

Defence **iQ**

Defence IQ

ARMoured VEHICLES MARKET REPORT 2017



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“The defence market is becoming more sensitive to cost and value for money”

In 2016 we have continued to see hotspots of unrest and conflict across the world, particularly in the Middle East and North Africa region, and there are few indications that these will abate in 2017. Conflict is unpredictable and asymmetric in nature and, in responding to these threats, armies across the globe are expecting their armoured vehicle fleets to provide the backbone of their ground based fighting capability. Versatile and flexible in use, armoured vehicles provide the protection and mobility for the deployment of troops, sensors and weapon systems. They deliver the military capability and “troops on the ground” where and when they are needed.

At NIMR, we closely monitor market trends to ensure we are ready to meet the emerging demands of our customers. With this in mind, we welcome the annual Global Armoured Vehicles Market Report and are delighted to introduce the 2017 Report. Launched ahead of the series of armoured vehicle conferences, the report identifies the trends within the sector that will shape the market activity for the coming year. We expect to see continued growth in the demand for vehicles from the international market, both for new capability and to replace some ageing fleets.

The modern battlefield sets a variety of challenges, demanding high levels of operational and tactical mobility alongside protection for crew and mission systems. At NIMR we believe firmly these requirements can be best provided by a range of multi-role wheeled vehicles. These versatile platforms can be rapidly deployed over large distances to respond to new threats, whilst also providing tactical mobility in demanding terrain along with high performance as a fighting platform.

Protecting our soldiers remains our highest priority and the most significant trend. Whilst the threats continue to grow stronger, especially from IEDs and the proliferation of RPG and similar weapons, a mixture of responses is needed to deliver this protection. Physical measures alone do not ensure survivability, and consequently NIMR has developed a range of other characteristics to improve survivability. We firmly believe that tactical mobility across all types of terrain can deliver a critical advantage and accordingly our platforms are designed to achieve the highest levels of mobility. Fightability – the ability to use the vehicle as a fighting platform – is also a high priority and the seamless integration of mission and weapon systems onto the vehicle is a critical success factor.

With a global economic slowdown and reduced oil prices, the defence market is becoming more sensitive to cost and value for money, both in terms of acquisition and through life costs. This is another area where NIMR aims to lead the market, with a range of multi-role wheeled vehicles with low initial cost and, importantly, low through life costs achieved by a mixture of platform commonality and reliable performance. This also delivers a lower logistic footprint with benefits in terms of reduced resupply and simpler training and support.

We at NIMR look forward to seeing you at the International Armoured Vehicles conference and throughout 2017 at the subsequent conferences held across the globe. These events provide an excellent opportunity for discussion with expert speakers and representatives from both industry and Governments. I recommend this year's Global Armoured Vehicles Market Report to you as a starting point for what promises to be another interesting and challenging year for armoured vehicles.



Dr. Fahad Saif Harhara
CEO
NIMR Automotive

EXECUTIVE SUMMARY

From UK shores, 2016 has been dominated by the referendum to leave the European Union and the uncertainty that has flowed from that momentous decision. By the beginning of next year, we may know more about what this actually means for the UK and Europe, but uncertainty is likely to complicate the UK's Defence Programme. We will certainly know the outcome of the US Presidential Election – the new incumbent's inauguration will take place in January – but we will still be in relatively uncharted waters. New relationships, notably with Russia and China, as well as with and within Europe will be required. Meanwhile, there has been no let-up in the uncertainty and instability caused by global terrorism, especially in mainland Europe where unprecedented migration has heightened the severe security challenge.

Within this broad strategic context, conventional tensions and conflicts across the world also claim our attention. In Europe, NATO is routinely deploying armoured formations in Poland, Ukraine and the Baltic States to deter any further Russian inspired instability or aggression. Throughout North and West Africa and the Middle East, conventional forces are pitted against asymmetric threats and terrorism, stimulated, for the most part, by Islamic Fundamentalism. Significant casualties continue to result from wars in Mexico, Somalia, South Sudan and Yemen. Such conflicts highlight the roles armoured vehicles play in protecting people, delivering mobility and lethality, but also expose their vulnerabilities and the challenges in training and sustainability.

In this edition of Defence IQ's annual Global Armoured Vehicles Market Report, the latest survey data and analysis once again demonstrates that the market – in the face of fluctuating economies and an unpredictable operational environment – is always uncertain. However, elements of regional growth and shrinkage can be forecast with a degree of confidence. On a global scale, Defence IQ estimates that the armoured vehicles market will reach \$15.17bn in 2017.

After a brief period of decline in confidence two years ago, following the withdrawal from Afghanistan and the expectations that land warfare would be far from our minds for some time, the market has rebounded with the emergence of political instability in the Middle East,

Eastern Europe and Asia-Pacific, regions that will drive market growth. Like last year, the threat of landmines and IEDs remain at the top of the list of concerns, only now, a wider spectrum of threats – including directed energy and CBRN attacks – are no longer considered low-priority. Indeed, the rise in technological sophistication across battlefields worldwide is forcing even more of armoured vehicle capabilities.

Meanwhile, defence budgets fluctuate, strategies adapt and force structures are realigned. The only way to stay on top of these changes is to continue to communicate with others in the field, to intelligently observe the emerging threats, and to absorb reliable market intelligence.

On the back of these developments, Defence IQ invites you to join us and so many others from across the globe at next year's International Armoured Vehicles Conference, to be held at Twickenham Stadium, London, 23-26 January 2017. Now in its 17th year, the Conference will bring together practitioners, providers and wider stakeholders to take an in-depth, contemporary look at armoured vehicles in the Defence and Security context.

This event offers an unparalleled opportunity to share these varied experiences in this vital field, at a venue that offers the space to exhibit, confer and network with a wide variety of international colleagues on one site. Whether you are a military practitioner, acquisition staffer, decision maker, programme manager, technical expert, industrial supplier or strategic leader, I believe you will all benefit considerably from attending and look forward to welcoming you to Twickenham early next year.

In the meantime, we hope this report offers you a useful context.

The Defence IQ Team

Defence 



International Armoured Vehicles
23 - 26 January, 2017
Twickenham Stadium, London, UK
[Register today!](#)

The background of the slide is a photograph of a military tank, likely an M1 Abrams, positioned in a field. The tank is angled towards the left, with its main gun barrel pointing forward. The image is heavily filtered with a semi-transparent blue color, which covers the entire slide area. At the top, there is a horizontal bar with a blue-to-orange gradient. The text "SURVEY ANALYSIS" is centered in the middle of the slide in a white, bold, sans-serif font.

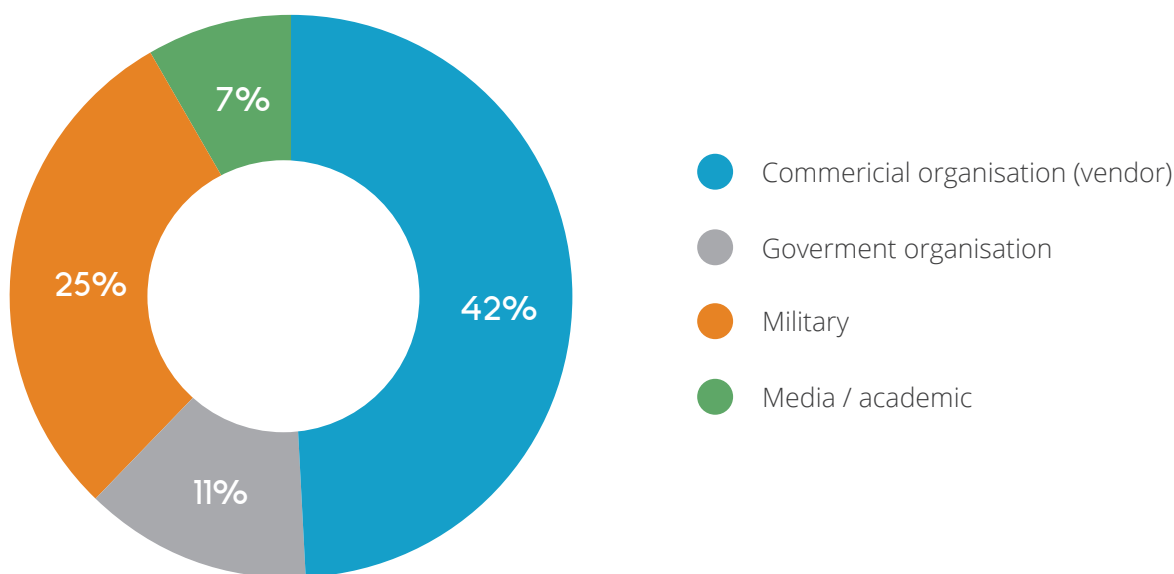
SURVEY ANALYSIS

This section of the report is based on an exclusive Defence IQ survey of senior executives and professionals within the armoured vehicle domain, which includes commercial and military (currently serving and retired) respondents. The analysis of the survey data has been supplemented with proprietary interviews and desktop research. Defence IQ's Global Armoured Vehicle Market Report is now in its sixth year, meaning the data in this report has been analysed within the context of recent developments and offers a reliable framework for the future trends of the armoured vehicle market.

Topics examined include; the key emerging regional markets, global procurement requirements, the primary challenges facing armoured vehicle manufacturers over the next decade, armoured vehicle design requirements, and the 'new normal' in the industry as the effects of the global financial crisis begin to wane and new opportunities emerge.

1. Analysis of respondents by type

Please select which of the following categories best describes your current role with armoured vehicles.

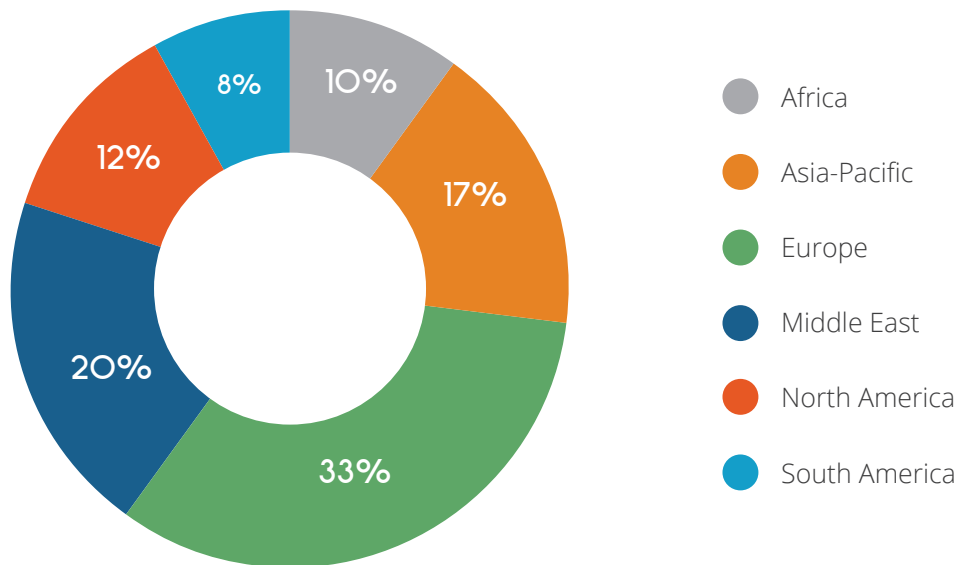


The largest segment of survey respondents (42 percent) derived from the commercial sector, which is a decrease of 15 percent on the number of respondents from industry in last year's Global Armoured Vehicle Market Report. This variance is due to an increase in end-user participation, with military respondents accounting for

35 percent of all respondents and 15 percent identifying themselves as government employees or from related organisations. Individuals from defence academia and the media accounted for the remaining 7 percent of respondents.

2. Overview of Respondents by REGION INTEREST

What is your primary region of interest with regards to armoured vehicles?

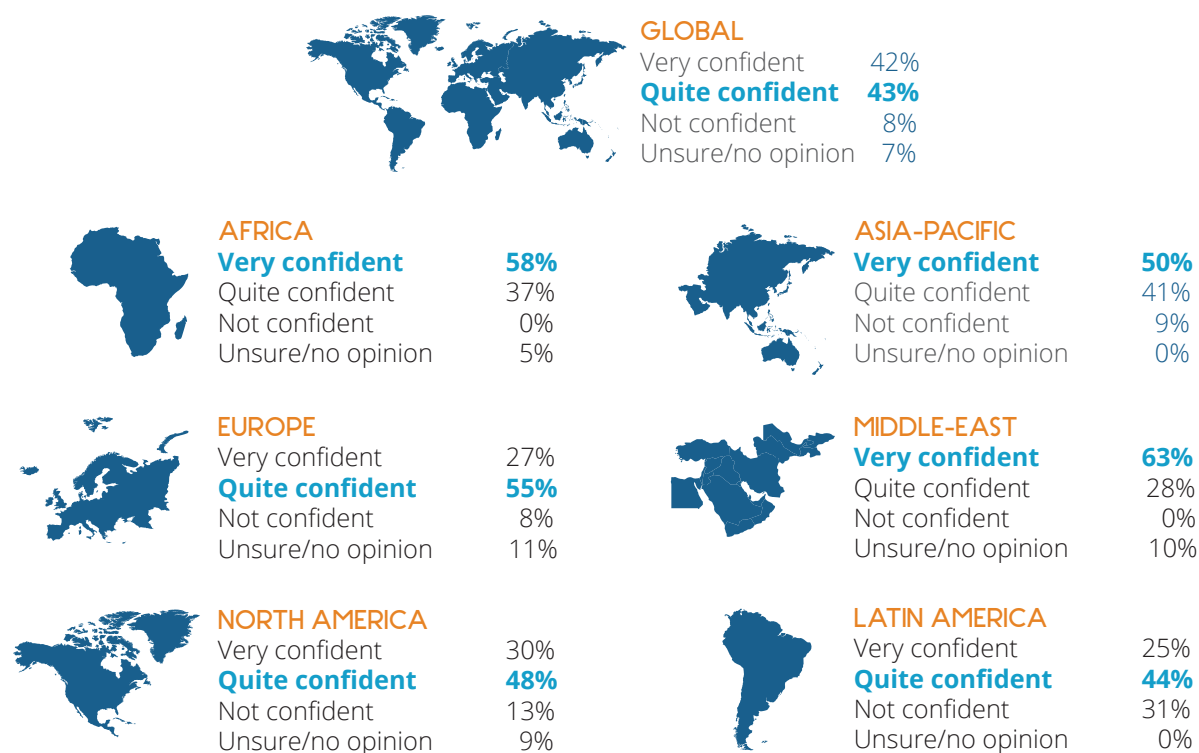


This report represents a similarly diverse and regionally measured level of response as last year's analysis, with the majority of participants working within or focused on regions outside of Europe and North America. Participation from the Asia-Pacific (17 percent) increased on last year, perhaps indicative of the climbing market in that part of the world. However, Europe also saw an increase in proportional response, accounting for 33 percent, up 7 percent. Again, this appears to correlate with the rebounding fortunes of the European market – particularly in Eastern Europe – with rising demand for land systems in the wake of continued fears of Russian aggression and security pressures on NATO's southern frontier. It should be noted that while this data can go some way to indicating which regions are seeing an

increasing interest in the armoured vehicle market, Figure 2 is more a reflection of the make-up of Defence IQ's membership base than any particular insight into wider armoured vehicle trends – please consult the data in Figure 4 for target markets and regional growth potential. The graph above is only designed to give the reader an understanding of which geographies the data is collected from and should be considered within this regional context. A number of graphs and figures in this report have been broken down into their regional responses but the majority are taken as a 'global' response.

3. Overview of Respondents by REGIONAL PROSPECTS

How confident are you in the future of the armoured vehicle market in your region over the next 10 years?



Overall, confidence in the global armoured vehicle market is near level with last year's statistics which were found to be at a five-year high. While the percentage is marginally lower than 2015-16, 42 percent of respondents stated a firm assurance in order books over the next decade, marking a 9 percent bump from where the result stood in 2014 when just a third of our participants identified being 'very confident' in the future of the market.

Of note, North America dropped lost its status as the dominant market influencing global opinion, with only 30 percent of participants centred in this region indicating a robust confidence (compared to 47 percent last year). This is still an improvement on two years prior when confidence in the North American market tanked as half of respondents claimed to have 'no faith' in the sector. A number of high profile government contracts and investments – not least the \$30bn Joint Light Tactical (JLTV) programme, which was awarded to Oshkosh Corp. – has seen confidence in the world's largest armoured vehicle market stay afloat with 48 percent still declaring a fair level of confidence.

Latin America saw little change in assurance levels, with marginal gains in confidence in spite of ongoing economic and political uncertainty across the region. Likewise, the Asia-Pacific – seen by most analysts as driving the future of the market over the next ten years – saw little gain on last year, landing exactly level on those expressing fair

to robust faith in the regional market. However, this still equates to a massive 91 percent of responses.

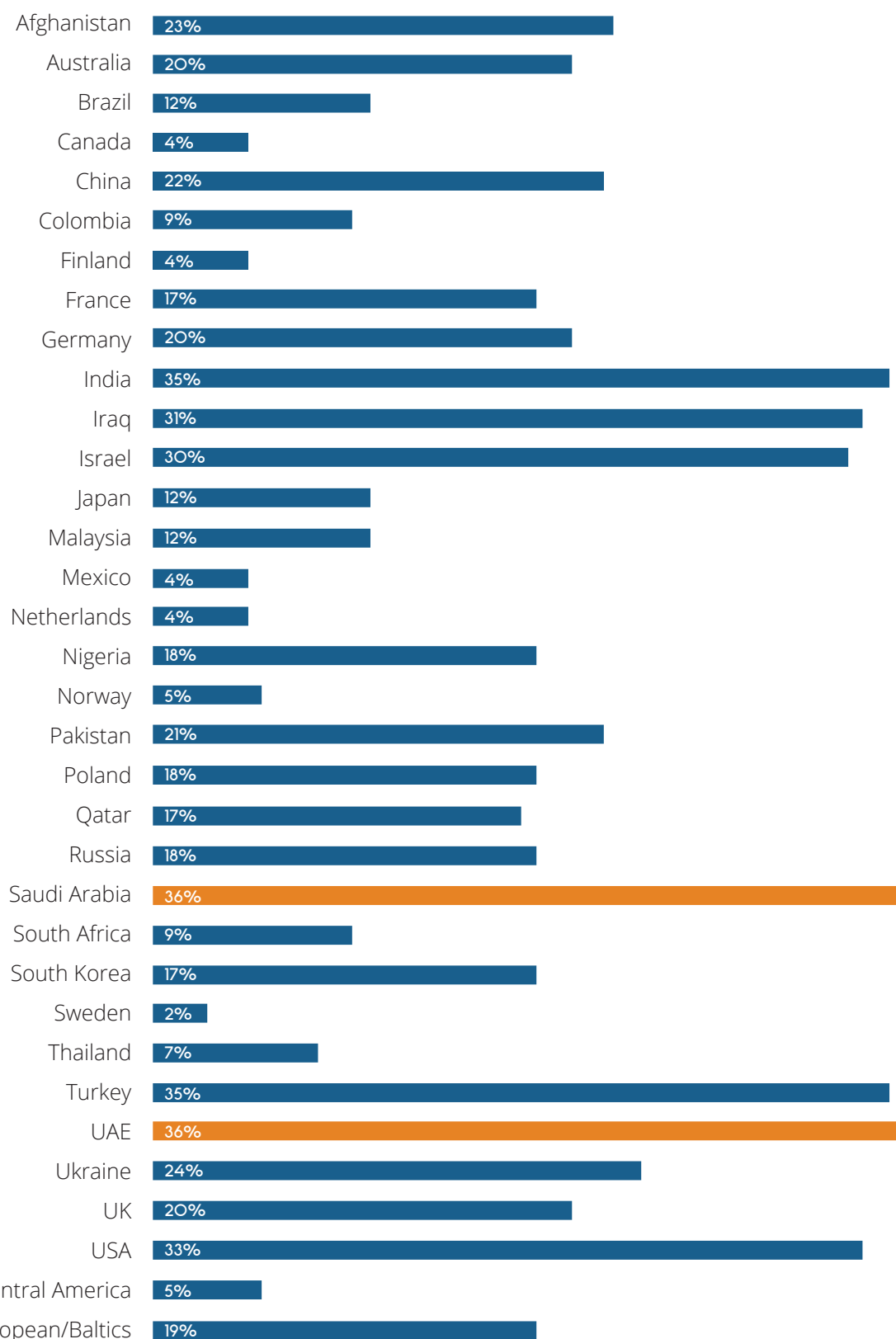
Steadily increasing budgets, new contract opportunities, and the growing intensity of local conflict saw the Middle East gain the biggest jump in market confidence, with 63 percent feeling particularly buoyant about future business. Not a single respondent from this region declared anything but confidence here.

The same cannot be said of Europe or Africa, both of which are still registering high levels of confidence (between 75-95 percent on average), but in a more measured stance – the former down 4 percent on 'very confident'; the latter down 10 percent on the same figure.

One of the clearest signs of self-assurance is being decisive; sitting on the fence rarely inspires confidence. With this in mind, the number of respondents stating they were 'unsure' about the market outlook rose from 3 percent in the 2016 report to 7 percent in 2017. While confidence in the market is yet to return to the levels of buoyancy, recovery has been established and industry is beginning to heavily invest in future capabilities and infrastructure. That said, there is a significant air of caution represented in this data, perhaps highlighting the fact that the market for the year ahead is reliant on many external and unpredictable factors.

4. Overview of key armoured vehicle growth markets

Which countries present the greatest potential for growth and will be targeted as a priority over the next 10 years?



Saudi Arabia and the UAE topped the countries being targeted for armoured vehicles for the next decade, with 36 percent of respondents declaring them priority nations. Both countries have been involved in operations in Yemen this past year, with announcements being made at time of writing over continued efforts to be made in the coming months. The faith in these nations to make new armoured vehicles purchases or to produce their own for local and international use is notable in that oil prices have yet to recover and economies here are less assured than in recent memory. However, with insurgencies and power vacuums still peppering the Middle East, it is likely that governments in the West will seek to support the capabilities of both countries to ensure they remain pillars of strength in the region.

India, once the runaway leader in this statistic, slips into second place with Turkey, but both nations offer solid standings at 35 percent each. The concerns of each nation can be said to be very different – between issues of economic strength, internal stability, and cultural attitudes – but business is forecast to remain strong for both. Each has a desire to keep the conveyor belts moving within their domestic defence industries at this time, with government initiatives focusing heavily on military manufacturing and uncovering new export opportunities.

South Africa, Thailand, Sweden and Mexico all saw significant decreases on last year.

Despite Europeans demonstrating strong confidence in their home market, the global outlook for individual markets remains modest when compared with the powerhouse opportunities of the likes of China, the USA or Israel. Perhaps unsurprisingly, Ukraine was seen as Europe's most viable candidate for armoured vehicle business as the country continues to invest in upscaling its forces while seemingly on the precipice of further conflict with Russia. As with Saudi Arabia and the UAE, Ukraine will continue to find monetary and diplomatic support from Western nations wanting to maintain a strong front in the region in the event of any warfare. Meanwhile, Poland's standing contracted slightly, while Germany jumped 6 percent in the rankings. Berlin has recently committed to not only large purchases of vehicles for its own fleet (including Boxer APCs), but also in assisting the likes

of Jordan and Tunisia in efforts to counter insurgency. Meanwhile, the biggest margin of change from last year's report was seen in France, which saw a 9 percent jump. A heightened domestic terrorism situation, alongside commitments to NATO, the EU and peacekeeping operations all suggest that France will remain militarily active at home and abroad over the next ten years.

Despite being highly competitive and constrained by budget and contractual hurdles in recent years, the US maintained its position in fifth place among the most appealing regional markets, seeing a 4 percent increase as international businesses continue to find opportunities here.

New additions to this year's report include Afghanistan, Iraq, Japan, Ukraine and a collective option for the Eastern Europe/Baltics, which naturally share similar budgets, operations and 'pooling and sharing' initiatives.

5. Analysis of key armoured vehicle attributes over the next decade

Please rate how critical you view the following attributes in terms of key armoured vehicle requirements over the next 10 years.

	Unimportant	Somewhat important	Very important	Critical
Ballistic protection	2%	6%	47%	45%
Blast protection / counter-IED	2%	10%	41%	48%
Environmental control systems	3%	42%	44%	12%
Interoperable communications	1%	18%	47%	35%
Load carrying capacity	3%	35%	51%	12%
Mission range	2%	24%	59%	16%
Modular / interchangeable mission role (adaptability)	4%	22%	52%	22%
Power/weight ratio	2%	17%	61%	20%
Reducing repair/maintenance costs	1%	22%	47%	31%
Speed/ maneuverability	1%	15%	59%	26%
Easily transportable	1%	30%	51%	18%
Reduced unit cost out of factory	2%	26%	51%	22%
Reliability	1%	3%	43%	53%

In the history of this report, protection has consistently been identified as a key attribute for armoured vehicles, and this year is no different. What is different is that it has been pipped to first place for the first time in six years by the need to prioritise 'reliability' (with 53 percent of respondents calling this a 'critical' feature). While admittedly a vague term, its growing importance in this study suggests a collective recognition that inventories are in need of not only long-term service but must also show a capacity to deal with a quickly evolving theatre of operations, wherein many of the threats are becoming more numerous as well as more sophisticated. In efforts to reduce through-life costs, government requirements for reliability also represent a step-change as vehicle integrators are working hard to meet the new demands.

IED and blast protection was said to be 'critical' by 48 percent of respondents. Although the MRAP market has contracted, all other vehicles are likely to be faced with the prospect of IED emplacement in any current

and future theatre, keeping protective systems in this category under high demand. The next most critical was ballistic protection with 45 percent – the same as last year. Protection has again trumped speed (26 percent critical) and unit cost (22 percent) in the great survivability vs mobility vs cost debate. However, both of these latter categories witnessed a year-on-year upswing, which were at 18 percent and 17 percent respectively in 2016.

