

# Pacific Environmental Security Forum

9-12 May 2017 | Anchorage, Alaska



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## **ACKNOWLEDGEMENTS**

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## FORWARD

I would like to extend my sincere appreciation and congratulate all participants for making the 2017 Pacific Environmental Security Forum (PESF) a success. This was a professional and meaningful engagement that brought over 20 nations together to discuss environmental security best practices, lessons-learned, and opportunities to collaborate in the future. Thank you!

The 2017 PESF tackled issues related to Environmental Security Best Practices in the Indo-Asia-Pacific region, Military & Biodiversity Conservation, Climate Change, Waste Management, Water Security, Energy, and the National Guard State Partnership Program. The PESF served as a leading platform to discuss these topics, and formulate civil-military opportunities moving forward. It is my hope that this After-Action Report will result in action by all parties involved.

Herein you will find PESF daily summaries, activity reviews, participant contact information, and opportunities moving forward. There are many cooperative prospects, and the U.S. Pacific Command (USPACOM) Environmental Security Program and its partners will be reaching out to various representatives in the coming months to start project development.

USPACOM remains committed to advancing environmental security in the Indo-Asia-Pacific theater. USPACOM will continue the annual Environmental Security Forum for partners to share best practices and lessons-learned; move priority project opportunities from the classroom to the field; and maintain the PESF web site (<http://www.pesforum.org>) to allow partners access to environmental security information. I look forward to seeing you all in 2018 in Ulaanbaatar, where Mongolia will host the Northeast Asia Regional Environmental Security Forum.



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## EXECUTIVE SUMMARY

### Discussion

USPACOM hosted the 2017 PESF, in partnership with AKNG, to 1) identify future collaborative projects with partner nation militaries and civilian agencies, 2) increase environmental security awareness within Indo-Asia-Pacific countries, and 3) promote collaboration where militaries may be able to utilize their capabilities to assist civilian authorities. Each day the event focused on a theme. The primary themes were *Environmental Security Best Practices* and the *Military & Biodiversity Conservation*, with secondary themes being *Climate Change*, *Waste*, *Water Security*, *Energy*, and the *National Guard State Partnership Program*. A total of 116 participants from 23 countries attended the PESF.

The Forum identified 34 future environmental security projects that the USPACOM environmental security program will seek to fund. These included project ideas associated with waste management, counter wildlife trafficking, uncontaminated water supply, coastal resource surveying, and waste oil reuse. US government agencies attending the PESF as SME's will "adopt" project ideas and research, refine, prioritize, and submit them for funding consideration. The PESF planning team will post progress at the event's official web site, <http://www.pesforum.org>.

### Day 1-Indo-Asia-Pacific Environmental Security Best Practices

Dr. John Wood (USPACOM J9) moderated the morning session of the first day. Dr. Wood explained the importance of the Indo-Asia-Pacific

and what USPACOM does to engage partners in theater security. Dr. Wood also showcased a new tool USPACOM is developing to better place environmental security cooperation activities called, “Visual Representation All-Hazards Events.” Following Dr. Wood’s introduction, four foreign military officers gave presentations. Brigadier General Aziz Mohammed, (Deputy Commander, Republic of Fiji Military Forces) presented on Global Climate Change, Ocean Acidification, and the Adoption of the Public Trust. Captain Pujitha Sugathadasa (SLNS Dakshina Naval Base Commanding Officer, Sri Lanka Navy), spoke on Marine Environmental Conservation. Lt Col Bharat Lal Shrestha (Project Team Leader, Nepalese Army) spoke on the Imja Tsho Glacial Lake De-watering Project. From Timor L’este, Captain Domingos Oki (Engineering Officer, Directorate of Strategic Politics and International Policy) delivered an overview of environmental security challenges in his country. After the presentations, Dr. Wood moderated a Q&A panel session with all speakers from the morning session. Discussions focused on ocean-mining, environmental degradation, civil-military cooperation, wildlife trafficking, human migration, and other topics.

The afternoon featured interactive working group activities centered about environmental security. “Jeopardy,” focused on numerous environmental themes and concepts, and a Q&A session where the right answer yielded a paper ball to throw at a target.

### Day 2-Multiple Theme Tracks and Field Trip to JBER

On the PESF Day 2, themed lecture tracks presented six speakers in three rooms giving the audience a choice to attend. The themes were: the National Guard State Partnership Program, Climate Change, Water Security, Waste, and Energy. It was the first time the PESF included

this format. No panel sessions were held after the speakers' presentations but discussions ensued if time allowed after each brief.

