

AMM V Steel Scrap Conference

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HBI/DRI Supply & Demand Outlook



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- **International Iron Metalics Association**
- **Ore-Based Metalics**
 - ✓ **Description/Features & Benefits**
 - ✓ **Requirements for HBI Industry**
 - ✓ **Iron Producers/Sources**
 - ✓ **Supply-Demand Issues**
 - ✓ **Price Development**
- **Summary**



International Iron Metallics Association

- Producers of DRI, HBI, Iron Nuggets, and Merchant Pig Iron



- Trade Contributors
- Suppliers of raw materials, logistics, technology, equipment, consultancy, etc.
- Individuals whose careers have helped further the ore-based metallics industry

IIMA = HBIA + IPIA

HBIA (Hot Briquetted Iron Association)

IPIA (International Pig Iron Association)



Primary Purpose

Create unified market presence to:

Promote

value-added benefits for steel production & iron casting

Represent

collective interest of members

Collect & Present

industry data and statistics

Serve

as readily available information source

Strictly observes and complies with anti-trust laws





Ore-Based Metallics



- Merchant pig iron, HBI, DRI & iron nuggets are ore-based metallics (manufactured from iron ore)
- Ore-based metallics are not **scrap substitutes** or **alternate iron sources**
- They are **SCRAP SUPPLEMENTS** and add value beyond the basic price of iron units





Hot Briquetted Iron (HBI)



Chemical Characteristics (ranges % by wt.)

Total Iron (Fe)	90.0 - 94.0%
Gangue	1.95 - 5.10%
P ₂ O ₅	0.02 - 0.11%
S	0.003 - 0.03%
C	0.8 - 1.7%
Weight	0.4 - 6.6 lbs
App. Density	>312 lbs/ft ³
Bulk Density	156 - 187 lbs/ft ³
Length	3.5 - 5.0 in
Width	1.9 - 4.5 in
Thickness	0.75 - 2.0 in



HBI Features & Benefits

- **Low residual content**
 - ✓ **Blend with scrap to dilute residuals**
 - ✓ **Blend with scrap to achieve best overall charge economics**
- **Promotes slag foaming**
- **N₂ scavenger = Low N₂ content in steel**
- **Excellent thermal and electrical conductivity**
- **Bucket charge (up to 40%)**
- **Continuously feed (up to 100%)**
- **Extremely stable, resistant to loss of metallization**
- **Easily and safely transported, handled, and stored**
- **Quality guaranteed by supplier**



Requirements for HBI Industry

Host Country

- **Natural Gas**
 - **Iron Ore**
 - *Fines, Lumps & Pellets*
 - **Electricity**
 - **Water**
 - **Infrastructure**
 - *Gas Pipelines, Ports, Rail Lines, Roads*
 - **Qualified Personnel**
- } Long term Contracts @ Competitive Prices

