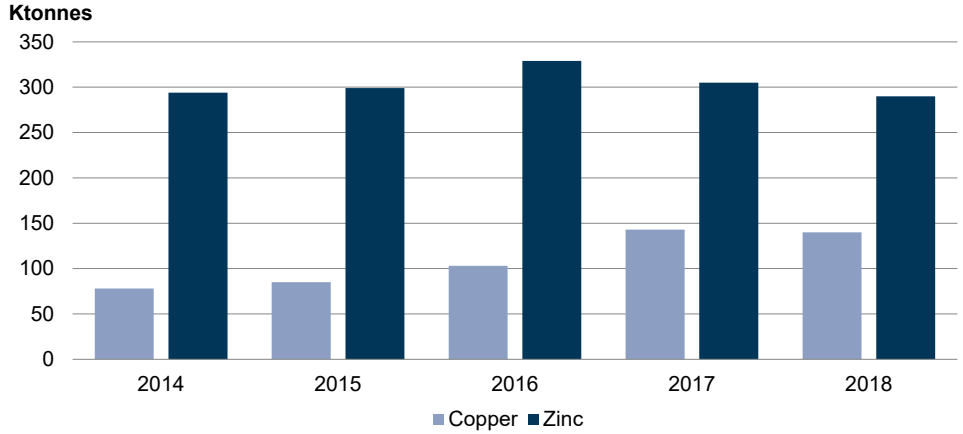
Investing for growth

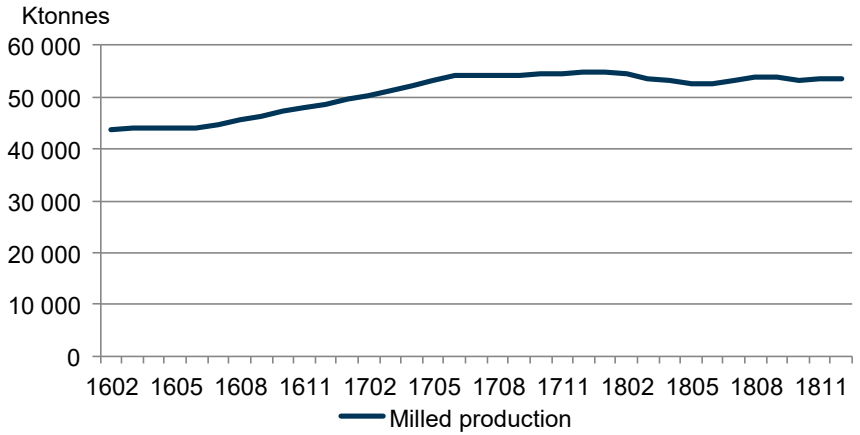
Stefan Romedahl, President Boliden Mines

