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U.S. Tactical Wheeled Vehicle Manufacturers Face Period of Uncertainty as DOD Purchases Decline and Foreign Sales Potential Remains Unknown



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Why GAO Did This Study

DOD's need for TWVs dramatically increased in response to operational demands and threats experienced in Afghanistan and Iraq. TWVs primarily transport cargo and personnel in the field and include the High Mobility Multi-purpose Wheeled and Mine Resistant Ambush Protected vehicles. The U.S. TWV industrial base, which includes manufacturers and suppliers of major subsystems, increased production to meet DOD's wartime requirements. That base now faces uncertainties as DOD's budget declines and operational requirements for these vehicles decrease. In addition to sales to DOD, U.S. manufacturers sell vehicles to foreign governments.

The Senate Armed Services Committee Report on a bill for the National Defense Authorization Act for Fiscal Year 2012 directed GAO to (1) describe the composition of the U.S. TWV industrial base, (2) determine how many U.S. manufactured TWVs were purchased by foreign governments from fiscal years 2007 through 2011, and (3) identify factors perceived as affecting foreign governments' decisions to purchase these vehicles. GAO analyzed data from DOD on U.S. and foreign government TWV purchases, as well as sales data from the four primary U.S. TWV manufacturers. GAO also collected data from five foreign governments, including those that did and did not purchase U.S. TWVs.

What GAO Recommends

GAO is not making recommendations in this report. DOD, the Department of State, and two manufacturers provided technical or clarifying comments on a report draft that were incorporated as appropriate.

View [GAO-12-859](#). For more information, contact Belva Martin at (202) 512-4841 or martinb@gao.gov.

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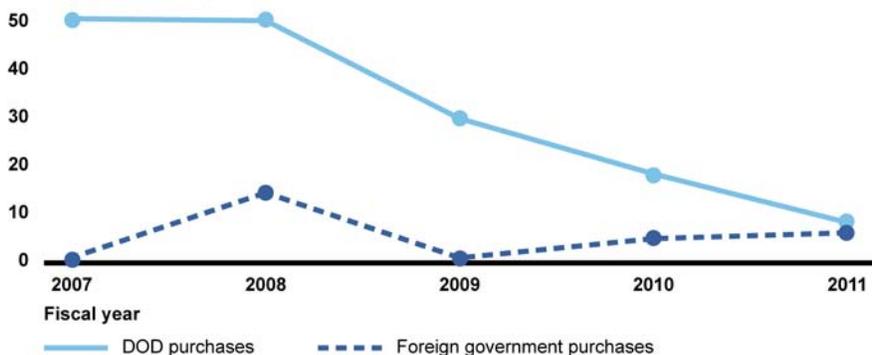
U.S. Tactical Wheeled Vehicle Manufacturers Face Period of Uncertainty as DOD Purchases Decline and Foreign Sales Potential Remains Unknown

What GAO Found

The U.S. tactical wheeled vehicle (TWV) industrial base includes seven manufacturers that utilize common suppliers of major subsystems, such as engines and armor. Four of these manufacturers reported that their reliance on sales to the Department of Defense (DOD) varies, in part, as they also produce commercial vehicles or parts. Collectively, the seven manufacturers supplied DOD with over 158,000 TWVs to meet wartime needs from fiscal years 2007 through 2011. DOD, however, plans to return to pre-war purchasing levels, buying about 8,000 TWVs over the next several years, in part, due to fewer requirements.

Almost 28,000 U.S.-manufactured TWVs were purchased for use by foreign governments from fiscal years 2007 through 2011. Approximately 92 percent of these vehicles were paid for using U.S. security assistance funds provided to foreign governments. Iraq and Afghanistan were the largest recipients of such assistance, but officials stated that DOD does not plan to continue funding TWV purchases for these countries. While sales to foreign governments are unlikely to offset reductions in DOD purchases, manufacturers reported that foreign sales are becoming an increasingly important part of their revenue stream.

Comparison of TWV Sales to DOD and Foreign Governments, Fiscal Years 2007 through 2011
Quantity (in thousands)



Source: GAO analysis of DOD and manufacturer data.

Sales of U.S.-manufactured TWVs to foreign governments may be affected by multiple interrelated factors, including the availability of used DOD vehicles for sale, foreign competition, differing vehicle requirements, and concerns associated with U.S. arms transfer control regimes. U.S. manufacturers said sales of used Army TWVs to foreign governments could affect their ability to sell new vehicles. U.S. manufacturers and foreign governments also identified a number of non-U.S. manufacturers that produce TWVs that meet foreign governments' requirements, such as right-side drive vehicles. While U.S. manufacturers can produce vehicles that meet these requirements, vehicles they produced for DOD generally have not. Finally, manufacturers and foreign officials had mixed views on how the U.S. arms transfer control regimes may affect foreign governments' decisions to purchase U.S. vehicles. U.S. manufacturers and foreign officials expressed concerns with processing times and U.S. end-use restrictions, but foreign officials also said that such concerns have not been a determining factor when purchasing TWVs that meet their requirements.

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Abbreviations

AECA	Arms Export Control Act
DCS	direct commercial sales
DOD	Department of Defense
FMS	Foreign Military Sales
FMTV	Family of Medium Tactical Vehicles
HMMWV	High Mobility Multi-purpose Wheeled Vehicle
JLTV	Joint Light Tactical Vehicle
MRAP	Mine Resistant Ambush Protected
TWV	tactical wheeled vehicle
USML	United States Munitions List

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United States Government Accountability Office
Washington, DC 20548

September 13, 2012

Congressional Committees

Tactical wheeled vehicles (TWV) have played a critical role in supporting the warfighter, as most recently demonstrated in Afghanistan and Iraq. TWVs are primarily designed for use by forces in the field to transport cargo and personnel and are capable of operating on primary and secondary roads, trails, and cross-country terrain. The Department of Defense's (DOD) need for TWVs increased dramatically in response to the operational demands and threats, such as improvised explosive devices, experienced by U.S. forces during Operation Enduring Freedom and Operation Iraqi Freedom. For example, DOD's procurements for two types of TWVs—the High Mobility Multi-purpose Wheeled Vehicle (HMMWV) and the Family of Medium Tactical Vehicles (FMTV)—increased from 5,500 in 2002 to 27,350 vehicles in 2006. To meet these requirements, the U.S. TWV industrial base, which includes vehicle manufacturers and their suppliers of major subsystems and parts, increased vehicle production. However, that industrial base now faces a period of uncertainty as requirements for these vehicles decrease with the withdrawal of U.S. forces from Iraq and the planned drawdown in Afghanistan, along with declines in DOD's budget.

