Silver – The Techno Metal

New Demand - New Policy - New Future

Hecla 130 YEARS
MINING COMPANY
Largest U.S. Silver Producer



Extractive Industry Investment Options Conference

March 31st, 2021

RESPONSIBLE. SAFE. INNOVATIVE.

A VERY SHORT HISTORY OF SILVER DEMAND

Despite declining photography demand, silver industrial and investment demand has been in a secular bull market since 2000 and is stronger in 2021 and the future

Five distinct periods of silver demand, three that are strengthening

- Monetary by governments (2000 BC to 1800 AD)
- Photographic (1900 to 1999)
- **Industrial (1940 -)**
- **Investment (2000 -)**
- **Energy (2010 -)**

20 YEAR CHANGE IN DEMAND

Million Ounces

	1999	2019	% Increase
Industrial	343	511	**49%**
Photography	246	34	**-86%**
Jewelery/Silverware	260	260	0%
Investment	26	268	**931%**
Total	875	1073	**23%**

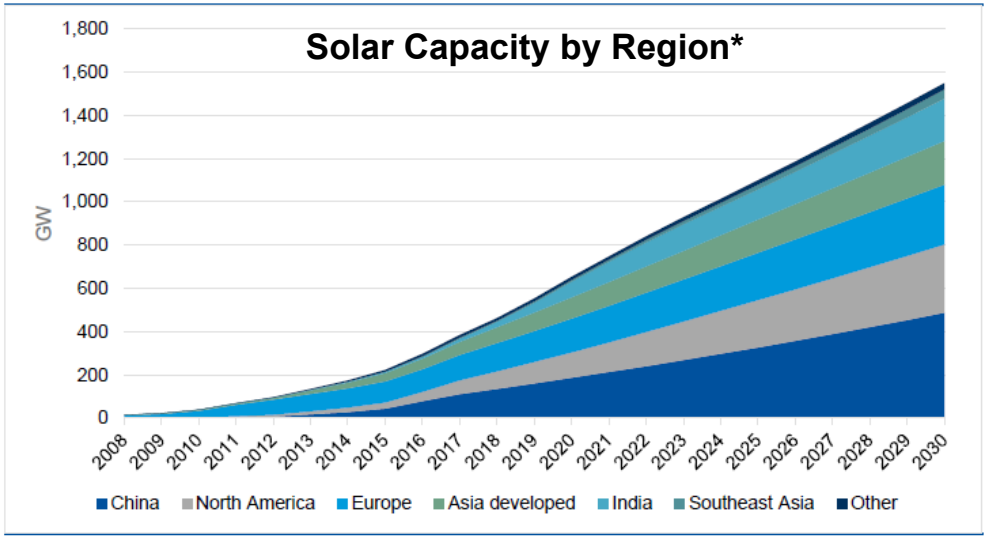
If the decrease in photographic demand is removed, silver demand increase 441 million ounces or 61%

Source – World Silver Survey 2020

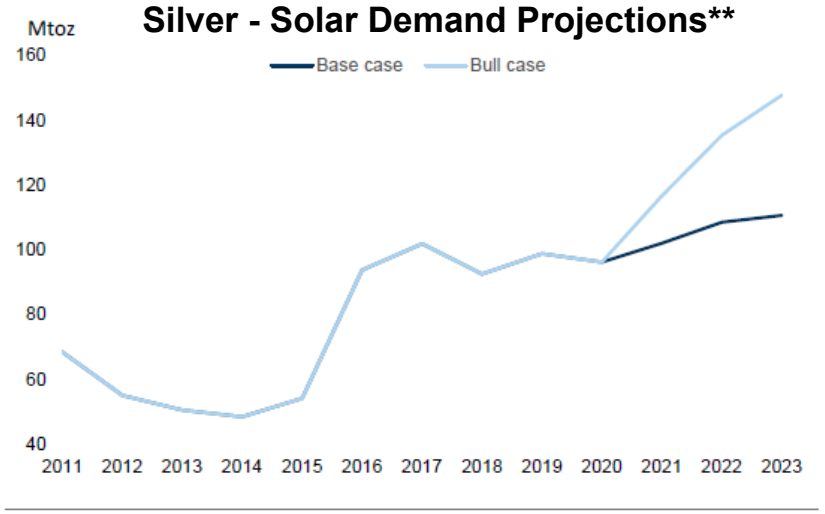
SOLAR ENERGY & PHOTOVOLTAICS

Infrastructure stimulus globally is tilting towards solar – silver is the beneficiary

