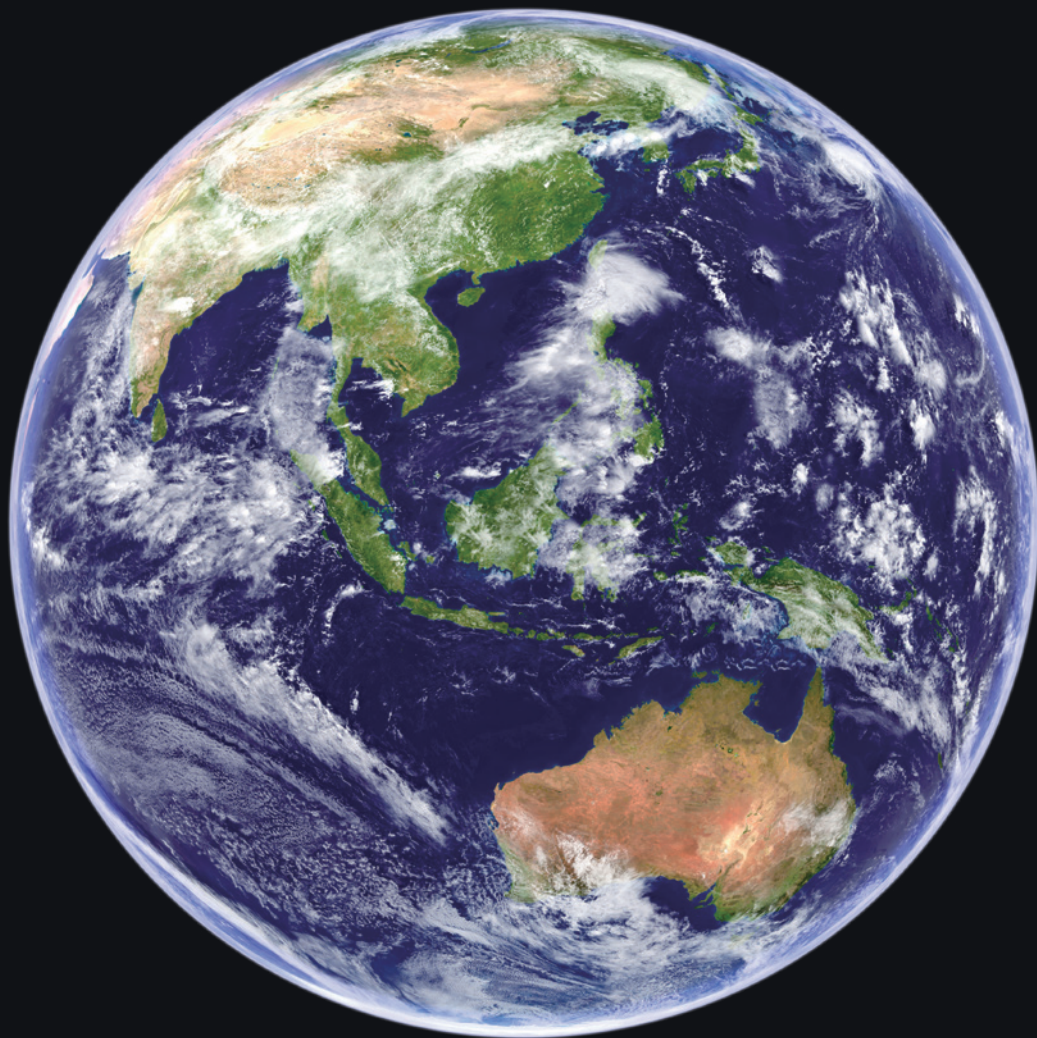


Deloitte.

Asia-Pacific Defense
Outlook 2016
Defense in
Four Domains



Contents

About Deloitte's Asia-Pacific Defense Outlook

This report examines policies, practices, and trends affecting the defense ministries of 20 Asia-Pacific countries. Publicly available information, commercially-sourced data, interviews with officials in government and industry, and analyses by Deloitte's global network of defense-oriented professionals were applied to develop the insights provided here. Because reliable public information on North Korea's defense budgets and policies is not available at the same level of detail as other Asia-Pacific countries, the report does not include North Korea in many analyses.

This is an independently-developed report, and the data and conclusions herein have not been submitted for review or approval by any government organization. The Asia-Pacific Defense Outlook was written in January 2016.

For ease of analysis, this report groups 19 countries in the region into three categories, further defined in the body of the report. The categories, called "Strategic Profiles", are as follows:

- "Investors": Bangladesh, Sri Lanka, Thailand, Vietnam
- "Economizers": Indonesia, Japan, Malaysia, Myanmar, South Korea
- "Balancers", including:
 - "Higher-Growth Balancers": Cambodia, China, Pakistan, Philippines, Singapore
 - "Lower-Growth Balancers": Australia, Brunei, India, New Zealand, Taiwan.

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Asia-Pacific Defense Outlook: Key Numbers

Defense Budget



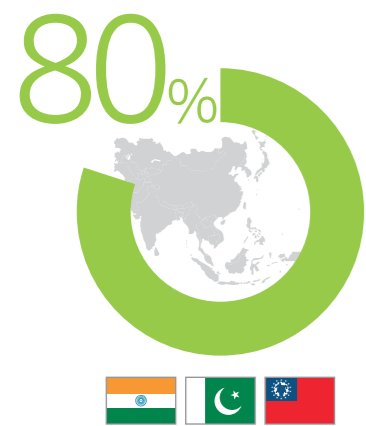
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Nineteen Asia-Pacific countries will account for nearly **one-third of global defense budgets** by 2020, and more than **one-third of all active-duty military personnel**.

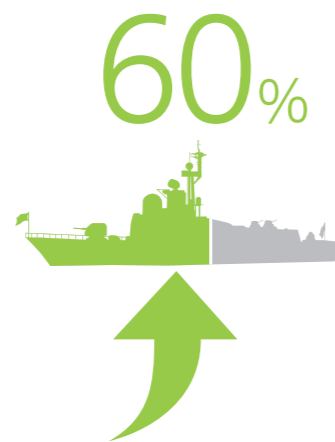
Four Domains



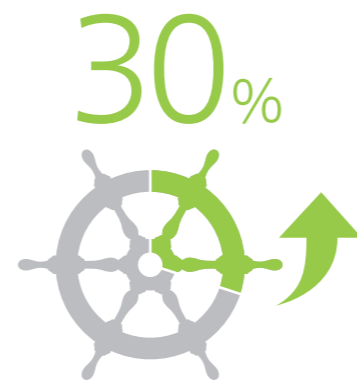
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Conventional armed conflict in Asia-Pacific **fell by 30 percent** in 2001 – 2014 over 1985 – 2000. More than **80 percent** of Asia-Pacific conventional conflicts involved **India, Pakistan or Myanmar**.

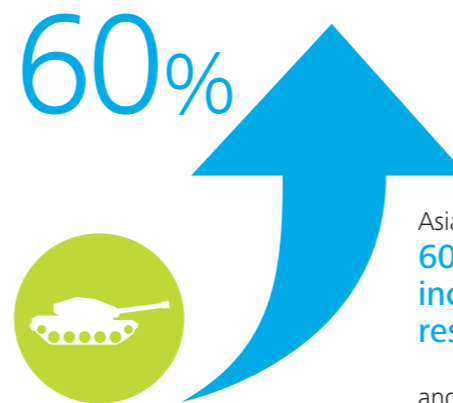


More than **50 percent** of global container traffic now moves through Asia-Pacific. **Naval budgets are projected to increase by 60 percent** through 2020, as navies respond. **China will build 30 new submarines** and **one new aircraft carrier**.



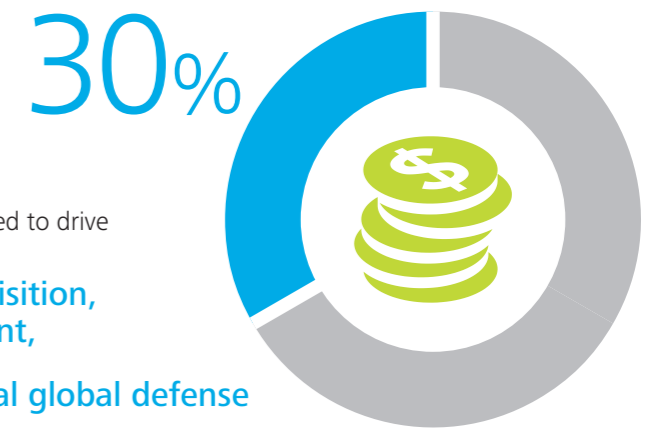
Total worldwide incidents of piracy declined by **45 percent** from 2010 to 2014, but **incidents in Asia-Pacific increased by nearly 30 percent**. The Chinese navy has rotated more than **16,000 sailors** and more than **30 surface ships** through escort and anti-piracy missions in the Gulf of Aden.

Defense Acquisition and R&D



60%

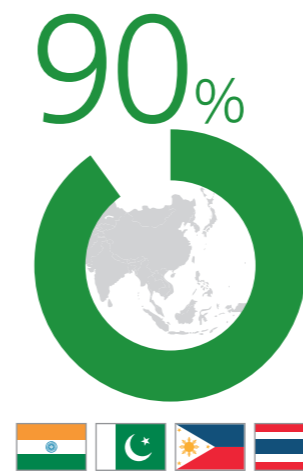
Asia-Pacific economies are projected to drive **60 percent of the global increase in defense acquisition, research and development**, and **30 percent of the total global defense acquisition budget** through 2020.



