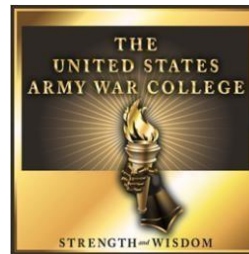


Natural Disasters in the Asia-Pacific: U.S. Interests, Challenges, and Opportunities

by

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Abstract

The Asia-Pacific has the most natural disasters than any other region in the world. It is also an area of increasing economic growth and urbanization. The devastating costs associated with natural disasters have direct and indirect implications, not only for the region, but also for the United States. As the U.S. shifts its focus to Asia, it is essential to understand and mitigate the effects natural disasters have in the Asia-Pacific in order to promote stability and protect U.S. interests. This paper will examine the causes of natural disasters in the Asia-Pacific, assess the costs associated with these events, and link how environmental catastrophes in the region affect the United States and its interests in the region. In addition, it will provide recommendations on how the U.S. government can better support endeavours to build resilience against the effects of natural disasters with the goal of maintaining stability and security in the Asia-Pacific, and ultimately in the United States.

Natural Disasters in the Asia-Pacific: U.S. Interests, Challenges, and Opportunities

... if there's one thing I tell everybody that comes to work for me, every commander, I said, "While you're here, you may not have a conflict with another military, but you will have a natural disaster that you have to either assist in or be prepared to manage the consequences on the other side." And that has been true every year.

—Admiral Samuel J. Locklear III¹

According to the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), Asia and the Pacific are the most disaster-prone regions in the world.² "Since 1970, the regions have been hit by more than 5000 disasters causing more than two billion fatalities and affecting the lives of more than six billion."³ The Asia-Pacific is particularly vulnerable due to the rise of populations and economic growth, and the function the region plays in the world's global security environment. It is vital to understand how natural disasters are affecting the Asia-Pacific, the mechanisms in place to counter the negative effects of such disasters, and what measures can be implemented to ensure security is maintained, not only for the region, but also for the security and stability of the United States.

This paper will examine the main underlying causes of natural disasters in the Asia-Pacific, assess the costs associated with these violent events, and link how environmental catastrophes in the Asia-Pacific affect the United States and its interests in the region. Furthermore, it will present the processes, opportunities, and challenges of current U.S. involvement in disaster relief in the region. Finally, it will take a fundamental look at existing international and regional disaster management mechanisms in the region and provide recommendations to how the U.S. government can support endeavours to build resilience against the effects of natural disasters with

the goal of maintaining stability and security in the Asia-Pacific, and ultimately in the United States.

Main Causes of Natural Disasters in the Asia-Pacific Region

Scientists, researchers, and institutions around the world are divided in their assessments of the underlying causes of global warming. Some, like the Intergovernmental Panel on Climate Change, provide statistical evidence that human activities and recent anthropogenic emissions of greenhouse gases are the main causes of climate change.⁴ Others claim that there is no scientific proof that human emissions of carbon dioxide are the dominant cause of global warming and that the climate changes observed in the last decades are the natural processes observed on Earth throughout the millennia.⁵ Despite the disagreements on the underlying causes, the fact that warming of the climate occurs is unequivocal and many of the recently observed changes on the globe are unprecedented over decades to millennia. “The atmosphere and oceans have warmed, the amounts of snow and ice have diminished, and the sea level has risen.”⁶ These changes have impacted natural and human systems across the globe in many ways, to include access to water and food resources, changes in seasonal activities and migration patterns, and shifting in a species’ geographical ranges and interactions.⁷ One of the most visible changes attributable to global warming is an increase in extreme weather and climate events that have been observed since about 1950. Natural disasters have been increasingly violent and unpredictable, affecting large swatches of territory and often more than one country simultaneously. Among all the regions around the world, Asia continues to be the most affected continent, with more than 62 per cent of deaths caused by environmental disasters and 89 per cent of the people affected.⁸ According to the research undertaken

by the Asian Development Bank, there is a body of scientific knowledge which suggests that there is a link between global warming and increasing natural disasters in Asia and the Pacific.⁹ In addition to climate warming, there is another aspect to consider in regards to natural disasters in the region – tectonic shift.