- Photovoltaics (PVs) have significant support in renewable energy due to cost reductions and supportive policy measures. PVs have seen a CAGR of 15% over the past 5 years
- Silver's natural properties (electrical and thermal conductivity) make it a key input in PV cells, which are used in solar panels. An average solar panel uses ~0.7 ounces of silver
- Increasing PV applications estimate to increase silver demand by 2% in base cases and 9% in a bull case**



Data: CRU



Source: IRENA, Silver Institute, Goldman Sachs Global Investment Research

* Source – CRU: Role of Silver in Green Revolution, July 2018

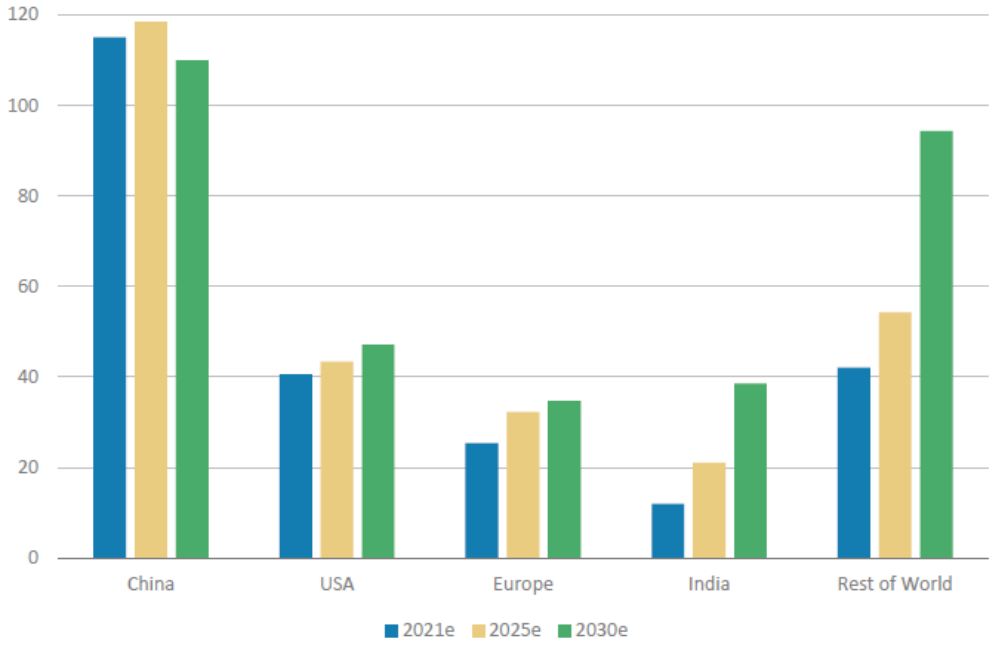
** Source – Goldman Sachs Research – Quantifying silver upside from solar, October 8, 2020

WIND ENERGY

Silver & Copper have a pivotal role in wind energy

- Silver bearing sensors used extensively in:
  - Wind turbines checking inputs including wind speed, weather and vibration
  - Grid management in power generation to control voltage and network configurations, smart switches, and other functions