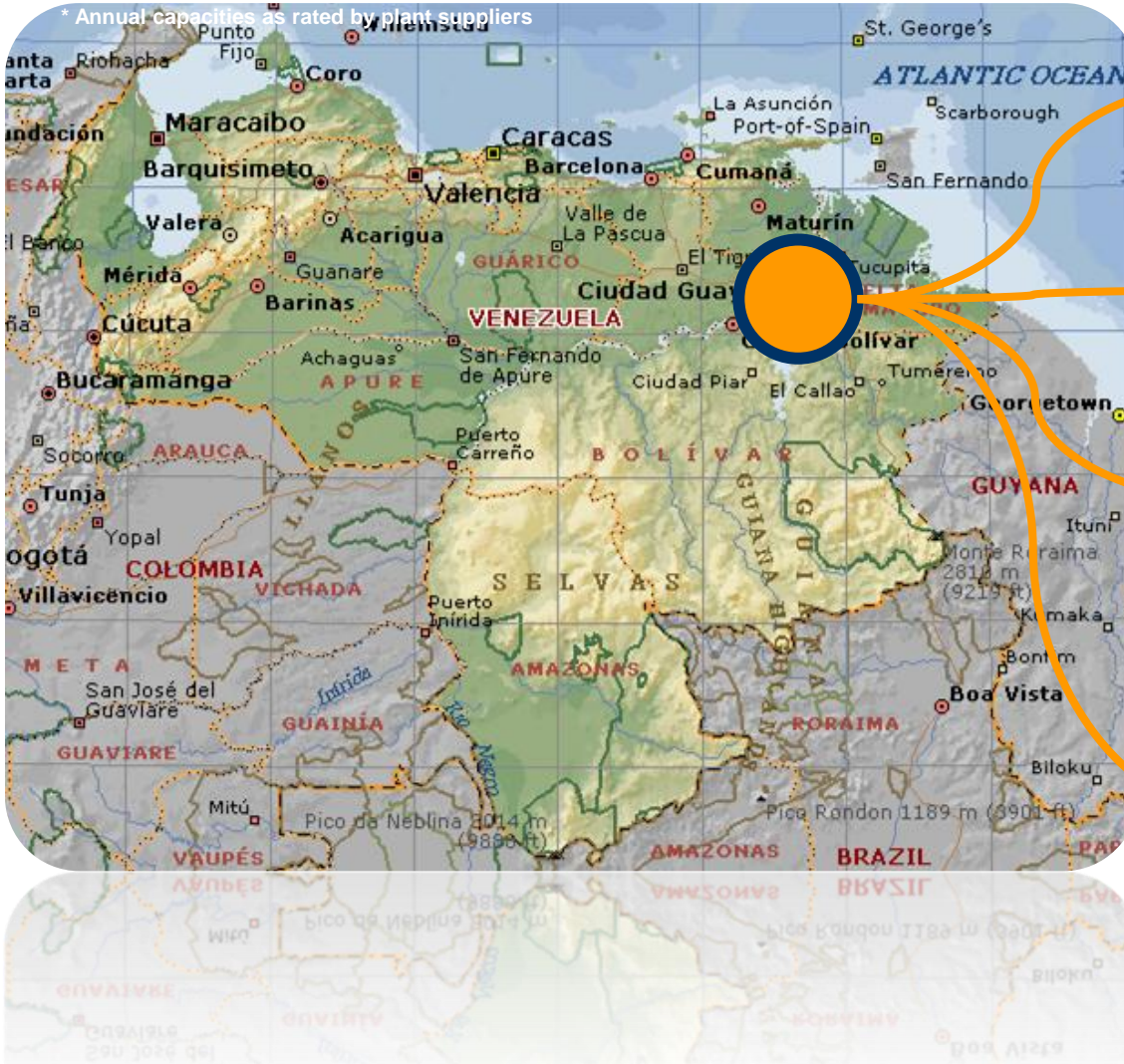


Venezuela Has It All

- **Iron Ore**
Total Reserves: 14,678 billion tons
(3,644 proved; 2,323 probable; 8,711 possible)
- **Natural Gas**
Proven Reserves (Anaco):
35.4 trillion m³
- **Hydroelectric power**
Capacity: 17,376 MW
- **Water/Ports**
Orinoco River & Caroni River
Palua – world's most experienced DRI/HBI port
- **Qualified labor force**
Direct reduction plants in operation since 1976