The Asia-Pacific region has been, and remains, highly susceptible to environmental disasters due to its unique geological factors. The Ring of Fire, a string of volcanoes and sites of seismic activity that runs around the edges of the Pacific Ocean, is responsible for around 90 per cent of all earthquakes on Earth, and dotted with 75 per cent of all active volcanoes on Earth.¹⁰ The large numbers of earthquakes that occur in the area are caused by overlapping of the oceanic and the continental plates, which has made the Asia-Pacific region highly susceptible to natural disasters for millennia.

Finally, there are many demographical, social, economic, and environmental factors that determine the vulnerability, exposure, and impact of a disaster on a people or a country. Massive population growth in Asia has forced millions of people to move towards coastal areas and more marginal lands, making them more vulnerable to droughts, storms, typhoons and tsunamis.¹¹ Several major cities are situated near seismic fault lines and thus constantly exposed to earthquakes. Additionally, a number of the region's cities are located in the flood plain of major rivers, which makes them particularly vulnerable to flooding.¹² According to the climate change vulnerability index, all seven cities globally classified as at the "extreme risk" of exposure to natural disaster are in Asia.¹³ As assessed by the Asian Development Bank "natural disasters are now four times more likely to affect people in the region than those in Africa, and 25 times

more likely than those in Europe.”¹⁴ All the above listed causes make the Asia-Pacific region highly prone to environmental disasters.

Cost and Consequences of Natural Disasters

The analysis of disasters that occurred over the last few decades shows that economic losses from natural hazards have increased around the globe.¹⁵ As assessed by the Climate and Development Knowledge Network, vulnerability and exposure to natural disasters are dynamic and depend on various factors, to include economic, social, demographic, cultural, institutional, and governance. “Individuals and communities are exposed differently based on factors such as wealth, education, gender, age, class or caste, and health.”¹⁶ In that regard, disasters affect poor people the most. Socio-economic disparities are aggravating disaster factors, making poor people much more vulnerable to disasters, and trapping them in “a vicious circle of poverty.”¹⁷ As assessed by the World Bank, losses to disasters in developing countries are much higher than in developed countries in terms of percentage of gross domestic product (GDP). This can be attributed to low quality construction, poor building laws and codes, as well as competing development priorities, which take attention away from the risk emanating from potential natural events.¹⁸

With exponential population growth, increased urbanisation, and rapid economic development in East and South Asia, environmental disasters in the region affect a vast number of people and assets, significantly increasing human, economic, and security costs. Financially, in the last two decades Asia and the Pacific accounted for almost half of the estimated global economic cost of disasters in the world, which amounted close to US\$1 trillion. “While the region generated almost 25% of the world’s gross domestic

product (GDP) during 1980–2009, it accounted for 38% of global economic losses due to natural disasters in that period.”¹⁹

Direct impacts, in the form of deaths and damage to infrastructure, are the most visible costs of natural disasters. Economic losses however, are often less visible, and can range from years-long setbacks of GDP to negative impacts of life and livelihoods of local communities which are deeply felt by the affected societies. Natural disasters affect different sectors ranging from tourism, agriculture, transportation systems, up to changes in income, demand and supply, shifting terms of trade, increased inflation, etc. These implications are, in turn, negatively influencing not only national but also international trade, global supply chains, and development. The least visible impacts of natural disasters are the social impacts, to include short-term displacements, psychological setbacks, distress migration, and human trafficking.²⁰

Some research indicates that economic growth is related to the occurrence of armed conflict.²¹ Due to the complexity of armed conflicts and the huge number of variables that take part in the occurrence of the crisis, it is hard to identify a clear link between natural disasters and the occurrence of a conflict. However, it cannot be ruled out that long-term negative economic growth and destructive social consequences in the aftermath of natural disasters may lead to increased tensions and political changes in the affected countries, adding to the long-term costs of environmental events.

