

**BRITISH SULPHUR | CONSULTANTS**

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# Trinidad Nitrogen Supplier to the U.S.

**2006  
Fertilizer Outlook &  
Technology Conference**

**Ken Nyiri**

LONDON | RALEIGH | WASHINGTON | SINGAPORE | BEIJING

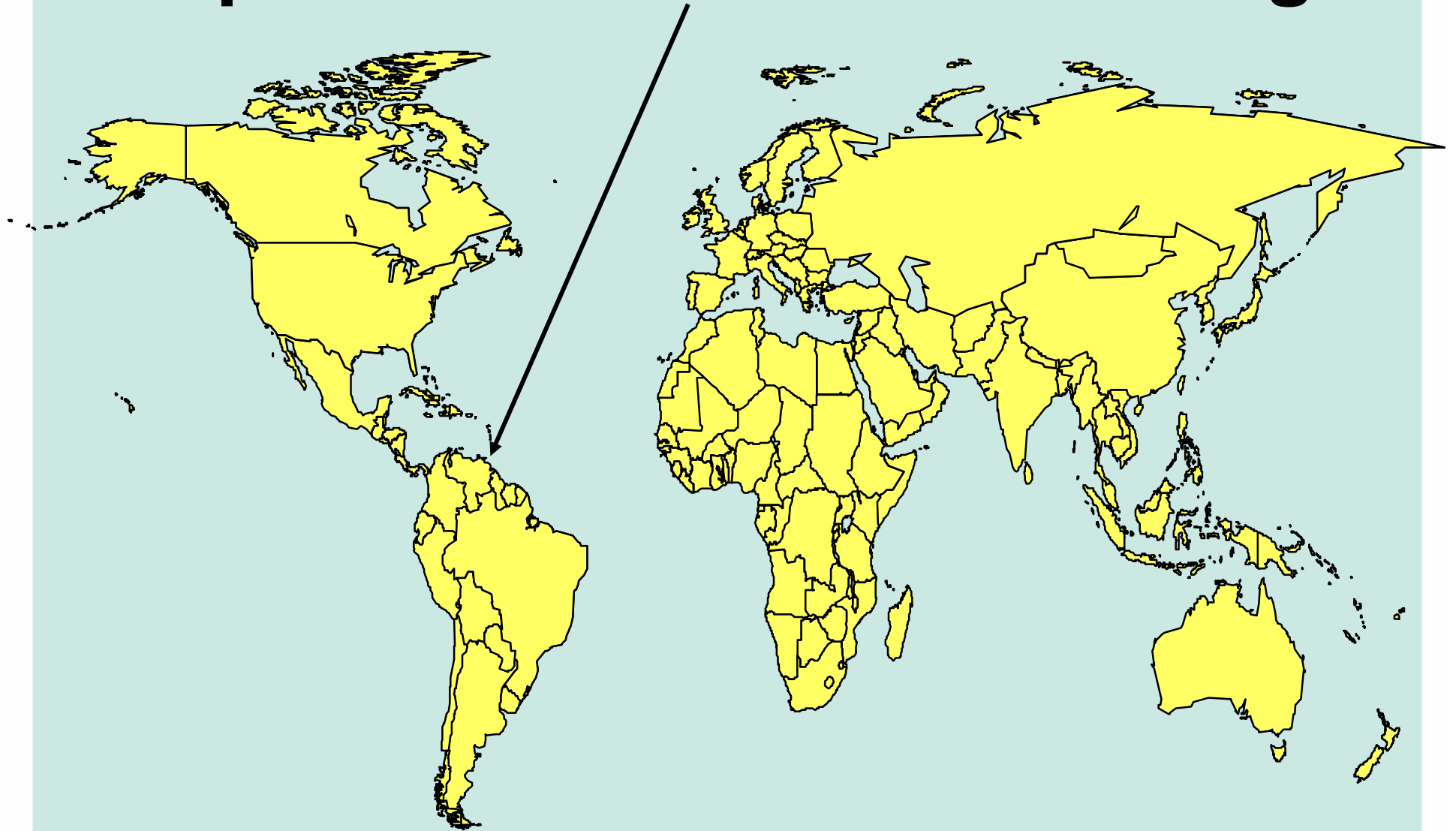
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# Republic of Trinidad and Tobago



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# Republic of Trinidad and Tobago

- **Government:** Democratic State  
(British Commonwealth)
- **Area:** 5,130 sq. km  
(1.5 times the size of Rhode Island)
- **Education:** English speaking
- **Population:** 1.3 million
- **Ethnic Profile:** 40% African descent  
40% East Indian  
20% Mixed or Other
- **Climate:** Tropical (Just south of the Hurricane Belt)
- **Political Risk:** Low



# Trinidad and Tobago Economy

- **Energy based economy - The petroleum sector is about one-fourth of GDP**
  - **Large gas reserves – Competitive**
  - **Forty-five years of successful natural gas based investment – ammonia, methanol, urea, iron and steel**
  - **World's Largest ammonia exporter since 1999**
- **GDP per capita 2003 – US\$ 7,838**
- **Manufacturing, Distribution, Construction and Finance contribute 5%, 15%, 10% and 13% respectively to the country's overall GDP**





Tobago  
Scarborough

Caribbean Sea

Toco

PORT-OF-SPAIN

Sangre Grande

Trinidad

Point Lisas

Rio Claro

North Atlantic Ocean

Guayaguayare

Siparia



# The Point Lisas Industrial Estate

- **10 world scale ammonia plants**
- **7 world scale methanol plants**
- **1 world scale urea plant**
- **1 LPG plant**
- **3 DRI (Direct Reduced Iron) plants**
- **1 steel mill**
- **7 berths for export of bulk petrochemicals & metals**
- **1 major electricity generation facility**
- **1 desalination plants (one of the largest in the world)**



