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## Commodities and Responsible Investing: An Impossible Marriage?

After the energy and food shocks, inflation and correlated losses in equity and bond markets that characterized 2022, many investors appear to be newly appreciative of the diversifying, inflation-hedging properties of commodities. But they are also increasingly focused on the investment risks and opportunities associated with creating a more sustainable economy, and some question portfolio exposure to the business of extracting ever more raw materials from the earth.

But what exactly does “exposure” mean? Is it more responsible to participate in some commodity markets rather than others? Are some commodity investment strategies more responsible than others? And can investors actively influence the development of more responsible commodity markets?

In this paper, we do not try to make the case that commodity futures investing can have an unambiguously positive environmental and social impact. We do challenge the prevailing notion of its negative impact, however, and describe a holistic framework for commodities investing within a multi-asset portfolio that we believe addresses investor concerns.

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## COMMODITY MARKETS CAN BE IMPROVED, BUT ALSO USED TO SEND PRICE SIGNALS TO A TRANSITIONING ECONOMY

	NEW MARKETS					TRADITIONAL MARKETS			
<b>OPPORTUNITY</b>	Carbon price discovery		General acceleration of the transition to a more sustainable economy				Improve futures market governance		
<b>TOOL</b>	Carbon offset markets	Carbon compliance markets	Battery metal futures	Biofuel futures	Scrap metal futures	Futures on certified responsibly produced & traceable commodities	Exchange engagement	Responsible counterparty selection	
<b>IMPACT</b>	Improve liquidity, improve efficiency of price discovery					Improve liquidity, price discovery in futures and improve social and environmental impact of physical production		Improved governance, more support for the development of new markets	
<b>COST</b>	Recurring costs	Illiquidity due to lack of market familiarity				Illiquidity due to non-fungibility and lack of market familiarity		Negligible	

Source: Neuberger Berman. For illustrative purposes only.

### Neuberger Berman's Responsible Commodity Investment Action Plan

- **Employ an inclusionary process** to bring fair-value assessments to as many commodities as possible, while avoiding those, such as diamonds, tobacco and palm oil, with direct links to social and/or environmental harm: this can aid the efficient allocation of scarce resources and help the progress of the low-carbon transition.
- **Avoid physical delivery, physically backed investment vehicles and holding physical inventory** so as not to hoard commodities away from productive use.
- **Favor value-oriented, liquidity-providing and price-stabilizing trading strategies** over momentum, trend-following, liquidity-taking strategies that risk excessive market impact and system-wide volatility.
- **Avoid excessive concentration** by employing liquidity filters in smaller markets or at particular points in futures curves, to prevent causing excessive volatility or misleading commercial hedgers: our team generally prefers to own no more than 10% of the open interest in any contract.
- **Engage with exchanges** and other market participants to initiate new contracts for green-sourced, inventory-traceable commodities, and be willing to aid in price discovery for them.
- **Recognize contracts on carbon markets** as an important addition to the traditional commodity futures universe.
- **Focus on responsible commodity investing holistically** across the entire portfolio, including engagement with corporate commodity producers and consumers, and considering how to invest derivative collateral portfolios in a way that is consistent with the strategy's broader sustainability goals.


When people discuss responsible investing, they generally focus on the capital assets that they own: corporate equity and debt.

This might explain why investors and regulators give commodities little thought when it comes to responsibility. Investors generally don't own raw materials directly: if they own grain silos or metals warehouses or barrels of oil it will be indirectly, in the form of the securities of corporate entities that own these assets. They therefore focus on encouraging responsible use of raw materials by the corporations whose securities they own.


And yet many investors would say that they have commodities in their portfolios—perhaps via commodity futures, a commodity index product or a hedge fund managed by a “commodity trading advisor.”

Over the past year, in particular, they have been reminded of how commodities can be a diversifying, positive exposure to inflation, especially unexpected inflation that causes wider economic damage. The supply-chain disruptions of the COVID-19 pandemic and the war in Ukraine, and a general rise in geopolitical tensions, has led to greater focus on security of supply of critical raw materials worldwide. And the list of critical materials is lengthening, as there is growing recognition of the commodity-intensive infrastructure required for the transition to a lower-emissions economy, evident in the U.S. Inflation Reduction Act, as well as the European Union's proposed Net-Zero Industry Act and Critical Raw Materials Act. All of this has led to expectations for structurally higher commodity prices over the coming cycles.


