

LOW CARBON TRANSITION

LATIN AMERICA AND GULF COOPERATION COUNCIL: DIFFERENT WAYS TO FACE THE LOW CARBON TRANSITION

Energy and mineral commodities are central to the low carbon transition process. Latin America, which boasts abundant amounts of minerals and key metals for the transition, and GCC¹ countries, which are dependent on revenue from hydrocarbons, are seemingly, on the face of it, taking contrasting paths on the transition journey. However, the macroeconomic consequences cannot easily be determined currently. Gulf countries have some advantages in the oil market, but the pace of the transition could affect revenues more quickly than expected. In Latin America, while the size of critical minerals reserves is brightening the outlook, various national strategies and numerous constraints could curb the scale. Beyond possible short-term growth gains, the shared objective of all of these countries would be to move away completely from relying on commodities and to move up value chains.

LOW CARBON TRANSITION AND COMMODITIES

The core component to combatting climate change is the low carbon transition, which should enable countries to shift from a fossil fuel economy (relying on coal, oil and gas) to an economy that emits as little greenhouse gas (GHG) as possible, thereby reducing fossil energy consumption as much as possible.

The consequences of this process will vary significantly from country to country, depending on whether the country is among the economies which emits the highest amounts of GHG emissions (dependent on fossil energy production or production sectors with high GHG emitters, heavy industry in particular), or is among the economies with assets which will help to make the transition a reality (high-demand minerals and high renewable-energy potential). As a matter of fact, the faster pace of the transition is inextricably linked to increased demand for specific minerals and metals required for the electrification of uses (copper and lithium, for example) and some key technologies for the transition, such as renewable energy production, being implemented.

HYDROCARBONS: AN UNCERTAIN OUTLOOK

Irrespective of the scenario envisaged, the low carbon transition will negatively affect the medium- and long-term fossil-energy demand. According to International Energy Agency (IEA) STEPS² scenario (the most conservative about the pace of the transition), global fossil-fuel demand could fall structurally from 2030, sharply for coal, and more slowly for oil and gas. The start of the decline in oil demand is due in particular to the electrification of road transport (45% of global oil demand), furthered by increased sales of electric vehicles (EVs) (+35% in 2023 worldwide) in developed countries and China (60% of global sales of electric vehicles in 2023).

However, the slowdown in oil demand is expected to be very gradual. Over the past 50 years, the relative proportion of hydrocarbons within total energy consumption has decreased from 80% to 77%, despite more than doubling in volume terms. This proportion is expected to continue falling over the next few decades, but the first step in the transition is likely to be a long-term accumulation of hydrocarbons and renewable energy.

MAIN MINERAL COMMODITIES AND GHG EMISSIONS PER ZONE

	reserves		GHG emission/hab (teq CO ²)
	Copper	Lithium	
Latin America	63	54	8
	Crude oil		
Gulf Cooperation Council	30		28

TABLE 1

SOURCE: US GEOLOGICAL SURVEY, OIL STATISTICAL REVIEW OF WORLD ENERGY, OUR WORLD DATA

PRIMARY ENERGY CONSUMPTION PER SOURCE

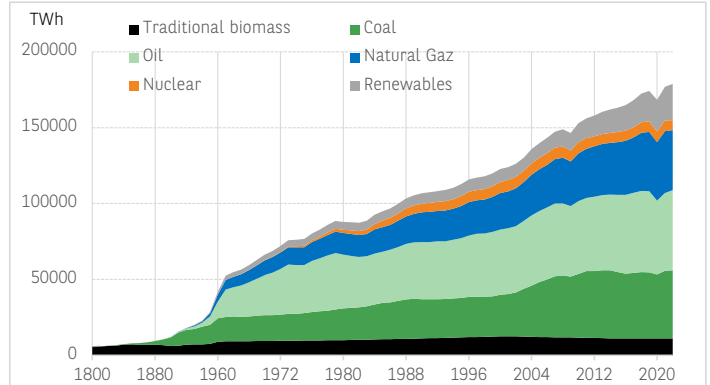


CHART 1

SOURCE: ENERGY INSTITUTE

In addition, the low carbon transition involves significant technological changes (new energy production infrastructure, carbon capture facilities, and hydrogen production), which could generate a “rebound effect” in global energy demand and potentially in the global hydrocarbon demand as a result.

¹ GCC: Gulf Cooperation Council, which includes Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates.
² Stated Policies Scenario, i.e., a continuation of the current transition policies.

Beyond this basic trend, the consequences of the transition on the oil-market balance and therefore on prices remain uncertain. The pace of the transition is a key factor, which is still very difficult to anticipate, as it depends on many factors, such as changes in consumption habits, the introduction of regulations, large-scale carbon taxation and technological advances. Some alternative scenarios anticipate an accelerated drop in oil demand and prices over a relatively short timeframe of around two decades. According to estimates by Boer et al.³, the oil price outlook for 2050 varies greatly (ranging from USD 15/barrel to USD 300/barrel), depending on whether the transition is primarily driven by demand (the electrification of transport is stepped up, for example) or by supply (regulations restricting production, for example).

