



# COBALT SUPPLY CHAIN

Cobalt is a vital and expensive material needed for rechargeable lithium-ion batteries, generally found in heterogenite rock. It is estimated that 50-60% of the world's cobalt comes from the Democratic Republic of Congo (DRC). Cobalt is not currently categorized with other "conflict minerals" which have been linked to armed groups and violence in the region, but its supply chain is still fraught with labor abuses and exploitation.

## Cobalt and Technology

- Demand for lithium-ion batteries is expected to continue so the demand for cobalt will likely skyrocket.
- It is predicted that the demand will double by 2020, after having tripled the last five years.
- A smart phone battery may contain 5 to 10 grams of refined cobalt, while an electric-car battery uses 15,000 grams of refined cobalt.

## How is Cobalt Extracted?

- Cobalt is extracted by local diggers termed "artisanal miners" who are impoverished workers (both children and adults) largely working in the informal sector.
- They use mallets, chisels and head torches, usually without safety gear, to dig for the material by hand.
- Diggers are paid based on how much they collect, amounting to US \$2-3 on a good day.

## The Dangers of Artisanal Mining

- Artisanal miners risk their lives every day due to dangerous and exploitative working conditions.
- Miners frequently spend 12 hours a day underground.
- Many mines are built haphazardly, not following the limited safety regulations provided for construction.
- Ongoing exposure to cobalt without safety gear has numerous long-term health consequences and individuals who work in/around mines suffer from a variety of respiratory illnesses.
- Fatal accidents happen frequently and between September 2014 and December 2015, at least 80 miners died during underground accidents.
- In recent years, miners have died due to underground fires, landslides, and collapsed tunnels.

## The "Web" of Cobalt's Supply Chain

- Cobalt is obtained from multiple suppliers in a complicated web including six to eight steps, which may include the following: Mined in DRC → Sold to small shops → Refined in country (usually) → Battery cathodes → Battery producers → Sold to major companies
- There are two main stages: Upstream and Downstream
- Upstream - smelters and traders that purchase cobalt before it is processed
- Downstream - companies that buy cobalt after it is processed or sell products containing cobalt
- Major downstream companies include: BMW, Ford Motor, Apple, Microsoft, Tesla, LG, Samsung, Amazon.
- Companies do not have the same requirements as other minerals under DRC law or US law to track the source of the original extraction since cobalt is not a classified "conflict mineral."

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Amnesty International, *This is what we die for: Human rights abuses in the Democratic Republic of the Congo power the global trade in cobalt*, 2016.

Todd Frankel, Peter Whoriskey & Jorge Ribas, *The Cobalt Pipeline: Cobalt mining for lithium ion batteries has a high human cost*, 2016.