

Changes in Non-Ferrous Production: United States vs. China 1996 to 2020

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United States – Copper Mining, Smelting and Refining

• 1995

- 40 mines produce copper
 - 1.9 million tons production
- 7 primary smelters
- 4 secondary smelters
- 7 electrolytic refineries
- 15 electrowinning facilities
 - 2.3 million tons refined copper

• 2020

- 25 mines produce copper
 - 1.2 million tons production
- 3 primary smelters
- 0 secondary smelters
- 3 electrolytic refineries
- 14 electrowinning facilities
 - 0.9 million tons refined copper

China – Copper Mining, Smelting and Refining

• 1995

- 0.4 million tons mine production
- 0.7 million tons refined copper

• 2020

- 1.7 million tons mine production
- 9.8 million tons refined copper

All information from USGS National Minerals Information Center's Mineral Commodity Summaries or Yearbook
All tons are metric tons

Changes in Copper Supply Chain

Mines 1995 2020 Metal 1995 2020



1.9 million tons



1.2 million tons



2.3 million tons



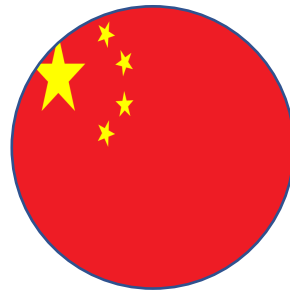
0.9 million tons

Critical Minerals
By-Products
from Metal
Production

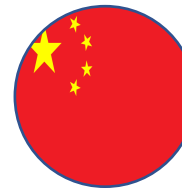
Te, PGMs



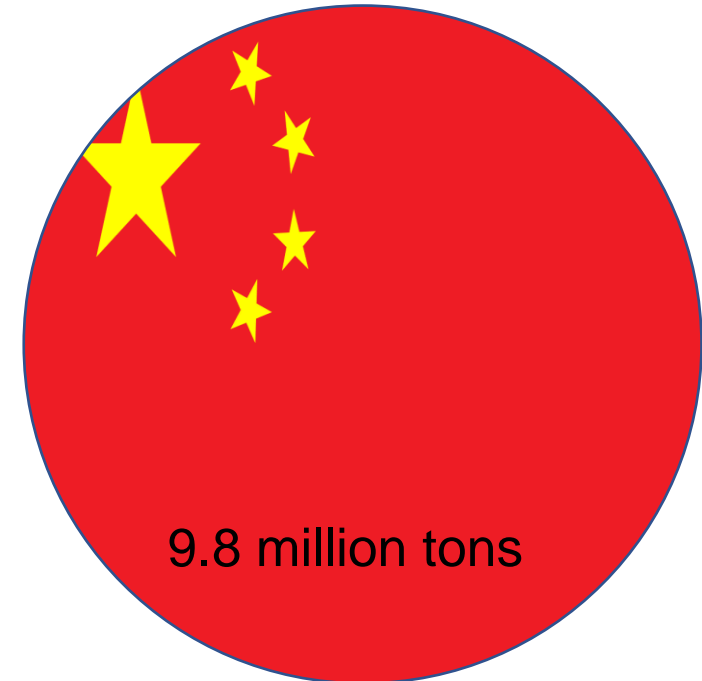
0.4 million tons



1.7 million tons



0.7 million tons



9.8 million tons

United States – Zinc Mining, Smelting and Refining

• 1995

- 25 mines produce zinc
 - 0.63 million tons production
- 3 primary smelters
- 7 secondary smelters
 - 0.60 million tons refined zinc (total)

• 2020

- 14 mines produce zinc
 - 0.67 million tons production
- 1 primary smelters
- 2 secondary smelters
 - 0.15 million tons refined zinc (total)

