

Military and Defense

Opportunities and Challenges



Ian S. Hodges, Managing Director UK

May 19-21, 2014 • Hilton Sorrento Palace, Sorrento, Italy



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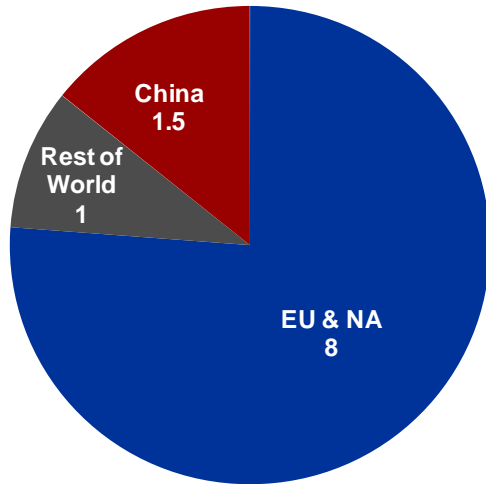


Agenda

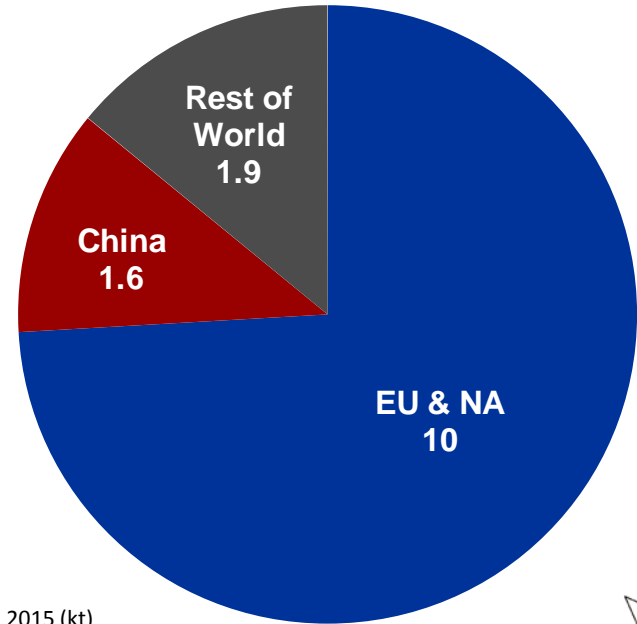
- Budgets and Spending
- Programs
- Foreign Military Sales
- Additive Manufacturing
- Titanium Demand??

Global Military Titanium Demand

Global Military Titanium Demand Forecast:
2009, 10.5 kt



Global Military Titanium Demand Forecast:
2015, 13.5 kt



Source: Roskill, Fifth Edition, 2010, Table 132: World: Forecast demand for titanium mill products, 2015 (kt)