As with last year, load carrying capacity and environmental control systems scored as the least important attributes. Interoperable communications climbed 5 percent, consistent with an increase in efforts to integrate vehicle types within a fleet to deliver a timely and coordinated response to a shared battlespace picture, as well as efforts to ensure coalition-led operations do not suffer communication gaps between individual forces. Fresh spending commitments from NATO members are likely at the core of rising interest in interoperability.

6. Overview of key threats to armoured vehicle survivability

Thinking specifically about the requirements in your region of interest, which threats should armoured vehicles seek to protect against most when considering the present and future threat landscape?



GLOBAL

CBRN (Chemical Biological Radiological Nuclear)	34%
Small arms ballistic attack (up to and including 7.62mm)	58%
HMG ballistic attack (above 7.62mm)	56%
Blast / IEDs	79%
Directed energy systems attack	35%
RPG	68%
Unfamiliar and difficult terrain / climate	44%

AFRICA

CBRN (Chemical Biological Radiological Nuclear)	26%
Small arms ballistic attack (up to and including 7.62mm)	74%
HMG ballistic attack (above 7.62mm)	58%
Blast / IEDs	89%
Directed energy systems attack	21%
RPG	68%
Unfamiliar and difficult terrain / climate	32%



ASIA-PACIFIC

CBRN (Chemical Biological Radiological Nuclear)	27%
Small arms ballistic attack (up to and including 7.62mm)	52%
HMG ballistic attack (above 7.62mm)	55%
Blast / IEDs	76%
Directed energy systems attack	42%
RPG	55%
Unfamiliar and difficult terrain / climate	64%

EUROPE

CBRN (Chemical Biological Radiological Nuclear)	41%
Small arms ballistic attack (up to and including 7.62mm)	56%
HMG ballistic attack (above 7.62mm)	60%
Blast / IEDs	79%
Directed energy systems attack	38%
RPG	78%
Unfamiliar and difficult terrain / climate	33%



MIDDLE EAST

CBRN (Chemical Biological Radiological Nuclear)	38%
Small arms ballistic attack (up to and including 7.62mm)	62%
HMG ballistic attack (above 7.62mm)	51%
Blast / IEDs	95%
Directed energy systems attack	38%
RPG	65%
Unfamiliar and difficult terrain / climate	49%



NORTH AMERICA

CBRN (Chemical Biological Radiological Nuclear)	39%
Small arms ballistic attack (up to and including 7.62mm)	48%
HMG ballistic attack (above 7.62mm)	57%
Blast / IEDs	74%
Directed energy systems attack	35%
RPG	70%
Unfamiliar and difficult terrain / climate	48%

LATIN AMERICA

CBRN (Chemical Biological Radiological Nuclear)	7%
Small arms ballistic attack (up to and including 7.62mm)	67%
HMG ballistic attack (above 7.62mm)	47%
Blast / IEDs	47%
Directed energy systems attack	20%
RPG	60%
Unfamiliar and difficult terrain / climate	40%



Supporting the data in Figure 5, blast and IEDs are seen as the most significant threat to armoured vehicles over the next decade. Globally, 79 percent of respondents believe the IED to be the key threat (up marginally on last year), followed by RPGs (up 10 percent year-on-year) and small arms ballistic attack (58 percent – down 5 percent).

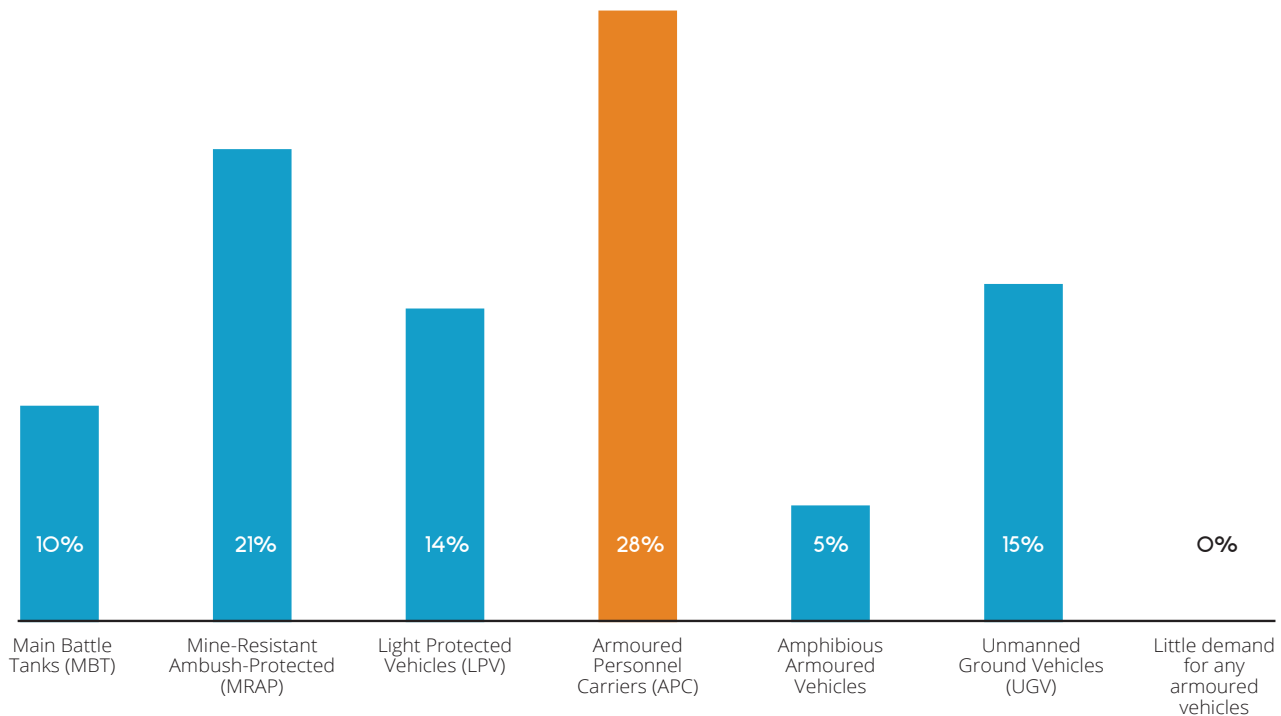
Overall, this year's survey found that these statistics are slightly more level than last year, indicating a greater awareness of 'fringe' threats as playing an increasingly larger role in the battlespace. For example, the threat of directed energy weapons saw a 15 percent jump in importance (particularly in the Middle East, which saw the DE threat climb a massive 36 percent). This is a significant result that suggests an anticipation of a far more tech-savvy adversary in the coming years and an ease of

acquisition for the likes of laser and electromagnetic technology. The threat posed from Chemical Biological Radiological Nuclear (CBRN) attack also rose by 5 percent. Undoubtedly, we are in a diverse era of warfare.

Regionally, the IED is still the biggest threat in the Middle East (95 percent), Asia-Pacific (76 percent), Europe (79 percent), North America (74 percent) and Africa (89 percent). Indeed it is seen as the priority armoured vehicle requirement in every region other than Latin America, where small arms ballistic attack was considered the most important attribute among 67 percent of respondents, and where RPG attacks also rated higher on the threat-scale.

7. Analysis of global demand for armoured vehicle type through 2026

Which type of armoured vehicles are likely to be in the highest demand globally over the next ten years?



Following the new trend from last year, the Armoured Personnel Carrier (APC) remains the vehicle most likely to be in highest demand over the next decade after the slow decline of the once-prominent Mine Resistant Ambush Protected (MRAP) vehicle. The APC was identified as the vehicle likely to be in highest demand globally over the next ten years with 28 percent of respondents indicating it as a key choice, just a percentage point up on last year. The MRAP fell four points to 21 percent.

Demand for the Main Battle Tank (MBT) rose this year, fending off the wider trend for lighter, more agile and flexible vehicles. A number of countries are developing new and modernising old MBTs – with Turkey, South Korea and Thailand all requiring a heavy armoured platform in the future. Although seen as less versatile to meet the range of possible future operational scenarios, the MBT is still viewed as the staple in fleets requiring resistance to sophisticated weapons and armoured adversaries. The risk of state-on-state conflict between such high-end militaries, rather than against low-tech guerrilla fighters, is arguably more intense now than in recent years. According

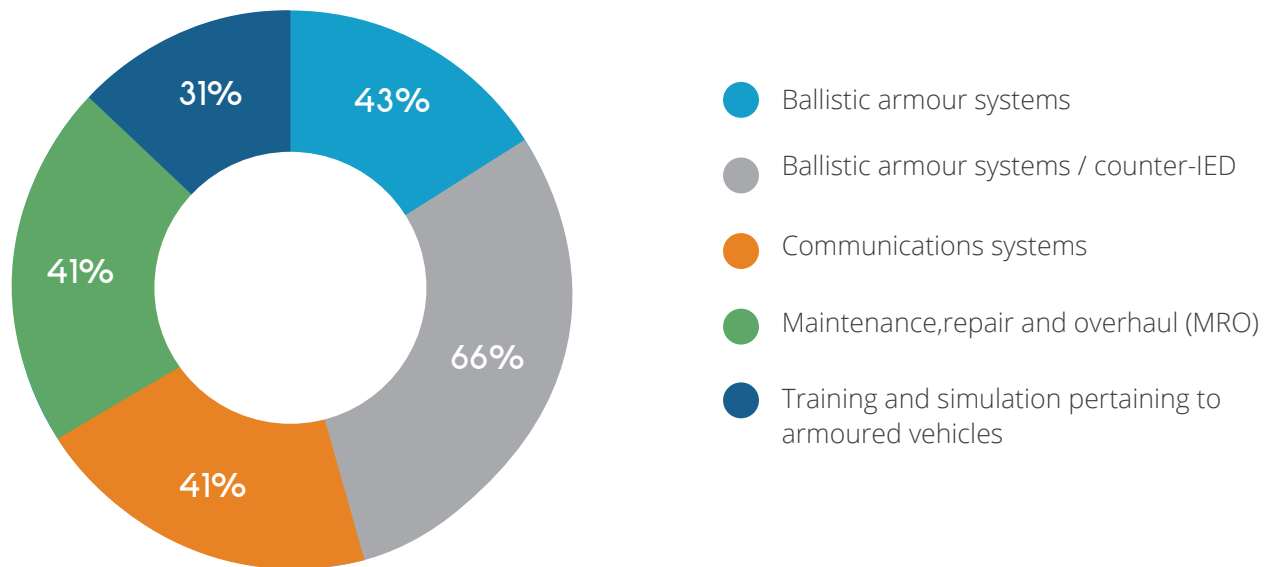
to recent figures around 6,000 MBTs are forecast to be produced globally over the next 10 years for a total cost of about \$26bn.

However, this has by no means taken demand away from light armoured vehicles. Around 11,000 light tracked vehicles are forecast to be produced over the next decade, valued at over \$30bn while almost 27,000 light wheeled vehicles valued at over \$12bn are also forecast to be produced. LPVs alone accounted for 14 percent on this year's demand-scale.

The Unmanned Ground Vehicle (UGV) also edged further up the chain with 15 percent identifying it as a platform of choice in the future compared with 14 percent last year. A number of countries are investing in the technology including the Russian Ministry of Industry and Trade (Minpromtorg), which is aiming to create a roadmap for the development of robotic systems and UGVs valued at around \$0.5m.

8. Analysis of technology investment over the next decade

Thinking about how governments will apportion budgets over the next 10 years, which areas of armoured vehicles will see the greatest investment globally?



Consistent with the analysis of the data in Figures 5 and 6, the technologies that respondents believe will be granted the most significant levels of investment are counter-IED measures and blast protection systems. Almost two thirds (66 percent) said that these systems will be favoured when defence ministries look to apportion budgets over the next few years. This represents a 2 percent year-on-year increase, further underlying the significance of the IED and blast threat and need for future investment.

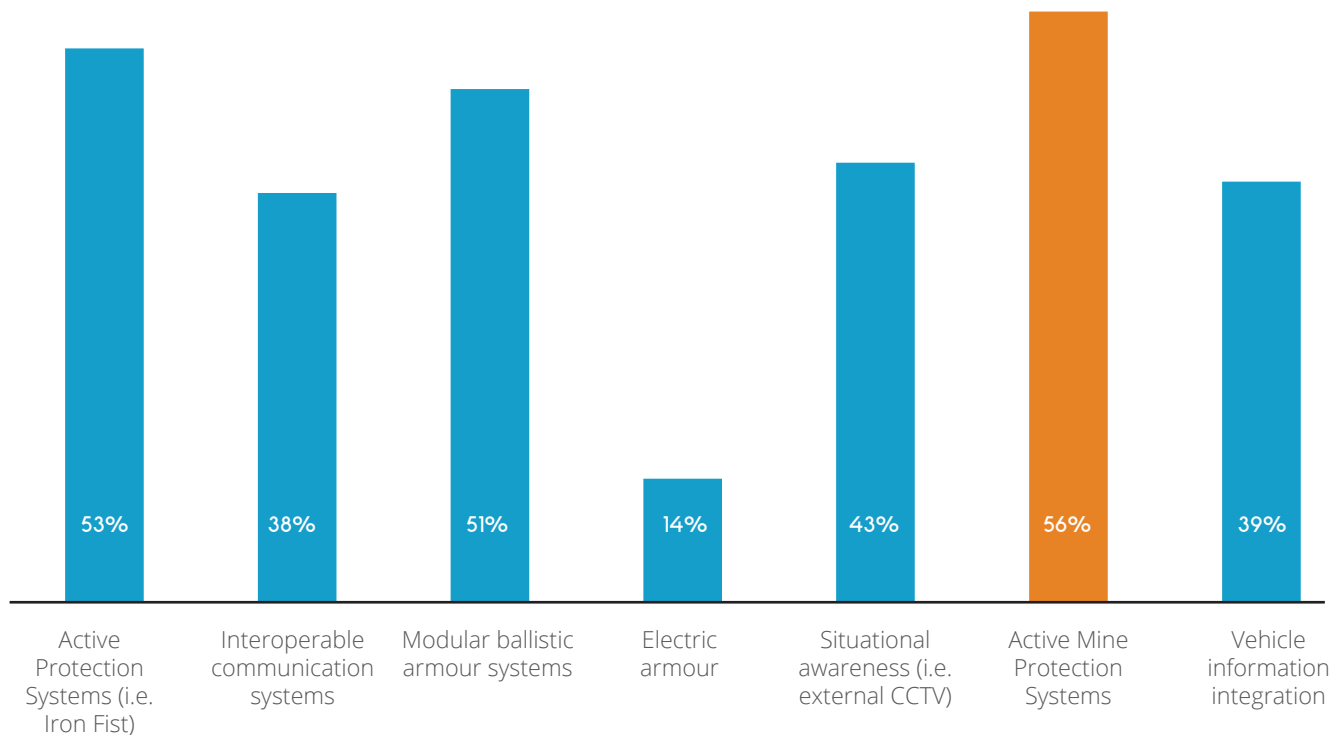
Demand for investment into maintenance, repair and overhaul (MRO) continued its decline this year at 41 percent, down 4 percent on last year and 6 percent on the year before. This is perhaps due to an increase in the number of new vehicles and vehicle-types, as well as associated technologies, currently being sought for procurement in lieu of maintaining existing/ageing

platforms. It is a sign of the times that the through-life cost of an armoured vehicle is now viewed on a par with the factory cost of a vehicle. It underscores that governments are getting – or at least trying to get – smarter at procuring military equipment and investing more resources into ensuring that the kit they buy is not only relevant and cost effective now, but 30 years from now too.

The spike in the demand for ballistic armour systems at 6 percent on last year corresponds with the expansion of efforts to counter adversaries armed with small and medium ballistic weapons, from Daesh in the Middle East and North Africa, to rebel groups and operating in the jungles of Latin America and South-East Asia.

9. Analysis of technology investment over the next decade

In terms of improving performance and survivability, which technology do you think will have the greatest impact on the armoured vehicle market over the next decade?



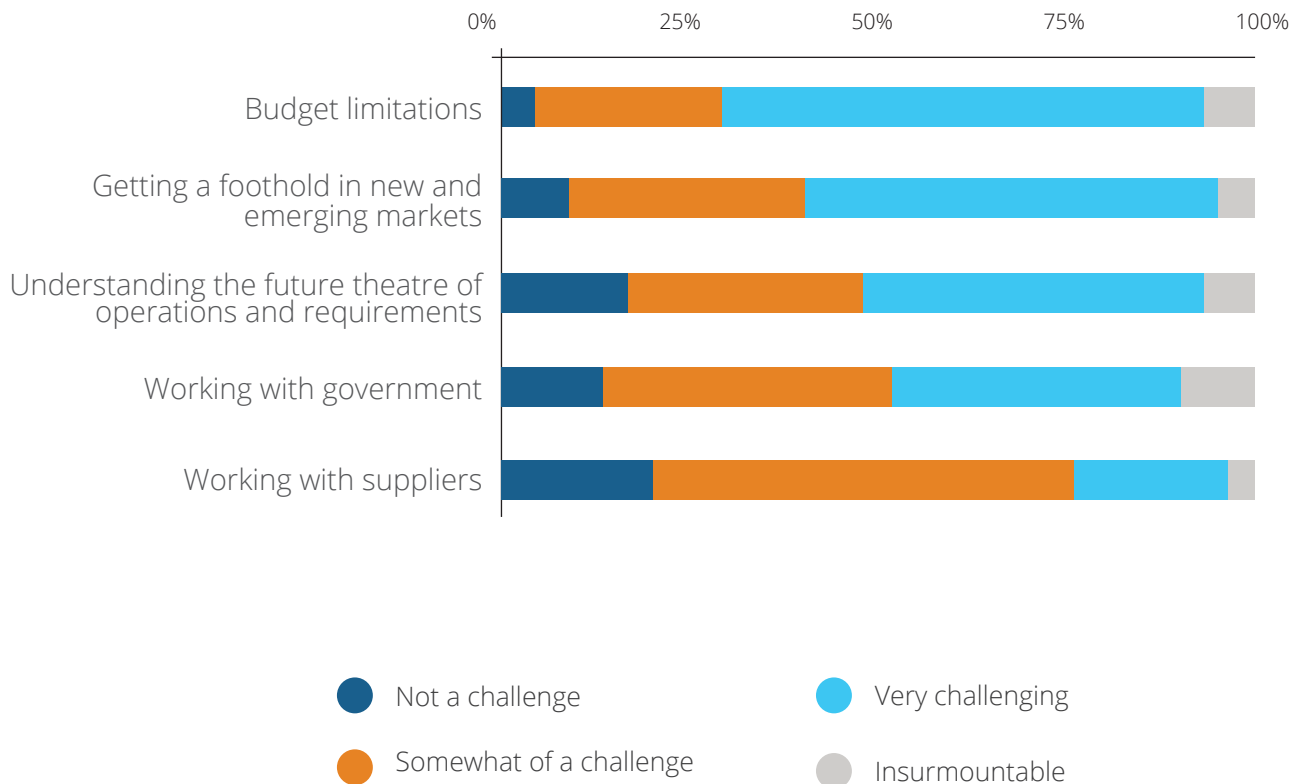
Active Mine Protection Systems (AMPS), and other innovations to mitigate the specific effect of IED blasts, were identified as likely to have the greatest impact on future armoured vehicle design, with more than half of respondents citing these as front-running technologies. This overtakes the factor of more general Active Protection Systems (APS) – last year’s leader – by 3 percent. Any military strategist will tell you that the IED threat is not going away. At present, innovators are reflecting on lessons learnt from Iraq and Afghanistan and developing more sophisticated systems for future armoured vehicles to face hybrid threats in complex operating environments. The development of active mine protection systems is central to the work in this field. This particularly important as demand for the MRAP – with its ultra-heavy frame – recedes and new methods of blast protection is needed on the large number of light or tracked vehicles rolling (back) into service. A number of companies are in the midst of trialling or marketing ground-breaking solutions in this field, including Advanced Blast & Ballistic Systems Limited (ABBS) – which received UK government funding to advance its AMPS project towards new tests in October 2016 – and TenCate Armor’s recently launched Active Blast Counter Measures System (ABDS).

APS such as Rafael’s Trophy, which is designed to identify and intercept incoming projectiles, are still seen to be critical AFV technologies according to 53 percent of respondents, reinforcing the number one priority of keeping the troops safe inside. Used in combination with traditional armour, active protection systems can offer much needed supplementary support and will continue to see significant investment from research houses and specialist manufacturers. While APS are unlikely to replace physical armour systems in the short-term, the advancement of the technology does not appear to be in doubt and is likely to become a major component of an armoured vehicle’s protection system in the future.

Electric armour has been a burgeoning technology for a number of years but it still hasn’t emerged as a reliable market solution for the mass market. 14 percent of respondents – a nominal 2 percent increase – believe it will have an impact on the armoured vehicle market over the next ten years. It’s likely that when electric armour been through a robust development and testing programme it will be an effective protection solution – whether that happens within the next decade is unknown.

10. Analysis of armoured vehicle challenges through 2026

To what extent do armoured vehicle manufacturers in your region of interest find the following a challenge?



Although a negligible fraction, more respondents thought the challenge of working with government entities was an 'insurmountable' hurdle (6 percent) but over half of all respondents did not see this as a major problem. This suggests that while business is not often hindered by a breakdown in communication with government representatives, when it is, the impact is lethal.

Understanding the future threats and requirements and budget limitations (5 percent each) also saw small slivers of similar disgruntlement from respondents. Overall, money remains the most challenging factor, with budget limitations accounting for 68 percent of strong concern among respondents. As indicated in Figure 8, budget limitations present a more intense problem for industry and government, considering that the demand for better protection is steadily rising year-on-year.

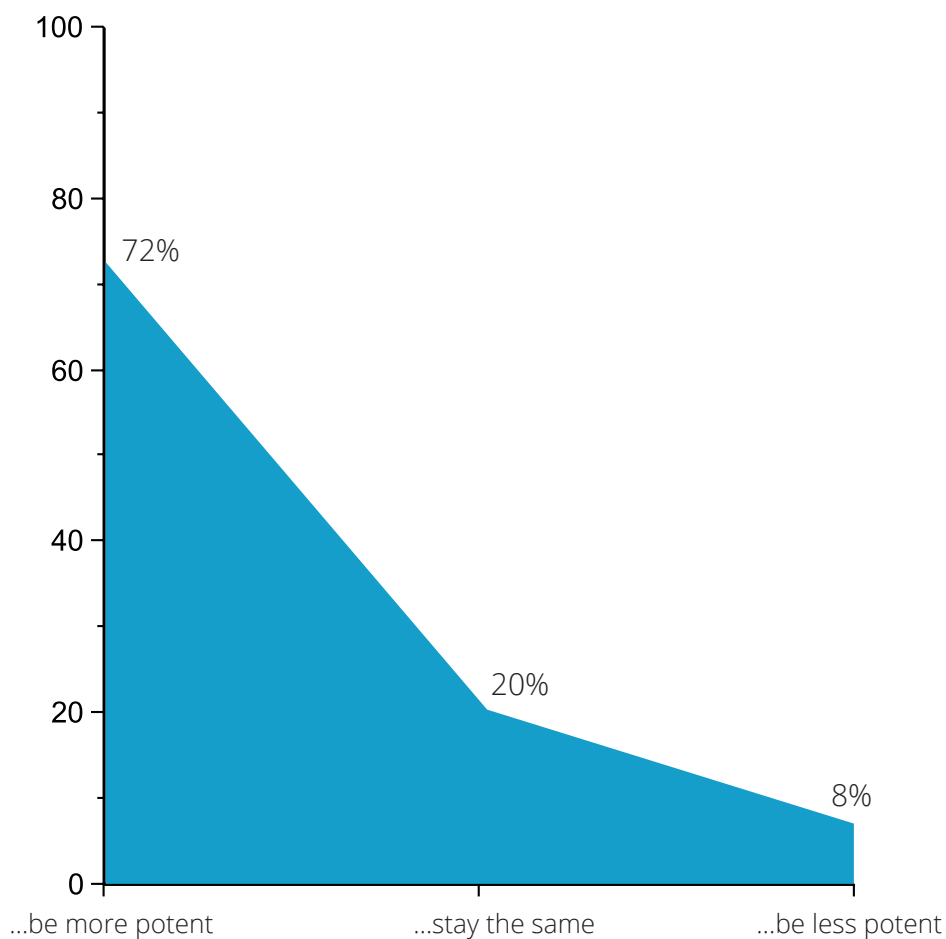
The task of reaching new markets drops from the top spot on 2016 but remains the second most difficult

factor to deal with behind budget, with 57 percent rating it 'very challenging'-to-'insurmountable'. This reinforces what we already know – that regional armoured vehicle manufacturers and component suppliers are seeking to expand their global operations and diversify their customer-base, but that they need help. Assistance invariably will come from more engagement with regional military and industry leaders and gathering intelligence on specific markets.

While still one of the key challenges for industry and governments, the improved economic environment has had a soothing effect on market confidence and requirements are again considered an important consideration as opposed to cost alone. Given that most of those surveyed remain largely happy with working with governments and suppliers, there is hope that these requirements can be readily met through a cooperative approach.

11. Overview of global military perception of armoured vehicle fleet potency

In ten years time do you foresee your armoured vehicle fleet to...



After years of decline in how much faith military respondents had in the future of their armoured vehicle fleets, last year saw an increase in confidence returning with 69 percent. This has now risen to 72 percent, confirming a new trend of assurance that that future armoured vehicle fleets will be more potent within the next decade. That marks a significant 16 percent rise since 2015.