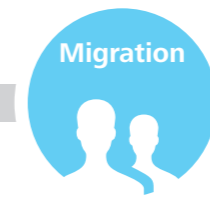
30%



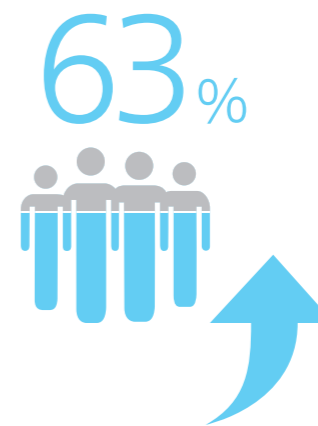
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Fewer than **20 percent** of global deaths from terrorism occur in Asia-Pacific. **Ninety percent of these deaths are in Pakistan, India, Philippines and Thailand**.



→ See P.17



Fewer than **10 percent** of global cross-border refugees originate in Asia-Pacific. But the total population of refugees from Asia-Pacific countries **increased by 63 percent** between 2008 and 2014.



→ See P.18



The **“Cyber Five”** -- South Korea, Australia, New Zealand, Japan and Singapore -- appear **nine times more vulnerable to cyberattack** than other Asian economies.

Defense Investments: The Economic Context

Rapid economic growth and development continue to fund modest defense budget increases, but Asia-Pacific countries, including China, place higher priority on non-defense public investments including health care and education. As the Asia-Pacific economies continue to expand, their defense ministries, unlike their Western counterparts, are driving most of the world-wide increase in defense research, development and acquisition.

The Asia-Pacific defense landscape has been reshaped, and is now paced by the rapid economic development of China, India and South Korea, and the relative decline in Japan's economic influence. Growth in China, India, Korea and Japan accounted for 26 percent of the total global increase in economic output between 1990 and 2014, and rising production in Asia-Pacific increased East Asia's share of economic output to over 30 percent of the world's total, even as the shares of Japan, the United States, and the Organisation for Economic Co-operation and Development (OECD) countries declined.

Regional defense spending grew along with the Asia-Pacific economies, accounting for nearly 25 percent of the global total in 2014¹. But slowing economic growth and rising expectations for civilian infrastructure and services have changed the relative priority and pace of spending for defense resources. In fact, all 19 Asia-Pacific countries reviewed in this report plan to grow defense budgets at a slower pace than their economies will grow through 2020.

Strategic Profiles: Investors, Balancers and Economizers

Three distinct defense budgeting approaches are being applied as Asia-Pacific governments balance defense against other national priorities. All three approaches are based on growing defense budgets at a lower rate than gross domestic product (GDP). Countries applying these approaches can be categorized as "Investors", "Balancers" (Higher-Growth and Lower-Growth), and "Economizers", shown in Figure 1 below.

Investors (Bangladesh, Thailand, Sri Lanka and Vietnam) are planning the most aggressive growth in defense budgets through 2020, with a mean defense budget annual growth rate of 6 percent. But the Investors are well-positioned to fund this growth, as they are projected to grow GDP twice as fast as defense budgets. The Investors represent only three percent of Asia-Pacific economic output, and about three percent of the total regional defense budget.

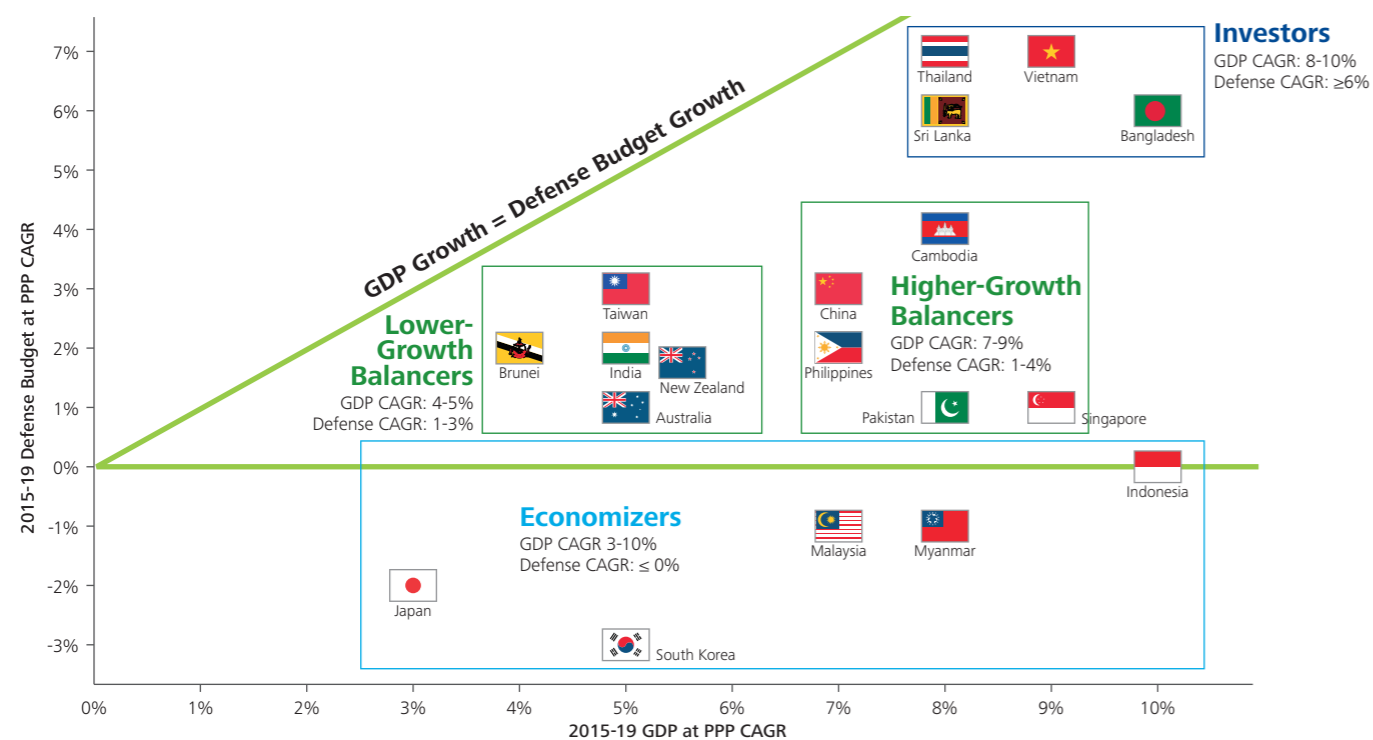
In contrast, the five **Economizers** (Japan, South Korea, Malaysia, Indonesia and Myanmar) include one-third of Asia-Pacific GDP, and 28 percent of the total regional defense budget. The Economizers' real defense budgets are projected to decline through 2020. South Korea's announced reduction of its active-duty forces by nearly 20 percent³, Malaysia's budget cuts in the face of slowing economic growth⁴, and Japan's continued de-facto commitment to a one-percent of GDP share for defense spending⁵ have shaped the Economizer's budgeting approaches.

Ten Asia-Pacific countries, accounting for two-thirds of the region's economic product and nearly 75 percent of the 2015 regional defense budget, are **Balancers**. This group, which includes both Higher- and Lower-Growth Balancers, includes the big-budget states of China, India and Australia. The Balancers are projected to grow their economies at a compound annual rate of 4 to 9 percent, while growing their defense budgets at 1 to 4 percent.

China, Pakistan, Singapore, Cambodia and Philippines are the **Higher-Growth Balancers**. While none of these countries will grow defense budgets as rapidly as GDP, China's size and continuing modest defense budget growth will add \$18B in annual procurement and R&D budget by 2019, representing nearly half the total increase in global defense acquisition budgets in the 2015 – 2019 period⁶. China's newly-released military strategy⁷ aligns continued budget growth with significant revisions in acquisition and force-development policies, emphasizing a shift from priority on land forces toward open-ocean capabilities, "informationization," (i.e. improved integration of networks and enhanced application of data in decision-making), improvement of joint operations, and information dominance.

The **Lower-Growth Balancers** Australia, Brunei, India, New Zealand and Taiwan include 23 percent of regional defense budgets, with India (11 percent) and Australia (8 percent) holding the largest shares. The Lower-Growth Balancers are increasing defense spending at an annual rate of 1-3 percent. India's continued growth in annual defense budgets is closely tied to the Modi government's "Make in India" economic development strategy, which includes plans for substantial development of India's domestic aerospace and defense industry⁸. Australia's most recent defense budget is based on the government's plan to increase defense spending to reach two percent of Australia's GDP by 2020⁹.

Figure 1: Four Strategic Profiles Chart²



Aligning Defense and Domestic Priorities

The combination of rapid economic growth and relatively limited increases in defense budgets have reduced the reliance of Asia-Pacific economies on defense budgets as an element of overall economic policy. As growth continues, the Asia-Pacific countries are devoting increased shares of gross domestic product to civilian investment priorities, reducing the share of their labor force devoted to military service, and raising the pay of active-duty service members to professionalize the armed forces, promote consumption spending and boost economic growth¹⁰.

