

Base metals fundamentals: an overview of 2018-2019

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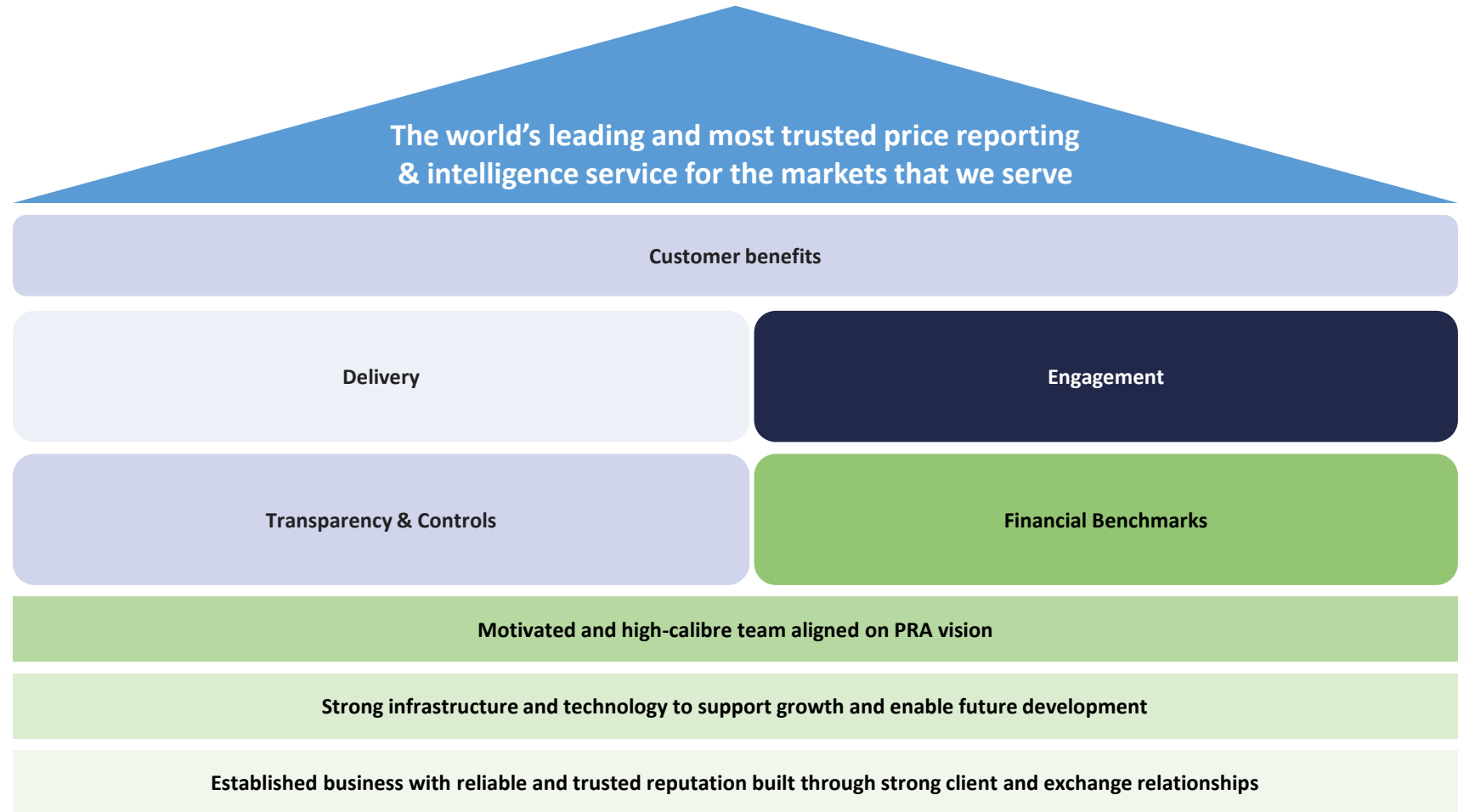
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> 50 Events p.a.