There has at the same time been a marked decrease (7 percent) in those expressing a negative outlook of vehicle potency since last year's report. Overall, 92 percent of respondents believe future armoured vehicles will be at least as potent in the battlefield as they are today, consistent with the resurgent strength of the market.

12. Analysis of global military perception of key armoured vehicle requirements

Please rate how critical you view the following attributes in terms of key armoured vehicle requirements over the next 10 years.

	Inadequate	Good enough	Very good	Exceptional
Lethality	27%	38%	31%	4%
Survivability	20%	51%	24%	4%
Mobility	15%	45%	36%	4%
Scope for modernisation	27%	27%	38%	8%
Communications	15%	46%	25%	15%
Flexibility (for foreign conflict and homeland security operations)	30%	30%	38%	2%
Speed	17%	46%	35%	2%
Value for money	29%	41%	24%	6%

Figure 12 gives an overview of current levels of satisfaction within the military community regarding their armoured vehicle fleets.

There was a 10 percent increase in those who felt current communications systems are 'exceptional'. Aside to an 8 percent increase in those felt there was considerable scope for modernisation, most recorded a modest opinion of current fleet capabilities. Likewise, the flexibility of vehicles to operate at home or abroad saw almost a third of respondents express an opinion that current vehicles are inadequate. Again we see uncertainty in the style or intensity of future conflicts, with military personnel expecting a schism between conventional

and unconventional engagements driving a need for an improved diversity in capabilities.

Interestingly, survivability measures are thought to be much more effective than they appeared in last year's results, with only a fifth of respondents believing them to be wholly inadequate, compared to 44 percent last year. This corresponds to recent efforts to up vehicle protection in the last 12 months across many militaries, but adjacent to other statistics suggests that this is a temporary improvement, with future threats likely to bring forth further upgrade requirements.

NIMR Automotive

The AJBAN Special Operations Vehicle (SOV)

The NIMR AJBAN Special Operations Vehicle (SOV) is an open top 4x4 long-range reconnaissance vehicle for Special Forces. Light and powerful, capable of accessing all terrains and helicopter transportable, this vehicle can be fitted with any user specified equipment. The AJBAN SOV seats 4 crew with an optional 5th seat, providing all round situational awareness and self-defence from a high mounted gun ring and gun mounts at all crew positions. The vehicle can optionally be fitted with ballistic and blast protection.

*Conquer The Elements
Gain The Advantage*



The background of the slide features a photograph of a military vehicle, possibly an armored personnel carrier, with a mounted machine gun. The image is heavily obscured by a semi-transparent blue overlay that covers the entire page. At the top, there is a horizontal bar with a blue-to-orange gradient.

REGIONAL DEVELOPMENTS



While much has been made of the impact of strategic airstrikes in Syria on IS targets, and while press reports surrounding skirmishes across the Russia-Ukraine border have subsided considerably since the annexation of Crimea, neither situation presents a significant subsidence in tension along either NATO 'flank'. There remains a continued threat of both high-end conflict and asymmetric warfare in Europe, with numerous terrorist attacks marring public reassurance efforts from the region's security and intelligence forces. Meanwhile, an increased Russian presence in the Arctic region presents an emerging risk on the northern front. Meanwhile, humanitarian operations, primarily in the Middle East and Africa, remain a factor that draws upon European resources.

Where armoured vehicles are concerned, there remains a need for both military and law enforcement to ensure that the most capable and protected inventory remains available, be it for urban operations or for the prospect of conventional land engagements. Many military nations have taken definitive action on overhauling their armoured vehicle fleets in this post-Afghanistan era to meet a very different and complex range of threats, while others have been hampered significantly by the economic turmoil of the 2010s, continuing to pursue ambitions of modernisation through a financially restrictive corridor. However, all efforts to introduce new military hardware take time – a fact that is hard to swallow when the continent collectively faces a more sophisticated opposition, a more advanced and lethal weaponry, and those potential adversaries operating armoured fleets with comparable capabilities.

From NATO's perspective, a campaign of renewed collaboration and support has been expanding, particularly when it comes to the provision of more permanent U.S. equipment stationed on European soil. For example, U.S. Army Europe will occupy a base in north-west Germany to store tanks and other combat-ready equipment, in response to the sustained military build up of Russian forces across the Ukrainian divide. This builds on a previous establishment of a persistent rotational presence of forces and equipment – coined the 'European Activity Set' (EAS) – that sees the Alliance outfitted with a readied U.S. armoured brigade in Europe. 'Army Prepositioned Stock' (APS) will

continue to be hosted at installations including Estonia, Latvia, Lithuania, Poland, Romania and Bulgaria with the intention to "reduce force deployment times and enable a rapid response to potential contingencies".

Confidence in the European armoured vehicles market has climbed. According to Defence IQ's research, the past year has seen buoyant assuredness in the regional business market, building back against the uncertainties of the past three years.

SIPRI reported (April 2016) that while military spending decreased in Western Europe in 2015, Eastern Europe saw investment increasing (up 7.5 per cent on 2014). However, the trend of a decline in military spending in Western Europe also slowed from the previous year (1.3 percent). Countries in Central Europe were also seen to have increased spending by 13 per cent, "largely prompted by fears of Russian aggression following the Ukraine crisis." Overall, expenditure in Europe rose 1.7 percent to \$328bn, suggesting that widespread austerity measures may be slowly coming to an end.

The defence budget of Ukraine has 'quadrupled' from 2014 to 2016

The defence budget of **Ukraine** has 'quadrupled' from 2014 to 2016 with drastic efforts to reform and rebuild taking place. The 2016 budget – around \$4bn – constituted a massive five percent of the country's GDP. The military has increased its size to roughly 280,000 soldiers, making it one of the largest military forces in Europe. Concerted efforts have been made to speed up procurement processes while removing inefficiencies. Monthly upgrade targets have been set, alongside the introduction of new legislative amendments, logistical refinements and training initiatives. By 2020, the Ukrainian Armed Forces (UAF) aims to have renewed and modernised enough to

ensure a high-level of protection of its state territory. It is understood to have received 15 new equipment types in 2015, including APCs and light armoured vehicles. Support has of course come from other nations, including the UK provision of 55 used Saxon AT-105 APCs and the U.S. offering up over 200 unneeded Humvees. 316 tanks and 251 BMPs and BTRs have also been taken out of long-term storage for integration into active service.

Most recently, the UAF took delivery of the first ten of a batch of Dozor-B armoured vehicles, developed by Kharkiv Morozov Machine Building Design Bureau (KMDB), in the summer of 2016. The special operations vehicle is a 4x4 APC capable of carrying ten personnel and offering protection against armour-piercing bullets, shrapnel and mines, and CBRN attacks. It is fitted with the BPU-12.7 machine gun, night vision equipment, and the NSVT 12.7 machine gun with optical monocular periscope sight.



*The Dozor-B fleet began delivery to Ukraine in summer 2016.
Image: Wikimedia*

Also reportedly tested at the start of the year was the 4x4 Triton light APC from Kiev-based Leninska Kuznya, of which 62 units have been ordered by the Ukrainian Border Guard. At a combat weight of 10 tons, the Triton carries reconnaissance and observation equipment, a remote control turret from Leninska Kuznya that integrates a 12.7-mm machine gun and a UAG-40 grenade launcher.

Around the same time, the Ukrainian government signed a contract with Textron Systems to become the launch customer for three Survivable Combat Tactical Vehicles (SCTVs). The vehicles will augment a fleet of 230 High-Mobility Multi-Wheeled Vehicles (HMMWVs) provided by the U.S. in a non-lethal aid support agreement.

Russia has of course been doing its utmost to keep its military expansion and modernisation efforts

rolling in the face of European sanctions. Recent years have seen the highest post-Soviet budgets emerge in the country's history. A 7.5 percent hike on defence spending in 2015 took the budget to \$66.4bn but 2016 finally saw shrinkage of 5 percent, knocking the country out of the top three global military spenders (Saudi Arabia has taken its spot).

What has not dissipated is the level of threat Russia is promoting in Eastern Europe. This past summer saw new reports of Russian tanks moving into occupied territory in Crimea, with footage emerging of armoured trucks and troop transporters mobilising. Outbreaks of violence in the area are also still being reported. Approximately 40,000 Russian troops were reported to have amassed along the Ukrainian border between June and August 2016, prompting widespread concern. The subsequent 'Kavkaz 2016' war game involving thousands of troops in Crimea was no doubt intended as a show of strength.

Moscow remains in the process of overhauling its ageing armoured vehicle fleet, replacing Soviet technology with equipment to match or exceed the capabilities seen in Western Europe and North America. New vehicles that have been showcased to the public include the Armata family of tracked vehicles (Universal Combat Platform/BMP-T-15) – set to replace Soviet-era heavy armour. UralVagonZavod Research and Production Corporation is the prime contractor for the T-14 MBT, of which the first test consignment of over 100 units has now been ordered by the Russian Ministry of Defence and a unit price agreed. The T-14 is armed with an externally mounted 125 mm smoothbore gun with 32 rounds of ammunition in the autoloader, and is said to operate a firing rate of 10–12 rounds per minute with a maximum effective-penetration range of 8 km. Programme managers have claimed the fifth generation tank is “invisible” to radar, but many analysts believe these claims to be overstated. The army plans to acquire 2,300 T-14s to replace the T-72M3 and T-90 MBT fleets. Likewise, the T-15 heavy IFV, Kurganets-25 IFV and APC, and Boomerang 8x8 will all be moving in to replace the BMP and BTR vehicle series. In addition, the 2S35 Koalitsiya-SV (Coalition-SV) self-propelled artillery (SPA) system will replace the 2S19 MSTA-S SPA currently in service with Russian Ground Forces.

Christopher Foss of IHS Jane's International Defence Review wrote in August 2016 of Russia's development of a slat armour system designed for tracked and

wheeled AFVs for enhanced survivability against anti-tank weapons fitted with a single high-explosive anti-tank (HEAT) warhead. It is understood this armour can be fitted to several vehicle families in Russian service, including BTR-60/70/80 APCs and BMP-1/2 IFVs.

In April, Russia ordered an additional 20 BTR-82A 8x8 APCs from the Arzamas Machinery Plant of Russia's Military-Industrial Company (MIC). The ground forces and navy already operate over 2,000 vehicles in the BTR-80 family, many of which are being modernised (and re-designated as BTR-82AM). Full delivery of this order is scheduled before 2017.

Activity in the Arctic region is also seeing armoured vehicle activity, with reports emerging in May 2016 that Russia could be trialling Toros tracked AFVs to mobilise personnel in the tundra while also being prepared for combat. Traditional BMP-2/3 IFVs and BTR-80/82A APCs are said to have lacked the resilience for Arctic operations. Toros, produced by Russia's OAO Muromteplovoy, is based on the MT-LBu armoured tracked towing unit, specially modified for Arctic use and with a service life of 30 years. The vehicle has a road speed of 60 km/h and can traverse water at 4-6 km/h thanks to a YaMZ-238BL-1 (310 hp) diesel engine.

According to footage from Russian state media, defence contractor VPK LLC has developed a driverless, semi-autonomous version of the GAZ Tigr, featuring a remote controlled 30mm gun with the ability to identify and track targets.

The **United Kingdom** has seen notable activity in the past year as it continues its 'out with the old; in with the new' approach to fulfilling the 'Army 2020' restructure, ultimately aimed at saving £5.3bn (\$8.9bn). Following changes at Divisional, Brigade and Unit level, including implementation of a mid-life upgrade to 643 Warrior infantry fighting vehicles in a project known as the Warrior Capability Sustainment Programme (WCSP), the UK's ambition is to streamline the vehicle fleet with fewer but high-end solutions. In July, former Prime Minister David Cameron reassured NATO members that the UK will maintain its pledge defence spending to 2 percent of GDP, as required under Alliance guidelines. However, following the country's referendum to part from the EU, question marks have emerged over MOD spending and the potential of a £700m 'black hole' resulting from a drop in the strength of the pound.

The nation is progressing with its future rapid effects system (FRES) programme, having pledged a £390m (\$608m) support contract in 2015 for the General Dynamics Scout Specialist Vehicles (SV) fleet – since named 'Ajax' – following a £3.5bn (\$5.46bn) deal announced ahead of the 2014 NATO Summit in Wales to buy 589 of the vehicles. The contract will run until 2024. In March, Ajax received the first production standard 40 CTAS (Cased Telescoped Armament System) 40mm weapon system from CTA International, a joint venture between BAE Systems and Nexter Systems. The weapon system will arm Lockheed Martin-developed turrets for the 245 Ajax vehicles. A total of 515 gun systems from CTAI are contracted to be delivered over the next six years.

Lockheed Martin UK is the prime contractor for the WCSP, overseeing the upgrade of at least 380 armoured fighting vehicles for the Army. The company is understood to be bidding for the MOD's contract to upgrade the British Army's Challenger 2 tanks in collaboration with Elbit Systems UK. A proposal to undertake the Life Extension Project (LEP) should see the MBT fleet remain in service until 2035. Should the bid be accepted, work is likely to be undertaken at LMUK's newly opened (June 2016) manufacturing facility at its Ampthill site in Bedfordshire, where work on Warrior and AJAX is already underway.

Meanwhile, the British Army has retired the ST Kinetics Warthog articulated tracked armoured vehicle from service. 115 Warthogs had been ordered by the UK under an urgent operational requirement (UOR) for use in Afghanistan, beating out the less-protected BvS 10 Viking articulated tracked vehicle. Plans to retain use of the fleet after Afghanistan (to be modified and transferred to the Royal Artillery's 32 and 47 Regiments) had been announced in 2013, but this decision was eventually reversed.

Ireland's Defence Forces took delivery of two more MAN HX 60 4x4 armoured trucks in August 2016, which are fitted with Marshall Aerospace and Defence Group's armoured shelter for their EOD units. These new vehicles will augment those already in service, supporting Ireland's UN missions operating in the Middle East, where its EOD teams deploy in armoured vehicles as part of route clearance operations and to handle unexploded ordnance uncovered by other UN forces operating in the area.

France continues to move forward with its landmark €752m (\$929m) SCORPION (Synergie du Contact Renforcé par la Polyvalence et l'Infovalorisation) army modernisation programme providing a new generation of wheeled combat. The deal will see development and acquisition, maintenance and training equipment provided for the 6x6 Véhicule Blindé MultiRôle (VBMR, or 'Griffon') and 6x6 Engin Blindé de Reconnaissance et de Combat (EBRC, or 'Jaguar'). Griffon will replace the 4x4 VAB light armoured transport vehicle, while Jaguar will replace a range of other wheeled combat vehicles in service, such as the ERC90 Sagaie and the AMX 10RC. The vehicles are being developed by an all-French consortium comprised of Nexter Systems, Renault Trucks Défense (RTD) and Thales Communication and Security.

The Army is to receive Jaguar by the end of 2020. In total, 110 of these vehicles will be inducted through 2025 as part of Step One of SCORPION, and the remaining units during Step Two, with deliveries to be completed in 2032. The main system of this vehicle is the T40M two-man lightweight modular protected compact stealth turret being developed by Nexter in cooperation with other suppliers, the DGA and the Army's Technical Section, the STAT (Section Technique de l'Armée de Terre).

Details also emerged in June 2016 of the modernisation of Army's Leclerc MBT. Nexter Systems is working on the development of an enhanced configuration of the tank, which will see two prototypes completed in late 2018 for trials by DGA and the STAT. The two prototypes will be followed by an initial serial production modernised vehicle to be delivered in 2020, with the last scheduled to be inducted by the French Army in 2028. A contract worth approximately \$366 million to modernise 200 of the main battle tanks and 18 existing DCL (Dépanneur de Chars Leclerc) armoured recovery vehicles to Leclerc Rénové (XLR) and DCL Rénové (DCLR) standards respectively was awarded on 5 March 2015. France is also considering the feasibility of modernising additional MBTs. Modernising the current Leclerc simulation systems installed at the Saumur military school is also being considered.

Of the 406 MBTs received since 2007, 346 units are currently in active service. 200 are in service with the 501e Régiment de Chars de Combat in Mourmelon (501e RCC); 1er Régiment de Chasseurs (1er RCh) in Verdun; and the 12e Régiment de Cuirassiers (12e RC)



France's Leclerc MBT is set to be modernised for delivery in 2020. Image: Daniel Steger

in Olivet. The remaining vehicles are used for different purposes including for training in Mourmelon and Canjuers military training camps.

This modernisation is intended to provide the vehicle with additional capability to intervene in urban scenarios, face future threats and deliver increased fire power. The upgrade will provide the vehicle with capabilities to integrate SCORPION battle groups, increase its capability to intervene in urban scenarios and high intensity scenarios, deliver improved protection and increased fire power. It also reduces support costs and maintains the vehicle to high standards for MBTs.

In spite of a wider European trend to hike defence budgets, **Italy's** budget dipped again in 2016 and is expected to do so for a further two years. 2016 procurement funding allocated €2.18bn from the Defence Ministry and €2.54bn from the Industry Ministry, down on 2015's €4.87bn total but up on Italy's initial forecast by almost €2bn. While this is unnerving to the nation's military officials, given Italian commitments to security in North Africa and renewed concern over Russian aggression, several large defence programmes are continuing to move forward, albeit with their share of obstacles.

Recent efforts to purchase up to 381 Freccia 8x8 multirole armored vehicles from the Iveco-Oto Melara (Finmeccanica) consortium had been set to cost around €2.65bn, with acquisitions spread over the coming years until 2024. However, reports in 2016 suggest that the plan to build a second brigade on the basis of the Freccia received only \$23.58m in funding, prompting concerns that rate of production could be drawn out for far longer than the 2024 deadline. These new vehicles are being introduced to provide the Italian Army with greater mobility and digitization, capable of a range of roles including combat, anti-tank, mortar, command post and exploration.

\$180m is understood to have been earmarked for the new Centauro II wheeled tank programme – an upgrade to the existing Italian tank and benefiting from a 120mm gun and 720 hp engine – being developed by a consortium of Italy's Iveco and Leonardo-Finmeccanica. Up to 140 of these vehicles may eventually be ordered. The Army received the prototype over the summer, with tests set to run through 2017.

Although high-end tanks present a current gap in the Army (should Italy be required to engage in a land campaign in the near future), medium vehicles have been considered the 'key element' in terms of providing the flexibility and digitisation required of the modern Italian fleet. Previously announced armoured vehicle priorities include the completion of upgrades to the Ariete MBTs and the Dardo IFVs to urgently upgrade IED protection. UGVs are also being closely considered for future Italian procurement as the technology matures and new innovations enter the market. On the export side, the Italian government recently donated 54 military trucks to the Somali National Army (SNA) as part of assistance in rebuilding the army of the war-ravaged nation.

Spain has rebounded back into serious defence investment after years of downturn and austerity. The country spent 40 percent more on defence in 2015 than was included in the government's initial budget of €5.76 bn (\$6.53 bn). Final defence expenditure saw the budget rise from €7.69 bn in 2014 to €8.1 bn. In one of its most significant new efforts, the Spanish Army has awarded a contract to a temporary consortium designated 'UTE VCR 8x8' (Unión Temporal de Empresas Vehículo de Combate sobre Ruedas 8x8) – formed by the Spanish companies General Dynamics

European Land Systems-Santa Bárbara Sistemas (GDELS-SBS), Indra Sistemas and SAPA Operaciones – to develop its future 8x8 AFV. The new vehicle would progressively replace Spain's BMR M1 (Blindado Medio de Ruedas) 6x6.

Spain has rebounded back into serious defence investment after years of downturn and austerity.

A risk reduction effort is in place to develop six different technological projects related to several latest generation systems aimed to integrate the final vehicle. The €89.2 m (\$96.4 m) contract covers research, development and the production of prototype vehicles to be trialed between 2016 and 2018 as part of the 'Vehículo de Combate sobre Ruedas' (VCR) programme. Up to 400 vehicles in different variants are expected to be ordered with the GDELS-Mowag Piranha 5 multi-role design serving as the base platform. Spanish Navy Marines have already fielded Piranha 3 8x8 amphibious IFVs.

Of companies involved in the VCR 8x8, SAPA Placencia is understood to have been in talks to supply engine installation and subsystems including automatic transmission and driveline. Indra Sistemas is set to be providing electronics and command and control systems. Spanish entities including Navantia Sistemas, Airbus Defence and Space, Amper, Mecanizados Escribano, EXPAL, GMV and OTO Melara Ibérica could also be competing as local sub-contractors.

Portugal approved its 12-year military programming law in early 2015 with the Ministry of National Defence expected to spend €960m (\$1.084bn) in armament programmes up to 2018. Of these, the priority army programmes over the next four years include the procurement of 4x4 light armoured vehicles for the army's Rapid Reaction Brigade (BrigRR). The country recently received a contingent of 166 Pandur II 8x8



Portugal has received new Pandur II 8x8 APCs. Image: Allied Joint Force Command Brunssum

armoured vehicles and the army's Intervention Brigade (BrigInt) completed delivery of 22 more vehicles in June 2016 as part of a deal agreed in October 2014 between Portugal and General Dynamics European Land Systems (GDELS), taking the total number to 188. Portuguese investment in modern equipment in 2015 constituted 8.7 per cent of overall defence spending, which itself tallied on 1.33 per cent of GDP, below NATO's 2 per cent threshold. However, this figure is an improvement on Portugal's 2014 figure and consideration of the damage the country experienced as a result of the eurozone debt crisis must be held in consideration.

While the **Netherlands** decided to increase defence spending by \$129 million (€100 million) per year from 2015 – following the downing of Flight MH17 over East Ukraine – defence investment remains at 1.14 percent of GDP, beneath the average of NATO state spending.

2016 saw the Royal Netherlands Army complete delivery of the first batch of Boxer vehicles, including (NLAMB) ambulance versions, Command Post versions, (GNGP) Engineering vehicles and Cargo variants. Boxer is produced by ARTEC industrial group (Krauss Maffei Wegmann; Rheinmetall Landsysteme; Rheinmetall Nederland), which is supplying hundreds of the vehicle for the Netherlands and Germany.

After the Netherlands identified a need for additional engineer vehicles instead of cargo and command post vehicles, ARTEC signed a new contract with the

Organisation for Joint Armament Cooperation (OCCAR) in May 2016 to supply further Boxer multirole AFVs. This contract increases the number of engineer vehicles from 39 to 92 and reduces the number of cargo vehicles from 15 to 12 and command post vehicles from 36 to 24.

The Armed Forces of **Belgium** have phased out tracked vehicles to go completely wheeled, with an inventory that includes the Piranha 8x8. In January 2016, Belgium ordered 108 Fox 4x4 Rapid Reaction Vehicles (RRVs) from Jankel, an upgraded military version of the 79 Series Toyota Land Cruiser. The Fox is expected to replace Belgium's ageing Volkswagen Iltis light 4x4s used by the special forces. Alongside the order, Belgium is acquiring 38 removable protection kits for the vehicles and ring mounts for mounting 12.7 mm heavy machine guns (MGs) or 40 mm automatic grenade launchers on 60 of the vehicles. All 108 can mount 7.62 mm MGs.

The country raised its alert status after the high-profile arrest of terrorist suspects in 2015. The country has since adopted its new Strategic Defence Plan for 2030, which intends to see the defence budget rise from 0.9 percent of GDP to 1.3 percent (below the rumoured 1.6 percent discussed in 2015), but will be accompanied by a reduction of personnel numbers. Under the proposals for new investment into all services, the army is earmarked to receive new wheeled vehicles, alongside 155mm artillery, communications systems and smart combat gear. The Piranha and Dingo are also expected to be upgraded.

After a long period of tentative negotiations, the **German** government has committed to boosting defence spending considerably. Federal budget proposals for 2017 have earmarked an additional \$1.9bn – a 6.8 percent rise on 2016 – equating to \$40.39bn in 2017. This will more than double the growth rate of 2.7 percent for the federal budget as a whole. Budget approval has been made until 2020, where Germany is set to spend \$43.96bn.

As part of its modernisation, Germany is preparing to adopt the of the Puma AIFV, with Projekt System and Management (PSM) stepping up development and full rate production of 66 units per year set to be achieved in 2017. 350 units will be supplied to the German Army by 2020 (reduced from an initial order of 405), with 78 having been delivered as of August

more expected by the end of 2016. Sources say there remains the prospect of an additional order of between 100 and 200 units. Development of the Puma over the course of the programme has seen the power pack, suspension and remote-controlled turret all modified ahead of delivery.

Germany-based Rheinmetall unveiled its Lynx tracked IFV in June 2016, describing it as 'agile, hard-hitting and highly protected' for every engagement from peace enforcement to high-intensity combat. The company is also, along with Krauss-Maffei Wegmann (KMW) group, manufacturing a total of 88 Boxer 8x8 IFVs (as joint venture Artec) for the Lithuanian military under a \$435m contract. Deliveries of the Boxer vehicles will be completed in 2019 and will equip the 'Iron Wolf' mechanized brigade.



*More Boxer 8x8s have entered service in the Netherlands following strong performance in the Germany Army.
Image: ISAF HQ*

Worth noting is that French and German armoured vehicle makers Nexter and KMW has sealed a merger (named 'KNDS'), combining the Leclerc and Leopard tank brands in what could provide the foundation for further European defence consolidation.

Austria ordered 32 BvS10 articulated all-terrain vehicles from BAE Systems in July 2016 at a cost of \$95m. The vehicle, a bigger and amphibious evolution of the unarmoured Bv206, is intended for the army's alpine operations and deliveries are currently scheduled from late 2017 to late 2019. The deal includes weapons and additional equipment. Existing operators include the

UK, the Netherlands, Sweden and France.