China – Zinc Mining, Smelting and Refining

• 1995

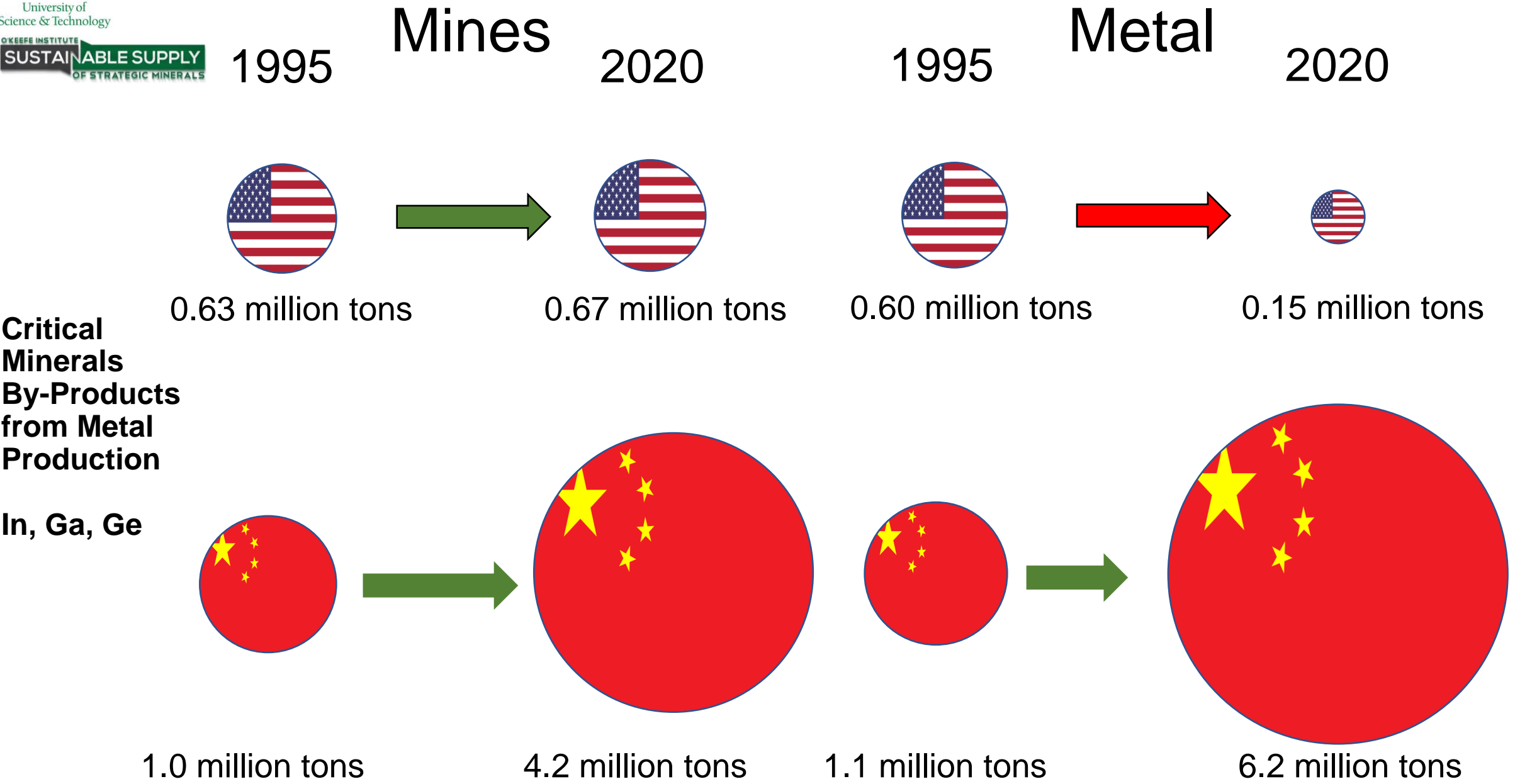
- 1.0 million tons mine production
- 1.1 million tons refined zinc

• 2020

- 4.2 million tons mine production
- 6.2 million tons refined zinc (2019, ILZSG)

Most information from USGS National Minerals Information Center's Mineral Commodity Summaries or Yearbook
All tons are metric tons

