



# KYOS Commodity Risk Solutions

## Insights in risks

Aluminium, corn & coffee

October 2024

### Learn about the risks of a commodity portfolio with KYOS Insight in Risks.

What are the risks you are facing? At KYOS we offer several analytical modules in our platform to optimize your business:

- **Risk reporting:** understanding the current situation
- **Risk analytics:** simulating the future.

In this report we would like to explain two important advanced risk metrics: Cashflow-At-Risk and Value-At-Risk. These are based on market price volatilities, correlations and Monte Carlo simulations,

We will compare two commodities to illustrate the amount at risk, and what measures you could take to mitigate the risk.

### Advanced risks metrics offered by KYOS:

- **Stress tests:** how are your financial results if there is a specific change in market prices, volatilities or positions?
- **Options and accumulators:** what are the values of your derivatives, using Monte Carlo simulations?
- **Value-at-Risk:** what is a '95% worst-case' impact on your MtM in one single day?
- **Cashflow-at-Risk / Profit-at-Risk:** what is a '95% worst-case' scenario of your cash-flows over a longer period?

### Portfolio example: alu, corn & coffee

Earlier this year (Feb 21st) we calculated the value of a portfolio of a food producer who needed to buy aluminium, corn and coffee during the budget year 2025. We also estimated the risks if this food producer would leave the position open ("unhedged"). In the table below we present the current costs to hedge this portfolio on the forward market (without any margins for the supplier) and compare this to the calculated values of February.

		21 Feb 2024		8 Oct 2024	
Commodity	Exposure	Average price	Total	Average price	Total
Aluminium	30.000 MT	2406.05 \$ / MT	\$ 72.18 million	2628.72 \$ / MT	\$ 78.86 million
Corn No 2	5 mio bushel	474.46 \$ cnt / bushel	\$ 23.72 million	448.66 \$ cnt / bushel	\$ 22.43 million
Coffee	30 mio Lbs	187.14 \$ cnt / Lbs	\$ 56.15 million	241.14 \$ cnt / Lbs	\$ 72.34 million
Total			\$ 152.05 mio		\$ 173.63 mio



## Cash-flow at Risk

The Cashflow-at-Risk is calculated as a '95% worst-case' scenario of your cash-flows over a longer period. If you do not hedge this "floating priced" position, your Cashflow-at-Risk (=CfaR) from today until 31 December 2025 (=14 months) can be presented as the potential cashflow difference between:

Sourcing volume \* current market prices versus

Sourcing volume \* simulated market prices

	21 Feb 2024	8 Oct 2024
Current value	\$ 152.05 mio	\$ 173.63 mio
5% worst case scenario	\$ 207.70 mio	\$ 224.47 mio
Cashflow-at-Risk	\$ 207.70 mio - \$ 152.05 mio = \$ 55.65 mio	\$ 224.47 mio - \$ 173.63 mio = \$ 50.84 mio

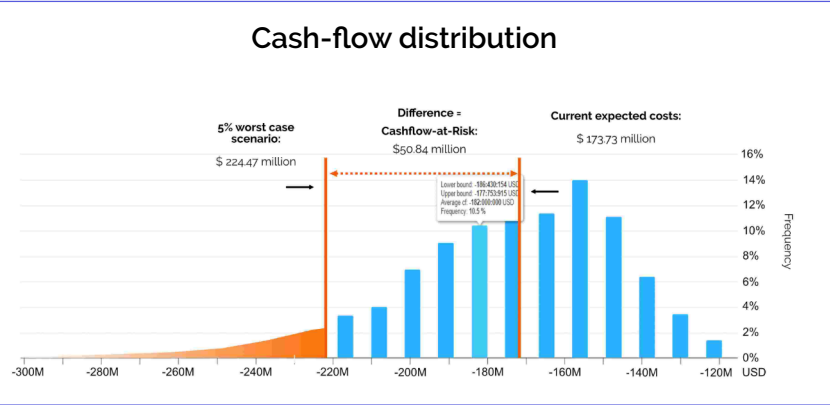
We estimate with 95% confidence that the total costs to source these three commodities will not be more than USD 224.47 mio. This means that the difference between the current costs USD 173.63 mio and the worst-case costs (USD 224.47 mio) is the CfaR of USD 50.84 mio.

