

# World Sulphur Outlook

**The Sulphur Institute**  
Washington, DC, USA

**Donald L. Messick**  
Vice President, Agricultural Programs



# **TSI's Mission**

**Global advocate for sulphur**

**Represents all stakeholders producing, buying, selling, handling, transporting, or adding value to sulphur**

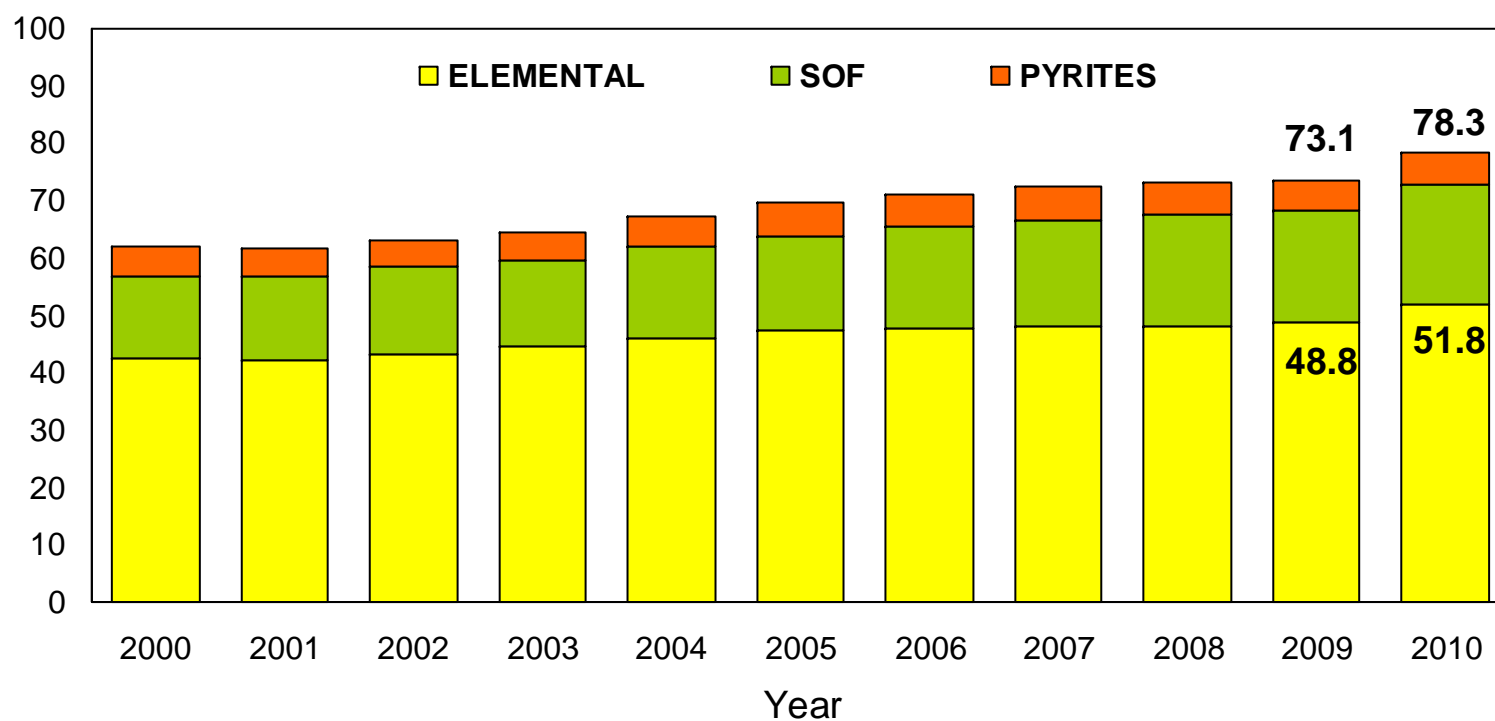
**Unified voice for sulphur producers, consumers, and service providers**

- Promotes safe handling, transportation**
- Protects the environment**

# All forms Sulphur Production, by Type

## Million tons sulphur equivalent

Most growth in non-voluntary sources: elemental and smelter acid

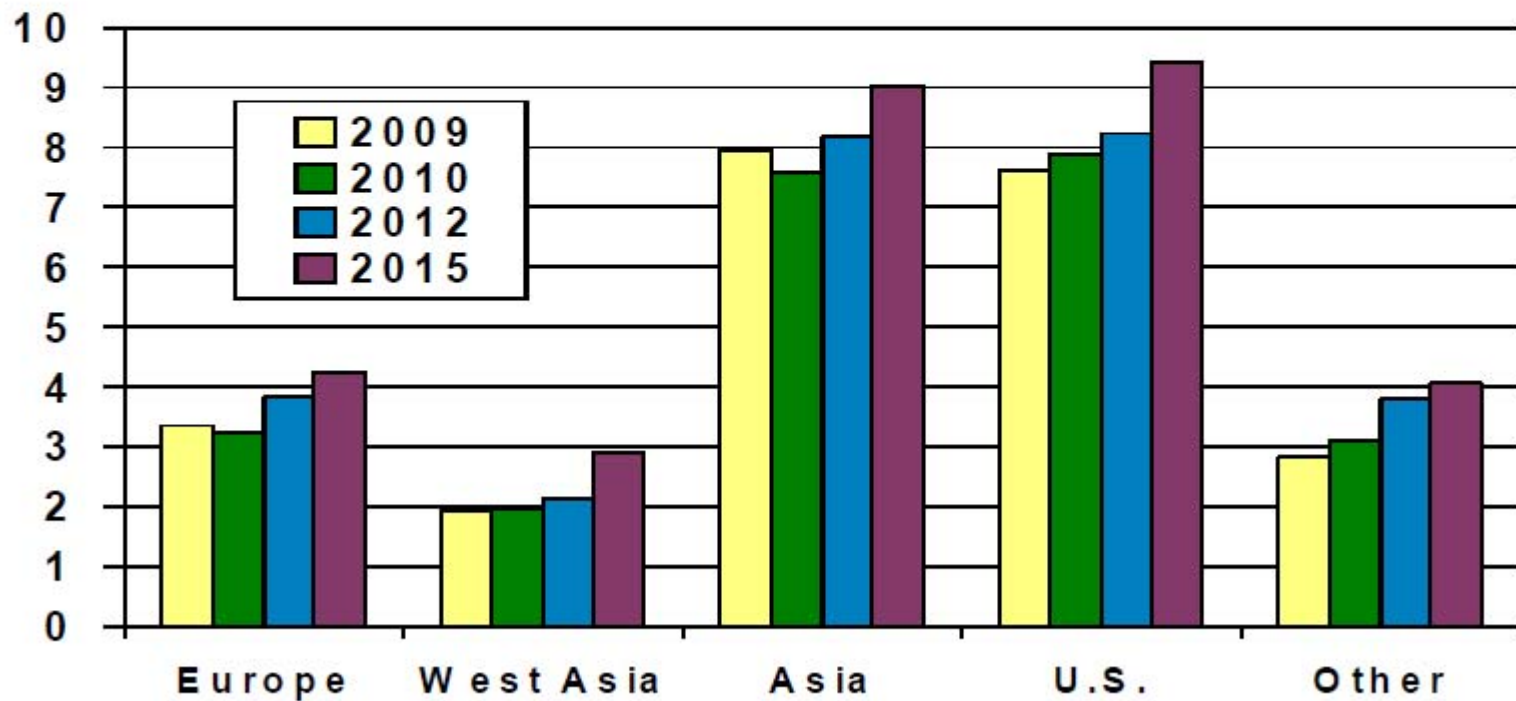


# Gas-Recovered Sulphur Production (1000 tons)

	2009	2010	2015
Canada	4,412	4,150	3,600
U.S.A	1,190	1,250	1,100
EECA	7,655	8,455	11,600
West Asia	6,894	8,230	13,290
Europe	1,365	1,290	865
China	80	1,070	4,000
Others	928	915	915
Total	22,524	24,860	35,370