> 4,200 Prices

200 Forecasts

370+ FTEs



Timeline

Cyclicalty at a time of volatility

2012-2015

Contraction

2016-2017

Reaction

2017

Growth

2018>

Consolidation and expansion

Aluminium - Fundamentals

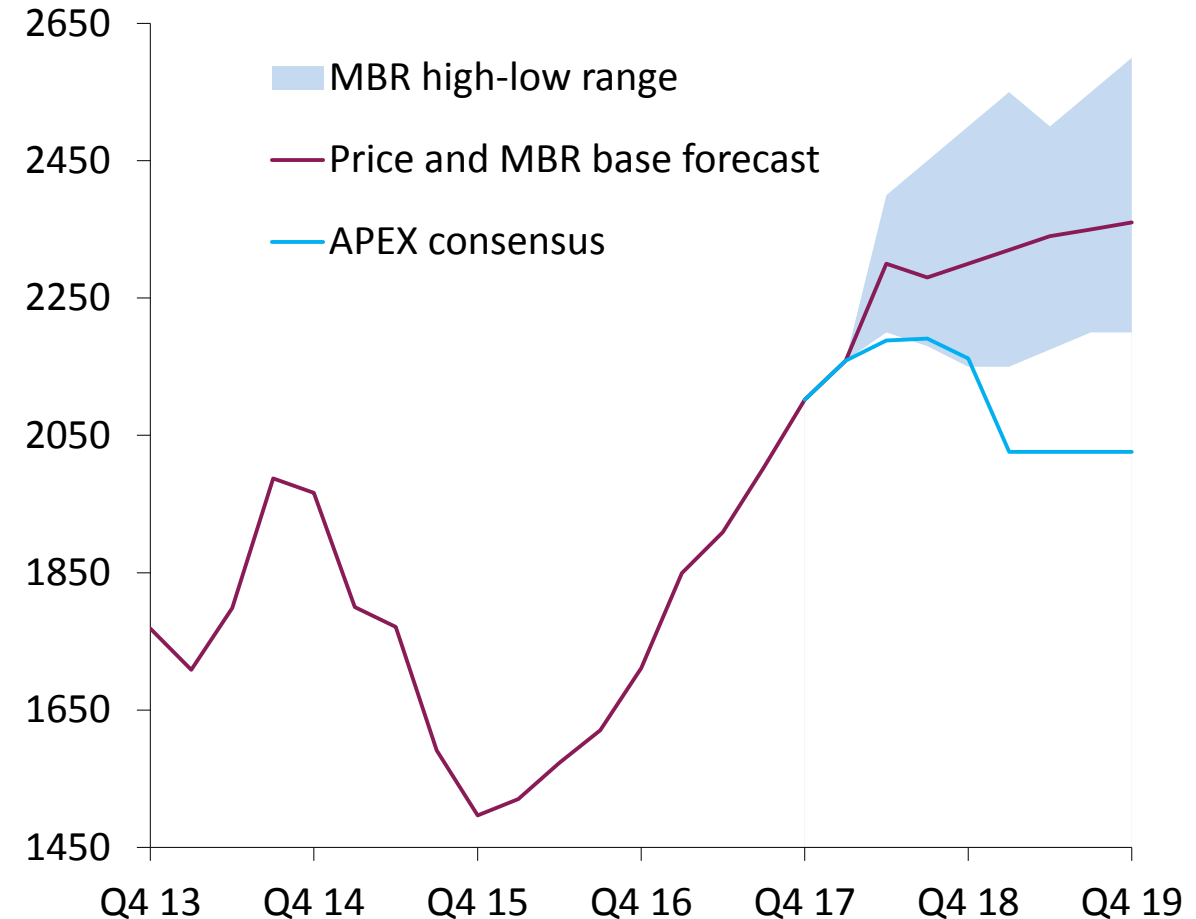
- Global primary aluminium market is expected to be in deficit this year and beyond.
- Supply
 - New capacities from China will keep coming on stream, although slower than expected
 - The biggest uncertainty is Rusal production which accounts for 7% of global total and is the largest producer outside China. It is facing financing difficulties and also has settlement issue.
- Demand
 - Aluminium demand will continue to be supported by infrastructure construction and urbanization in China although the rising interest rate in China may affect floor space sales and therefore extrusion demand
 - Chinese export will not be impacted significantly because of the recent US-China trade war truce

MBR Aluminium Forecast

Thousand tonnes	2014	2015	2016	2017	2018f	2019f
Production	54,156	57,834	59,570	63,636	65,761	68,197
% change y-on-y	5.4%	6.8%	3.0%	6.8%	3.3%	3.7%
Consumption	53,626	56,426	60,037	63,450	66,437	68,898
% change y-on-y	7.7%	5.2%	6.4%	5.7%	4.7%	3.7%
Balance	530	1,408	-467	186	-675	-702
% of consumption	1.0%	2.5%	0.8%	0.3%	1.0%	1.0%
Reported stocks	6,241	3,586	2,578	2,098	1,423	721
Weeks consumption	6.1	3.3	2.2	1.7	1.1	0.5
Base case	1,865	1,665	1,606	1,966	2,260	2,343
% change y-on-y	1.0%	-10.8%	-3.5%	22.4%	15.0%	3.7%