Toward the end of 2015, the army took delivery of six Husar light multi-role 4x4 vehicles from Iveco for policing and reconnaissance patrol duties. They were the first of an order of 150 vehicles ordered, intended to replace Austria's Horseman patrol vehicle fleet at a cost of \$121m. The Husar offers a remote weapons station and light armour for protection against gunfire, mines and shrapnel.

Prior to this, Austria modernised its Pandur wheeled armoured transport vehicles ahead of its 2015 peacekeeping mission to Kosovo, primarily to help enhance crew protection with mine-, IED- and ballistic protection and to integrate a 360° electrically-powered remotely-operated weapon station.

Authorities have found critical use in armoured vehicles on Austrian soil in recent years, deploying them to get supplies to civilians trapped in their homes after severe ice storms cut off large areas of the country.

In October 2015, **Hungary** introduced new – and domestically-developed – RDO-3221 Komondor light armoured vehicles from the Gamma Technical Corporation and the Hungarian Defence Industry Association, for use by not only the military but counter-terror and police forces, disaster relief services and border protection authorities. The vehicle had spent almost four decades in development, with variants including a 4x4 ambulance and a 6x6 base vehicle. Ninety different Hungarian companies were said to be involved in building the prototypes, with features ranging from radar to modular add-on armour.

Hungary's defence budget is set to increase to \$1.27bn in 2017 (0.94 percent of GDP). In 2012, the government adopted a resolution in which it pledged to increase defence spending to 1.4 percent of GDP by 2022. In May, the Hungarian Defence Minister promised to increase military aid for Peshmerga forces fighting in Kurdistan. Hungarian tanks and other armoured vehicles have meanwhile been mobilising soldiers in response to the migration of refugees on the Hungarian borders of Croatia, Serbia and Romania.

The **Czech Republic** has been seriously readdressing its military policy since Moscow's annexation of Crimea, with the government proposing an increase in defence spending to 1.4 percent of GDP by 2020. In 2015, the country updated the Security Strategy and Foreign Policy Strategy and adopted a new, long-term acquisition plan leading up to 2030.

Further to its purchase of 58 surplus T-72s from Hungary in 2014, the Czech Ministry of Defence is looking to procure 210 tracked armoured vehicles for the army in order to replace its current fleet of obsolete Russian-designed BMP-2 tracked IFVs and APCs. Once the contract – worth \$2bn – is signed, deliveries are anticipated to begin in 2019 and take place over the ensuing ten years. Among the expected bidders are Zetor Tractors, a manufacturer of tractors and other agricultural machinery, which has developed a new tracked IFV for military-use in the form of the 'Wolfdog'.

The Czechs have been pooling resources with Slovakia in order to achieve joint modernisation aims and bolster manufacturing industries across both countries. GDELS signed a partnership with Czech firm Excalibur Army in 2015 to market the Steyr Pandur II armoured vehicle in Eastern Europe and Asia. That same year, the Czech MoD confirmed the Army will be procuring 20 Pandur IIs to compliment the existing 107-strong fleet of Pandur 8x8s.

Slovakia's 2016 vehicle procurement initiatives and domestic vehicle manufacturing programmes have been particularly active

Slovakia's 2016 vehicle procurement initiatives and domestic vehicle manufacturing programmes have been particularly active in the past 12 months. Among them, Slovakia's MSM Group unveiled a new air-transportable 8x8 wheeled IFV prototype in May called

the Corsac, based on the Pandur II. Slovakia is also said to be negotiating a purchase of 30 eight-wheeled Rosomak AMVs from Poland to replace the outdated OT-64 SKOT APC fleet, following the signing of a letter of intent to cooperate on military transactions in July 2015. Rosomak is reported to be in line to be paid \$30m for the contract.

May 2016 saw the unveiling of the Slovak-built Aligator 4x4 Master II, built by Kerametal and aimed at both armed and special forces. The vehicle is amphibious and intended as a platform for a wide range of deployments such as command, surveillance, reconnaissance, weapons station, CBRN and police.

In addition, the armed forces received six Tatra T 815-79OR99 38 300 8x8.1R-L2 High Mobility Heavy Duty (HMHD) tactical trucks at the start of 2016 as part of a wheeled vehicle fleet recapitalisation programme that began in 2012, with over 200 new vehicles from four suppliers have so far been delivered. The L2 variant offers a maximum road speed of 85 km/h, a payload capacity of 19,450 kg and NATO STANAG 4569 Level 2 protection to counter small arms fire and mine threats.

However, unlike some of its neighbours, Slovakia's relationship with Russia is much less frosty, allowing for defence business to continue with Moscow. As such, Russia's Military Industrial Company (VPK) delivered a batch of Tigr multipurpose infantry mobility vehicles to Slovakia (and other countries) in 2016. These vehicles have been manufactured at the Arzamas Machine-Building Enterprise in Russia's Nizhny Novgorod region since 2005.

Latvia on the other hand is wary of Russia's shadow. It raised its defence expenditure to 1.4 percent of GDP in 2016, with plans to expand this to the 2 percent threshold by 2018.

July saw Canada commit around 450 troops and armoured vehicles to Latvia for long-term deployment, with Canada taking command of a 1,000-strong multinational force in the country. Germany, the United States and Britain are leading similar forces in Lithuania, Poland and Estonia. In 2015, Latvia took delivery of an initial batch of 123 overhauled and upgraded Scimitar Combat Vehicle Reconnaissance Tracked (CVRT) vehicles from the UK for training and familiarisation in a deal worth \$53.6m. The Scimitars are being outfitted with Spike anti-tank and anti-personnel missiles.

Latvia, Lithuania and Estonia have all raised their defence expenditure and are considering the establishment a joint medium-range air-defence system to protect their collective airspace. Lithuania has reintroduced conscription and Latvia is considering taking the same measure.

The **Lithuanian** State Defence Council approved negotiations with Germany's ARTEC for the purchase of 88 GTK Boxer 8x8 modular AFVs. The Ministry of National Defence recommended this vehicle as the 'preferred' option to meet the Baltic NATO nation's land force requirements. Lithuania hopes to equip its future fleet with UT-30 Mk1 or Mk2 remote-controlled weapon stations of Elbit Systems Land and C4I-Tadiran, which includes the Orbital ATK Mk 44 Bushmaster 30mm automatic cannon, FN Herstal MAG58 7.62mm machine gun, and Rafael Advanced Defense Systems Spike LR long range anti-tank missile. The first vehicles are expected to be received in 2017, with delivery expected to complete by 2019.

Existing Lithuanian inventory consists primarily of the M113A1G and M1064A4 tracked vehicles, M1114 4x4 vehicles, and SISU ETP 8x8 logistics protected trucks. In addition to a number of howitzers purchased in September 2015, Lithuania has invested in 26 BAE Systems M577A2 tracked command post vehicles, and six Rheinmetall Defence Bergepanzer 2 armoured recovery vehicles, based on the Leopard 1 main battle tank chassis.

Elbit Systems Land and C4I completed the upgrade of M1064A3 120mm tracked armoured mortar carriers of Mechanized Infantry Brigade "Iron Wolf" with new barrel and digital automated fire control system. A new Mechanized Infantry Brigade was created with its headquarters to be implemented in Klaipėda in 2016.

Estonia's Defence Minister announced plans at the start of 2016 to spend around \$916m on the acquisition of new weapons and equipment by 2020. The 2016 budget of around \$503m comes to 2.07 percent of the GDP.

The country has purchased 35 extra CV90 AFV hulls from Norway for \$674m, complementing the existing 44 CV9035NL IFVs bought from the Netherlands in 2014. Estonia is planning to convert the additional hulls domestically into combat support (CS) and combat service support (CSS) vehicle variants. Esterline's Racal

Acoustics RA7000 Elite Hearing Protection System has been selected as the hearing protection and communication system for the Estonian CV90.

The Estonian Armed Forces are also looking to capitalise on the force-multiplying possibilities of autonomous systems through its Digital Infantry Battalion Solution (DIBS) programme. Under the initiative, Estonian unmanned ground vehicle (UGV) manufacturer MILREM and the Estonian National Defence College are developing CONOPS for the deployment of UGVs in support of battalion-level infantry missions. MILREM's Tracked Hybrid Modular Infantry System (THeMIS) UGV has been built with a modular architecture in order to keep its payload and mission set as versatile as possible. Among the options available, the developers are keen to outfit the platform with an RWS for an anti-tank role, an ISR suite, a CBRN suite, and (more traditional) EOD capabilities.

Aside to Estonia's own fleet, ten more U.S. tanks, four Bradley vehicles and several armoured support vehicles are to be stationed in the country in 2017, along with 120 more U.S. personnel, as NATO continues its rotation efforts in response to "Russian aggression".

Poland is planning to spend \$21.6bn on new military equipment in the near future

Poland, particularly spurred into action by the threat of recent Russian military activity, is planning to spend \$21.6bn on new military equipment in the near future, significantly modernising all services. This includes a budget of \$9.58bn for 2017, pushing military spending to 2.01 percent of GDP.

Polska Grupa Zbrojeniowa (PGZ), the state-run defence group, has a strategy to triple its revenues by 2030, with an increasing eye towards raising its profile for exports and foreign partnerships. Its subsidiary Rosomak SA (formerly WZM), is currently producing

Poland's 8x8 AMV fleet made under license from Finland's Patria. Many of these vehicles carry the Mk44 30mm cannon, but are now also being modified to fire 40mm. A new Rosomak-2 variant is said to be in the pipeline.

Rheinmetall was awarded an upgrade contract for Poland's Leopard 2 MBT and is pitching its AMPV on the country's Pegasus 4x4 competition – against the likes of the GDELS Eagle V, the AMZ Kutno Tur V and the Thales Hawkei – which will outfit the Polish Special Forces. Rheinmetall is also manufacturing a 6x6 light armoured reconnaissance vehicle (LOTR) with Poland's Obrum with hopes of replacing the Polish BRDM-2 4x4 amphibious vehicle fleet. A prototype is expected in 2017.

Obrum (with BAE Systems) has been developing the futuristic-looking PL-01, a light tank boasting multi-layer ceramic-aramid armour and a 105 or 120 mm calibre gun in an unmanned turret. A prototype has been estimated for completion in 2016, with mass production presently scheduled to begin in 2018 at the earliest. Obrum also displayed its Universal Modular Tracked Platform (UMTP) prototype in September 2016, boasting Spike LR anti-tank missiles and a 30mm turret, with which the company hopes demonstrate to the MOD as a potential 'future solution'.

Romania aims to continue its recent increase in defence spending with ambitious hopes to reach the 2 percent threshold by 2017, according to the National Political Agreement. The 2016 budget was reported to be at 1.5 percent. Expenditure is being focused not just on armed forces modernisation but also peacekeeping missions, joint operations and border control measures. Romania's state defence contractor Romarm announced a cooperation proposal in May with Italian-American group Fiat Chrysler Automobiles to produce the military 4x4 Jeep J8 in Romania.

Budgetary priorities follow the guidelines of a Programme concerning the transformation, development and procurement of the Romanian Armed Forces by 2027 and beyond, which includes 28.8 percent of the budget allocated solely for procurement purposes. Among key equipment to receive investment will be the purchase and modernisation of armoured combat vehicles. This will ensure readiness of both a permanent combat service and rapid reaction force.

Bulgaria wants to boost its defence budget-to-GDP ratio – currently at 1.3 percent at around \$769m – to 2 percent by 2024. This plan would include 20 percent of expenditure ring-fenced for the acquisition of new gear. A government white paper released at the end of 2015 outlined the areas where the country will prioritise defence-related research and development activities, including weapons systems and CBRN protection technologies.

In May, the Defence Ministry halted two procurements to deliver 13 U.S. M117 Guardian ASVs and six Israeli Sand Cat 4x4 armored vehicles to the Bulgarian Armed Forces, claiming the tenders were not managed efficiently or transparently enough.

Like Belarus, **Serbia** is remaining relatively close-knit with Moscow, inviting the Russian Army to participate in two military exercises in autumn 2016 on Serbian soil: the first of which is designated 'Slavic Brotherhood'. This close military cooperation has been a concern to NATO, while the EU is unlikely to admit Serbia as a member unless it pushes back on Russian integration and influence.

In 2015, Serbia announced that it will begin serial production of the Lazar 2 8x8 multirole family of vehicles. Designed in 2013, the mine-protected platform can be customised to roles including APC and IFV, with options of additional composite armour and a Remote-Controlled Weapons Station (RWS) with armament ranging from 12.7mm to 30mm. Manufacturer YugolImport-SDPR unveiled a version to the public in July 2015. While having 15 on order for Serbia, there are high hopes for export.

Slavic brotherhood has been a particular worry for **Croatia**, which has been investing in Patria 8x8 AMVs, as well as Kiowa helicopters and howitzers. However, Croatia has been battling an ailing economy and governmental unrest, leading to defence spending cuts being proposed in March 2016. The proposal earmarked \$54.5m for 2016, a drop on the previous year.

In 2015, the country displayed a number of its newly adopted armoured vehicles. These included four variants of the Patria AMV – medical, logistical, command and APC – as well as 212 MRAP vehicles donated by the U.S. – comprising the Navistar

MaxxPro, the Oshkosh M-ATV, and the BAE Systems RG33 Heavy Armoured Ground Ambulance (HAGA). Croatia had previously acquired Iveco Light Multirole Vehicles (LMVs) and ex-U.S. Humvees to help round out its military police and training requirements. Subsystem integration difficulties had caused delays to the acquisition of the 126 AMVs but the full contingent is expected to be in active service by the end of 2016 unless postponement is announced. Eight of these will be equipped with a 30mm armed weapon station. Several of the MRAPs have been absorbed into the Croatian Special Forces Command (SFCOM), with others also going to the Support Command, Military Police Regiment and the Croatian Army.

Even though the financial situation in **Greece** remains troubled, Greece spent around 2.4 percent of its GDP on defence for 2015, a 0.1 percent increase in spending over 2014. The previous year, the country's debt as percentage of GDP was at 175 percent, while its economy contracted by 3.3 percent. Greek officials offered \$220m more in defence cuts in talks with creditors, but the response was a demand instead for \$440m. The chunk of the current budget goes towards the upkeep of the Hellenic Army's vast armoured vehicles fleet, which includes 460 M113s adopted from the US and 320 Oshkosh Heavy Expanded Mobility Tactical Trucks (HEMTTs). The new arrivals include 225 M113A2 APCs to replace Greece's ex-East German BMP-1 IFVs, along with 128 M577A2 command post vehicles, 106 M901A2 Improved TOW vehicles, and the U.S. Army's last operational M106 107 mm mortar carrier.

Belarus has continued to be involved in bilateral military exercises with Russia, including 2015's 'Union Shield' sessions that emphasised rapid reaction. However, despite the apparent cooperation between the two nations, Belarus is less willing to rattle the sabre in fear of stoking a hybrid conflict and remains in communication with Ukraine. Minsk plans a slight increase to the defence budget, but with a lack of public resources the government will need to raise additional funds through the selling of obsolete military equipment.

In August 2016, the State Military Industrial Committee of Belarus announced that in the first half of the year saw national defence enterprises earn a net profit of \$80m, exceeding the assigned export plans by a quarter despite Moscow continuing its December 2015 policy of restricting access to Russian markets for Belarusian defence firms. These restrictions are said to be having a negative impact on bilateral relations and

the economic health of Belarus.

In March 2016, Belarusian truck manufacturer MAZ signed an agreement on establishing a production line of trucks in Ukraine's Cherkasy with the Ukrainian corporation Bohdan for both civilian and military use. In vehicle-specific developments, the Belarusian engineering company Volat (OAO Minsk Wheel Tractor Plant) presented a model of the lightly armoured automobile V-1 in the summer of 2016.

Nordic defence cooperation is increasing, partly due to Russia's military activity. Focus on increasing common capability, bilateral security and patrol services, and cost sharing on major programmes continue to be part of the regional plan. For example, a pact between Sweden and Finland agreed in 2014 has aimed to acquire equipment for both countries that is compatible with NATO systems.



A Danish Mowag Piranha 5 undergoing trials. Image: FMT

Like Spain, **Denmark** has placed an order for Piranha 5 vehicles – 309 in total – in a deal worth \$651m, with deliveries scheduled to take place 2018-2023. Denmark announced earlier that year the selection of the Piranha 5 design to progressively replace the M113 series tracked armoured vehicles of the Royal Danish Army. The service also currently fields several Piranha IIIs. The vehicle was selected over GDELS-SBS ASCOD 2, BAE Systems Hägglunds Armadillo, Flensburger Fahrzeugbau Gesellschaft mbH (FFG) PMMC G5 and Nexter Systems VBCI. It offers a gross vehicle weight of 30t with built-in growth potential rating 33t, payload of 13t, 8m overall length, height over hull of 2.3m, 2.99m overall width, maximum road speed of 100km/h and top range of 550km.

In February 2016, Denmark announced that it had qualified five approved bidders to provide new

protected patrol vehicles for the army, aiming to offer added protection and payload over the existing fleet. The bidders are understood to be General Dynamics' Foxhound and Eagle V, Nexter's Aravis, Oshkosh's M-ATV and L-ATV, and Otokar's Cobra and Cobra II. Once vehicle-specific bids are in, the FMI will downselect three vehicles for trials. An initial purchase of 36 vehicles will be made, with an option to increase the order. Denmark is planning to operate a total of four variants of the vehicle: Patrol, Electronic Warfare, Support, and Reconnaissance (in both open- and closed-cab versions). Denmark currently operates 91 Eagle IVs, along with 22 modified High-Mobility, Multipurpose Wheeled Vehicles and a small number of Supacat Jackals that are used for special attack roles.

Finland is understood to be concluding a defence cooperation agreement with the U.S. following Russian activity around the Baltic and Nordic regions. This would include incorporating joint military training, information sharing and research. Both Finland and Sweden have already signed a pact with NATO that allows NATO to provide the two nations with military assistance in emergency cases. An increase to the defence budget in 2016-2020 is also expected to continue in order to address an extensive reform centred on issues relating to operational costs, obsolete equipment and a reduction in conscript size.

A delivery of 20 surplus Leopard 2A6 MBTs from the Netherlands is expected to be completed in 2019 in a \$221m investment into Finland's long-term strike force. Meanwhile, Finland-based Patria's delivery of 71 renovated XA-180 6x6 APCs for the Finnish Defence Forces – involving the installation of new seating and electric systems, and repairs to engines, transmission, and axels – is scheduled for completion in 2017, with the possibility of 210 more vehicles contracted for refurbishment.

In terms of export developments, Patria is selling the 8x8 AMV (armoured modular vehicles) to the UAE armed forces. Patria, which is majority state-owned, has not confirmed the value of the contract or how many vehicles are included in the order. However, reports indicate that 40 vehicles are to be delivered and are being manufactured in Poland. Patria's Polish partner has been producing AMVs for more than a decade under the name 'Rosomak'. The AMV 8x8 has also, as of August 2016, been submitted for a Qatari requirement.

As mentioned, **Norway** is to sell used CV90 hulls to Estonia, providing its army with a significantly increased operational capability and contributing to the greater

defence of the Baltic region as a whole. Norway is itself acquiring new CV90s and upgrading existing ones, having been pleased with the performance of the BAE Systems Hägglunds vehicles. It was announced in September 2016 that the first 12 (of 144) of these upgraded vehicles have been delivered.

When it comes to high-tech solutions, the Norwegian Army is undertaking interesting research in the potential use of augmented reality (AR) technology to improve situational awareness and the utility of armoured vehicle command, control, and information systems. Norwegian combat vehicles are integrating battlefield management systems into the platform architecture.



*Former Norwegian CV90s are being sold to Estonia.
Image: PRT Meymaneh*

According to the Government of **Sweden's** Defence Policy 2016-2020, the defence budget for the years 2016 to 2020 will increase by \$1.18bn, largely in response to Russia's military resurgence. The army has ordered upgrades to 350 of its Leopard 2 MBTs and CV90 IFVs at a cost of \$300m, with Battlefield Management and Tactical Command and Control Systems being replaced aside to weapons systems, sensors, software, chassis and other features. Work on the MBTs is due for completion in 2023, and IFVs between 2018-2020. Sweden's Special Operations Task Group has also been taking delivery of a number of 4x4 Bastion Tactical and Reconnaissance Vehicles from Renault Trucks Defense.



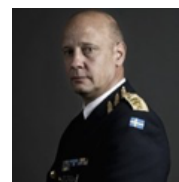
EUROPE

Interested in this region? Key speakers at the International Armoured Conference this year include:



Lieutenant General Paul Jaques

Chief of Materiel (Land)
DE&S - UK MoD



Major General Karl Engelbrektson

Commander
Army of Sweden



Major-General Vakhtang Kapanadze

Chief of General Staff
Georgian Armed Forces



Brigadier General Charles Beaudouin

Director Technical Section
French Army



Brigadier General Andrés Chapa Huidoro

Commander, Calvary Brigade "Castillejos"
Spanish Army



While some African countries have experienced a high level of economic growth and prosperity in the past year, Africa remains an unstable region with many nations experiencing some of the world's most intense security threats, primarily owing to the surge in Islamist insurgency. After a period of seeing Africa arm itself faster than any other continent with the greatest collective increase in military budgets worldwide, the regional market has retracted. Military spending in Africa fell by 5.3 percent after 11 years of steady increase, according to SIPRI's latest report. In spite of its size and the multitude of nations involved, the African market also accounts for just two per cent of the global military market.

Demand for infantry mobile vehicles (IMV) and IFVs is likely to increase in response to counterinsurgency operations

Africa's complicated security situation still presents fertile ground for armoured vehicles sales. Demand for infantry mobile vehicles (IMV) and IFVs is likely to increase in response to the aforementioned conflicts and counterinsurgency operations. However the market for AFVs cannot be proportionally translated in sales as western intervention strategies in this area usually consist of the deployment of these vehicles to support operations.

While conflict is no stranger to Africa, it is just as important to recognise the positive progress that is being made continent-wide, with more democratic governments beginning to take shape and many economies seeing growth. Where armoured vehicles are concerned, local industry is fledgling but no longer confined to South Africa and Northern Sahara. Nigeria

and Uganda, for example, have made independent steps into domestic assembly and production. As Defence IQ has reported, African states will continue to come to the realisation that they need increased strategic capability. At the same time, there is a heightened belief among African governments that they can take a more proactive and sustainable approach to their involvement in the defence market. This includes a predicted expansion for regional companies, such as Denel and Paramount Group, who believe African nations will be increasingly more attracted to African brands and the benefits they claim to offer to the total regional market.

Foreign equipment imports are of note here. China is now the third biggest global arms exporter and within Africa, Sudan is one of its main clients. Tanzania, Morocco and Algeria have also become customers of Chinese equipment in the past five years – as has Namibia and Cameroon in smaller number – all purchasing relatively low-end technology. Russia has long been an important supplier to a range of African states and Ukraine has found business in providing second hand equipment. Indian vehicle manufacturer Tata Motors has supplied 585 military vehicles to a variety of African countries for use in the United Nation's Multidimensional Integrated Stabilization Mission in Mali (MINUSMA) mission in Mali. Meanwhile, U.S. donations and sales have been targeted chiefly at strengthening nations fighting Islamist insurgencies.

Among the most notable of developments is that **Mali** has doubled its defence budget since 2013, following the ongoing conflict between rebels and French-led forces. The presence of various rebel groups and Islamist terrorist organisations has resulted in a significant increase in violence and deterioration in security, and there is always a concrete risk that violence could spill over borders. The EU has raised its contribution to the Mali mission to provide \$21.2 million in its 2016 budget allocation, which will be used for training and new security provisions for staff. Meanwhile, China and Germany have recently announced further commitments to peacekeeping operations, with Canada on the verge of initiating a new mission.



*Malian forces operate the ACMAT VLRA among their fleet.
Image Pierre Delattre*

The Malian military currently operates Acmat VLRA and PVP vehicles from Renault Trucks Defense, alongside a fleet of 4x4 vehicles that include units armed with 14.5 mm ZPU-2 guns and .50 heavy machine guns. In September 2015 the US Department of Defence ordered 62 Bastions for five African countries via Mack Defense.

In March 2016, Mali's armed forces took delivery of a number of Bastion armoured vehicles from France's Acmat. Troops were trained by Italian personnel serving with the United Nations mission (MINUSMA) at the request of the Malian Chief of Staff, including lessons on the detection and avoidance of IEDs. Based on the VLRA TDN-TDE platform, the 12-tonne APC is configured for troop transport, with the range featuring STANAG 4569 protection and the capacity to carry 10-12 passengers.

Nigeria remains involved in a serious struggle with Boko Haram (aka the Islamic State West Africa Province), which continues to control most of the North-Eastern territories and areas within Niger, Chad and Cameroon. Suppressing this insurgency is therefore becoming an increasingly important step towards maintaining control of much of West Africa and preventing a much larger-scale conflict. Several Nigerian soldiers have recently been killed by roadside IEDs while on patrol duties, with armoured tanks and patrol vans also being destroyed in the blasts. August 2016 saw five suspects arrested for emplacing similar explosive hazards.

Multiple military and police security operations were launched in Nigeria between 2015-2016 – including Lafiya Dole, Delta Safe, Gama Aiki and Awatse – with various goals ranging from the protection of vital assets and communities to hostage rescue and the clearance of embedded fighters from specific areas, usually with military vehicles forming the core of the taskforce. Operation Maximum Safety, for example, launched in August 2016 to target bandits and kidnappers along the Abuja-Kaduna highway, comprises 510 anti-riot policemen, backed by 40 patrol vehicles and APCs.