On the second afternoon, USPACOM designed a field trip for visitors to see environmental security projects firsthand. The USAF Civil Engineering Group (CEG) transported participants in nine vans to tour four sites at Joint Base Elmendorf-Richardson (JBER). The sites were: 1) The base's Landfill Methane Gas Power Plant, 2) the Wildlife Education Center, 3) the William Jack Hernandez Sport Fishery, and 4) the Eagle River Flats ecosystem, used as a training range when wildlife will not be impacted. Base biologists and other subject matter experts explained how JBER addresses environmental issues through each facility/program: 1) obtaining energy security and managing waste streams by producing electrical power with landfill gas, 2) protecting biodiversity and critical ecosystem services through modifying training practices on military ranges, 3) enhancing food security and recreational opportunities through stocking waterways with native fish species and 4) monitoring terrestrial mammal species.

### *Day 3-Military & Biodiversity Conservation*

The Day 3 theme was *The Military & Biodiversity Protection*. Col Frank Flores (Commander, U.S. Pacific Air Force Regional Support Center) chaired the day and introduced the Biodiversity Conservation theme. Col Flores spoke about the importance of biodiversity to the military and described the biodiversity protection responsibilities of the PACAF Regional Support Center and the geographic area covered, which includes 13 different ecosystems from Alaska to Hawaii. After his introduction, four distinguished speakers gave presentations. Mr. Zhang Xiaohui (China's Anti-Smuggling Bureau) presented ongoing counter-wildlife activities in China, showcasing a few high-profile

cases his organization has worked. Brigadier Craig Dobson (Director, General Support [J1/J4] for the Australia Defence Force) spoke on natural resource management at Australia's military training ranges, challenges faced and a case study of Shoalwater Bay Training Area, Queensland. Mr. Abdul Kadir bin Abu Hashim (Malaysia Wildlife Department and National Parks [DWNP]) delivered a presentation on Malaysia's approach to counter-wildlife trafficking, which includes advanced technological and strategic measures. The last biodiversity presentation was by the Honorable F. Umiich Sengebau (Minister of Natural Resources, Environment and Tourism, Republic of Palau), who provided an overview of how the Palau National Marine Sanctuary was developed, its intention to protect Palau's Exclusive Economic Zone from overfishing and illegal fishing, and associated enforcement efforts.

After the presentations, Colonel Flores moderated a lively panel session with the aforementioned biodiversity speakers. Participants posed questions on the presentations, as well as other questions related to natural resources management.

The *Military & Biodiversity Conservation* theme concluded in the afternoon with a group exercise. Participants were divided into ten groups and were asked to come up with solutions to biodiversity hotspot scenarios faced by personnel at a fictitious military installation. This activity was designed to increase awareness of natural resources management techniques, share best practices, and foster diverse solutions to common challenges.

#### *Day 4-Environmental Security Project Development*

The last day focused on *Project Collaboration*. Mr. Chris Sholes (USPACOM) began the discussion by describing why participants are being asked to develop project ideas, the collaborative process to brainstorm and prioritize project ideas, and the opportunities that can come from this exercise when executed. Mr. Sholes highlighted past PESF project ideas, and clearly defined the goals and objectives of the project development session. He also stressed that USPACOM wants to establish long-term partnerships and projects that may start out small, but could be expanded in the future.

Next, participants gathered at their single-country tables, with U.S. participants joining them to “brainstorm” potential environmental security projects. A variety of projects were discussed, and a country representative briefed the most feasible project to the plenary summarized on a slide with the preliminary scope, magnitude, objective, problem statement, point of contact, and location. Nineteen countries briefed. Australia abstained as they wish to be a resource to help other countries. Vanuatu, the Solomon Islands, South Korea, and Tuvalu had early flights this day and couldn’t join this most critical phase of the PESF.

Before the closing ceremony, each country delivered their After-Action Review (AAR) comments. Countries were asked to share what they thought worked best at the PESF, areas for improvement, and how to involve their country more in future PESF collaboration. A common feedback was participants would be better prepared if they received environmental security materials in advance and better understand the goal to develop project concepts on Day 4. Several participants also mentioned that there were other agencies in their country that should be

engaged, depending on the themes of the forum, and pre-meetings could be held in advance of the PESF to assess needs and brainstorm project ideas.

Closing Ceremony: Ambassador Bulgaa Altangerel (Mongolian Ambassador to the United States of America) and Lieutenant Governor Byron Mallott (State of Alaska) officially closed the PESF. Both civilian leaders thanked the participants for their efforts over the four days and emphasized working together to protect natural resources for future generations. They encouraged participants to continue the civilian-military dialogue and develop collaborative environmental security projects.

