Military and Defense Opportunities and Challenges

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Agenda

- Budgets and Spending
- Programs
- Foreign Military Sales
- UAV/Drones
- Titanium Demand??
Global Military Titanium Demand

Global Military Titanium Demand Forecast: 2009, 10.5 MT

- EU & NA: 8
- Rest of World: 1
- China: 1.5

Global Military Titanium Demand Forecast: 2015, 13.5 MT

- EU & NA: 10
- Rest of World: 1.9
- China: 1.6

Top Five Military Spenders in 2012

Source: Stockholm International Peace Research Institute Yearbook 2012 (Table 3.3), and 2011 (Table 4.2)
“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
Decrease in JSF Build Rates

Source: Teal Group 2007 and 2013
Foreign Military Sales

- DoD has surpassed State Department in foreign spending

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<tr>
<th>Country</th>
<th>Estimated Allocation</th>
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<tbody>
<tr>
<td>Israel</td>
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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
  - Fighter Competition
    - F-15
    - Typhoon
    - F-35

Source: fas.org
Programs

- India
  - P-8
  - Chinooks
  - Apache
  - Howitzer
- Afghanistan
  - Mi 17
- Iraq
  - Stryker Infantry carriers
Programs

- Israel
  - V-22
  - KC 135
- UAE
  - F-16
- Africa
  - F-16
  - Abrams tank
AIA polled the public on increased non-military usage of drones:

- 54% in favor
- 26% are opposed
- 20% neutral

Source: AIA, June 26, 2013
Military Build Rates

Military Aerospace Build Rates

Source: Teal, August 2013
Titanium Content per Aircraft

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

Global Defense Sector Titanium Demand by Location: 2009 - 2013

Thousands of MTs

Source: TZMI Titanium Metal Annual Review 2012, REF 8349