In addition to sales to DOD, the U.S. TWV industrial base also sells vehicles to foreign governments. The sale of U.S. arms and dual-use items, including TWVs, to friendly nations and allies is an integral component of both U.S. national security and foreign policy.¹ The Arms Export Control Act (AECA) authorizes the President to control the export and import of arms.² The AECA authorizes the U.S. government to sell arms to foreign governments through government-to-government agreements as part of the Foreign Military Sales (FMS) program.³ It also authorizes the issuance of export licenses for U.S. manufacturers to sell

¹For the purposes of this report, the term arms refers to defense articles, defense services, and related technical data as specified by 22 U.S.C. § 2778 and defined in 22 C.F.R. Part 120. Dual-use items are those which have both military and commercial applications.

²22 U.S.C. §§ 2751-2799aa-2.

³FMS is limited to eligible countries and international organizations. 22 U.S.C. § 2753.

arms directly to eligible foreign governments, known as direct commercial sales (DCS). Regardless of the method of sale, each FMS request or DCS license application is reviewed by officials from DOD and the Department of State (State) to ensure the sale would not result in harm to U.S. interests and is consistent with national security and foreign policies.

In response to directions in the Senate Armed Services Committee Report⁴ on a bill for the National Defense Authorization Act for Fiscal Year 2012, we (1) described the composition of the U.S. TWV industrial base and the extent of manufacturers' reliance on sales to DOD, (2) determined how many U.S. manufactured TWVs foreign governments purchased in fiscal years 2007 through 2011, and (3) identified factors that are perceived as affecting foreign governments' decisions to purchase these vehicles.

To describe the composition of the U.S. TWV industrial base, we obtained, reviewed, and discussed with DOD officials service-level TWV strategy, acquisition planning, budget, and program office documents. We identified the new TWVs acquired by DOD in fiscal years 2007 through 2011 and new TWVs anticipated for acquisition in fiscal years 2012 through 2017—the period projected in current budget documents.⁵ We identified vehicle manufacturers that produced those vehicles, either fully or partially, within the United States and consider them part of the U.S. TWV industrial base for the purposes of this review. We obtained past and planned acquisition data for these TWVs from the Army TACOM Life Cycle Management Command, Marine Corps Systems Command, the Mine Resistant Ambush Protected Joint Program Office, the Air Force Air Logistics Center, and the Navy Expeditionary Program Office. We also obtained data from and interviewed the four U.S. manufacturers that produced approximately 92 percent of all TWVs purchased by DOD in fiscal years 2007 through 2011 regarding their reliance on DOD sales and their supplier base. While we did not obtain data from the other three manufacturers on their reliance and supplier base, the DOD TWV procurement data we obtained include their sales to DOD in fiscal years 2007 through 2011. We assessed the reliability of the data reported by DOD and manufacturers through interviews with knowledgeable officials

⁴S. Rep. No. 112–26, at 30 (2011).

⁵We did not include TWV parts purchased by DOD or any efforts intended to sustain or upgrade its existing vehicles.

and electronic data testing for missing data, outliers, and obvious errors and determined the data to be sufficiently reliable for our purposes.

To determine how many U.S. TWVs were purchased by foreign governments, we obtained FMS and DCS data for fiscal years 2007 through 2011. We obtained FMS data from the Army TACOM Life Cycle Management Command's Security Assistance Management Directorate and the Marine Corps Systems Command's International Programs Directorate as they directly facilitate the FMS process for TWVs within DOD. We obtained DCS data from the four TWV manufacturers included in our scope. The FMS data we obtained from DOD contain foreign sales data for the three remaining TWV manufacturers, but we did not collect DCS data from them. We limited FMS and DCS data to vehicles that were purchased by DOD in fiscal years 2007 through 2011 and also sold to foreign governments. We assessed the reliability of FMS data reported by DOD by interviewing officials knowledgeable about the data and cross-checking the data with FMS records from the four manufacturers we met with. We assessed the reliability of DCS data reported by the four manufacturers we met with by interviewing officials knowledgeable about the data and performing electronic testing. Based on those efforts, we determined that the FMS and DCS data reported to us were sufficiently reliable for our purposes.

To identify factors perceived as affecting foreign government decisions to purchase U.S. TWVs, we interviewed representatives from the four U.S. TWV manufacturers included in our scope, foreign government officials from five selected countries, and DOD, State, and Department of Commerce (Commerce) officials. We interviewed officials from three countries that were among the biggest buyers of U.S. TWVs through the FMS program in fiscal years 2007 through 2011 or DCS in fiscal years 2008 through 2011. We also interviewed officials from two allied countries that did not purchase U.S. TWVs through the FMS program in fiscal years 2007 through 2011 or DCS in fiscal years 2008 through 2011 to gain additional perspectives. Some of the five countries were in the process of purchasing TWVs. Collectively, these officials provided information on foreign manufacturers of TWVs and foreign TWV requirements. Because the countries provided us with information on the size and composition of their TWV fleets, which some regard as sensitive, we are not identifying the countries that participated in our review by name. To determine how the U.S. arms transfer control regimes may affect such sales to foreign governments, we also reviewed the AECA, Export Administration Act of 1979, International Traffic in Arms Regulations, DOD's Security Assistance Management Manual, and related U.S. guidance. To

determine how many U.S. TWV sales to foreign governments were denied, we interviewed officials from State's Directorate of Defense Trade Controls and Regional Security and Arms Transfer offices and Commerce's Bureau of Industry and Security. We also reviewed available State export licensing data for fiscal years 2008 through 2011 and Commerce's data for fiscal years 2007 through 2011.⁶

We conducted this performance audit from October 2011 to September 2012 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

Tactical Wheeled Vehicles

DOD and the military services classify TWVs by weight or payload capacity into three categories—light, medium, and heavy—although the definitions of each class vary among the services. Each class generally includes multiple variants or models built on a common chassis. For example, the Army's FMTV consists of 2.5- and 5-ton capacity trucks, each with the same chassis and includes cargo, tractor, van, wrecker, and dump truck variants. Table 1 lists the TWVs acquired by the military services over five fiscal years, fiscal years 2007 through 2011.

⁶Licensing data for DCS were obtained from State's DTRADE system, which was implemented in 2008. We did not obtain State licensing data collected prior to its implementation.

Table 1: DOD TWVs by Type Acquired, Fiscal Years 2007 through 2011

Vehicle class	Vehicle family	Number of variants	Military service
Light	High Mobility Multi-purpose Wheeled Vehicle	5	Army, Marine Corps, Air Force, Navy
Medium	Light Medium Tactical Vehicle	3	Army
	Medium Tactical Vehicle	10	Army
	Medium Tactical Vehicle Replacement	11	Marine Corps
Heavy	Heavy Expanded Mobility Tactical Truck	6	Army
	Palletized Load System	1	Army
	M915 Series Line Haul Tractor	2	Army
	Heavy Equipment Transport System	1	Army
	Logistics Vehicle System Replacement	3	Marine Corps
Not applicable ^a	Firefighting Truck	2	Army
	Mine Resistant Ambush Protected vehicle	13	Army, Marine Corps, Air Force, Navy

Source: GAO summary of DOD information.