Source: Fertecon, 2010

## ***OIL REFINERY RECOVERED SULPHUR (million tonnes)***



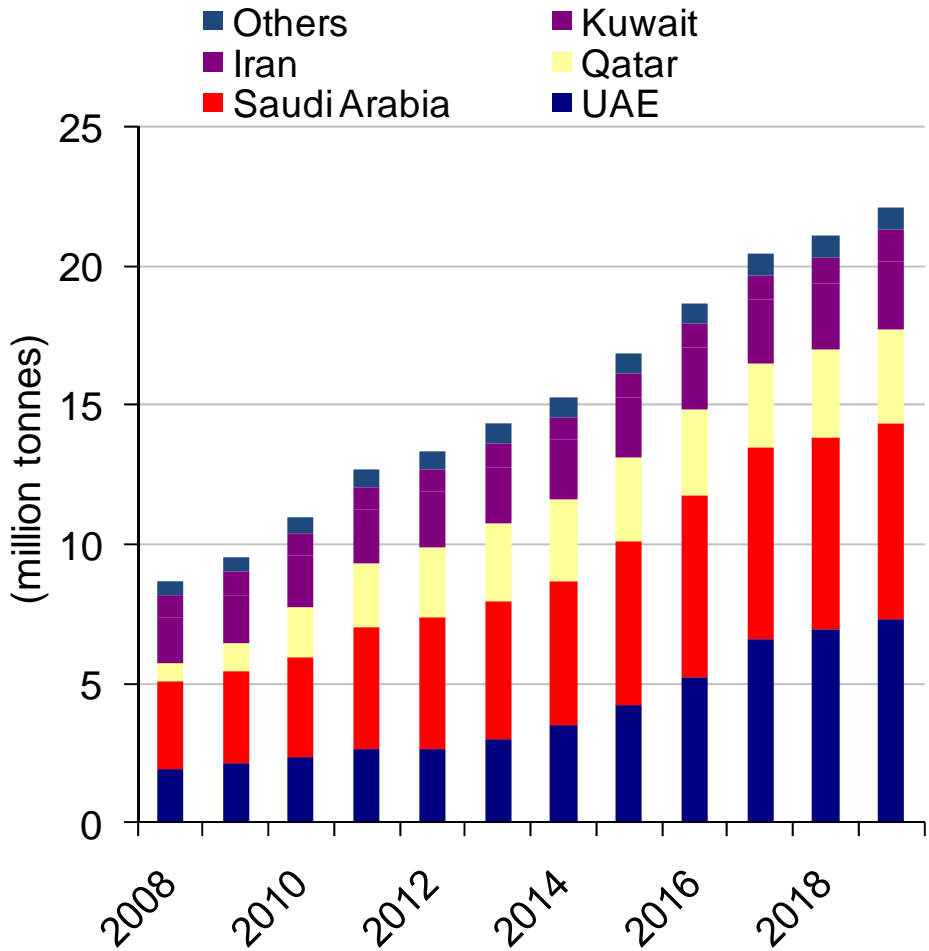
Source: Fertecon, 2010

# Oil-Recovered Sulphur Production (1000 tons)

	2009	2010	2015
U.S.A	7,630	7,875	9,400
Europe	3,359	3,230	4,230
West Asia	1,955	1,975	2,905
Asia	7,903	7,600	9,020
-China	1,300	1,540	2,300
-India	1,450	1,600	2,000
Others	2,837	3,110	4,070
Total	22,874	23,790	29,625