**Koch/Terra**

**Clico  
(Proposed)**

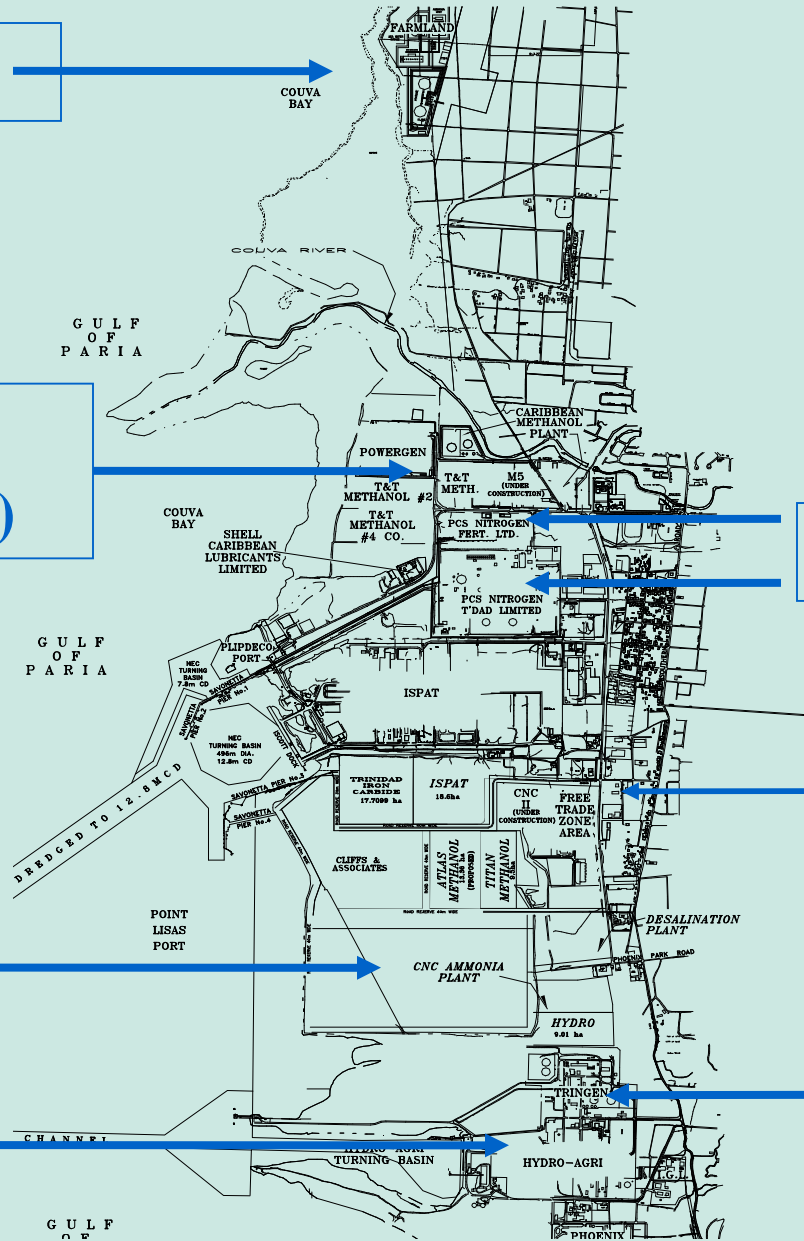
**PCS Nitrogen**

**CNC II**

**CNC I**

**Yara (Tringen)**

**Yara (Hydro)**



# PCS Ammonia/Urea







**CNC II 2000 Ammonia  
(Nitrogen 2000)**



# Methanol Holdings Nearing Completion

**METHANOL HOLDINGS TRINIDAD LIMITED**  
**5400 MTPD PLANT**

EPC Contractor  Ferrosaal Aktiengesellschaft

Detail Engineering, Procurement & Construction  Pro Man AG  
 Pro Man AG (Trinidad) Ltd.

Commissioning Plant Management  Industrial Plant Services Limited

Process Design  Davy Process Technology

Process Technology  Johnson Matthey

Start of Construction June 2003

Scheduled Completion Date 4<sup>th</sup> Quarter 2005

Site Preparation  SUPER INDUSTRIAL SERVICES

Piling  P&S-CON LTD

Structural Steel  YORK STRUCTURES LTD.

 SUPER INDUSTRIAL SERVICES

 SUPER INDUSTRIAL SERVICES

# 10 Point Lisas Ammonia Plants

PCS Nitrogen	Point Lisas	1981	520,000
PCS Nitrogen	Point Lisas	1981	520,000
PCS Nitrogen	Point Lisas	1996	402,000
PCS Nitrogen	Point Lisas	1998	610,000
<b>Total PCS Nitrogen</b>			<b>2,052,000</b>
Tringen 1	Point Lisas	1977	465,000
Tringen 2	Point Lisas	1988	550,000
Yara	Point Lisas	1966	310,000
<b>Total Yara</b>			<b>1,325,000</b>
Pt. Lisas Nitrogen	Point Lisas	1998	610,000
CNC	Point Lisas	2003	610,000
Nitrogen 2000	Point Lisas	2004	610,000
<b>Total Koch/Terra</b>			<b>1,830,000</b>
<b>Total Point Lisas</b>			<b>5,207,000</b>



# Planned Ammonia Plants

**Existing Point Lisas** **5,207,000**

<b>CLICO</b>	<b>Point Lisas</b>	<b>2008</b>	<b>610,000</b>
<b>TEIL</b>	<b>Point Lisas</b>	<b>2009</b>	<b>1,000,000</b>