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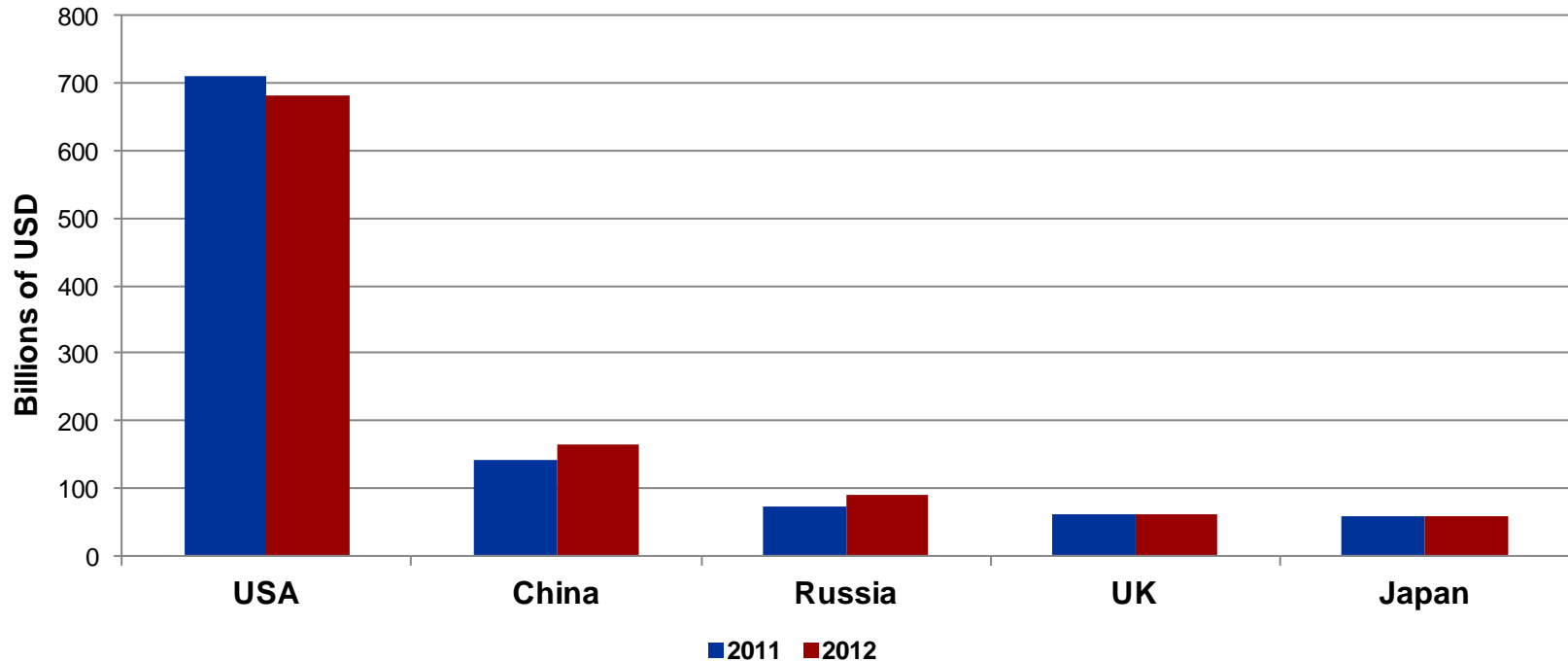
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Top 5 Military Spenders in 2012



Source: Stockholm International Peace Research Institute Yearbook 2012 (Table 3.3), and 2011 (Table 4.2)

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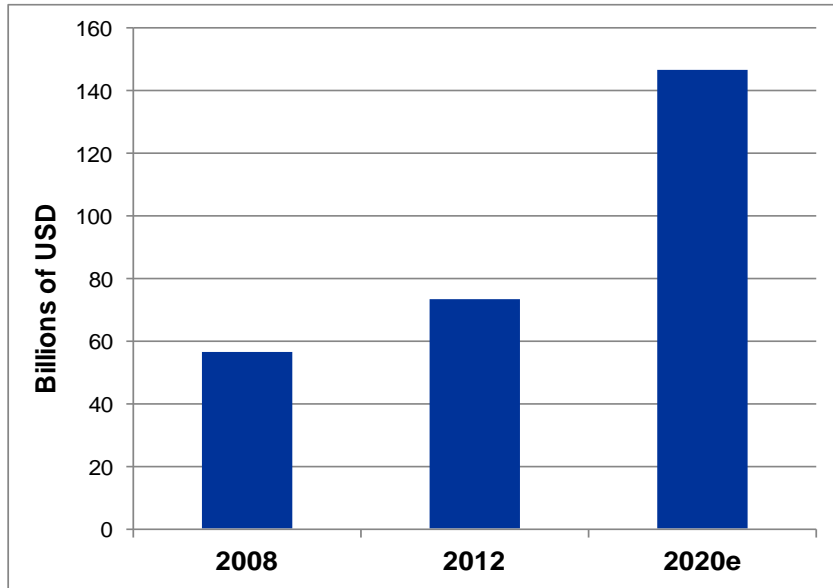
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IHS Jane Study

Global Arms Trade



- Two things are happening: Budgets are shifting east and global arms trade is increasing competition,” said Paul Burton, senior manager of IHS Jane’s DS forecast.
- “At this rate, defense trade between countries will have more than doubled by 2020.”
- “This is the biggest explosion in trade the world has ever seen.”