Key highlights since CMD 2017

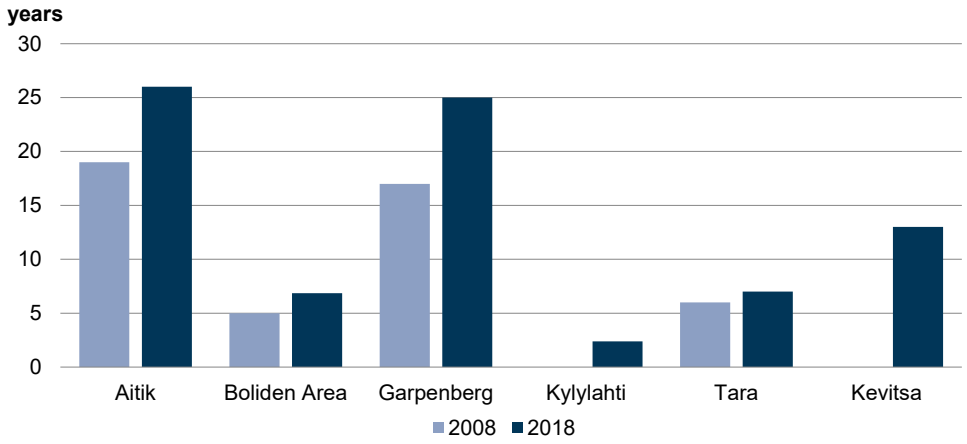
Production of metal in concentrate



Stable output in from all mines, R12



Long mine life for largest and most profitable mines

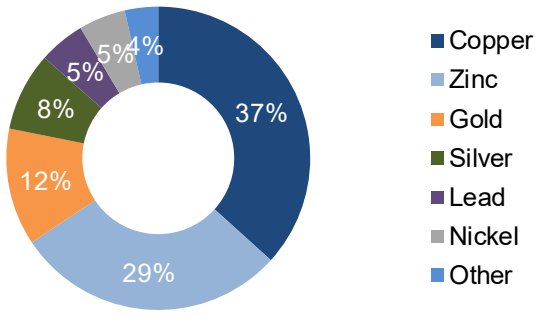


- New surface crusher in Aitik
- Increased cobalt production in 2018
- Exploration drifts in Tara and Rävliden
  - Tara Deep Resource estimate upgraded to 18 Mtonnes (13)

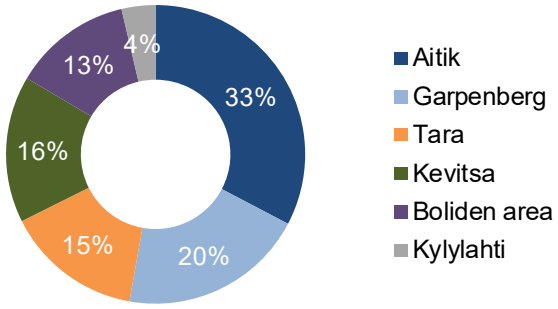
Diversified portfolio and revenues

2018 Mine Revenue breakdown

By Commodity



By Mine

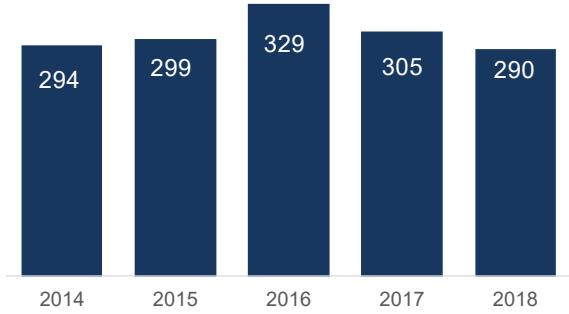


Mines 2018 Revenues: 18,404 MSEK

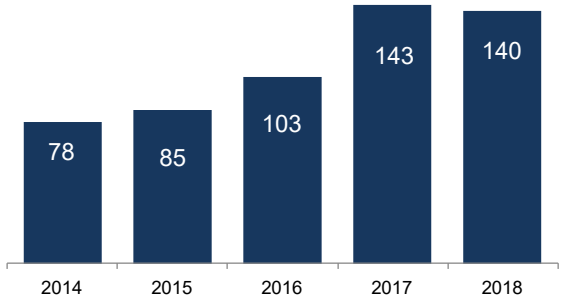
Mines 2018 EBIT: 6,451 MSEK

Copper and gold among key commodities

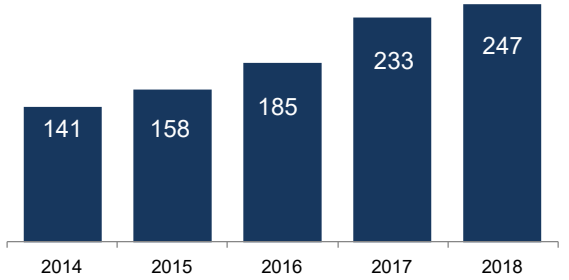
Zinc[1] (ktonnes)



Copper[1] (ktonnes)



Gold[1] (koz)