Wind and Solar Power – GW capacity additions by region 2021, 2025 and 2030E*



Source: Morgan Stanley Research estimates

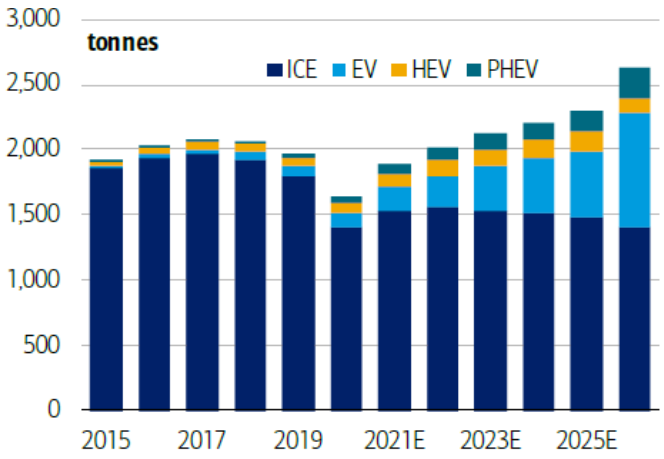
* Source – Morgan Stanley research

ELECTRIC VEHICLES

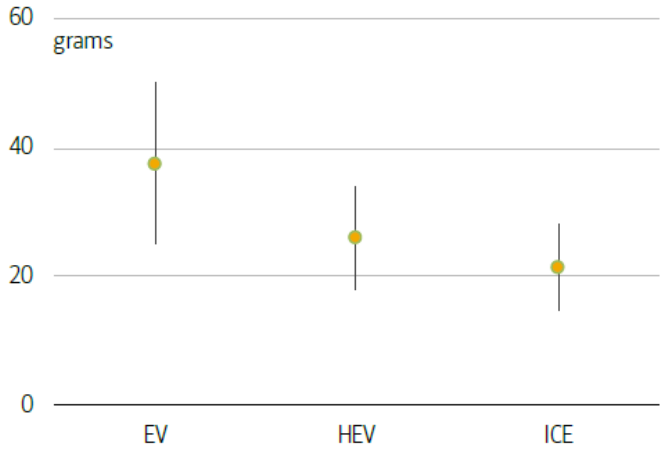
Electric Vehicles make use of silver for its conductivity & corrosion resistance

- Every electrical connection in a vehicle has silver
- Currently, over 55 million oz of silver are used annually by motor vehicles
- Silver loadings in electric vehicles (EVs) is ~40 grams per vehicle, ~25 grams in hybrid eclectic vehicles (HEVs) and ~20 grams in internal combustion engines (ICE)
- As EV and HEV sales are projected to increase → use of silver in motor vehicle applications will increase

Silver demand in automotives



Silver loadings in cars



With electrification of vehicles, silver's use in vehicles will grow at a faster pace

*Source – BofA Global Research – 'Silver's spark from power', Global Metals Weekly published March 29th, 2021

GOVERNMENTAL POLICES SUPPORTIVE OF SILVER

US policy is to reduce carbon emissions and improve the supply chain

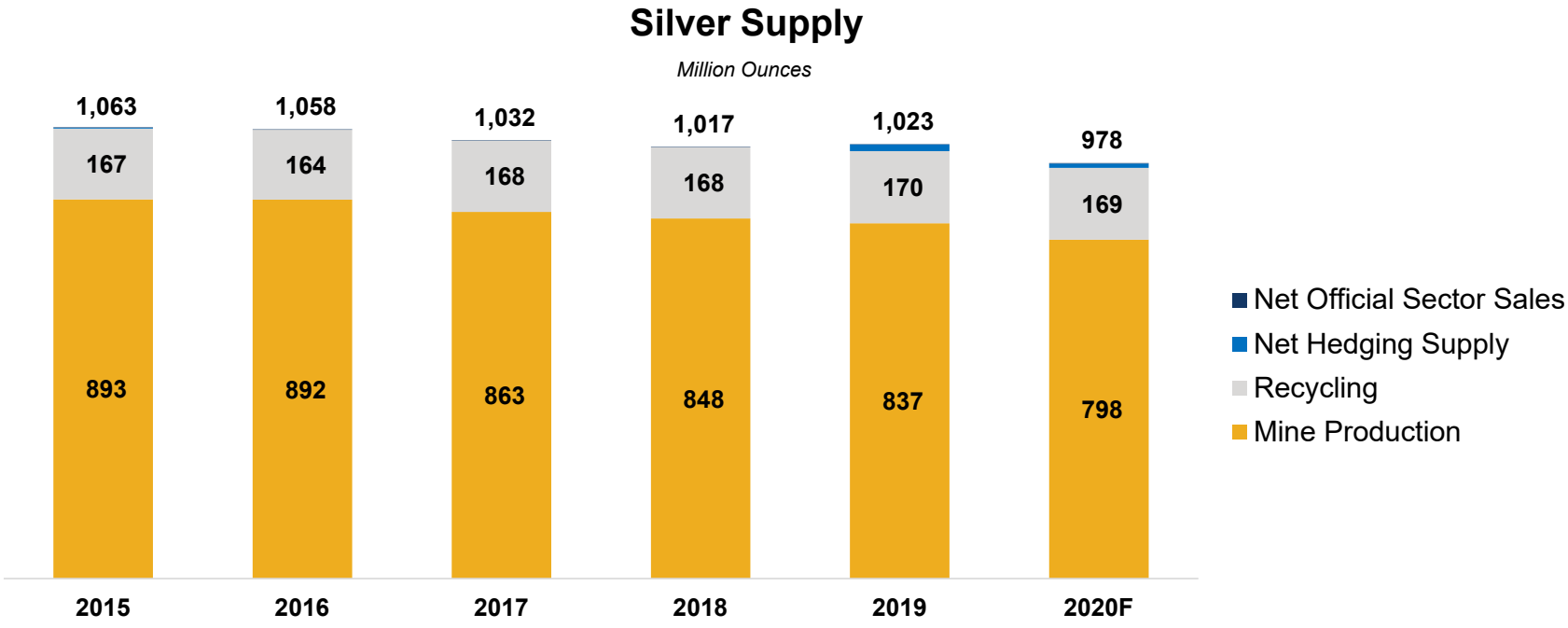
- Global policy to decarbonize the economy
  - Paris Accord's goal is carbon neutrality by 2050 or sooner
  - More than 14 countries and 20 cities around world proposed bans on sales of vehicles powered by fossil fuels starting in 2030
  - Car companies – Jaguar - 2025, Volvo - 2030, GM - 2035 – all electric

