

Greenlee County, Arizona | Case Studies

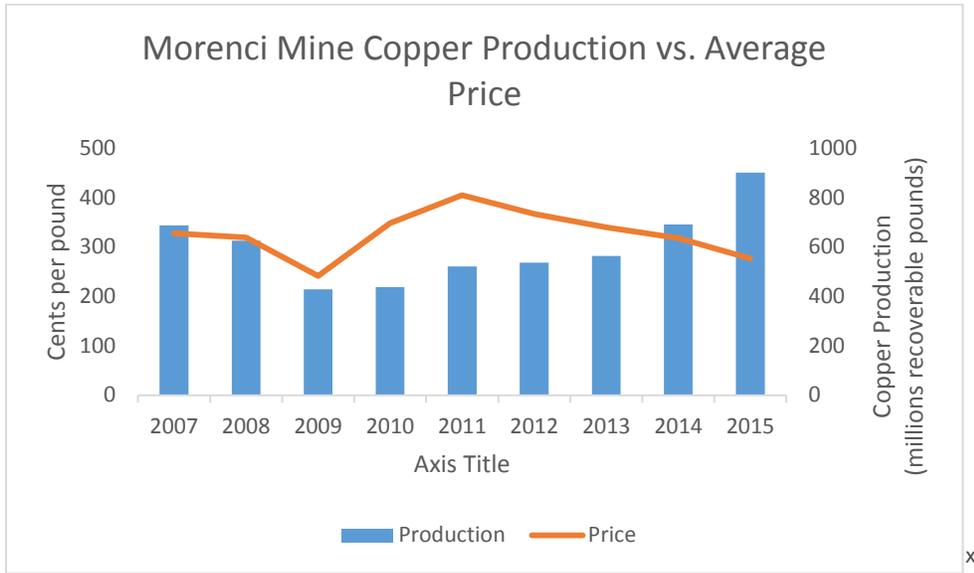
Copper is a major industrial metal used in construction, electronics, transportation, industrial machinery, and consumer products. In 2014, the U.S. was the world's fourth-largest copper producer, mining 1.127 million tons of copper worth approximately \$9.7 billion.ⁱ Of the five major copper-producing states (Arizona, Utah, New Mexico, Nevada, and Montana), Arizona increased production the most in 2014; its copper output totaled 893,000 metric tons, representing 66% of the national total.ⁱⁱ Copper represented 89% of the total value of mining in Arizona.ⁱⁱⁱ Greenlee and Pima counties generated the majority of that production. If Arizona were a country, it would be the seventh largest copper producer in the world.^{iv}

Geology and history

Greenlee County has a long history of copper mining dating back to the mineral's discovery in the area during the 1870s. Initial recovery operations drew prospectors to the towns of Clifton, Morenci, and Metcalf, where underground mining methods targeted high-grade copper ores. In the 1920s, the Phelps Dodge Corporation (now Freeport-McMoRan Inc.) became the single owner of mining operations in the jurisdiction and discovered huge reserves of low-grade ores in the area. However, when the price of copper collapsed during the Great Depression, mining in the region temporarily halted between 1932 and 1937, until Phelps Dodge Corporation converted its underground mining operations to open-pit methods that could profitably harvest lower-grade ores.^v The modern Morenci Mine was thus established and has been a significant economic driver in the county ever since.

Production

The largest-producing copper mine in North America is the privately owned Morenci Mine, located in Greenlee County. In 2015, the Morenci Mine produced 901 million pounds of recoverable copper, up from 537 million pounds of recoverable copper in 2012.^{vi vii} Production at Morenci had significantly declined following the 2008 global recession and associated copper price decline. Recently, however, production has rebounded and has surpassed pre-2008 levels.^{viii ix} However the two leading copper producers in Arizona decreased production in 2015 due to falling prices, despite increases at Morenci.^x



Employment

Copper production employed 1,893 people in 2014 in Greenlee County. Copper mining employed 11,953 workers in Arizona in 2014 (out of 2,241,077 total workers), comprising less than 1% of statewide employment.^{xii xiii} In Greenlee County, the ebbs and flows of employment mirror trends in the copper industry. County unemployment reached 18% in 2009 at the height of the recession before falling to around 7% in 2013, as global demand and prices stabilized.^{xiv} Freeport-McMoRan Inc. owns and operates Greenlee County's Morenci Mine, after merging with Phelps Dodge Corporation in 2007, and serves as the key copper-mining employer.