**FIGURE 1. COMMODITIES, ESPECIALLY METALS, ARE CRITICAL TO THE LOW-CARBON TRANSITION**

Hardware & Infrastructure 		
<b>Solar Panels</b>	Silver	Solar Panels already account for 8% of silver demand  Solar panels and wind farms consume large amounts of metal
<b>Wind Turbines</b>	Steel Silicon Copper	EV bodies require more lightweight aluminum to counter heavy onboard batteries
<b>EV Body Parts</b>	Aluminum	


  

Energy Production & Distribution 		
<b>Wiring</b>	Aluminum Copper Silver	Copper, aluminum and silver are used as conductors in wiring circuitry
<b>Power Grids</b>	Gold Aluminum Copper Silver	Gold is used for non-corroding electrical contacts in critical and precision equipment
<b>Nuclear Fuel</b>	Steel Uranium	Nuclear fuel is widely considered a more sustainable power source than carbon-emitting fuels

Energy Storage 		
<b>Super-capacitors</b>	Aluminum Iron Copper Manganese Graphene Vanadium	Energy storage capacity is critical for EVs, and for increasing power generation from renewable but intermittent sources such as wind and solar
<b>Vanadium Redox Flow Batteries</b>	Aluminum Iron Copper Manganese Graphene Vanadium	Graphite Nickel Cobalt Lithium
<b>Lithium-ion Batteries</b>	Graphite Nickel Cobalt Lithium	

Electric Motors 		
<b>Brushless DC</b>	Dysprosium Praseodymium	Wind turbines and increasingly EV motors use permanent magnets that use large amounts of rare earth metals
<b>Permanent Magnet</b>	Dysprosium Praseodymium Neodymium Steel Aluminum	The alternative, AC induction motors, use large amounts of copper
<b>AC Induction</b>	Steel Aluminum Copper	

Source: Cambridge House, Visual Capitalist, Neuberger Berman.

As investors become more interested in commodities, how might they think about their role as a responsible participant in these markets? We believe there are two questions packed into this. What is the nature of the exposure to the underlying commodity and its environmental and social footprint? And what is the environmental, social and economic impact of participating in commodity markets?

## Do Commodity Futures Have An Environmental Footprint?

### *The "Legal Fiction": A Future Ownership Claim on a Physical Commodity*

As we mentioned above, when investors say they hold commodities, they generally mean futures contracts that confer ownership of a commodity (or the cash value of the commodity represented by the contract) on a specific date in the future.<sup>1</sup> What exactly does the value of that contract represent?

In legal terms, if a contract settles with physical delivery rather than cash, the investor has an ownership interest in the underlying commodity beginning on the contract's delivery date. Therefore, the value of the contract represents the market's estimated value of the commodity on the delivery date, discounted to the present.

<sup>1</sup> These are usually futures, forwards or swaps on futures. For the sake of brevity, we will refer generically to "futures" through this paper.

If you have a future ownership interest in a barrel of oil or a silo of grain or a consignment of aluminum, don't you also have a future ownership interest in its carbon footprint or the social and environmental impact of its extraction and use?