Finally, Asian countries are not the only ones affected by the negative costs of natural disasters occurring in the region. Due to global human, economic, and social connections and dependencies, many wide-range consequences are affecting the entire world, to include the vital interests of the United States. As stated by the Assistant

Secretary for East Asian and Pacific Affairs Daniel R. Russel, “the United States’ prosperity and Asia’s prosperity have been shown to be inseparable.”²² As U.S. business is the region’s biggest source of foreign direct investments, with over \$620 billion in investment stock in the region reported in 2013, the human, environmental and economic security of Asia remains a great importance for U.S. strategic interests.²³

U.S. Interests in the Asia-Pacific

In 2015, Secretary of State, John Kerry, stated:

...the reason I have made climate change a priority in my current role as Secretary of State is not simply because climate change is a threat to the environment. It’s because – by fueling extreme weather events, undermining our military readiness, exacerbating conflicts around the world – climate change is a threat to the security of the United States and, indeed, to the security and stability of countries everywhere. . . . We’re talking about the impacts on whole cities of unpredictable and uncontrollable extreme weather events. We’re talking about the impact on entire countries of fundamental shocks to the global agricultural system.²⁴

In January 2016, the Department of Defense (DoD) released DoD Directive 4715.21, which establishes policy regarding the assessment and risk management of the impacts associated with climate change.²⁵ Essentially, this directive guides the whole of DoD to identify and assess the effects of climate change, consider those effects during planning, and manage the risks associated with climate change in order to build resilience.²⁶ As already acknowledged, the effects of natural disasters in the Asia-Pacific can have a profound impact on the citizens and national interests of the U.S. as there is always the potential for disasters to significantly impact either economic, political, or social constructs. A nation or region can become completely overwhelmed to a point beyond which the governing body can effectively provide or manage. This has the potential to lead to instability in the region and possibly even conflict, which can further amplify the effects globally.

According to a CNA study, the main U.S. national interest in regards to the Asia-Pacific is to secure the region's economic prosperity and ensure a stable and peaceful environment.²⁷ In order to define exact U.S. interests in the Asia-Pacific, it is first necessary to understand U.S. national interest in general. As outlined in the 2015 National Security Strategy, the enduring national interests of the United States are: the security of the United States, its citizens, and U.S. allies and partners; a strong, innovative, and growing U.S. economy in an open international economic system that promotes opportunity and prosperity; respect for universal values at home and around the world; and a rules-based international order advanced by U.S. leadership that promotes peace, security, and opportunity through stronger cooperation to meet global challenges.²⁸ The 2015 National Security Strategy further elaborates and prioritizes top strategic risks to U.S. interests, which directly and indirectly relate to natural disasters in the Asia-Pacific. The priorities are, threats or attacks against U.S. citizens abroad and our allies; global economic crisis or widespread economic slowdown; severe global infectious disease outbreaks; climate change; major energy market disruptions; and significant security consequences associated with weak or failing states.²⁹ Therefore, natural disasters that significantly affect the Asia-Pacific region and the U.S. homeland in the Pacific, as well as U.S. allies and partners, have a direct impact on vital national interests.³⁰ There are three broad categories that encapsulate U.S. interests in the Asia-Pacific as they relate to natural disasters. They are security, prosperity, and a peaceful, rules-based international order based on American values.

Security

Providing for the security of American citizens and interests abroad is a top concern for the U.S. government. Although exact numbers are difficult to estimate,

approximately 800,000 American citizens live abroad in the Asia-Pacific region, and this figure does not represent the constant flow of American citizens traveling in and out of the region on a daily basis.³¹ It is important to understand that the protection of American citizens goes beyond the borders of the United States. A primary mission of the U.S. Armed Forces is to defend the Homeland and provide support to civil authorities. Inherent to this, it is also to assist in significant natural disasters.³² The U.S. military has maintained a foundation of stability and security in the Asia-Pacific for decades and this has become even more relevant as America shifts its focus to Asia.³³ U.S. relationships with its Pacific neighbors allow the U.S. to gain or enhance access in the region. This also can help lead the way for greater collaboration with Asian-Pacific nations. The increasing development of U.S., partner, and alliance relationships and capabilities helps the U.S. maintain and enhance stability. U.S. military presence and strategic alliances in the region have dissuaded conflict and afforded a path to stability for over 60 years.³⁴ However, as the Asia-Pacific region continues to grow in terms of population and economy, competition for resources and power has become a greater challenge. Any natural disruption to this inevitable trend has the potential to destabilize a nation or region and possibly lead to a failed state or conflict.