Aluminium – Price projections

- Aluminium prices have been driven by political events like Rusal sanctions or US-China trade war. But now as the impact from these events have faded away, market should be back to fundamentals
- Upside risks: restarts and new capacities have been slower than expected; rectification on captive power plants in China should provide support to production costs; raw material cost such as alumina remained at high levels; Chinese al inventory started to fall.
- Downside risks: Stronger USD; Chinese inventories are still at high levels; Hydro's alumina refinery restarts; Loosening of US sanctions against Rusal



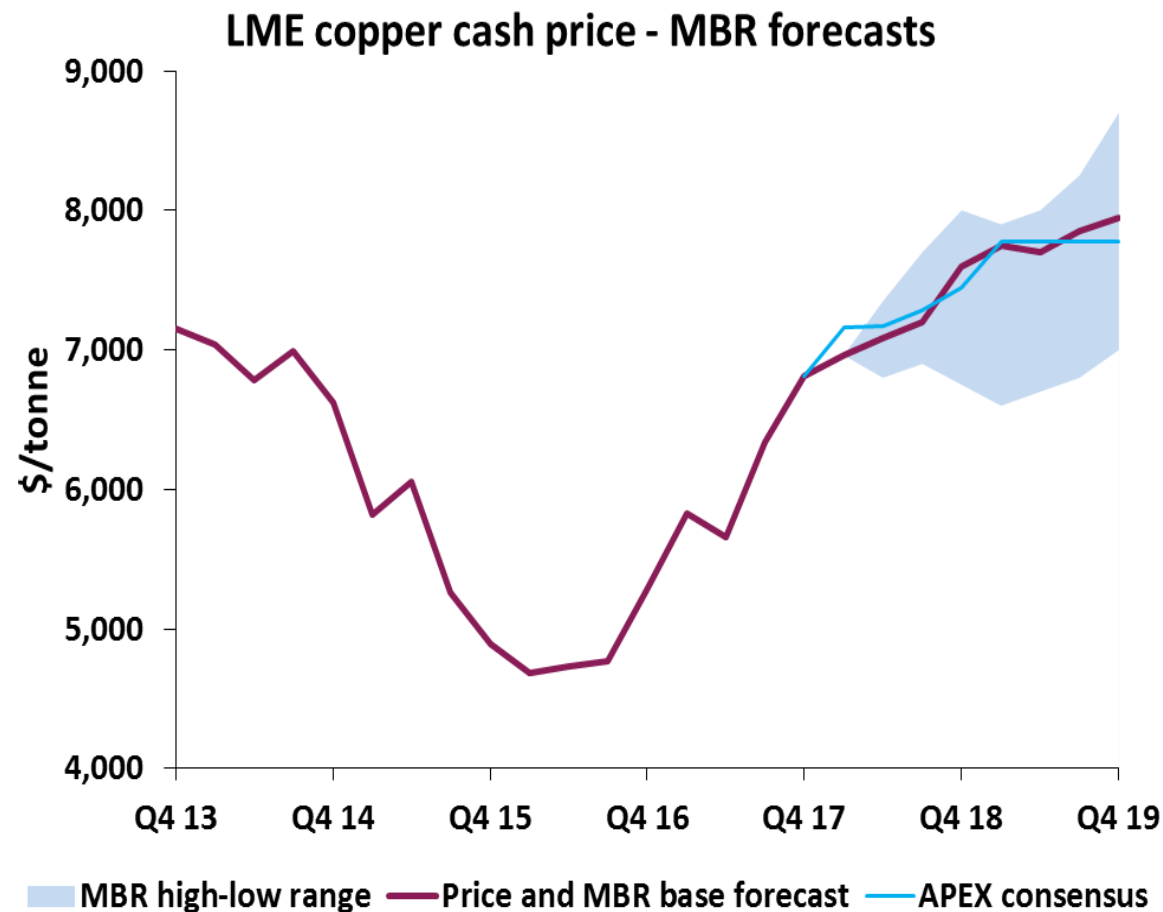
Copper - Fundamentals

- Global refined copper market set to remain in deficit this year and beyond.
- Supply
 - Lack of mine capacity growth will hold back refined production, even though smelter capacity continues to be built.
 - Secondary copper supply will face disruptions on China's more stringent policies on imported scrap.
- Demand
 - Copper should capture substantial demand from the EV revolution, reflecting (1) the higher copper-intensity of EVs and (2) the need for charging infrastructure.
 - China should remain the main contributor to global copper demand growth.