Defense spending is declining as an element of government expenditure across most of the Asia-Pacific economies. Except for the four Investor economies, which account for only about three percent of regional GDP, all other Asia-Pacific economies sharply reduced defense spending as a percentage of gross government expenditures from 2001 – 2013. This is especially evident in the Higher-Growth

Balancers, where China's shift toward civilian-sector services drove an overall decline in the defense share of government spending from nearly 13 percent to just over 7 percent (See Figure 2).

As defense spending declines as an element of government spending, the Asia-Pacific economies are shifting budgets toward public education and health care. All four defense budget profiles show increasing shares of government spending on health care, and two of the four showed similar increases in public education. Economic growth supports larger defense budgets, but the Asia-Pacific economies are placing higher emphasis on increasing the non-defense elements of their public investments.

Development-driven growth in civilian demand for labor means that Asia-Pacific economies can rely less on military service to absorb labor, but it also imposes higher costs to attract and retain skilled military personnel.

Across the region, the percentage of the labor force on active military service has declined since 2001 (see Figure 3 below). Total troop strength has not declined significantly, although pending reductions in the Chinese and Korean active-duty forces are likely to continue the trend toward less reliance on military service as an element of the labor market. Rather, the decline is driven by higher growth and increased opportunity in civilian occupations. Japan has experienced this competition for labor, as 2015 applications for military jobs fell by 20 percent from 2014¹².

The Balancer economies (with 74 percent of total defense spending and nearly 80 percent of active military personnel) increased military personnel spending per active-duty service member by about ten percent from 2010 through 2013. The Indian government recently announced compensation increases (including pensions) of 23 percent for civil servants including military members¹⁴. China's recent budget increases have included substantial improvements in soldier compensation, and

newly-announced plans to reduce active-duty strength by 300,000 soldiers appear to reflect broader re-structuring plans to increase productivity¹⁵.

Growing Prominence in Global Defense Markets

The Asia-Pacific economies are continuing to grow defense budgets at a rate slower than overall economic growth, but economic growth combined with slowing defense spending worldwide means that Asia-Pacific defense ministries will command an increasing share of the global markets for defense equipment and services.

When the US war effort peaked in 2010 - 2011, the US accounted for just over half of the \$832 billion budgeted worldwide for defense-related procurement and RDT&E. Declines in US and non-Asia-Pacific budgets, combined with steady increases across most of the Asia-Pacific, increased the Asia share of total RDT&E and procurement to 27 percent in 2015.

Figure 2: Defense and Other Government Expenditure¹¹

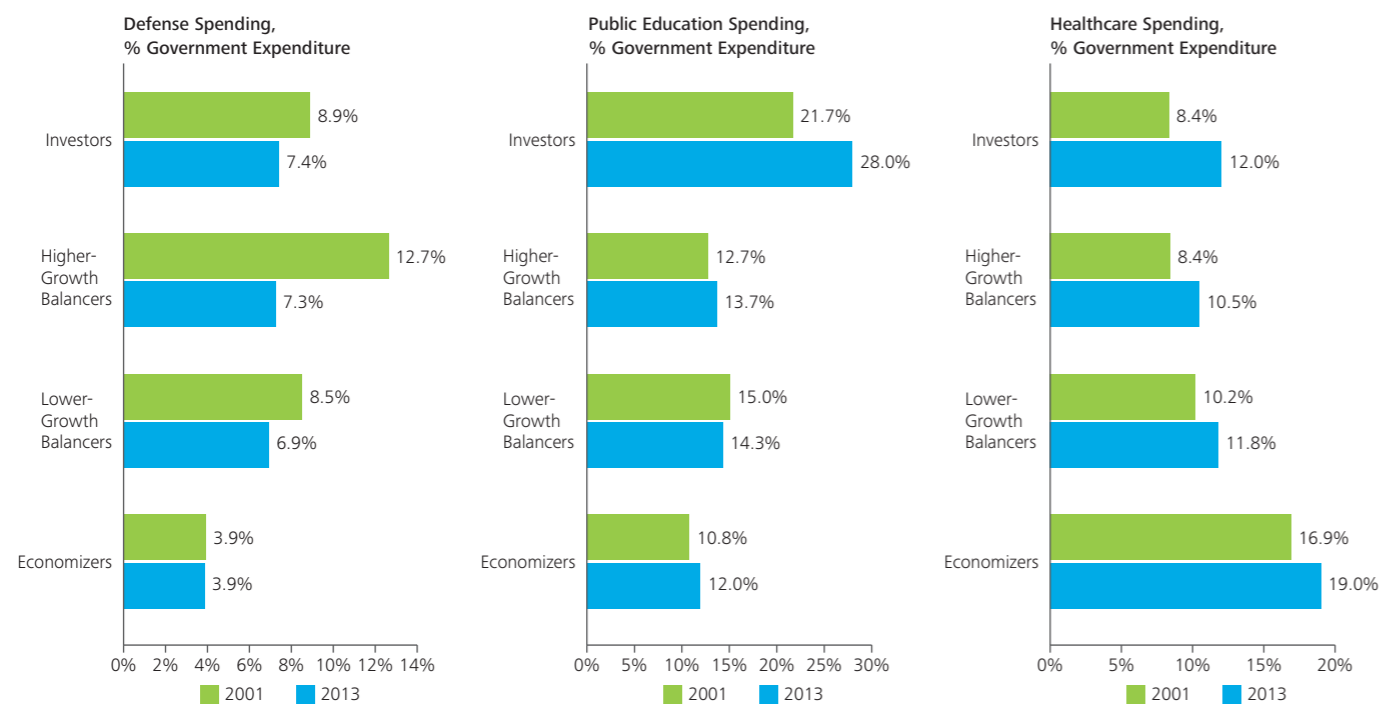
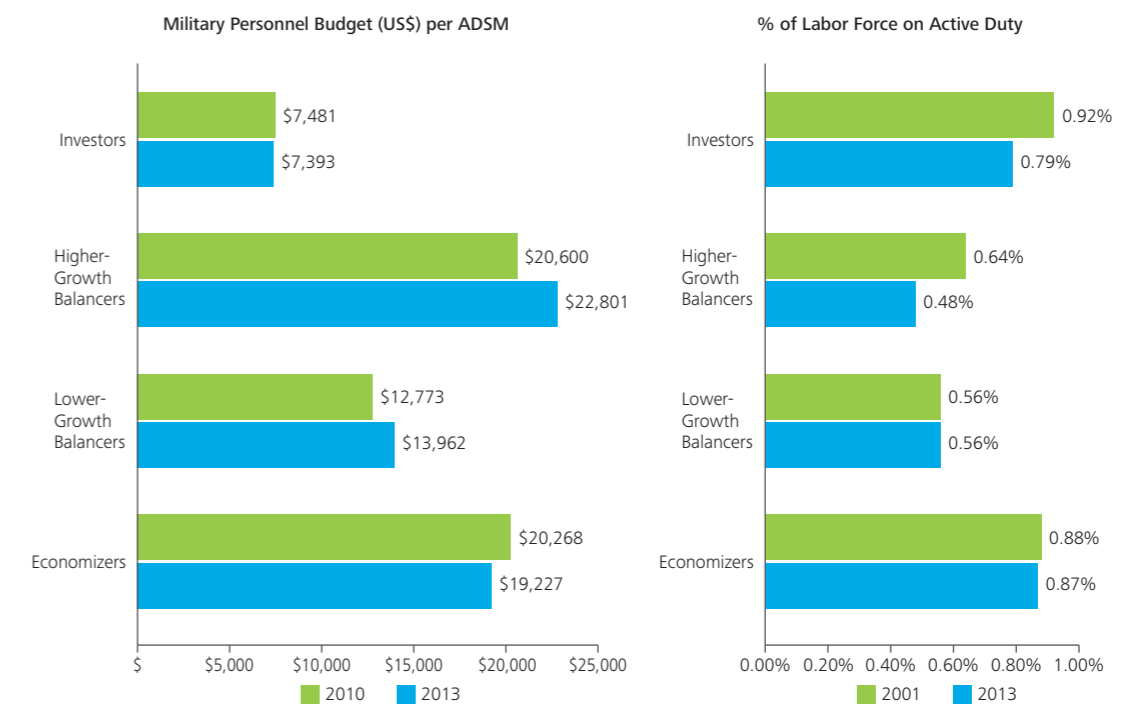


Figure 3: Military Personnel Expenses and Labor Force Involvement¹³



By 2020, the US share of global defense procurement and RDT&E is projected to decline further, to about 40 percent, while the Asia-Pacific countries will increase their share to just under 30 percent of the global market (see Figure 4 below). The Asia-Pacific countries are projected to account for three-fifths of the total increase in global defense RDT&E over the next five years, while the US will command only 17 percent of the increase – creating substantial development opportunities for defense businesses able to serve Asia-Pacific markets.

Focus on Domestic Production and Export Growth

As regional defense procurement budgets increase, and governments work to sustain economic growth, Asia-Pacific countries are focusing on expanding domestic defense industrial capabilities and exports of defense equipment. If these policies are successful, the result will be increased global competition for defense equipment.