A number of international partners are doing their part in assisting Nigeria. The U.S. signed off a delivery of 24 MRAPs to the Nigerian military in early 2016, worth a total of \$11m. The vehicles were donated at the Ikeja Cantonment in Lagos.

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Meanwhile, Nigerian media reported that the country's state-owned Defence Industry Corporation of Nigeria (DICON) launched a new Public-Private Partnerships (PPP) unit in May 2016 with a new joint venture with local armoured vehicle manufacturer Proforce Limited. The development should see the design and manufacture of new APCs for the Nigerian military. A prototype vehicle was scheduled to be ready in September with first production vehicles expected by the end of 2016. Proforce was founded in 2008 and now specialises in armoured tactical vehicles and APC for military and police use, aside to armoured private and commercial passenger vehicles. DICON – the only legal small arms and light weapons manufacturer in Nigeria – has a Special Vehicle Plant that is currently carrying out the refurbishment and upgrade of Scorpion light tanks, Steyr tracked APCs and MOWAG APCs.



Officials of the Nigeria Army receiving 24 Mine-Resistant Armour Protected (MRAP) from the US government.
Image: TheCable

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Libya is currently the stage of a high-intensity conflict between the UN-approved government, the international community, and Daesh militants. Although recent successes have been made in curbing the insurgency, the country is not likely to settle in the near future and remains at risk of falling back into civil war if an authority cannot be established post-conflict. The

city of Sirte is currently seen as the final fortification for Daesh forces within the country, but seizing the city is proving difficult.

Given the uncertainty over the country's future, shipments of armoured vehicles to Libya in recent months have been deeply controversial. A December 2015 shipment of 16 Streit Group Typhoon 4x4 MRAPs, along with a number of armoured cars, were temporarily seized by Greece before the UN ruled their transfer was legal once the newly recognized government laid claim to the shipment. However, the UN subsequently criticised Streit for the "illicit transfer" of 131 Typhoons and Spartan patrol vehicles to Libya in 2012, causing a diplomatic storm for Canada, where Streit is registered. The investigation is ongoing.

South Africa's defence budget shrunk in real terms this year, with just \$3bn allocated for fiscal year 2016/17 – a slight reduction on the back of more than a 6 percent rate of inflation – compared to \$3.8bn on 5 per cent in 2015. Hopes of increasing the budget in the near-term have yet to come to pass. The chief of the army announced in 2015 that the nation's soldiers are "well prepared to defend the nation and to carry out international missions envisaged by government," including the pledge of an African Capacity for Immediate Response to Crisis (ACIRIC). Peace across the continent is viewed as a catalyst for economic development, encouraging South Africa to ready for immediate intervention to hotspots in other African states. However, amid the budget restrictions, there remains scepticism that the SANDF can meet these requirements, having already been stretched to – and perhaps even beyond – capacity.

On the positive side, domestic business is seeing results. July 2016 saw state arms manufacturer Denel Vehicle Systems ship its first batch of RG31 MRAPs to the United Arab Emirates (UAE) Armed Forces. The RG31 is a Mobile Mortar Platform (MMP) boasting 4x4 capabilities, high-level mobility and enhanced protection in the face of explosive devices. While the size of the order has not been revealed, 73 Denel vehicles are already in UAE service and a second batch was under testing at time of writing. The company was required to make around 30 improvements to the performance and reliability aspects of the vehicle based on assessments in the Middle East's hot and dry operational environment. With a range of 800km at a speed of 80 m/h, the RG31 is widely used by UN and peacekeeping forces.

Around the same time, the country's Paramount Group unveiled its 8x8 Mbombe 8 infantry combat vehicle, based on its previous Mbombe 6. This new vehicle has a gross weight of 28 tonnes, a kerb weight of 19 tonnes, and a payload of nine tonnes, which covers the weapon system, ammunition, crew and supplies. Eight dismounts can be accommodated in addition to three crewmembers, with the capability to integrate a wide range of turrets and weapon stations. The first advanced prototype of the Mbombe 8 has been undergoing mobility trials while production could take place in South Africa or Kazakhstan.



The 8x8 Mbombe 8 infantry combat vehicle manufactured by South Africa's Paramount Group which was unveiled in June, 2016. Image: Paramount Group

With Boko Haram spilling into **Cameroon**, the country is having to find new methods and resources to deal with insurgents. The start of the year saw the government forced to close some of its borders with Nigeria to prevent militants from crossing over. Several dozen people have died from recent suicide bombings and the country had incurred human and material losses from landmine emplacement.

The United States is offering assistance by training the Cameroon military in techniques of detecting and countering IEDs, but protective vehicles are necessary for troop transport. The US therefore ordered 15 Acmat Bastion armoured vehicles from France for Cameroon in 2015. In addition, the US DoD has signed a \$378m contract with Oshkosh Defence for the supply of 1,543 armoured vehicles from the company's Family of Medium Tactical Vehicles (FMTV) to Cameroon, Somalia and Iraq.

Cameroon's Rapid Intervention Battalion (BIR) acquired its first batch of South African-made Ratel IFVs from December 2015, with at least 12 in service – some armed with 20 mm guns – among light intervention units deployed to the Far North province. The Ratels are reportedly being employed as engineering vehicles for mine-clearance and EOD operations.

Cameroon deploys around 24 LAV-150 Commando IFVs, five Type-07 APCs, six Type-07P/VN-1 IFVs, 12 WMA-301 Assault armoured fire support vehicles, 30 AML-90s, six AMX-10RCs, 12 Ferrets, eight M-8s and half a dozen VBLs. The country is also operating the Israeli Saymar Musketeer in its Presidential Guard Reconnaissance and Support Group, the first known use of the vehicle. Based on a Toyota Land Cruiser chassis, the six-seat vehicle is fitted with a remotely operated weapon station with a 7.62 mm FN MAG machinegun.

Following the removal of al-Shabaab from its major strongholds in Somalia by African Union force (AMISOM) in 2011, the group has carried out several attacks in Kenya, including attempts to ambush military convoys. Kenya's 2016/2017 defence and security budget therefore allocated a \$2.64bn to its services and agencies, marking an increase on the \$2.2bn provided in the 2015/2016 financial year.

At the start of the year, the Kenyan police commissioned 30 Chinese-made Norinco VN4 light armoured vehicles – some armed with a version of the 7.62 mm FN MAG machine gun – for use in the paramilitary General Service Unit (GSU) for anti-terrorism, international peacekeeping, and local police missions. At least six of these vehicles were known to be deployed to Boni Forest and Lamu in March.

Also of note, Inspector-General released a statement in July 2015 ordering anyone in the country in possession of an armoured vehicle to declare it and obtain mandatory approval. All armoured vehicles must now meet the requirements of the newly enacted Security Laws (Amendment) Act 2014 which states that such vehicles must have special certificates from the government.

Egypt's security forces received an initial shipment of MRAPs from the U.S. in May, with a total of 762 vehicles scheduled to be transferred throughout the year. Originally designed for US military operations in Afghanistan, the vehicles form part of the DoD's Excess Defense Articles grant programme, in which the vehicles are being transferred at no-cost to the government of Egypt to combat terrorism.

In its fight against terrorism in North Sinai, hundreds of Egyptian security personnel have been killed by roadside bombs. However, Egypt has refused to take part in the Saudi-led operations in Syria. On the opposite side of the country, there are rumours that Egypt could intervene militarily in Libya to safeguard its own security, which would include ground-force operations and the securing of Libya's ports. Like the U.S., other international states see Egypt as a pivotal role in restoring stability in the MENA region.

Africa's falling expenditure can mainly be attributed to the huge cut in budget by Angola, which has long been the largest defence spender in sub-Saharan Africa. Falling oil prices have forced Angola's hand, following a 176 per cent increase in military spending between 2004-2014 and a record (for an African state) annual budget of \$10.4bn in 2015. Had oil not dropped, analysts had been forecasting a rise to \$13bn by 2019, a figure now – apparently – far from achievable.

In 2014, Germany-based Rheinmetall and project developer Ferrostaal industrial group were due to sign a deal with Algeria for 980 Fuchs 2 armoured personnel carriers and a vehicle factory. The deal is part of a wider arms package between Germany and Algeria, valued at around 10 billion euros. Cooperation between the two nations has seen Algeria at the top of Germany's arms export customers in 2013, shifting equipment from tank parts to SUVs at a value of well over \$1 bn. Algeria also formed a partnership with the UAE to jointly produce NIMR vehicles for its military, police and peacekeeping forces. These are designed to not only be a modular, flexible option but also specifically integrated with a high grade cooling system to cope in excessively hot climates. In 2012, Algeria began an order of 300 T-90 tanks from Russia to complement its 325 existing T-72s, as well as 150 T-62s, and 270 T-54/55 tanks that are reaching the end of their usability.

Following **Tunisia's** political revolution, a transition has occurred in civil-military relations, as not only have the



*The first shipment of MRAP (Mine Resistant Ambush Protected) vehicles from the United States arrived in the port of Alexandria for delivery to the Egyptian military, 12 May 2016.
Image: US Gov*

country's armed forces become more decentralised, they have been seen as playing an important role in the nation's young democracy. Budget increased to \$14.5 bn in 2016, with post-revolution governments investing in new equipment to counter serious security threats still facing the country and wider economic growth being forecast.

In efforts to ensure democracy continues, international governments have also been quick to provide support to Tunisia's military power, including several donations of vehicles. In May 2016, the U.S. provided 48 jeeps among a package worth around \$20m. More recently, Germany announced plans to give Tunisia (and Jordan) funds to buy armoured vehicles to help combat Daesh. The exact figure was not revealed but the "double-digit million" sum will come from a 100 million euro crisis prevention fund to strengthen partner states south of the European Union. Military equipment was also pledged by Russia in March 2016 after Tunis requested Moscow's assistance in preventing militants from crossing the border from Libya.

Uganda is facing an internal crisis of widespread unemployment amidst constrained growth, with trade imbalances further aggravating the situation. In 2015, the country's defence budget rose by 10.8 percent with the bulk of expenditure financing operations of the UPDF peace keeping mission in Somalia (offering the largest African Union contingent to the mission as well as building up land forces and special equipment.

Like Tunisia, the UPDF has taken armoured vehicle donations from the U.S., including a delivery of bullet-proof Land Cruiser SUVs, a dozen MRAPs, and three training vehicles. However, Uganda's military chief has stated that 'frustrations' with international partners and disagreements over training efforts will see Uganda withdraw its troops from Somalia by the end of 2017.

In industry developments, the UPDF has established its own facility to refurbish and reassemble APCs and other vehicles at its Magamaga army barracks. Developments in local assembly are emerging hand-in-hand with development of the country's metal works industry and efforts to adopt or train skilled engineers.

Senegal is equipping its armed forces under the 'Armées Horizon 2025' project, which is aimed at enhancing personnel and equipment for the Defence Forces amid a "proliferation of threats". The military operates around 50 AML-60/90s, ten M-8s, 12 M-3 Panhards, ten M-3 half-tracks, eight Casspurs, 25 Ratel-20s and a number of M-20s. In April 2016, Senegal unveiled its Norinco WMA301 6x6 Assaulter armoured fire support vehicles, alongside a WZ551 command vehicle and Israeli Ram Mk III armoured vehicles, during its independence day parade. It is understood the Rams are being used on behalf of the UN operation in Cote d'Ivoire (UNOC).

A cash-strapped **Zimbabwe** government signed off a \$380m defence budget in 2015 – up from \$356m – with around \$50m intended for the procurement of 633 armoured vehicles, including all-terrain troop-transport trucks, along with water cannon and anti-riot equipment for its military and police forces. However, severe socio-economic pressures on the population have left the government fearing an Arab Spring-style uprising. September 2016 saw government announce that it will issue bond notes that will be traded one-for-one for U.S. dollars and will be backed by an international loan. This announcement has sparked fears of hyperinflation's return and set off public protests. With unemployment now at around 90 per cent and President Robert Mugabe's grip weakening, transition in the country seems inevitable in the near future.

Last year, **South Sudan**, Africa's newest nation, was said to have arranged an \$850m budget – around 15 per cent of its GDP – in order to suppress rebellion shortly after the country's insurgency gave rise to civil war in 2013. A peace deal signed in 2015 was

intended to end five-years of post-Independence conflict, but with violence flaring in July 2016, and despite the implementation of a ceasefire, the peace agreement is in danger of falling apart. The presence of other factions, such as the Lord's Resistance Army (LRA), have exacerbated the violence. Members of the Ugandan People's Defence Forces (UPDF) have remained operating in the country, particularly within the Western Equatoria State, undertaking operations against these belligerents and prepared to return to Juba if the crisis flares again.

Various, smaller developments have been taking place among other nations, including those involved in conflict and those operating in a 'peacetime' or peacekeeping environment. Security forces in **Mozambique**, for example, deployed this past year on the streets of the capital Maputo after rumours of planned anti-government demonstrations circulated on social media. Although no open civil unrest occurred, the use of armoured vehicles to dissuade demonstrations illustrates the current tensions with state authorities. The Mozambican Armed Forces (FADM) has been combating Renamo rebels in spite of reports that less than 10 percent of its armoured vehicle fleet was not fit for service as of 2014.

Mauritania acquired at least a dozen Turkish-made Otokar Cobra armoured vehicles in 2016 as forces joined the UN mission in the Central African Republic (MINUSCA). Some of these are armed with a Chinese-made 12.7 mm W85 heavy and PK-pattern 7.62 mm machine guns, while at least one is configured as a recovery vehicle. Ethiopia retains a powerful military force that boasts hundreds of T-72 and T-55 tanks in spite of a sliding defence budget. Local industry has developed the ability to manufacture and refurbish its Soviet-era armoured vehicles and the armed forces have acted on a strategic front-foot, aggressively policing its borders and pre-emptively attacking threats. In 2015, 3,000 Ethiopian armoured units were said to have crossed into Somalia to attack al-Shabab militants, and new confidence in the process towards peace has since been expressed.



AFRICA

Interested in this region? Key speakers at the International Armoured Conference this year include:




Major General Idriss M Alkali
Commander Armoured Corps
Nigerian Army

Brigadier General Thomas Oppong-Peprah
Chief Staff Officer
Ghana Army HQ



Brigadier General Jack Singyangwe
Chief of Policy, Doctrine and Strategic Branch
Zambia Army



MIDDLE EAST

The Middle-East accounts for over 15.8 per cent of the world fleet (23,511), with active procurement programmes in Bahrain, Iraq, Israel, Libya, Qatar, Saudi Arabia and the UAE, and increased spending on armoured vehicles forecast until at least the end of the decade.

Despite the successes that have been achieved by the international community in Iraq and Syria the Middle East remains highly unstable. The conflict in Syria has seen the involvement of all the major regional countries states, including Turkey, Iran, Saudi Arabia and Jordan, which all still have military deployed. There are no signs that the situation will significantly improve within the next year.

At time of writing, the offensive carried out by US-backed rebels, with the support of coalition air strikes, has liberated the northern city of Manbij, effectively cutting off supply routes to the Daesh strongholds of Aleppo and Raqqa. Despite Daesh being viewed as the 'common enemy', there are many complex factors influencing the outcome of the conflict. Assad, the anti-governmental rebels and the Kurds all remain fundamental sources of disagreement among the anti-Daesh factions, indicating an inevitable continuation of conflicts, claims and coups for years to come.

The violence in Yemen is also feeding regional instability. There is a high risk that the power vacuum created by this conflict will strengthen the power of AQAD and Daesh within the country, leading to a Syria-like scenario. Despite the remote geographical position and the country's lesser strategic importance, Yemen is becoming the stage of a proxy war between the two giants of the region: Iran and Saudi Arabia. The involvement of these external actors in the country has arguably exacerbated the violence, resulting in a need for major security provisions in the near-future.

While the international community has withdrawn most of its troops, the situation in Afghanistan remains unsettled. The Taliban launched their offensive 'Operation Omari' in April 2016 and since this time the number of casualties has risen sharply, calling for troops to be deployed outside major bases. Despite the frequent attacks and the widespread violence a re-

involvement of the international coalition in the country is unlikely as it would likely face strong opposition among the public.

When it comes to the armoured vehicles market, the Middle Eastern market remains fragmented. The stronger economic powers in the region continue to modernise their inventories and expand their capabilities. On the other hand, many war-torn countries in the region do not contribute much overall to regional market demand or supply, being in a position of seeing a great deal of AFV activity but not actively shaping the commercial trends.

Saudi Arabia is now the second biggest arms importer in the world (after India), having doubled its defence budget in the last five years and becoming a leading customer for US exports. At the same time, the Saudi government has initiated a National Industrial Clusters Development Program with a goal to double the manufacturing sector's contribution to the GDP by 2020.

At the beginning of the year, it was announced that the country was set to receive 200 armoured vehicles from France (Renault Trucks Defense), consisting of 100 VAB Mk3 6x6 APCs and 100 Sherpa Light tactical vehicles, for the Lebanese Armed Forces (LAF). The order was part of a \$3bn package of French defence equipment that Saudi Arabia pledged in 2013 to provide to the LAF, but that it suspended in February citing a political disagreement with the Lebanese government. Saudi Arabia was obliged to honour the contract with Renault and is adopting the vehicles internally.

In more positive news for the state, a \$1.15bn potential sale of military equipment was approved by the U.S. State Department in August, including conversion work for 133 M1A2S Abrams tanks and 20 battle damage replacements for the existing fleet. Saudi Arabia is also seeking to obtain M88A1/A2 Heavy Equipment Recovery Combat Utility Lift Evacuation Systems (Hercules), and Armored Recovery Vehicles (ARV) for the Royal Saudi Land Forces (RSLF).

Turkey increased its defence and security budgets by 20 percent in 2016, bringing the figure to a total of \$21.2bn. The hike came amidst the country's involvement in Syria, an attempted military coup, and a fresh political alliance with Russia, all of which has caused great concern in the West.



The Otokar Cobra II 4x4 is being supplied to Turkish security forces at a cost of €106.1m.

In July, domestic vehicle giant Otokar was contracted to supply COBRA II 4x4 tactical wheeled armoured vehicles to Turkish security forces at a cost of €106.1m, including maintenance and support systems. Deliveries are under contract to begin towards the end of 2016 through to the first quarter of 2017. Otokar revealed that the COBRA II had successfully passed desert and amphibious terrain and hot climatic condition tests. Otokar also announced in August that it had submitted its final offer to the country's armament procurement agency, the SSM (Savunma Sanayii Müsteşarlığı) to begin serial production of the Altay MBT for the Turkish Land Forces Command (TLFC), including features ranging from a 120mm/L55 calibre smoothbore gun, a power pack consisting of 1500 hp diesel engine, and a situational awareness system for 360° coverage.

Earlier in the summer, SSM awarded FNSS Savunma Sistemleri (a joint venture of Turkish conglomerate Nurol Holding and BAE Systems) a contract for the purchase of 260 self-propelled anti-tank systems. The contract will meet the requirements of the anti-tank vehicle project (Silah Taşıyıcı Araç). Under this contract, all design, development, and prototype qualification is

to be completed in 2018. Serial production will then begin, with all 180 tracked and 76 wheeled armoured vehicles to be delivered to TLFC by 2020. The tracked variant will be based on the company's Kaplan-20 platform, while the wheeled system will use the Pars 4x4 vehicle as the base carrier.

Mountains along **Lebanon's** northern frontier is often witness to a spill of combat between Daesh and other Syrian militant groups, requiring keen attention to border security. To assist in this effort, the U.S. delivered 50 armoured vehicles to the Lebanese army in August – amongst other land equipment – at a value of \$50m. The broader American military aid package makes Lebanon the fifth biggest recipient of U.S. military assistance. The current government is seen as vulnerable at this time and international support is seen as a necessary dam to destabilisation.

However, this past year saw Saudi Arabia suspend its \$3 billion security commitment to Lebanon over a diplomatic dispute. That deal was intended to see 200 French-made (Volvo-Renault/ODAS) armoured vehicles sent to Lebanon, including Sherpa Light 4x4 armoured tactical vehicles and VAB Mk3 APCs.



100 VAB Mk3 6x6 APCs were set to be provided to Lebanon via Saudi Arabia, but political disputes have stalled the agreement. Image: Renault.Trucks Defense

Since 2011, **Jordan** has taken in around 700,000 Syrian refugees, but is desperately trying to balance its security measures with its aid provisions. The defence budget has struggled to increase but saw a marginal rise from 2011-2015 (0.27 percent), with projections for further gains over the next five years.

In May, a partnership was formed between South Africa-based Paramount Group and Jordan Manufacturing Services Solutions (JMSS) to begin local production and assembly of a bespoke version of the Mbombe 6x6 IFV for the Jordanian Armed Forces. The work is taking place at the Dulail-King Abdullah II Design Development Bureau (KADDB) Industrial Park. 50 units are due to be delivered with the first 25 vehicles expecting to be completed by the summer of 2016. Involved in the production are Jordan Advanced Machining Company (JAMCO), manufacturing the turret and pestle mounts, and Aselsan Middle East, providing the intercom systems. The Jordanian Mbombe will be built to withstand the extreme regional climates, having undergone trials that included 50-degree Celsius desert environment operation, as well as -50-degree Celsius winter trials.

NIMR Automotive rolled out its one-thousandth vehicle in June 2016 at the Tawazun Industrial Park in Abu Dhabi

The **UAE** is currently involved in the air and ground operations in Yemen as part of the Saudi-led campaign. From November 2015, Yemeni forces arrived in dozens of UAE-supplied military vehicles on the front line at the battle for the city of Taz, which had been under siege for weeks by Houthi forces. Further security vehicles (non-armoured) have since been donated from the UAE to Yemen to bolster the mission. The latest available SIPRI figures for UAE defence spending (2014) puts the state in 14th place on the world table, registering a 136 percent increase from 2006-15.

NIMR Automotive – a subsidiary of Tawazun Holdings and the UAE's leading armoured vehicle producer – rolled out its one-thousandth vehicle in June 2016 at the Tawazun Industrial Park in Abu Dhabi (from its AJBAN 440A line, a lightweight armoured utility vehicle). This landmark symbolises an important point in the establishment of the country's modern production system. Tawazun itself has grown over the years thanks to its creation of a number of international partnerships, such as with South Africa's Denel. Business for NIMR therefore includes a \$63m contract with the U.S. to manufacture Denel RG-35 MRAPs at its UAE facility with completion scheduled for the end of 2017.

Towards the start of 2016, it was confirmed that the UAE had agreed to the sale of a fleet of 8x8 AMV (armoured modular vehicles) from Finland-based Patria. While the number of vehicles being produced (in the Poland facility, rather than in Finland) and delivered was not confirmed, it is believed to be in the range of 40, and will join the small number of AMVs already in UAE possession since 2008.

The Patria 8x8 AMV has since expanded its profile in the Middle East with confirmation in August 2016 that Patria Land Systems had submitted the vehicle for a **Qatari** 'significant' requirement. No date has yet been announced for a decision on this procurement. Qatar is modernising its armoured forces and is in the process of taking delivery of 62 Leopard 2A7+ tanks and 24 155 mm PzH 2000 self-propelled howitzers.

Qatar is involved in one of its largest-ever military engagements, with hundreds of troops in Yemen combating Houthi rebels. However, this comes at a time when oil prices are down and pressures on the national economy forcing cutbacks.

This past summer, the **Israeli** Defense Ministry unveiled its new APC – 'Eitan' – offering an upgrade in terms of protection and sophistication. It is capable of seating up to 12 soldiers and, with a 750 hp engine, can reach speeds of up to 90 km p/h. The vehicle will be introduced to operations alongside the IDF's Namer ('Leopard') APCs and will be equipped with an active interception defense system capable of intercepting incoming anti-tank missiles, similar to the Trophy system already employed on selected IDF tanks. Israel plans to gradually replace all of its ageing M-113s.

In spite of its advanced features, the Defense Ministry has expressed concerns that its wheeled configuration may be more susceptible to missiles than a tracked option.

Ever on the cutting-edge, Israel's key vehicle developments in the last 12 months have been in enhancing vehicle crew and passenger survivability, with technology that provides improved situational awareness and visibility without exposing troops. This is a particularly vital capability when it comes to the urban combat environment, within which Israeli troops often find themselves (such as in Operation Protective Edge, 2014). These advances have emerged from Elbit Systems, including the Dragon advanced firing system being installed on IDF Achzarit APCs and Puma armoured engineering vehicles. Using external cameras and radar, Dragon identifies distant targets at day or night, under various weather and battle conditions, and delivers short bursts of accurate fire at an effective range of 1,500m.

August 2016 also saw Elbit unveil IronVision, its helmet-mounted system designed to allow APC and tank crews the ability to 'see through' the vehicle armour, 360-degrees and in real-time, by feeding from camera sensors stationed around the platform. The IDF is reportedly testing the technology before making a decision on whether to acquire, as it is with Elbit's SupervisIB, a mobile electro-optical lookout system that uses day and night sensors to generate a panoramic picture equivalent to approximately 150 thermal imagers placed side by side.



Israel's Eitan 8x8 APC was unveiled in 2016



*Iran's Tiam MBT was displayed publicly in April 2016.
Image: Tanks Encyclopedia*

Iran's defence budget remained relatively flat between 2014-5 at \$10.3bn, following a drop in 2012 as a result of temporary EU sanctions. New negotiations in 2016 between Iran and Western states could lead to a rosier economic outlook in the near future.

The country unveiled new vehicles in April 2016 at a showcase event. These included its newest MBT, known as the Tiam, which is apparently an amalgamation of U.S. and Chinese parts – the hull of a M47M tank (produced in Iran from the 1970s) and a 105mm gun mounted on a turret found on Type 59.69 Chinese tanks.