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North Atlantic Ocean

La Brea

Guayaguayare

Siparia



# Planned Ammonia Plants

<b>Existing Point Lisas</b>			<b>5,207,000</b>
<b>CLICO</b>	<b>Point Lisas</b>	<b>2008</b>	<b>610,000</b>
<b>TEIL</b>	<b>Point Lisas</b>	<b>2009</b>	<b>1,000,000</b>
<b>La Brea Nitrogen</b>	<b>La Brea</b>	<b>2009</b>	<b>660,000</b>
<b>Coffeyville Res</b>	<b>La Brea</b>	<b>2009</b>	<b>660,000</b>
<b>ANSA McAI</b>	<b>La Brea</b>	<b>2009</b>	<b>660,000</b>
<b>Total Planned</b>			<b>3,590,000 *</b>

\* At least half of the nitrogen will be converted on-site into urea or UAN

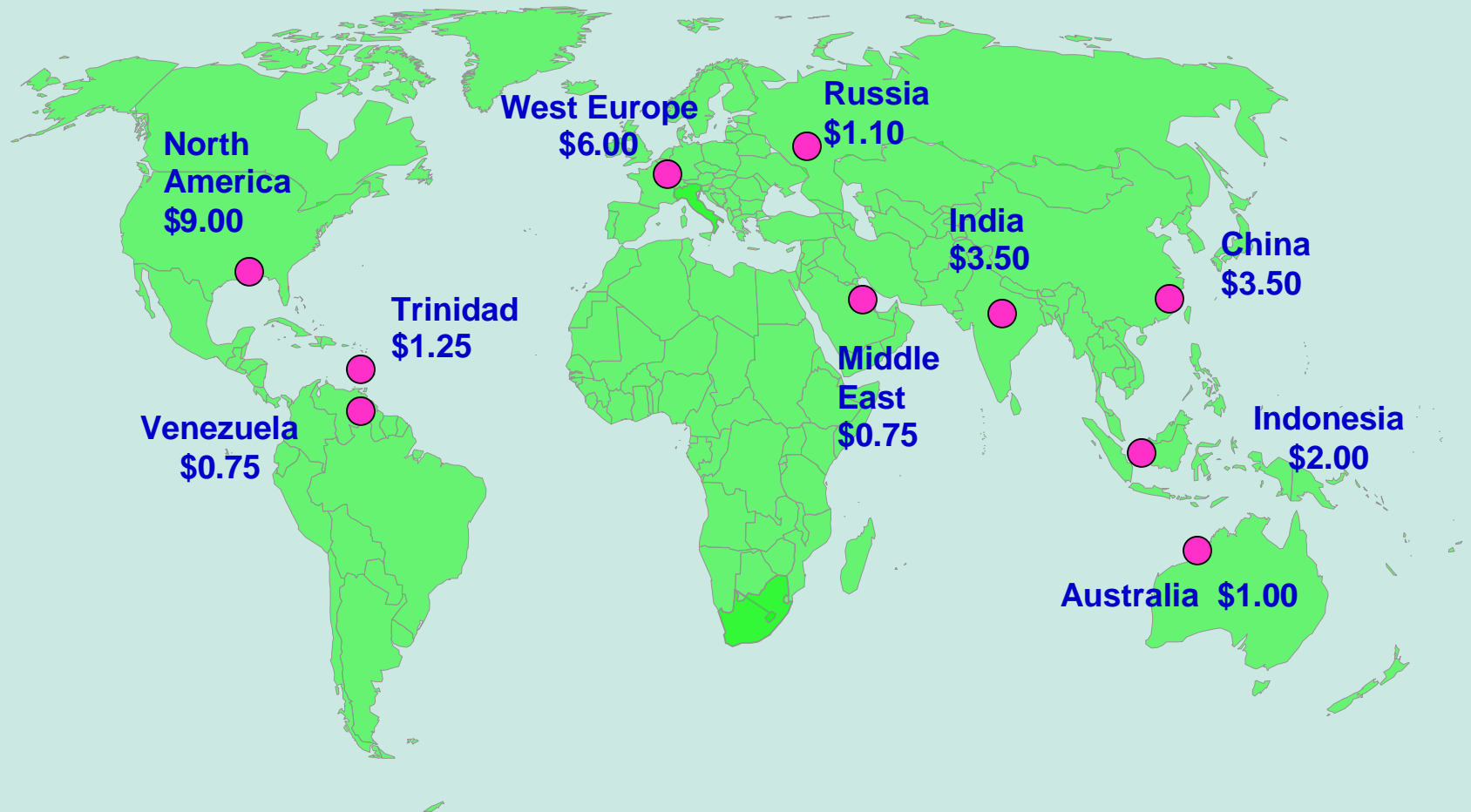


# Why Trinidad?

- **Low Political Risk & Positive Business Climate**
  - **Friendly & Stable Government**
  - **Experienced Workforce/Service Industry**
  - **Relatively Low Cost Gas**