STRONG INCREASE IN DEMAND FOR CRITICAL MINERALS

Conversely, the demand for minerals and metals is expected to rise substantially with the transition. According to the IEA's medium scenario (APS)⁴, demand for critical minerals⁵ is expected to double by 2030. In 2023, around 30% of the demand for these materials was linked to the low carbon transition (renewable energy production, batteries, EVs, electricity grid and hydrogen), and this proportion could double by 2040. In particular, this presupposes that demand for nickel and cobalt will double compared to 2023 and that demand for lithium will increase ninefold. For copper, a key material in the electrification process, global demand could increase 1.5 times by 2040. Furthermore, if we refer to the scenario arising from the Paris Agreements⁶, which is optimistic but increasingly unlikely, demand for the various materials would increase twentyfold on average by 2040 too.

LATIN AMERICA: EVIDENT STRENGTHS, BUT NOT WITHOUT A NUMBER OF CONSTRAINTS

The critical minerals demand outlook suggests that there will be significant growth opportunities for a number of Latin American countries. More than 60% of the total lithium resources are located in the region, including 56% in three countries, Argentina, Bolivia and Chile (known as "the Lithium Triangle"). 21% of the world's copper reserves are located in Chile, while Peru and Mexico have 15% of them. Latin American countries are expected to maintain a major market share in critical minerals mining by 2030 (USD 120 billion out of a total of around USD 500 billion, according to the IEA APS scenario).

However, Latin American countries dominating the global critical minerals market in the coming decades seems unrealistic, not least because of hugely contrasting mining strategies across the region.

Lithium is a good example of this. In Bolivia, this metal has been a national issue for a number of decades. Resources are nationalised, foreign investments are very limited and regulated, and development projects have been met with resistance from local populations.

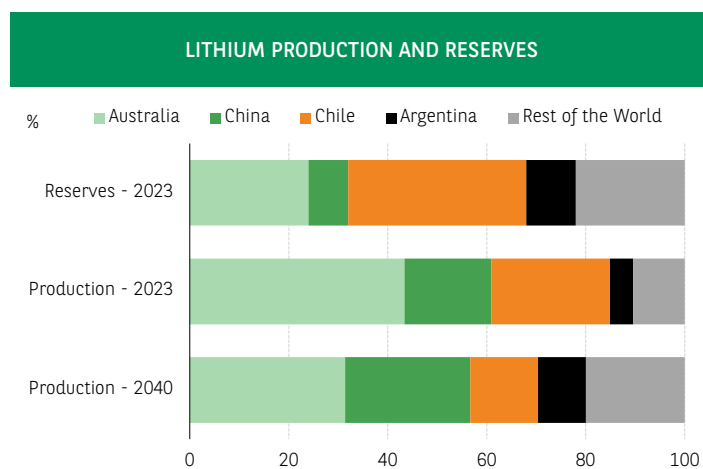


CHART 2

SOURCE: INTERNATIONAL ENERGY AGENCY

The national strategies are different again in Chile and Argentina, with mining only undertaken by private companies in Argentina, while the situation is more "hybrid" in Chile (a national public company, an American company and a Chinese company share mining operations).

The legal environments and hugely contrasting national strategies are already having an effect: while Bolivia has the greatest resources, extraction and production are very underdeveloped and its outlook is not particularly positive.

From a technical standpoint, lithium extraction is also time-consuming and complex, and must be adapted to each extraction site. The available infrastructure (access to energy and water resources) must also be taken into account. Unlike oil, lithium supply cannot be adjusted easily or over a short period of time.

And lastly, technology is evolving rapidly (lithium-free batteries could be manufactured on a large scale in a relatively short time) and recycling techniques are improving, which could further limit prospects for producer countries. The proportion of recycled materials in the total demand could hit an average of 15% in 2040, compared to its current level of less than 5% (around 10% for copper).

In addition, Latin American countries must take into account the growing number of projects in other countries. Even though their outlook is favourable, the proportion of these countries could decrease in the coming years.

GULF COUNTRIES: A FAVOURABLE POSITION THAT SHOULD BE PUT INTO PERSPECTIVE

Gulf countries dominate the global oil market, accounting for a quarter of the world's oil production and a third of the world's reserves.

³ Boer L., Pescatori A., Stuemer M., 2023, "Not All Energy Transitions Are Alike: Disentangling the Effects of Demand and Supply-Side Policies on Future Oil Prices", WP/23/160, IMF.

⁴ Announced Pledges Scenario in which the climate targets set by the various governments are achieved.

⁵ The availability of a specific category of minerals is made critical by the transition. The criticality of minerals is based on the level of the risks relating to their production, their use and their end of life management. Other factors to consider include demand in a large number of industrial sectors, limited short-term substitutability, geographical concentration of reserves and production, and high valuation. Copper fulfils all of these criteria; the main lithium reserves are concentrated in a limited number of countries, while the cobalt reserves are almost exclusively concentrated in the Democratic Republic of the Congo, a country which is experiencing a range of political tensions. Nickel, graphite and rare earths can also be added to this list.

⁶ This means limiting global warming to 2°C compared to the pre-industrial era.