*The Economic Reality: A Financial Exposure to a Notional Commodity*

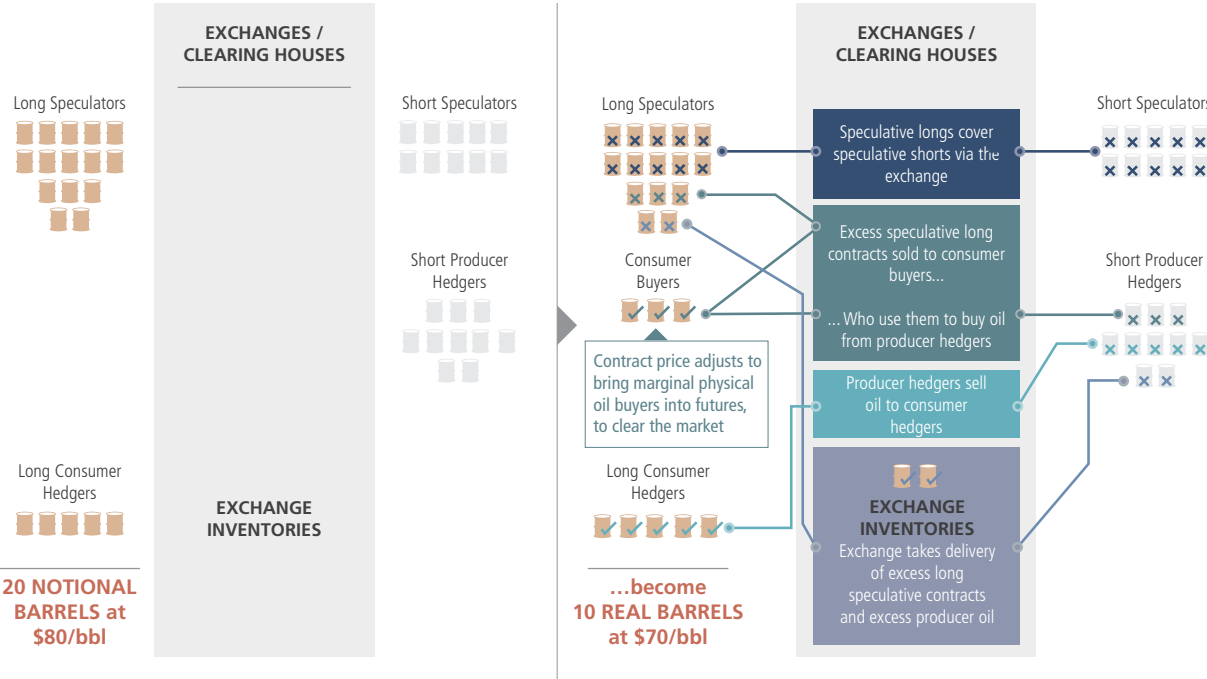
In practical terms, this simply cannot be the case. There are many more notional barrels of oil represented in the futures markets than there are real barrels of oil available for delivery at any given time. It is not possible for several investors to have a future ownership claim on the same barrel of oil on the same day.

In reality, only a tiny percentage of futures contracts end with delivery of a physical commodity. Market participants holding speculative positions "cover" those positions before the delivery date. Those holding long positions simply sell their contracts, via brokers and dealers, to a futures exchange; those holding short positions instruct their brokers to buy covering contracts. The contracts the exchange receives from those with long positions cover the short positions, and on the delivery date, those notional barrels of oil essentially cease to exist. The price at which the exchange transacts is the price required to clear any excess investment positions—by attracting marginal demand from those prepared to make or take physical delivery—so that no one ends up taking delivery of a commodity they do not want or having to deliver a commodity they do not have.

Figure 1 shows a simplified version of this clearing process in the typical situation where there are excess speculative longs, and the price consequently has to adjust downwards to attract marginal buyers of physical oil. Were there excess speculative shorts, the price would have to adjust upwards to attract marginal sellers of physical oil. Either way, 20 notional barrels of oil in the futures market reduces to 10 real barrels of oil on delivery day. In the actual oil markets, speculative activity is far more dominant than this: over recent years, the annual trading volume in futures markets has been 25 to 30 times the volume of demand for real barrels of oil, according to data from Bloomberg and the International Energy Agency.

**FIGURE 1. NOTIONAL BARRELS DISAPPEAR AS THE MARKET CLEARS LEADING UP TO DELIVERY DAY**

A simplified model of the commodities market showing excess long speculative positions in futures



Source: Neuberger Berman. For illustrative purposes only.

Economically, therefore, a commodity futures investor does not hold a future ownership interest in the underlying commodity. They own a purely *financial exposure* to the estimated discounted present value of the underlying commodity, minus the cost of the option to cover their position before delivery day.

Where there is no future ownership of the commodity, there can be no future ownership of its carbon footprint or the social and environmental impact of its extraction and use. In our view, if delivery is not possible or intended, there is no responsible investment reason not to hold futures on any underlying commodity. (That said, we do believe there is a case for excluding certain “controversial” commodities from portfolios because they are subject to risks or uncertainties, such as trade being prohibited or severely constrained by one or more major jurisdictions, that are simply too great to manage. Here, exclusion would cover both the physical commodities and their futures markets. Examples might include rubber, tobacco or diamonds.)

The same reasoning suggests that responsible investors should avoid investment strategies and products that are backed by physical commodities rather than rolling futures exposures. Hoarding critical raw materials for their speculative value is not, in our view, the environmentally, socially or economically optimal way to use them.