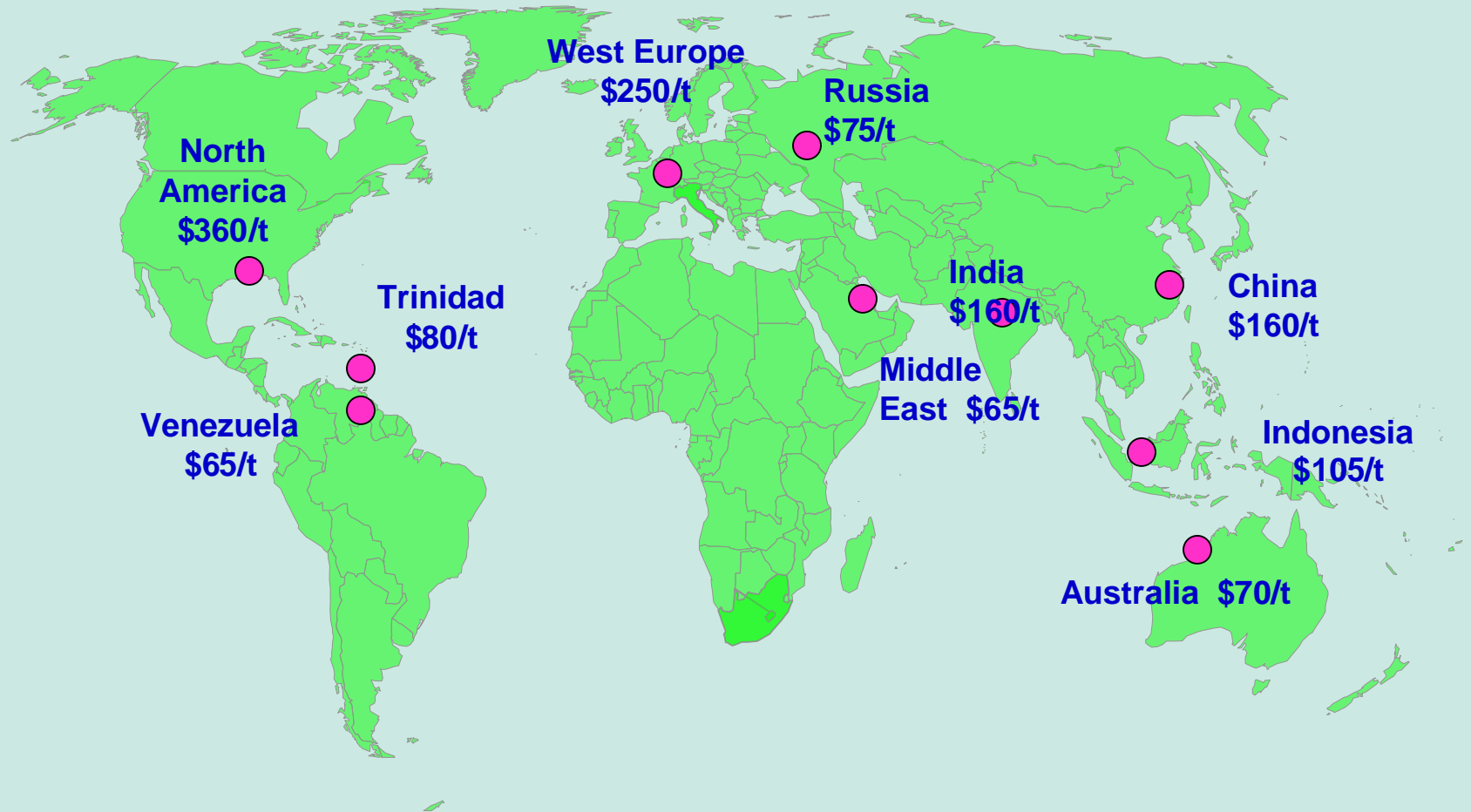


# 2005 Global Gas Prices (\$/MMBtu)





# 2005 Global Cash Cost of Ammonia Production (\$/tonne)



# Why Trinidad?

- **Low Political Risk & Positive Business Climate**
  - Friendly & Stable Government
  - Experienced Workforce/Service Industry
  - Relatively Low Cost Gas
- **Proximity to Major Markets**
  - Major Supplier of U.S. Ammonia
  - Opportunity for Urea & UAN exports to U.S.
  - Potential Sales into Latin America



# Distance to Major U.S. Ports

## Ammonia

### Distance in Nautical miles (Days)

Departure	Tampa	NOLA	Freeport
Point Lisas	1,735 (6)	2,065 (7)	2,217 (8)
Ventspiles (Baltic Sea)	5,143 (18)	5,472 (19)	5,653 (20)
Odessa (Black Sea)	6,382 (22)	6,712 (23)	6,893 (24)

## Urea/UAN

Departure	Wilmington	NOLA	Houston
Point Lisas	1,697 (6)	2,065 (7)	2,254 (8)
San Jose	3,351 (12)	2,385 (8)	2,793 (10)
Arab Gulf	8,580 (30)	9,602 (33)	9,800 (34)
Constantza	5,544 (19)	6,566 (23)	6,764 (24)