A summary of the event can be reviewed at:

The AKNG Public Affairs Office issued a press release and corresponded with local media outlets for coverage PESF. The local Anchorage CBS news affiliate (KVTA) produced written and video media event coverage: <http://www.ktva.com/pacific-nations-come-together-talk-environmental-security-962/>

“Your Alaska” produced video coverage:  
[http://www.youralaskalink.com/news/pacific-environmental-security-forum/article\\_366d77c0-36c8-11e7-858b-f727605db1fe.html](http://www.youralaskalink.com/news/pacific-environmental-security-forum/article_366d77c0-36c8-11e7-858b-f727605db1fe.html)

KNOM Radio Mission published a written story:  
<http://www.knom.org/wp/blog/2017/05/19/alaska-national-guard-hosts-pacific-environmental-security-forum/>

Alaska Native News published a written story: <http://alaska-native-news.com/alaska-national-guard-hosts-24-countries-at-pacific-environmental-security-forum-28551>

The *Arctic Warrior*, the newspaper of the Joint Base Elmendorf-Richardson, published a written article: <https://www.dvidshub.net/publication/issues/34243>.

Alaska National Guard Public Affairs posted an article: <https://www.dvidshub.net/news/235156/alaska-national-guard-hosts-24-countries-pacific-environmental-security-forum>

Alaska National Guard published a photo gallery: <https://www.flickr.com/photos/alaskanationalguard/sets/72157680574361533>

### Way Ahead

Multiple opportunities abound for USPACOM's environmental security program. First, the Pacific Environmental Security Forum (PESF) will continue. The 2018 PESF will be a regional event, hosted by Mongolia. Major themes in Ulaanbaatar will focus on environmental security strategy and policy cooperation as well as specific environmental topics applicable to Northeast Asia's unique geography, climate, and socio-economic considerations.

New Zealand will host in 2019 and USPACOM is discussing Vietnam hosting in 2020 with the US Embassy there. The planning team is also

in conversation with Australia, Japan, Korea and the PRC so they early consider attending future events.

The 35 project concepts developed at this year's PESF will be coordinated with the US Army Corps of Engineers, USAID, the US Fish and Wildlife Service and other agencies attending the Forum. The project proposals will be submitted for funding consideration in the Overseas Humanitarian Assistance Shared Information System (OHASIS). Those that are funded will be assigned to the appropriate US government agency with USPACOM J445 oversight, and will be implemented in partnership with all interested stakeholders.

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## **AFTER-ACTION REVIEW**

1. **EVENT DATES:** 09-12 May 2017
2. **EVENT LOCATION:** Anchorage, Alaska, USA
3. **BACKGROUND:** The 2017 PESF was the seventh Asia-Pacific environmental security event organized by USPACOM. Each year, the event alternates between Pan-Pacific and regional themes. The initial activity was held in Hawaii in 2011 and featured Pan-Pacific sessions on 1) climate change adaptation, 2) environmental sustainability, 3) water resource management, and 4) disaster preparedness. In 2012, the event moved to Jakarta, where the Indonesia Ministry of Environment hosted the event. There, fourteen countries met to evaluate Southeast Asia regional environmental security concerns related to pollution, global warming, deforestation, overfishing and water supply in an ASEAN (Association of Southeast Asian Nations) context. In 2013, USPACOM partnered with the Australian Department of Defence, involving 17 countries to discuss sustainable environmental management in military operations, lessons-learned from military support to disaster relief operations, managing bio-security risks in the military context, and emerging technologies and new approaches to mitigating and adapting to climate change impacts. In 2014, the Maldives National Defence Force hosted the PESF 2-5 June 2014, which focused on South Asia regional environmental security topics related to water, waste management, resource protection, and energy. In 2015, the Thailand Ministry of Defence hosted the PESF, and featured topics related to climate change, protection of the commons, military environmental programs, and project concept development. The 2016 Oceania RESF was hosted by Fiji and focused on sustainable

ocean resources, protecting the coastal zone, resiliency to extreme and frequent weather events, and regional project collaboration. Mongolia has agreed to host the PESF in 2018.

4. MISSION: To execute the PESF from 09-12 May 2017 in partnership with AKNG.

5. PURPOSE: To advance civil-military cooperation in the areas of biodiversity conservation, water security, energy, waste, and climate change; to conceptualize future environmental security cooperation activities that potentially can be achieved in the Indo-Asia Pacific region; to increase awareness of environmental security best practices and lessons-learned throughout the region; and to advance military support to civilian authority in the areas of environmental stewardship.

6. VISION: To strengthen and advance alliances and partnerships by enhancing the capabilities of Indo-Asia-Pacific states in the Pacific theatre to assess causes and impacts of environmental security issues, develop response strategies to mitigate these issues, and conduct contingency planning for crisis response.

7. OBJECTIVES: The following objectives were set for the 2017 PESF:

- Conduct civil-military conversations on environmental security issues and lessons learned;
- Strengthen cross-country partnerships on environmental security issues; and
- Design projects to help build partner-nation capacity where needs exist.

8. POINTS OF CONTACT:

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- Christopher Sholes, Environmental Program Manager, J445, USPACOM, [christopher.sholes@pacom.mil](mailto:christopher.sholes@pacom.mil) or +1 (808) 477-9420.