Changes in Zinc Supply Chain



United States – Lead Mining, Smelting and Refining

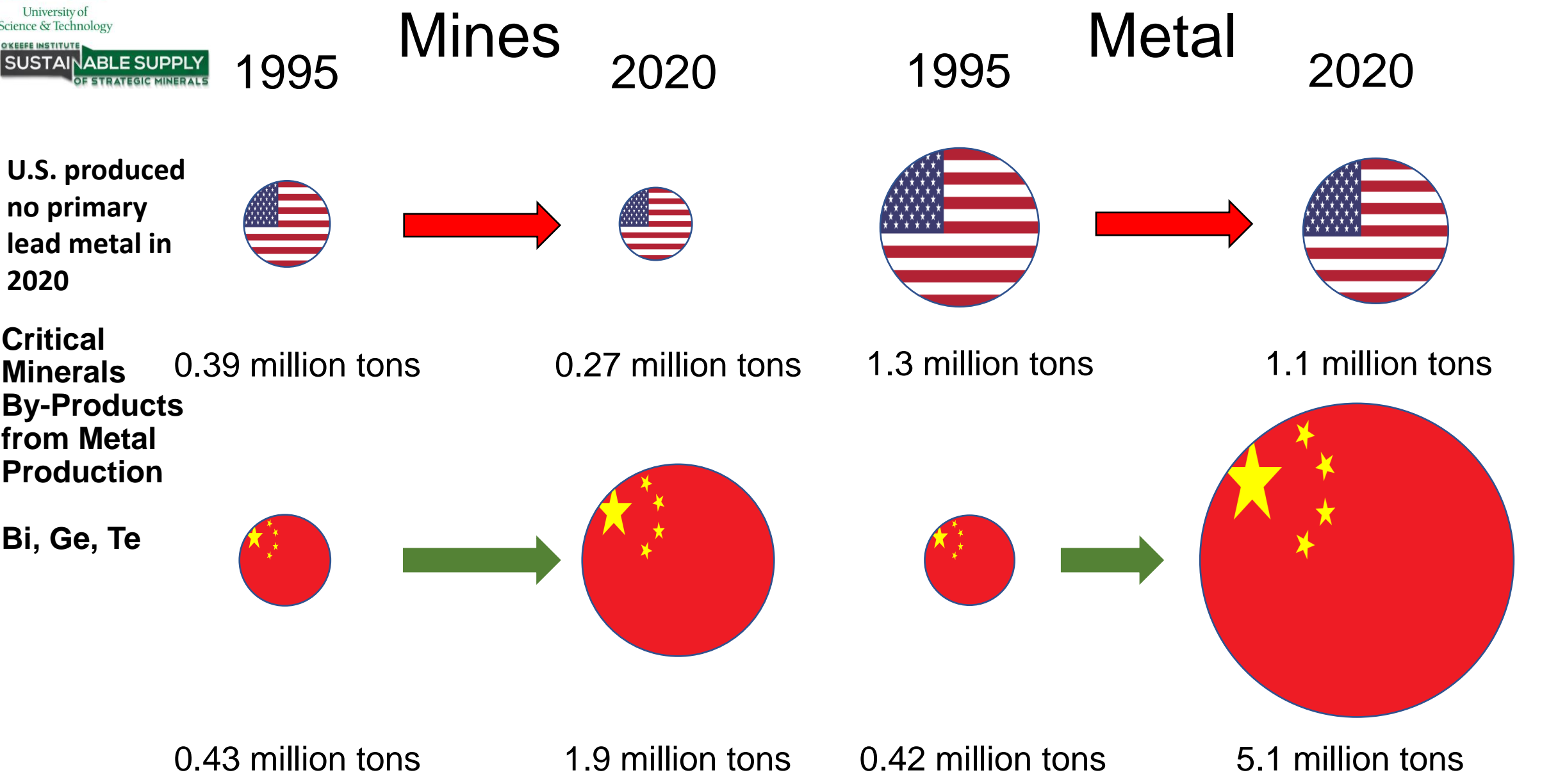
- 1995
 - 11 mines produce lead
 - 0.39 million tons production
 - 3 primary smelters
 - 0.37 million tons refined lead
 - 18 secondary refineries
 - 0.9 million tons refined lead
- 2020
 - 10 mines produce lead
 - 0.29 million tons production
 - 0 primary smelters
 - 12 secondary refineries
 - 1.1 million tons refined lead

China – Lead Mining, Smelting and Refining

- 1995
 - 0.43 million tons mine production
 - 0.42 million tons refined lead
- 2020
 - 1.9 million tons mine production
 - 5.1 million tons refined lead (2019, ILZSG)

Most information from USGS National Minerals Information Center's Mineral Commodity Summaries or Yearbook; All tons are metric tons

Changes in Lead Supply Chain



United States – Alumina and Aluminum Production

1995

- 5 alumina production facilities
 - 4.5 million tons alumina
- 22 primary smelters
 - 3.4 million tons aluminum

• 2020

- 2 alumina production facilities
 - 1.3 million tons alumina
- 7 primary smelters
 - 1.0 million tons aluminum

China – Alumina and Aluminum Production

• 1995

- 2.2 million tons alumina
- 1.9 million tons aluminum

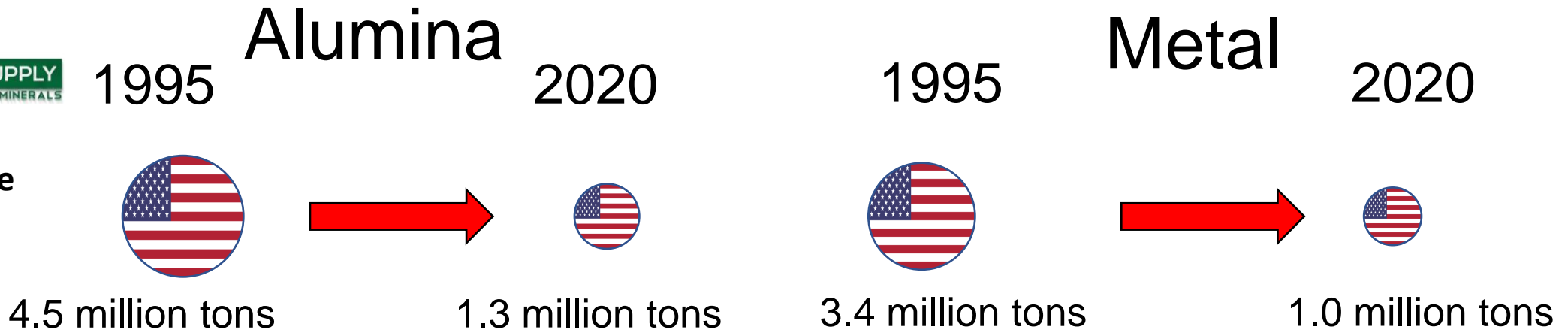
• 2020

- 74 million tons alumina
- 37 million tons aluminum

Most information from USGS National Minerals Information Center's Mineral Commodity Summaries or Yearbook
All tons are metric tons

Changes in Aluminum Supply Chain

Not on same
 scale as Cu,
 Zn, Pb



**Critical Minerals
 By-Products
 from Alumina
 Production**

Ga

