Global Sulphur Market Outlook

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Global Market Overview

Forecast to 2017

- Supply Overview
  - North America
  - Middle East
  - CIS
  - China
- Demand Overview
  - Phosphates
  - Nickel Leaching
- Balance
Phosphates Outlook
A healthy market on the horizon?

- Sulphur-in-All-Forms (SAF) supply dominated by involuntary production
  - Brimstone (64%)
  - Smelter acid (SOF) (29%)
- Voluntary production - Pyrites (7%)

- Oil and gas are main brimstone sources (97%)
- Other (coal gasification, etc.) (2%)
- Mined sulphur (1%)
Phosphates Outlook
A healthy market on the horizon?

- SAF demand dominated by fertilizer production
  - Phosphoric acid, SSP, Ammonium Sulphate (56%)

- Base metals production and industrial uses also important (32%)
Sulphur Balance and Prices

Global Sulphur Balance

<table>
<thead>
<tr>
<th>Year</th>
<th>Million Tonnes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>-3</td>
</tr>
<tr>
<td>2011</td>
<td>-2</td>
</tr>
<tr>
<td>2012</td>
<td>0</td>
</tr>
</tbody>
</table>

Sulphur Price Developments

- **ADNOC monthly**
- **Vancouver fob (contract)**

![Sulphur Price Chart](chart.png)
<table>
<thead>
<tr>
<th>Country</th>
<th>Exports (Mt)</th>
<th>Imports (Mt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>5.6</td>
<td>1.8</td>
</tr>
<tr>
<td>USA</td>
<td>1.8</td>
<td>2.9</td>
</tr>
<tr>
<td>Middle East</td>
<td>10.0</td>
<td>6.2</td>
</tr>
<tr>
<td>CIS</td>
<td>2.6</td>
<td>1.1</td>
</tr>
<tr>
<td>Japan</td>
<td>10.9</td>
<td>3.8</td>
</tr>
<tr>
<td>Europe</td>
<td>3.8</td>
<td>2.1</td>
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<td>1.1</td>
</tr>
</tbody>
</table>

Key Sulphur trade routes (2012*)

Total trade 31 million tonnes

* Full year estimates

All quantities in million tonnes
Moroccan quarterly sulphur imports
Down by 40% y-o-y

Quarterly Moroccan sulphur imports by origin, 2011 - 2012

- Russia
- Middle East
- Europe
- ROW
SUPPLY FORECAST TO 2017
Global sulphur production by country, 2011 - 2017

Global sulphur supply outlook, 2011 - 2017
Global sulphur supply outlook, 2011 - 2017

Global incremental changes to supply by source, 2012 - 2017

- Middle East
- CIS
- East Asia
- North America
- South America
- Central America
- South Asia
- Africa
- Central Europe
- Western Europe
- South East Asia

Million tonnes

- Oil sands
- Mined sulphur
- Gas
- Oil
- Other

-2 0 2 4 6 8 10
Regional Production stable at 15 Mt/y

United States of America
- Sulphur output to grow by 1.2 Mt
- Increases from oil refining activities
  (majority of production in PADD 3)

Canada
- Alberta gas fields depleting
- British Colombia production stable (0.8 Mt/y)
- Increases from Alberta oil sands (+0.8 Mt)
- Destocking in Oil sands region would be high cost
Middle East sulphur supply, 2011 -2017

- Qatar
  - 2011: 2.0 Mt/y
  - 2017: 2.8 Mt/y

- Iran
  - 2011: 1.7 Mt/y
  - 2017: 2.1 Mt/y

- UAE
  - 2011: 2.2 Mt/y
  - 2017: 6.0 Mt/y

- Saudi Arabia
  - 2011: 3.5 Mt/y
  - 2017: 6.7 Mt/y
CIS +4.3 Mt (2011-2016)
New producers are the key to growth

**Russia**
- 5.8 Mt to 6.8 Mt (2011→2017)
- Output from gas stable at 5.8 Mt/y (2011)
- Norilsk Nickel producing 1.0 Mt/y (2016-17)

**Kazakhstan**
- Tengiz to produce 2.3 Mt/y
- Kashagan expected on-stream (mid-2013)
  - 1.2 Mt/y by 2016

**Turkmenistan**
- South Yolotan on-stream (2013)
  - 2.6 Mt/y by 2016
China sulphur supply, 2011 -2017
Sichuan gas fields drive sulphur production growth

Forecast

Other Regions (combined)  Eastern Region  South Western Region


million tonnes

Sichuan Gas
DEMAND FORECAST TO 2017
Phosphates Outlook
A healthy market on the horizon?

- **Morocco**
  - OCP Jorf Phosphate Hub expansions
  - Total sulphur demand 5.0 Mt/y by 2017

- **Saudi Arabia**
  - Further expansion at Ma’aden
  - Total 1.7 Mt/y sulphur demand by 2017

- **Brazil**
  - Salitre (2013) 0.3 Mt/y sulphur demand
  - Expansion at Catalao (+0.1Mt) from 2013

**Phosphoric Acid Capacity Growth (2011 - 2017)**
Million tonnes P$_2$O$_5$
Nickel Leaching Outlook
New markets for sulphur exporters

- Sulphur demand from 0.6 Mt to 3.0 Mt (2011 → 2017)
- Annual nickel leach demand growth ~0.4Mt/y vs. annual sulphur supply growth ~4.0Mt/y
SULPHUR BALANCE TO 2017
Global Sulphur Balance 2010 - 2017

The chart shows the global sulphur balance from 2010 to 2017. The x-axis represents the years from 2010 to 2017, and the y-axis represents the sulphur balance in million tonnes. The balance is indicated by bars, with red bars showing a deficiency and blue bars showing a surplus. The chart indicates a surplus of sulphur from 2014 onwards, with the highest surplus in 2017.
Global oversupply is coming; can demand catch up?

**Global Market**

- Supply growth to outpace demand growth
  - New production dominated by Middle East and FSU
  - Delays less likely as large projects move closer to commissioning

- Demand growth
  - Phosphate demand will recover from 2013
  - Nickel leaching demand is strong but growth is not unlimited

- Sulphur balance will move into surplus
  - Producers will need to withhold product from the market
  - But which producers will act?
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