9. COUNTRIES INVOLVED: Australia, Bangladesh, Cambodia, China, Fiji, Indonesia, Lao PDR, Malaysia, Maldives, Marshall Islands, Nepal, New Zealand, Palau, Philippines, Solomon Islands, South Korea, Sri Lanka, Thailand, Timor L'este, United States, Vanuatu, and Vietnam.

Participants from Papua New Guinea, Tonga, and Tuvalu were also planning to attend, but were unable to make the trip due to visa issues.

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11. DAILY SUMMARY: The details found in the section below summarize the PESF's daily activities. They were recorded on the day, and reflect the current status at the time.

a. 09 May 2017

The PESF officially commenced with an opening ceremony led by MG Laurie Hummel, Adjutant General, Alaska National Guard (AKNG). MG Hummel focused her speech on current environmental security challenges and opportunities in the Arctic region. She highlighted the importance of environmental security in overall national security concerns, and the value of events like the PESF, which bring focus on a topic often overlooked by militaries. MG Hummel was followed by a dance performance by the Unangax Nation, spotlighting native Alaskan cultural awareness and perspective.

After the opening ceremony, Mr. Chris Sholes (USPACOM J445) presented USPACOM's perspective on environmental security in the Indo-Asia-Pacific region. Mr. Sholes showcased USPACOM's ongoing program to build partner capacity in a variety of topics related to environmental security, including oil spill response, counter wildlife trafficking, environmental sensitivity indexing, and more projects.

Next, Dr. John Wood (USPACOM J9) took the stage to moderate the Day 1 *Indo-Asia-Pacific Environmental Security Best Practices* session. Dr. Wood explained the

importance of the Indo-Asia-Pacific area and what USPACOM is doing to engage partners in theater security. Dr. Wood also introduced a new tool USPACOM is developing to better understand environmental security cooperation activities called, “Visual Representation All-Hazards Events.”

After introducing the session, Brigadier General Aziz Mohammed, (Deputy Commander, Republic of Fiji Military Forces) presented on “Global Climate Change, Ocean Acidification, and the Adoption of the Public Trust.” He explained what Fiji is experiencing in regards to climate change in the Oceania region, and the importance for militaries to be involved in the conversation and not get caught off guard. He also explained the “Public Trust,” and the value of framing the issue with it.

Next, Captain Pujitha Sugathadasa (Sri Lanka Naval Ships Dakshina Naval Base Commanding Officer, Sri Lanka Navy), spoke on “Marine Environmental Conservation.” Captain Sugathadasa described a variety of environmental security initiatives that the Sri Lanka Navy supports, including oil spill response, mangrove restoration, development of turtle nesting habitat. The Sri Lanka Navy’s Marine Environmental Conservation program has seamen assigned to these duties, and collaborates with civilian authorities often to reach mutual goals.

After the first two speakers, there was a 30-minute break where participants were able to converse, and view project

posterboards in the lobby. Then Lt Col Bharat Lal Shrestha (Nepalese Army) spoke on the “Imja Tsho Glacial Lake De-Watering Project.” Lt Col Shrestha showcased the Nepalese Army’s extraordinary effort to reduce the volume of a high-elevation glacial lake and prevent it from bursting. He described how the glacial lake formed as a result of climate change and the various lessons-learned from the project, .

The last Day 1 speaker was Captain Domingos Oki (Engineering Officer, Directorate of Strategic Politics and International Policy, Timor L’este). Captain Oki delivered an overview of environmental security challenges in Timor L’este, including tough decisions on whether to protect natural mangrove forests or develop the area for potential economic benefit.

After the officers’ presentations concluded, Dr. John Wood (USPACOM J9) moderated a Q&A panel session with the four speakers. Discussions were on maritime mining, environmental degradation, civil-military cooperation, wildlife trafficking, and human migration challenges.

After lunch, the AKNG photographer took the group photo in front of the Chugach Mountains before the environmental security group activities commenced. Participants played “Environmental Security Jeopardy.” They started the first round in groups of ten, and then competed group against group in Round Two. All of the jeopardy categories were focused on environmental security topics designed to review

basic understanding of environmental issues facing civil and military audiences.

The last group activity of the day was named, “Paper Balls.” The premise was to have participants answer environmental security questions and if answered correctly, they were able to wad the question into a ball and throw it at a target to accumulate points. The person with the largest point total received a small prize. The overall objective was to share basic environmental security knowledge, as well as to get participants to start thinking about environmental security project ideas for discussion later in the week.

Day 1 of the PESF concluded with administrative remarks, facilitator review, and a planning team meeting.

b. 10 May 2017

MG Laurie Hummel (AKNG) opened PESF Day 2 providing an introduction to the five lecture tracks. Participants chose which session to attend and could change tracks during a five-minute transition period between speakers. The first set of themed tracks were the State Partnership Program (SPP), Climate Change, and Water Security, with three speakers each. The SPP track continued for an additional session, with two new tracks, Energy and Waste.