They are the core members of the OPEC cartel and some of the only members with some flexibility in their production that could influence the market.

Gulf economies are shaped by oil revenues, which account for around 2/3 of their total exports and more than half of fiscal revenue. These countries currently have relatively low debt and have substantial sovereign funds, but their economic situation could deteriorate rapidly if there was a sustained fall in oil revenues. The fiscal breakeven oil price is currently relatively high and is averaging at USD 75/b, with prices above USD 100/b for Saudi Arabia, for example.

The low cost of oil extraction is the main factor that could enable Gulf countries to enjoy oil revenues for longer than other producing countries. However, this aspect should be put into perspective, given, firstly, the need for a relatively high price in order to preserve the sustainability of public finances, and, secondly, the recent developments in the oil market. As a matter of fact, the difference in extraction costs between the Gulf and other producers is getting smaller. The growth of shale oil in the United States (currently the world’s largest producer) has come alongside significant advances in extraction techniques that have reduced the cost of production in this region. Against this backdrop, there are no guarantees that Gulf countries will be able to hold up any better than other major producers should there be a sharp drop in demand and/or prices.

THE NEED TO BREAK RELIANCE ON COMMODITIES

Despite, at first glance, contrasting situations, Gulf countries and Latin American countries are wrangling with the same challenge: breaking their reliance on commodities. For Gulf countries, the expected fall in revenue is only a matter of time, while for Latin American countries, the potential benefits of the dynamic minerals market will depend on a significant number of constraints.

According to revenue indicators calculated by the World Bank, these two groups of countries have a far greater reliance on commodities than the global average or than middle-income countries. More broadly, although it is a potentially major revenue source, reliance on commodities is negatively affecting the economic development of producing countries. It is a source of macroeconomic instability linked to price volatility (with the exception of copper, prices of critical minerals fell in 2023 after three years of continued rises), and may slow the development of other exporting sectors by increasing the appreciation in the exchange rate (what is known as “Dutch disease”). Lastly, reliance on commodity-linked fiscal revenues can pose economic governance problems.

In order to break this reliance on commodities, the priority is to diversify production, especially export production, by moving up value chains in order to bolster long-term growth.

In the GCC, progress is being made on diversifying the economy, but there is still some way to go with diversifying exports. In the United Arab Emirates, services account for a major proportion of GDP (standing at around 50% of the total, dominated in particular by the tourism, real estate and transport sectors), while in Saudi Arabia, energy-intensive industrial activities, for example, petrochemicals and, more recently, services, have increased their share within the composition of GDP.

COMMODITIES AND RENTS

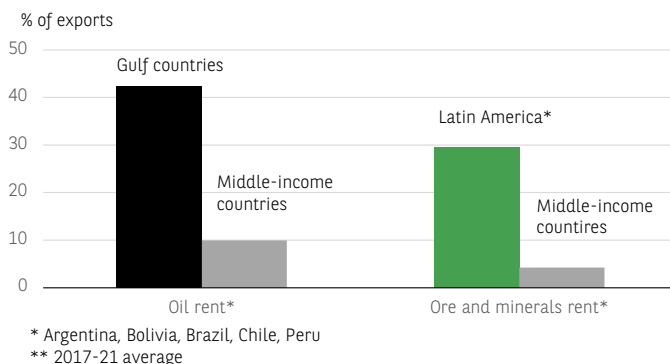


CHART 3

SOURCE: WORLD BANK

However, the composition of exports has changed relatively little over the past twenty years; hydrocarbons continue to dominate and only very energy-intensive industrial sectors have increased.

In sectors linked to the low carbon transition, GCC countries have major ambitions in the mining sector (Saudi Arabia) or hydrogen production (all countries), but also in producing batteries and electric vehicles. In addition, Aramco and ADNOC, the two national oil companies of Saudi Arabia and the United Arab Emirates, are considering extracting lithium from oilfield brine, but have not specified any production targets, as the technology being used is still unproven. There is still major uncertainty as to whether these sectors will be able to generate enough revenue and supplement declining oil revenue. As a matter of fact, in these markets linked to the low carbon transition, Gulf countries will face very strong international competition, and will therefore not have the capacity to lead the market as they have been able to do on the hydrocarbon market.

For the time being, in short, the lithium value chain is split into two parts: firstly, countries which extract and produce commodities (which, therefore, include Argentina and Chile) and, secondly, countries which produce electrodes, components and the battery itself, which are currently mainly located in Asia. China has a special position in the entire value chain and leads the way in the critical-minerals refining and processing segments. It does not occupy quite such a dominant position in the extraction segment, with its extraction operations relating mainly to graphite and rare earth. China’s investments (at home or abroad) in the mining sector are also growing significantly, and hit a ten-year high in 2023. This is the case not only for lithium, but also for nickel and cobalt.

For Latin American countries, the challenge is to move up the value chains and implement appropriate policies, such as funding the necessary infrastructure and building know-how. In addition, the development of a lithium-ion battery industry is inextricably linked to the prospect of a large-scale electromobility industry in a neighbouring geographical area being developed.

Hélène Drouot helene.drouot@bnpparibas.com Pascal Devaux pascal.devaux@bnpparibas.com