Prosperity

The Asia-Pacific is home to two of the three largest economies in the world, and a strong U.S. economy depends on peace, stability, and economic growth in Asia.³⁵ According to the U.S. State Department, the East Asia-Pacific accounts for over one-quarter of the global GDP, and the U.S. is the leading economic investor in the region.³⁶ America's exports alone account for some \$1.2 trillion in trade, which in turn helps sustain American jobs. It is estimated that exports of trades and services in 2012

accounted for as many as 2.8 million jobs for American workers.³⁷ U.S. foreign direct investment in the region supports jobs and economic growth, not only in the Asia-Pacific but also in the U.S., and highlights the critical importance the region represents to future U.S. investment in the economic growth and development of the Asia-Pacific.³⁸

A key component of U.S. prosperity is the ability to counter or prevent economic crisis or slowdown. The ability to maintain stability and nurture economic growth can be disrupted overnight with the onset of an environmental disaster. The balance can quickly shift from that of prosperity to that of calamity. The implications may be felt in various forms and range from foreign trade disruptions due to production or resource interruption, to investor and consumer declining confidence. Investing in natural disaster preparedness and resilience is one way to counter this challenge.

International Order

The U.S. is at the forefront of promoting a rules-based international order, and adherence to this system has been vital to promoting peace, creating stability, and generating prosperity in the Asia-Pacific.³⁹ Supporting and strengthening existing allies and partners also encourages the opportunities to build new partnerships and further contributes to the capacity building of nations. The main effect of this cooperation is greater stability, security, and opportunity in the region. In return, this supports and strengthens the U.S. ability to shape the regional environment and meet global challenges.

The Department of Defense helps maintain a rules-based international order by promoting adherence to international law and standards, which is one of its maritime objectives in the Asia-Pacific.⁴⁰ In order to protect the economic order, the Department of Defense engages to ensure free and open maritime access, which is not only vital for

unhindered trade and transportation in the region, but is also critical for unhindered access in the event of a crisis. This not only serves Asian-Pacific nations, which have long-benefitted from this practice, but also allows U.S. forces to respond to particular events when necessary.⁴¹ This is particularly crucial in cases of natural disasters when proper procedures, laws, and internationally recognised rules allow for the organization and correct coordination of assistance for prompt relief to the affected regions.

Additionally, there has been growing interest in learning from U.S. experience and established capabilities, especially in disaster response, that have resulted in joint exercises and training with Asian-Pacific nations. Despite the limited number of U.S. military units involved in such exchanges, Asian partners acknowledge to having gained unparalleled benefits and opportunities from such drills.⁴² This on the other hand gives the U.S. the ability to promote the international rule of law and the core values it represents.

U.S. Involvement in Disaster Relief in the Asia-Pacific

As previously mentioned, natural disasters that occur in the Asia-Pacific region are often negatively affecting areas that are of vital importance for U.S. security and prosperity. Additionally, due to global environmental and climate changes, the scope of disasters is becoming increasingly unmanageable by local communities or even single countries. The great human and economic losses are often overwhelming the affected nations, and in recent years, have led to increased requests for U.S. assistance. This occurred during significant natural disasters throughout the last decade including the Asian Tsunami in 2004, Operation Tomodachi in Japan in 2011, and the response to Typhoon Haiyan in the Philippines in 2013.⁴³

With a large number of environmental disasters occurring each year, it is clear that the U.S. government cannot respond to each and every international request. The response to foreign disaster relief operations requests is decided and led by the U.S. Department of State (DoS), which relies on the information provided by its regional bureaus and the U.S. Agency for International Development (USAID). The final decision is based on the three main criteria: the disaster must exceed the coping mechanisms of the host nation, the affected country must officially request U.S. assistance, and providing support must be in the strategic interests of the United States.⁴⁴

The main institution designed to administer foreign, non-military humanitarian activities is USAID, which was established by the Foreign Assistance Act of 1961.⁴⁵ Other actors, such as the Department of Defense, are in a supportive role. The need for military assets is determined in accordance with the international guidelines on the Use of Foreign Military and Civilian Defence Assets in Disaster Relief, also known as the “Oslo Guidelines.” According to the guidelines “military and civil defence assets should be seen as a tool completing existing mechanisms in order to provide specific support to specific requirements.”⁴⁶ In other words, “military assets should be requested only where there is no comparable civilian alternative” and it “must be unique in capability and availability.”⁴⁷ The U.S. military can be used in support of USAID selectively, and based on a U.S. government decision. However, due to rapidly evolving and unique situations, the process is still evolving and there were cases when a U.S. ambassador that resided in the affected country requested direct disaster relief assistance from the regional Combatant Commander, which was immediately granted.⁴⁸ When taking into consideration the total number of disasters occurring in the Asia-Pacific, the U.S.