# Dedicated Ammonia Vessels

**CARLI BAY**

**JESPER MAERSK**

**TOURAINÉ**

**EUPEN**

**KOCH NITROGEN**

**KOCH NITROGEN**

**KOCH NITROGEN**

**KOCH NITROGEN**

**ELVERSELE**

**JAKOB MAERSK**

**PCS NITROGEN TRINIDAD**

**PCS NITROGEN TRINIDAD**

**MAROLA**

**SOLARO**

**TRINIDAD NITROGEN CO. LTD.**

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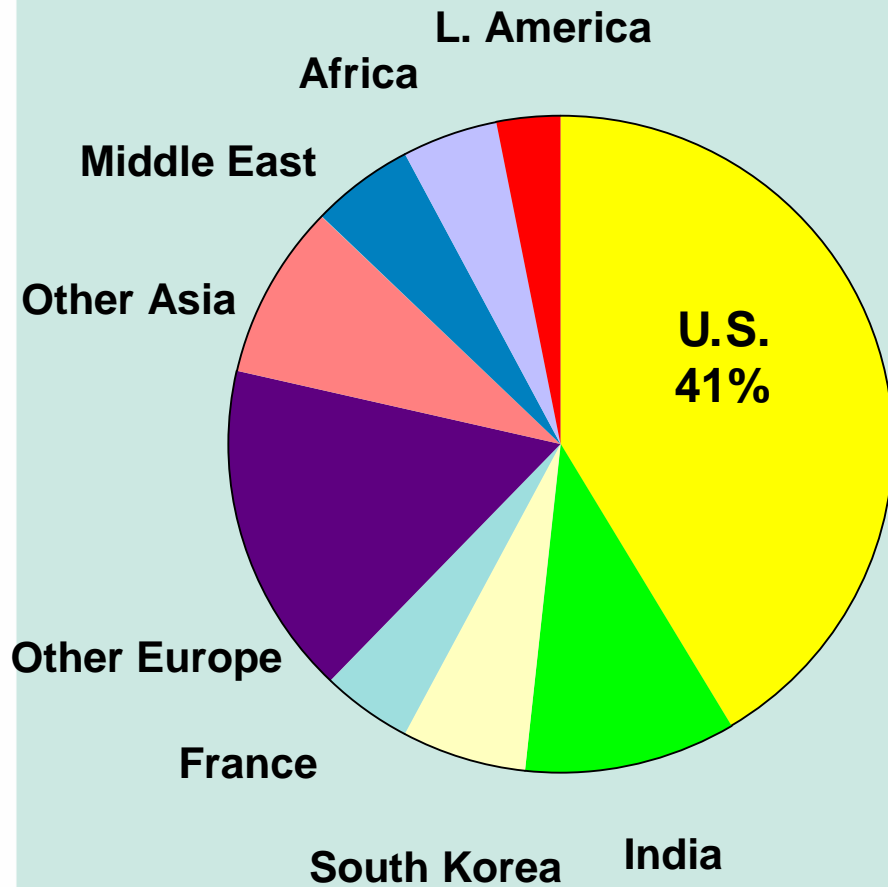
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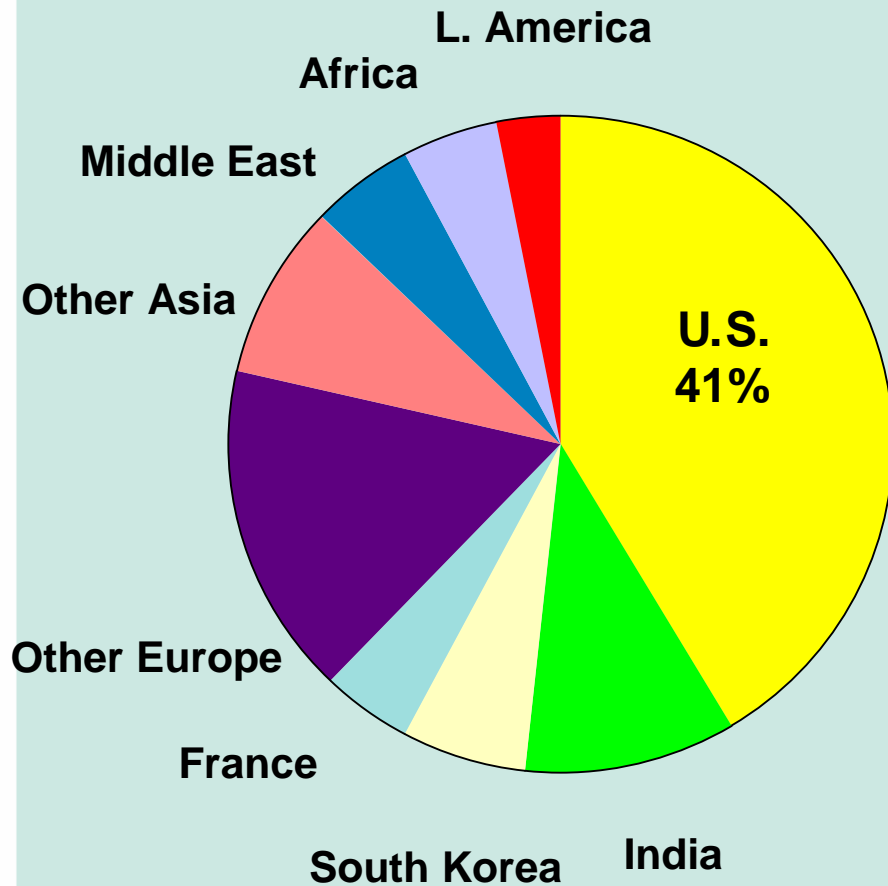
# World Ammonia Importers

(17.7 million metric tons of ammonia)