Revenue

State revenue from copper extraction is directed back to Greenlee County primarily through the state's severance tax. Arizona levies this tax on metal minerals (including copper) set at 2.5% on 50% of the difference between the gross value of production and the production costs. While 47.6% of this revenue goes to the state's General Fund, the other 52.4% is distributed to cities and counties.^{xv}

Arizona also collects a Transaction Privilege Tax for the right to do business in the state at a rate of 3.125% on the total gross receipts of taxable business.^{xvi} However, this tax does not apply to copper mining.

In 2014, Greenlee County received \$ 5,537,109 in transaction privilege and severance tax disbursements.^{xvii} In publicly available documents, the Arizona Department of Revenue reports this revenue as one sum, and does not specify what percentage of the tax stems from copper mining. Greenlee County also collected \$3,256,209 in local property taxes levied for general purposes, public health services, and flood control (out

of a total \$19.7 million in county revenue) in 2014.^{xviii} While some portion of property taxes stems from copper mining, the percentage is not specified in publicly available data.

Costs

Copper mining activity is a key consideration in Greenlee County road planning.^{xix} No additional publicly available government sources delineating specific fiscal costs of copper mining in Greenlee County were found.

Data availability

The table below highlights data sources used to compile this narrative, as well as any gaps in publicly available data.

Measure	Data availability	Data gaps
Production	The U.S. Geological Survey published copper production data at the county level for 2012. Production information from a 2011 Freeport-McMoRan Inc. report shed light on the six-year trend of production at the largest copper mine in the county (and state). Data for 2013 was not found.	
Employment	The Arizona State University William Siedman Research Institute provided supplemental information on mining employment trends.	The Bureau of Labor Statistics does not have mining data (NAICS 212, 2122, 21223) for Greenlee County for 2012, 2013, or 2014. Neither BLS nor the U.S. Census Bureau has ten-year employment-trend data for the copper mining industry at the Greenlee County level for 2004–2013. There are several years and subindustries without data.
Revenue	Revenue information was gathered from a range of Arizona state and county government sources for 2012–2013, including the State of Arizona	Data on how sales and use taxes relate to extractive activities in the county was not found.

Measure	Data availability	Data gaps
	2013 Tax Handbook, Arizona Department of Revenue, and Greenlee County Annual Financial Report 2012.	
Costs		Data on connections between county transportation, emergency services, reclamation, and water-infrastructure investments and extractive industries was not found.

Notes

ⁱ U.S. Geological Survey, [2015 Copper Commodity Summary \(PDF\)](#)

ⁱⁱ Arizona State University, [The Economic Impact of Mining in the State of Arizona \(PDF\)](#)

ⁱⁱⁱ Ibid.

^{iv} Ibid.

^v Greenlee County, [Morenci Mining District](#)

^{vi} [Freeport-McMoRan Copper & Gold Inc. Reports Fourth-Quarter and Year Ended December 13, 2015 Results \(PDF\)](#), table II

^{vii} [Freeport-McMoRan Copper & Gold Inc. Reports Fourth-Quarter and Year Ended December 31, 2013 Results \(PDF\)](#), table II

^{viii} Ibid

^{ix} U.S. Geological Survey, [2007 Minerals Yearbook: Copper \(PDF\)](#), table 2; [2008 Minerals Yearbook: Copper \(PDF\)](#), table 2; [2009 Minerals Yearbook: Copper \(PDF\)](#), table 2; [2010 Minerals Yearbook: Copper \(PDF\)](#), table 2; [2011 Minerals Yearbook: Copper \(PDF\)](#), table 2; [2012 Minerals Yearbook: Copper \(PDF\)](#), table 2

^x U.S. Geological Survey, [Minerals Commodity Summaries 2016, Copper \(PDF\)](#)

^{xi} Ibid

^{xii} <http://www.azmining.com/uploads/AMA%20report%202014%20v2%20.pdf>

^{xiii} <http://www.census.gov/quickfacts/table/PST045215/04,00>

^{xiv} Bureau of Labor Statistics, [Local Area Unemployment Statistics Map, Counties, Annual Average](#)

^{xv} State of Arizona, [2013 Tax Handbook \(PDF\)](#), p. 25

^{xvi} State of Arizona, [2013 Tax Handbook \(PDF\)](#), p. 21

^{xvii} Arizona Department of Revenue [2015 Annual Report \(PDF\)](#), table 24

^{xviii} Greenlee County, Arizona, [Annual Financial Report](#), 2014, p. 10

^{xix} [Southern Greenlee County Small Area Transportation Study, Addendum to Transportation Plan \(PDF\)](#), p. 5