

SHIFT

AUTOMOTIVE PUBLICATION OF The Daily Star

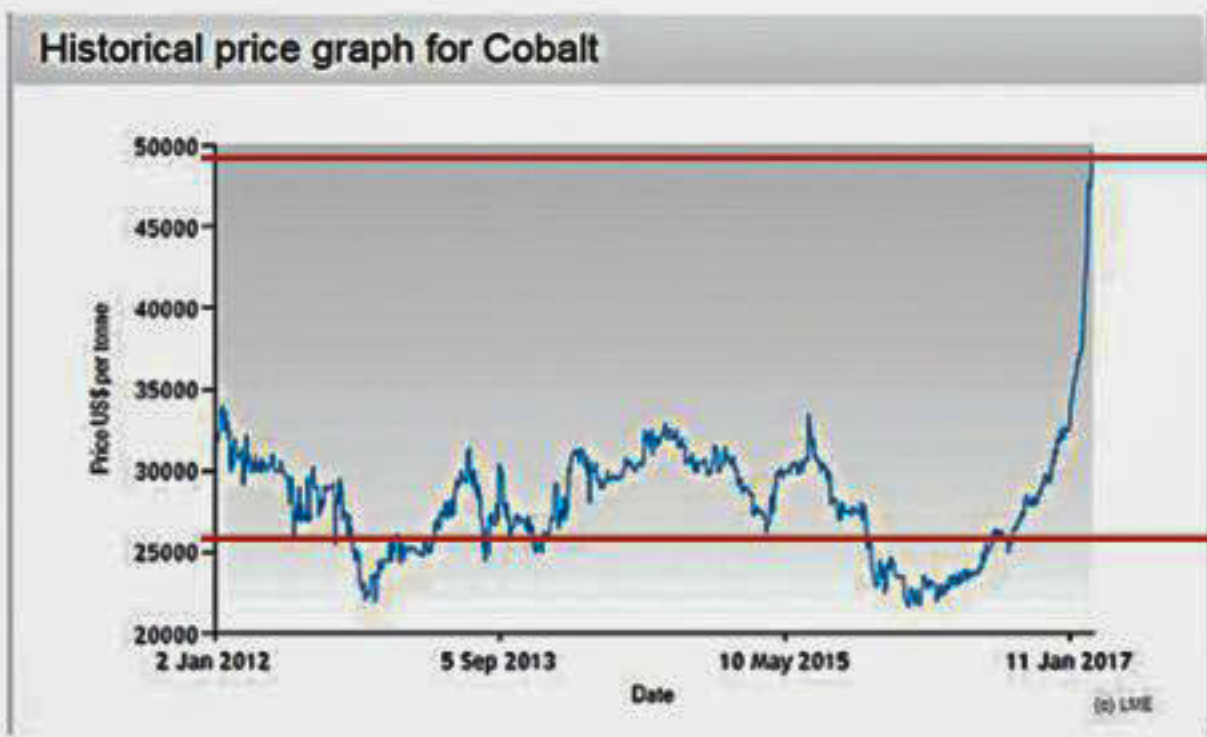
THE COBALT CHOKE FOR THE EV INDUSTRY



Cobalt
27
Co
58.933

INFOGRAPHIC: SHAER REAZ

Cobalt. A silvery blue metal that is obtained as a by-product of mining nickel, and a vital part of the world's demand for Lithium powered batteries. With Lithium-ion batteries powering everything from smartphones to electric cars, the world's collective demand for the metals used to make them (Cobalt, Manganese, Nickel) has exploded over the past few years. While world governments are pushing for complete bans on fossil fuel powered vehicles by 2040, the world's automakers are scrambling to make electricity their chief source of mobility. Small scale EV production has already popularised the idea of an electric future, but rising prices of cobalt seems all set to rain on the mass-produced EV parade. And that's without even mentioning the ethical concerns surrounding this suddenly precious metal...



Source: London Metal Exchange

JAN 2017 \$56,500
216% INCREASE IN 3 YEARS
JAN 2012 \$26,200



The Democratic Republic of the Congo has the largest Cobalt deposits in the world, with most of the world's supply of the metal coming from the country. The DRC is one of the world's most hostile places to live in, constantly affected by civil war, corruption and violence. The estimated \$24 trillion worth of untapped mineral reserves is a huge contributor to the conflict racking the nation, as each opposing side tries to take power and hand out mining contracts.

60% OF THE WORLD'S COBALT DEPOSITS ARE IN THE CONGO
100,000 ARTISANAL MINERS WORK DAILY IN THE DRC, EARNING \$2 PER DAY

CANADA: 6%
AUSTRALIA: 4%
PHILIPPINES: 4%

1 TOP COBALT DEPOSITS AFTER THE CONGO
THE MINING INDUSTRY IS THE CONGO'S LARGEST SOURCE OF EXPORT INCOME.

The rising price of Cobalt is a huge concern for any industry that relies on it in their supply chains, from the smartphone industry to the recent push for electric vehicles in the automotive industry.