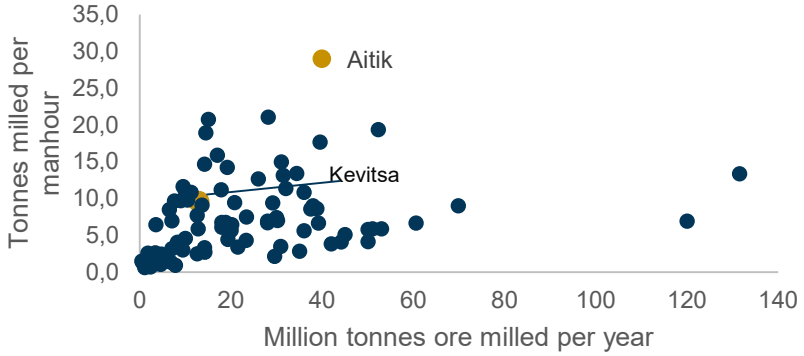


(1) Refers to production of metal in concentrate

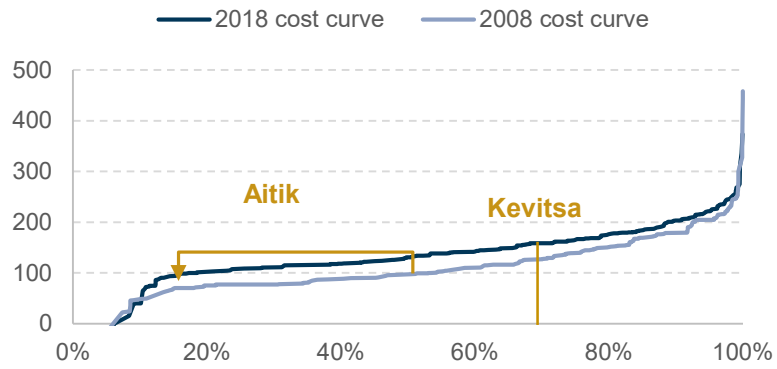
Successfully enhanced productivity and cost position in open pit and underground mines

Copper – Open Pit Mines(1)

We transformed Aitik into the world's most productive open pit copper mine

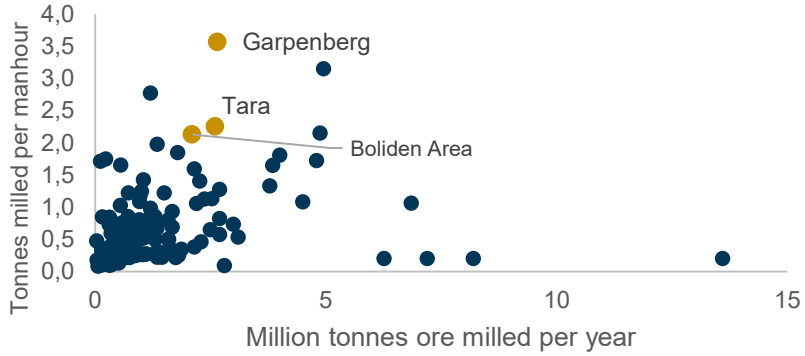


Copper Cost Curve(2)

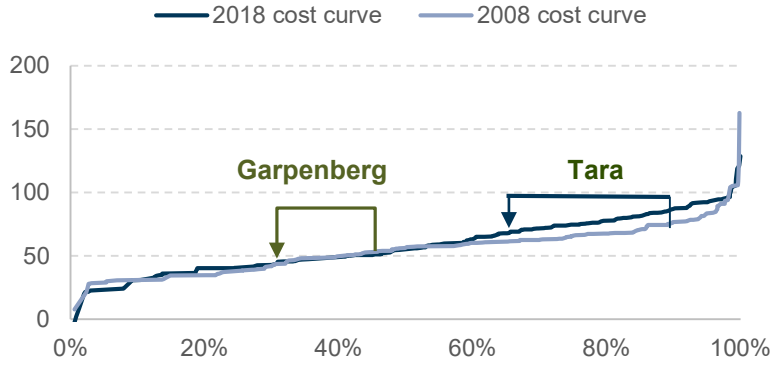


Zinc – Underground Mines

We transformed Garpenberg into the world's most efficient underground mine



Zinc Cost Curve(2)



Source: Wood Mackenzie
(1) Open pit and mines with both open pit / underground operations,
(2) C1 Cash Cost (US¢/lb) composite costing