The SPP Track was moderated by MG Laurie Hummel (AKNG). In the SPP Track, Mr. Robert Blankenburg, PE (Solid Waste and Pesticides Program Manager, Alaska

Department of Environmental Conservation) presented on “Regulation of Rural Alaska Landfills.” He gave an overview of solid waste management issues faced by small villages with no road access, resource challenges, and gaps in technical knowledge. Alaska has effectively developed regulation of landfills and improved landfill management in these villages, including addressing emerging challenges, such as climate change.

The second speaker in the SPP Track, Dr. Geoff Dabelko (Professor and Director, Environmental Studies Program, Ohio University), presented on Environmental Security for Peace. He focused on the opportunities for civilian and military security actors to pursue confidence-building and trust-building collaborations, through facing environmental security challenges together. Dr. Dabelko also provided national and international examples outside the Indo-Asia-Pacific region to illustrate the potential security benefits that can be realized while addressing underlying environmental and natural resource management issues.

The third SPP Track speaker, Brigadier General Zachary F. Doser (Director of the Joint Staff, Nevada National Guard), spoke on Food Security and the Nevada State Partnership Program. He gave an overview of the food security exchange they conducted in Tonga in 2016 identifying threats to food resources. During the response and recovery phase of an emergency, both Tonga and the U.S. recognize that the availability, access, utilization and stability of food resources can severely impact operations.

Fourth: Major General Arthur “Joe” Logan (Adjutant General, Hawaii National Guard), presented on the Hawaii State Partnership Program and Environmental Security. He focused on the collaboration between Hawaii, Indonesia, and regional partners on increasing peat fire mitigation and response capacity. MG General Logan highlighted key engagements that directly align with GOI priorities, Incident Command System (ICS) objectives, and Theater Security Cooperation Plan (TSCP) Lines of Effort (LOE).

Dr. Rajive Ganguli (Professor of Mining Engineering, and Director, Mineral Industry Research Laboratory, University of Alaska Fairbanks) was the fifth speaker in the SPP Track. He presented on Responsible Mining in Mongolia: What Does It Take From a Workforce Development Perspective. He gave an overview of the mining industry and the education system in Mongolia, as well as mining and education initiatives between the University of Alaska Fairbanks and Mongolia.

Dr. John Pearce (Division Chief, U.S. Geological Survey Alaska Science Center) was the sixth and final speaker in the SPP Track. He spoke on USGS Research in the Arctic and Pacific, specifically the scientific research that informs decision-making processes of agencies responsible for management of wildlife and development of energy resources, for understanding hazards (tsunamis and earthquakes), zoonotic disease, and invasive species, and for public planning in areas where these topics interface with

human communities. Dr. Pearce also described impacts of these issues to industry, the economy, and tourism.

The Climate Change Track was led by Dr. Douglas Causey (University of Alaska Anchorage) and the first speaker was Dr. J. Jerome Montague (Native Affairs and Natural Resources Advisor, Alaskan Command). He presented on Climate Change and Biodiversity, which included an overview of climate change science, impacts on biodiversity, future projections, and the importance of coordinated action by military and civilian agencies to address these impacts.

The second speaker in the Climate Change Track was First Admiral Muhammad Ali, Vice Assistant for Planning and Budgeting to the Chief of the Indonesian Navy. He presented on Climate Change Impacts on Maritime Security: An Indonesian Navy Perspective. His presentation focused on three aspects of the challenges faced by military forces due to climate change: readiness, operations and strategy.

The third and final speaker in the Climate Change Track was Dr. Su-Hyung Jang (Principal Researcher, K-Water Institute), who presented on Climate Change Adaption on Water Resources in Korea: Current Status and Future Perspectives. He spoke about development of climate change adaptation strategies for South Korea. Specifically, he described a study funded by the Ministry of Land, Infrastructure and Transport (MOLIT) to develop national water resource management technology for climate change

adaptation and to build a foundation for contributions to the global water industry.

The Water Security Track was led by Dr. Roger Babcock (Professor, Civil & Environmental Engineering, University of Hawaii-Manoa). The first speaker was Mr. Mike Macmillan (Project Manager, Alaska District, U.S. Army Corps of Engineers), who presented on the Puttalam Water Supply Project in Sri Lanka. The project was designed to improve the living conditions of the poorest families in the surrounding communities of Puttalam. Mr. Macmillan stressed that once people had access to clean water, the secondary benefits became apparent, such as having time for fishing, working as laborers, and selling goods in the market, now that they didn't have to spend so much time collecting water.

The second speaker in the Water Security Track was Mr. B. Purevjav (Control Department Head of Operations, Ulaanbaatar City Water Supply and Sewerage Authority, Mongolia). He presented on Water Supply of Ulaanbaatar City, Mongolia. He described climate change issues faced and the drawdown of groundwater resources that are depended on for drinking water wells, as well as a number of solutions they have developed for the city.