^aThe military services do not classify these vehicles by class.

Requirements for TWVs have evolved over the last decade, in part, due to the operational threats encountered in Afghanistan and Iraq. TWVs were traditionally viewed as utility vehicles that required little armor because the vehicles operated behind the front lines. However, the tactics used against forces in these countries dictated that vehicles needed more protection. For example, the HMMWV was conceived and designed to support operations in relatively benign environments behind the front line, but it proved to be highly vulnerable to attacks from improvised explosive devices, rocket-propelled grenades, and small arms fire when it was required to operate in urban environments. As a result, DOD identified an urgent operational need for armored tactical vehicles to increase crew protection and mobility of soldiers. Although the initial solution—the Up-Armored HMMWV—provided greater protection, the enemy responded by increasing the size, explosive force, and type of improvised explosive devices, which were capable of penetrating even the most heavily armored vehicles. Consequently, the Mine Resistant Ambush Protected (MRAP) vehicle was approved in 2007 as a rapid acquisition capability. DOD recognized that no single manufacturer could provide all of the vehicles needed to meet requirements quickly enough, so it awarded contracts to multiple manufacturers.

U.S. Arms Transfer Control Regimes

The AECA authorizes the President to control the export of arms, such as TWVs.⁷ The authority to promulgate regulations on these items has been delegated to the Secretary of State.⁸ State administers arms transfer controls through the International Traffic in Arms Regulations and designates, with the concurrence of DOD, the articles and services deemed to be arms.⁹ These arms constitute the United States Munitions List (USML).¹⁰ DOD's TWVs are generally designated as Category VII (Tanks and Military Vehicles) items on the USML.

Arms, including TWVs, can be sold and exported to foreign governments through the FMS program or DCS. Under the FMS program, the U.S. government procures items on behalf of eligible foreign governments using the same acquisition process used for its own military needs. While State has overall regulatory responsibility for the FMS program and approves such sales of arms to eligible foreign governments, DOD's Defense Security Cooperation Agency administers the program. Alternatively, the DCS process allows foreign governments to directly negotiate with and purchase arms from U.S. manufacturers. For TWVs controlled on the USML, manufacturers must generally apply for an export license to State's Directorate of Defense Trade Controls, which authorizes the export of arms to foreign governments.¹¹

State officials assess all arms export requests through the FMS program and DCS license applications against 12 criteria specified in the Conventional Arms Transfer Policy, as summarized in table 2.¹² DOD officials assess the technical risks of the sensitive or classified electronic equipment associated with the sale of TWVs to foreign governments, including the type of armor, sensors or weapons attached to the vehicle, and any signature information. Aside from these technologies, State and

⁷22 U.S.C. § 2778(a).

⁸Exec. Order No. 11,958, 42 Fed. Reg. 4,311 (Jan. 24,1977).

⁹22 C.F.R. §§ 120 - 130.

¹⁰22 C.F.R. § 120.2 and Part 121.

¹¹While most defense articles and services on the USML require a license for export, the International Traffic in Arms Regulations contain some exemptions and authorize exceptions.

¹²According to Presidential Decision Directive 34, all arms transfer decisions should take into account the 12 criteria identified in the conventional arms transfer policy.

DOD officials said the departments generally consider the technology associated with TWVs comparable to commercially available trucks and do not have any additional policies pertaining to the sale of TWVs to foreign governments.

Table 2: Conventional Arms Transfer Policy Criteria

- | | |
|-----|---|
| 1. | Consistency with U.S. regional stability interests, especially when considering transfers involving power projection capability or introduction of a system which may foster increased tension or contribute to an arms race. |
| 2. | The degree to which the transfer supports U.S. strategic and foreign policy interests through increased access and influence, allied burden sharing, and interoperability. |
| 3. | The human rights, terrorism and proliferation record of the recipient and the potential for misuse of the export in question. |
| 4. | Consistency with international agreements and arms control initiatives. |
| 5. | Appropriateness of the transfer in responding to legitimate U.S. and recipient security needs. |
| 6. | The impact of the proposed transfer on U.S. capabilities and technological advantage, particularly in protecting sensitive software and hardware design, development, manufacturing, and integration knowledge. |
| 7. | The degree of protection afforded sensitive technology and potential for unauthorized third-party transfer, as well as in-country diversion to unauthorized uses. |
| 8. | The ability of the recipient effectively to field, support, and appropriately employ the requested system in accordance with its intended end-use. |
| 9. | The risk of revealing system vulnerabilities and adversely impacting U.S. operational capabilities in the event of compromise. |
| 10. | The impact of U.S. industry and the defense industrial base whether the sale is approved or not. |
| 11. | The availability of comparable systems from foreign suppliers. |
| 12. | The risk of adverse economic, political or social impact within the recipient nation and the degree to which security needs can be addressed by other means. |

Source: Department of State.

In accordance with the AECA, recipient countries of arms, including TWVs, must generally agree to a set of U.S. arms transfer conditions, regardless if sold through the FMS program or DCS.¹³ The conditions include agreeing to use the items only for intended purposes without modification, not to transfer possession to anyone not an agent of the recipient country without prior written consent of the U.S. government,

¹³See, e.g., 22 U.S.C. § 2753.

and to maintain the security of any defense article with substantially the same degree of protection afforded to it by the U.S. government. To ensure compliance with these conditions, recipient countries must permit observation and review by U.S. government representatives on the use and possession of U.S. TWVs and other arms.

While the majority of TWVs that DOD purchases are regulated on the USML, a small number that lack armor, weapons, or equipment that would allow armor or weapons to be mounted are considered to be dual-use items—having both commercial and military applications. These items are controlled under the Export Administration Act of 1979,¹⁴ which established Commerce’s authority to control these items through its Export Administration Regulations and Commerce Control List.¹⁵ On the Commerce Control List, DOD’s TWVs are generally designated as Category 9 (Propulsion Systems, Space Vehicles, and Related Equipment) items. For DCS of such items, U.S. manufacturers must comply with the Export Administration Regulations to determine if an export license from the Commerce’s Bureau of Industry and Security is required.

¹⁴Authority granted by the act lapsed on August 20, 2001. 50 U.S.C. app. § 2419. However, Executive Order 13222, Continuation of Export Control Regulations, which was issued in August 2001 under the authority provided by the International Emergency Economic Powers Act (50 U.S.C. § 1702), continues the controls established under the act and the implementing Export Administration Regulations. Executive Order 13222 requires an annual extension and was recently renewed by Presidential Notice on August 15, 2012. 77 Fed. Reg. 49699 (Aug. 16, 2012).

¹⁵Under the Export Control Reform initiative, State has proposed revisions to Category VII of the USML that, among other things, are intended to more clearly identify ground vehicles controlled on the USML and those controlled on the Commerce Control List. The proposed rule would also move certain spare and replacement parts from the USML to the Commerce Control List. State officials did not have a timeframe for the completion of these proposed changes. 76 Fed. Reg. 76100 (Dec. 6, 2011).