Also unveiled was a nuclear, biological, and chemical detection (NBC) vehicle called the Shahram – a BTR-60 APC fitted with NBC sensors and protection systems – several refurbished Shir vehicles (an Iranian version of the Chieftain) and T-62 tanks. The event did not showcase Iran's rumoured Karrar tank, an in-the-works, domestically-built vehicle intended to 'rival' the T-90 for capability. A tank fitting this description appeared briefly on Iranian television footage several months later.

Following **Kuwait's** announcement that it will be spending an extra \$1bn on defence and security each year for the next decade, the government has reportedly held a meeting with the Kuwaiti National Guard (KNG) to discuss requirements, including plans to buy new military vehicles. In October 2015, Prime Minister Sheikh Jaber Al-Mubarak Al-Hamad Al-Sabah attended a three-day visit in France resulting in a

light armoured vehicles (all-terrain Sherpa trucks offering 360-degree firepower, IED blast protection and the ability to carry up to four people) and maintenance of its patrol vehicles. An agreement has been reached on cooperation between Kuwaiti financial institutions and the French public investment bank Bpifrance regarding joint investments of \$510.6m in French technology companies.

Prior to this, Kuwait contracted Rheinmetall to supply 12 state-of-the-art armoured NBC reconnaissance vehicles (the 2 NBC-RS "Spürfuchs"). That order also included comprehensive support in the form of training, service and spare parts. Delivery of the NBC-RS vehicles will commence in 2017.

Iraq has seen the largest defence budget increase in the world between 2006-2015 (at 536 percent), as it has been rebuilding its armed forces rapidly post-coalition withdrawal to contend with Daesh and Taliban insurgents. Spending equated to \$13.1bn in 2015, up 35 percent from 2014.

Among notable procurements, Iraq made a \$66m deal in April 2016 with the U.S. DoD to receive 60 Textron Commando Select APCs. This includes 54 APCs with 40/50 turrets, each armed with a 40 mm automatic grenade launcher and a .50 calibre machine gun; four command variants with 40/50 turrets; and two APCs without turrets.

Iraqi Special Operation Forces (ISOF) – also known as the Counter-Terrorism Service (CTS) – were seen with new vehicles during operations in Mosul in June, consisting of black-painted Oshkosh M-ATVs (not previously seen in Iraqi service), fitted with remote weapon stations armed with heavy machine guns, automatic grenade launchers, mast-mounted surveillance cameras and antennas possibly for use as IED jammers. Also seen were a number of Caiman MRAPs with additional armoured plates. Meanwhile, the Iraqi Army has been employing M1A1 tanks and M109 self-propelled howitzers in its fight against Daesh militants.

Interestingly, the Baghdad Post reported in August that Iraqi security forces were preparing to deploy at least one robotic unmanned vehicles equipped with an automatic machine gun to better their chances amid the Mosul offensive. The UGV was said to have been equipped with four cameras and a launcher for on-board Russian-made Katyusha rockets.

From 2012-2016, defence expenditure in Kazakhstan

saw a slight dip from \$1.8bn to \$1.73bn. However, the national market is expected to grow in the coming years, driven by needs for military modernisation and increasing threats from domestic terrorism.

Forces in **Kazakhstan** received the first allocation of its new Arlan multipurpose armoured vehicle in August 2016. These vehicles are being produced by Kazakhstan Paramount Engineering (KPE) – a joint venture between South Africa's Paramount Group and state-owned Kazakhstan Engineering – and is based on Paramount's Marauder MRAP. Designed to carry ten military personnel, the vehicle can perform a wide range of functions, including fire-fighting missions. As per the company's pioneering work in blast protection, these vehicles can withstand 50kg of explosives from the side, 8kg under the vehicle, and 14kg under the wheels. Having been adapted to the hot regional climate, an agreement has already been reached between Kazakhstan and Jordan (another Paramount customer) to receive deliveries of the Arlan.

KPE also unveiled its 'Barys' variation on the Mbombe 8x8 which are now being produced at the 15,000sqm assembly plant opened in 2015 in the Kazakh capital Astana. The version of Barys displayed at KADEX 2016 was fitted with the Russian AU-220M stabilized, remotely controlled turret mounting a 57mm automatic cannon.

The fight against Taliban offensives has continued to rage in the past twelve months in Afghanistan, with the Afghanistan National Army (ANA) coordinating its push into captured towns with accompanying air strikes.

Additional military equipment was ushered into Afghanistan between 2015-2016 in order to bolster the ANA. Part of this has involved a \$56.2m contract to Textron Marine & Land Systems for the delivery of 55 additional Commando Select Armoured Security Vehicles, which were delivered in February 2016.

A 2016 watchdog (the Special Inspector General for Afghanistan Reconstruction) report claims that the U.S. five-year commitment to maintain vehicles for Afghanistan's military and train local troops to take care of its fleet had seen its cost more than double to \$423m due to insufficient oversight. As of August 2016, the U.S. has spent more than \$17bn to provide weapons, ammunition, and other military equipment to Afghanistan's police and armed forces.

MIDDLE EAST

Interested in this region? Key speakers at the International Armoured Conference this year include:



Brigadier General Fahd Faleh Al Dhamen
3rd Division Commander
Jordan Armed Forces

Major General (Rtd.) Carey Wilks CB CBE
CChief Operating Officer
NIMR Automotive





ASIA-PACIFIC

Attempts to expand land and maritime territory and the emergence of stronger military capabilities in the Asia-Pacific region makes for a difficult security landscape. Overall the military expenditure of the region in the last five years remained steady with no country drastically changing its defence budget. However, widespread political unrest and the presence of various insurgent groups could lead to an increase in expenditure in the near-term.

In spite of many of these states taking a defensive posture, few are eager to trigger an arms race or risk a full-scale conflict

While its domestic situation is quite stable, China is not only seen as a threat to the security of the region but perceives many of its regional neighbours to be a threat to its own territories. Areas of the South China Sea remain hotly disputed between the likes of Japan, Vietnam, Brunei and Malaysia. 2016 saw Beijing reject the decision of an international tribunal which ruled in favour of the Philippines over one such territorial claim. This has enflamed tensions and sparked further increase in military activity and procurement proposals across the region. However, in spite of many of these states taking a defensive posture, few are eager to trigger an arms race or risk a full-scale conflict.

Despite the low risk of high intensity conflict, demand in Asia for AFVs is set to increase. Aside to China's large military deployment along its borders and the influence this is having on the military capabilities of surrounding states, both Taiwan and South Korea remain attractive markets for western military exports. India remains the principal growth market thanks to its surging economy, and tensions along its borders with Pakistan and China may well lead to a further increase in the demand for

armoured vehicles for years to come. Due to the typical terrain across much of the region and the asymmetric nature of modern conflicts, LAVs and 8x8 APCs will be the key types of vehicles under contract in the Asian market, but precautionary border security measures and the need to appear prepared for conventional warfare should also stimulate demand for heavy armour.

As mentioned, **China** sits at the heart of defence decision in the Asia-Pacific region. The presence of US forces operating in the region and the high volume of defence systems sold by the US to Taiwan (\$46bn) are issues of concern to Beijing, which has strengthened its presence on the territory to reassert its sovereignty claims. Likewise, its long-running animosity with Japan has not been helped by an expansion of Japanese security activity and partnerships with the West. Beyond the maritime areas, low intensity skirmishes have also been seen at the Tibetan border, while continued sabre-rattling from North Korea is arguably jeopardising China's interests. Overall China sees many reasons to retain a strong military – including a recent announcement to expand its peacekeeping role in Africa – and will undoubtedly continue to expand as its economy remains particularly healthy. With this in mind, the country is understood to have raised military spending by 7.6 percent in 2016 to \$146.67 bn, representing its lowest increase in six years, with more resources said to be diverting to intelligence activities.

China North Industries Corporation (Norinco) has ramped up production and sales for domestically-made armoured vehicles. In 2016, the company developed a 6x6 VN2C mine-resistant vehicle – similar to its earlier WMZ-551 APC – and armed with a 12.7 mm and 7,62 mm machine gun, eight electrically operated grenade launchers, and space for additional turrets.

Chinese media sources in late 2015 stated China had retired its fleet of Type 89 (PTZ89) tank destroyers, around 100 of which had been in service since 1989. 25 years of modernisation has allowed the country to acquire significant advancement with tanks when it comes to armour, protection and large-calibre guns, eliminating the need for thinly protected and specialised tank destroyers.

International exports of Chinese armoured vehicles continue to progress as far afield as Africa and Latin America. For example, April 2016 saw Senegal unveil its newly delivered batch of 12 Norinco WMA301 Assaulters armoured fire-support vehicles. July 2016 saw Bolivia take ownership of 27 Chinese Tiger 4x4 combat vehicles and four riot response vehicles in a \$7.7m contract that falls under a bilateral cooperation agreement. The vehicles have been developed and built by Shaanxi Baoji Special Vehicles Company. The China Tiger is a high-mobility, all-weather vehicle that can carry up to nine fully equipped infantrymen and a crew of two.

India has experienced instability in the Kashmir region resulting in its highest surge in violence for years. Clashes between activists and police have required military involvement, but have also resulted in the deaths of soldiers. The Indian central government has increased its military presence in this region, but with no clear long-term strategy, the risk of an increase in insurgent activity will be of concern to New Delhi. In the past year, a heightened army presence in the north has already seen 100 T-72 MBTs shifted to eastern Ladakh to dissuade 'frequent' Chinese incursions, while Panthera-T6 APCs have been mobilised in Kashmir to protect troops from insurgent small arms fire and mob violence.

Equally, memories of the Mumbai terror attacks of 2008 have barely faded and an increasing use of the military in counter-terror activity across the entire country is said to be largely supported by the Indian public. With these issues under consideration, India's Defence Ministry is planning to boost defence spending by \$233bn over the next 11 years, with resources primarily being driven into the procurement of new military hardware, much of which the government hopes will be manufactured in India. The MoD also wants a hike of around eight percent in capital spending annually in budget to buy or produce new equipment.

Of major interest to the market will be the progress of India's recently revived Future Infantry Combat Vehicles (FICVs) competition, which will award the largest ever indigenous contract at a value of \$8.93bn. Ten Indian companies have formed consortia to compete to supply 2,610 of the selected vehicle. These include Tata Motors and Bharat Forge Ltd, General Dynamics Land Systems (GDLS), L&T and Mahindra, and several



India's armed forces are to benefit from a new wave of equipment upgrades in its defence spending boost.
Image: Wikimedia

other companies ranging through Tata Power SED, Reliance Defense, Rolta, Punj Lloyd, Titagarh Wagons and the public sector Ordnance Factory Board (OFB). The FICV will be an amphibious, armoured, tracked and air-transportable troop-carrier that can fire four-kilometre range anti-tank missiles and will replace the Indian Army's Russian-made BMP II second-generation infantry fighting vehicles in use since the 1980s. Three shortlisted consortia will develop an FICV prototype, with the MoD contributing 80 percent of the cost.

In August 2016 it was reported that Russia's JSC Rosoboronexport and Indian railroad hardware producer Texmaco Rail and Engineering (TRI) had signed the agreement on the development and manufacturing of military hardware for the Indian Armed Forces. This will see the transfer of Russian technologies to India and licensed local production of Russian BMP-3 IFVs among other armoured vehicles and spare parts. October meanwhile saw the Indian Army place an order for 250 Mine Protected Vehicles (MPVs), which are routinely spotted on the streets and highways of Jammu and Kashmir and states in North Eastern India. Deliveries are expected to begin in 2018 to augment the fleet of Casspir MPVs currently deployed by the Army and Central Armed Police Forces (CAPFs).

Long-running tensions with **Pakistan** have not been helped by tit-for-tat exchanges of fire between the two nations in the Kashmir region in recent months. Currently Pakistan's defence budget is the lowest in the region, with around \$7bn allocated in 2015-16 (around 2.3 percent of its GDP), a mere fraction compared to India. It is attempting to expand both its military capabilities and its defence-related economy assets through a number of newly formed bilateral deals, including fresh agreements with Russia, Indonesia and South Africa.

The main phase of Pakistan's (terrorism counter-offensive) Operation Zarb-e-Azb concluded in April 2016, resulting in the lowest number of terrorist attacks in the country since 2008. Up to 30,000 troops and armoured vehicle forces were involved in the operation, all with the aim of stifling al-Qaeda and its affiliates in the region. However, security efforts do not simply end, and as such, demand for armoured vehicles in Pakistan remains high. With the economy stumbling, Islamabad is struggling to acquire the counterinsurgency vehicles it needs to protect its government and military officials.

In recent years, the government has been averse to importing surplus vehicles, particularly from the US, but did approve a \$198m foreign military sale for 160 MaxxPro MRAPs in 2014. Other recent deals discussed in recent years have been the acquirement of General Dynamics' Dragoon four-wheel-drive armoured fighting vehicle and the Chinese VN1 eight-wheel-drive AFV. Pakistan is also in the process of evaluating a number of tanks under its 'Haider' programme, envisaged as a new MBT to supplement the (Chinese-derived) al-Khalid MBT fleet. Rumoured tanks under consideration for Haider include Turkey's new Altay vehicle, although it is likely that such a vehicle would simply augment a more diverse range of vehicles.

Over 10,000 **Bangladeshi** troops contribute to the UN's peacekeeping forces, which is more than any other country. Bangladesh is an equalising power in the region and pioneered the creation of the South Asian Association for Regional Cooperation (SAARC) in the 1980s. It is currently going through a multi-year modernisation period, which includes the potential upgrade of its ageing T-54/Type 59 and Type 69 main battle tanks.

Amid the widespread tensions, **Japan** approved its largest ever defence budget this past year at \$44bn. In tandem with this investment, the country signed in new laws to ease long-running restrictions on Japanese military personnel from operating outside of national

borders. Clearly, Japan's defence policy is shaking off many of the constraints of its post-war constitution and sees no reason to not obtain the same benefits within the international defence markets as other regional nations. In producing high-end indigenous military technology, it stands to see opportunities to support the economy. At the same time, the significant capability of the Japan Self-Defence Forces (JSDF) is now likely to join other major military powers in international operations.

As part of the new framework, Mitsubishi Heavy Industries (MHI) has been in talks with the US over a potential possible partnership to develop armoured vehicles for the United States and possibly other foreign customers. According to analysts, building a defence system for an export customer could give MHI more control of its intellectual property and simplify the approval process to sell more of its products overseas in the future. MHI already produces Japan's main battle tank and its vehicles are highly regarded for their heavy-duty tank engines, gear technology and water jet propulsion systems.

Japan's Ministry of Defence awarded BAE Systems a \$149m contract for 30 new AAV7A1 assault amphibious vehicles

In early 2016, Japan's Ministry of Defence awarded BAE Systems a \$149m contract for 30 new AAV7A1 assault amphibious vehicles (AAVs). These vehicles will be AAV7A1 Reliability, Availability, and Maintainability/Rebuild to Standard (RAM/RS) variants which provide a more powerful engine and drive train, as well as an upgraded suspension system, allowing the new vehicles to meet or exceed original AAV7A1 performance. Production was scheduled to begin in August 2016 and final vehicles deliveries expected by the end of 2017. The contract includes tools and test equipment as well as training aids. The US Marine Corps is also considering a new amphibious vehicle programme.

The **Republic of Korea** (ROK) has budgeted \$36.49bn for 2017 defence budget, marking a 4 percent increase on 2016 and a record high for the country's history. Over a quarter of this budget is expected to be spent on defence modernisation, including procurement and research and development. The nation of course remains in a tense diplomatic gulf with the DPRK and a strong military is unlikely to fall off the nation's priority list.

A programme of mass-production of indigenous armoured vehicles began in June 2016 under the oversight of the ROK's Defence Acquisition Programme Administration (DAPA), aiming at improving mobility and operability of infantry troops. 100 6x6 KW1 (K806) and 500 8x8 (K808) wheeled armoured vehicles are to be produced by 2023. This renews the initiative first launched in December 2012, with work being undertaken by Hyundai Rotem. 16 low-rate initial production vehicles are to be delivered to the Republic of Korea Army (RoKA) for field trials scheduled to last till the end of 2017. Production will commence thereafter from 2018.



India's armed forces are to benefit from a new wave of equipment upgrades in its defence spending boost.
Image: Wikimedia

While the 16-tonne K806 and 20-tonne K808 share similar features – such as a 420 hp Hyundai Motor Company diesel engine and a two-person crew with space for up to nine fully equipped troops – the K806 is conceived as an escort-type protective vehicle for convoys and facilities or reconnaissance while the K808 is designed to integrate with other combat vehicles for high-intensity operations over difficult terrain. DAPA believes the new wheeled armoured vehicles, equipped with cutting-edge technologies, can move swiftly on the ground as well as cross water obstacles, carry heavy firepower and protect the troops inside from enemy machine gun attacks that will enormously increase infantry units' operability. The vehicles will also compete on the export market if they prove to offer a cost-advantageous option over alternatives.

Singapore raised its defence budget in 2016 by 6.4 percent on the previous year, taking it to \$10.2bn and marking the fastest rate of growth seen in the country for five years. Defence expenditure also increased as a proportion of GDP for the second consecutive year, rising to 3.4 percent. Owing to the injection, the Singapore Armed Forces (SAF) has confirmed that it will commission its next generation AFV by 2019 in order to replace the ageing Ultra M113 fleet. The new vehicle will offer a larger calibre gun and enhanced firepower and protection. Development of the new vehicle began in 2006 through collaboration of the SAF, the Defence Science Technology Agency, and Singapore Technologies (ST) Kinetics (the land systems division of state-affiliated defence prime ST Engineering).

ST Kinetics is hoping to expand exports of its Terrex 8x8 IFV family, which now includes three distinct platforms with gross vehicle weight ratings ranging from 24-35 tonnes. The company has indicated that interest has been shown from countries in the Middle East, North America (specifically, the US Marine Corps' Amphibious Combat Vehicle Phase 1 Increment 1 programme), Latin America, and by those involved in the Australian Army Project Land 400 Phase 2. Design and engineering capabilities are said to support in-country manufacturing to help manage cost and risk for the customer. ST aims to build on its foreign experience in providing technical advice and consultancy services to Thailand's Defence Technical Institute's (DTI's) indigenous 24-tonne 8x8 Black Widow Spider armoured vehicle development for the Royal Thai Army (RTA).

Meanwhile, ST's 4x4 Protected Combat Support Vehicle (PCSV) – scheduled to be commissioned by 2017 – is also set to provide the SAF's motorised infantry with improved firepower and protection. The 20-tonne platform is based on the Paramount Marauder MRAP from South Africa, is operated by a crew of two seated in a protected cabin, and offers a payload capacity of 4,000 kg or up to eight dismounts. The modular design of the rear compartment enables the vehicle to be configured for a range of missions, with mortar, battlefield casualty evacuation, and resupply variants being planned. The PCSV will replace the soft-skin MAN military utility trucks currently involved in logistics operations. When equipped with the SAF's Army Battlefield Internet (ABI) network, the vehicle will be able to integrate with the Terrex IFV.

Malaysia responded to worries over its economy by trimming the 2016 defence budget by 2.25 percent to \$4bn. The figures are poignant when considering the 10 percent hike seen between 2014-15. The timing is difficult for the government as security crises have been plentiful in recent years, including Chinese incursions into Malaysian waters, a 2013 invasion of Filipino insurgents, and the 2014 disappearance of Malaysian Airlines flight MH 370, which many have attributed to terrorism.

Even under these cuts, the country is seeking to upgrade its AFVs to extend their operational life, while augmenting its fleet with the delivery of 257 AV8 8x8 vehicles from Malaysian company DefTech. The first of these AFVs have been delivered from the FNSS production line in Turkey. Plans to upgrade to the existing inventory include the Alvis Vehicles Scorpion 90 light AFVs and Rheinmetall MAN Military Vehicles Condor 4x4 APCs.



The Thai Defence Technology Institute (DTI) recently introduced the first 'Black Widow Spider' 8x8 amphibious armoured car.

Thailand is targeting a small increase in the defence budget for 2017 of 3 per cent at around \$6bn (1.5 per cent of GDP). This marks a deceleration in comparison to annual expenditure in the last three years, based seemingly on a slowing economy. The past year has seen interesting developments for Thailand in international cooperation as well as domestic vehicle development. Ukraine and Thailand signed an agreement at the end of 2015 on joint production of BTR-3 AFVs. The agreement provided for the

localisation of production of the vehicles in Thailand and was said to be a blow to Russia's Rosoboronexport which was expecting to clinch a similar deal for its BMP-3 AFVs.

Within the same period, Thai Defence Technology Institute (DTI) introduced the first 'Black Widow Spider' 8x8 amphibious armoured car. The vehicle was jointly developed by DTI researchers, the National Metal and Materials Technology Centre and private organisations with expertise in automotive safety. The Spider is resistant to small arms fire and .57 calibre machine gun fire, while being capable of transporting 12 people and equipped with its own 30mm machine gun. Also notable is that Bangkok-based Chaiseri, a defence land systems specialist with almost 50 years of experience in customising and repairing military vehicles, has developed its own APC. Named First Win, the vehicle has been designed specifically to offer high protection against IED blasts. The Royal Thai Army made an initial order of 21 units in 2012, then 50 more in 2013. Currently, at least 18 per year are set to be delivered to the RTA on a contract that could extend to 200 units.

Taiwan is projecting a defence expenditure increase to \$10.2bn for 2017, accounting for 0.5 per cent increase over actual expenditure in 2016. Earlier in the year, the US DoD requested Taiwan increase budget and invest in asymmetric and innovative capabilities due to the huge imbalance of size, power and military budgets between Taiwan and China. The country is remaining active on the international scene, having taken part in a US military training exercise in Hawaii in June 2016 that featured one of its mechanized infantry platoons observing operation and deployment of eight-wheeled armoured combat vehicles on terrain similar to its own.

Not all has been positive for Taiwan. The tail end of 2015 saw a number of Taiwanese officials and contractors charged over a procurement scandal involving locally produced 8x8 CM-32 Yunpao ("Clouded Leopard") APCs, which saw a \$243.9m manufacturing contract awarded to Chung Hsin Electric and Machinery Manufacturing Corp. (CHEM) only for a number of alleged irregularities. Those indicted were accused of using Chinese-made spare parts and not holding proper certifications to fulfil the contract, resulting in a "significant number" of vehicle breakdowns. However, the CM-32s will continue to provide coverage to the Army, with Taiwan allocating \$175m for new research and development into home-grown weapon systems, including those that can be integrated into these vehicles.



Taiwan's CM-32 Yunpao (Clouded Leopard) armoured vehicle in mobile gun configuration with a 105 mm gun.

Indonesia announced an increase to its defence budget in 2016, raising the funds by 9.2 percent to a total of \$8.28 billion. The injection has been made possible by the government's decision to scrap fuel subsidies and new procurements are on the agenda. Beijing's unilaterally claimed 'nine-dash line' demarcation intersects with Indonesia's exclusive economic zone near the Natuna islands and this has caused friction to what are otherwise positive relations.

The country has expanded its defence industrial base rapidly in recent years and is looking to further increase its number of export customers. One of the most prominent on paper is Pakistan, with a bilateral offer made in 2016 to formally seek sales of Indonesian equipment, including the Anoa 6x6 manufactured by one of Indonesia's main defence companies, state-owned PT Pindad. To date, the company has produced large numbers of the Anoa- 2 6x6 APC for Indonesian forces. In Pakistan, the vehicle would find itself in direct competition with the Dragoon 4x4 APC, produced under license by Pakistan's own Heavy Industries Taxila (HIT).

Pindad is said to be diversifying its range of AFVs. Its latest vehicle is the Badak 6x6 direct fire vehicle (DFV), which offers a different layout and is fitted with a CMI Defence two-person turret with a 90mm gun and a 7.62mm coaxial machine gun, plus a similar weapon being mounted on the roof. In January 2016, the company received an order to supply the Indonesian Army with an initial 50 units, approximated at \$36m, to be delivered by the end of the year. Pindad's Komodo 4x4 meanwhile provides a potential reconnaissance platform that accommodates a crew of four, or a protected troop carrier variant with a crew of two and up to 10 dismounts.

In terms of procurement, Indonesia took delivery in September 2016 of the first 24 of 61 Leopard 2 RI MBTs ordered from Rheinmetall Defence in 2012. The remainder is scheduled to be delivered by March 2017. These tanks form part of a \$280m contract that comprises the Leopard 2 RIs, plus 42 Leopard 2+ MBTs (standard Leopard 2 A4s configured with a bustle-mounted air conditioning system), 42 upgraded Marder 1A3 IFVs, and 11 armoured recovery and engineering vehicles offloaded as surplus by the German Army. Indonesia also completed delivery of a fleet of customized Black Fox 6x6 vehicles from South Korea's Hanwha Defense Systems in 2013, which were lightened to suit the local terrain and augmented with amphibious capabilities and weapons systems, and had Pindad undertake the work on final assembly and systems integration.

The **Philippines** is proposing a 14 percent increase in defence spending in 2017 to boost its fight against Islamist militants and enhance maritime security in the disputed South China Sea. This equates to \$2.8 billion going to the armed forces. The country's state-owned defence organisation, 'The Government Arsenal', has also outlined plans in 2016 to establish a dedicated defence industrial zone to support the development of related capabilities in the country.

Recent and controversial comments by President Rodrigo Duterte have indicated a desire to distance the country from its long-standing military and diplomatic ties with the United States, with threats to seek business instead with Russia or China. It remains to be seen whether this will affect bilateral defence trade and collaboration in the Asia-Pacific region. Such a break would mark a significant contrast to recent cooperation, with the Philippines – under former President Benigno Aquino – receiving a donation of 114 M113A2 APCs from the United States towards the end of 2015.