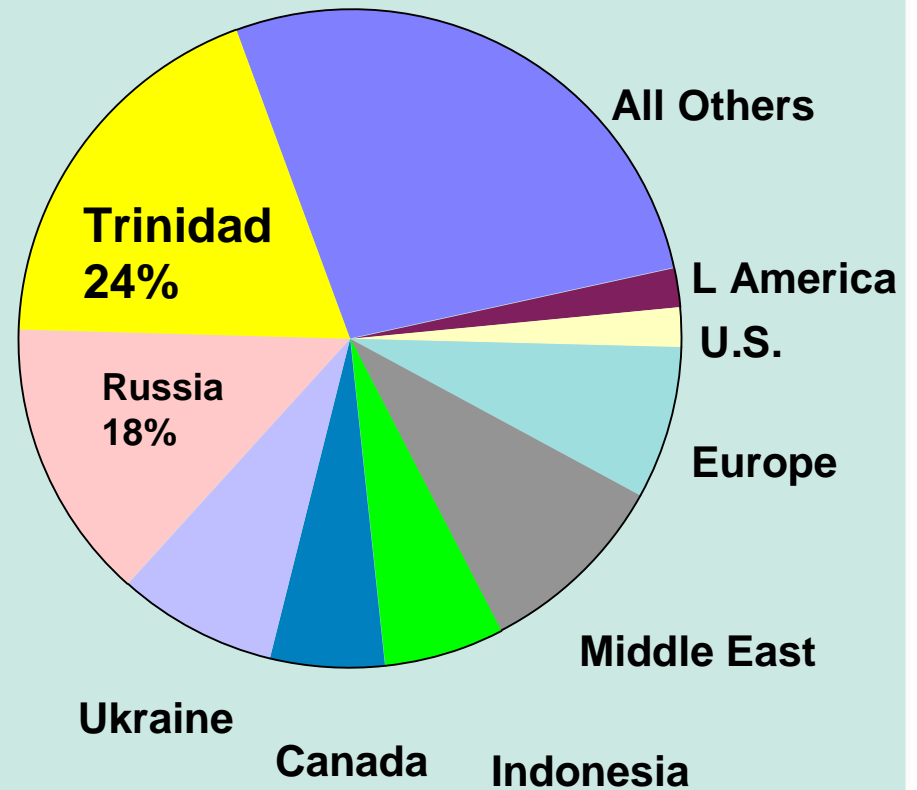
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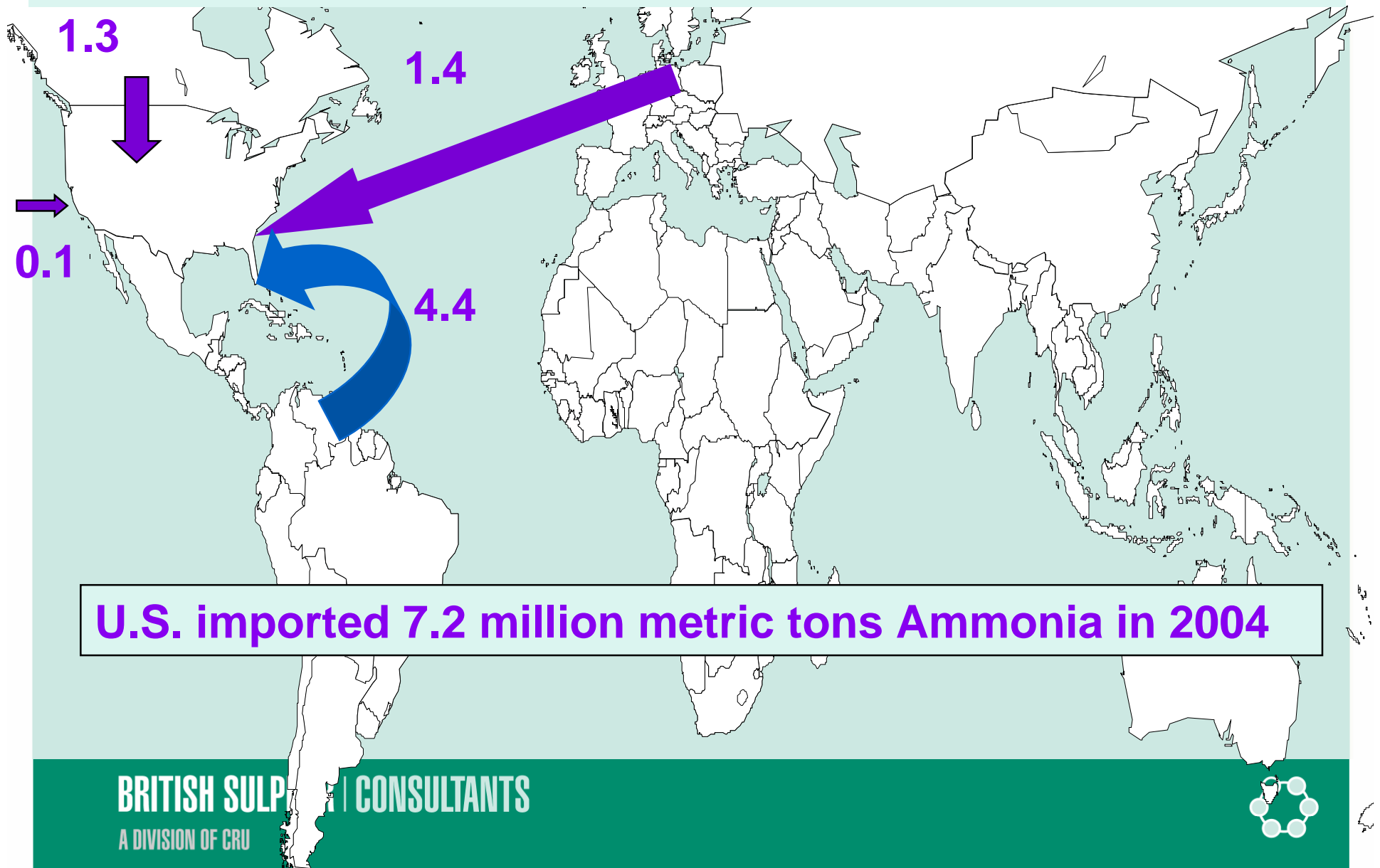