**U.S. TWV Industrial
Base Includes a
Number of
Manufacturers Whose
Reliance on Sales to
DOD Vary**

**Numerous Vehicle
Manufacturers and
Suppliers Comprise the
U.S. TWV Industrial Base**

The U.S. TWV industrial base includes seven vehicle manufacturers, over 90 major subsystem suppliers, and potentially thousands of parts and component suppliers. Four of the seven manufacturers provided approximately 92 percent of all TWVs purchased by DOD in fiscal years 2007 through 2011. Figure 1 identifies the manufacturers, the vehicles they produced, and the percent of all vehicles purchased by DOD from each manufacturer in fiscal years 2007 through 2011.

Figure 1: TWV Manufacturers, Vehicles Produced, and Market Share for DOD TWVs, Fiscal Years 2007 through 2011

TWV manufacturers	TWV families of vehicles	Percent of DOD's TWV purchases
AM General	• HMMWV	36%
Oshkosh	<ul style="list-style-type: none"> • Light Medium Tactical Vehicle • Medium Tactical Vehicle • Medium Tactical Vehicle Replacement • Heavy Expanded Mobility Tactical Truck • Palletized Load System • Heavy Equipment Transport System • Logistics Vehicle System Replacement • Firefighting Truck • MRAP variant 	31%
BAE	<ul style="list-style-type: none"> • Light Medium Tactical Vehicle • Medium Tactical Vehicle • MRAP variants 	19%
Navistar	• MRAP variants	6%
Freightliner	• M915 Series Line Haul Tractor	5%
Force Protection ^a	• MRAP variants	2%
General Dynamics	• MRAP variant	1%

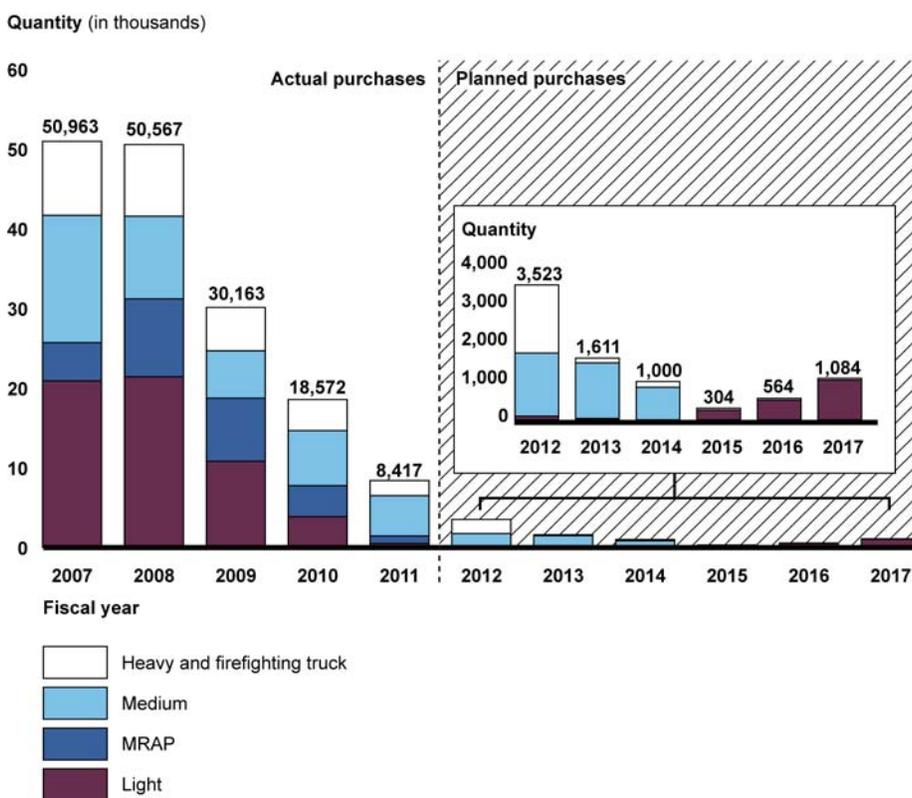
Source: GAO analysis of DOD data.

^aGeneral Dynamics acquired Force Protection in December 2011.

Although these manufacturers produced 11 different families of TWVs, which included over 50 vehicle variants, they generally relied on common suppliers for major subsystem components. For example, the manufacturers relied on six or fewer suppliers to provide components, such as engines or tires. In contrast, the manufacturers relied on more than 25 armor suppliers, in part, because there was a shortage of vehicle armor during initial MRAP production. DOD reported that the requirements for armor, in response to the conflicts in Iraq and Afghanistan, provided an opportunity for several suppliers to begin producing armor, which eventually resolved the armor shortage. In addition to these suppliers, manufacturers we met with reported there were potentially thousands of other companies that produced parts for these vehicles. See figure 2 for more information on the number of suppliers that produced major subsystems on DOD's TWVs.

2008, DOD plans to purchase less than 1,000 TWVs in fiscal years 2015 and 2016. In all, DOD plans to purchase approximately 8,000 TWVs in fiscal years 2012 through 2017, as shown in figure 3.

Figure 3: Declining DOD Purchases by TWV Family, Fiscal Years 2007 through 2017



Source: GAO analysis of DOD data and budget documents.

Future defense budgets will likely constrain new vehicle purchases and the size of a fleet the military services will be able to sustain. Army officials told us that it would cost approximately \$2.5 billion per year to sustain its current fleet of approximately 260,000 TWVs and meet any new TWV requirements. Officials stated, however, that the Army can no longer afford and does not need such a sized fleet, in part, due to budget cuts and potential force structure changes. The Army is re-evaluating how many TWVs it needs and can afford, which will be outlined in a revised TWV strategy. In developing this revised strategy, Army officials recognize that the Army has a relatively young fleet of TWVs, averaging 9 years of age, many of which will be part of its fleet through 2040.

While this revised strategy has not been completed, the Army has already made changes to reduce its TWV costs. For example, in February 2012 the Army reduced the number of FMTVs it planned to purchase by approximately 7,400 vehicles. At that time, the Army also terminated a HMMWV modernization effort, known as the Modernized Expanded Capability Vehicle, which was intended to improve vehicle performance and crew protection on over 5,700 HMMWVs. Officials stated that this effort was terminated, in part, because of DOD-wide funding constraints. Army officials estimate that these actions will result in a total savings of approximately \$2.7 billion in fiscal years 2013 through 2017. Furthermore, Army officials stated that the Army plans to reduce the size of its TWV fleet to match force structure requirements. They also stated that, as of July 2012, the Army plans to reduce its total fleet by over 42,000 vehicles. Officials added that more vehicles could be divested depending on any future force structure changes and budget constraints.