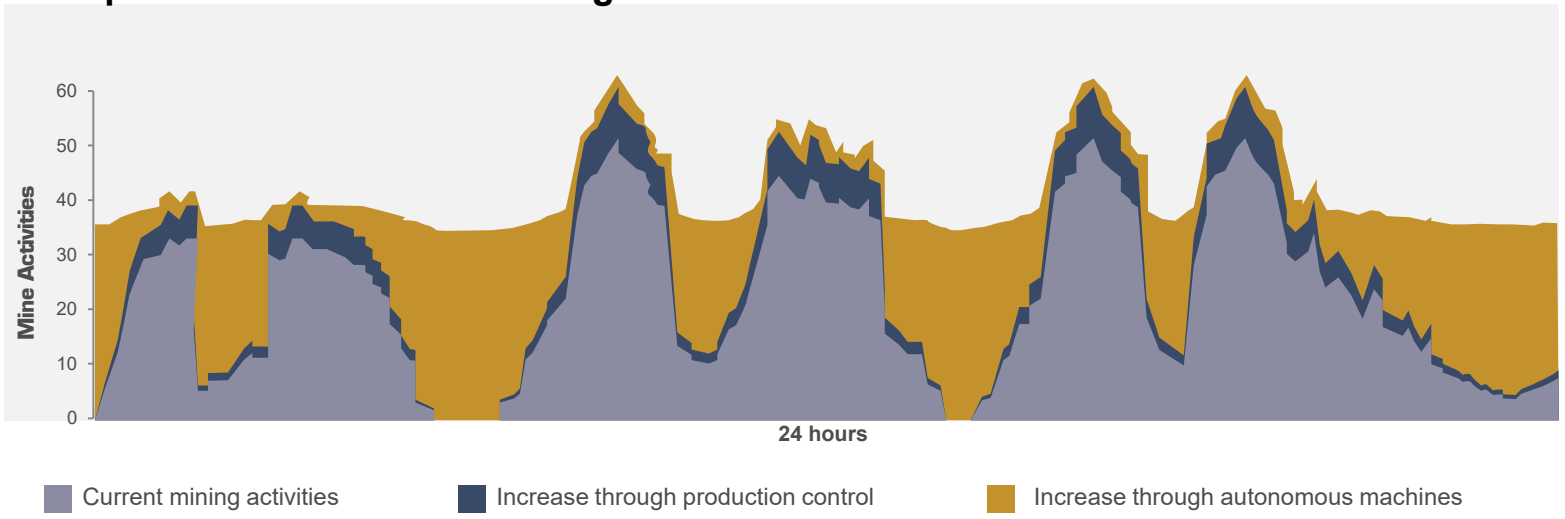
Mine design and technical know-how – critical for future competitiveness

A successful cocktail of electrification…

…and automation

- Electrification, ventilation on demand
- 5G underground positioning system, driverless vehicles
- Mining Operating Control, tablets controlling all digital systems
- In-house technical department