military's assets are used sporadically. However, the unique capabilities of the military services deem them often necessary and essential for large scale and complex emergencies.⁴⁹

Although many governmental and non-governmental agencies have developed various capabilities including the ability to move large quantities of supplies by air and sea, or possess well established medical capabilities, the cases of large scale environmental disasters often require engagement of all available assets for the initial period of time in the direct aftermath of a disaster. In such cases, military logistics, medical, engineering, and other support often plays a crucial role. In most cases, the U.S. military gets involved during the early phases of a response and leaves after the situation stabilizes.⁵⁰ In cases where the affected area is complex and requires provision of basic security operations, the military can be requested to stay longer to provide protection.⁵¹

The unique capabilities that can be provided by the U.S. military include air and sea lift assets that can transport large number of personnel and cargo, distribution and supply-chain management logistics capabilities, "extensive debris-clearing and infrastructure-reconstruction capabilities, including engineering support; communications infrastructure for both military and non-military counterparts; and an abundance of emergency medical support."⁵² As the majority of the Asia-Pacific region lies in the U.S. Pacific Command area of responsibility (AOR), the U.S. Navy and Marine Corps are often the first units ready to respond and deploy in the aftermath of a disaster in the region. Assets and capabilities of U.S. Pacific Command make them well suited for rapid disaster response when necessary. They can "deploy and support

[themselves] without the need for functional facilities (airfields, ports etc.) at a destination that may be damaged or destroyed as a result of a disaster of contingency.”⁵³ These services can provide large amounts of clean water, quickly deliver supplies, equipment, and manpower, as well as arrange airborne surveillance, a key capability the military provides.⁵⁴ Additionally, Marine Expeditionary Units complement the U.S. Navy by providing resources such as manpower, airlift, and sealift.⁵⁵

These combinations of extensive military capabilities are unique and not easily replaceable, which often makes them a deciding factor in the success of a relief operation in complex environments. Consequently, in the last two decades, U.S. military units were part of more than 40 foreign humanitarian assistance (FHA) operations in or near the PACOM AOR.⁵⁶ The strategic rebalance to the Pacific will likely make such operations even more probable in the future.⁵⁷

The U.S. government has acknowledged the significance of DoD involvement in FHA operations through changes in the U.S. defense strategic guidance and priority shifts that highlight humanitarian assistance and disaster relief (HADR) as “one of the key areas for regional cooperation.”⁵⁸ One reason behind it is that FHA operations provide a range of strategic advantages as well as operational opportunities for the United States.

First, U.S. military involvement in FHA operations builds a better understanding of the causes and risks of disasters, and creates opportunities to improve coordination mechanisms between different components and commands, as well as other actors involved. It is also a chance to build stronger multilateral security relationships with

other countries' militaries, create mutual trust, and provide important real-life training opportunities for U.S. troops.⁵⁹ Second, a large, comprehensive and multi-faceted response of U.S. troops in disaster areas of Asia-Pacific paints a clear picture of America's capabilities and presents a show of force, which serves as a deterrent. As argued by authors of the Foreign Policy in Focus, "the response to disaster Operation Tomodachi was a perfect opportunity for the United States to demonstrate to China that an immediate U.S.-Japan joint military operation was possible."⁶⁰ Third, by taking part in humanitarian operations, the U.S. presents its military as a "global force for good."⁶¹ This kind of soft power diplomacy can not only lead to a more positive attitude towards the U.S. around the world, but it is also a way to legitimize the extensive U.S. military presence in the region. Finally, despite the fact that budgetary reductions may challenge the DoD's readiness to respond to future disaster relief operations, FHA can also be used as a way for the military to expand its role and present itself as a more needed and diversified force than previously assessed.