MBR copper forecasts						
<i>Thousand tonnes</i>	2014	2015	2016	2017	2018	2019
Mine production	18,432	19,148	20,357	19,991	20,670	21,228
<i>% change</i>	1.4%	3.9%	6.3%	-1.8%	3.4%	2.7%
Refined production	22,834	23,117	23,594	24,200	24,798	25,364
<i>% change</i>	6.9%	1.2%	2.1%	2.6%	2.5%	2.3%
Refined consumption	23,211	23,200	23,735	24,429	24,968	25,541
		0.0%	2.3%	2.9%	2.2%	2.3%
Apparent balance	-377	-83	-142	-229	-169	-177
<i>% of consumption</i>	-1.6%	-0.4%	-0.6%	-0.9%	-0.7%	-0.7%
Estimated reported stocks	830	747	606	377	207	30
Stocks as weeks of consumption	1.9	1.7	1.3	0.8	0.4	0.1
LME cash price (\$/t)	6,861	5,506	4,867	6,160	7,213	7,813
<i>% change</i>	-6.5%	-19.7%	-11.6%	26.6%	17.1%	8.3%

Copper – Price projections

- Tighter fundamentals of the copper market should underpin its price uptrend for 2018 and beyond.
- We expect the LME copper price to average \$7,213/t in 2018 (+17% from 2017) and \$7,813/t in 2019 (+8% from 2018).
- Upside risks: mine supply disruptions, oil rally, easing of fiscal/monetary policy stance in China.
- Downside risks: US-China trade war, slowdown in EM economies caused by Fed tightening, ugly deleveraging in China.
- Bottom line: Copper should perform well in the present late phase of the economic cycle.