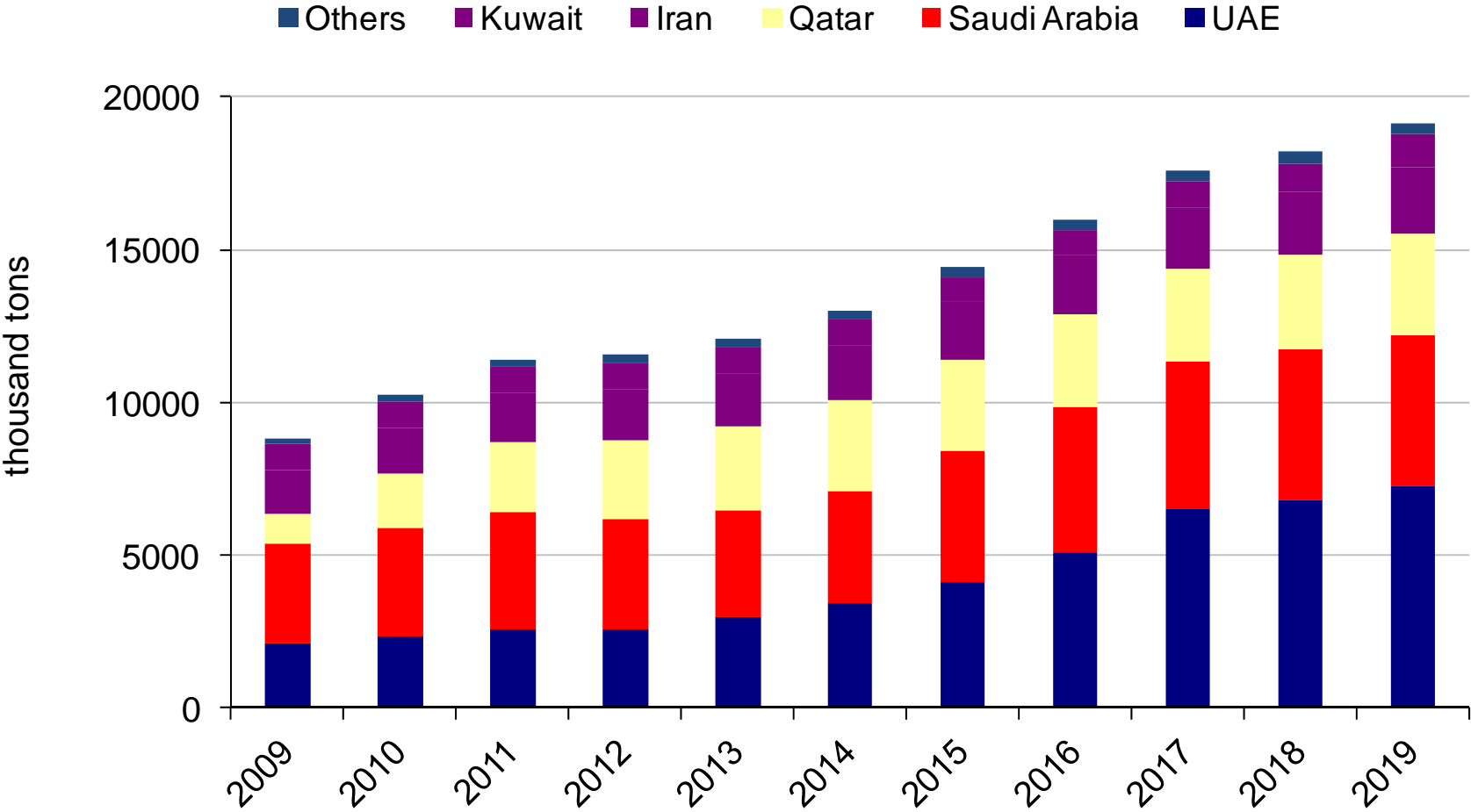
Source: Fertecon, 2010

# Middle East production grows by 12.6 million tons, 2009-2019



Source: IFA, 2011; BSC, April, 2010

# West Asia States' sulphur export availability more than doubles, 2009-2019

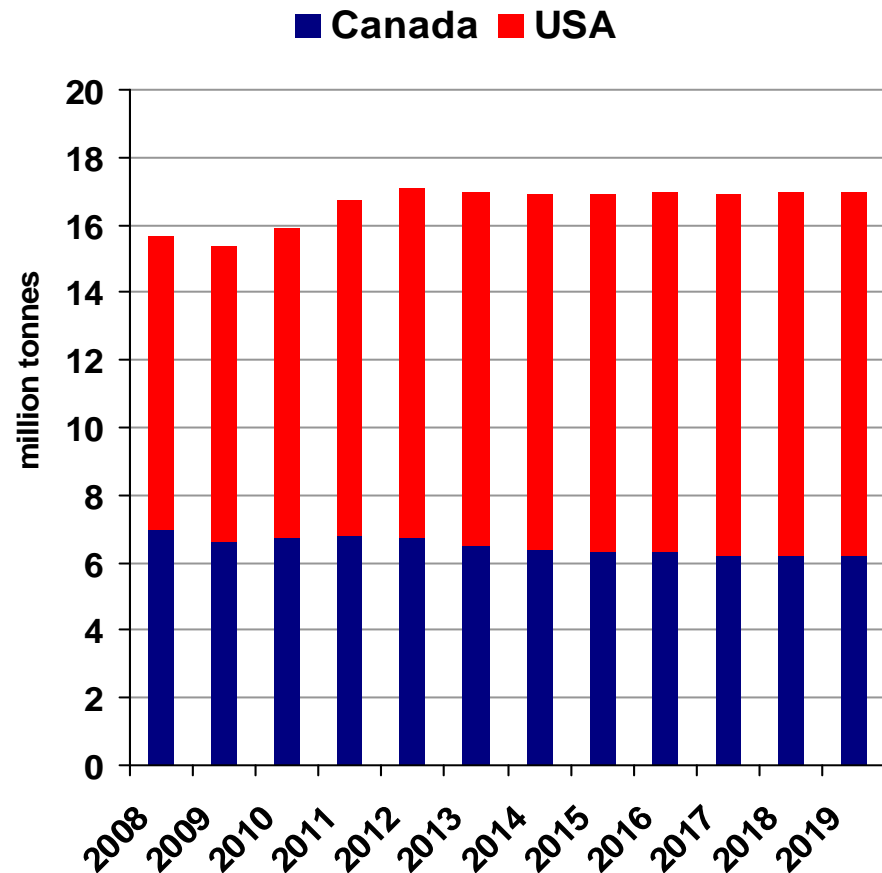


Source: BSC, 2010



# North America: +1.6 million tons

- Canadian production from gas declines. All growth from oil sands, which increases from 1.6 Mt/y (2009) to 3.0 Mt/y by 2015.
- Sulphur recovery capacity at US oil refineries increases by ~ 2.5 Mt/y by 2013.



Source: BSC, 2010

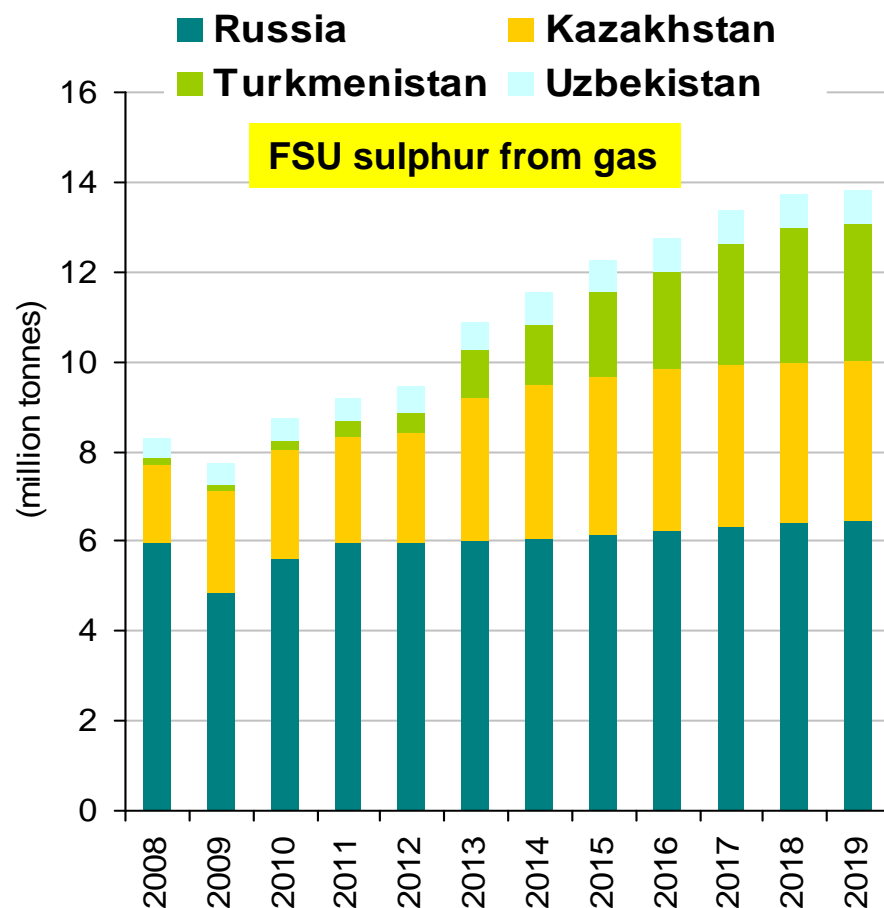
# US Gulf forming plant capacity now totals >12,000 t/d.

<b>Company</b>	<b>Location</b>	<b>Capacity (t/d)</b>
<b>Gulf Sulphur Service</b>	<b>Donaldsonville LA</b>	<b>4,000</b>
<b>Gulf Sulphur Service</b>	<b>Galveston TX</b>	<b>2,000</b>
<b>Martin Midstream</b>	<b>Beaumont TX</b>	<b>4,000</b>
<b>Koch Sulfur Products</b>	<b>Beaumont TX</b>	<b>345</b>
<b>Koch Sulfur Products</b>	<b>Corpus Christi TX</b>	<b>2,000</b>

