

Methodology and Specifications for Southern Africa Sulphur Supply Chain Stress Index Last Updated: July 2023

Introduction

Acuity Commodities (Acuity) has created a Sulphur Supply Chain Stress Index to reflect how efficiently the Southern African sulphur supply chain is meeting demand. It is assessed monthly and is published in *Regional Briefing: Southern Africa*.

This methodology and specifications guide is designed to give an overview of our general procedures and a clear description of how the index is assessed. This methodology is routinely reviewed for accuracy and market appropriateness. As a result, this document is subject to ongoing revision at Acuity's discretion. The current version of this document is available on Acuity's website <https://www.acuitycommodities.com/methodologyandcompliance>.

Sulphur Supply Chain Stress Index

The index is between 0% and 100%:

- 0%-40% means sulphur system capacity is exceeding market demand
- 40%-60% means sulphur system capacity is matching market demand
- 60%-100% means sulphur market demand is exceeding system capacity

Assessments

The index assesses five different components that influence the sulphur supply chain in Southern Africa:

1. Port delays
2. Port warehouse inventory levels
3. Road transport costs
4. Road round trip time
5. External factors

The ports that Acuity monitors are the four key import ports serving the Southern African market. They are Beira/Mozambique, Dar es Salaam/Tanzania, Richards Bay/South Africa and Walvis Bay/Namibia. There are other ports that are being developed but the volume handled at such ports are currently insignificant in comparison. Most sulphur imported via the four ports is for movement to the DRC.

Port delays

- Port congestion is measured by the average number of waiting days from when a vessel is formally registered as having arrived at a port to when the vessel is allowed to berth. The average considers all the vessels arriving at the four ports in the month. Six to seven days of waiting is considered normal when the methodology was last updated. The severity of port delay is represented by a score of 0-10, the higher the number the longer the wait is before a vessel can berth.

Score	Port delays (days)
0	0-1
1	1-2
2	2-3
3	3-4
4	4-5
5	5-6
6	6-7
7	7-8
8	8-9
9	9-10
10	≥10

Port warehouse sulphur inventory levels

- Sulphur stock levels at port warehouses help us understand the market balance of the region. A low level suggests supply is not keeping up with demand, and a high level suggests the market is oversupplied. Acuity surveys the warehouses across all four ports in Southern Africa at the end of each month. Stock levels are represented by a score of 0-10; the higher the number the fuller the warehouses were at time of survey.

Score	Sulphur inventory levels (%)
0	0
1	10
2	20
3	30
4	40
5	50
6	60
7	70
8	80
9	90
10	100

Road transport costs

- This assesses the road transport cost between Richards Bay in South Africa and Kolwezi in the DRC – the route that moves the largest volume of sulphur to the DRC. The cost is influenced by border delays, truck standing time, fuel prices, and the competition for truck capacity between sulphur and other products. Road transport costs are represented by a score of 1-10; the more it deviates from the normal level the more issues there are. The range of \$220-240/t is considered normal when the methodology was last updated.

Score	Road transport prices (\$/t)
0	≤140
1	140-160
2	160-180
3	180-200
4	200-220
5	220-240
6	240-260
7	260-280
8	280-300
9	300-320
10	≥320

Road round trip time

- This is the number of days needed for a road-travelling truck to be loaded at an import point, to complete its trip to the DRC and to return to the port. A round trip of 30-40 days is considered normal when the methodology was last updated. Border delays at Kasumbalesa and Beitbridge are often reflected in longer round trip times. Trip time is represented in a scale of 0-10; the longer the trip is, the bigger the border delay, and the fewer trucks available to serve the supply chain.

Score	Road round trip (days)
0	≤8
1	8-12
2	13-17
3	18-22
4	23-27
5	28-32
6	33-37
7	38-42
8	44-47
9	48-52
10	≥52

External factors

- This captures all other factors that impact the supply chain, such as competition of project cargoes, labour strikes, politics, fertilizer seasonality and the ramping up of new sulphur producing/consuming projects. External factors are represented by a score of 0-2. A zero (0) score means none of these factors are in place, one (1) refers to one factor being applicable, and score two (2) means multiple factors are impacting the supply chain.

Score	External factors
0	No external factor is impacting the supply chain
1	One external factor is impacting the supply chain
2	More than one external factor is impacting the supply chain

Index calculation

The maximum score is 42. By adding up the scores, and dividing the value by the total of 42, we can calculate the percentage of stress in the system. This eventual percentage forms the Sulphur Supply Chain Stress Index.