Source: IHS Jane Study, June 2013

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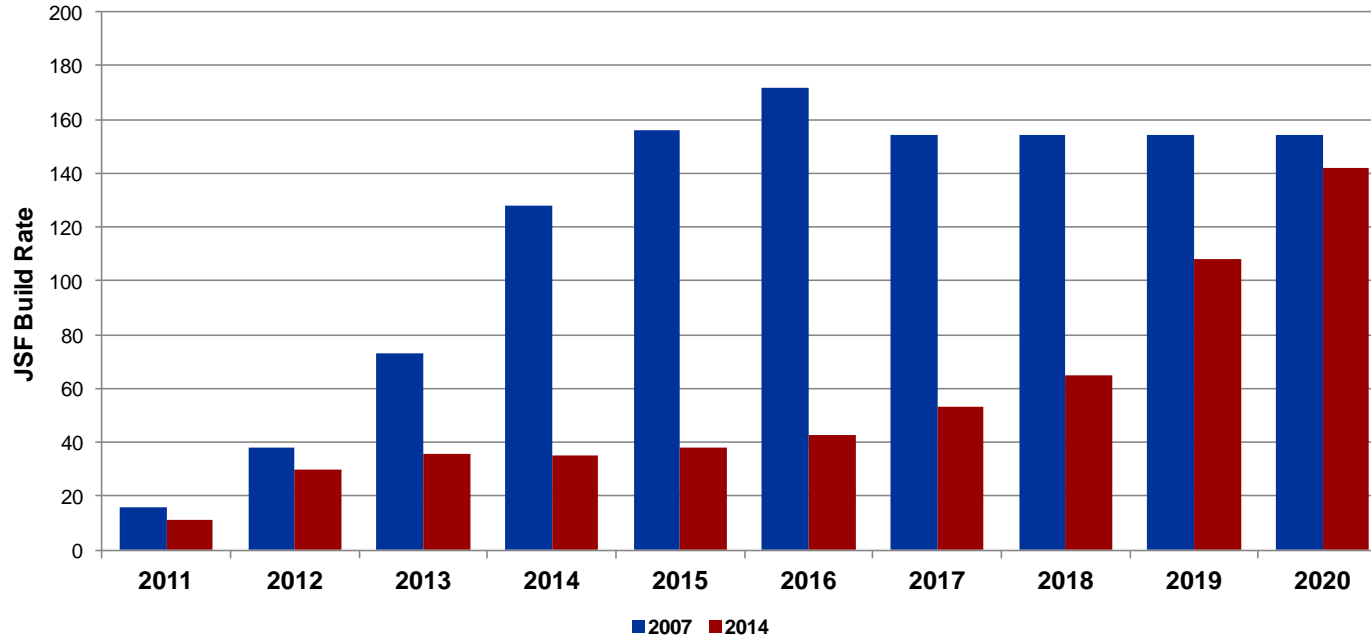
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Decrease in JSF Build Rates



Source: Teal Group 2007 and 2014



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Foreign Military Sales

- DoD has surpassed State Dept in foreign spending

FY2012		FY2013	
Country	Estimated Allocation	Country	Estimated Allocation
Israel	\$ 3,075	Israel	\$ 3,100
Afghanistan	\$ 2,327	Afghanistan	\$ 2,505
Pakistan	\$ 2,102	Pakistan	\$ 2,228
Iraq	\$ 1,683	Iraq	\$ 2,045
Egypt	\$ 1,557	Egypt	\$ 1,563
Jordan	\$ 676	Jordan	\$ 671
Kenya	\$ 652	Nigeria	\$ 599
Nigeria	\$ 625	Tanzania	\$ 571
Ethiopia	\$ 580	South Africa	\$ 489
Tanzania	\$ 531	Kenya	\$ 460
Total	\$ 13,808	Total	\$ 14,231

Source: Congressional Budget Justification Summary Table, FY2013, Country/Account Summary (spigots) FY2012 estimate and FY2013 request tables

Programs

- Western Europe
 - NH 90
- Russia
 - New 2.5-ton light helicopter
 - T-50 PAK FA Fighter
- South Korea
 - F-35
 - KAI T-50
- India
 - P-8
 - Chinooks
 - Apache