While we do not believe that owning a futures contract is the same thing as actually owning the underlying commodity, it does entail owning collateral to back the contract. Futures do not require cash collateral, and therefore many investors instead hold government bonds as collateral to earn yield. At the moment, the market in labelled (Green, Social, Blue, Sustainable, SDG, Transition and Sustainable-linked) bonds is too small to play a meaningful role in these collateral portfolios: we believe responsible derivative investors could engage with government, corporate and agency issuers to develop that market.<sup>2</sup>

## **Is There a Responsible Way to Speculate on Commodities?**

### *Commodity Futures Speculation Can Add Liquidity, Aid Price Discovery and Reduce Economic Risk*

Commodity futures, in various forms, have been used to solve risk-management problems for centuries.

Contracting to buy a producer’s output on a specific future date helps both the producer and the consumer to plan ahead and make investments. Meanwhile, speculating in these markets, if it is founded on estimates of fair value, can add liquidity and aid in price discovery. That combination of contracted future supply and demand with future price discovery can give producers and consumers still greater confidence in planning and investment, as well as the ability to hedge their risks in a cost-effective manner. The resulting reduction of revenue volatility can help to lower financing costs and bankruptcy rates, which has wider economic benefits such as adding stability to labor markets and preventing sudden supply shortages in critical raw materials.

Mature, liquid, price-discovering futures markets help us to manage risks and uncertainties in the economy.

### *Value Investing Versus Momentum Investing*

That said, not all participants in commodity futures markets facilitate price discovery.

Broadly speaking, two dominant trading styles are applied in commodity futures: value investing and momentum investing or “trend following.”

Value investors focus on price fluctuations around estimated fair value, taking long positions when the price moves below fair value and short positions when it moves above fair value.<sup>3</sup> Because these investors are focused on estimating fair value, their participation in the market is more likely to facilitate fundamental price discovery. In addition, because they invest against short-term price trends, they provide marginal liquidity to the futures market.

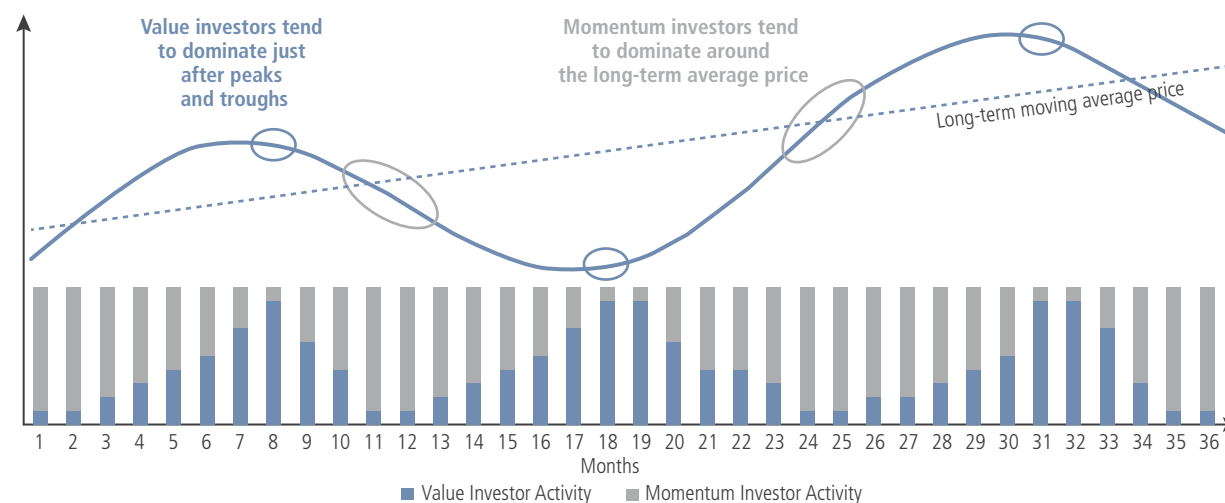
<sup>2</sup> Labelled bonds can be useful to highlight an issuers’ sustainability credentials and we welcome any additional disclosure and reporting which is provided as part of the labelled bond issuance. It is important that any disclosure provided relates back to the issuer’s wider sustainability policies and ambitions rather than referring solely to peripheral sustainability activities that are not core to its operations. As such, we would always advocate for considering sustainability at the issuer level rather than the instrument level.

<sup>3</sup> We believe that value investing, founded on estimates of fair value, is the most responsible way to speculate in commodity futures. For simplicity, throughout this paper we will refer to investors being “long” or “short,” but responsible value investors can be long/short or long-only, in our view. When long-only investors are overweight or underweight relative to their neutral allocation, they buy or sell contracts in opposition to trends away from fair value, thereby adding liquidity to the market and aiding price discovery.