Brunei's defence budget was announced to be growing by almost 5 percent in 2016-17, totalling \$408m (approximately 2.5 percent of GDP). The hike is not modest when considering that it comes at a time when the overall national budget has been cut by \$800m. However, last year saw the Royal Brunei Armed Forces (RBAF) lose 25 percent of its funding amid an austerity restructure brought on by collapsing oil prices. It is believed that up to \$94 million will be spent on the procurement of new equipment.

Australia's 2016 Defence Budget provides the funding needed to deliver the capability plans set out in the country's 2016 Defence White Paper by growing the budget to two percent of GDP by 2020-21, three years earlier than the Government's 2013 election commitment. This will result in additional funding of US \$22.63bn over the next decade. \$24.44bn will be provided in fiscal year 2016-17 and \$108.14bn over the Forward Estimates.

The Australian Army's \$14bn 'Project Land 400' re-equipment programme is the largest in its history. It will replace ageing and under-protected vehicles with modern IFVs, Combat Reconnaissance Vehicles (CRVs), Manoeuvre Support Vehicles (MSVs) and an Integrated Training System (ITS). The country's fleet of soft-skin Land Rovers will be replaced with Thales Hawkei 4x4 protected mobility vehicles (PMVs). Under the current phase (Phase 2) of this programme, 225 8x8 mine-protected reconnaissance vehicles will replace Australia's 250 ASLAV light armoured vehicles by 2020. Two contenders remaining in the competition at time of writing – the AMV35 Combat Reconnaissance Vehicle by BAE Systems Australia (teaming with Finland's and Saab Australia); and the Boxer Combat Reconnaissance Vehicle from Rheinmetall Defence (teaming with Supacat Australia and the Netherlands government). As of August 2016, a year's worth of rigorous testing and evaluation on both platforms is underway. In tandem effort, an IFV will replace Australia's M113AS4 from 2025. The M113AS4 LOT is expected to last as long as 2030 but its 'fit for purpose' suitability is decaying given current and emerging threats. It is not expected to be deployable for anything other than low intensity/low risk missions beyond 2025. The Army has

given bidders the flexibility to include options such as manned or unmanned turrets and protection systems to meet the combination of survivability, mobility, and firepower required for the CRV. Successful bidders will recommend subsystems for their vehicles, but the Defence Department has the option of selecting alternative ones. This includes a contract for active protection systems (APS) and missiles, with international bids, such as Israel's Rafael Trophy APS among the contenders.

The **New Zealand** government has also upped its budget. The 2016/17 budget sat at \$2.5bn for the New Zealand Defence Force (NZDF) – including \$543m the Army – representing an 8.8 percent increase over the previous year. Officials have said the budget is set to remain at around 1.1 percent of GDP for the coming years. The country also announced in its June 2016 Defence White Paper that it will spend \$20bn on the NZDF in a 15-year investment plan. While there is no specific breakdown of where costs will be funnelled, the plan is to assess whether existing LAVs will need to be replaced or simply modernised. The government has said that this investment policy is being launched at a time of "increasing uncertainty and instability in the international environment."



ASIA-PACIFIC

Interested in this region? Key speakers at the International Armoured Conference this year include:



Brigadier General Chris Mills
Director General, Army Modernization
Australian Army

Dr. Dong Hyun Kim
Director for Mobility & Automotive R&D
Agency for Defense Development (RoK)



Dr. Yazid Ahmad, Ph.D
Director Mechanical & Aerospace Technology Division (STRIDE)
Malaysian MoD



NORTH AMERICA

Overall, North America is a politically and economically stable region. Domestically, the United States has experienced heated civil rights protests in the past year centring on issues of race and police interaction, but despite the sudden frequency of this unrest, it is highly unlikely that the military will be deployed within the country to respond to these matters. The military however remains able to respond to environmental disasters, incidents of which can be severe – from hurricanes around the Gulf of Mexico to earthquakes around the Pacific coast. It goes without saying that the US retains a large military presence outside the country in spite of defence cutbacks in 2016. Today, its military personnel are deployed in more than 74 countries and are actively involved in the conflicts in Iraq, Syria, Libya and Yemen, as well as offering training and support in Cameroon, Burma, the Baltics and many other areas. This international involvement cannot come without a build-up of anxiety among other major powers, and as such, the nation holds fragile diplomatic relations with the likes of Russia, Iran and China.

Canada is not involved in any major conflict at present and is not facing a serious level of domestic threat beyond the occasional Islamist terrorist incidents to which all Western nations are currently subject. However, according to NATO figures, Canada will set aside \$20.3bn for defence in its latest budget, an increase from \$19.4bn in 2015. The newly-elected Liberal government is mulling peacekeeping operations in Mali, while also providing hundreds of troops to a NATO high-readiness brigade in Latvia as part of the multinational 'deterrent force' formed in the wake of recent Russian expansionism.

Meanwhile, the Arctic is emerging as a distinct sub-region in an increasingly globalised world. The heavy presence of natural resources and the emergence of new trade routes has led the Arctic to become part of a complex framework of political and economic dynamics. At the heart of this are multilateral claims on territorial sovereignty, largely related to the economic benefits attached to these disputed areas. For now, ownership of Arctic resources has been discussed on peaceful terms but with climate and topography

transforming, cooperation will become essential to ward off risks to security in this region.

Following the decision to 'downsize' its Army (from 490,000 active duty personnel to 450,000), the demand from the **United States** for armoured vehicles is likely to decrease. The creation of the Excess Defence Articles (EDA) programme aims to redistribute military assets that are no longer needed to partners and allies struggling to fulfil their own urgent requirements. In January 2016, for example, 24 MRAPs (valued at \$11m) were donated to Nigeria to support its campaign against Boko Haram.

Foreign sales of US-made vehicles also remain comparatively strong. In August 2016, the State Department approved the potential sale of more than 130 Abrams MBTs, 20 armoured recovery vehicles and other equipment to the Royal Saudi Land Force's (RSLF), worth around \$1.15bn. This coincided with the Saudi-led military action in support of Yemeni forces against Iran-allied Houthi forces. General Dynamics is the principal contractor for this sale.



Oshkosh Defense's Light Combat Tactical All-Terrain Vehicle (L-ATV) prototype which ended the US Army's nearly decade-long search for a new armoured truck. Image: US Army

As for its own military vehicles programmes, the Army's nearly decade-long search for a new armoured truck ended in August 2015, with the selection of the Oshkosh Corporation's Light Combat Tactical All-Terrain Vehicle (L-ATV). The initial contract for the Joint Light Tactical Vehicle (JLTV) programme is worth \$6.7bn, and calls for low-rate production of 16,901 L-ATVs for the Army and Marines over the next three years. Following this, there will be an option for the armed forces to purchase additional units at full-rate production, with expected totals of 49,100 for the Army and 5,500 for the Marines in operation by 2040. The contract is expected to be worth over \$30bn in total. The company received its latest order of a \$42m batch in September 2016, following a \$243m order in March. Each batch includes vehicles, installed kits and related support.

The JLTV programme was first approved in 2006, as the High Mobility Multipurpose Wheeled Vehicle (HMMWV) or Humvee was found lacking in its ability to withstand IED attacks. Rather than deal with the costs and time constraints involved in upgrading the armour of tens of thousands of Humvees, a new vehicle was sought. Three bidders were selected in August 2012 for JLTV's Engineering, Manufacturing and Development (EMD) phase. These were AM General with its Blast-Resistant Vehicle - Off Road (BRV-O), Lockheed Martin's JLTV, and Oshkosh's L-ATV, with all three being required to produce 22 prototype vehicles over the following 27 months. Each L-ATV is costed at \$433,539, to be sold at around \$559,000 per unit. The vehicle weighs 6,400kg, is fitted with a GM Duramax V8 6.6-litre engine, and has a top road speed of around 112kmph. It also utilises a power-assisted, front wheel steering system and Allison automatic transmission, and can be fitted with a selection of light and medium weapons, including anti-tank and automatic grenade weaponry.

In May 2016, the Army disclosed that the JLTV is also to be used as the platform for the upcoming Light Reconnaissance Vehicle (LRV) programme rather than the procurement of a new system. The LRV is to be an off-road platform for carrying a suite of intelligence, surveillance, and reconnaissance sensors; it is light enough to be carried by a CH-47 Chinook helicopter. The JLTV has been described as an interim LRV solution, and there is a possibility that evaluation of JLTV in the LRV role will determine if a change is necessary.

July 2016 saw Battelle awarded a five-year, \$170m contract to build and deliver non standard commercial vehicles (NSCVs) for US Special Operations Command (USSOCOM). The contract will see Battelle build re-engineered armoured and unarmoured vehicles that keep the appearance of original equipment manufacturer for the Hilux, Land Cruiser and Ford platforms, such as providing them stronger alternators to handle extreme climates, as well as improved crew protection, enhanced suspension, and a reinforced chassis. This new contract – which includes an option for two additional years – builds on the successful completion of a previous NSCV contract awarded to the company in 2013.

The Army disclosed that the JLTV is also to be used as the platform for the upcoming Light Reconnaissance Vehicle (LRV) programme

The US is also thinking to the future. It was announced in July that UK-based QinetiQ has been awarded a \$2.7m grant to help develop the country's next generation of AFVs under the US Defense Advanced Research Projects Agency (DARPA) Ground X-Vehicle Technologies (GXV-T) programme. The organization is leveraging its hub-drive technology which replaces multiple gearboxes, differentials, and drive shafts with compact, high-powered electric motors contained within the wheels themselves. The approach is said to reduce the overall weight of the vehicle, improve safety and increase performance. As a scalable solution, this could alleviate some of the burden brought on by the need for heavier armour. The contract will take the technology from concept to the build and test phase.

Despite the government's commitment to introduce more rigorous control in arms exports, **Canada's** position as a manufacturer is strengthening and is now the second biggest exporter of armoured vehicles in the Middle East. Overall there is the trend for this region to become a less appealing market as government policies are affecting the defence budget but it remains the fulcrum of manufacturing.

The past year has in fact placed some difficult pressures on Canada's export market. Shipments made to Libya and South Sudan by Streit Group – described as one of the world's largest armoured vehicles manufacturers – has caused a diplomatic storm in Ottawa over whether the company (and therefore the Canadian Government) has violated embargos. There remains a debate over whether the company, which established its largest production facility in Ras Al Khaimah, UAE, and has offices worldwide, can be considered 'technically' Canadian or whether its deals should be considered those of an entity of the United Arab Emirates. Nevertheless, officials within Canada and the UN Security Council are currently investigating the matter while the Liberal government deals with tough questions regarding its oversight of defence industry activity. At least 79 Typhoon and Spartan APCs were shipped to Libya and 173 Typhoon and Cougar APCs to South Sudan in 2014.



The TAPV/VPBT (Tactical Armored Patrol Vehicle/Véhicule Blindé Tactique de Patrouille) 4x4 mine protected high-mobility multipurpose vehicles from Textron Systems Canada of which the Canadian Army's 5th Canadian Division (5CdnDiv) took delivery this year. Image: Canadian Army

In less controversial developments, August 2016 saw Canada issue a call for tender for 52 Ultra Light Combat Vehicles (ULCVs), mirroring the United States' efforts for similar weight armour and intended as a complimentary vehicle to increase mobility and

response times across a spectrum of operations. These vehicles were outlined as needing to transport four passengers, small and light enough to fit inside the CC-177 Globemaster aircraft and CC-130 Hercules aircraft or in (or able to be lifted by) a CH-147 Chinook. They would also need to be air dropped with a 900 kg payload from either the Globemaster or the Hercules, and detached/offloaded from the helicopter within five minutes. The tender stipulated a requirement that the vehicle operate in extreme temperatures (-32C to +49C), handle a combination of urban and rural environments (mountainous, plains, jungle and woodland) and will be off-road 75 per cent of the time. The DND will have the option of adding 26 more vehicles to the contract within two years.

In the same month, the Canadian Army's 5th Canadian Division (5CdnDiv) took delivery of an initial six TAPV/VPBT (Tactical Armored Patrol Vehicle/Véhicule Blindé Tactique de Patrouille) 4x4 mine protected high-mobility multipurpose vehicles from Textron Systems Canada. The fleet will be used to train operators and maintainers. In 2012, Canada's Public Works and Government Services Canada (PWGSC) awarded a CAD603.4 million contract to the Textron Systems Canada to manufacture 500 TAPV vehicles, including an option for an additional 100 vehicles. The purchase included 300 general utility variants and 200 reconnaissance variants to replace the Coyote 8x8 vehicle and RG-31 Mk3 Nyala 4x4 vehicle. The contractor also received an additional CAD105.4 million contract for five-year in-service support. The fleet is to be distributed across the 2nd, 3th, 4th and 5th Canadian Divisions, Army Equipment Fielding Centre, and Royal Canadian Electrical and Mechanical Engineers School. The TAPV, meanwhile, is based on Textron's COMMANDO Elite design. The first vehicle was originally scheduled to be delivered to the Canadian Army in July 2014 and the last delivery for March 2016. However, in 2014, pre-production vehicles experienced a number of technical issues. Design changes and modifications to address the problems were subsequently fixed. The last delivery is now scheduled for late 2017.

Armoured vehicles are also being sought by local authorities in small measure. Police in Calgary announced in August 2016 that they are looking to purchase a new armoured rescue vehicle – at a cost of roughly \$300,000 – as a 'critical and irreplaceable' asset. The existing vehicle has been used extensively over the past ten years, responding to high risk call outs, barricade efforts and warrant services.



NORTH AMERICA

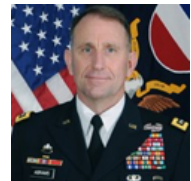
Interested in this region? Key speakers at the International Armoured Conference this year include:



General Robert B. Neller
Commandant of the Marine Corps
U.S. Marine Corps



General Robert Abrams
Commanding General
U.S. Army Forces Command



General David G. Perkins
Commanding General
U.S. Army Training and Doctrine



Brigadier-General D.A. Macaulay
Chief of Staff Army Strategy
Canadian Army



LATIN AMERICA

Although Latin America and the Caribbean only has some 8,651 light armoured vehicles (5.8 per cent), several vehicles are successfully produced in the region, with procurement programmes in Brazil, Argentina, Jamaica, Paraguay (planned), Peru and Venezuela.

Despite the increased military spending of many Latin America countries in the past five years and the high numbers of intergovernmental arrangements aimed at improving regional security, internal security remains highly unstable. While no intra-state conflict is likely to take place, the rise of paramilitary groups and gang-related violence leading to a human security situation that is fast becoming Latin America's most pressing issue. According to the United Nations Office on Drugs and Crime (UNODC), 36 percent of all homicides globally take place in the Americas. This is reflected in the Gallup's Law and Order Index which ranks Latin America as the 'least safe' region with only 14 percent of Venezuelans feeling safe when walking alone where they live. This represents an even more dangerous environment than war-torn Syria and Afghanistan.



*A Norinco VN-4 4x4 in Caracas, Venezuela.
Image: Cancillería del Ecuador*

Moreover, recent violent suppression of protesters by Venezuela's President Nicolas Maduro – in addition to the illegal gang led mining issue – could lead to the outbreak of low intensity conflicts in the country. At time of writing, Colombia's government is on the cusp of sealing a peace deal with the FARC (Revolutionary Armed Forces of Colombia) one of the major armed

groups involved in more than 50 years of internal conflict. However, there is concern that a referendum could reject the terms, thereby risking a return to conflict.

While domestic security issues do not require a heavy deployment of armoured vehicles, most Latin American countries are engaged in overseas peacekeeping operations and, as trends show, due to both a strategic and a political rationale, their military contribution will continue to increase.

At the same time, the SIPRI Military Expenditure Database indicates that military expenditure in Latin America and the Caribbean decreased by 2.9 per cent in 2015, largely owing to the huge fall in spending in Venezuela and Brazil's expenditure receding slightly as a result of its economic crisis. Spending continued to increase in Central America due to the growing militarisation of the anti-drug war.

Where the Latin American armoured vehicles market is concerned, demand for Light Armoured Vehicles, APCs and MRAPs, has been relatively strong in the face of shrinking expenditure. The rise of guerrilla warfare and asymmetric conflict results in national governments increasing their military presence in the territory and consequently demanding more LAVs to support their operations, but with enhanced survivability.

This trend may be reflected in the future military spending of countries such as **Venezuela**, which heavily cut its defence budget in the last three years but has recently experienced a dramatic worsening of its security situation. Currently, a severe economic slump brought on by the drop in oil prices and other factors has led to a severe shortage of food and basic goods. The military is being tasked with trying to deliver supplies to the public while also suppressing demonstrations calling for President Nicolás Maduro to step down and the opposition party to take control. Meanwhile, the borders with Colombia remained closed for much of 2016. Between 2011 and 2015, Venezuela was the eighteenth largest importer of military equipment in the world (most imported from Russia) but no new orders were placed in 2015 and the cuts will continue to be deep.

In October 2015, the Venezuelan Marine Corps became the first export customer for VN-16 and VN-18 tracked armoured amphibious assault vehicles from China North Industries (Norinco). These designations translate to a 105 mm gun-armed ZTL-05 amphibious assault vehicle and the 26-tonne 30 mm gun-armed ZBD-05 amphibious IFV. The latter is armed with a HJ-7D anti-tank missile, and carries a crew of three and up to eight troops. Both vehicles can traverse water at 25 km/h. The Chinese PLA has been operating these vehicles since 2006.



The Brazilian Army's VBTP-MR 6x6 Guarani amphibious medium APC will be enter service through to 2030.

Image: Andre Gustavo Stumpf Filho

The delivery followed that of an earlier consignment of 557-unit military vehicles from China, including VN-4 4x4 wheeled armoured vehicles, ABV-1 assault breacher vehicles and WTC-1 water cannon vehicles, alongside 200 Norinco NG2629 6x6 vehicles. Plans to purchase a total of 2,106 military vehicles for ground forces between 2009 and 2019 are likely to have been scrapped.

Following several years of expansion and investment into vast modernisation programmes, **Brazil** began to reduce its defence expenditure in 2015, cutting annual investment by a quarter. The drop was a direct result of the nation's sudden fiscal crisis, itself exasperated by political instability. Brazil's 2016 expenditure was placed at \$19.3bn, and analysts estimate this should rise to \$20.5bn by 2021 at a CAGR of 4.08 percent. In spite of what will be a temporary decrease, Brazil plans to continue investment into new military technology to strengthen its domestic defence industry as much as its armed forces. Of course, Brazil's security focus in recent years has been on ensuring a strong presence hosting world stage events – the 2014 FIFA World Cup and the 2016 Summer Olympic Games – which saw a series of demonstrations on the streets of Rio de Janeiro.

2016 saw several areas of progress for Brazilian armoured vehicles, beginning with the Army starting its upgrade of a second batch (236) of BAE Systems M113B tracked APCs to M113A2 Mk1 standard (designated as M113BR in the Brazilian Army), due to be completed in November 2019. The first batch of 150 identical vehicles was locally upgraded by the army's 5th Military Region's Regional Maintenance Park (Pq R Mnt/5) in Curitiba, State of Paraná. The last vehicle was delivered in December 2015. The Army is also receiving 34 surplus M577A2 command post vehicles, 12 M113A2 APCs, and four M88A1 recovery vehicles from the U.S. through the Excess Defense Articles (EDA) programme.

In spite of what will be a temporary decrease, Brazil plans to continue investment into new military technology

Since 2012, the country has been producing and delivering the Army's VBTP-MR 6x6 Guarani amphibious medium APC, a component of the wider military modernisation programme and a replacement of the ageing Urutu Cascavel fleet. Overall, 2,044 units have been signed off and are due to enter service until 2030. As a requirement, at least 60 percent of the vehicle components are originating from local industry. The Army also wants to procure additional REMAX (REparo de Metralhadora Automatizado X) and UT30BR lightweight remote-controlled weapon stations.

The Brazilian Navy meanwhile is considering upgrades for its SK-105A2S Kürassier light tanks, and to purchase 4x4 and 6x6 armoured vehicles for its Marine Corps (CFN). As of July 2016, concept and budget feasibility are being analysed. The projects would integrate the Navy's multi-phase Strategic Project for Consolidation of the Marines Amphibious Brigade Program (PROBANF), designed to enhance firepower, mobility, and protection capabilities.

Colombia's annual military expenditure increased in 2016 by around eight percent, reaching \$8.1bn. Further growth is anticipated through to 2020, where it should begin to push the \$10bn ceiling. U.S. lawmakers approved \$296m (a slight decrease on 2015) in aid to Colombia in 2016 to continue its efforts to reinstate authority and security.

As mentioned, a peace deal is tantalizingly close with the FARC, but a failure to close the deal could mean years of renegotiations and a risk of unrest. The five-decade old conflict is thought to have killed more than 220,000 people. Colombia is also still combating the smaller insurgency group of the ELN (National Liberation Army), which operates mainly in the north-east and is estimated to have dissolved to around two thousand members. The government began formal talks for peace agreements with the ELN in March 2016. Aside to these rebel groups, criminal organisations remain a serious problem for national security. Although Colombian coca production has been significantly reduced, the FARC-controlled drug trade – which has been used to fund the insurgency – is at risk of being seized by traffickers, while ex-FARC fighters may be persuaded to transition into cartels. At the same time, Colombia's relationship with neighbouring Venezuela has been increasingly strained owing to issues of border disputes and the infiltration of rebels across these borders.

These tensions are equally driving defence spending decisions, including investment into MBTs, IFVs and APCs. In recent activity U.S.-based Textron Systems was awarded a \$65m contract in 2016 to provide 54 Commando Select APCs with 40mm/.50 turrets as a foreign military sales contract to Colombia. Funds for the four-wheel APC will come out of the U.S. Army's "other procurement" pool. The contract follows a 2014 delivery of 67 4x4 Textron Commando Advanced APC high mobility vehicles – 39 of which were ordered without turrets and another 28 ordered with 40/50 calibre remote turrets – at around \$1.13m each.

No stranger to drug trafficking organisations themselves, **Mexico** remains in a fragile state when it comes to national security. However, the budget allocations for defence and security are complex. According to Forecast International, "When measured in dollars, defence spending [in Mexico] declined in FY16. However, this is largely due to the rising value of the dollar compared to the peso. In terms of pesos, the FY16 Mexican budget [increased to] 1.4 percent to MXN99,651.9 million." Even so, the decline in oil prices

has troubled the country, undermining the source of one-third of the government's income.



Presentation of the 21st Military Police (MP) battalion at Guachochi, Chihuahua as part of the Mexican Army's expansion of its Military Police Corps. Image: SEDENA

On the positive side, a defence spending spree in the preceding years – as part of the country's 'National Defence Sector Programme' to strengthen all defence institutions with territorial responsibility against organised and transnational crime – saw the budget increase at a CAGR of 5.8 percent between 2011-2015 and allowed Mexico to stockpile a range of new hardware as well as mandate new procurement programmes.

The Ministry of National Defence (SEDENA) launched a procurement programme in 2015 for 105 new armoured vehicles as well as a programme to upgrade its existing 119 6x6 Panhard Defense ERC 90 Lynx armoured reconnaissance vehicles. The investment would see the new vehicles bring four of its nine Armoured Reconnaissance Regiments (RBRs) to full spec. Mexico has purchased 3,335 HMMWV (Humvees) from ex-U.S. military stocks for \$504m. The country has \$499m earmarked for APCs and amphibious APCs, forecast at approximately \$200m per programme.

More recently, SEDENCA activated the 21st Military Police (MP) battalion at Guachochi, Chihuahua, as part of the Mexican Army's expansion of its Military Police Corps. The newly operational 4th Military Police Brigade is expected to eventually comprise 3,000 soldiers and conducts patrols in a number of vehicles including the Oshkosh Sandcat.

A September 2016 Independence Day military parade saw Mexico's Army unveil several new armoured vehicles. The Mexican Marines, for example, displayed a Mack Defense Sherpa Scout armoured patrol vehicle. Also shown were newly acquired Kitam 4x4 LAVs (currently approaching series production), and a prototype of the Cimarron APC, a design based on a Mercedes Unimog U5000 chassis that features a fully armoured cab and troop compartment.

Growth is also being driven in Mexico's commercial armoured car industry by continued high levels of violent crime. New domestic and foreign competitors have entered this market, establishing assembly plants in Mexico and appealing most to government authorities and business owners. The rate of increase in privately-owned armoured vehicles is in fact higher in other parts of Latin America than in Mexico but a sense of insecurity continues to pervade as cartels and other crime groups spread out. The criminal threat is of serious concern to Mexico's economic future. According to recent studies, as much as 3 percent of Mexico's GDP is lost to crime and violence each year, with most occurring from direct losses and a third spent on security and prevention. Also of concern is the extent to which criminal organisations are upscaling their own armour and equipment, including the recent emergence of so-called 'narco tanks' intended to combat both police, military and rival gangs on the streets.

In July 2016, **Bolivia** took ownership of a fleet of 31 China Tiger 4x4 light armoured vehicles and four riot response vehicles from China worth \$7.7 million as part of a military cooperation deal (including training and maintenance instruction). Of this order, five APCs and one crowd-control/command car will be given to the air force and another six vehicles of similar configuration will be provided to the navy, while the army will receive the remainder. The Tiger, built by Shaanxi Baoji Special Vehicles Company, offers high-mobility and all-weather capabilities, carrying up to nine fully equipped troops and a crew of two. China is also said to be donating an additional \$30m in military aid to the Bolivian Armed Forces.

The Bolivian Army currently stocks 36 SK-105 Kurassier light tanks and 24 EE-9 Cascavel reconnaissance vehicles, along with APC fleets including M113s, EE-11 Urutus, M9 Half-tracks, V-150s and Mowag Rolands (used by police).