Photo: Shutterstock



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Programs

- Afghanistan
 - Mi 17
- Iraq
 - Stryker Infantry carriers
- Israel
 - V-22
 - KC 135
- Qatar
 - NH90
 - AH-64



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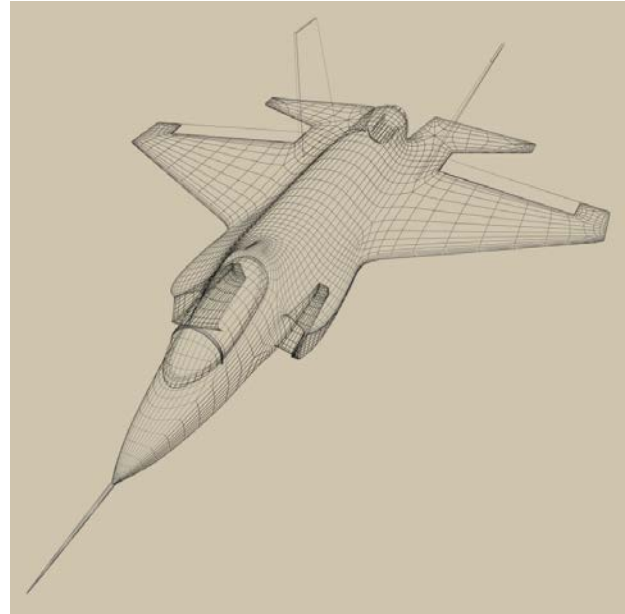
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Additive Manufacturing

“We are aggressively deploying additive manufacturing ... across all of our business areas. We do see great innovation with purpose and an entire family of applications.”

- Steve Betza, *Corporate Director of Hardware Engineering and Advanced Manufacturing at Lockheed Martin*



Source: *National Defense Magazine, March 2014*

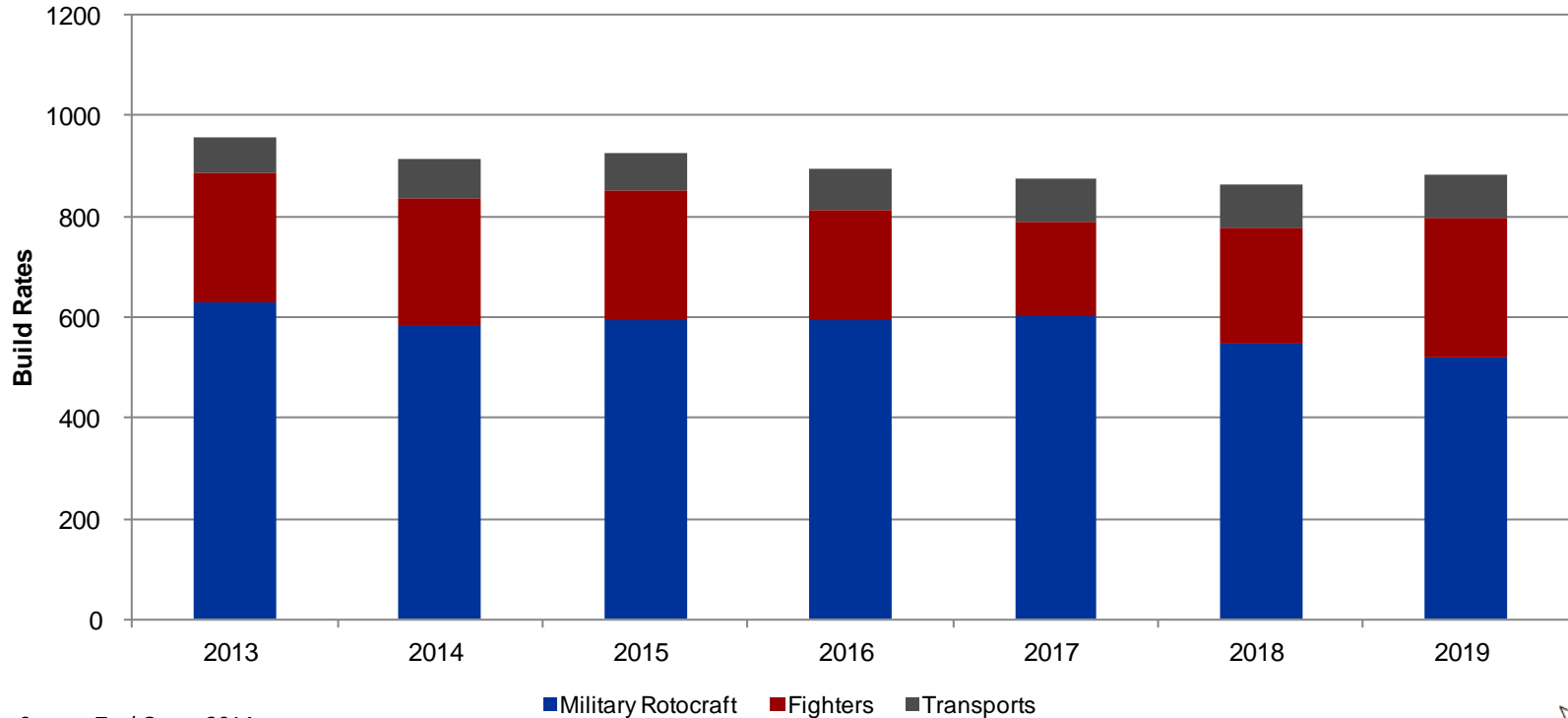
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Military Build Rates