Momentum investors seek to identify price trends, adding to their positions while those trends strengthen before easing out of them as they reverse. Because momentum investors focus on identifying trends rather than estimating fair value, their participation in the market does not facilitate fundamental price discovery. In addition, by leaning into price trends and generating “self-excited” market dynamics, they act as liquidity takers.

**FIGURE 2. MOMENTUM AND VALUE INVESTORS THROUGH THE PRICE CYCLE**

A simplified model of market participation through a price cycle



Source: Neuberger Berman. For illustrative purposes only.

#### *Potential Impacts on Production and Consumption: The 2007 – 8 and 2011 Food Crises*

In 2007 – 8 and again in 2011, global grain shortages led to spikes in the spot and futures prices of critical food markets. The war in Ukraine led to a broad spike in many commodity prices during 2022. Climate change and rising geopolitical tensions look likely to increase the frequency of these events.

When they occur, many investors question the responsibility of speculating in commodity futures markets. Some draw a direct link between speculators and rising costs for consumers. Others argue that speculators—even momentum investors—perform a positive function by pushing up futures prices and thereby incentivizing the production of the commodities that are in shortage.

We take the middle view. Multiple studies have looked into the impact of futures trading during commodity price spikes, and most conclude that variations in the spot prices that consumers pay are driven by fundamental supply and demand of physical commodities.<sup>4</sup> But that’s not to say the futures market has no impact at all—as we have described, it has always existed, at least in part, to facilitate and direct producer and consumer behavior.

In a well-functioning market, the futures price of a market in shortage ought to rise to reflect the higher fair value required to incentivize production. But what if it substantially overshoots fair value? That might incentivize a short-term spike in production of a specific commodity in shortage, but it ultimately risks creating additional distortions in the wider underlying market. For example, if a shortage of soybeans today causes its future price to spike well above fair value, and farmers respond by giving over too much acreage to soybeans, it could lead to a shortage of corn tomorrow.

<sup>4</sup> For example, see John Baffes and Alan Dennis, World Bank Policy Research Working Paper 6455, “Long-Term Drivers of Food Prices” (May 2013), at <https://documents1.worldbank.org/curated/ar/832971468150565490/pdf/WPS6455.pdf>; Technical Committee of the International Organization of Securities Commissions (IOSCO), Task Force on Commodity Futures Markets Final Report (March 2009) at <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD285.pdf>.

We therefore believe responsible commodity futures investors should favor trading styles that are biased to value investing and liquidity provision, anchored by a view on fair value that incentivizes production but not over-production. Some asset managers specialize in value or momentum, but many offer strategies that combine different styles for their diversification benefits.

## Is It Responsible to Participate in Some Markets But Not Others?

### *There Is a Responsible Fair Value For All Commodities—Not Just “Sustainable” Commodities*

Sometimes these price discovery and risk-management functions of futures markets are characterized as “greasing the wheels” of production, or incentivizing greater production of the underlying commodity. Does it follow that responsible participants should focus on “more sustainable” commodities (such as the metals that are critical for the low-carbon transition), and stay away from “less sustainable” ones (such as fossil fuels)?

We don’t believe so, because we think it is more accurate to say that futures market pricing helps producers and consumers make capital investments *that are appropriate for the implied commodity price environment*. This is an important distinction.

Imagine an investor who believes that governments, corporations and consumers will act to transition the economy to net-zero emissions by 2050, and that this will require a move away from fossil fuels to renewable energy sources and electrification, supported by more use of natural gas over oil in the interim. This belief would imply a long-term fair value for gas that is high enough to finance the capital investments required for gas to compete against oil, but low enough to remain cost-effective against oil; a fair value for oil that is at a spread above the fair value of gas; and a fair value for copper that is high enough to reflect future demand from electrification and incentivize marginal, higher-cost production. The investor’s positioning would fluctuate with economic, pricing and capex cycles, but it would tend to be long or short each commodity depending on how the current market price relates to its estimate of long-term fair value under this transition scenario.

Note that, for a responsible value investor with a long-term horizon, fair value for all commodities will be the estimated value required to incentivize the appropriate mix of production for each period of an economically viable transition to a sustainable economy.