Mr. Robert Bower (Principal Hydrologist, H2Alluvium, New Zealand) was the third and final speaker in the Water Security Track. He presented on Water Scarcity in an Uncertain World – Applying the tools of Managed Aquifer

Recharge (MAR) to issues of water scarcity and climate adaptation. His presentation focused on groundwater storage and efforts to recharge aquifers.

The Waste Track was led by Ms. Karen Baker, SES (Chief of Environmental Division, Headquarters, U.S. Army Corps of Engineers) and the first speaker was Lieutenant Colonel Jason Buursma (Deputy Commander, Alaska District, U.S. Army Corps of Engineers). He spoke on the Attu Island Environmental Remediation, which involved removal of aboveground petroleum storage tanks and contaminated soil. He described the challenges faced, such as adverse weather, limited access, unexploded ordnance concerns, and complex cultural and biological considerations.

The second speaker slot in the Waste Track was filled by two co-presenters: Dr. Andrew L. Sayers-Fay (Environmental Consultant, Chemist and Remediation Advisor, U.S. Agency for International Development) and Colonel Dau Xuan Hoai (Deputy Director, Centre for Environmental Treatment Technology, Vietnam). Dr. Sayers-Fay presented on Bilateral Collaboration and Joint Management for the Environmental Remediation of Dioxin Contamination at Danang Airport, Vietnam. Colonel Hoai presented on An Overview of Agent Orange Contamination and Remediation Process at Da Nang Airport of Vietnam. Both presenters focused on the cooperation between the USAID and the Vietnam Ministry of Defense (MOD) in cleaning up large quantities of dioxin-contaminated soil and the remarkable results.

The third and final speaker slot in the Waste Track was also filled by two co-presenters: Commodore Yahya Syed (Commander, Bangladesh Coast Guard) and Mr. Md. Alamgir (Ministry of Environment, Bangladesh). The two speakers presented together on the Oil Spillage in Sundarban: A Serious Wakeup Call. They described the efforts of the local residents, the Bangladesh Coast Guard, and the government of Bangladesh in cleaning up the spill and the impacted wildlife.

The Energy Track was led by Mr. Joel Neimeyer (Federal Co-Chair, Denali Commission) and discussion involved topics around energy system capacities, grid integration, geothermal power resources, and financing of renewable energy projects. The first speaker was Mr. Forest Button (Manager, Project Development & Key Accounts, Alaska Village Electric Cooperative), who presented on Integrating Renewables in Rural Alaska. He described the use of diesel generators to offset the intermittent power provided by wind turbines in rural Alaskan villages.

Mr. David Lockard, P.E. (Lead Engineer, Rural Energy, Alaska Energy Authority) was the second speaker in the Energy Track, and he presented on Modular Diesel Power Systems for Rural Villages. He explained that the diesel power modules typically include high-efficiency diesel gensets with marine manifolds for optimal heat recovery, while the data control systems are accessible remotely by

satellite dish or local internet and automatic paralleling switchgear, and are also designed to integrate renewables.

The third and final speaker of the Energy Track was Ms. Jocelyn Fenton (Physical Scientist, Alaska District, U.S. Army Corps of Engineers). She presented on Rural Mooring Points: A Simple Project Leads to Big Benefits, which included an overview of barge mooring and fuel/freight transfer needs at Alaska's coastal and riverine communities. Ms. Fenton described how established mooring points barges can firmly anchor to the shore, allowing barges to shut off engines while transferring cargo, limiting erosion impacts, the possibility of fuel spills and lost cargo, and increasing fuel efficiency.

After lunch, Colonel Scott Matthews (USAF CEG) provided an overview of the Site Visit Tour to Anchorage Methane Gas Power Plant, Wildlife Education Center, William Jack Hernandez Sport Fishery, and the Eagle River Flats ecosystem on Joint Base Elmendorf-Richardson. He highlighted JBER's environmental compliance and stewardship activities. The participants were divided into nine vans that completed the tour starting at different locations, in order to allow for small group presentations and interactions.

Day 2 of the PESF concluded with CEG drivers dropping off participants at the hotel and convention center.

c. 11 May 2017

Day 3 of the PESF commenced with Col Frank Flores (Commander, U.S. Pacific Air Force Regional Support Center) introducing the Biodiversity Conservation theme. Col Flores described the biodiversity protection responsibilities of the PACAF Regional Support Center and the geographic area they cover, which includes 13 different ecosystems from Alaska to Hawaii. He touched on some of their efforts, which include Polar Bear and Walrus Research at Remote Alaska Sites, Seabird Conservation on Kauai, Hawaii, and Mapping rare coral at Wake Island. He also explained some of their challenges, such as dealing with three different invasive rat species at Wake Island.