Source: Teal Group 2014

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■ Military Rotocraft ■ Fighters ■ Transports

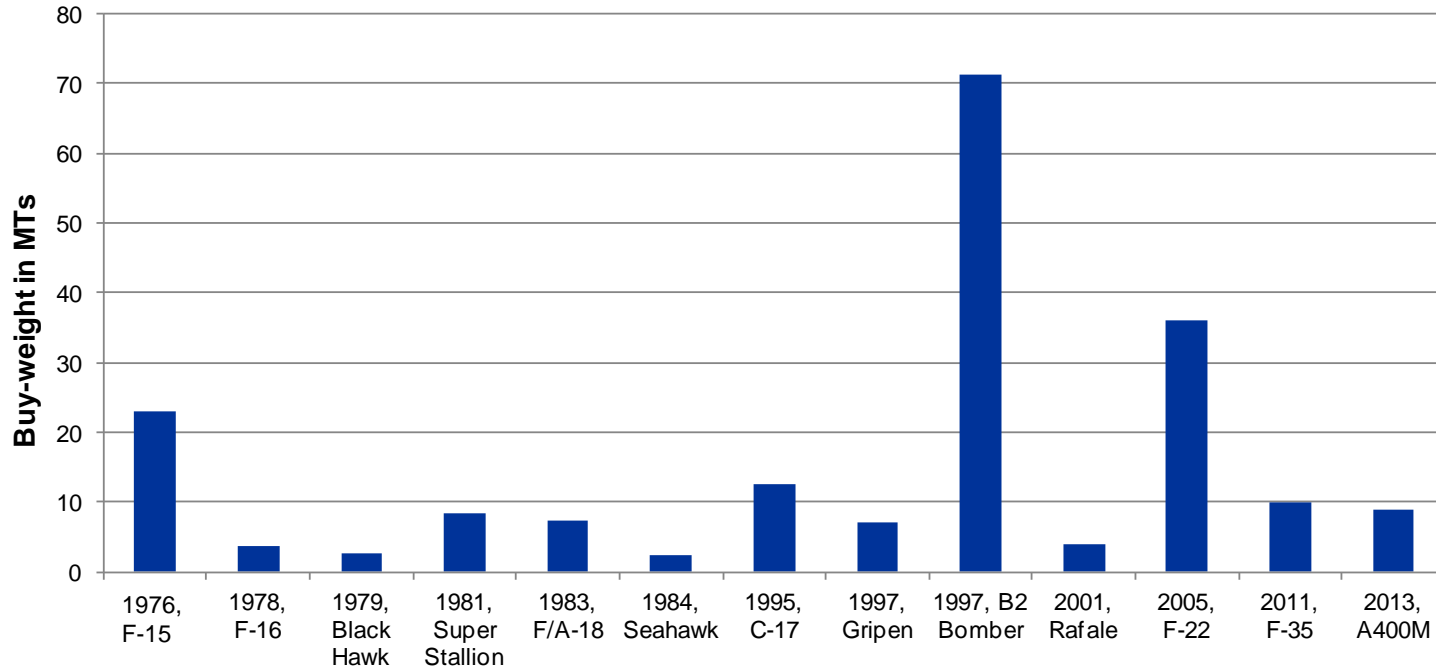
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Titanium Content per Aircraft