In short, if an investor believes that a transition to a more sustainable economy is an economically optimal outcome, and that governments, corporations and consumers will favor some commodities and curtail the use of others, it must also believe that efficient price discovery in *all commodity markets* will help accelerate the journey to sustainability. It is an important way to signal that, for example, powering the economy with fossil fuels will ultimately be more expensive than powering it with renewables-generated electricity. It will help us plan the transition to net-zero emissions with realistic economic assumptions. The sooner we get these price signals, the sooner commodity producers and consumers can steer their investment plans in accordance with them.

### *Investing Holistically: Combining Commodity Investment With Corporate Engagement*

At Neuberger Berman, we believe in approaching this investment challenge holistically. A by-product of our value-oriented approach is participating in price discovery in commodity futures markets, which plays one part in investing for a transitioning economy. In our view, it is equally critical to engage with commodity producing and consuming companies, via capital ownership, to improve disclosure on how they are exposed to the transition and begin to align their business models with it.

In the futures market, a responsible investor is focused purely on fair value for raw materials in the context of the transition to a more sustainable economy. Counterintuitively, therefore, it may simultaneously be long oil because it is not priced for its *negative* externalities (with an eye on a fair value that *discourages consumption*), and also long copper because it is not priced for its *positive* externalities (with an eye on a fair value that *encourages production*). The full expression of this view on fair value would be accompanied by engagement with corporate consumers of oil to encourage alternatives, and corporate producers of copper to invest in more extractive capacity. Conversely, a responsible investor pursuing positive engagement like these via their equity and bond holdings would not want to undermine them with a momentum-biased approach to commodity futures that might send conflicting price signals to those corporations.

<sup>2</sup> For example, see John Baffes and Alan Dennis, World Bank Policy Research Working Paper 6455, “Long-Term Drivers of Food Prices” (May 2013), at <https://documents1.worldbank.org/curated/ar/832971468150565490/pdf/WPS6455.pdf>; Technical Committee of the International Organization of Securities Commissions (IOSCO), Task Force on Commodity Futures Markets Final Report (March 2009) at <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD285.pdf>.



A lot can be achieved by coordinating all the tools available, whether this is voting through equity, introducing sustainability-linked bond covenants, or engaging with sovereigns on issues such as labor practices in the mining sector. In our view, investors that are fully engaged with commodity futures markets, taking an informed view on the future fair value of these critical raw materials and deploying speculative capital in accordance with those views, can engage more effectively on these issues.

## **Is There a Role for Engagement in Commodity Futures Markets?**

### *New Sustainable Commodity Futures Markets In Need of Liquidity*

We have described why we believe it is mistaken and counterproductive to favor one commodity over another purely on responsibility grounds. Instead, we believe investors should favor commodities where the need for liquidity is greatest—which generally overlaps with where prices are furthest from fair value. It follows that we believe there are some futures markets that investors should favor systematically: those where liquidity is very scarce and price discovery is consequently very inefficient.

As it happens, many of these markets are in new derivatives that are expected to support the transition to a sustainable economy. Some are contracts for already widely traded commodities, such as steel, iron ore, platinum, palladium, sustainable palm oil and bean oil, that come with additional certifications of responsible sourcing and full traceability through exchange inventories. Some are contracts for commodities that have substantial new importance and demand in the transition, such as lithium hydroxide (a critical input for the battery sector), scrap metal, (which promotes re-use and recycling), or bioenergy (a key replacement for fossil fuels). Others have a very specific role in transition-risk management, such as carbon-emissions and carbon-credit futures.

## Carbon Markets: A Short Guide

Carbon markets can be split into two broad groups:

### *Carbon compliance markets*

In these markets, regulators issue standardized annual carbon allowances that enable their owners to emit one metric tonne of carbon. Each entity gets a capped number of allowances, and heavier emitters can buy spare allowances from lighter emitters to cover their annual carbon emissions—this is sometimes referred to as a “cap-and-trade” system. A finite and diminishing number of allowances are issued each year, with regulators determining the volume and rate of decrease.

The prices of carbon allowances are primarily determined by the relationship between the number of allowances issued and the volume of emissions that need to be covered. As a reference point, the International Energy Agency’s World Energy Outlook model suggests that, in a scenario consistent with meeting Paris Agreement goals, carbon prices should reach \$75 – 100 per tonne by 2030 and \$125 – 140 per tonne by 2040. Allowances in the European Union’s Emissions Trading System priced above €100 per tonne in 2023, suggesting that the volume and retirement rate of allowances in this market is consistent with Paris Agreement goals. According to the Monash/C<sub>2</sub>Zero Real Carbon Index, however, the global average price of carbon emissions, capturing various cap-and-trade and taxation systems, has never breached \$6.50 per tonne. This implies that many markets are substantially over-supplied relative to the needs of the low-carbon transition.