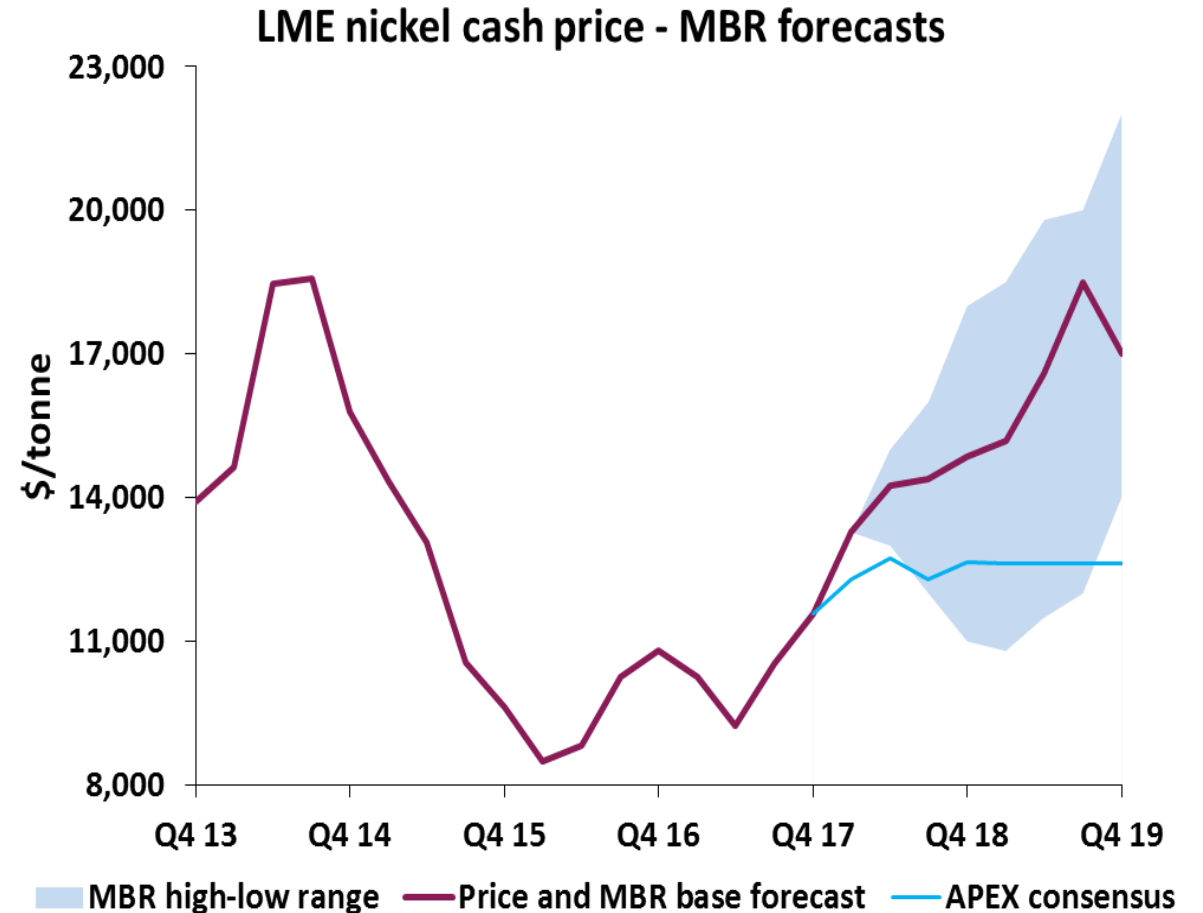
Nickel - Fundamentals

- The global nickel market should record a deficit of 65,000 tonnes this year and 81,000 tonnes next.
- Supply
 - Mine production: Growth is set to slow this year. Increases in Indonesia and New Caledonia should be partly offset by a fall in Filipino mine output on tough environmental regulations.
 - Refined production should grow at a stronger pace in 2018 on higher ore availability from Indonesia and an attractive international price.
- Demand
 - Robust demand outlook amid strong stainless steel production and production of car batteries in EVs.
 - The biggest winner of EV revolution – battery chemistries will be increasingly nickel-intensive.

MBR nickel forecasts						
<i>Thousand tonnes</i>	2014	2015	2016	2017	2018	2019
Mine production	2,164	2,152	2,010	2,148	2,230	2,297
<i>% change</i>	-16.6%	-0.6%	-6.6%	6.9%	3.8%	3.0%
Refined production	1,988	1,973	1,983	2,082	2,207	2,308
<i>% change</i>	1.3%	-0.8%	0.5%	5.0%	6.0%	4.6%
Refined consumption	1,869	1,882	2,030	2,185	2,272	2,389
	0.04701	0.7%	7.8%	7.7%	4.0%	5.2%
Apparent balance	119	91	-46	-103	-65	-81
<i>% of consumption</i>	6.4%	4.8%	-2.3%	-4.7%	-2.8%	-3.4%
Estimated reported stocks	507	526	480	376	311	230
Stocks as weeks of consumption	14.1	14.5	12.3	8.9	7.1	5.0
LME cash price (\$/t)	16,871	11,891	9,598	10,407	14,197	16,825
<i>% change</i>	12.3%	-29.5%	-19.3%	8.4%	36.4%	18.5%

Nickel – Price projections

- The healthy fundamentals of the nickel market should support prices over the course of 2018 and next year.
- We expect the LME nickel price to average \$14,197/t in 2018 (+36% from 2017) and \$16,825/t in 2017 (+19% from 2018).
- Nickel prices are vulnerable to high volatility due to a possible build-up of overhyped expectations about nickel demand from batteries in EVs, which represents a small part of global nickel consumption vs stainless steel.
- Bottom line: although nickel is a long-term bullish story, be ready to embrace volatility in near term.



