

PHILIPPE CHALMIN

Founder of Cercle Cyclope, Professor Emeritus at Paris-Dauphine University

Friedbert Pflüger, Director of the European Cluster for Climate, Energy and Resource Security (EUCERS) at the University of Boun, Founding Partner of Strategic Minds Company GmbH

The first speaker is Philippe Chalmin. Philippe is what you could call a walking encyclopedia on critical raw materials.

For 37 years, he has been publishing an annual report on the status of critical raw materials. Long before it became a political issue, a heated issue, he was an expert on these questions and I think there is hardly anybody else, at least not in Europe, who knows more about critical raw materials than Philippe, who was a professor at Paris-Dauphine and who is a great person. We are proud to have you. The floor is yours, Philippe.

Philippe Chalmin

Thank you very much. I would say, I do not think I am really an expert on critical raw materials. Christophe Poinssot is probably far better than me. In fact, Cyclope publishes a commodity yearbook, so we cover all kinds of commodities.

Sometimes, we might be wrong. Exactly one year ago, we were just in this place, or the hotel on the other side, and I told you that among the most bullish commodities we had in 2022 were what I called the electric materials, being lithium, nickel, graphite and some others.

One year later, November 2023, we have seen a complete reverse. Among all commodities, be it energy, agricultural, minerals, metals and the rest, the worst performance on world markets since 1923 has been lithium. Lithium has lost around 70% of its value, going from roughly USD 75 000 a ton to USD 25 000, more or less. It is still slightly more than it was in 1920.

Nickel, which was completely foolish in 2022, reaching at some time in the early Asian hours more than USD 100 000 per ton, nowadays is around USD 18 000.

Even graphite, and we have spoken a lot about graphite the last two weeks because of the quota set up by the Chinese government, but before that, the price of graphite had been declining this year by 30%.

The same thing for cobalt. Cobalt used to be somewhere between 50 cents and 80 cents per pound. Now, it is hardly between 17 cents and 18 cents, and it has even reached a low of 13 cents per pound some months ago.

In fact, the only one of all those metals which behaved a bit more positively was copper, although, last year, we were around USD 10 000 per ton. Now, we are hardly around USD 8 000.

Let us be frank. Be it electric metals, critical, strategic or just common, non-ferrous metals, all metals markets have been declining in this recent year.

Why is that the situation? Of course, we have seen in many derivatives markets a kind of end to the speculative exuberance. It must be stressed, the prices I gave you for lithium, for cobalt, are on some very opaque markets. Therefore, sometimes, you really have exuberant prices without links to reality.

Also, it must be stressed that, in many cases, anticipated demand, especially coming from the battery industry, has not yet materialized because, as you know, an industrial process is something which is quite long to put in place.

In fact, when I look at forecasts for 2024, what I see are mainly surpluses. The International Copper Study Group anticipates a surplus of 500 000 tons of copper out of world demand of around 25 million tons.

For cobalt, we know there are huge stocks in DRC, in Congo, and, for nickel, with the development of Indonesian production, we are more or less assured to have a market in surplus for the next three years.

What a contrast, what a paradox to what we hear on a long-term basis. On a long-term basis, we still see the same analysis that is reporting growing demand linked, of course, to green transition.

By 2030, that is more or less tomorrow or the day after tomorrow, copper and nickel demand should grow by 70%, cobalt by 150%, and even the demand for graphite and lithium should be multiplied by six or seven.

By 2030, we may have deficits of 10% to 15% of demand for copper or nickel, 30% or 45% for other metals. As you know, and you said it, governments have been, for all this year, frantically searching for mines and resources – be it in the US, be it in the EU – and still China remains, on many markets, the key.

China is using its power to put some export quotas – that is the great news of the year. We had export quotas this summer for germanium and gallium and, just a fortnight ago, for graphite. May I remind you that, for the moment, when you have a battery, its anode is graphite. China is producing around 70% of world graphite, be it natural or synthetic.

Of course, as I told you last year, in all the forecasts, we must take into account the fact that there is a factor which we cannot master, which is technological progress. You frankly do not know what there will be in batteries in 30 years' time, what kind of energy we will use, how we will manage to stock electricity, and the rest.

In fact, and I would like to use my remaining time getting away from the critical raw materials, as such, and tell you that, to my mind, the most critical of all raw materials – for the whole

century – the most difficult one will be copper. Copper, I would say, more than ever, because copper is the green metal par excellence. Today's demand, I told you, is around 25 million tons. By 2035, estimates range between 40 million and 50 million tons.

Let me explain. An average Westerner needs about 200 kilos to 250 kilos of copper. An average inhabitant of this world uses 60 kilos. Therefore, you have huge demand coming and, to meet that demand, you can, of course, go to recycling scrap, which has its limits.

Then, you can reuse mine waste with lower content and, of course, you have new mines. However, it takes 15 to 20 years, average 17 years, to develop a new mine – be it in copper or anything else – and the capital costs are huge.

Let me give you an example. Teck Resources, a Canadian company, has a big project in Chile, Quebrada Blanca 2. It should produce around 300 000 tons of copper per year. The projection of costs in 2019 was USD 5 billion. Now, it is USD 9 billion.

First Quantum, an American company, is active in Panama. The project of Panama copper is worth USD 11 billion. It is just now blocked by the Panamanian authorities and, just last week, First Quantum market cap lost USD 6 billion on the Toronto Stock Exchange.

In fact, many new projects are barred by political environmental concerns, and we have the same greens who are advocating the energy transition and who are blocking any kind of new mine.

We will speak probably of other metals – lithium, rare earths, etc. – but the true strategic metal of the 21st Century, and in fact the true strategic commodity of the 21st Century, I think is copper. It is a return to ancient times.

Recently, I was in the south of Spain, in Rio Tinto. Rio Tinto is probably the oldest functioning mine dating back to Roman times. At that time, copper was used with tin to make bronze and to manufacture spades and so on.

It was also the key mineral of the industrial revolution. I am pretty sure it will be exactly the same for the 21st Century. Economists will say copper used to be a good economic indicator when speaking of Doctor Copper. Well, I do think that Doctor Copper is back right now.

Friedbert Pflüger

Thank you so much for bringing us directly into the volatility of the prices on market speculation, which makes it even more difficult for politicians and administrations to really take the right decisions. I think that was a very good start.