Despite budget constraints, the industrial base will have some opportunities over the next several years to produce a new TWV for DOD. The Joint Light Tactical Vehicle (JLTV) is a new DOD program, designed to fill the gap between the HMMWV and MRAP by providing near-MRAP level protection while maintaining all-terrain mobility. As we previously reported, the Army and Marine Corps are pursuing a revised developmental approach for JLTV and awarded technology development contracts to three industry teams.¹⁶ The program completed the technology development phase in January 2012. Last month, the Army awarded three contracts for the JLTV's engineering and manufacturing development phase. While production contracts will not be awarded for some time, DOD reports that it plans to purchase approximately 55,000 JLTVs over a 25-year period with full rate production beginning in fiscal year 2018. With production of other TWVs for DOD largely coming to an end in fiscal year 2014, DOD considers the JLTV program to be critical in maintaining an industrial base to supply TWVs to the military.

In addition to new production, the Army and Marine Corps also plan to invest in sustainment efforts that could be completed by the U.S. TWV industrial base. These efforts include restoring or enhancing the combat

¹⁶GAO, *Defense Acquisitions: Future Ground-Based Vehicles and Network Initiatives Face Development and Funding Challenges*, [GAO-12-181T](#) (Washington, D.C.: Oct. 26, 2011); and *Defense Acquisitions: Issues to Be Considered as DOD Modernizes Its Fleet of Tactical Wheeled Vehicles*, [GAO-11-83](#) (Washington, D.C.: Nov. 5, 2010).

capability of vehicles that were destroyed or damaged due to combat operations.¹⁷ For example, Marine Corps officials reported that it plans to recapitalize approximately 8,000 HMMWVs beginning in fiscal year 2013. In addition, the Army is in the process of resetting the portion of its FMTV fleet that was deployed through at least fiscal year 2017 as well as recapitalizing some of its heavy TWVs.

Manufacturer Reliance on Sales to DOD Varied

Despite the significant decrease in DOD TWV purchases, the four manufacturers we met with generally reported that these sales remain an important part of their revenue stream. However, there is a wide range in the degree to which the manufacturers were reliant on DOD in a given year. For example, as shown in table 3, one manufacturer reported that for 2007 its revenue from sales to DOD accounted for 4 percent of its total revenue while another manufacturer reported such revenue was as high as 88 percent, with the other two manufacturers falling within that range.

Table 3: Ranges of TWV Manufacturer Reported Reliance on DOD Sales

Year	Percent of revenue from DOD sales	
	Low	High
2007	4%	88%
2009	26%	72%
2011	14%	73%

Source: GAO analysis of manufacturer data.

Among the four manufacturers, the extent of reliance on revenue from DOD sales varied, in part, because of vehicles sold in the commercial truck and automotive sectors. Aside from producing TWVs, manufacturers produced or assembled commercial vehicles, such as wreckers, fire trucks, school buses, and handicap-accessible taxis, as

¹⁷The Army defines reset and recapitalization efforts as actions taken to restore equipment to a desired level of combat capability commensurate with the equipment's future mission. It encompasses maintenance and supply activities that restore and enhance combat capability to equipment that was destroyed, damaged, stressed, or worn out beyond economic repair due to combat operations by repairing, rebuilding, or procuring replacement equipment. Recapitalization rebuilds or repairs equipment to a level that improves the performance capabilities of the equipment or returns the equipment to a "zero mile/zero hour" level with original performance specifications.

well as vehicle components, such as engines, transmissions, and suspensions.

According to the four manufacturers, their suppliers of TWV major subsystem components generally produced items in the commercial automotive and truck industries. For example, according to manufacturers, suppliers generally produced parts, such as engines, transmissions, axles, and tires for their commercial vehicles in addition to supplying parts for the TWVs they produce. However, vehicle armor, a major TWV component, is primarily a defense-unique item and those suppliers were not typically used in the manufacturers' commercial vehicles.

DOD Has Several Studies Under Way to Assess the U.S. TWV Industrial Base

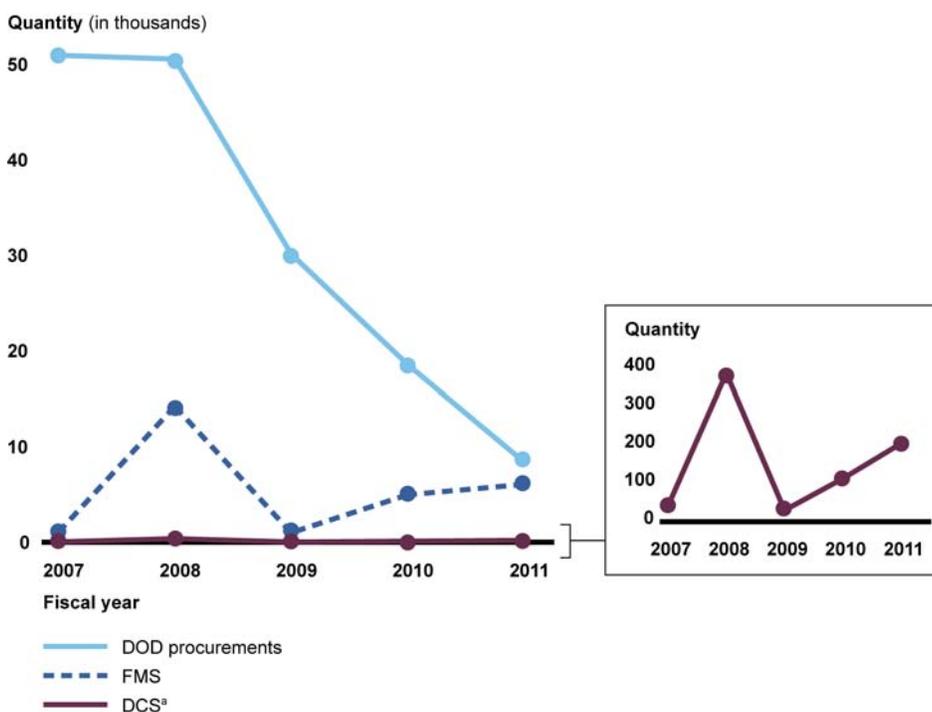
DOD currently has several studies under way to better understand the U.S. TWV industrial base, its capabilities, and how declining DOD sales may affect it. In 2011, DOD's Office of Manufacturing and Industrial Base Policy began a multifaceted review of the U.S. TWV industrial base that includes surveying suppliers, conducting site visits, and paneling experts. The Army's TACOM Life Cycle Management Command also has ongoing studies, including a review to assess the health of the industrial base and others intended to identify its supplier base and any risks associated with sustaining DOD's TWV fleet. Some of the goals of these different studies are to better understand how different vehicle supply chains affect others, identify single point failures in the supply chain, and provide DOD leadership with improved information so they may better tailor future acquisition policies.