India is at the forefront of the regional effort to build domestic defense production capability, because it is currently the world's largest importer of military goods, and because the government has made strong public commitments to expanded domestic manufacturing and export substitution¹⁷. Recent government policy has revised foreign direct investment requirements, permitting foreign firms to acquire as much as 49 percent interest in defense businesses. The policy is already leading to new ventures, including Tata Group's partnerships with Honeywell and Airbus, and Kalyani Group's

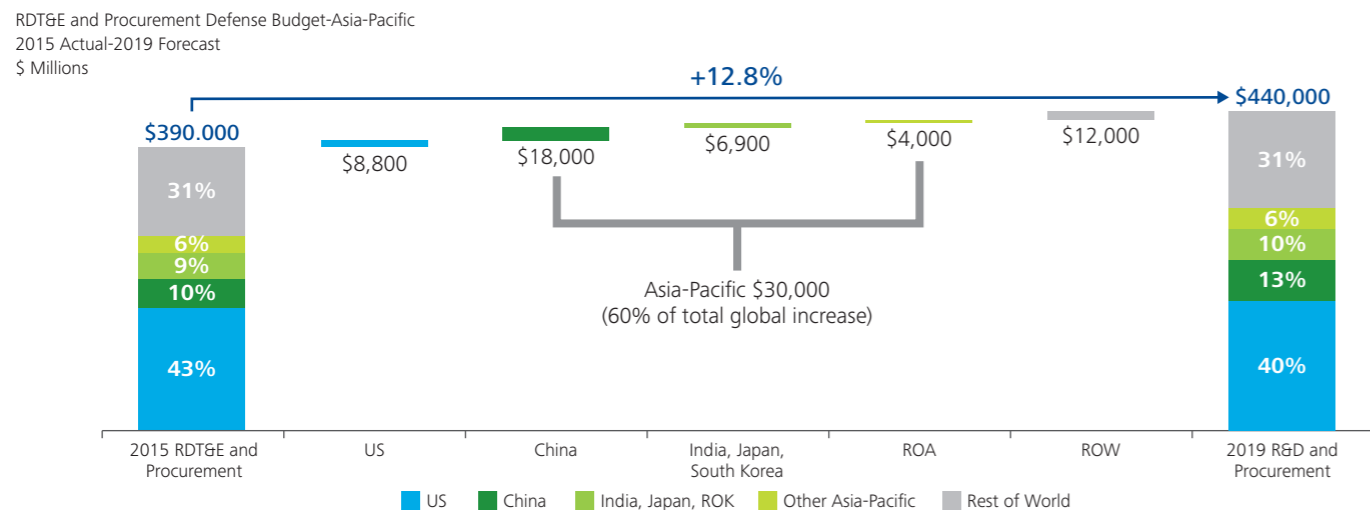
partnership with Rafael of Israel¹⁸.

While China's domestic defense industry remains bureaucratic and heavily protected, increased R&D investment and growing acquisition budgets led the government to establish an advisory institute to focus on strategic development of the industry, with input from the People's Liberation Army (PLA) but also from the Chinese Academy of Sciences, Ministry of Finance and other organizations¹⁹. The new advisory institute followed announcements by the Central Military Commission of new efforts to promote transparency and competitive practices in defense acquisition²⁰.

Japan's self-imposed restriction on the domestic defense budget leaves little room for defense industry growth within Japan, so the Japanese government has gradually eased long-standing policies allowing export of defense-related equipment. The new policy took shape in Japan's *Guidelines for the Three Principles on Transfer of Defense Equipment and Technology*²¹ (approved in April 2014), and is being exercised as Japan seeks to export the design for its advanced conventional submarine to Australia, in a deal valued at \$50B²².

The fast-growing economies of the Asia-Pacific region are increasing their defense capabilities within a broader framework of economic development. Their growing size and sophistication are leading the Asia-Pacific economies – especially China, India, and Japan – to new and more substantial roles in the global market for defense equipment.

Figure 4: RDT&E and Procurement Defense Budgets (2015 – 2019)¹⁶



Defense Policy Drivers: Defending in Four Domains

Defense budgets and policies change slowly, against a backdrop of economic, technical and political forces. Much of the evolution in Asia-Pacific defense policy can be understood by examining four domains of defense policy – conventional conflict involving armed forces engaged in traditional military and naval missions including protection of maritime commerce and counter-piracy, terrorism threatening civilian and economic interests, migration of refugee populations across national borders, and cyber-related threats to national economic and security interests. The nuclear domain is outside the scope of this analysis, as is the continuing challenge to regional stability posed by the military forces of North Korea.

Conventional Conflict: Defending Maritime Commerce

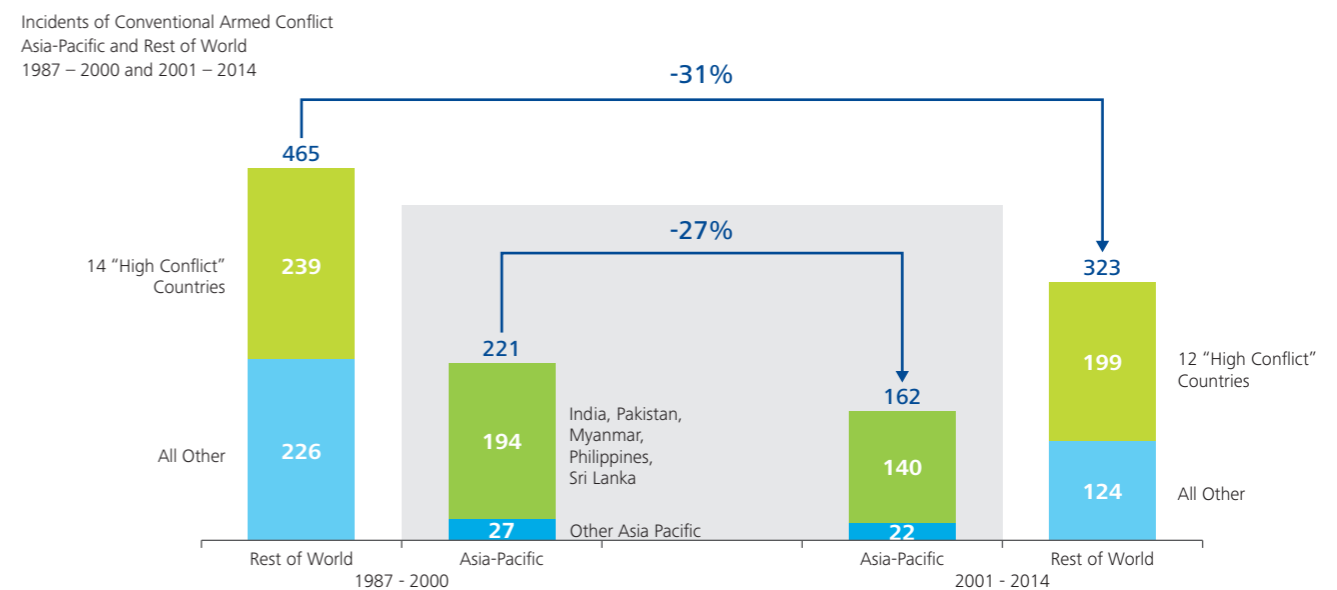
Conventional armed conflict continues to decline in the Asia-Pacific region, and is increasingly confined to a few chronic high-conflict areas. But economic growth and development have raised the importance of ocean-going commerce across the region, leading to changes in defense strategy and a significant new buildup in naval forces, as spending on surface combatants and submarines accelerates

ahead of overall defense spending. Potential conflicts in other regions may be primarily land-based, but in the Asia-Pacific region, the key challenges to peace and security are increasingly located at sea.

Land-Based Conflict Declining, Concentrated in Western Asia

Cases of conventional armed conflict have declined since the mid-1980's in the Asia-Pacific and worldwide. Between 1985 and 2000, some 468 armed conflicts occurred outside Asia-Pacific, with sixty percent of these conflicts occurring in 18 chronic high-conflict countries in Africa, the Middle East, and the former Soviet Union. In the same period, 190 armed conflicts occurred in the Asia-Pacific countries, with 72 percent of these conflicts involving India, Pakistan or Myanmar. From 2001 – 2014, the number of incidents of conflict in Asia-Pacific fell by 23 percent compared to the previous fifteen years, and 80 percent of these occurred in India, Pakistan or Myanmar. Only 30 incidents of armed conflict outside these three countries have taken place in Asia-Pacific since 2001 (see Figure 5 below). Land-based conventional conflict has declined sharply in Asia-Pacific, and is a concern mainly in India and Pakistan.

Figure 5: Incidents of Conventional Armed Conflict²³



Economic Development Drives Increased Maritime Commerce, And Piracy

As the Asia-Pacific economies have developed their manufacturing and export capabilities, ocean shipments of goods have become increasingly important to sustained growth and development. Container shipment volumes increased by over 180 percent between 2001 and 2013²⁴. More than half the world’s total container shipment volume now originates in Asia-Pacific, with 27 percent from China alone. (See Figure 6 below). China’s share of the global total has increased sharply since 2001 and appears likely to rise further.

But this increased trade is moving through narrow sea lanes, posing risks for countries dependent on free movement of commercial goods over the world’s oceans. About 30 percent of world trade already passes through the Strait of Malacca each year, while some 20 percent of worldwide oil exports pass through the Strait of Hormuz²⁶. Tanker traffic through the Strait of Malacca leading into the South China Sea is already more than three times greater than Suez Canal traffic, and well over five times more than the Panama Canal²⁷. China and all Asia-Pacific nations have substan-

tial economic interests in maintaining access to the key commercial routes through the Western Pacific, South China Sea, East China Sea and Indian Ocean.