# World Ammonia Exporters

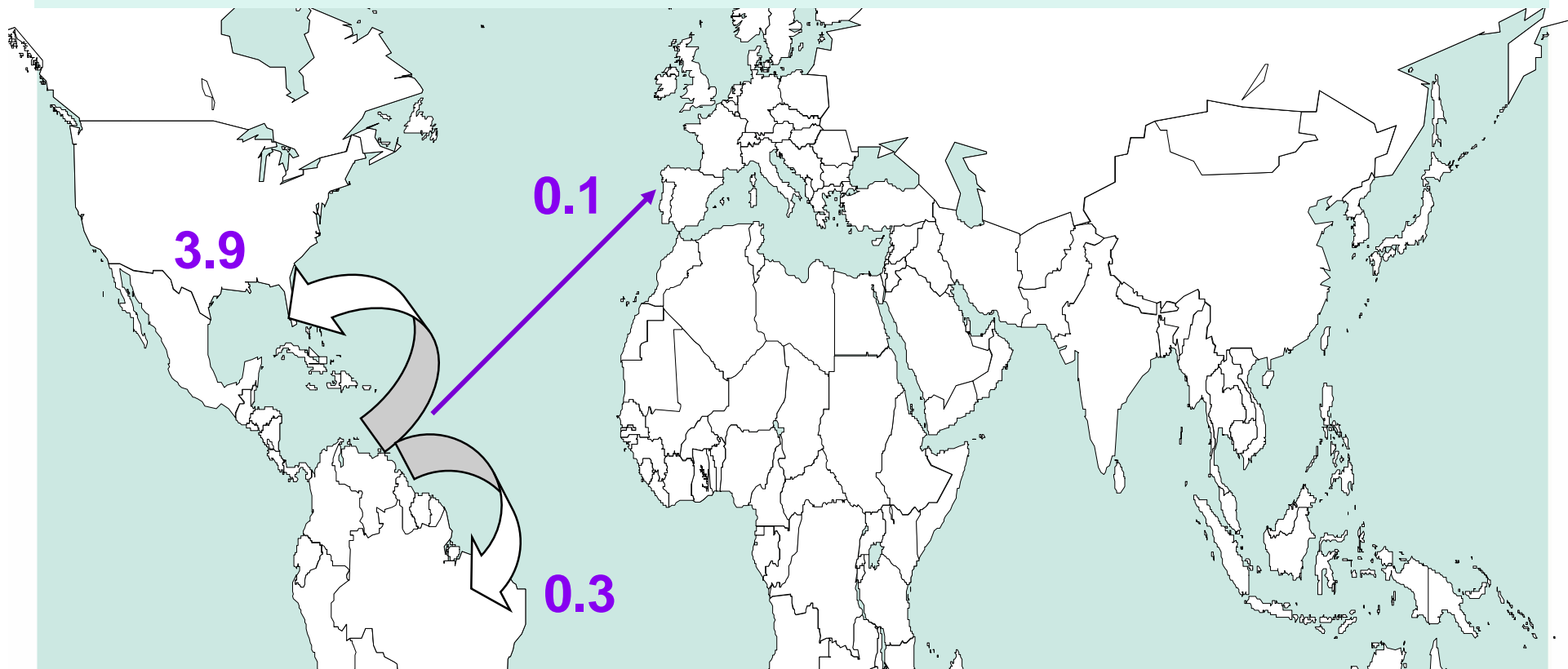
(17.7 million metric tons of ammonia)