Towards the beginning of 2015, **Peru** was reported as looking to acquire 106 AFVs and 105 MBTs as part of its Army 'Harpay Nina' ('Firepower') programme. The project is part of the army's 'Ugarte' modernisation plan. It is also known to be prioritising a new fleet of IFVs, but is undecided on a tracked or wheeled platform. Possibilities include the LAV III, YPR-765A1,

Peru is understood to be the customer of 338 Rheinmetall MAN Military Vehicles (RMMV) in a \$60m contract.

Marder 1, BTR-80, BMP-1/2, Pandur, M113, BMR-600, BTR-80A and BMP-3.

May 2015 saw General Dynamics Land Systems Canada unveil the first pair of LAV-II Cayman 8x8 armoured vehicles of a 32-strong fleet ordered by the Peruvian Armed Forces in the range of \$55m-\$67m and intended to be used to patrol the coast, lakes and rivers. These vehicles have been designed to Peruvian specifications – lightweight, amphibious, manoeuvrable over difficult terrain, and low-maintenance. GDLS is also providing the logistics support package.

Peru is also understood to be the customer of 338 Rheinmetall MAN Military Vehicles (RMMV) in a \$60m contract. RMMV will begin supplying the Navy with 30 TGS-MIL, and the Army with 92 TGS-MIL and 216 TGM MIL trucks from early 2017. The contract includes an option for 337 further vehicles.

In August 2016, a package of reforms was outlined by the government to combat crime and corruption. Among the measures are plans for widespread police stings and \$300m of upgrades to police equipment over the next five years.

While **Chile** is a relatively safer country compared to the rest of the region, there remains an ongoing, small-scale domestic terrorism risk, with political activists/anarchists emplacing over 200 IEDs since 2005. Large-scale demonstrations (including some that turned violent) also occurred in 2015 – predominantly in Santiago, Valparaiso and Concepcion – where tens of thousands of students, teachers, and citizens marched for educational reforms. For several years, the country has been investing heavily into its 'Northern Border Plan' by increasing the presence of police and armed forces and allowing the Chilean military to provide limited support functions to local authorities without infringing on laws preventing armed forces from being used in an internal security role.

In recent developments, relations with Bolivia have been sour over joint U.S.-Chile military exercises undertaken in August (Combined Joint Southern Star Exercise), with Bolivian President Evo Morales publically denouncing the manoeuvres. At the time of these exercises, the Chilean Agency for International Development Cooperation had been arranging a programme of collaboration with Bolivia to strengthen ties. Also in August, the commander of the Peruvian Army expressed hopes that Peru and Chile could re-start bilateral military meetings between senior level officers overseeing border units. Bi-lateral army visitations have been taking place to bolster this effort.

The Chilean Army has been updating its ageing military truck fleet under Projecto Alfil (Bishop Project) with an aim to over 40 percent of the army's current fleet, now at 25 years old or more. The ideal standard for a Chilean vehicle age is said to be at an average maximum of 10 years. Resources to undertake the overhaul have only become available in 2016. Mercedes Benz was awarded a contract to provide 330 trucks, includes a batch of MB Zetros 2733 6x6 and Unimog U 4000 4x4 vehicles. The Zetros are replacing legacy MB 1017A and the Unimog are to be added to the current stock of the same type. The priority is to replace vehicles that are deployed in the country's 'less hospitable' southern areas where civilian communities depend on the army during times of severe weather and emergencies.

Aside to this, the Army has been primarily exploring acquisition in the areas of maintenance and recovery, spare parts, vision and night fighting technologies and target acquisition. The development of training centres to improve the versatility and professionalism of its fleets has also been emphasised. Aside to fleets of Leopard 2A4s and 1V MBTs, the armed forces boast

Marder and YPR-765 AIFVs, M-113 A1/A2 and Piranha APCs, as well as a Marine force adopting new Scorpion light tanks and MOWAG Rowland 4x4s.

The military of **Argentina** is currently in a severely weakened state owing largely to the precarious state of the country's economy, which in 2014 defaulted on its debt for the eighth time. Defence spending had been increasing at an annual rate of 27.6 percent between 2012 and 2016, but due to high inflation, when converted to dollars, this translates to just a 1.5 percent increase. Now, defence spending is set to slow further.

While every service has been significantly maimed by these monetary woes (and by the involvement of officers in the recent political scandal), the army has arguably fared slightly better given its historical benefit of receiving almost double the budget of the navy or the air force. It has recently taken delivery of upgraded Tanque Argentino Mediano (TAM) medium tanks and refurbished Huey helicopters, apparently to reorient itself towards low-intensity peacekeeping operations rather than conventional combat.



The new prototype of an upgraded TAM 21P medium tank was shown on the 'Day of the Argentine Army' in the Military School of the Nation. Image: defence.pk

Despite these extreme difficulties, Argentina's military at least retains a core of well-trained personnel and an active domestic arms industry producing these aforementioned TAM tanks, alongside aircraft and naval corvettes. The prototype for the TAM modernisation programme – which sees partnership with Israel Military Industries (IMI), Elbit, and Tadiran – was unveiled in May 2016.

A prototype dubbed TAM 2C emerged in early 2013 and another in 2015 named TAM 2IP, the latter featuring additional armour. The new design is based on IMI's Iron Wall and can be added to any TAM unit without modification. The development includes new protection for the side turrets and chassis. Tests are currently underway on basic performance, protection levels, and the impact of the armour's weight on the vehicle suspension.

The country also finalised an order in June 2015 for 110 8x8 VN-1 wheeled amphibious fighting vehicles from China North Industries Corporation. Designed with an operational weight of 21 tons, a single VN-1 armoured vehicle is capable of carrying 11 soldiers in full equipment and an additional three-man crew. Argentina secured license to assemble the vehicles at its Tandanol-CINAR shipyards.

Recent senate reforms in Paraguay have been passed to expand military powers in the continued fight against guerrilla insurgents

Recent senate reforms in **Paraguay** have been passed to expand military powers in the continued fight against guerrilla insurgents of the Paraguayan People's Army (EPP) and drug traffickers. While a small force, the EPP have upped their attacks on its targets in recent years, including bombings, arson and assassinations. August 2016 saw eight troops killed in an ambush when guerrillas detonated explosives to destroy a military vehicle.

The Army currently operates a fleet of 6-15 light to medium tanks, as well contingents of M-9 and EE-11 APCs and upgraded EE-9 Cascavel armoured cars. Paraguay's M3 Stuart light tanks and M4 Sherman MBTs – although acquired from Brazil in 1970 and from Argentina in 1980, respectively – are to remain in

service as operational trainers.

Uruguay, per capita, is one of the world's leading contributors to UN peacekeeping forces and invests in the hardware to support its mission. It operates a range of armoured vehicles, including a fleet of tanks, and recently introduced the Tigr GAZ-233036 SPM-2 4x4 into the domestic police service, having purchased the fleet from Russia in 2011. A recent civilian outreach programme (Operation Soldado Amigo) has seen troops transported by heavy and light vehicles to remote towns in order to help locals with construction and other community-building tasks. Meanwhile, Russian media reported in September 2016 that Moscow has approved a draft of the Russian-Uruguayan intergovernmental agreement on defence cooperation to "strengthen mutual confidence, bolster international security, and step up the fight against terrorism."

Ecuador has been looking carefully at provisions for 'new roles' for its land forces, including peace keeping, natural disaster relief and custom vehicles for internal security. However, unpopular government policies and reforms at home were met with demonstrations in 2015, to which security forces responded with military mobilisation. Meanwhile, the relationship between Ecuador and the US – aside to other Western nations – has become strained in recent years, furthering the prospect that military equipment will be purchased from rival nations, either regionally or afar. One example of this is shown in its recent procurement of Venezuelan Tiuna UR-53AR50 multipurpose military vehicles.

In 2015, the Army received 709 HOWO-series logistics support vehicles from the China National Heavy Duty Truck Import and Export Corporation (CNHTC) through a package announced by the Ecuadorian government at \$81m. Before the acquisition, 70 percent of the country's land transport fleet was reported to be obsolete and only 51 percent operational.

LATIN AMERICA

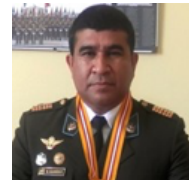
Interested in this region? Key speakers at the International Armoured Conference this year include:



Lieutenant General Ajax Porto Pinheiro (Brazil)
Force Commander
MINUSTAH



Colonel EP Raul Ramos Peralta
Member of Public Investment Project
Peruvian Army



Commander Pablo von UNGER Thaub
Project Manager for Marine Corps Integrated development,
Programs, Research and Development Directorate
Chilean Navy



The background of the page is a faded, orange-tinted photograph of a military armoured vehicle, possibly a tank or a heavy APC, with a soldier visible in the turret area. The image is semi-transparent, allowing the text to be clearly visible.

INTERNATIONAL ARMOURED VEHICLES IN REVIEW



Last year at the International Armoured Vehicles forum...

Defence IQ's International Armoured Vehicles (IAVs) 2016 conference (January 2016) delivered an exceptional agenda underpinned by an authoritative speaker faculty, which included keynote presentations from the UK's Head of Armoured Vehicle Programmes at **DE&S** Major General Talbot-Rice, the Chief of the General Staff for the **Afghan National Army**, H. E. General Qadamshah Shaheem and the Commanding General of **U.S. Army Materiel Command**, General Dennis L. Via. Moreover, the event was sponsored by our industry partners including **Textron Systems, BAE Systems, General Dynamics, ST Kinetics, Nexter, Saab, Patria** and many more besides.

The high-level presentations explored all aspects of the armoured vehicle operating environment such as future requirements from nations investing in protected mobility, ideas for how the military and industry can work better together, and alternatives for more cost effective fleet acquisition in the future. Under the informed direction of Lieutenant General Sir Gary Coward, the Chairman of the conference, the presentations were also considered within a wider defence industrial context, offering practical solutions to contemporary challenges faced by government, industry and the military.

The four day event kicked off with a pre-conference focus day about modernisation, retrofit and MRO (maintenance, repair, and overhaul). The presentations encouraged hearty debate about these important topics from a truly international delegation, which included officials from **Jordan, Ghana, Zambia, Tunisia, and Malaysia**.

Outside of the conference room, delegates found a lively exhibition area where the industry's best and brightest proudly displayed their products and armoured vehicle systems to international military delegations where they engaged in valuable conversations about future opportunities. The Vehicle Zone allowed delegates to get their hands on with some of the latest platforms and technologies on offer, which included vehicles from **Textron Systems, General Dynamics, Rheinmetall Defence, Lockheed Martin, Milspray** and **Raytheon**.

Following two days of exclusive insights and robust dialogue from select military officials and leading armoured vehicle manufacturers during the main conference, IAVs 2016 was rounded off with a post-conference workshop day focusing on the cognitive burden and the mounted close combat soldier.

In his summation of the discussions held during the conference, Lt Gen Coward said that the main points of debate and agreement centre around modularity, scalability and future proofing. He also said that open systems architecture is beginning to gain real traction and will be a key feature of all future armoured vehicle design.

"Despite resource challenges, I detect this is a reasonably healthy industry," said Lt Gen Coward, but underscored that there is clearly a "need to improve the dialogue between suppliers, manufacturers, the military, and government."



MILITARY INSIGHT



General Dennis L Via

US Army Materiel Command Procurement and Upgrade

Defence IQ: General, given the complexity and variety of potential future theatres, how is the US Army planning ahead to ensure readiness for its vehicle fleet for any eventuality?

General Dennis L Via: Certainly the armoured vehicle fleet is central to our operations for our ground forces. We're continuously looking at acquiring and filling the best capability we can provide for our soldiers as they deploy in complex operations around the world. We're placing a lot of research in development funding in that regard, to ensure that we're building capability to protect our soldiers, provide them mobility, increase lethality, as well as the ability to be expeditionary to fulfil requirements around the world.

DIQ: I know for the long-term you're advancing with Force 2025 and beyond, looking at the 30s and 40s and even further ahead. Although we can't know what the future conflicts and threats will be, are you taking a vision – a philosophy, perhaps – with you on that journey, to hopefully ensure you can be making the right decisions as and before they occur?

DV: There's always a balance between sustaining the force today, which has to be capable of meeting our requirements today in terms of missions, and having a mixed fleet of modernised platforms to be able to meet a variety of threats and a variety of missions. But at the same time we have to invest in research and development, to look beyond 2025 – as we term it, '2025 and beyond' – to the period of 2030 and 2040. We are leveraging what's in the art of possible, prototyping and testing those capabilities, working with the industry, working with our allies to see what

capabilities are there, what technology may mature in time, and then – where we can modernise our current fleet with those new technologies – we will do so. More importantly what we want to do is ensure that we're prepared when we acquire systems in the 2030/40 timeframe, that we're going to maintain the leap ahead technologies and the technological edge that we enjoy today against the perceived threats that we may see at that period of time and in that particular environment.

“The JLTV will improve reliability, fuel efficiency, protection and deployability”

DIQ: In the nearer term we'll of course see the introduction of the JLTV. Can you tell us briefly what capabilities that will bring to the fight and how that will of course integrate with existing vehicles?

DV: We're very much looking forward to the fielding of the Joint Light Tactical Vehicle. This vehicle will bring tremendous capability to our ground forces, improve reliability, fuel efficiency, protection and deployability. And it is built with communications and mission

command systems in its design. It will complement the current fleet of equipment that we have and it will replace some of our older systems, including the Humvees that we have in the Light Tactical Wheeled Vehicle fleet. It won't replace all, however. We'll still have uses for armoured Humvees and other vehicles, but the JLTV will be a tremendous complement to the capabilities we'll see going forward. So we look forward to being able to have that capability in our force, both the Army and the Marine Corps.



Defence IQ: And that's been seen as a great achievement from both a military and industry perspective. The IAVs forum is of course looking to ensure that engagement persists. How are you looking to ensure that those sort of relationships continue consistently in the years ahead?

DV: We're very pleased with the process that went forward in developing, testing and acquiring this particular platform, working closely with industry and the competition that was there, to be able to produce the capability platform that we needed based on the requirements that we've identified going forward. What we're going to do is build upon that as we look at other vehicles that will require other parts of the tactical wheeled vehicle fleet that we'll acquire in the future. We're going to work just as closely with industry. We think this is part of better buying power. The plusses of how we acquired and tested for this particular platform

– we think this is a good model to follow. I think as we look at acquiring other platforms in the tactical wheeled vehicle fleet, we will use the lessons learnt out of this procurement to build upon it for the future.

DIQ: How is the IAVs event adding to the opportunities or the value that you're finding in terms of engagement with the wider community?

DV: The greatest value I think is in being able to meet with our allies and partner nations at these type of events, and so while you have presentations and we hear perspectives from various countries – I was very privileged to speak here today, too – the true value is what it offers in personal relationships, to be able to have those type of side-bar discussions, to be able to talk with industry, to see what capabilities are here and what they're promising for the future, to gain a perspective and to share that. That is the strength of a conference like, particularly the Armoured Vehicle conference. It tells you the value of it that it has continued for 16 years. Bringing this industry, bringing our allies and partner nations together, as well as academia, I think it creates a great environment to talk about and collaborate on what the future possibilities are. I've been very impressed and it's been a great forum.



Lt Gen Seppo Toivonen

Commander, Finnish Army

Defence IQ: General, what can you tell us about the current priorities for the Finnish army in terms of its armoured vehicles fleet?

Lt Gen Seppo Toivonen: This is of course a time of change and different challenges but, in a way, we have a good background in different mechanised units. We will continue with those products we have. We were very happy to buy surplus Leopard 2A6 MBTs from the Netherlands as that will strengthen our fleet where we already have 100 Leopard A4s. Then I would say what we are doing now is looking through the different options and approaches to modernisation. For instance, the BMP 2 – with western technology, it's still a good combat proven tool in the battlefield. Next to come is the upgrade of the CV 9030 in the beginning of next decade. So, in a way we respond by improving on those – how should I say? – 'good' products, and that's the way we are moving ahead.

DIQ: What about the longer-term – the 2030s and beyond? How can you be sure that you'll be making the right decisions from that period?

ST: That's a good question, and of course the IAVs conference deals with those issues quite well. You have to have all the senses open, to look past what the new technology is offering. You need this kind of baseline of different capabilities and only then can you build up something new. So we are very much keeping our options open. We know that there will be a need for something new, especially towards the end of the 2020s, and that's why we are following closely what's happening in the market. You also need a good understanding of how the requirements are changing. Having that knowledge will keep us 'alive' and in a really good condition until 2030. There is also being discussed a ten-year time frame to find out

what is actually happening to main battle tanks. What is going on in the anti-tank section, and so on? We're investigating this now.

DIQ: The idea of balancing capabilities has come up quite a lot at the IAVs conference. How are you finding an approachable and affordable option plan, and indeed how is the industry helping you come to those particular decisions?

ST: It's related to many issues. It's related to the different organisations...how strong a battle group you create, what the role of brigade level and above capabilities will be. In Finland we see that the brigade is still an excellent tool in the battlefield, and through the brigade level you can bring in new, modern capabilities. So, it's a combination of ensuring you have a diversity of tools, but the art comes in how you do that and who is doing it. Usually at a battalion level you have to concentrate on the task, and then at the upper level, even in the army corps level, you have to find how to fit the new capabilities into the equation. There is always something of a changing role when it comes to new capabilities like electronic warfare. It's growing all the time.

DIQ: How useful have you found the International Armoured Vehicles conference in terms of knowing how to approach all that?

ST: I would say that this is a good concept. It's not oversized, so it gives you the possibility for interaction with colleagues and industry. There are good panel discussions, excellent presentations and then you also have something to feel and touch. I would say that this conference is really fine.



Colonel John Atkinson

US Marine Corps

Defence IQ: Colonel, what can you tell us about how the Marine Corps is anticipating the future operating environment and how that will impact combat development?

“We’re looking at different ways to harness energy so we can sustain, survive, fight and thrive in expeditionary environments”

Colonel John Atkinson: The Marine Corps sees an increasingly complex and dynamic operational environment, where hybrid threats will become increasingly capable, with capability sets that in some cases will have parity to modern nations. It also sees some development in the enduring nature of operational environments – war time environments. We’re going to continue to see war be chaotic, and uncertainty in fact will be the only certainty – hybrid threats, criminal networks, combining regular and irregular forces. But again, it’s new in some ways but it’s really old lessons being relearned. Napoleon experienced regular hybrid threats on the Iberian

Peninsula. Alexander the Great saw similar adversaries in Afghanistan, when he was there. So, while some people say it’s new, I think it’s just changing. The character of warfare is always changing; the nature will remain immutable.

DIQ: With that chaos and the uncertainty being predicted, what does that mean for the equipment that will be fielded or indeed the challenges that you have in fielding the correct equipment?

JA: If you don’t know what you’re going to face it’s difficult to fully prepare for it, but if you have the proper mind-set, if you have the proper approach intellectually and you can think through problems, then you have a good start at it. When you examine the globe for what’s going on and predict as best you can – and more importantly look to your history and understand how things have progressed and unfolded over time – you can begin to build a picture that gives you the basis you need. With our capabilities and, being a force that needs to be prepared to fight tonight, anywhere on the globe, against any threat, or respond to humanitarian situations across the range of military operations, it remains very difficult to get it perfectly accurate. But if you have a balanced force that’s able to operate in any climate or place, that has the ability to command and control in high-threat degraded environments where you’re leveraging technology but not overly dependent on it, then you begin to have the opportunity to leverage technology and use it to your advantage, rather than have it contribute to your own demise and create dilemmas for the enemy, whether the enemy is a war fighting enemy or a catastrophic storm. And I think that’s at least an approach.

DIQ: What can we expect from the role of the Marine Corps as we swing back to this expeditionary operational focus, and indeed what will that do to shape your vehicle fleet?

JA: The Marine Corps has remained America's expeditionary force in readiness. We've continued to respond to crisis and calamity around the world, even when embroiled in a decade and a half of conflict in Iraq and Afghanistan. But the requirements, the capabilities, the force, the training, the mind-set required for counter insurgency, while we can't step away from that, we need to get back to our expeditionary roots – being able to go into an environment where there is no infrastructure, where we do not have immediately the ability to rely upon a robust joint force, but where we can go in where there is no infrastructure, leverage the joint capabilities and the coalition capabilities that are available, and not just exist or survive in that environment but thrive in it. Marines have always done that since our beginning, and it's just a matter of getting our orientation back on that. We're looking at different ways to harness energy, different capabilities, so we can sustain, survive, fight and thrive in expeditionary environments from the sea. We are going back to our amphibious roots to fight from the sea, on the sea and for the sea, and that's in our DNA. So it's really just stretching out and getting refocussed on it and the Marine Corps is moving in that direction swiftly.

DIQ: You really invigorated the discussion at IAVs with your presentation. What else have you actually learnt yourself from the other conversations taking place at this event?

JA: I think it has been interesting to interact with our international partners, our allies, our colleagues, both in uniform and in industry, and see that we are all looking at similar problem sets – maybe a little bit differently, maybe with a little different vantage point and perspective, but certainly based upon missions, roles, responsibilities, our position in the world, size and those type of things. But it's good. We're all seeing the same challenges. We're all bringing different thoughts to the discussion and environments like this allow us to collaborate and share those ideas, because really technology, as I said before is important. It's the thinking man and woman that are going to survive and thrive going forward. We're better off coming

together, using the best and brightest minds from all our partners, our allies, our friends around the globe, who are looking at things a little bit differently, and we have been getting the synergy of that interaction. That's been the best part, understanding that we all have some of the similar tensions, viewing adversaries in all their forms. I think that can only help all of us as we solve these problems. All of us are going to need to work together to solve these problems. No one nation can solve the world's problems and while the United States Marine Corps can contribute to it, we certainly want to have strong, capable, brilliant allies – the type we've seen at IAVs – alongside of us.

DIQ: And of course it's not just partners and allies. There's also the defence industry, the technology providers who are part of this mission, so to speak. What can you tell us about those opportunities?

JA: Absolutely. A lot of the industry partners at IAVs we know and we work with in the United States. We've worked very hard. My boss, the Deputy Commandant for Combat Development and Integration, is very keen on establishing and building relationships with industry, to leverage and tap into what they're doing. There are a lot of great ideas, a lot of effort, a lot of investment, a lot of R&D. Companies are spending a lot of money to solve these problems, certainly for business interests but also – as I believe most of the folks we've dealt with here and that we deal with on a daily basis are patriots and want to serve their nation – for serving the global community for the greater good. A lot of the capabilities they're delivering, we can leverage. We're also leveraging their minds, leveraging their approach, leveraging their investment, and working as a collaborative partnership. I think that's the only way we are going to really move forward. If we articulate clearly what our requirements are and if industry works with us to meet them, to keep cost down and deliver the required capability, I think that's the best approach for all of us.



Major Francois Laroche

Armoured Trials and Development Unit

Defence IQ: Major Laroche, could you summarise for us the key messages being communicated at the ATDU briefing at IAVs?

Major Francois Laroche: The key message is really cognitive burden. So, to explain a bit of what that is, at the end of the day we represent the user, the multi-mission close combat user, and with those new armoured platforms, like Ajax or the Warrior Capability Sustainment Programme, there comes a lot of new technology, a lot of new sensor input on those turrets, and so on. You don't want the human inside that turret to be the weakest link when it comes to dealing with all that information, all those feeds coming to the soldier, to the gunner, or to the commander. That's our message – to make sure that people understand the cognitive burden, the information overload, and making sure that we understand the problem if there is a problem. Maybe the new generation using this technology will feel comfortable inside those new turrets, but we just want to make sure that people, especially the industry who design those platforms, understand that you ultimately want your user to maximise all of those capabilities rather than being overwhelmed by them.

DIQ: When it comes to your work and the technology you're seeing coming through, has there been much impact from the recent conflict and the way the theatres have developed?

FL: Yes. I'll say they always influence things. I'm a firm believer that you should always look at all the potential threats to base your acquisition and procurement strategy. So, definitely the threat should be a focus point of all the new technologies. Indeed, the previous experiences in Afghanistan and Iraq, and especially

now with the more conventional threats on the Ukraine border, mean we need to be adaptive. We need to really concentrate all our armoured platforms towards all types of threat – be ready for anything, and then choose what is appropriate for a specific theatre. It really is about having a lot of new technology fitted just to ensure we're well prepared when we enter any new theatre, and we never know which enemy we're going to face. That situation will definitely influence the solutions on the market. You need to keep your eye open to all kinds of threat and be prepared to counter it.

“You need to keep your eye open to all kinds of threat and be prepared to counter it”

DIQ: So, as you say, we don't know what the future threats will be, but in terms of balancing the possibilities that are before us how do you find that militaries are able to do that from an affordable perspective?

FL: That's hard to say. Again, the best solution is to have most of all those capabilities in one package, like you would with a golf bag having a multitude set of

clubs to respond with all those capabilities from light to heavy. It's a big challenge to make it affordable, but it's essential to have that.



DIQ: With the test and development research it's undertaking, the Army clearly has a requirement to do that, but it still needs the engagement of industry to make it possible. How are you seeing that that relationship is being consistently managed?

FL: Our unit is at the centre of that. We try to maintain a good, strong relationship with industry to make sure that we know what's out there while they want to make sure that we maintain an open discussion with them to understand what they are offering. If it's a really good capability, it's our role to push it through our chain of command and try to influence and explain to them that this is really a great capability worth the investment. So we have that relationship and it's working really well. I think it's a great example of industry and user working together.

DIQ: And hopefully IAVs has also been part of that process...

FL: Definitely. This forum also helps and maintains that relationship in that it has in one central place the experts from the military, from all these different countries, and being industry-specific in the area of our expertise. Everyone is in the same place so having that networking opportunity, and those great presentations about all the new technology and capabilities, that's great. It's a great event.

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