**And more plants are under study, some at inland locations**

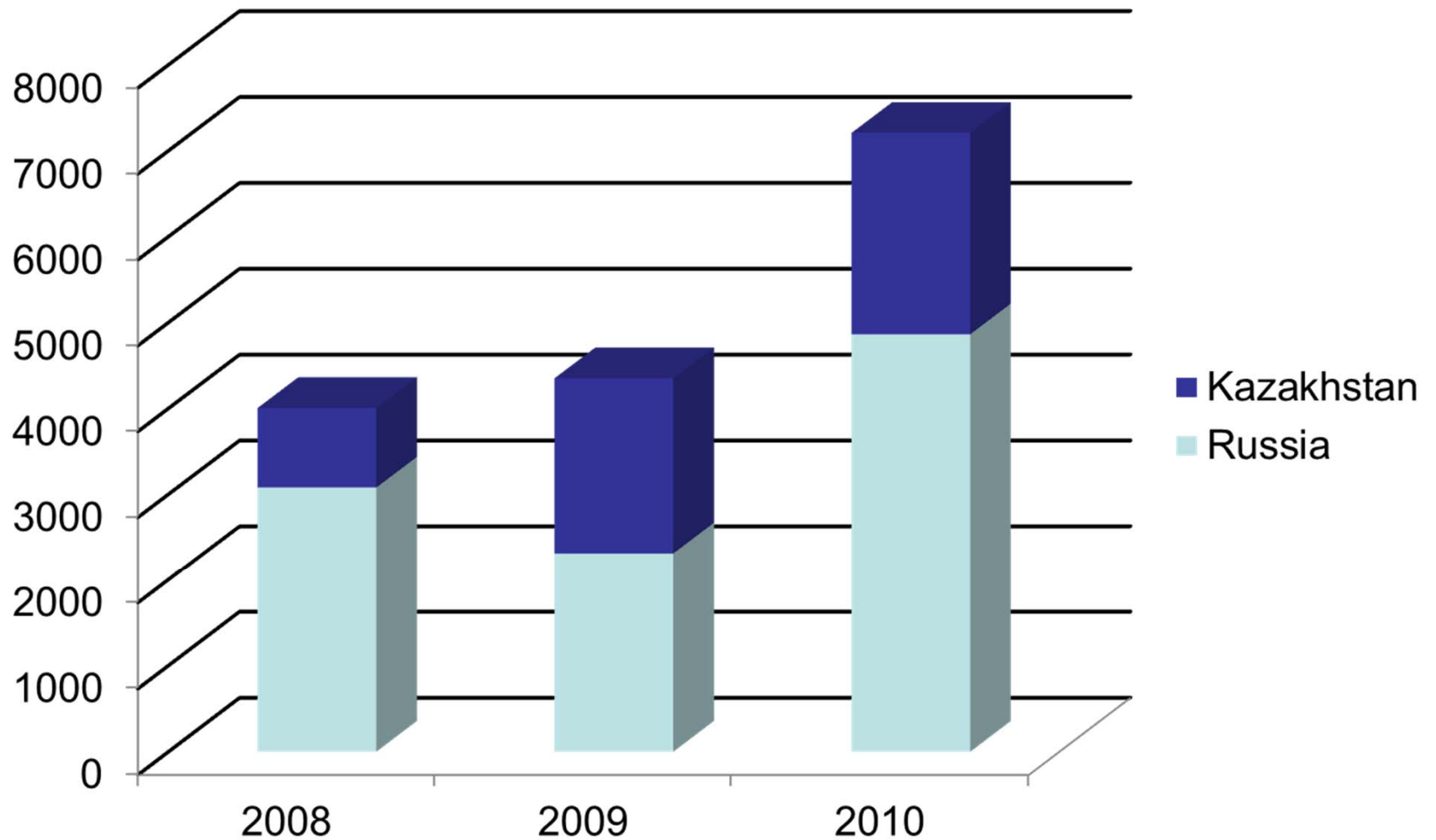
# FSU: +6.4 million tons

Gas-Recovered Sulphur Production (1000 tons)