To reduce the CfaR, you can use financial instruments like hedging with swaps, futures and options like accumulators. Or agree a partially fixed price with your supplier.

What will you do? Hedge now, at current market prices and pay USD 173.63 million? Or leave it open? There is a 5% chance that costs will go up and you have to pay an extra USD 50.84 million—or more.

KYOS can calculate the "cashflow@risk" of your particular position & hedging strategy.

The graph underneath shows the distribution of the CfaR.

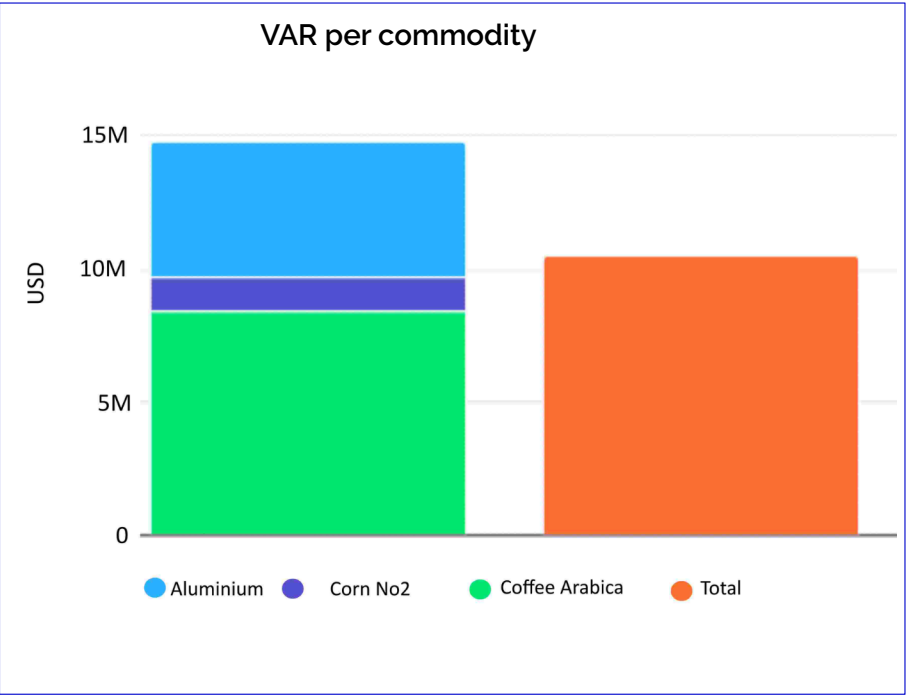


## Value-at-Risk

The Value-at-Risk shows the '95% worst-case' impact on your MtM due to various price changes in the short-term.

The graph shows the Value-at-Risk for a basket of commodities: left for the individual commodities aluminium, corn and coffee, on the right for the three together. Do you notice the difference? The combined exposure is lower than the sum of the two because the commodity prices are not strongly correlated.