TWV Sales to Foreign Governments Were Relatively Few and Generally Purchased with U.S. Funds

U.S. manufacturers sold relatively few TWVs for use by foreign governments in fiscal years 2007 through 2011, when compared to the 158,000 vehicles sold to DOD over that same period. However, most of the manufacturers we met with stated that while sales of TWVs to foreign governments have not equaled those sold to DOD, such sales are becoming an increasingly important source of revenue as DOD purchases fewer vehicles. According to data provided by DOD and the four manufacturers, foreign governments purchased approximately 28,000 TWVs, either through the FMS program or through DCS, in fiscal years 2007 through 2011. In addition to these sales to foreign governments, manufacturers reported they exported approximately 5,000 other TWVs that were different vehicles than those DOD purchased during that time period. Nearly all TWVs sold to foreign governments were sold through the FMS program rather than through DCS. DOD

reports that about 27,000 TWVs were sold through the FMS program, while the four manufacturers we met with reported that about 700 vehicles were sold through DCS in fiscal years 2007 through 2011.¹⁸ See figure 4 for a comparison of TWVs sold to DOD and to foreign governments through the FMS program and DCS in fiscal years 2007 through 2011.

Figure 4: Comparison of TWV Sales to DOD and Foreign Governments, Fiscal Years 2007 through 2011



Source: GAO analysis of DOD and manufacturer data.

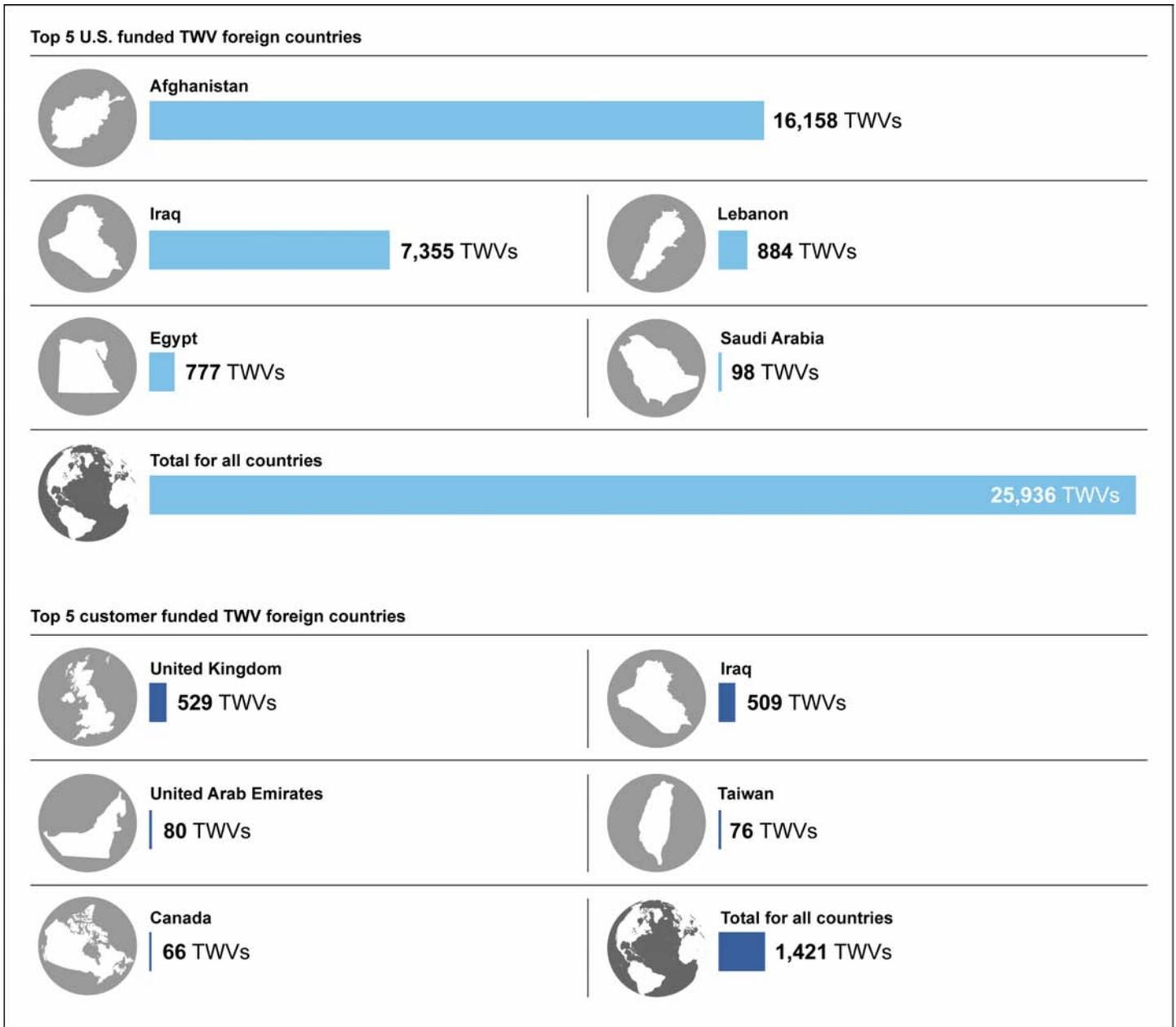
^aDCS data only reflects data provided by the four manufacturers we met with and is limited to vehicle models purchased by DOD.

Approximately 95 percent of TWVs purchased through the FMS program from fiscal year 2007 through 2011 were paid for using U.S. government funding through different security and military assistance programs. The U.S. Congress authorizes and appropriates funds for assistance

¹⁸This includes the export of TWVs controlled under State or Commerce regulations.

programs that support activities, such as security, economic, and governance assistance in foreign countries. Examples of such assistance programs include the Afghanistan Security Forces Fund and Iraq Security Assistance Fund, which were sources of funding for TWVs purchased for Afghanistan and Iraq through the FMS program. While Afghanistan and Iraq were the largest recipients of U.S. manufactured TWVs through such assistance programs, DOD officials informed us that as the war efforts conclude there, U.S. funding for TWVs for these two countries' security forces has declined and is not planned to continue. In addition, a smaller number of TWVs were sold through the FMS program to countries using their own funds. Figure 5 identifies the countries that purchased the most U.S. manufactured TWVs with U.S. or their own funds through the FMS program.

Figure 5: Comparison of Funding Types for TWV FMS, Fiscal Years 2007 through 2011



Source: GAO analysis of DOD data (data); Map Resources (images).

U.S. Manufacturers and Foreign Governments Identified Multiple Interrelated Factors That May Affect TWV Foreign Sales

U.S. manufacturers of TWVs and foreign government officials we met with identified a number of interrelated factors that they perceive as affecting whether a foreign government decides to purchase U.S. manufactured TWVs. These included potential future competition from transfers of excess (used) U.S. military TWVs, competition from foreign manufacturers, and differing foreign requirements for TWVs. In addition, these U.S. manufacturers and foreign government officials expressed mixed views on the effect the U.S. arms transfer control regimes may have on foreign governments' decisions to buy U.S. vehicles. These officials said that processing delays and end-use restrictions can influence foreign governments' decisions to buy U.S. TWVs. Despite these issues, foreign government officials said the U.S. arms transfer control regimes would not adversely affect their decisions to purchase a U.S.-manufactured TWV that best meets their governments' requirements.

