.2%
HEV [%]	1.7%	2.6%	6.5%	9.4%	0.1%	1.1%	2.3%	4.1%	1.9%	6.4%	9.8%	14.4%

Five players will dominate the global market by 2015 with combined market share of ~70%

Key industry participants in 2015

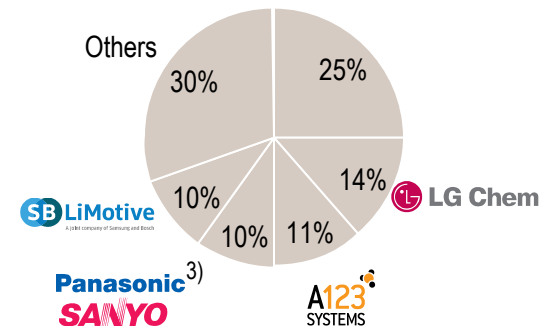
Expected 2015 global market share¹⁾ [USD based²⁾]

Σ = USD 9.8 bn

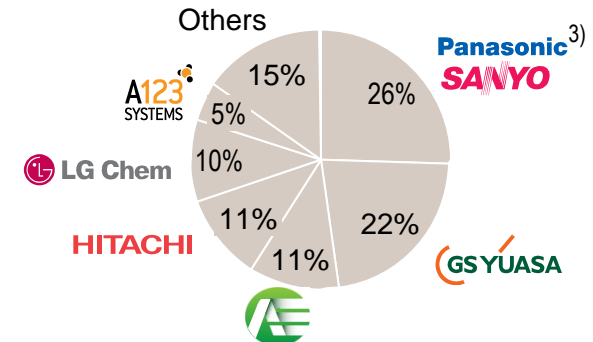


Expected 2015 global market share¹⁾ [kW, kWh based]

PHEV and EV [kWh]



HEV [kW]



1) Accuracy level: +/- 2%; 2) Market value derived using USD 730/kWh for hybrids, USD 560/kWh for PHEV, and USD 400/kWh for EV in 2015;

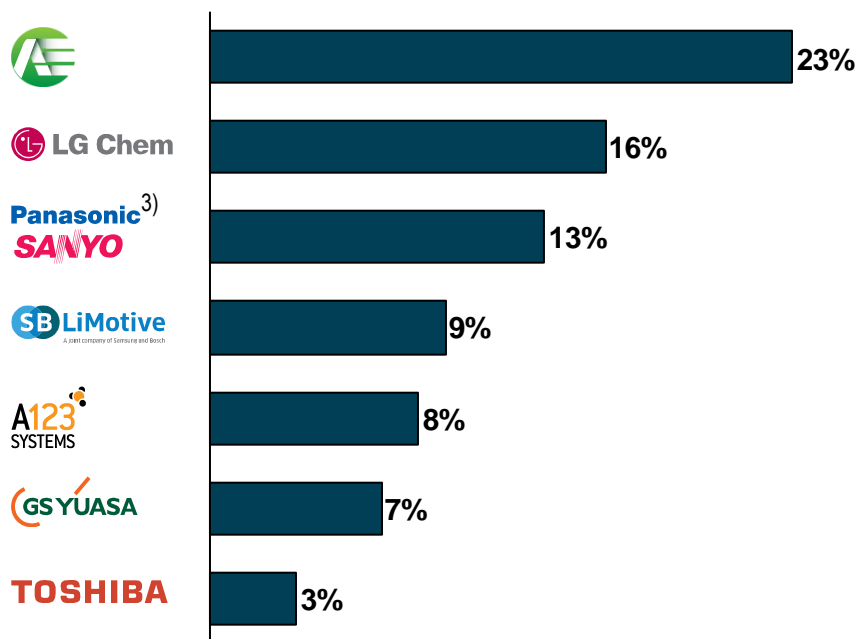
3) Includes Primearth's share

Same players dominate the light vehicle market in 2015

Key industry participants in 2015

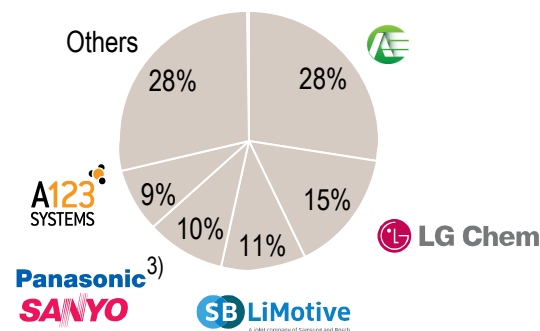
Expected 2015 global market share¹⁾ [USD based²⁾]