Source: IFA, 2011;BSC, April, 2010

# FSU Offshore Exports

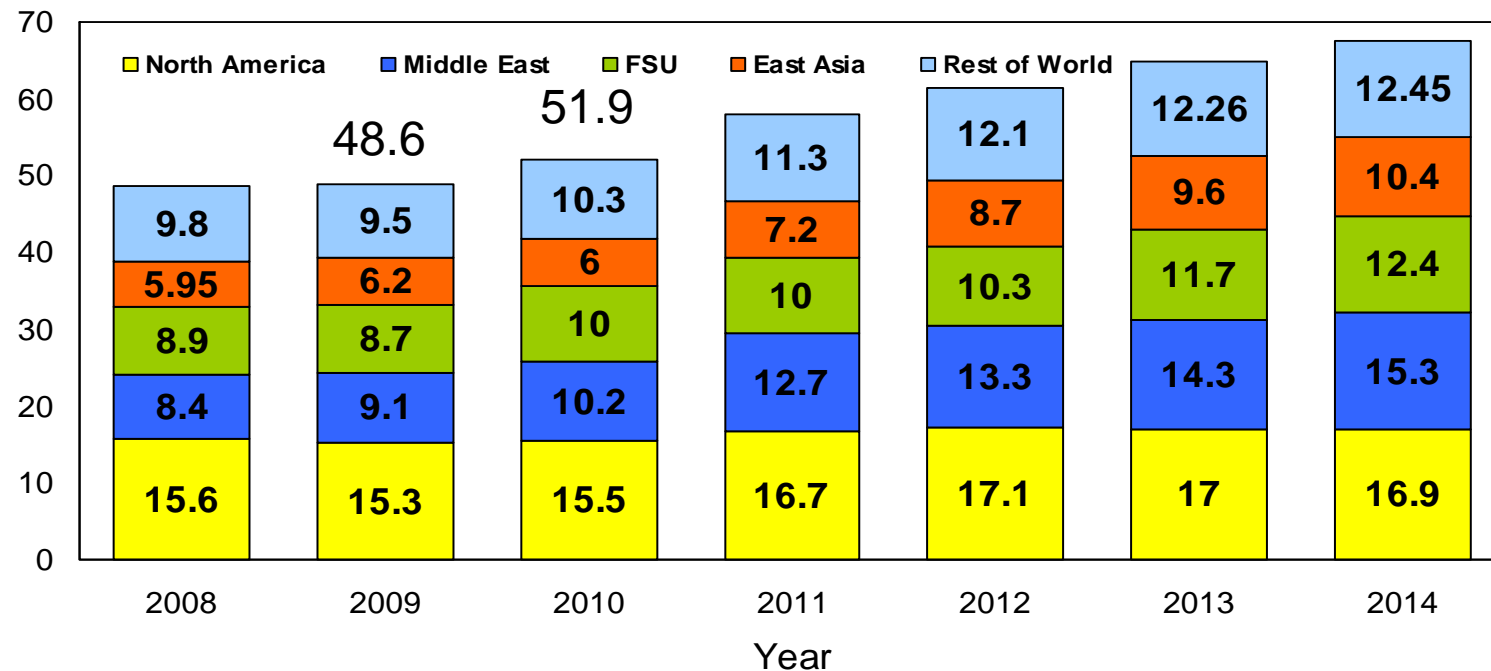


Source: Oxbow, 2011

# Elemental Sulphur Production

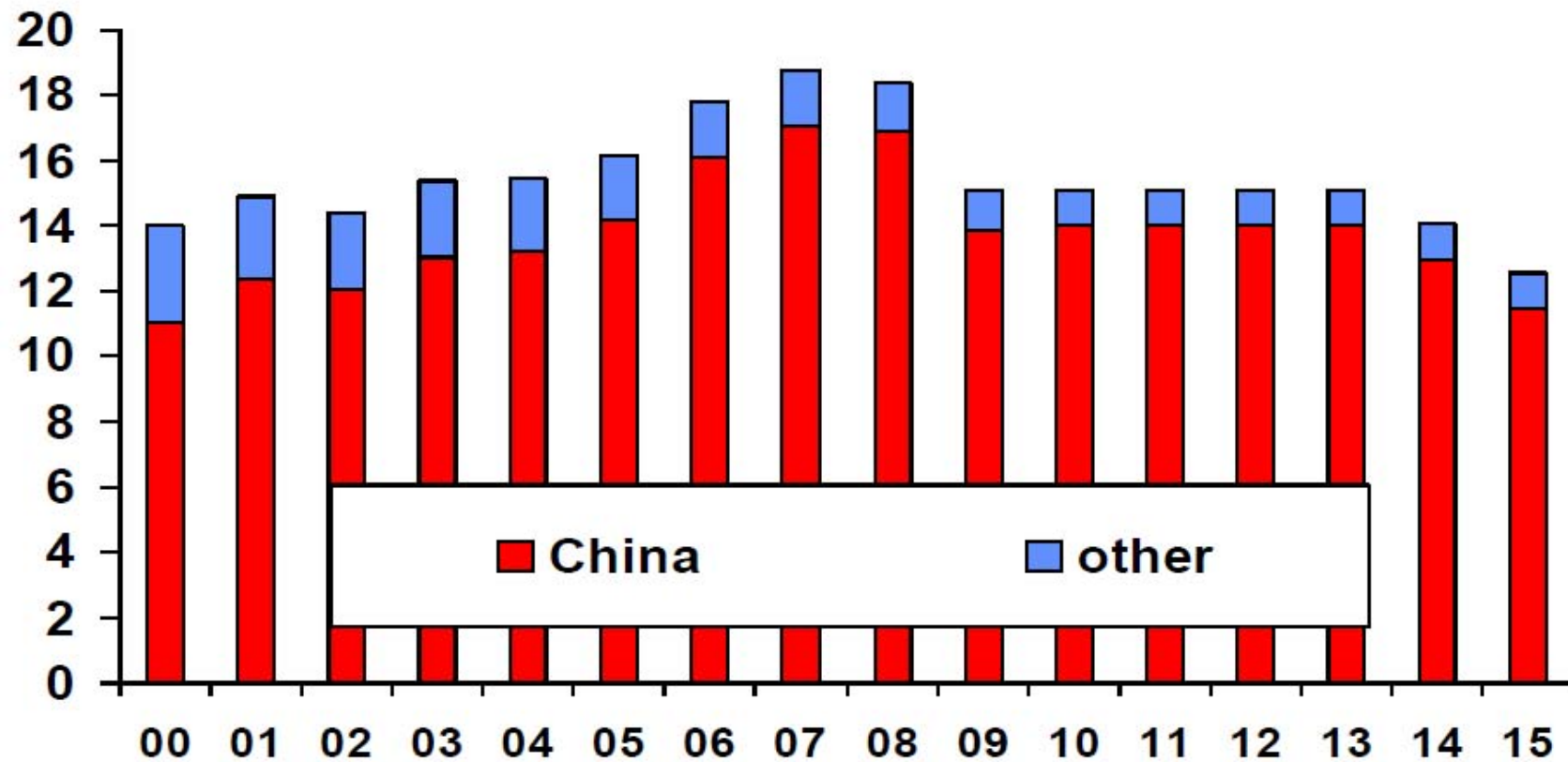
## Million tons sulphur

- Strongest growth is in Middle East, FSU and Asia.
- All growth is from involuntary production.



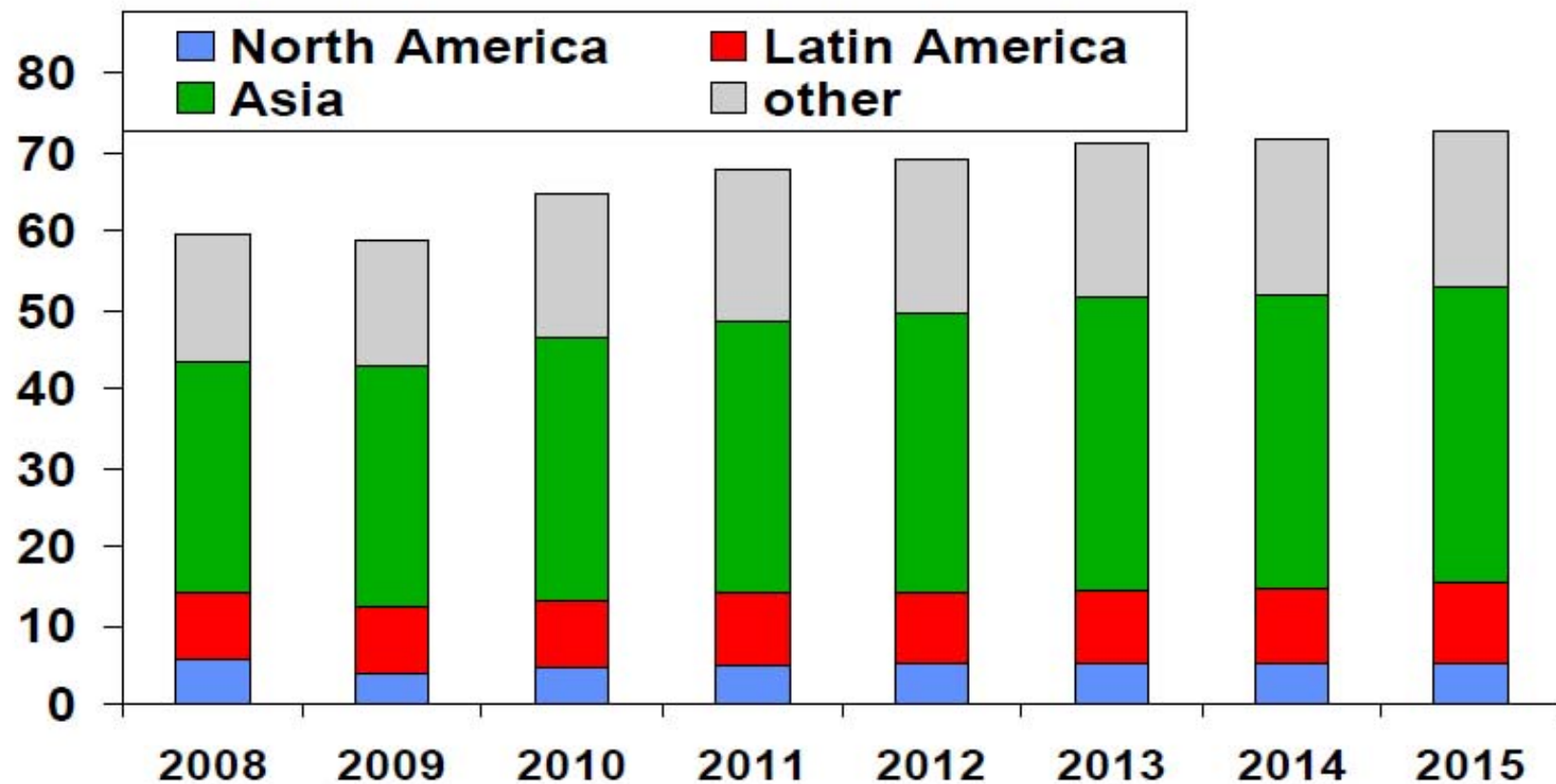
Source 2008 and 2009: The Sulphur Institute  
 Source 2010-2014: British Sulphur Consultants April 2010

# ***PYRITE SULPHURIC ACID PRODUCTION (million tonnes)***



Source: Fertecon, 2010

# ***SMELTER SULPHURIC ACID PRODUCTION (million tonnes)***



Source: Fertecon, 2010

# **Sulphur Overview - Uses Sulphuric Acid**

**93% of sulphur consumption is as sulphuric acid**

**7% is consumed as elemental sulphur**

**Total world acid production in 2010: 200 million tons, up 9% from 2009**

- From elemental: 122 million tons**
- From smelters: 64 million tons**
- From pyrites: 14 million tons**



## Nickel Projects Will Create New Demand

<b><u>Location</u></b>	<b><u>Sulphur Requirement (tonnes/year)</u></b>
<b>Goro, New Caledonia</b>	<b>460,000</b>
<b>Ravensthorpe, Australia</b>	<b>500,000</b>
<b>Ramu River, Papua New Guinea</b>	<b>360,000</b>
<b>Ambatovy, Madagascar</b>	<b>600,000</b>
<b>Moa, Cuba</b>	<b>200,000</b>