Iron Producers



<u>Iron Ore</u>	
CVG FMO	25.0

<u>DR Grade Pellets</u>	
CVG FMO	3.3
Sidor	8.0
Total	11.3

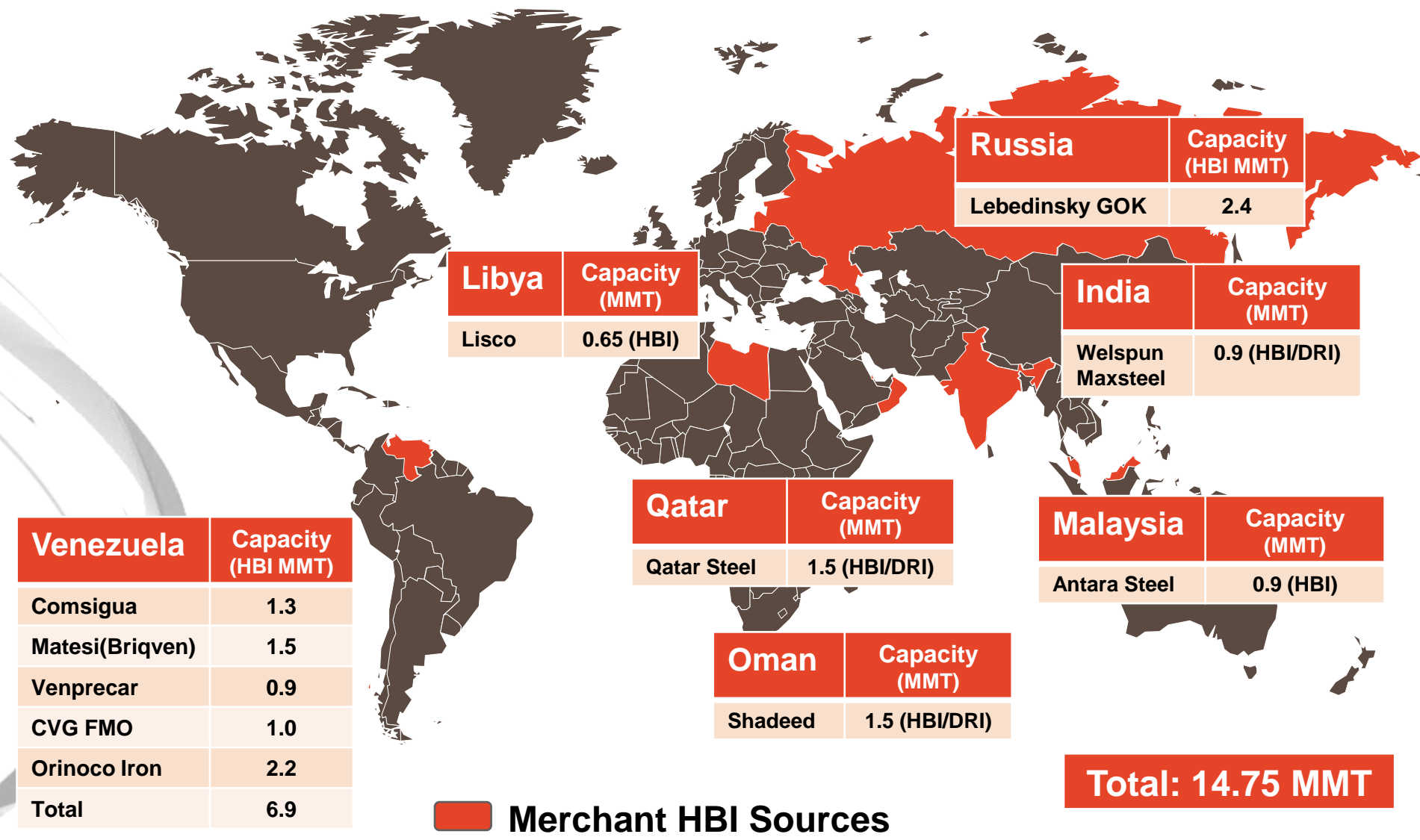
<u>DRI</u>	
Sidor	4.8

<u>HBI</u>	
Comsigua	1.3
Briqven(Matesi)	1.5
Venprecar	0.9
CVG FMO	1.0
Orinoco Iron	2.2
OrDI (*)	0.4
Total	7.3