As the growing Asian economies have expanded commercial traffic through the Pacific and Indian oceans, the regional pattern of piracy has shifted from Somalia, the Gulf of Aden and the Red Sea toward the Strait of Malacca and the Indian Ocean. These shifting patterns are the result of effective counter-piracy operations.

Total worldwide incidents of piracy declined by forty-five percent from 2010 to 2014, but incidents in Asia-Pacific increased by nearly thirty percent, from 142 to 183, mostly in the Malacca Strait and Indian Ocean²⁸. The shift from Somali pirate activity around the Horn of Africa, and toward the Strait of Malacca, appears to be driven by two international policy measures – increased presence, including escort patrols, by global navies; and the practice of stationing armed guards on commercial ships transiting high-risk areas around Somalia, the Gulf of Aden and the Red Sea.

Figure 6: Global Maritime Shipping Container Volumes²⁵

Global Maritime Shipping Container Volumes by Source
Twenty-Foot Equivalent Units (TEU)
2001 vs. 2013

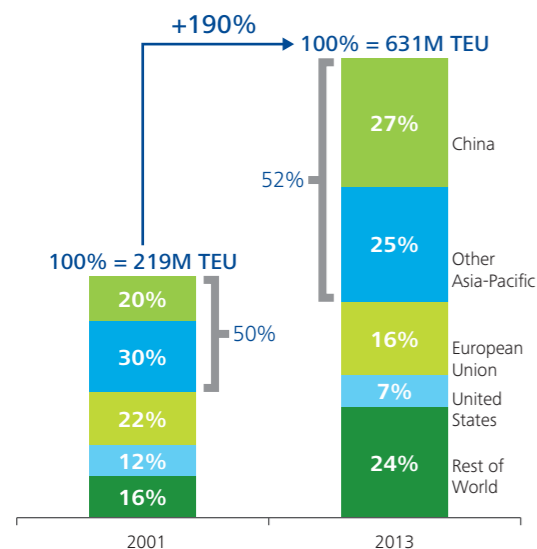
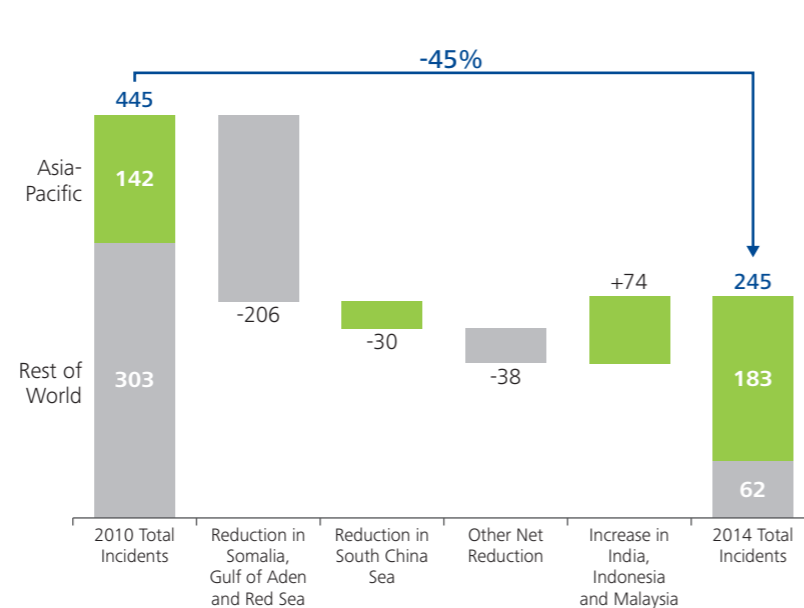


Figure 7: Global Incidents of Maritime Piracy²⁹

Global Incidents of Maritime Piracy
Total Incidents and Sources of Change
2010 vs. 2014



In December 2015, a group of shipping industry organizations agreed to reduce the size of the “High-Risk Area” for Indian Ocean piracy³⁰, because of the significant reduction in Somali pirate attacks since 2010 – 2012. This decline followed the interception of pirate vessels by warships which had been alerted to the presence of the pirates by the private maritime armed security teams present on the merchant vessels being attacked by the pirates³¹.

But success against the Somali pirates has led to increased activity in the Malacca Strait as criminal organizations shifted operations away from well-protected sea lanes in the Gulf of Aden and Red Sea. Attacks in Indonesian waters and the Malacca Strait have increased. Partial figures for 2015 indicate that these high-traffic areas have seen doubling in attacks over the first months of 2014³².

Maritime Commerce Drives Asia-Pacific Naval Buildup

China’s position as the region’s largest economy, and its substantial reliance on access to ocean routes for international trade have led to substantial changes in Chinese defense policy. These changes, in turn, are generating policy responses from other Asia-Pacific governments, leading to a significant buildup of naval capabilities in the region.

China undertook a broad revision of its defense strategy in 2015³³, citing for the first time a commitment by the PLA Navy (PLAN) to gradually shift its focus toward open-sea operations, including strategic deterrence and counterattack, maritime maneuvers, and joint operations at sea, comprehensive defense and comprehensive support. This shift toward open-sea operations can be seen in at least four

maritime practices undertaken by China – territorial claims to provide a basis for securing sea lines of communication, new overseas bases to enhance support for open-sea operations, continued development of carrier-based aviation and an extensive submarine construction program.

China’s territorial claims to Taiwan (Republic of China or ROC) and ROC-controlled islands, islands in the South China Sea (Paracels and Spratley Islands), and the Senkaku/Diaoyu islands claimed by Japan have not changed substantially since the 1970’s³⁴, but have gained importance as China has undertaken construction and reclamation efforts to support future bases. As these claims continue to be pressed, China has announced plans to build logistical support facilities in Djibouti³⁵, referring to it as a resupplying position for its ships participating in United Nations anti-piracy missions.

China’s new strategy includes expansion of carrier-based aviation, as the PLA Navy announced design and construction of a second aircraft carrier intended to enhance China’s ability to “safeguard sovereignty over territorial seas and over maritime rights and interests³⁶.” The Chinese naval construction program is also believed to include over 30 new diesel-electric attack submarines – or about one-third of all conventional submarine deliveries planned worldwide over the next ten years³⁷.

Counter-piracy has been a key element of China’s revised naval strategy. The Chinese navy began operating in the Gulf of Aden in 2008, and has rotated more than 16,000 sailors and more than 30 surface combatants – nearly half of China’s major surface fleet – through escort and anti-piracy missions³⁸.

Regional Navies Adjust To Expanding Commerce, and To China's Emerging Capability

With a view toward their own reliance on maritime commerce, as well as toward China's growing naval resources, Asia-Pacific defense ministries are undertaking substantial programs to expand their fleets – especially submarine fleets – and enhance counter-piracy capabilities.

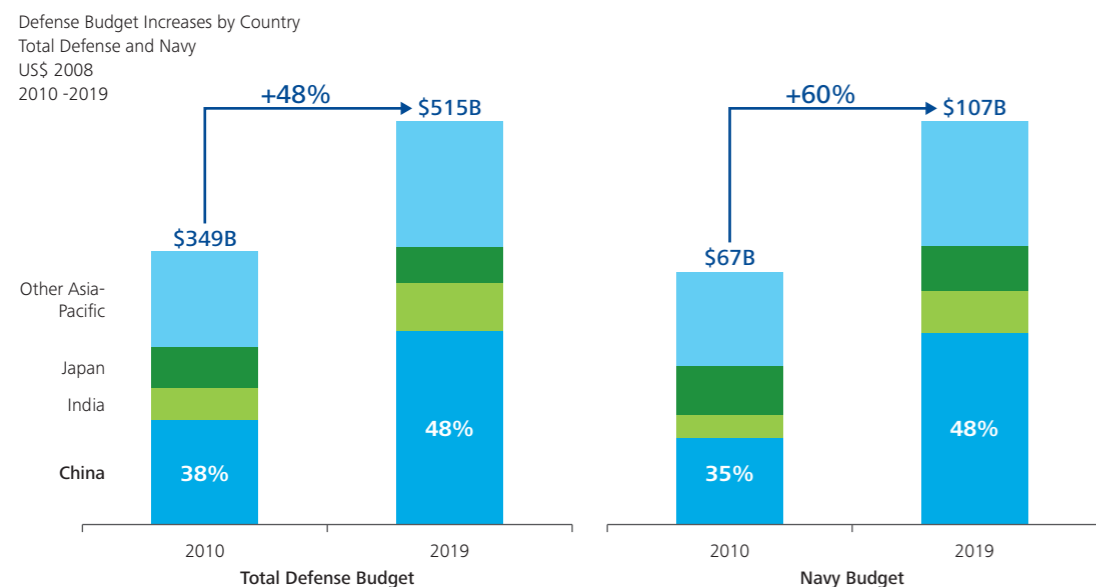
Naval budgets are projected to grow by more than 60 percent above their 2010 levels by 2019, as naval construction programs drive higher spending. (See Figure 8 below). Most countries in Asia-Pacific have announced new or expanded submarine programs. The most expensive of these may be Australia's Future Submarine Program, in which Australia plans to spend over \$30 billion (US) to acquire and operate a fleet of eight conventionally-powered submarines³⁹. Taiwan announced its intention to design and build a fleet of new submarines to replace existing 70-year old boats⁴⁰. The Indonesian Navy has announced plans to procure two new submarines from Russia as it seeks to bolster its limited submarine force. Current plans are for Indonesia to acquire 12 diesel-electric submarines by 2024⁴¹. Japan is continuing with construction of its advanced Soryu-class submarine fleet by adding to the six boats already in service. South Korea added a sixth conventional submarine to its fleet in 2015, and announced the formation of an integrated submarine fleet command structure⁴². Pakistan announced in late 2015 a

deal to acquire 8 new attack submarines from China⁴³, and India announced plans to design and build a new class of nuclear-powered attack submarines, with an initial commitment for six boats⁴⁴. The Indian submarine program complements a substantial naval buildup, as India currently has some 47 new vessels under construction⁴⁵.