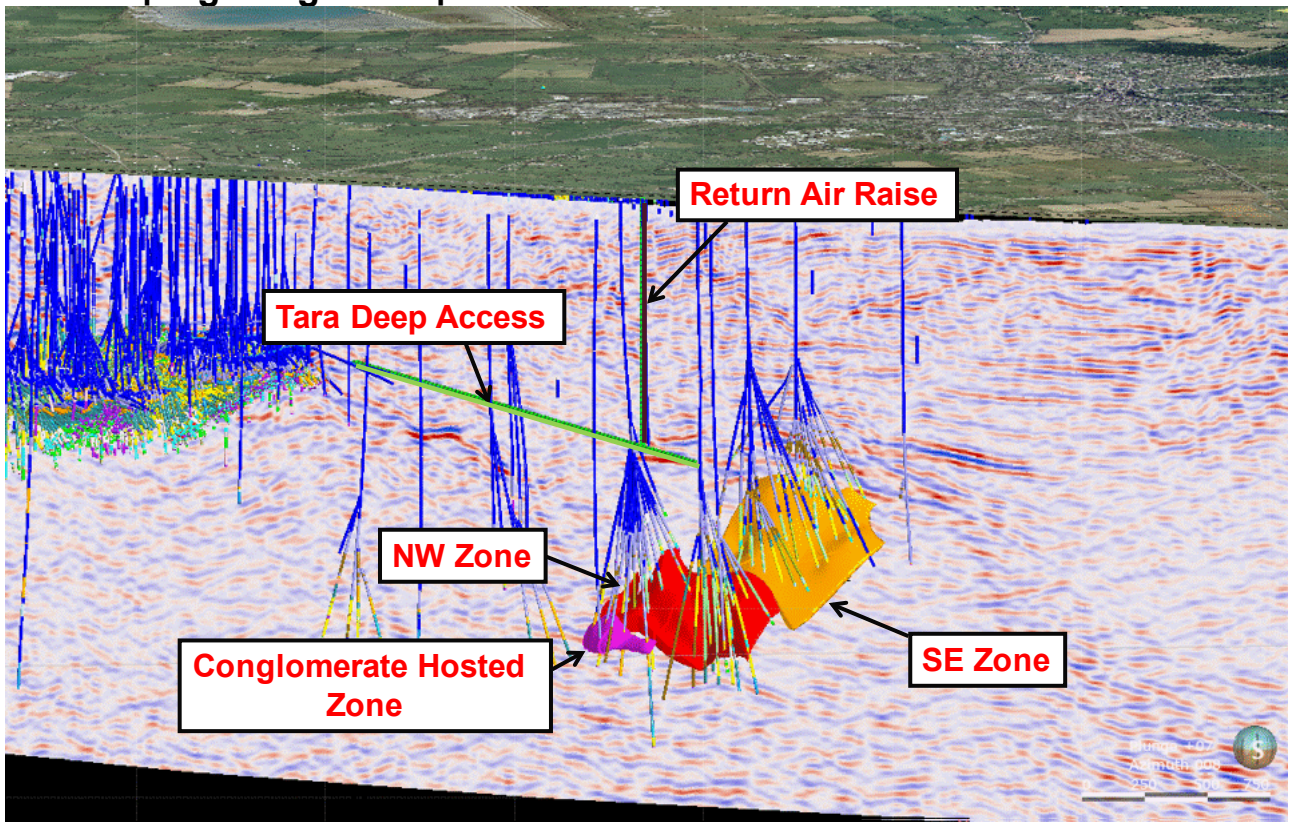
Example: Mine activities in underground mine



Exploration and Mineral Resources & Mineral Reserves

- Exploration cost 520 MSEK (2018)
  - Drifts in Tara and Boliden Area
  - Increased exploration budget 2019 +10%
- Long life-of-mine in Aitik, Kevitsa and Garpenberg
  - Limited new additions
  - Aitik remaining life-of-mine reserve grade 0.22% (0.23)
- Increased inferred mineral resources in Tara Deep
  - Increase from 13.0 to 18.2 Mtonnes
  - Surface drilling
- Short life-of-mine in Kylylahti in existing ore body

Tara Deep – geological map



Aitik – status update

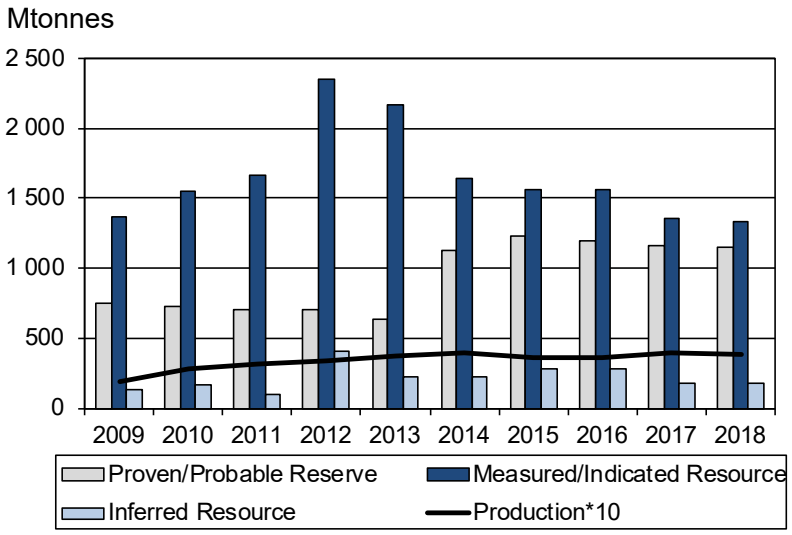
Plus

- 45 Mtonnes throughput 2020
- New surface crusher
- Automation
  - Production drilling
- New satellite pits
- 26 years reserve life

Minus

- Mining 2018 at higher grades than mineral reserve average (Cu reserve grade: 0.22%)
- Diesel - tax?