Next, Col Flores introduced the first biodiversity speaker, Mr. Zhang Xiaohui from China's Anti-Smuggling Bureau (ASB). Mr. Xiaohui spoke on ongoing counter-wildlife activities in China. He started by explaining what is ASB's role, and the various wildlife trafficking issues China experiences. Mr. Xiaohui then showcased a few high-profile cases his organization has worked on, as well as their information sharing partnership with Germany and other countries and international law enforcement organizations. Mr. Xiaohui concluded by emphasizing that counter-wildlife trafficking achieves more success when it is performed through multi-organizational and multi-government collaboration.

Next, Brigadier Craig Dobson, the Director General Support (J1/J4) for the Australia Defence Force, spoke on natural resource management at Australia's military training ranges. Brig Dobson started first by describing the nature of Australia's training ranges, the unique resources they have to protect, and the challenges they face balancing natural resource management with military readiness. Brig Dobson highlighted Shoalwater Bay Training Area as a case study. He emphasized that natural resource management is a "high stakes game," and it must be performed properly to ensure ecosystem livelihood. Encroachment and run-off contaminating the marine environment are among the major issues there.

Following Brig Dobson, Mr. Abdul Kadir bin Abu Hashim from the Malaysia Wildlife Department and National Parks (DWNP) took the stage. Mr. Hashim delivered a presentation on Malaysia's approach to counter-wildlife trafficking. He highlighted a series of examples of wildlife-trafficking which Malaysia experiences, and how smugglers go to great lengths to try to move illegal materials around. Finally, he highlighted Malaysia's way forward in countering wildlife trafficking, which includes advanced technological and strategic measures.

The last biodiversity subject matter expert presentation was delivered by the Honorable F. Umiich Sengebau, Minister of Natural Resources, Environment and Tourism from the Republic of Palau. Mr. Sengebau presented on the Palau National Marine Sanctuary. He provided an overview of the

sanctuary, how it was developed, and its intent to protect Palau's Exclusive Economic Zone from overfishing and illegal fishing. Mr. Sengebau described enforcement methods, and future strategic applications Palau hopes to apply to protect its water.

After all subject matter expert presentations were complete, Col Frank Flores invited the morning presenters back to the stage for a short panel session. Participants were able to ask questions. A few of the topics addressed included how to reduce demand for endangered species, the need for education to reduce wildlife trafficking, and the exploration of alternative methods for mitigating invasive species.

In the afternoon, work groups delved into a biodiversity exercise. Participants were asked to work through ten biodiversity scenarios that could impact a military installation. The topics:

1. Endangered Species Conservation (Wildlife Trafficking)
2. Invasive Species (Brown Tree Snake)
3. Encroachment (Bird Strike)
4. Pollination (Bees & Butterflies)
5. Climate Change (Coastal Flooding)
6. Integrated Natural Resource Management Plan (Coral Reefs)
7. Landscape Disturbance (Wildfires)
8. Multiple Use (Training, Hunting & Conservation)
9. Legal and Policy Issues (Wetlands)

## 10. On-Base/Off-Base Partnerships

Participants were given an installation map and scenario details, and then were asked to respond to specific questions related to each scenario. Facilitators guided participants through the activity, and every attendee had the opportunity to engage on specific environmental security concerns that may impact military operations, strategy, planning, and readiness.

At the conclusion of the biodiversity exercise, each group had an opportunity to brief the participants on one of the biodiversity hotspot topics it visited.

### d. 12 May 2017

The final day of the PESF focused on environmental security project development. Mr. Chris Sholes (USPACOM) started the discussion by describing why participants are being asked to develop project ideas, the collaborative process to brainstorm and prioritize project ideas, and the opportunities that can come from the project ideas when placed into action. Mr. Sholes highlighted past PESF project ideas, and clearly defined the goals and objectives of the project development session. He also stressed that USPACOM would like to establish long-term partnerships and projects that may start out small, but could be expanded in the future.

Next, participants broke into their respective country tables, with U.S. participants joining them. At each country table, a

facilitator assisted country representatives with brainstorming a series of potential environmental security project ideas. A variety of ideas were discussed, and the project deemed as the highest priority by the country was briefed to the plenary. The top priority project was summarized on a slide with the preliminary scope, magnitude, objective, problem statement, point of contact, and location. The planning team collected all project description slides for compilation and assessment.

The below project ideas were considered priority by the various countries in attendance.

(See the Opportunities section of this document for a summary and enclosed document for slides outlining all of the 35 project ideas proposed.)