Expanding Asia-Pacific navies have contributed substantially to the successful reduction of Somalian-based pirates, and matched China's expanded counter-piracy capabilities. The Indian Navy has been deployed in the Gulf of Aden and off the coast of Somalia continuously since October 2008, escorting over 3000 vessels with no hijackings⁴⁷. Japan, which relies heavily on commerce moving through the Indian Ocean, began anti-piracy naval and air patrols in 2009, with two escort vessels and patrol aircraft operating in the Gulf of Aden⁴⁸. Malaysian and Indonesian navies formed a new counter-piracy rapid deployment team, including helicopter-equipped special operations and rescue capabilities based in Johor Baru⁴⁹. While improving access to commerce, Asia-Pacific navies are also gaining experience operating in remote waters and alongside foreign fleets.

Economic development and growth have raised the importance of maritime commerce, and the Asia-Pacific defense ministries are responding with substantial increases in their naval capabilities.

Figure 8: Defense Budget Increases 2015 - 2019⁴⁶



What Rules Apply? North Korea and Asia-Pacific Nuclear Weapons

North Korea claimed to have tested a hydrogen bomb in January 2016⁵⁰, following an ejection test of a submarine-launched missile⁵¹. Initial reports cast doubt on both results⁵² and the tests were followed by condemnations from the UN⁵³, China⁵⁴, and others.

Whether the recent tests were successes or failures, and whether North Korea has eight warheads⁵⁵ or more, North Korea's nuclear program appears aimed at acquiring land and sea-based nuclear capabilities. While North Korean weapons pose inherent dangers, the longer-term defense challenge in Asia-Pacific may be the lax regional framework for managing development, spread and control of nuclear weapons and missile technology.

Three international agreements allow governments to better control nuclear weapons, contributing to long-term predictability. These agreements include the Comprehensive Test Ban Treaty (CTBT)⁵⁶, the Treaty on Non-Proliferation of Nuclear Weapons (NPT)⁵⁷, and the Missile Technology Control Regime (MTCR)⁵⁸. North Korea operates outside these agreements, having withdrawn from the NPT in 2003. But India and Pakistan are also non-signatories to the NPT and CTBT, and only South Korea, Japan, Australia and New Zealand are among the Asia-Pacific partners to the MTCR.

Nuclear stability in Asia-Pacific appears likely to remain elusive as individual states, including North Korea, continue to operate outside the international framework to regulate warhead and delivery technology.

Terrorism: Managed Risks, Concentrated Violence

Asia-Pacific defense ministries are building global mobility, intelligence and special operations capabilities, as economic interests and globally-mobile citizens require protection from terrorist violence.

Counter-Terrorism: Maintaining Control, Building Capability

Between 2001 - 2014, terrorist attacks in 128 countries killed over 165,000 people. More

than 100,000 of these deaths – about sixty percent – occurred in seven Middle East and African nations⁵⁹. The Asia-Pacific countries included in this report accounted for fewer than twenty percent of terrorist-related deaths. Although most global terrorism occurs outside Asia, some 22,670 people were killed in terrorist attacks in Asia-Pacific countries between 2001 and 2014, with over ninety percent of these deaths in four countries – Pakistan, India, Philippines and Thailand.

Table 1: Asia-Pacific Cumulative Deaths from Terrorism 2001 – 2014

Country or Region	Total Deaths from Terrorism 2001 - 2014 ⁶⁰	Percent of Total Asia-Pacific Terrorism Deaths
Pakistan	9,504	42%
India	5,753	25%
Philippines	2,687	12%
Thailand	2,842	13%
Other Asia-Pacific	1,884	8%

Deaths from terrorism in these four Asia-Pacific countries were nearly four times higher in 2014 than in 2001 – a slower increase than the worldwide upward trend in terrorism, but a much faster increase than the rest of Asia-Pacific, as shown in the figure below. Outside the four high-terrorism countries, annual terrorist-related deaths in Asia-Pacific actually declined between 2001 and 2014.

The four high-terrorism countries have responded with military, police and diplomatic measures to reduce terrorist activity.

Pakistan’s government, acting on the view that terrorism is closely linked to the Taliban’s activities in Afghanistan, has begun to facilitate direct engagements between the Kabul government and Taliban leaders, and has expanded counter-terrorism intelligence-sharing with the United States⁶². India’s National Investigation Agency and elite National Security Guards (NSG) have added special-operations capabilities to address terrorist incidents⁶³. Philippines’ army recently completed an extensive counterterrorism offensive backed by the United States that reportedly killed 26 Abu Sayyaf gunmen in Basilan⁶⁴, and Thailand’s Internal Security Operations Command (ISOC) has announced an effort to increase the integration of counter-terrorism efforts across

units of the Thai government⁶⁵.

While the four high-terrorism countries focus on internal measures to manage terrorist violence, China is taking both internal and external measures, with a view toward its growing interests in high-threat areas abroad, including Africa and South America. China’s first anti-terrorism law⁶⁶, passed in December 2015, signals the government’s intention to treat terrorism as a national security priority at home and abroad. The new law expands internal counter-terrorism efforts by requiring technology companies to assist the government with encryption keys for internet communications, and by requiring local governments to create counter-terrorism agencies supervised by the national government. The law also authorizes the People’s Liberation Army and People’s Armed Police to send personnel overseas for counter-terrorism missions with the approval of China’s State Council and agreement from the concerned foreign governments. From 2001 – 2014, China experienced 105 terrorist incidents, with 688 reported killed⁶⁷. This total can be compared with terrorist-related fatalities during the same period in the West Bank/Gaza (678), Turkey (681) and Egypt (803).

Japan, which has not experienced a foreign terrorist attack in this century, is also expanding

overseas-oriented counter-terrorism capabilities. In December 2015, the government launched a specialized counter-terrorism intelligence unit within the Ministry of Foreign Affairs⁶⁸, with foreign posts in Jordan, Egypt, India and Indonesia. The new unit formed in response to the killing of two Japanese hostages by Islamic State in Syria, and in anticipation of the 2020 Tokyo Olympic Games.

Terrorism has led Asia-Pacific defense ministries to pursue more global capabilities in intelligence, mobility and special operations. The challenges of economic development are pressing Asia-Pacific defense ministries to develop increasingly global perspectives and skills.

Migration: Challenges in China, Myanmar and Pakistan

World attention has been riveted to the human tragedy of the Syrian diaspora, and terrorist attacks in France and the United States highlight the potential defense and security implications of large, uncontrolled cross-border migrations. While the ongoing Syrian and African refugee crises present growing concerns for defense planners in the West, forced cross-border migration in Asia occurs on a smaller scale, and is concentrated in China, Pakistan and Myanmar. Asian policymakers view

cross-border migration as presenting humanitarian and economic challenges, although increased attention from Islamic State has highlighted the potential security challenges of these movements.

Fewer than ten percent of global cross-border refugees originate in the Asian countries covered in this report – about 1.5 million people in 2014. But the total population of Asian refugees increased by 63 percent between 2008 and 2014⁶⁹. Pakistan, Myanmar and China accounted for all of the net increase in refugee populations, reflecting three ongoing crises. (See Figure 10 below).

Afghan migrants from Pakistan created the largest single increase in Asia-Pacific refugee movements between 2008 and 2014, as Afghan refugees continued moving across the Afghanistan/Pakistan border, and moving out of the region to Greece, en route to other European nations. Afghan migrants became the second-largest group of refugees and migrants arriving in Europe in 2015, behind Syrians. Pakistan’s defense officials continue to encourage Afghan refugees to leave, because of economic pressures and because of the perception that the refugees may allow terrorist organizations to mask movements inside Pakistan⁷¹.