The problem is that the biggest cobalt mines are located in the deeply corrupt nation of The Democratic Republic of the Congo, and are owned by a few handful of corporations which control the supply and raise prices as they see fit.

Companies like Glencore, which owns the largest mines through local companies like Katanga and Mutanda Mining, cannot match the increasing demand in supply since the majority of cobalt supply comes in the form of by-product in nickel and copper mining, with very little of it coming from pure cobalt mines.

There has been talk of finding replacements for cobalt - iron, which is a highly abundant metal, seems to be the favourite for replacing cobalt in rechargeable lithium-ion batteries, but like most materials in the tech and auto industry, it will take time and effort to make it a viable alternative.

What does this mean for the auto industry?

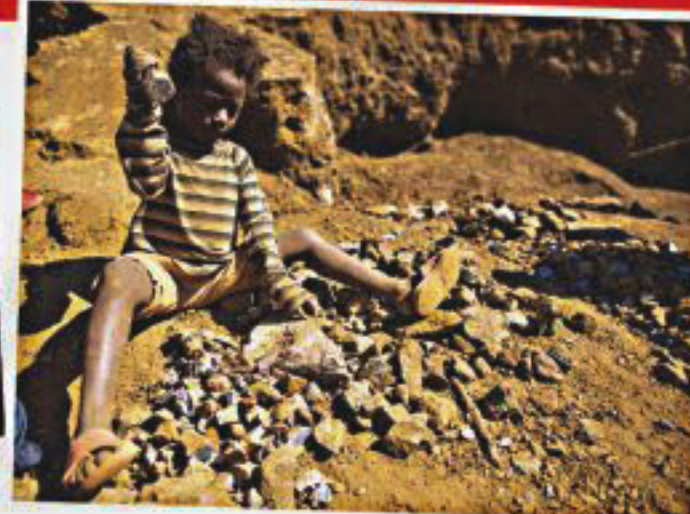
The biggest challenge is to find a viable alternative - it has to be cheap to source (see left), without any of the ethical issues (see right), and actually work.

For now, most manufacturers investing heavily in EVs are looking for ways to recycle batteries and reclaim scarce metals from them, and even though this seems like a sustainable way of ensuring used batteries aren't a huge concern, it won't be financially viable anytime soon.

Forward thinking brands like BMW are looking to limit their cobalt needs, expecting to use a battery composition of 80 percent nickel, 10 percent manganese and 10 percent cobalt, as opposed to the roughly equal amounts that are used today. This follows trends - palladium was in huge demand for catalytic converters in the early 2000s and saw a huge spike in demand; the metal is hardly used today.



The Congo is also notorious for "the Cobalt kids", with an est. 40,000 children, some as old as 7, working in the country's cobalt mines.



Amnesty International assessed global automotive manufacturers for their effort (or lack of it) in ensuring ethical standards are maintained when sourcing raw materials for battery production. The level of transparency in disclosing potential human rights violations in their supply chains was also taken into account.



Best practices in sourcing cobalt and in R&D into alternatives.



Worst practices in sourcing cobalt and in R&D into alternatives.



Shows promise in supply chain investigation but not transparent about it.

AUTO NEWS

Toyota's new LMP1 concept



Toyota kept the GR Super Sport under wraps at the Tokyo Auto Salon, with everyone initially speculating that it would finally be the new Toyota Supra. Spectators weren't too disappointed however, when it turned out to be their latest LMP1 concept car. Developed by Toyota GAZOO Racing, their official motorsport development unit and test bed for everything from rallying to road racing, the GR Super Sport incorporates Toyota's latest hybrid racing tech that powers the TS050 racecar in the World Endurance Championship. Under the sleek bodywork lies a lean burn 2.4 litre twin turbo V6 and Toyota Hybrid System Racing powertrain that puts out an astronomical 956 HP.

The GR Super Sport is practically a test bed with which Toyota plans to develop high performance components and technologies that will eventually find their way onto road-going vehicles. We're still waiting on the new Supra, though.



From the ShiftDS Facebook group



Shift fans on our official Facebook group were understandably divided over this widebody Lamborghini Miura, unveiled by Liberty Walk at the 2018 Tokyo Auto Salon and shared on the group by Zayan Khan.

Comments came from those who hated it...
Haseeb Chowdhury - "Who do I have to bomb for this?"
Srijon Biswas - "Ughhh."
To those who were in love with it...
ShoebSaleheen - "What's really pretty in this case is how the WB treatment complements the car's

natural curves- just goes with the flow."
Joshua Barokh - "It's beautiful. Just minus the camber."
To those who were clearly being sarcastic.
Usama Mustafa Zaman - "Cant wait to see a Liberty Walk (Ferrari) 250 GTO."
Come join the debate! Look up Shift DS on Facebook and join in on the fun.