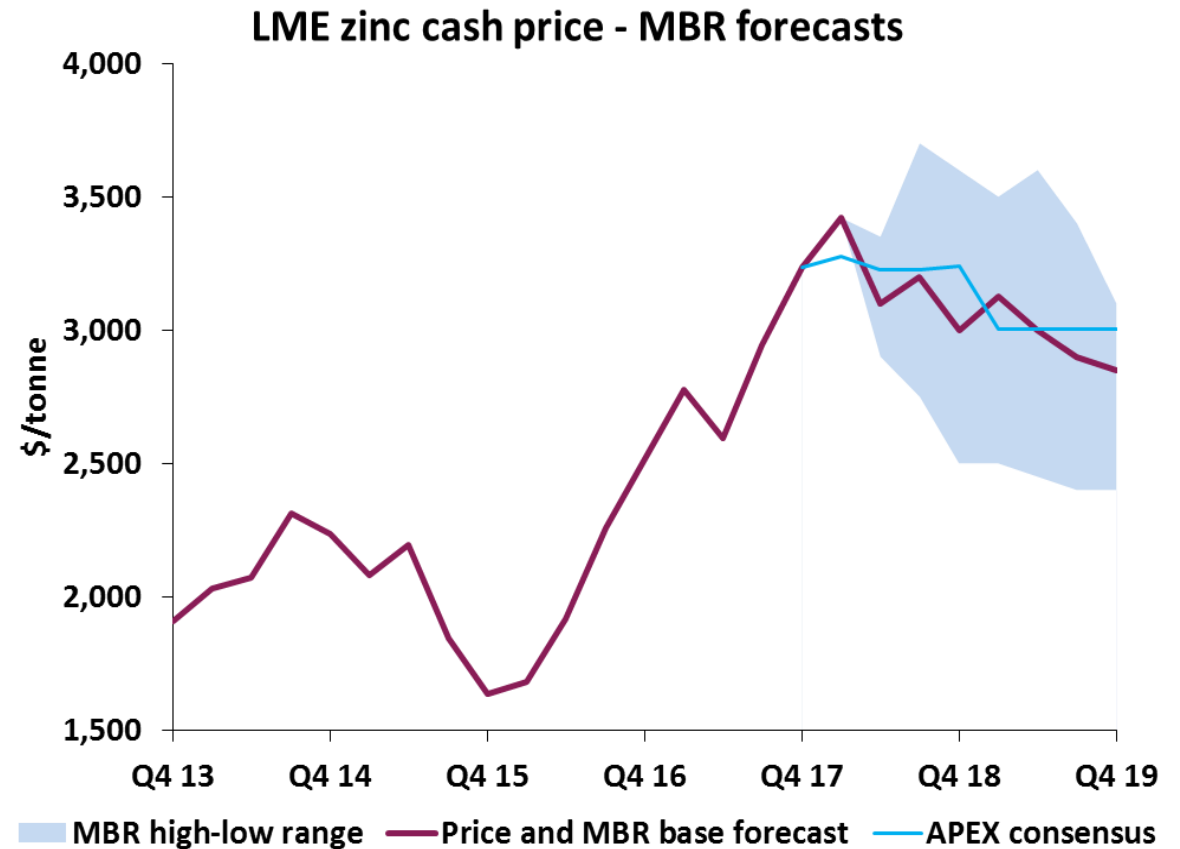
Zinc – Fundamentals

- MBR expects the zinc market to remain in deficit for a third year in a row this year.
- Supply
 - Mine production: supply is expected to continue to recover steadily in the coming years on new and restarted mine capacity. But China's tight environmental protection policies pose a downside risk to our supply expectations.
 - Refined production: The expected easing tightness of the concentrate market should prompt smelters to boost their production this year and next.
- Demand
 - Refined zinc production should grow at a healthy clip in 2018-19, reflecting HDG capacity expansions in the US and EU.

MBR zinc forecasts						
<i>Thousand tonnes</i>	2014	2015	2016	2017	2018	2019
Mine production	13,493	13,610	12,769	13,414	13,977	14,620
<i>% change</i>	3.5%	0.9%	-6.2%	5.1%	4.2%	4.6%
Refined production	13,485	13,651	13,738	13,725	14,234	14,789
<i>% change</i>	3.6%	1.2%	0.6%	-0.1%	3.7%	3.9%
Refined consumption	13,735	13,474	13,860	14,218	14,524	14,825
	4.3%	-1.9%	2.9%	2.6%	2.2%	2.1%
Apparent balance	-249.3	177	-122	-493	-290	-36
<i>% of consumption</i>	-1.8%	1.3%	-0.9%	-3.5%	-2.0%	-0.2%
Estimated reported stocks	1566	1465	1375	1025	735	800
Stocks as weeks of consumption	5.9	5.7	5.2	3.7	2.6	2.8
LME cash price (\$/t)	2,162	1,939	2,093	2,888	3,180	2,969
<i>% change</i>	13.2%	-10.3%	8.0%	38.0%	10.1%	-6.7%

Zinc – Price projections

- The deficit in the global zinc market is set to steadily narrow this year and next – supply should get looser but demand conditions stable.
- We forecast the LME zinc price to average \$3,180/t in 2018 (+10% from 2017) and \$2,969/t in 2019 (-7% from 2018).
- The bullish narrative (*supply is getting tighter and tighter*) is likely to evaporate in 2018, raising the likelihood of a peaking-process.
- Bottom line: After a massive rally of 89% over 2016-17, zinc is one the most vulnerable base metals to a reversal of fortunes.



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