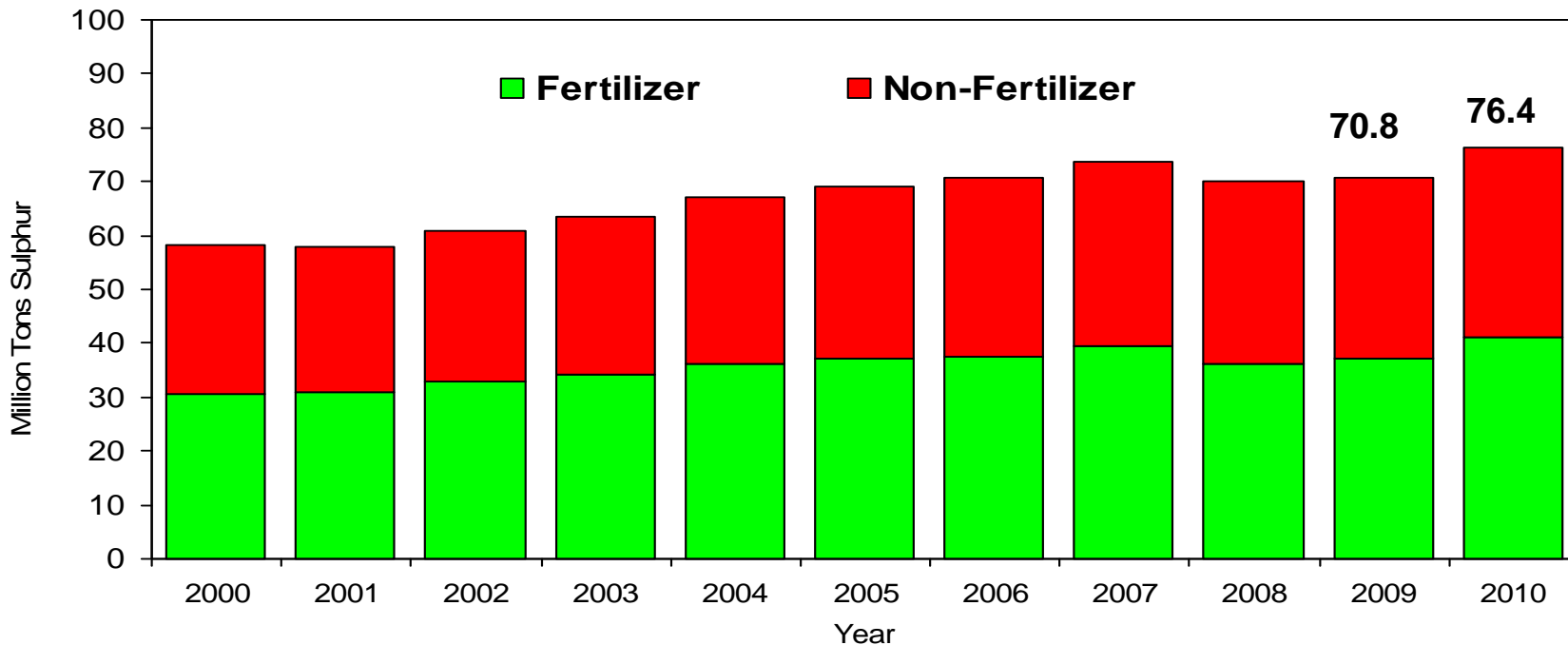
Source: ICIS, 2011

# Sulphur Consumption

## Million tons sulphur equivalent

After two years of decline, fertilizer demand recovers in 2010

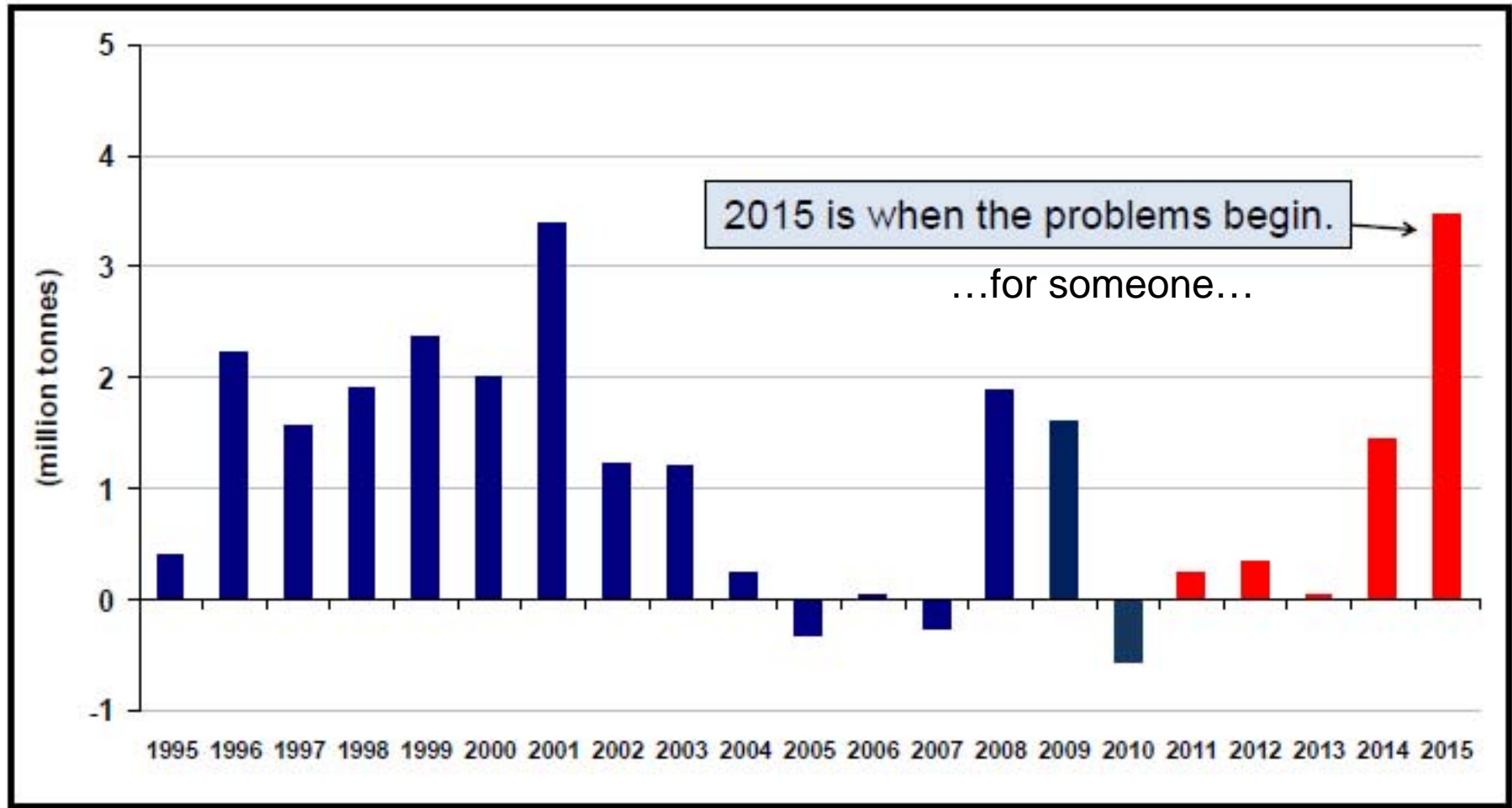
Industrial demand impacted by declining global economy; slight recovery in 2010