One way to address this is for jurisdictions with higher prices in their carbon markets to impose a Carbon Border Adjustment Mechanism (CBAM)—effectively, a tariff on imports from jurisdictions where carbon markets are absent or underpriced. That tariff would be equivalent to the cost of buying enough local allowances to cover the emissions of exporters. To avoid the tariff, the exporter could buy emissions on global markets, but it would have to buy enough to be equivalent *in value* to what it would cost to buy the same amount of carbon allowance in the importer’s market. For example, if the exporter needed to cover one tonne of emissions and the importer’s market priced carbon at \$100 per tonne, it could either buy one allowance in the importer’s market or 20 allowances from global markets at \$5 per tonne (or pay the tariff under the CBAM). Over time, this should bring the global price of carbon closer to the price being set by the world’s biggest importing economies—and therefore it is significant that the European Union, with its high carbon price, has been the first to commit to a CBAM.

### *Voluntary carbon markets*

In voluntary markets, entities aim to reduce their carbon footprints by investing in decarbonization projects created by private developers, who register the offsets on a public registry. Some of these projects will be designed to reduce emissions while others will be designed to remove emissions altogether; it is important to distinguish between the two.

Reduction projects might include improving management of existing forests or capturing methane gas at landfill sites. Removal projects eliminate a quantifiable amount of carbon from the atmosphere and store it over the long term; these might include direct air carbon capture and storage (DACCS), bioenergy-carbon capture and storage (BECCS), or planting entirely new forests.

**There are futures in both compliance and voluntary carbon markets. Derivative investors do not get any carbon-offsetting benefit, because the allowances need to be formally retired in a registry to claim that benefit—and to do that, an investor would need to take delivery of the underlying allowance. It is the same principle behind our belief that commodity futures do not have the social or environmental footprint of the underlying commodity, and that only delivery of the commodity confers that exposure. We do believe there are attractive value and relative-value opportunities in these markets, however, as well as the chance, in the words of the Net Zero Asset Owners Alliance, “to contribute to a liquid and well-regulated [carbon] credits market, thus accelerating the inventive to transition that is associated with carbon-pricing mechanisms.”**

### Engaging With Exchanges To Develop Sustainable Commodity Futures Markets

These newer futures markets, especially those in certified commodities, are often challenging for commodity futures exchanges and market makers to develop. Liquidity is partly a function of standardization and fungibility, and commodity futures markets are naturally fragmented: contracts for the same commodity will have different delivery dates, different delivery locations and sometimes different quality grades, and they are traded on different exchanges. Further fragmenting liquidity by splitting markets into certified and non-certified commodities is undesirable.

We think this is where large institutional investors that have not been involved in commodity futures—perhaps because of responsibility concerns—have an important role to play. Engaging with exchanges and market makers to encourage the development of more responsible products, backed by provision of substantial marginal liquidity for those products, could represent a tipping point in their viability. Recent success with Bursa Malaysia’s traceable palm oil futures is a good example. Opportunities exist to encourage the London Metal Exchange to reintroduce green aluminum contracts, and to urge the Chicago Mercantile Exchange and Intercontinental Exchange to follow suit, for example, or to push for fair-trade coffee futures or provide liquidity for contracts such as CME futures on voluntary carbon emissions offsets. The main cost of engaging with the wider commodities ecosystem in this way is illiquidity—but we believe this is well-compensated cost. As in any asset class, providing liquidity to new markets where price discovery is highly inefficient also offers some of the best potential for attractive long-term returns.

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**FIGURE 4. RESPONSIBLE INVESTORS CAN HELP IMPROVE COMMODITY MARKETS, AND USE THEM TO SEND PRICE SIGNALS TO A TRANSITIONING ECONOMY**

	NEW MARKETS					TRADITIONAL MARKETS		
<b>OPPORTUNITY</b>	Carbon price discovery		General acceleration of the transition to a more sustainable economy			Improve futures market governance		
<b>TOOL</b>	Carbon offset markets	Carbon compliance markets	Battery metal futures	Biofuel futures	Scrap metal futures	Futures on certified responsibly produced & traceable commodities	Exchange engagement	Responsible counterparty selection
<b>IMPACT</b>	Improve liquidity, improve efficiency of price discovery					Improve liquidity, price discovery in futures and improve social and environmental impact of physical production	Improved governance, more support for the development of new markets	
<b>COST</b>	Recurring costs	Illiquidity due to lack of market familiarity			Illiquidity due to non-fungibility and lack of market familiarity	Negligible		

Source: Neuberger Berman. For illustrative purposes only.