Figure 9: Terrorism-Related Deaths by Region⁶¹

Change in Terrorism-Related Deaths by Region
2001 – 2014
2001 = 100

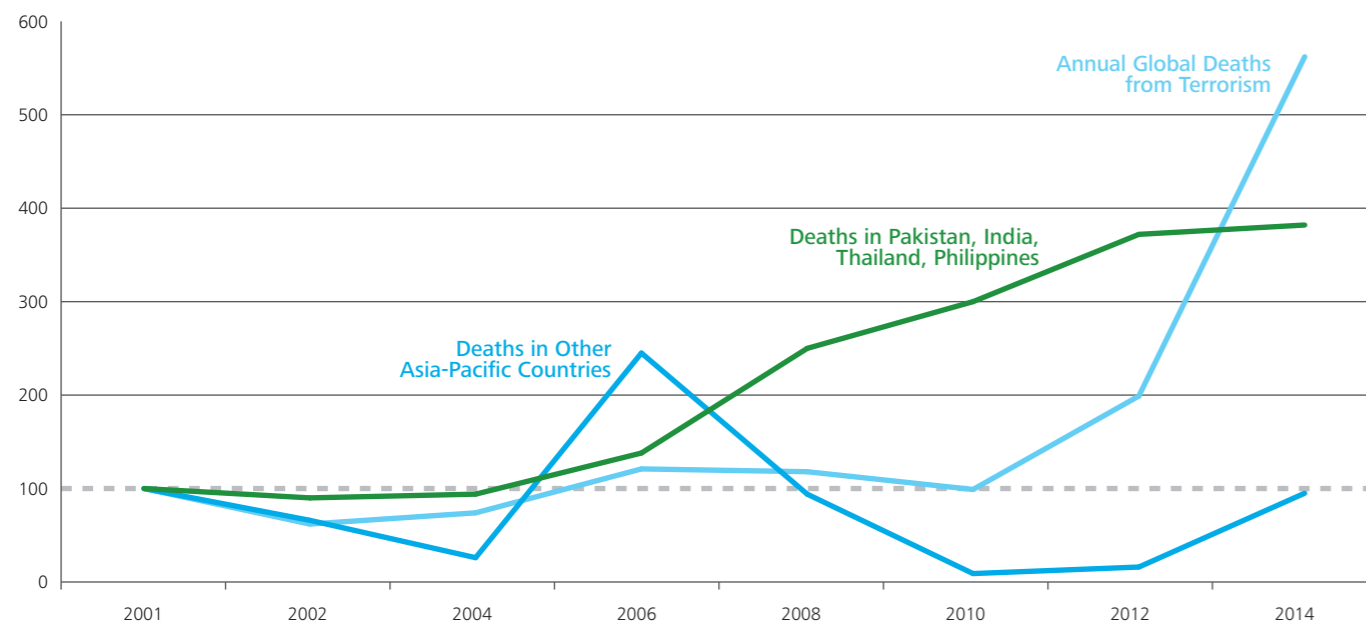
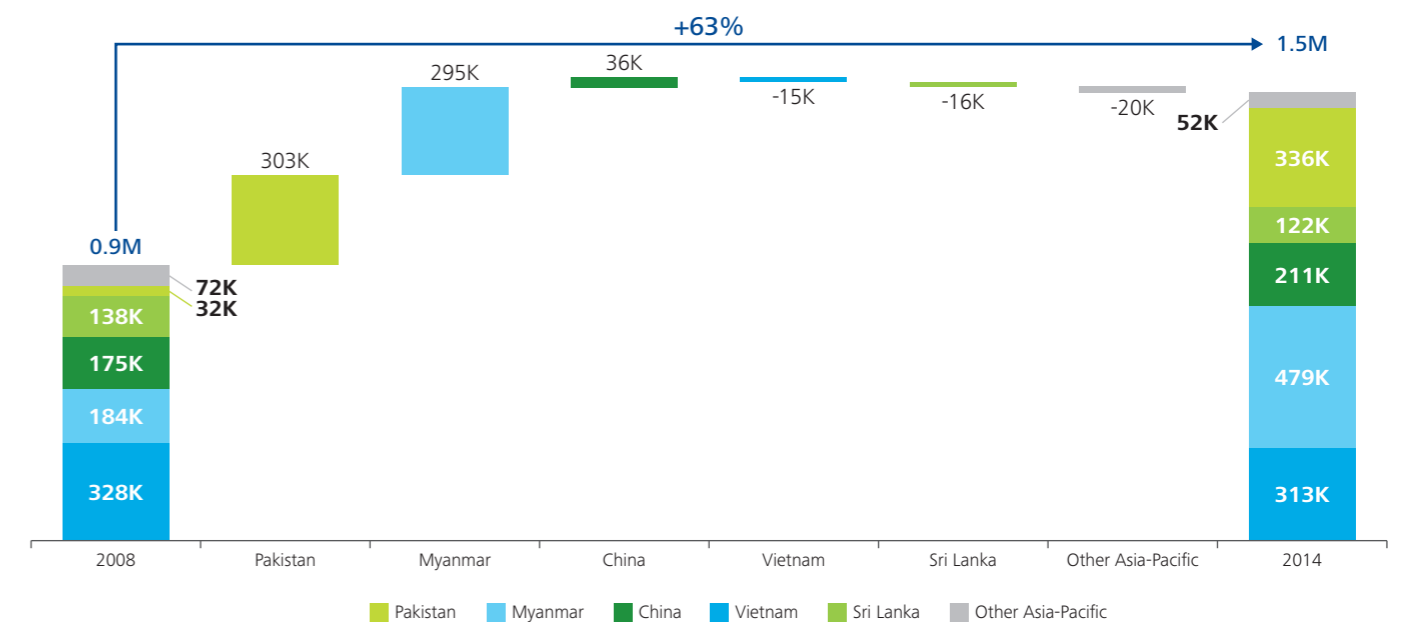


Figure 10: Asia-Pacific Refugees by Country of Origin⁷⁰

Refugees by Country of Origin
Refugees (including refugee-like situations)
2008 vs. 2014 Actual



The Rohingya, a Muslim ethnic minority group from Myanmar, formed the second-largest increase in refugee populations in Asia. Large-scale attacks on Rohingya communities in 2012 killed hundreds, and spurred migration into Bangladesh, as well as movements by boat across Asia. Security concerns led Thailand, Malaysia and Indonesia to refuse entry to Rohingya refugees, although Malaysia and Indonesia subsequently admitted refugees for limited periods⁷².

Because the Rohingya are Muslim, their continued plight has attracted attention from the terrorist group Islamic State, which has publicly announced its intention to focus on Myanmar as a priority for future operations. If this occurs, then the refugee experience of the Rohingya may push this population toward Islamic extremism, presenting a new defense challenge in the region⁷³.

Tibetan refugees moving from China into India represent the third source of increased migration in Asia-Pacific. Movements from Tibet into India and elsewhere began in the 1950's and have continued as China has tightened restrictions on internal movements by ethnic Tibetans⁷⁴.

While forced cross-border migration in Asia-Pacific is dwarfed by the crises in Europe and Africa, the potential impact of these movements on regional security is substantial. Should fundamentalist terrorist groups acquire a foothold by exploiting ethnic and religious dissatisfaction, the security consequences for the region could be costly and difficult to manage.

Cyber: Growing Vulnerability of Asia's "Cyber Five"

Asia's rapid economic development has pushed citizens, businesses and government agencies onto the internet, creating new risks and growing vulnerability to cyberattack. But the internet push has not affected Asia-Pacific countries equally, and the emerging Asian cyber environment presents unique challenges for defense policy makers and their counterparts in intelligence and law enforcement.

Similar Policy Approaches: Security At Home; Collaboration Abroad

Broadly similar cyber policy initiatives are underway across the region, as governments

take action to bolster domestic information systems security while engaging international partners for intelligence sharing, improvements in threat identification and protection of critical infrastructure.

Japan's emerging cyber strategy recognizes the growing risk of cyberattacks against infrastructure, as well as attacks on military targets. Because Japan's Self-Defense Forces are integrated with the civil government, Japanese cyber policy is based on a "whole-of-government" approach, and is also closely coordinated with US cybersecurity efforts. Japan and the US made explicit commitments to expand collaboration on cyberspace matters in the 2015 revision to the Guidelines for Japan-US Defense Cooperation⁷⁵.

China's cyber policy combines internally-focused measures to increase security of computer systems and insure government access to key systems with externally-focused measures to share information with international partners. Chinese law⁷⁶ calls for strengthened management over the internet and tough measures against online attacks, theft of secrets, and the spread of illegal or harmful information. A new cybersecurity law places additional requirements on network operators, including government inspection of networks and security measures. The new law does not require a government "backdoor" into sensitive systems, but does require private companies to assist the government with decrypting information. Chinese law requires that core information technology, critical infrastructure and important systems and data must be "secure and controllable" to protect Chinese sovereignty over its cyberspace.

China's efforts to collaborate on cyber defense include an agreement⁷⁷ with the US on information-sharing related to cyberattacks, as well as a program of joint exercises to clarify cyberattack response procedures by the US and Chinese governments. China participates with Japan and South Korea in a Trilateral Cyber Policy Consultation⁷⁸ focusing on coordination of cyber strategies and policies, discussion of international norms and confidence-building measures in cyberspace, and possible areas of trilateral cooperation.

Australian cyber policy is under revision, with a

new cyber strategy set for public release in 2016. Australia's approach⁷⁹ includes a newly-created government-wide Cyber Security Centre to integrate operational cyber capabilities, as well as bilateral cyber-related dialogues with China, Korea, India and New Zealand.

India's cybersecurity policy⁸⁰ includes commitments to protect critical infrastructure, as well as to establish a corps of 500,000 cyber professionals by 2018. India's bilateral cyber initiatives include the US-India Cyber Dialog⁸¹, which met in August 2015 and discussed cyber issues including cyber threats, enhanced cybersecurity information sharing, cyber incident management, and norms of state behavior in cyberspace. The dialog identified a variety of opportunities for increased collaboration on cybersecurity capacity-building.

South Korea is doubling the size of its cyber command and is reported to have increased spending on cyber-related defense by fifty percent since 2009⁸².