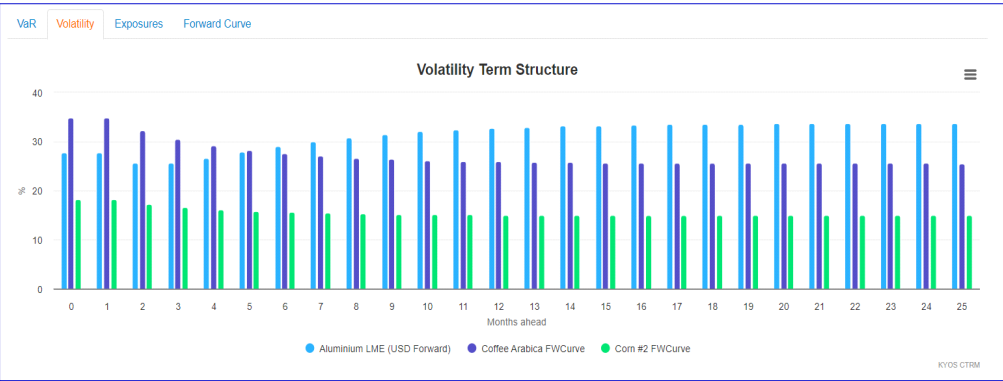
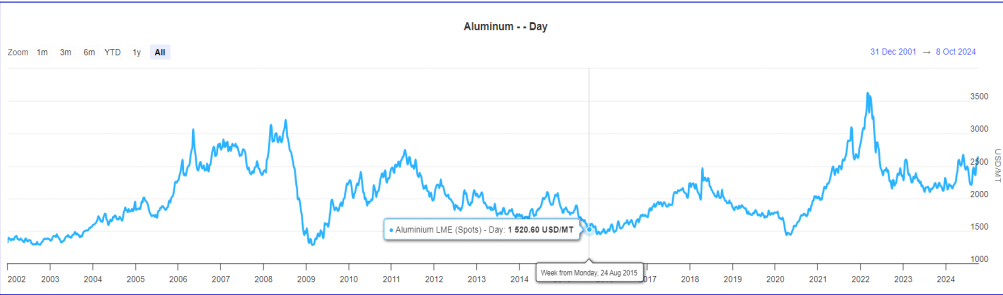
See in the table the Value-at-Risk calculations for 1 day. We also show how quickly the value could go up (or down) for 10 days (holiday scenario). Beware that this is not the maximum. The actual cost increase may be higher with 5% probability.



VAR Per commodity: 1 day vs 10 days - all amounts in US Dollars.

Commodity	Exposure	21 Feb 2024		8 Oct 2024	
		1 day	10 days	1 day	10 days
Aluminium	30.000 MT	2.22 mio	6.84 mio	1.71 mio	5.05 mio
Corn No 2	5 mio bushel	0.39 mio	1.20 mio	0.40 mio	1.27 mio
Arabica	30 mio Lbs	1.48 mio	4.44 mio	2.77 mio	8.40 mio
Total individual		4.09 mio	12.48 mio	4.88 mio	14.72 mio
Total basket		2.90 mio	8.83 mio	3.60 mio	10.51 mio

## Market Trend



Compared to Feb 2024 the costs of buying this portfolio has gone up by 14.1%. Especially coffee has gone up, prices have risen with 28.9%.

Obviously it is a shorter timeframe (bit more than 14 vs 22), which means a shorter risk horizon. We calculated the CfaR correctly: the costs of buying the portfolio remained within the limits we stated in Feb.

Normally we would have expected a lower VAR, due to the shorter risk time frame. However the VAR increased by 25% for the 1 day - mainly due to the volatile coffee prices.





## Advantages KYOS Portfolio and Risk Management System

### Short term versus Long term

KYOS software is used globally by procurement teams to calculate short- and long-term risks.

Short term risks can be calculated using stress tests or by using Value@Risk (=VaR) calculations. VaR can be calculated using different modelling techniques and depending on the underlying commodity, clients should apply a different technique.

### Accumulators - embedded options

Many clients in the food & beverage industry use accumulators to manage the price risk. KYOS has developed software to verify price valuations. It enables our clients to have an independent calculation of the value as well as the MtM. It also enables clients to play with the strikes to find their optimum.

### KYOS adds value

To help you understand price risks and improve your company's cash flow prediction, KYOS has developed risk management software to effectively manage any commodity portfolio. This software is tailor-made to reflect your specific requirements. The KYOS commodity portfolio & risk management system captures years of industrial experience in managing budgets, commodity contracts, physical and/or financial hedging, market price analysis including sophisticated cash flow forecasting.

### For all departments

Are you still using different spreadsheets to calculate your numbers? Whether you are in Procurement, Sales, Finance or Treasury – every department needs good, dependable figures. We at KYOS are confident a good cash flow forecast will make your life easier.

Please do not hesitate to contact us so we can discuss how we can help you save time – and probably money too.

This is just a brief overview of what we can offer you. Have a look at our website [www.kyos.com](http://www.kyos.com) for more detailed information.

Do not hesitate to contact us for more information, or a short demonstration: [info@kyos.com](mailto:info@kyos.com)



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