Despite the positive effects the use of the military can have on foreign disaster relief operations, its involvement in what is perceived 'a humanitarian domain' also raises criticism. First, there is a congenital reluctance of the humanitarian actors to accept military involvement during relief efforts due to the apparent differences in the character of the organisations, with the military not being perceived as impartial or neutral. Second, there is an issue of cost-efficiency and transparency, with military operations often exhausting limited budgets for humanitarian assistance activities.⁶² Third, the use of military satellite imagery, surveillance and reconnaissance technologies in support of disaster relief operations is criticised for providing U.S. troops

opportunity to gather additional intelligence, which in turn can lead to fear among host nations and create confusion of the real intentions of the operations.⁶³

International and Regional Disaster Response Mechanisms in the Asia-Pacific

Naturally, the United States does not operate independently in the Asia-Pacific region. The international community has long recognized the detrimental effects of natural disasters and has been working on developing the legal and operational basis for disaster relief operations. There are vast arrays of international agencies that provide help in one form or another, ranging from disaster preparedness to disaster recovery. The following initiatives are the leading mechanisms that have been developed, both internationally and regionally, to prepare against and counteract natural disasters in the region.

Hyogo Framework of Action (HFA)

In 2004, the United Nations General Assembly, concerned with the number and scale of natural disasters and their increasing negative and long-term impact on human, social, and economic development, adopted Resolution 58/214 - International Strategy for Disaster Reduction.⁶⁴ The resolution recognized the need to continue to develop a greater understanding of natural disasters and their socio-economic impacts, and to develop and implement policies and practices on risk mitigation and disaster management.⁶⁵ The resolution would pave way for the World Conference on Disaster Reduction, in Hyogo Prefecture, Japan, in January 2005. A key resolution of the conference was to establish the Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters.

The main purpose of the HFA was to create resiliency of communities and nations to by reducing vulnerabilities and risks to hazards associated with natural

disasters.⁶⁶ This ranged from policy development and implementation to technological advances. The strategic goals of the HFA were to: (1) integrate disaster risk considerations into sustainable development policies, planning, and programs at all levels, with a special emphasis on disaster prevention, mitigation, preparedness and vulnerability reduction; (2) develop and strengthen institutions, mechanisms, and capacities, in particular at the community level; (3) systematically incorporate risk reduction in emergency preparedness, response, and recovery programs.⁶⁷ Although the HFA is not a binding document, it is the only international framework that provides a strategic and comprehensive global approach to the challenge of reducing risks from natural disasters.⁶⁸

Sendai Framework for Disaster Risk Reduction 2015-2030

After completing the assessment and review of the Hyogo Framework for Action 2005-2015, and considering the lessons and experience gained during its implementation, the United Nations General Assembly adopted the Sendai Framework for Disaster Risk Reduction 2015–2030 during the Third United Nations World Conference on Disaster Risk Reduction, held in Sendai, Japan in March 2015.⁶⁹ The Sendai Framework for Disaster Risk Reduction will build upon the lessons and practices garnered from the previous 10 years. It gives nations an opportunity to adopt concise, focused, forward looking, and action-oriented framework for disaster risk reduction, complete the assessment and review of the implementation of the Hyogo Framework for Action 2005–2015, consider the experience gained through the regional and national strategies and plans for disaster risk reduction, identify methods of cooperation, and determine methods for the periodic review of the implementation.⁷⁰

ASEAN Agreement on Disaster Management and Emergency Response⁷¹

The ASEAN Agreement on Disaster Management and Emergency Response, or AADMER, is the first legally binding agreement in support of the HFA and affirms ASEAN's commitment to disaster preparedness and response.⁷² AADMER's roots began in 1976 when ASEAN recognised that the region was at high-risk to natural and human-induced disasters, negatively influencing the region's economic competitiveness, prosperity, food security, political stability, and quality of life of its peoples.⁷³ AADMER, signed in July 2005, and entered into force in December 2009, established disaster risk reduction and management as a priority, which enabled dedicated and proactive participation, and provided a regional framework for cooperation, coordination, technical assistance, and resource mobilisation in a holistic approach to disaster management.⁷⁴