# Ammonia Imports into the U.S.



# Ammonia Exports from Trinidad

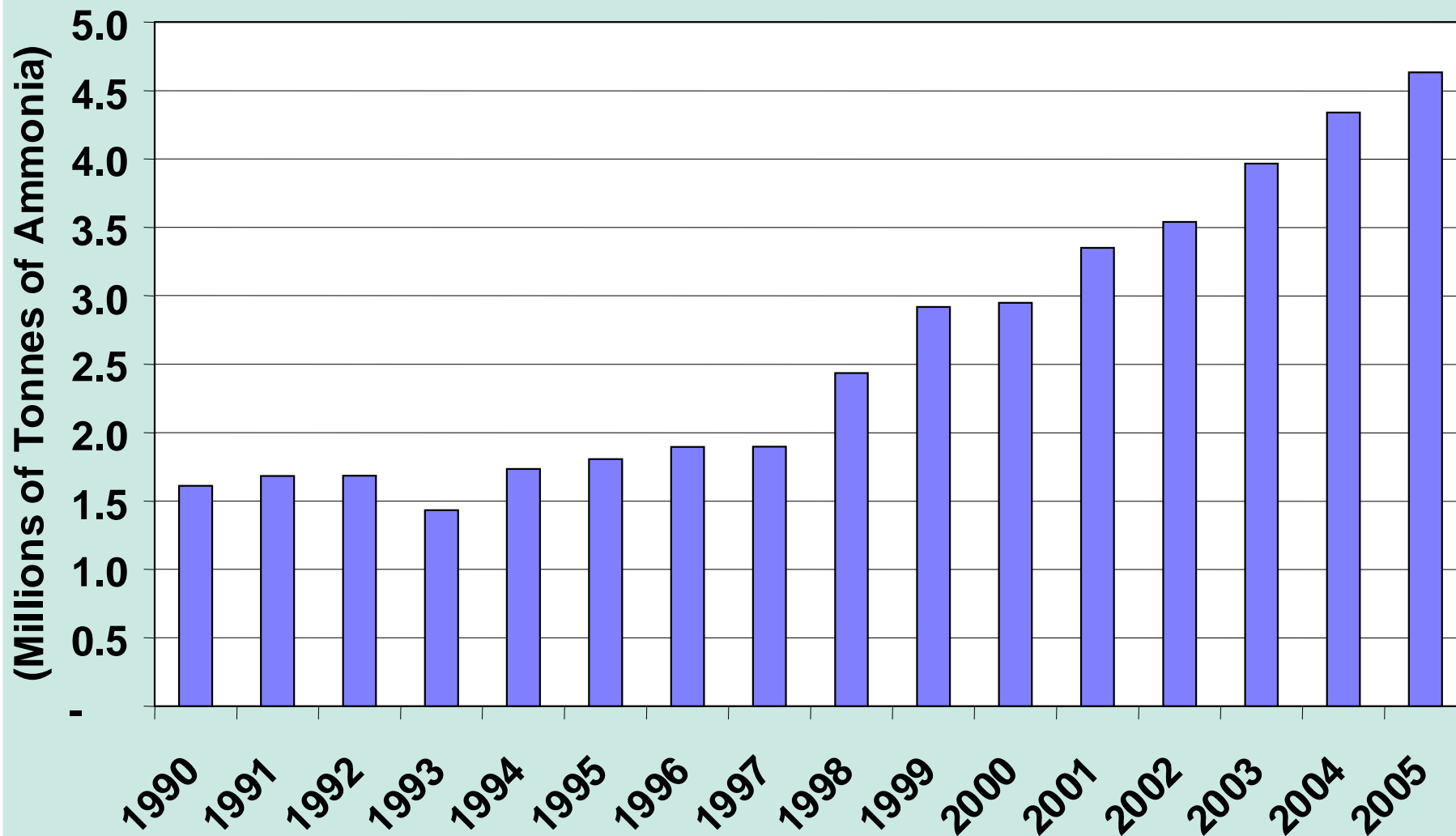


**Trinidad exported 4.3 million metric tons Ammonia in 2004**





# Ammonia Exports from Trinidad

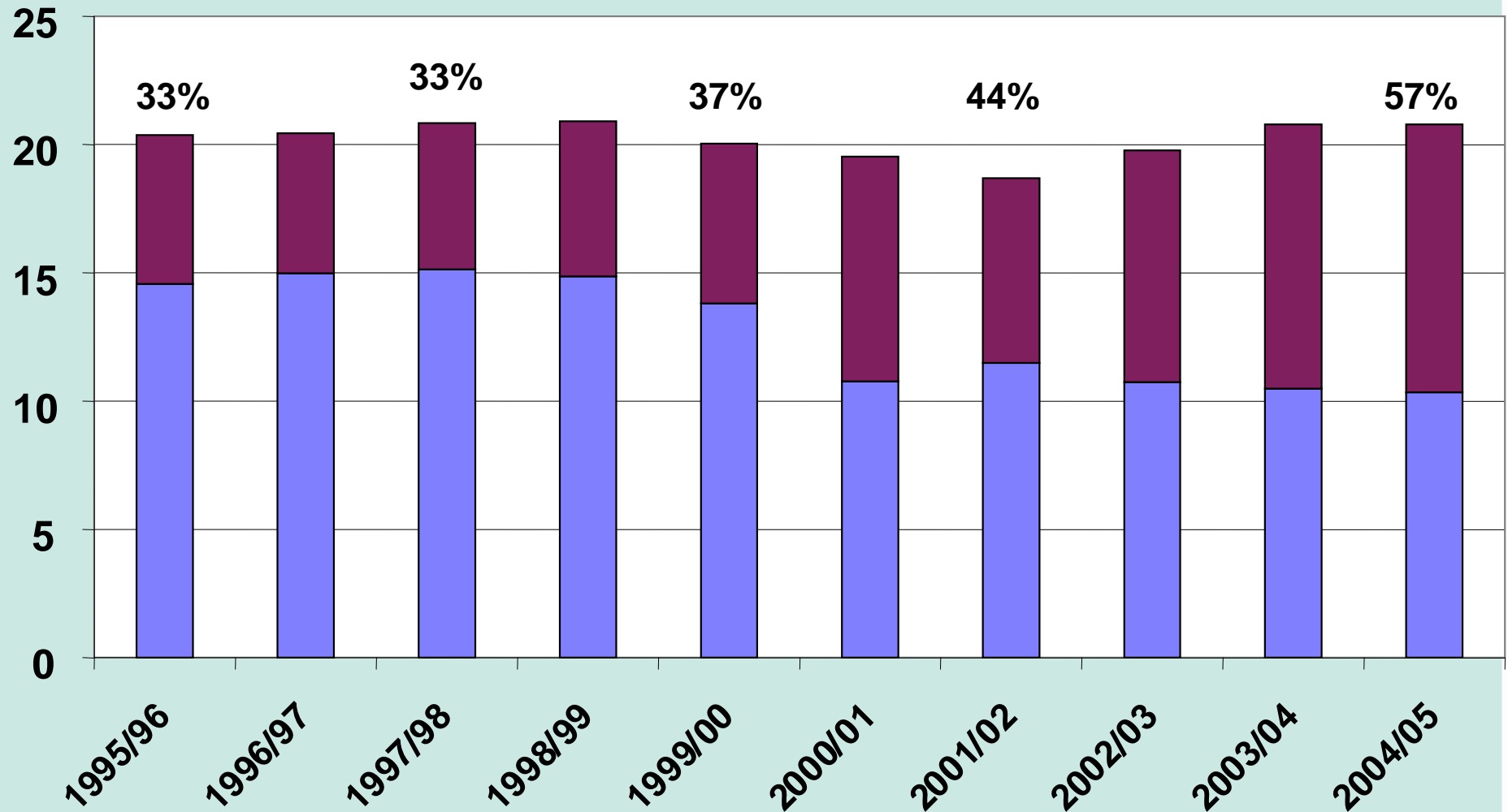


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# U.S. Nitrogen Production & Imports



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# Trinidad Issues?

- **Limited Gas Availability**
  - **LNG Exports vs. Domestic Conversion**
  - **Domestic Conversion Creates Jobs**
- **Petrochemical vs. Other Industrial Uses**
  - **Ammonia & Methanol**
  - **Steel & Aluminum**
- **Capital Costs**
  - **Ammonia – 2,000 tpd - \$400 million**
  - **Half Converted to Urea or UAN - \$200 million**



# Trinidad Ammonia - NOLA Barge

660,000 tpy NH<sub>3</sub>  
\$400 million Capital Cost  
Assuming gas @ \$1.25 mmbtu

Cash Production Costs	\$ 75	metric ton
Shipping to NOLA	\$ 25	
Terminal Charge	<u>\$ 15</u>	
Total Cash Delivered	\$115	
Debt Service	<u>\$ 85</u>	
Delivered Full Cost	\$200	metric ton
	\$181	short ton



# Trinidad Conclusions

- **Ammonia, Urea & UAN plants will be built**
  - **Expect 3 or 4 New Plants before 2012**
  - **Expect at least Half Converted to Urea or UAN**
- **U.S. will be Primary Target for Trinidad Exports**
  - **Ammonia Imports from Trinidad grow to over 5 million tonnes by 2012**
  - **Urea & UAN Imports from Trinidad grow to over 2.5 million tonnes by 2012**