* Idle



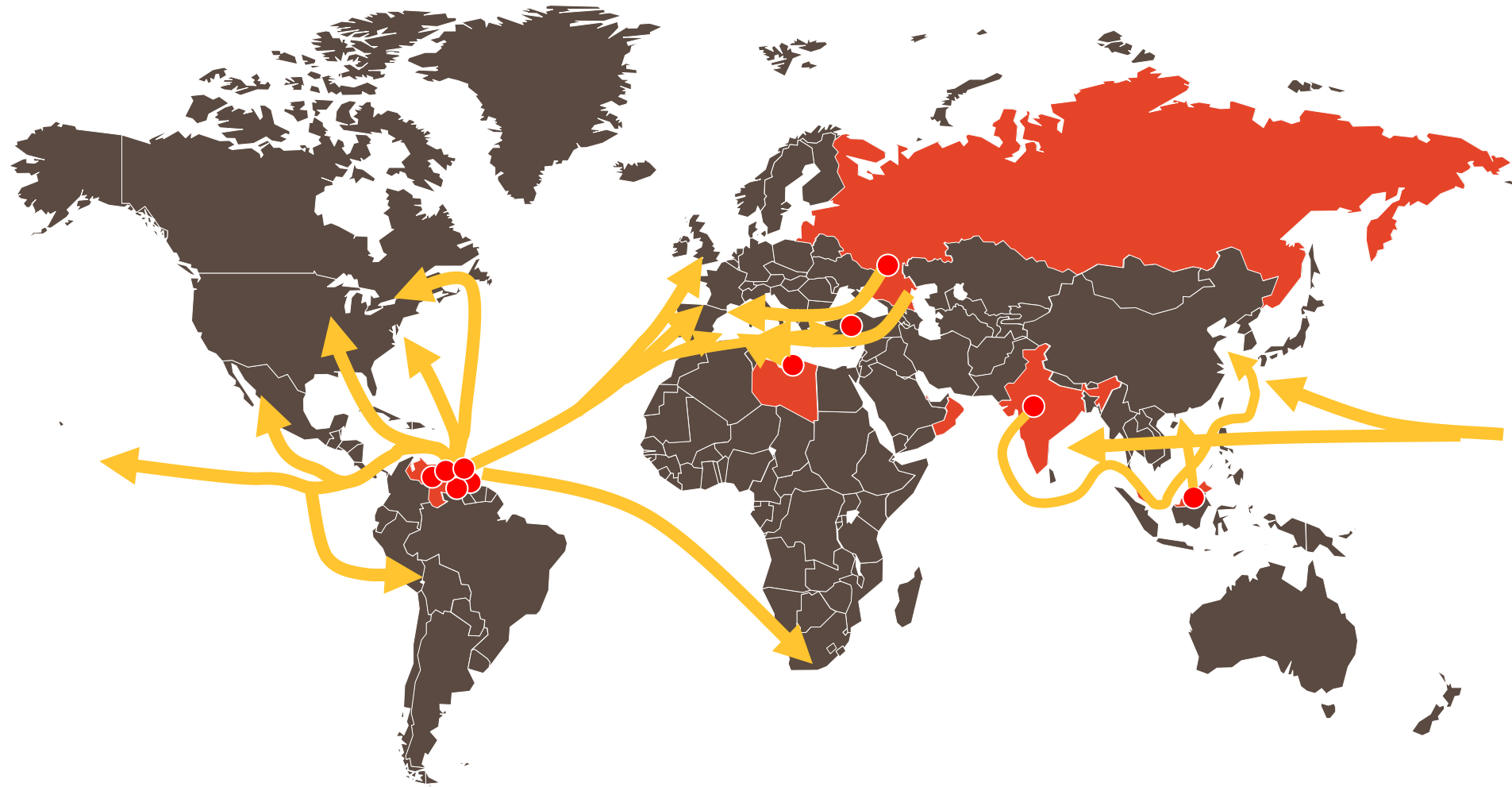
Merchant HBI Sources



Total: 14.75 MMT



Merchant HBI Trade Routes

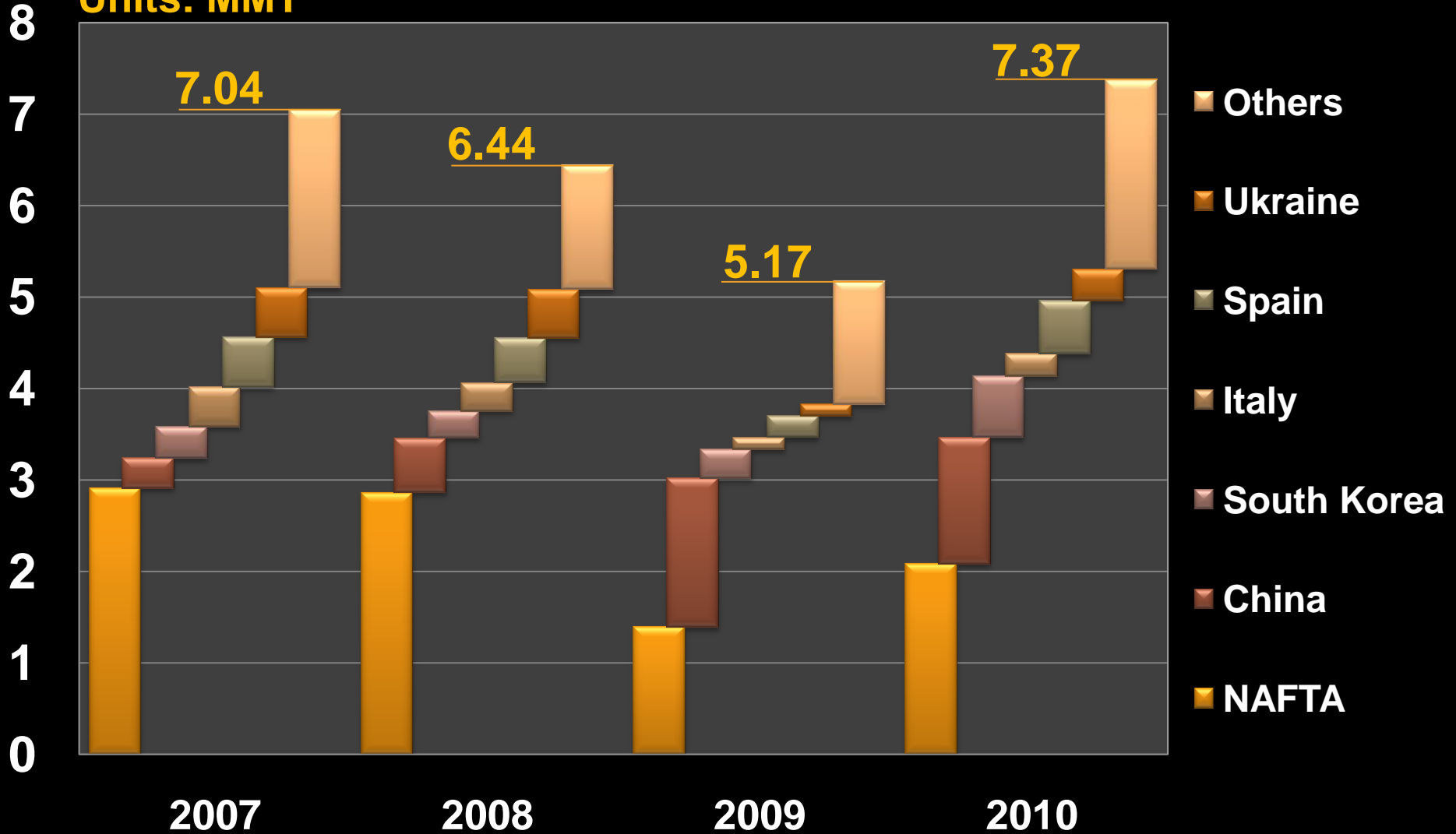


 **Merchant HBI Sources**



Destinations of Merchant HBI

Units: MMT





Supply-Demand Issues

- **Supply-side:**

- ✓ Raw material costs vs. selling price
- ✓ Nationalization of Venezuelan HBI industry
- ✓ Middle East and Russia

- **Demand-side:**

- ✓ Global Steel industry activity
- ✓ Impact of increased domestic demand in Russia
- ✓ Chinese demand for imported metallics
- ✓ Availability of low residual scrap
- ✓ Captive metallics sources