- Biden Administration is prioritizing climate change
  - Rejoined the Paris Accord
  - "Build Back Better Plan" includes $3 Trillion investment in infrastructure and clean energy innovation
    - Includes clean energy upgrades, stable electric vehicle charging stations across the country
  - Executive Orders to buy carbon-free energy and electric vehicles
  - Executive Order on domestic supply chains retains the Trump EO on risks to domestic supply of critical minerals and supporting domestic mining

SILVER SUPPLY COMES FROM MINE PRODUCTION & RECYCLING

Recycling is potentially a 200 million ounce supply source

- Mine production accounts for 80-85% of total silver supply of ~1 Billion oz
- Mine supply has shown a CAGR of **-1%** over the past 5 years (2014-2019)
- Recycling has not seen 200 million ounces since 2012, no significant increase in recycling despite higher silver prices



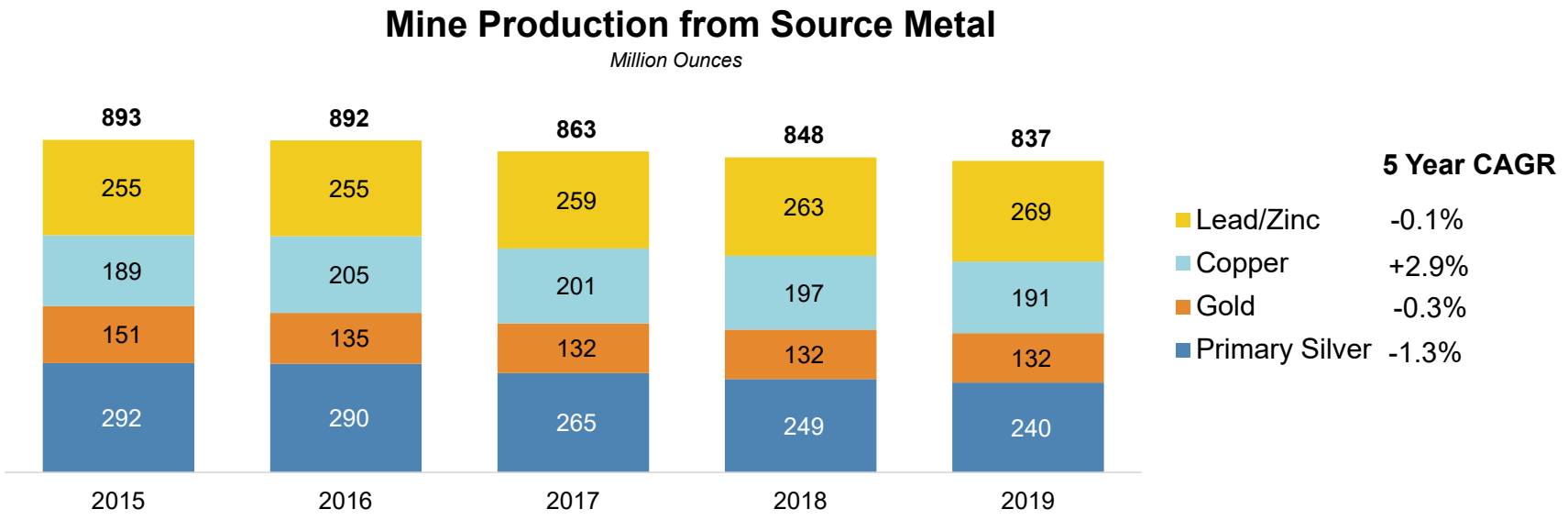
Source – World Silver Survey 2020

MINED SILVER RELIES ON BYPRODUCT PRODUCTION

Only a third of mined silver is primarily driven by silver prices

Significant factor impacting silver supply future this decade:

- General decline in ore grades at large mines. Except supply from copper mines, primary silver production and silver as by-product from gold, lead and zinc mines has declined in the past 5 years

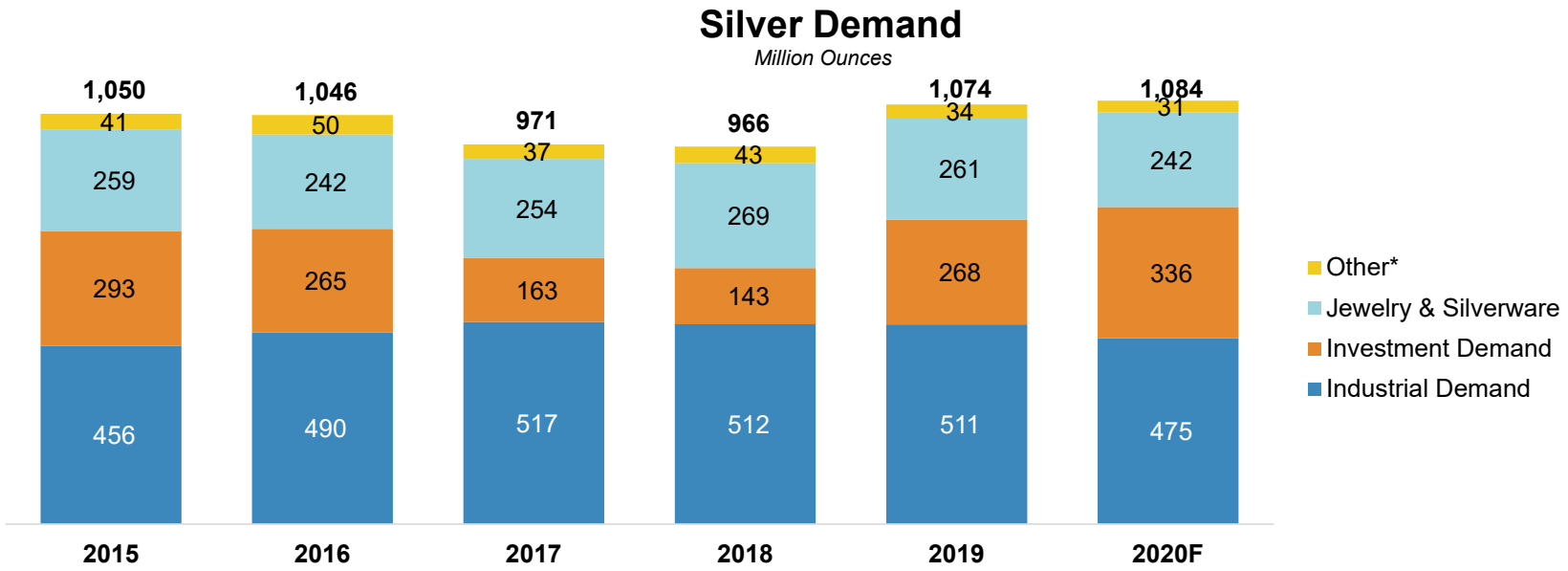


Source – World Silver Survey 2020

SILVER DEMAND

Industrial & Investment demand are key pillars

- Total Silver Demand has stayed in the range of 1 Billion oz with the exception of 2017/2018 when investment demand declined
- Industrial demand accounts for ~ 50% of silver's total demand
- Investment demand (physical investment & Exchange Traded Products) and Jewelry & Silverware account for ~25% each of total demand