Potential Transfers of Used Army TWVs Viewed as Risk by Manufacturers to Future Sales of U.S. TWVs to Foreign Governments

The U.S. manufacturers we met with regard the Army's intent to reduce its TWV fleet size as a risk to their future sales of TWVs to foreign governments. Army officials said it is still assessing its TWV requirements and potential plans to divest over 42,000 vehicles, but they acknowledge that a number of these TWVs could be transferred through the FMS program. The four U.S. manufacturers consider these used vehicles to be a risk to their future sales of U.S. TWVs to foreign governments because foreign governments could be less likely to purchase new vehicles from U.S. manufacturers if the U.S. Army transfers these used vehicles through foreign assistance programs. U.S. manufacturers told us they would like more involvement in DOD's decisions on its plans for these divested vehicles so they may provide input on potential effects on the industrial base. Commerce's Bureau of Industry and Security reviews proposed FMS of divested items to identify effects on the relevant industry. During this review, Commerce provides industry with the opportunity to identify any impacts of the potential FMS on marketing or ongoing sales to the recipient country. When approving these transfers, State and Defense Security Cooperation Agency officials said the U.S. government must also weigh national security and foreign policy concerns, which could outweigh industrial base concerns with transfers of used DOD TWVs to foreign countries.

While concerned about the potential for competition from the FMS of these retired vehicles, U.S. manufacturers also view these planned divestitures as a potential to provide repair or upgrade business that could help sustain their production capabilities during a period of low

DOD demand. Some manufacturers we met with stated that they would like to purchase DOD's used TWVs, before they are made available to foreign governments, so they may repair or upgrade them and then sell them to foreign governments. DOD is currently reviewing its policies to determine which vehicles, if any, could be sold back to manufacturers. Another manufacturer, while not interested in purchasing the vehicles, expressed interest in providing repair or upgrade services on the used TWVs before they are sold to foreign governments. Defense Security Cooperation Agency officials stated that excess defense articles, such as the used TWVs, are generally made available to foreign governments in "as is" condition and recipient countries are responsible for the cost of any repairs or upgrades they may want to make. They added that in such instances, it could be possible for U.S. manufacturers to perform such services, but it would be at the direction of the purchasing country, not the U.S. government.

**Foreign Competition,
Different Vehicle
Requirements, and
Concerns Associated with
U.S. Arms Transfer Control
Regimes Affect Foreign
Governments' Decisions to
Purchase U.S. TWVs**

Foreign government and manufacturer officials that we interviewed identified a number of TWV manufacturers that compete with U.S. manufacturers for international sales. Examples of foreign manufacturers are shown in table 4.

Table 4: Foreign TWV Manufacturers as Identified by Manufacturers and Foreign Governments

Manufacturer	Headquarters location
Ashok Leyland	India
DAF Truck	The Netherlands
General Dynamics European Land Systems	Spain
IVECO	Italy
Krauss-Maffei Wegmann	Germany
Land Rover	The United Kingdom
Mahindra	India
Mercedes Benz	Germany
Nimr	United Arab Emirates
Patria	Finland
Renault	France
Rheinmetall MAN	Germany
Tata Motors	India
Tatra	Czech Republic
Toyota	Japan
Thales	France
UROVESA	Spain

Source: Officials from foreign governments and U.S. manufacturers.

Officials from two countries that had not purchased U.S. manufactured TWVs explained that their countries have a well established automotive industrial base capable of producing TWVs that meet their governments' needs. While all of the foreign officials we interviewed reported that their countries had no policies that favor their domestic manufacturers, governments that have not purchased U.S. TWVs generally purchased vehicles from domestic manufacturers. For example, foreign officials from one country said that all of their government's TWVs are assembled within its borders.

While all of the competitors to U.S. TWV manufacturers are not headquartered in the purchasing countries, foreign officials reported that many of these companies have established dealer and supplier networks within their countries. Foreign officials reported that these domestic dealer and supplier networks make vehicle sustainment less expensive and more manageable, in part, because it is easier and quicker to obtain replacement parts or have vehicles repaired. In contrast, foreign officials said that U.S. TWV manufacturers do not generally have the same dealer

and supplier networks within their countries. They added that this can make maintenance of the U.S. vehicles more expensive, in part, due to the added cost of shipping.

In addition to the number of TWV manufacturer competitors, foreign officials also reported that there is limited foreign demand for TWVs. Foreign officials reported that their governments purchase relatively few TWVs compared to the U.S. government, in part, because their fleet size requirements are much smaller. Foreign officials we interviewed reported TWV fleets that ranged in size from 2 to 9 percent the size of the U.S. Army's fleet. For example, foreign officials from one country stated that their military was in the process of upgrading its entire fleet of approximately 7,500 vehicles, which is less than 3 percent of the size of the U.S. Army's TWV fleet.

Foreign government officials also explained that U.S. manufacturers can generally produce TWVs to meet their governments' requirements, but the vehicles U.S. TWV manufacturers are producing for DOD do not necessarily align with these requirements. Foreign government officials identified the following areas where their governments' requirements differ from those of DOD:

- DOD's TWVs are generally larger than what their government can support. For example, officials from one foreign government reported that its military considered purchasing U.S. manufactured MRAP vehicles but did not have the cargo planes required to transport a vehicle the size and weight of DOD's MRAP vehicles. Instead, according to the official, this country purchased a mine and ambush protected vehicle developed by one of its domestic manufacturers that is smaller and lighter than the DOD's MRAP vehicles and better aligned with its transportation capabilities.
- Their governments do not always require the same level of capabilities afforded by DOD's TWVs and, in some cases, requirements may be met by commercially available vehicles. For example, foreign government officials identified a number of vehicles in their governments' tactical fleets that are based on commercial products from automobile companies such as Jeep and Land Rover.
- Their governments have different automotive or design standards for military vehicles that do not always align with those produced for DOD by U.S. manufacturers. For example, officials from one country said that their military is required to purchase right-side drive vehicles, which are not always supported by U.S. manufacturers. While their military can obtain a waiver to purchase a left-side drive vehicle, this

presents training challenges as the majority of the vehicles in its fleet are right-side drive vehicles. Foreign officials said that while U.S. manufacturers are capable of meeting these requirements, foreign competitors may be more familiar with these requirements. Manufacturers that we interviewed said they produce or are developing TWVs to better meet foreign customers' requirements. For example, one U.S. manufacturer said it was developing a right-side drive variant of one of its vehicles and another manufacturer said that it has a line of TWVs for its international customers that better meets those requirements.