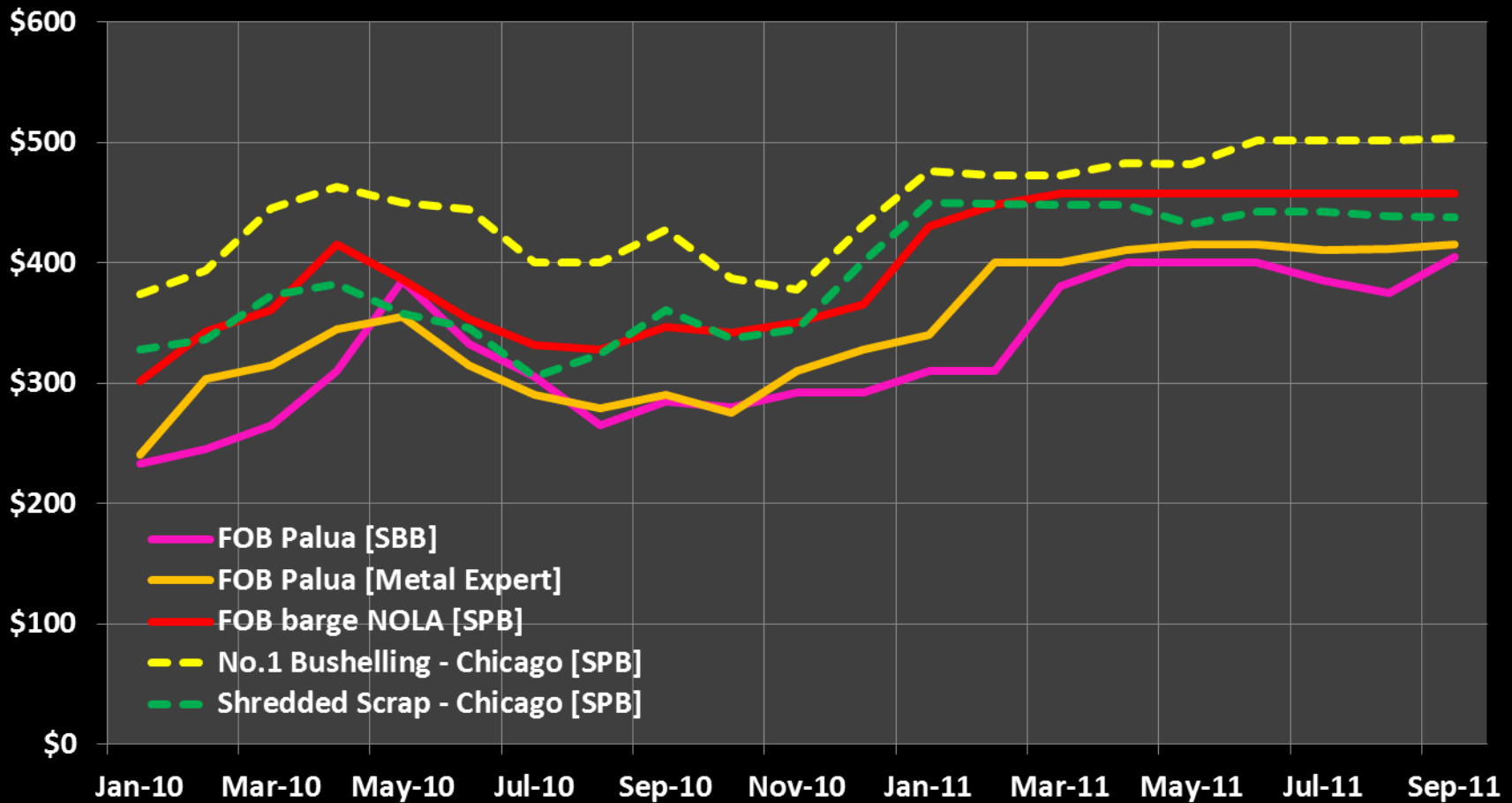


Contract/Pricing Dynamics

- **Steel sector:**
 - ✓ **Most are spot priced on a shipment-by-shipment basis**
 - ✓ **Public offering (Venezuela)**
 - ✓ **Price drivers:**
 - ❖ **Scrap prices**
 - ❖ **Supply/demand balance [can vary regionally]**
 - ❖ **Raw material costs**
 - ❖ **Freight rates**