AADMER's Work Program 2010-2015 translates ideas and intent into tangible lines of effort and work. At its foundation the Work Program outlines a detailed road map for four strategic components: (1) Risk Assessment, Early Warning and Monitoring; (2) Prevention and Mitigation; (3) Preparedness and Response; and (4) Recovery.⁷⁵ In addition, six structural pillars support the four strategic components of the program to guide with implementation. These pillars are: (1) Institutionalization of AADMER; (2) Partnership Strategies; (3) Resource Mobilization; (4) Outreach and Mainstreaming; (5) Training and Knowledge Management System; and (6) Information Management and Communication Technology.⁷⁶ The overall goal of the program is to create greater resiliency of ASEAN nations to withstand the affects of natural and human-induced disasters by reducing loss of life and damage to economic, social, physical, and environmental assets.⁷⁷ Although progress has been made with disaster risk reduction, the toll from these events have continued to plaque nations. An increasing number of

people and assets are exposed to disaster risk while vulnerabilities have still not been adequately addressed.

Asian-Pacific countries remain in the greater majority of developing nations with booming populations and significant societal discrepancies that create a wide range of competing internal spending priorities. The capacity to invest in disaster management is therefore unequal in the region and often prevents poorer nations from adequately investing in their own disaster management and recovery where it is often needed the most.⁷⁸ Investments in better infrastructure, alert mechanisms, and education to prepare for future circumstances still require a lot of room for improvement.

Progress towards disaster preparedness in the Asia-Pacific continues to evolve. Despite the remaining challenges, the international and regional mechanisms and frameworks are positive and offer needed developments that provide nations with a basis for cooperation when dealing with the global issue of natural disasters. They also create a space to engage for actors like the U.S., providing a forum to discuss best practices, learn from mutual experiences, and train and prepare for future operations.

Recommendations

It is easy to understand and see that “U.S. economic and security interests are inextricably linked to developments” in the Asia-Pacific.⁷⁹ Hence, when thinking of the way ahead in disaster preparedness, resilience, and response, the opportunities and challenges are essentially limitless. The key is to determine those areas of improvement that provide the greatest advantage for the least cost. This can be a daunting task to determine given the unpredictability of natural disasters, and the limited resources to meet the challenge of disaster resilience. With that being said, there are several broad

categories that can prove to be the most advantageous when considering disaster preparedness, resilience and response.

Diplomacy

The U.S. government should continue to reassess and develop its doctrine and policies in regards to natural disaster response in the Asia-Pacific. This should be based on the comprehensive research and understanding of the underlying causes and potential future effects on the region, and the effects on the U.S. and its interests. U.S. authorities should then articulate policies to the international community through organizations such as the United Nations while engaging with its partners in the region. With climate change being the major underlying cause of the increase in the number of volatile environmental events, the U.S. government should take a leading role in global efforts to reduce the negative anthropogenic effects of gas and heat emissions. Regionally, the U.S. should continue to support the regional disaster management initiatives as well as partners' efforts to boost their own resources and capacities. Finally, the U.S. government should continue to enhance bi-lateral, multinational, and international cooperation and coordination, to include with major international organisations. The greatest gains could be achieved through establishing pre-disaster agreement frameworks that enable faster response by eliminating the first level of diplomatic bureaucracy. This can be developed in two categories. First, a broad framework could be created that establishes the generic conditions for disaster response in which all nations in the region could agree upon. ASEAN is the logical organization that could fulfil the lead in this role, especially given their extensive work toward disaster preparedness and response. This should also be expanded to include those nations in the region not belonging to ASEAN. Second, building on the generic

framework, more detailed pre-disaster agreements can be developed with host nations to further enhance response, such as Status of Forces Agreements, pre-established areas of access, technical agreements, etc.

Military

The U.S. military should continue to take part in major FHA operations in the Asia-Pacific. In the aftermath of disasters, few nations are able to effectively carry out the immense and complex tasks needed to establish relief and promote security. U.S. capabilities are unmatched and impossible to substitute by other countries and organisations. The military's greatest strength is in its ability to provide command and control, communications, computers, intelligence, surveillance, reconnaissance, and creating access for aid contractors, intergovernmental organizations, and non-governmental organizations. Considering the U.S. military normally conducts FHA operations in support of other U.S. Government agencies or departments such as USAID and the Department of State, greater collaboration should be explored at all levels – strategic, operational, and tactical.⁸⁰ The DoD should continue to develop its understanding of the most effective response mechanisms to potential future disasters and improve its efficiency as a FHA provider. It should include better coordination within the force structure and civilian agencies and organisations, a clear definition of responsibilities, resources available, and the elimination of overlapping tasks. The DoD should use that engagement to enhance the international and bi-lateral cooperation and planning with other militaries and organisations, and to create stronger security relationships in the region. Additionally, the DoD should use the increased need for FHA missions as an opportunity to refocus and progress its mission, which can be a significant force multiplier in the time of shrinking forces and funds. Finally, through its