# **Sulphur Overview - Uses Phosphate Fertilizers**

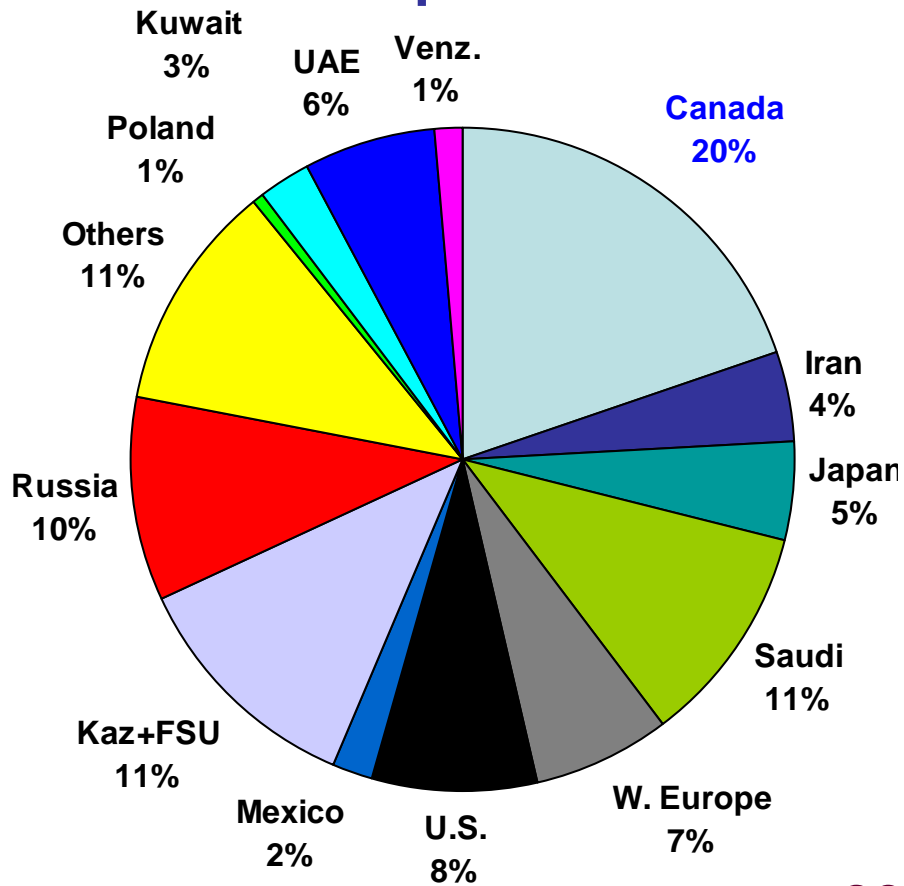
- **Over 50% of world sulphur demand**
- **Demand in 2010 increased**
- **Maaden adding 1.5 Mt/y S demand**
- **Fertilizer demand growth to come mostly from E. Asia, L. America and S. Asia**

# The Sulphur Market Balance, 1995-2015

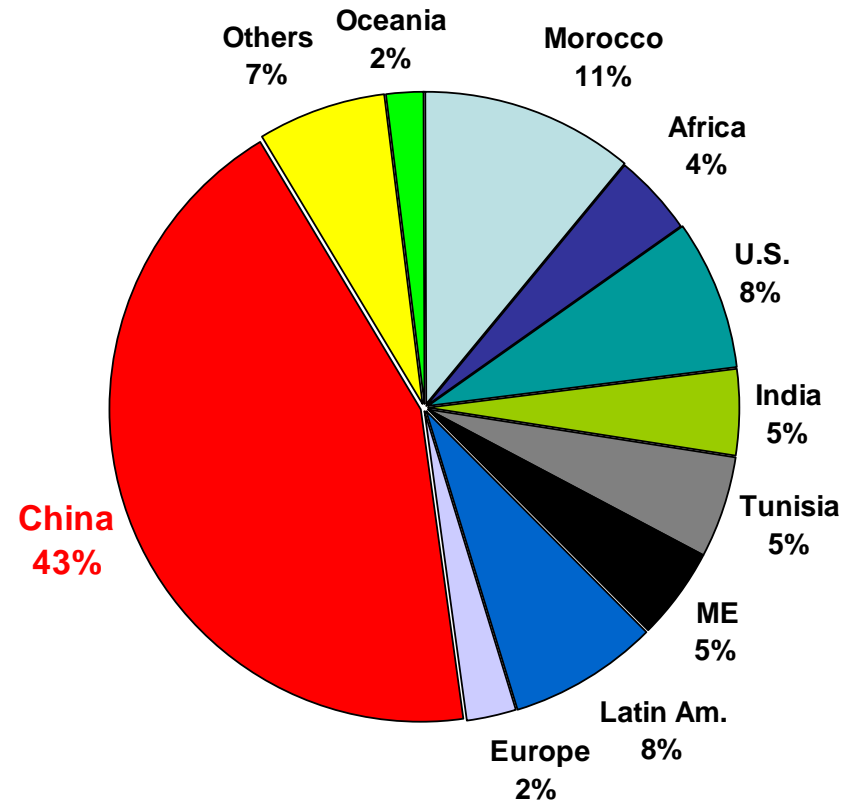


# Internationally Traded Sulphur - 2009

## Exports

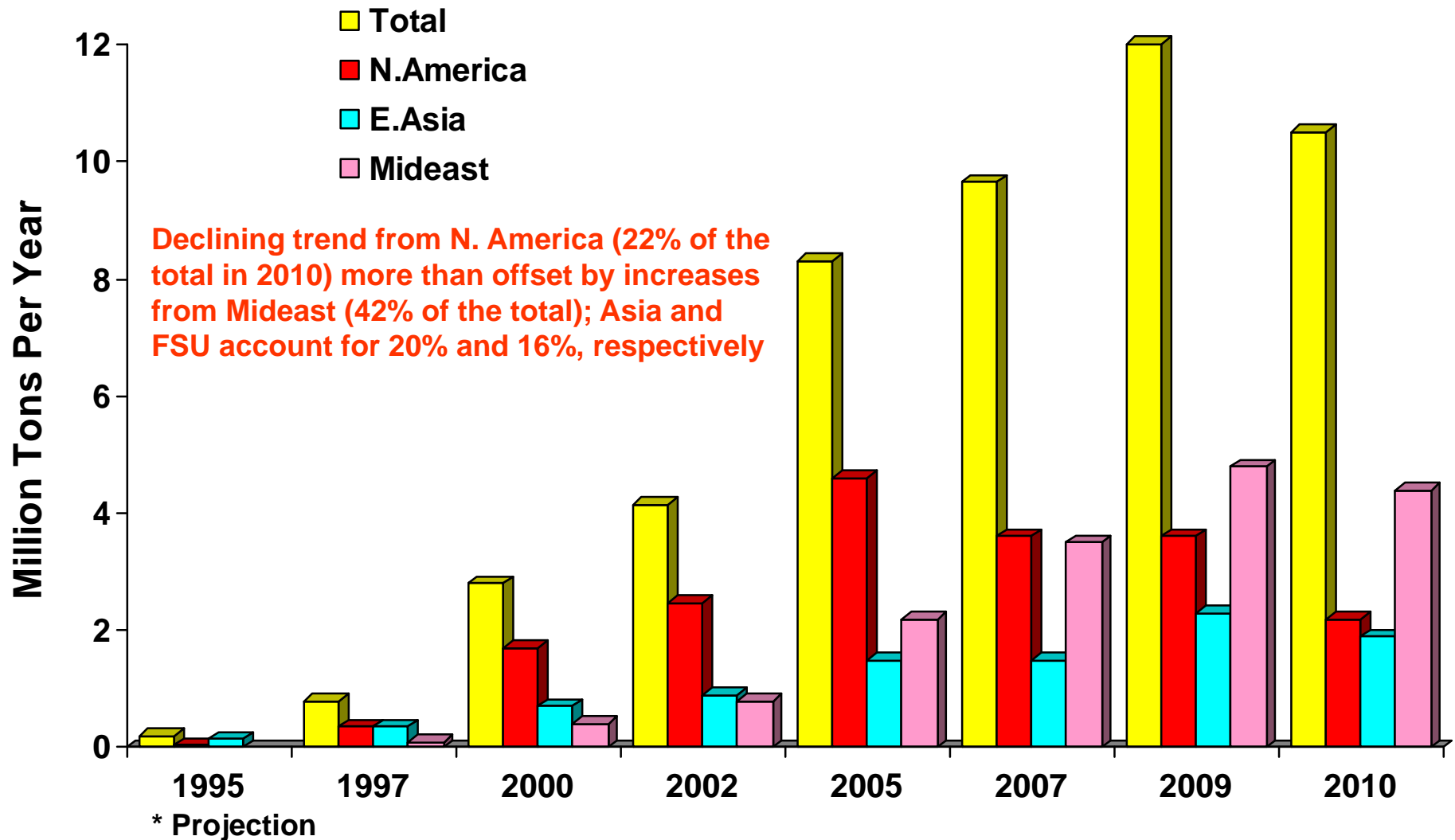


## Imports



**28.3 million tons**

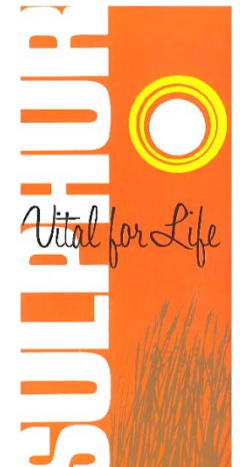
# China Sulphur Imports by Origin



Source: China Sulphuric Acid Industry Association

# Sulphur: An Advantaged Element

- Essential for protein in humans, animals and plants
- Valuable raw material for making wide variety of products in everyday life
- Natural element in air, water and land
- Valuable: plant nutrient
- Valuable soil amendment
- Valuable component of select construction materials