Aitik reserve & resources vs. production



Next key step

- Electrification
- Increased automation
- Planning, new industrial area

Garpenberg – status update

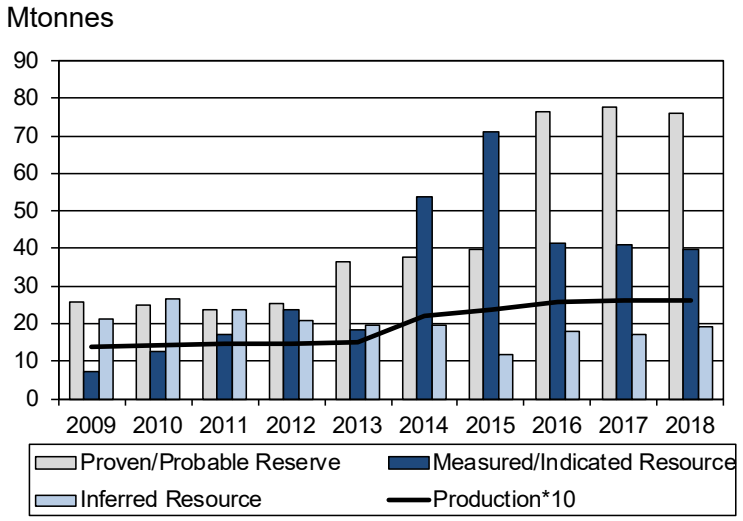
Plus

- 3.0 Mtonnes throughput 2020
- Automation
  - Drill rigs, trucks
- 25 years reserve life

Minus

- Mining 2018 at higher grades than mineral reserve average (Zn reserve grade: 3.1%)

Garpenberg reserve & resources vs. production



Next key step

- Increased automation

Kevitsa – status update

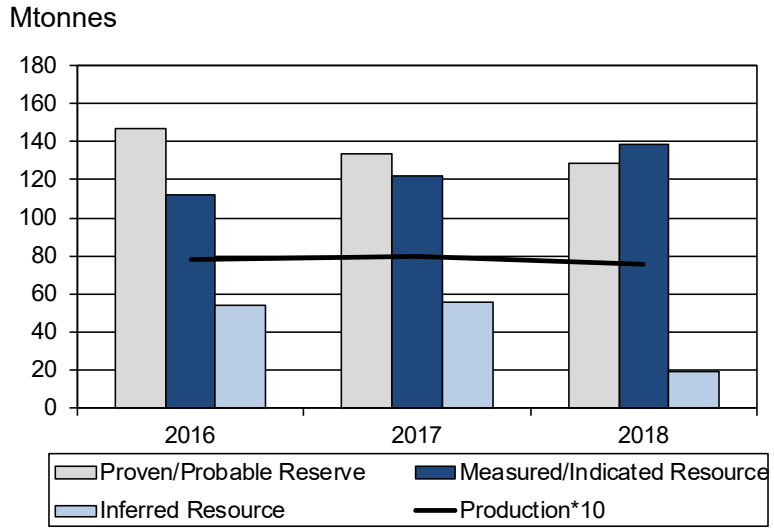
Plus

- 9.5 Mtonnes milled volume pace in 2020
- Automation
- Increased in-house production
  - Larger and more suitable machines
- 13 years reserve life