engagement in disaster relief missions, the U.S. should continue to send a clear message that the U.S. is an indispensable nation to its partners in the region and affirm American commitment. This, in turn, will support U.S. soft-power projection, helping justify U.S. military presence and garnering greater support and goodwill, both in the region and globally.

Development

There are several areas regarding development that should be expanded. The U.S. should invest in the Asia-Pacific to build disaster preparedness and resiliency alongside with increased trade and incentives for future growth, which can create greater economic and political stability.⁸¹ The obvious and most effective methods are to build preparedness to mitigate the risks associated with natural disasters before they occur through comprehensive, long-term planning. This should include building more climate-resilient infrastructure, building host nation capacity to prepare for, respond to, and recover from natural disasters, and the creation of a comprehensive database built on shared information across nations and organisations, which would be continuously monitored and updated.⁸² Investing in disaster preparedness and resiliency often mitigates the effects of disasters, and in most cases, pays for itself. U.S. Congressional Budget Office analysis determined that the average country saved US\$3-US\$4 for every US\$1 spent on disaster mitigation.⁸³ One of the main challenges to nations in the region is their ability to obtain resources with constraining budgets and competing priorities, while facing the uncertainty of whether a natural disaster will actually occur. The U.S. should therefore help provide financial support for climate-adaptation projects in the region. The U.S. could use this development support to further increase economic cooperation, enhancing confidence and trust towards the U.S., thus allowing greater

collaboration between U.S. military and civilian agencies on all levels.⁸⁴ It is also a peaceful way to inject influence in the region without provoking China.⁸⁵

Education & Training

The U.S. government and its agencies should continue to develop programs and research to better understand the underlying causes of the disasters, and to overcome the obstacles that hinder the advancement of humanitarian assistance and disaster relief such as: language and culture differences, lack of specialized equipment and training, standardized policies and procedures, and inadequate information and access sharing.⁸⁶ In order to develop the best defense and response mechanisms to natural disasters, the DoD should put emphasis on force training and education to include the improvement of knowledge, networks, and abilities of HADR leaders.⁸⁷

Additionally, The U.S. should strengthen existing alliances and build new key alliances and partnerships to include establishing networks devoted toward better understanding of, and preparation against, natural disasters. Education and training developed through knowledge sharing, skills development, and services improvement foster greater interoperability, appreciation for principles and perspectives, and creates an enriched understanding that leads to overall effectiveness of improving disaster resilience and preparedness.⁸⁸ One of the methods to achieve that goal is a continuous engagement in joint exercises that seek to promote stability, disaster response capacity, together with interoperability, and partnerships among nations and organisations.⁸⁹ In times of fiscal austerity, education and training may be the most cost-effective method of achieving sustained progress on humanitarian assistance and disaster relief.⁹⁰

Conclusion

Natural disasters in the Asia-Pacific will most likely continue to increase in frequency and in degree of intensity based on current data and trends. Urbanization in coastal areas will further exacerbate the effects of these disasters. Given the current climate, it is in the interest of the United States, and in the interests of allies and partners in the region, to continually invest in disaster preparedness, resilience, and response in order to maintain stability and security in the region. The effectiveness and efficiency of disaster preparedness, resiliency, and response will only increase by continuous planning, preparation, and practice through collaboration and exercises. As the U.S. shifts or 'pivots' to Asia, the short and long-term effects of climate change and natural disasters, and their implications on U.S. and global security, need to be considered. The catastrophic implications of natural disasters will continue to plague the Asia-Pacific. It is not a matter of *if*, but a matter of *when* and *where* the next disaster will occur. With dedication and effort, the consequences of natural disasters can be mitigated, and the global economic and security environment maintained.

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