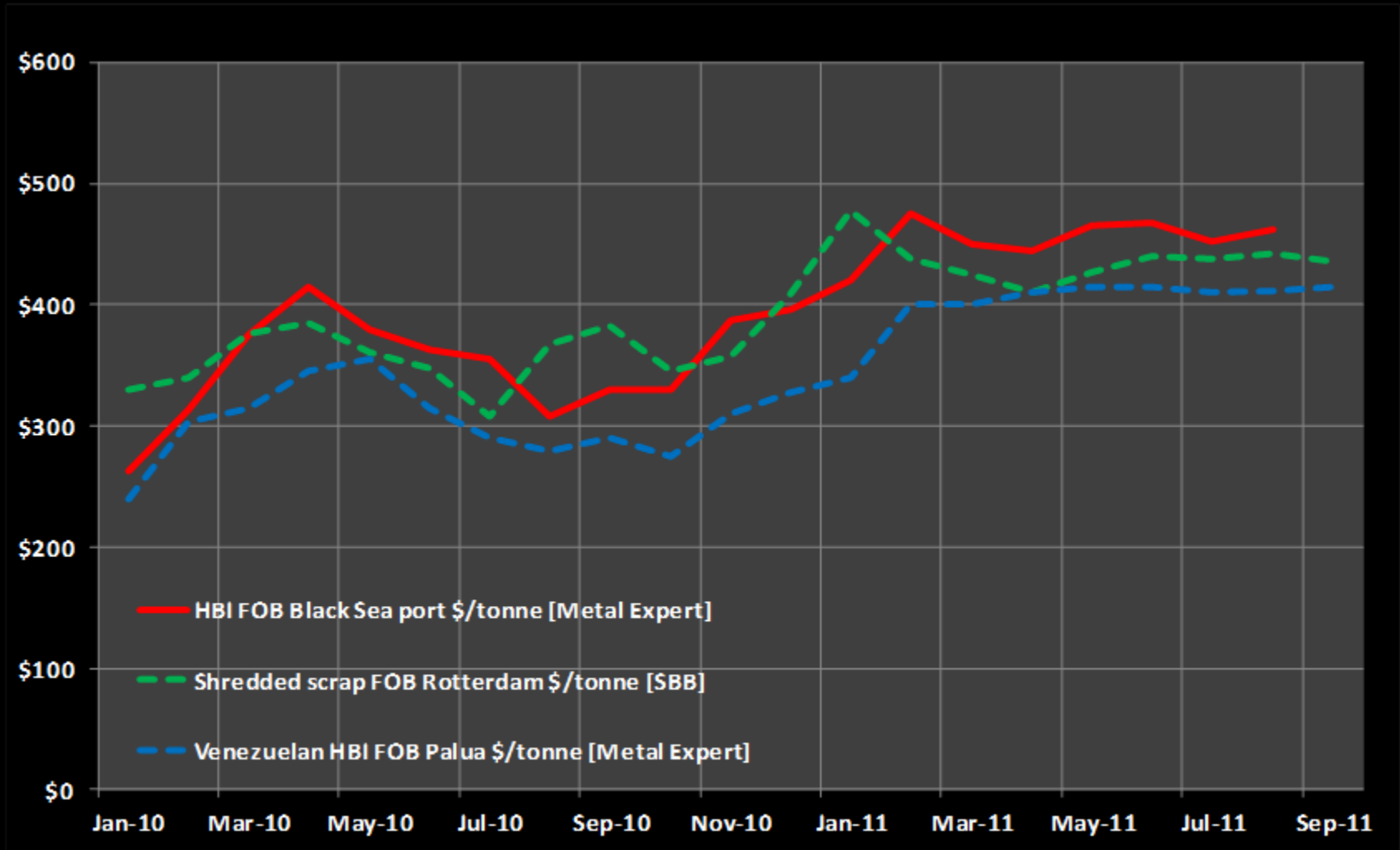
Venezuelan HBI Prices





Russian HBI Prices

RUSSIAN HBI PRICES





Metallics Current Perspectives - Slim Margins, If Any



Everywhere



Thank you for your attention

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