Widening Gap in Cyber-Vulnerability: The Asia-Pacific "Cyber Five"

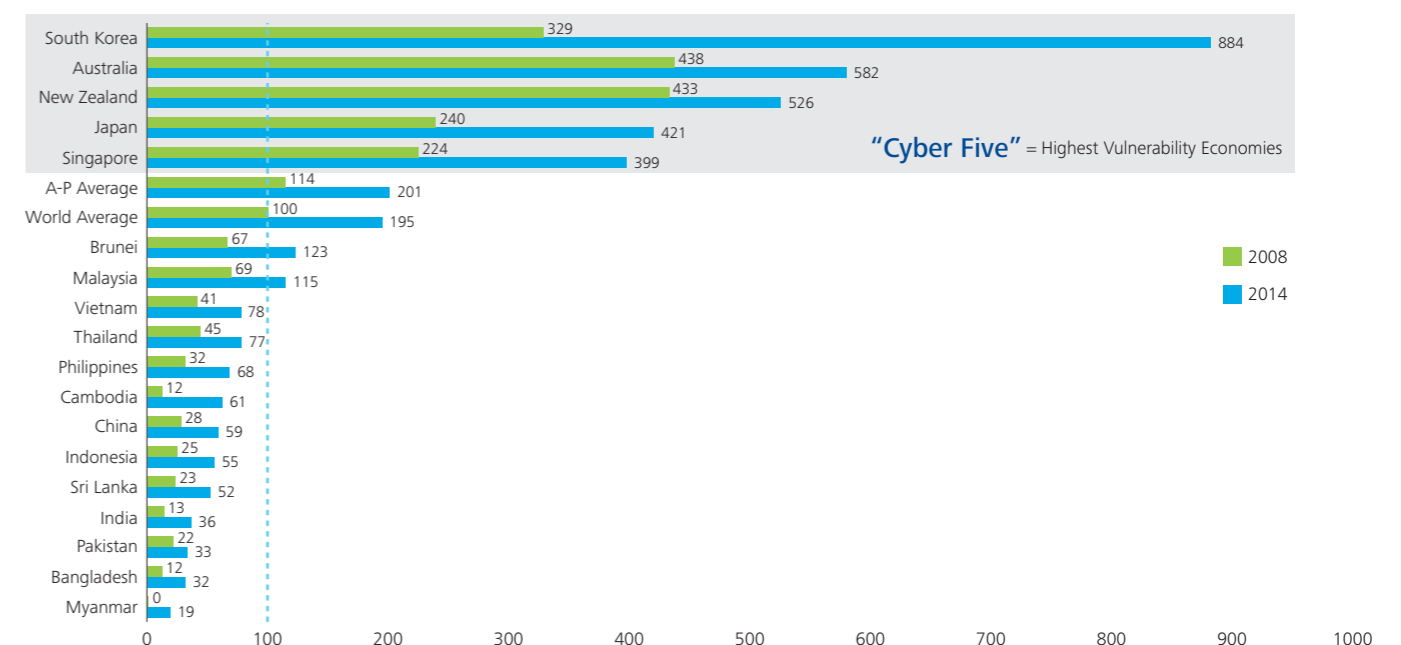
While Asia-Pacific policy approaches to cyber security appear broadly similar, these economies are not equally vulnerable to cyberattack. In

fact, five Asian economies appear highly vulnerable to attacks against information systems, while the most populous nations – China and India – appear much less vulnerable. The widening cyber-vulnerability gap may create incentives for less-vulnerable countries to adopt a more aggressive stance – whether covert or overt – in cyberspace.

Vulnerability to cyberattack can be estimated and compared by examining how extensively each economy relies on internet-based interactions. Deloitte compiled historical data from the World Bank's World Development Indicators⁸³ to develop a Cyber Vulnerability Index using each nation's rate of mobile cell subscribers, number of secure internet servers, fixed broadband subscribers and rate of internet use. While the index does not include key aspects of national vulnerability and risk, including (for example) the level of security and countermeasures in place, the number of military and government systems exposed to the internet, and many other potentially useful variables, the index provides a straightforward, publicly-verifiable basis for rough comparison of changing national vulnerability over time. The Cyber Vulnerability Index assigns a value of 100 to the 2008 global average as the baseline for comparison. (See Figure 11 below).

Figure 11: Cyber Vulnerability Index⁸⁴

Cyber Vulnerability Index
Country Scores 2008 and 2014
2008 Global Average = 100



Five Asia-Pacific economies -- the "Cyber Five" -- are the most heavily dependent on internet-based interactions: South Korea, Australia, New Zealand, Japan and Singapore. As a group, the Cyber Five are nine times more vulnerable to cyberattack than the other thirteen Asia-Pacific economies for which data are available. South Korea's rapid move toward ubiquitous wireless access propelled it to the highest score for cyber risk in 2014.

The wide gap in vulnerability between the Cyber Five and the other Asia-Pacific economies may point toward an emerging defense challenge. China (2014 Cyber Risk Score 59) and India (26) are far less vulnerable to cyberattack than the Cyber Five, but these two lower-vulnerability nations, and other Asia-Pacific nations, have committed to building advanced cyber capabilities. The lower-vulnerability nations may therefore be prepared to behave more aggressively in cyberspace, because their potential adversaries are much more exposed to internet-based damage.

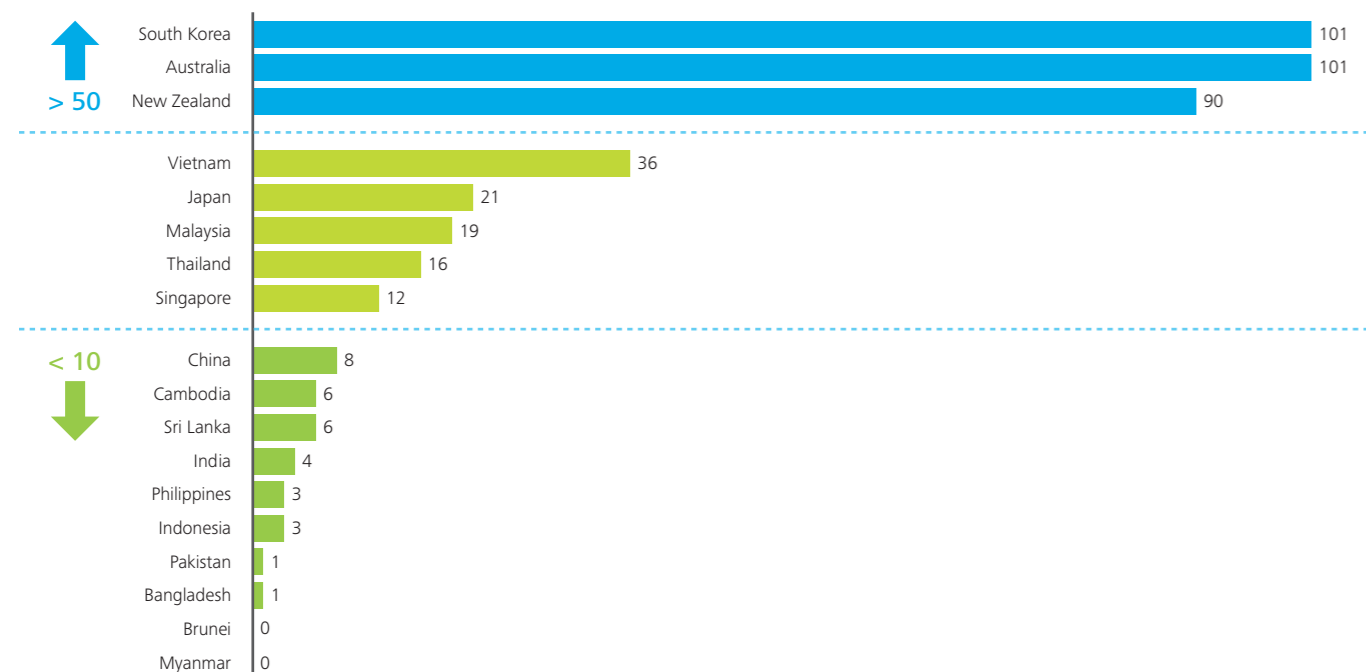
Industrial Control Systems (ICS) (not included in the Cyber Index) demonstrate how the Cyber Five present much higher vulnerability than other Asia-Pacific economies. These systems include computers used to manage building

and factory automation, commercial infrastructure and other key economic resources. While ICS are being widely adopted across Asia⁸⁵, Korea, Australia and New Zealand present more than ten times more internet-exposed ICS than China or India per unit of economic output. All of the Cyber Five are at least three times more vulnerable than India to attacks against ICS (see Figure 12 below).

The disproportionate vulnerability of the Cyber Five to economic damage from cyberattacks is a product of economic development, and may decline over the long term as the other Asian economies increase their reliance on internet-based systems. In the near term, the vulnerability gap indicates that collaborative approaches may not be adequate to deter attacks against internet-based infrastructure. Cyber defense policies that rely on quid pro quo retaliation in cyberspace may work for the less-advanced economies, but the Cyber Five are likely to require other policy approaches. Threatening disproportionate or unpredictable retaliation for cyberattacks, including responses outside cyberspace (for example, trade measures or other economic sanctions) may be essential elements of a rational cyber policy for the highly-vulnerable Cyber Five.

Figure 12: Internet-Exposed Industrial Control Systems by Country⁸⁶

Internet-Exposed ICS by Country
Exposed IP Addresses Per \$100B GDP
December 14 2015



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