Minus

- 2019 – year of transformation
  - Mining below reserve average
  - High capex

Kevitsa reserve & resources vs. production



Next key step

- Electrification
- Increased automation

Tara – status update

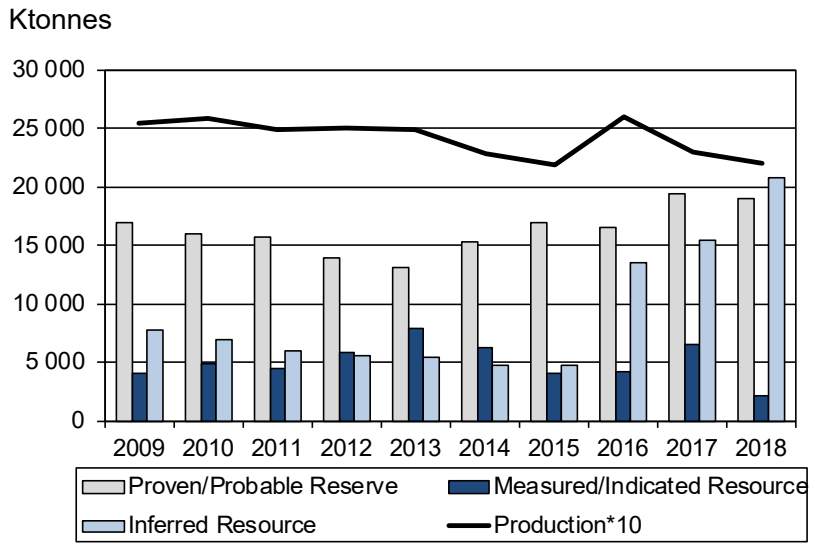
Plus

- New tailings facility
- Automation
  - Drill rigs, trucks and chute
- Increase in inferred mineral resources
  - Drilling from Tara Deep´s exploration drift expected to start in 2020

Minus

- Decreasing stope size
- 7 years reserve life

Tara reserve & resources vs. production



Next key step

- Tara Deep
- Increased automation

Boliden Area – status update

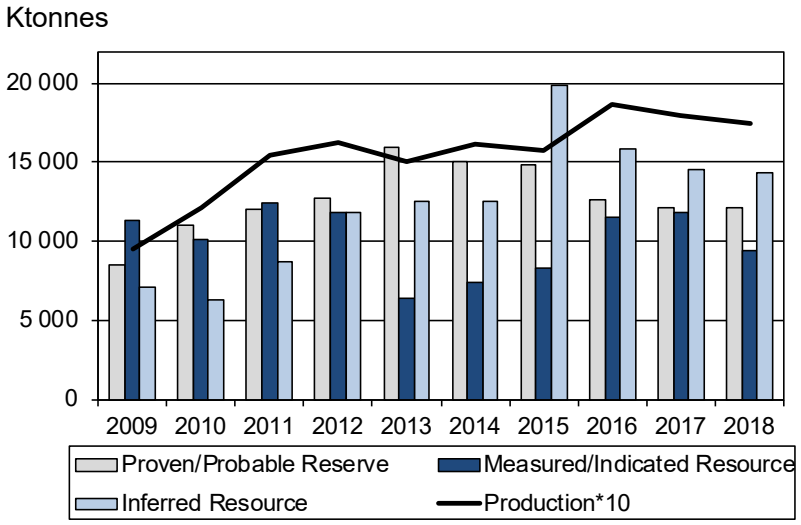
Plus

- Rävliden project in Kristineberg
- Highly flexible mill
- Increased tailing capacity

Minus

- Maurliden depleting
- ~80% utilization of mill
- 7 years reserve life

Boliden Area reserve & resources vs. production



Next key steps

- Rävliden
- Renström expansion
- Increased automation

Kylylahti – status update

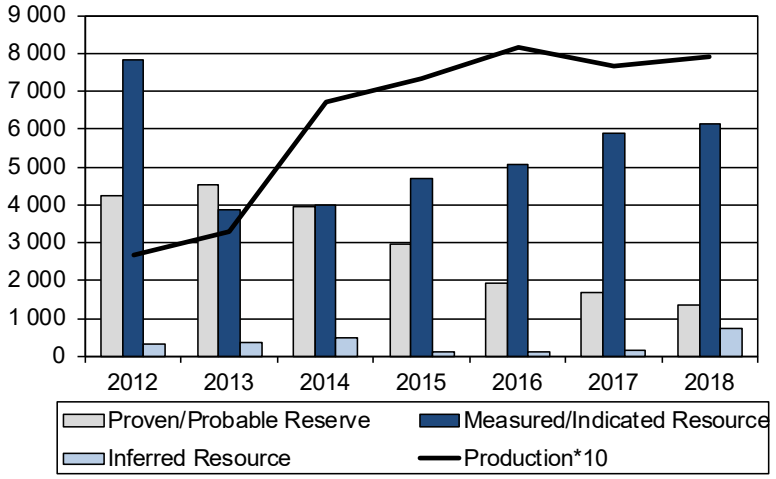
Plus

- Extended operation to 2020
- Cobalt production
- Test of cobalt from tailings in good progress
- Exploration potential in Outokumpu field