# Sulphur Deficit and Requirement: Global

**Sulphur - fourth major plant nutrient**

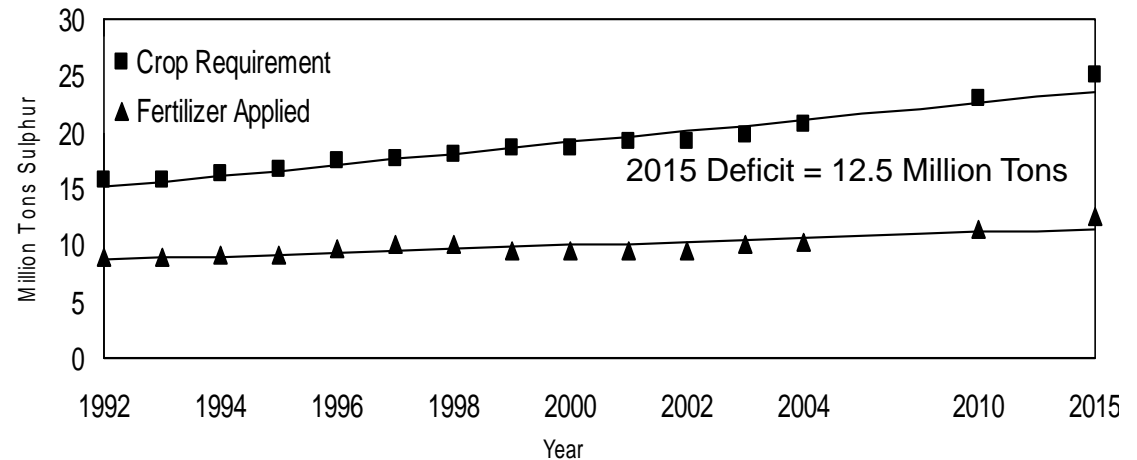
**Required in similar amounts as P, about 20.6 million tons S in 2005.**

**About 10 million tons S applied as a fertilizer worldwide**

**Total S fertilizer market potential for 10.6 million tons S today**

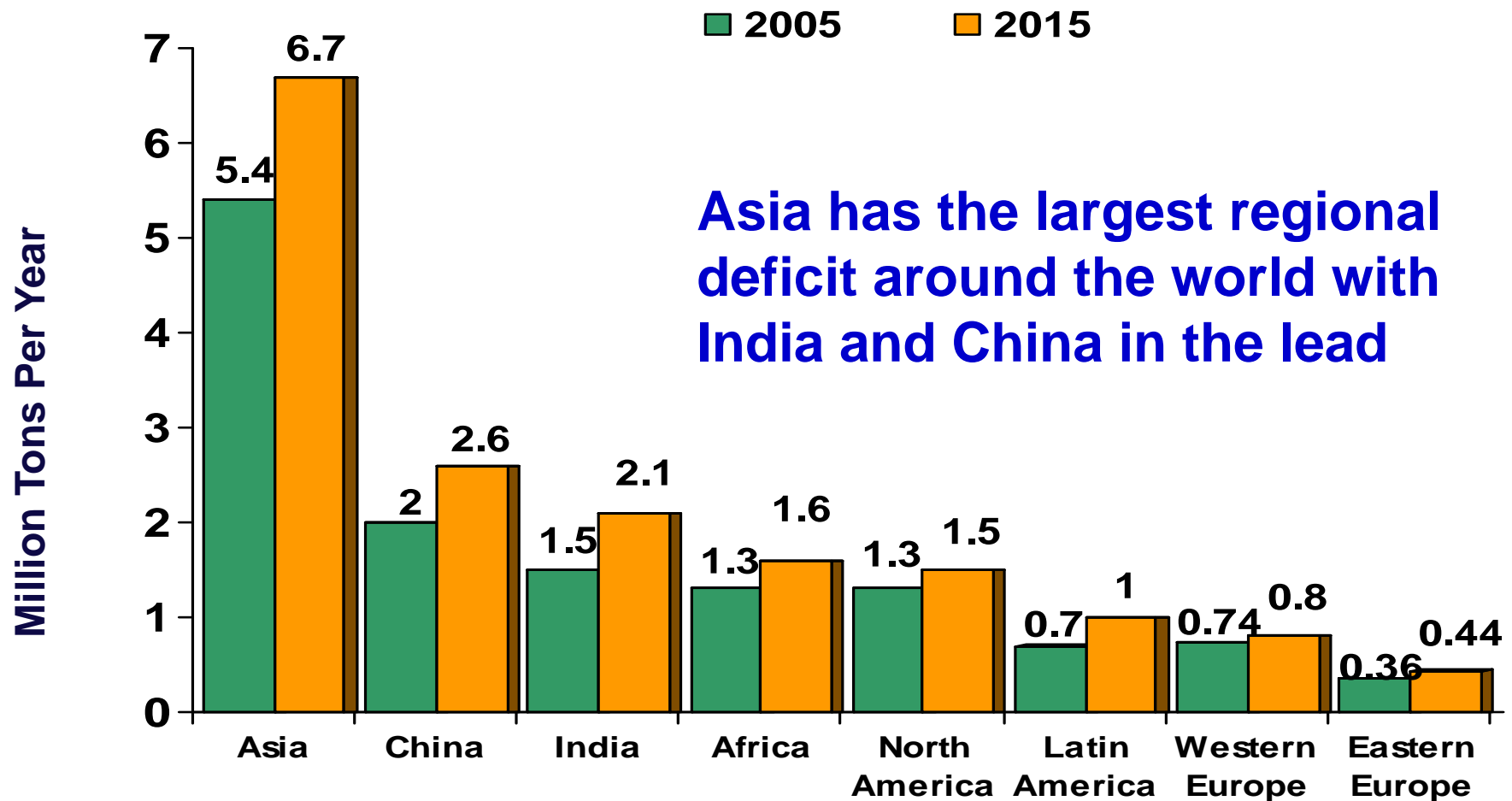
**12.5 million tons by 2015, primarily in Asia and the Americas.**

**Plant Nutrient Sulphur Requirement and Deficit (Mt)**





# Regional Plant Nutrient Sulphur Deficit Worldwide



# Sulphur Fertilizers: New Ground for Fertilizer Industry

- Traditional S fertilizer production will not meet the increasing demand for sulphur in agriculture.
- Sulphur fertilizers and their use provides potential market of 9.6 million tons of sulphur consumption annually, benefiting the industry.
- Fertilizer producers need to address this market potential



# Sulphur World Symposium 2012

The Sulphur Institute's



April 23 - 25, 2012

antwerp, belgium

Mark your calendars now!

The Premier Sulphur Industry Event will be in Antwerp, Belgium – April 23-25, 2012 for:

- Two days of networking with top industry players
- Insightful speakers on key topics
- A *Sulphur Education Session* for those new to the industry

Visit [www.sulphurinstitute.org](http://www.sulphurinstitute.org) for updates!



**TSI** THE SULPHUR INSTITUTE

# TSI Member Companies

