

Crouching Bear Hidden Eagle

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Following a compromise deal between a group of Republican and Democratic senators and the White House last week, President Biden’s signature infrastructure initiative is now one step closer to being rolled out. The original infrastructure spending bill called for \$621bn of spending on physical transportation infrastructure, water systems, electric vehicles, and high-speed internet networks.¹ Under last week’s compromise deal, infrastructure spending is reduced by 7% to \$579 billion.²

Here at NTree, we have on numerous occasions highlighted our excitement over the infrastructure bill and the potential impact on metals like copper, nickel, and silver which stand to benefit substantially from this spending.³ Whilst we wait for more details on the deal, we can infer some of the potential impact on the key metals which stand to benefit. According to the initial American Jobs plan factsheet,⁴ the key elements of the \$621bn physical infrastructure plan called for:

- Modernizing 20,000 miles of highways, roads, and main streets, fix the 10 most economically significant bridges and repair the worst 10,000 small bridges
- Replacing or repairing 24,000 buses, 5,000 rail cars, 200 stations and thousands of miles of track, signals, and power systems.
- Developing and rolling-out electric vehicles and corresponding charging network, including building 500,000 EV chargers by 2040, replacing 50,000 diesel transit vehicles and electrifying at least 20% of yellow school bus fleet.
- Replacing of all lead pipes and service lines
- Investment in the electric grid network
- Rolling-out affordable reliable high-speed broadband across the country

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The US Infrastructure bill is staggering in its size and ambition and will “potentially have profound effects on commodity markets and supply chains”.⁵ At \$579bn, the infrastructure plan dwarfs the \$13.2bn Marshall Plan (ca. \$132bn in today’s money) that the US spent on rebuilding Europe post World War II. As with all large spending plans, there will inevitably be winners and losers, and smarter people will be able to figure out which company falls into each category. However, it is very clear that several key metals will benefit tremendously from physical infrastructure spending, and one of them is copper. Copper is one of the clear beneficiaries with US refined demand expected to grow by 6% per year over the next 5 years, of which approximately 2.2% is due to new infrastructure spending.⁶ If we factor in the reduced spending bill, we can assume the adjusted annual increase in demand for infrastructure driven refined copper over the next 5 years will reduce slightly to a growth of 2.0% per year.⁷ Assuming an annual US refined copper consumption of approximately 1.8 million tonnes per year then the increased infrastructure spending will translate into additional refined copper demand of approximately 500k tonnes over the next 5 years.⁸

Nickel and copper stand to also be key beneficiaries from electrification spending and replacement of internal combustion-powered federal fleets with electric battery-powered fleets. EVs contain by some measures 10x more copper than internal combustion engine vehicles and each electric bus contains approximately 370kgs of copper.⁹ The US yellow school bus fleet size is approximately 480,000 and if 20% of the fleet is replaced by electric buses, an additional 35k tonnes of copper will be needed.¹⁰ The US also has a federal agency vehicle fleet of approximately 650k and transitioning all of those to electric vehicles will significantly increase demand for both copper and nickel.¹¹ Nickel is one of the key components of electric batteries and whilst there are a lot of uncertainties on types of battery technologies and their nickel loadings, we can make some simplified assumptions to estimate the expected additional demand for nickel. Assuming the US federal government contracts to buy American EV buses then Nickel demand from replacing the whole federal fleet should be in the order of 55kt.^{12,13,14,15}

Silver is also likely to be a strong beneficiary of the bill given high-speed internet, 5G and IoT connectivity will all increase demand for silver.¹⁶ Whilst exact figures are hard to come by, we can surmise that silver is expected to benefit meaningfully given its pervasiveness in circuit boards, chips and just about every electronic item you can think of.¹⁷ In fact, given it is also a precious metal, silver may also benefit from concerns that the US government intoxicated on colitas, has engaged Traffic-unAware Cruise Control and is well on its way to driving off a financial cliff at the end of a dark desert highway.

The sleeping giant has awoken and is filled with terrible resolve

As the infrastructure deal firms up through the legislative process and more details become available, we will get a much clearer picture of the impact on metals. In the meantime, it is worth keeping in mind that spring is coming, and the US is on the precipice of a new dawn. In the 1950s, the US embarked on a space race with the USSR, and in another Laika moment, the US has woken up from a deep slumber and is filled with renewed resolve to meet this century’s rising power. In the 1990s Tim Berners-Lee unleashed a technological breakthrough that ushered decades of productivity growth with studies indicating an increase in GDP per person of \$8-\$15 for every 1% increase in internet users.¹⁸ The US infrastructure bill is expected to increase productivity and while estimates may vary, a

2014 University of Maryland study found that every \$1 of infrastructure investment adds as much as \$3 to GDP growth.¹⁹

By Hamad Ebrahim

Footnotes

1. <https://www.whitehouse.gov/briefing-room/statements-releases/2021/03/31/fact-sheet-the-american-jobs-plan/>
2. NYT, 24.6.21, "Biden and Senators Reach Broad Infrastructure Deal", Jonathan Wisman, Emily Cochrane and Jim Tankersley
3. https://www.brighttalk.com/webcast/17849/457032?utm_source=website_md
4. https://www.brighttalk.com/webcast/17849/479689?utm_source=website_md
5. https://www.brighttalk.com/webcast/17849/457021?utm_source=website_md
6. <https://www.whitehouse.gov/briefing-room/statements-releases/2021/03/31/fact-sheet-the-american-jobs-plan/>
7. <https://www.fastmarkets.com/Media/Files/PRA/FMV2/pdfs/Promotional%20materials/US%20I>
8. <https://www.fastmarkets.com/Media/Files/PRA/FMV2/pdfs/Promotional%20materials/US%20I>
9. Absent more details this assumes a simple 1-to-1 ratio based on the reduced infrastructure spending bill
10. <https://www.statista.com/statistics/254855/copper-consumption-of-the-us/>
11. https://www.copper.org/publications/pub_list/pdf/A6191-ElectricVehicles-Factsheet.pdf
12. <https://www.nysbca.com/fastfacts.html>
13. <https://www.washingtonpost.com/climate-solutions/2021/01/28/biden-federal-fleet-electric/>
14. <https://www.motivps.com/application/electric-school-bus/>
15. Assumes a 35:65 ratio between passenger vehicles and trucks - FY2020 GSA Federal Fleet Report
16. Assumes lithium-ion battery technology
17. Assumes average battery capacity of 65kwh for passenger vehicles
18. https://www.brighttalk.com/webcast/17849/457021?utm_source=website_md
19. <https://seekingalpha.com/article/4416773-what-bidens-big-infrastructure-push-means-for-silver>