Minus

- Disappointing exploration results near mine
- <2 years reserve life

Kylylahti reserve & resources vs. production



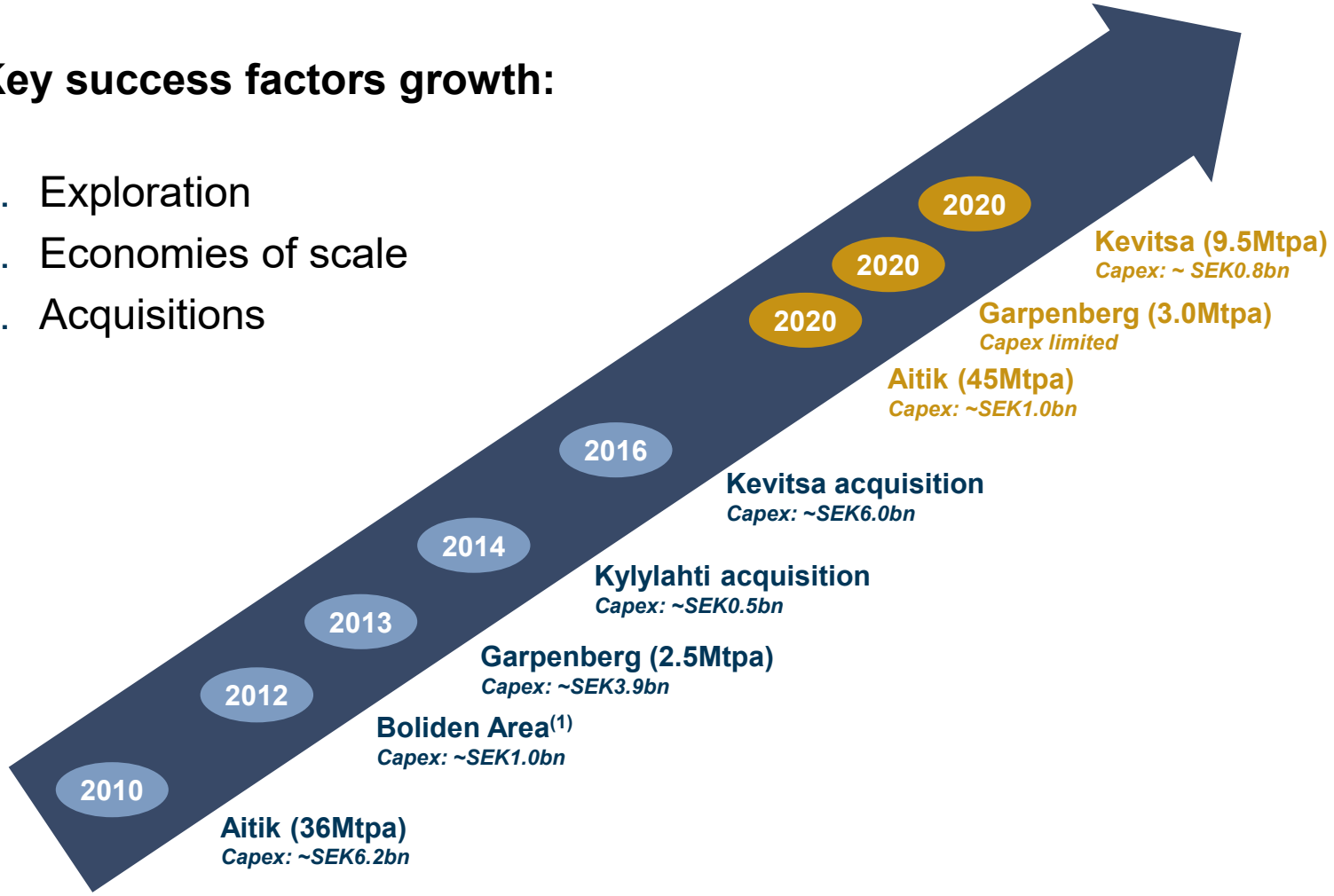
Next possible key step

- Extraction of cobalt from tailings

Investing for growth

Key success factors growth:

1. Exploration
2. Economies of scale
3. Acquisitions



1) Kankberg mine; Gold/Tellurium expansion