Source: Roskill, Sixth Edition, 2013, Table 81: Western World: Titanium buy-weights for commercial and military aircraft

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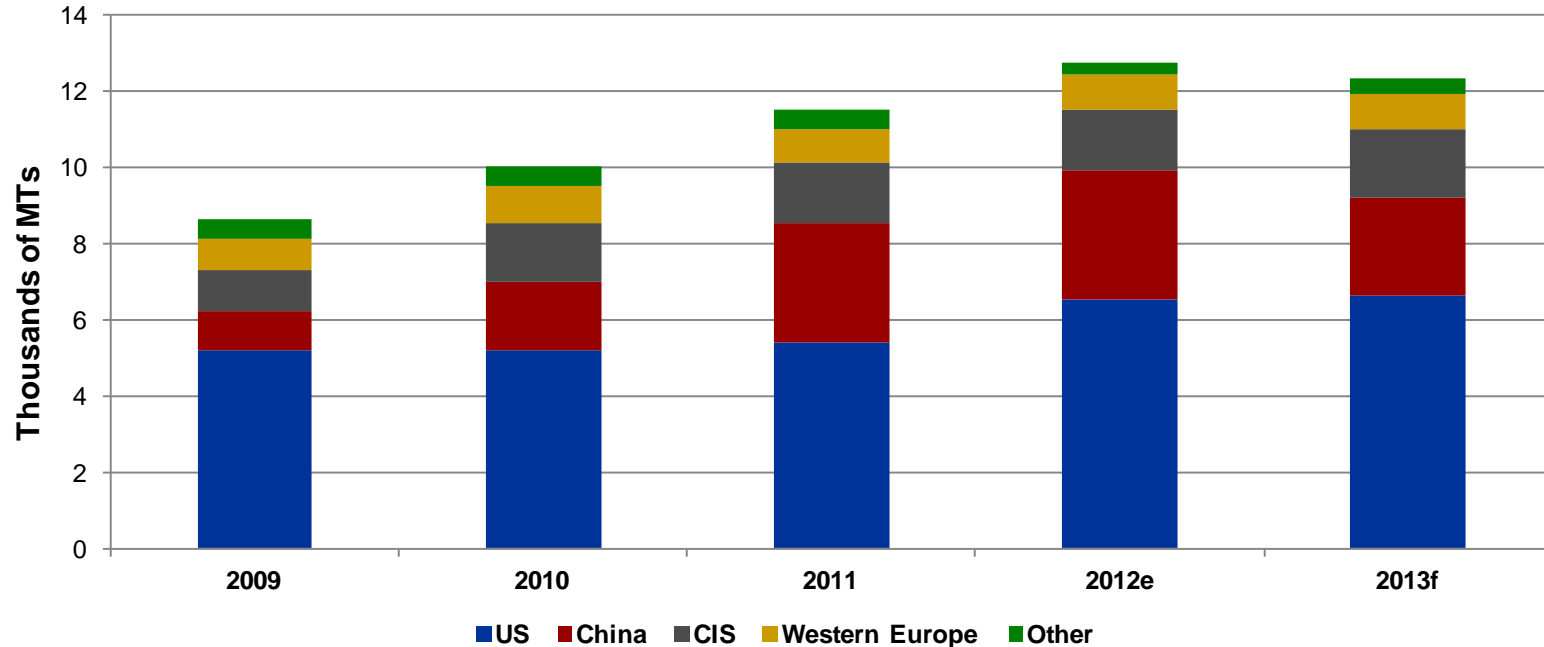
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Global Military Titanium Demand

Global Defense Sector Titanium Demand by Location: 2009 - 2013



Source: TZMI Titanium Metal Annual Review 2012, REF 8349

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