U.S. manufacturers and foreign officials expressed mixed views on the effect the U.S. arms transfer control regimes may have on the sale of U.S.-manufactured TWVs to foreign customers. Officials we met with reported that, generally, the U.S. arms transfer control regimes do not inhibit foreign governments from purchasing U.S. manufactured TWVs. Accordingly, we found that once the FMS and DCS process was initiated, no eligible foreign sales or licenses for U.S. TWVs were denied. For example, State officials reported that no countries eligible to participate in the FMS program were denied requests to purchase TWVs in fiscal years 2007 and 2011. Similarly, State DCS license data indicated that no licenses for vehicle purchases were denied from fiscal years 2008 through 2011.

While sales of TWVs to foreign governments are generally approved by the U.S. government once initiated, U.S. manufacturers and foreign officials said that foreign governments may prefer to purchase vehicle manufactured outside the United States, in part, due to the amount of time to process sales and licenses requests and end-use restrictions associated with the U.S. arms transfer control regimes. Specifically, manufacturers said the congressional notification process can result in lengthy delays during the FMS and DCS approval process. The AECA requires notification to Congress between 15 and 45 days in advance of its intent to approve certain DCS licenses or FMS agreements.¹⁹ Preceding the submission of this required statutory notification to the U.S. Congress, State provides Congress with an informal review period that does not have a fixed time period for action. One manufacturer stated that this informal review period, in one case, lasted over a year and, after

¹⁹22 U.S.C. § 2776.

which, the prospective customer decided to not continue with the purchase. Another manufacturer said that the informal congressional notification process is unpredictable because there is no set time limit for review, making it difficult for the manufacturer to meet delivery commitments to foreign customers. State officials acknowledged that the informal congressional notification period can delay the DCS and FMS process because there is no designated time limit for review. According to State officials, the department established a new tiered review process in early 2012 to address this issue by establishing a time bounded informal review period that is based on the recipient country's relationship with the U.S. government. The formal notification period remains unchanged.

Foreign officials said when TWVs that meet their governments' requirements are available from manufacturers outside the United States, AECA restrictions on third party transfers and end-use administrative requirements associated with U.S. manufactured vehicles could affect their governments purchasing decisions. Foreign officials explained that there are a number of TWV manufacturers outside the United States that can meet their requirements and vehicles sold by those manufacturers do not necessarily come with the same end-use restrictions as U.S. vehicles. For example, the AECA restricts the transfer of arms, including U.S. manufactured, TWVs to a third party without consent of the U.S. government.²⁰ Some foreign officials said their governments prefer to use private companies, when possible, to make repairs and maintain its TWV fleet because it can reduce costs compared to government repair work. These foreign officials said that U.S. third party transfer restrictions require that their governments obtain permission from the U.S. government before transferring a U.S. TWV to a private company for repairs, which creates an administrative burden. Additionally, foreign governments are required to maintain information on U.S. TWVs' end-use and possession that must be available to U.S. officials when requested to ensure compliance with U.S. end-use regulations. Foreign officials from one country said the maintenance of this information is an administrative burden and will be more difficult to manage as their government tries to reduce its workforce in a limited budget environment. Foreign officials said that TWVs purchased from manufacturers outside of the United

²⁰As required by the AECA, foreign governments may not transfer title to or possession of any defense articles or services to anyone not an officer, employee, or agent of that country unless the country receives prior consent from the U.S. government. 22 U.S.C. § 2753.

States are not generally encumbered with these same restrictions and administrative burdens, making maintenance of these vehicles easier and cheaper, in some cases. State officials acknowledged these concerns from foreign governments but said these restrictions play an important role in protecting U.S. national security interests.

Foreign officials reported, however, that the U.S. arms transfer control regimes would not adversely affect their decision to purchase a U.S. vehicle that best meets their governments' requirements in terms of capabilities and cost. Foreign officials said that U.S. manufacturers make vehicles that are reliable and highly capable. When their governments have requirements that align with those associated with U.S. manufactured vehicles, foreign officials said that the U.S. arms transfer control regimes would not be a factor in their governments' decisions to purchase the vehicles. Foreign officials that we interviewed also said their governments are experienced buyers of U.S. arms and are able to successfully navigate the FMS and DCS processes and U.S. end-use restrictions to obtain the military equipment they require.

Concluding Observations

The volume of TWVs DOD purchased to meet operational requirements in Iraq and Afghanistan was unique due to specific threats. Many of these vehicles are no longer needed and DOD's need for new TWVs is expected to decline in coming years. Further, given the current budgetary environment, DOD cannot afford to support the size of its current fleet or buy as many vehicles as it once did. Though U.S. manufacturers increased their production to meet those past needs, they will be challenged in responding to the sharp decline in DOD's TWV requirements in future years. As DOD continues its studies of the U.S. TWV industrial base, it may be better positioned to address these challenges and how DOD can mitigate any risks to sustaining its TWV fleet. It is unlikely that sales to foreign governments will ever offset declines in sales to DOD, but foreign sales may be more important to the industrial base now more than ever. U.S. manufacturers, however, are presented with a number of factors that affect their ability to sell TWVs to foreign governments. While no foreign officials indicated that their governments would not buy U.S. TWVs, there has been relatively limited demand for the vehicles U.S. manufacturers have produced for DOD. Further, there are many foreign manufacturers that can supply vehicles that meet foreign governments' requirements. Each of the U.S. manufacturers we met with was either selling or developing alternative vehicles that better meet foreign governments' requirements, but the extent to which those efforts will stimulate additional sales has yet to be seen. Further, U.S. manufacturers raised concerns that their competitors

could eventually include the U.S. military as it makes plans to divest itself of used TWVs that it could make available to foreign governments at reduced costs or for free. Additionally, while U.S. manufacturers perceived the U.S. arms transfer control regimes to be more burdensome than those of other countries, the regimes are not a determining factor when foreign governments seek to purchase TWVs.

Agency Comments and Third-Party Views

We provided a draft of this report to DOD, State, and Commerce, as well as the four manufacturers and five foreign governments with whom we met, for their review and comment. DOD and State provide technical comments and two of the manufacturers provided clarifications, which we incorporated into the report as appropriate. Commerce, two manufacturers, and the five foreign governments informed us that they had no comments.

We are sending copies of this report to the Secretary of Defense; the Secretaries of the Army and the Navy; the Secretary of State; Secretary of Commerce; and the four manufacturers and five foreign governments with whom we met. In addition, the report also is available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff have any questions concerning this report, please contact me at (202) 512-4841 or martinb@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff members who made key contributions to this report are listed in appendix I.



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Appendix I: GAO Contact and Staff Acknowledgments

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Acknowledgments

In addition to the contact name above, the following staff members made key contributions to this report: Johana R. Ayers, Assistant Director; Patrick Dudley; Dayna Foster; Beth Reed Fritts; Justin Jaynes; Julia Kennon; Roxanna Sun; Robert Swierczek; Bradley Terry; Brian Tittle; and Alyssa Weir.

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