Σ = USD 8.6 bn

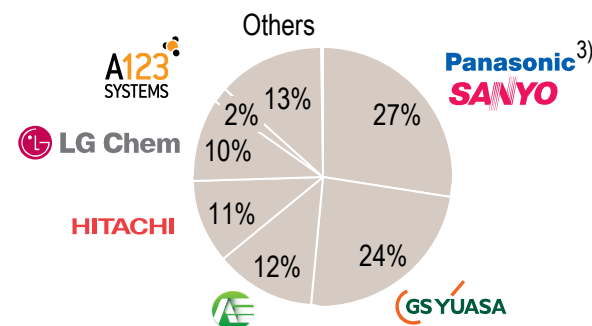


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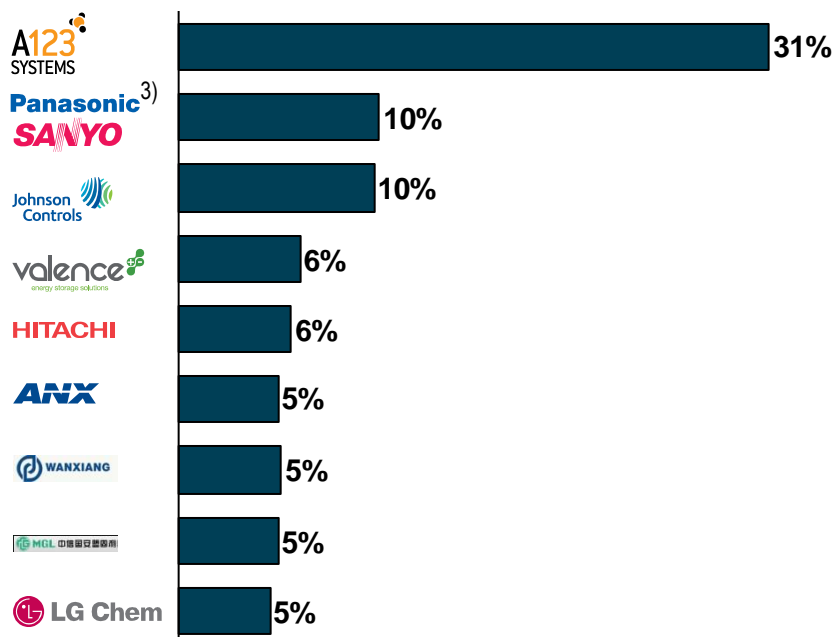
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In trucks and buses, A123 is forecast to rank #1 with an expected 2015 market share of >30%

Key industry participants in 2015

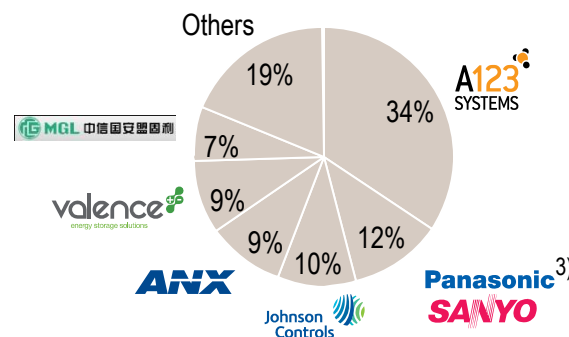
Expected 2015 global market share¹⁾ [USD based²⁾]

Σ = USD 1.2 bn

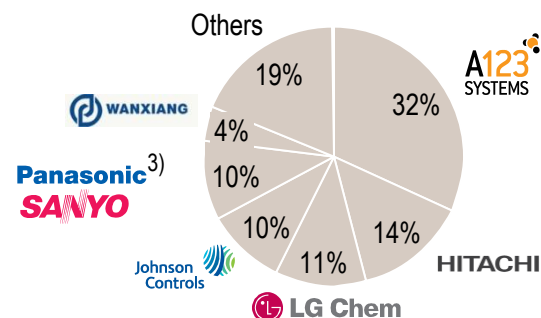


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It's
character
that
creates
impact

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