## Can One Invest in Commodities Both Responsibly and Passively?

### *The Momentum Bias in Many Commodity Indices*

We argue that liquidity-providing value investors aid price discovery and that liquidity-taking momentum investors do not. That has implications for passive, rules-based commodity index investing.

Strategies tracking market capitalization-weighted equity indices are essentially momentum investing, directing marginal flows into stocks whose market caps have been rising. Many commodity futures indices work on similar principles—for example, weighting their allocations by worldwide production over recent years (which exhibits a close overlap with those commodities whose futures are the most liquid). They often rebalance very infrequently, perhaps no more than once a year, and in the meantime, weights are determined by price trends. These indices are also highly concentrated, holding contracts in no more than a couple of dozen commodities (unlike equity indices representing hundreds of companies), all near the front of the futures curve: at one point during 2022, a widely followed index had almost a fifth of its entire exposure in near-term natural gas futures. And, last but not least, they hold only long positions.

All these features add up to a strong momentum bias for any investment program that tracks these indices. By definition, that does not contribute meaningful marginal liquidity to those markets where it is most required.

We should also mention another, different concentration issue. Some of the futures markets included in commodity indices are relatively small, and that means investment programs tracking them can end up owning a very large proportion. Because index positions are long-only, that has implications for price discovery in these smaller markets; it is also potentially a bigger problem for larger institutional investors whose allocations could have a more distorting impact—we believe investors should be present in as many markets as possible without overwhelming open interest and volume.

We believe active strategies that rebalance frequently and are oriented toward value investing can avoid these pitfalls of momentum exposure, concentration, liquidity-taking, inappropriate position sizes and potential price distortion.

### *Problems With “Sustainable” Commodity Indices*

We are beginning to see methods explored for incorporating environmental and other sustainability factors into derivative-based commodity index weighting rules, and we find many of these discouraging. Suggestions include attempting to assess the environmental footprint of specific commodities, or their exposure to the transition to renewable energy and electrification, and then weighting allocations according to these assessments.

We believe these assessments are immaterial for futures markets—a notional barrel of oil cannot have an environmental footprint—and therefore weighting along these lines has no effect on an investor’s environmental or social exposures. It would, however, reduce the transparency of the index’s weighting rules relative to the simplicity of the standard indices. It would also arbitrarily direct marginal liquidity from one set of commodity futures to another based on these criteria, raising the risk of inefficient price discovery across all commodities.

In our view, an active value investing style, which also provides marginal liquidity, is the approach most likely to generate attractive long-term returns, with the byproduct of contributing to efficient price discovery across all commodities.

## **Conclusion: A Necessary Marriage, Not an Impossible One**

More and more investors are caught between their often long-held concerns about the responsibility of commodity investing and the desire to benefit from their inflation-hedging properties, the positive structural outlook for the asset class, and indeed the positive exposure that many commodities have to the transition to a low-carbon economy.

We believe many of the concerns are misplaced.

Worries about which commodities are responsible and which are not are immaterial for investors gaining exposure via futures, in our view. Futures investors simply do not own physical commodities, and therefore they do not own their environmental or social footprints.

Worries about speculating on critical raw materials are more well-founded. Speculation itself is not irresponsible, in our view—indeed it is at the heart of efficient markets. But we do believe speculating on value can contribute more to market efficiency than speculating on trends, and it therefore follows that we believe active investing is more responsible than passive investing. Investing style is a responsibility issue in commodity markets, in our view.

Finally, investors in commodity futures have a voice that exchanges and other key market participants will hear. Whether and how an investor uses that voice and influence will depend on its individual discretion and the scope of its mandate, but we see a potential opportunity for a collective of impact-oriented commodity investors to become more involved in developing and providing liquidity for new commodity-market products that can improve sustainability. Providing liquidity to new markets where price discovery is highly inefficient also offers some of the best potential for attractive long-term returns.

Far from sitting on the sidelines of commodity futures markets, we believe responsible investors have a key role to play—and attractive return opportunities to explore—as active and engaged participants in it.

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