Source – World Silver Survey 2020
* Other includes net hedging demand and photography applications

SILVER – THE BIG PICTURE

Demand will outpace supply until mine production catches up

Projected Silver Supply

- Flat/declining with declining mine production and disruptions
- Expected to last this decade until new projects come online
- Recycling not expected to be a major source of supply, stayed in 170 Moz range

Projected Silver Demand

- Industrial demand has increased ~49% in the past 20 years and holds significant upside as the decarbonization of economies and focus on green energy lends support
- Investment demand is supported by favorable macroeconomic factors and monetary and fiscal policies of governments and central banks

Tightening supply + Increasing demand → Gap filled by above ground stock

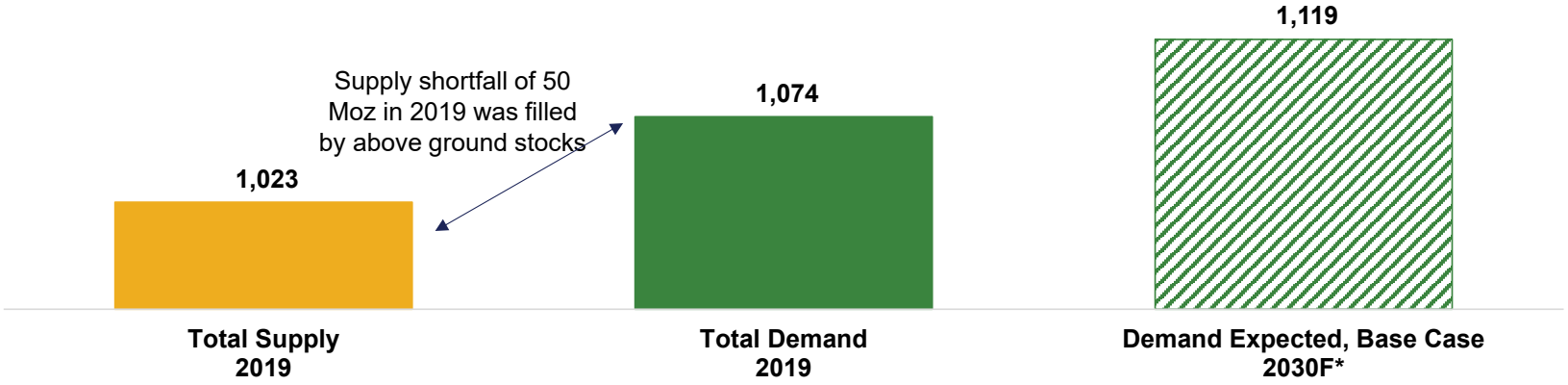
SILVER – WIDENING GAP BETWEEN SUPPLY & DEMAND

Gap expected to increase with conservative demand assumptions

- 2019 saw a total supply of 1,023 Moz and total demand of 1,074 Moz
- This supply shortfall of 50 Moz of silver was filled by above ground stocks
- Silver's total demand in 2030 is expected to reach ~1,119 Moz assuming 25% lower CAGR of industrial demand* and no increase in silver's investment demand
- Supply needs to grow by ~95 Moz per year to meet the additional demand expected in 2030

Silver Supply & Demand: 2019 and 2030F

Million Ounces



*Hecla Estimates for demand assumptions: 1.5% per year growth in Industrial demand, Investment demand, Jewelry & Silverware demand expected to stay at 2019 levels. CAGR for industrial demand over the past 20 years has been 2%.

Silver – The Techno Metal

New Demand - New Policy - New Future

Hecla 130 YEARS
MINING COMPANY
Largest U.S. Silver Producer



Extractive Industry Investment Options Conference

March 31st, 2021

RESPONSIBLE. SAFE. INNOVATIVE.