- Bangladesh = Online River Quality Monitoring System (Dhaleshwary River)
- Cambodia = Counter-Wildlife Trafficking in Cambodian National Parks
- China = US-China Environmental Security Mil-Mil Exchange
- Fiji = Vessel Salvage
- Indonesia = Fish Hatchery Planning and Construction (Natuna)
- Lao PDR = Solid Waste Management Planning (Vientiane)
- Maldives = Stormwater/Fire Rescue Construction (Gaafu Alifu Atoll)

- Malaysia = Counter-Wildlife Trafficking and Development of a National Wildlife Policy
- Marshall Islands = Waste Oil Re-Use Study (Ebeye)
- Mongolia = Permafrost Mapping
- Nepal = South Asia Wildlife Enforcement Network Counter-Wildlife Trafficking Workshop
- Palau = Remote Fueling Station (Helen Reef)
- Philippines = Mindanao Army Combined Readiness Training Area Environmental Impact Statement
- Sri Lanka = Construction of Recycling Facilities
- Thailand = Water Supply (Nakorn Sawon Province)
- Timor L'este = Coastal Resource Survey (Atauro Island)
- Vietnam = Wildlife Trafficking Workshop (Border Command)

The closing ceremony was led by MG Laurie Hummel (AKNG) and included remarks by Ambassador Bulgaa Altangerel (Mongolian Ambassador to the United States of America) and Lieutenant Governor Byron Mallott (State of Alaska). Ambassador Altangerel spoke about the importance of addressing the diverse and critical environmental security issues that face their country and those in the region, including water security, food security, waste management, natural resources management, energy issues and many more. He highlighted the good relationship that Mongolia has with Alaska through their State Partnership Program and their similar environmental concerns, which include fragile climates, natural disasters, and glacier retreat.

Lieutenant Governor Mallott thanked the participants for coming to Alaska and shared his commitment to protecting natural resources for future generations. He described unique environmental security

considerations in the Arctic, but showcased how all places can be impacted.

Captain Rodney Moore (USPACOM) presented MG Hummel with a PESF conference poster signed by all of the participants. MG Hummel individually thanked the members of the planning team and presented coins to the foreign participants. Participants collected their certificates, group photos, and PESF collapsible water bottles from the registration desk.

At the conclusion of the closing ceremony, participants picked up their certificate, group photo, and a PESF collapsible water bottle before departing.

**12. PARTICIPANT EVALUATION SUMMARY:** At the conclusion of the PESF, participant evaluation forms were disseminated to everyone to gain feedback on the event. Each statement/question was ranked from 1 to 5, with 5 being the highest and 1 the lowest. The percentages, and/or grades, were calculated by assigning the following values/weights:

- 1 = 0
- 2 = 25
- 3 = 50
- 4 = 75
- 5 = 100

The value that is highlighted indicates the majority vote by the participants. Open-ended questions were also included. Due to the planning team's changes to the Participant Evaluation Form questions, several responses could not be compared with previous years' evaluations.

1) The Day 1 group activities provided sufficient introduction to basic environmental security concepts and terms.

**85.0%** (↓ **3.2% decrease from last year's Day 1 activity**)

|   |   |   |             |   |
|---|---|---|-------------|---|
| 1 | 2 | 3 | <b>4.53</b> | 5 |
|---|---|---|-------------|---|

2) Please select your 3 favorite and 3 least favorite Jeopardy topics. (Climate Change, Water, Biodiversity, Air, Humanitarian Assistance Disaster Response, Energy, International Treaties, Waste, Food Security, Sustainable Operation)

| <b>Jeopardy Topics</b> | <b>% Favorite Votes</b> |
|------------------------|-------------------------|
| <b>Climate Change</b>  | <b>24.2%</b>            |
| HA/DR                  | 16.6%                   |
| Water                  | 15.9%                   |
| Biodiversity           | 9.6%                    |
| Food Security          | 7.6%                    |
| Sustainable Operations | 7.6%                    |
| Waste                  | 7.0%                    |
| Energy                 | 5.7%                    |
| International Treaties | 3.2%                    |
| Air                    | 2.5%                    |

| <b>Jeopardy Topics</b>        | <b>% Least Favorite Votes</b> |
|-------------------------------|-------------------------------|
| <b>International Treaties</b> | <b>19.5%</b>                  |
| Air                           | 14.8%                         |
| Sustainable Operations        | 14.1%                         |
| Waste                         | 10.2%                         |
| Food Security                 | 10.2%                         |
| HA/DR                         | 7.8%                          |
| Biodiversity                  | 7.0%                          |
| Energy                        | 7.0%                          |
| Climate Change                | 5.5%                          |
| Water                         | 3.9%                          |

3) Paper ball game: Would you rephrase or change any of the questions? If so, how would you change them?

| <b>Yes</b>   | <b>No</b> | <b>Blank</b> |
|--------------|-----------|--------------|
| <b>41.8%</b> | 32.7%     | 25.5%        |

A summary of feedback on recommendations is below:

| Paper Ball Game Comments/ Recommendations                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------|
| Use fewer words, keep answers separate, provide written questions in a format that can be shown to people, rather than just read aloud |
| Use more simple terms for non-native English speakers                                                                                  |
| Make less U.S.-centric                                                                                                                 |
| Yes/no or true/false worked well                                                                                                       |
| Put more yes/no questions                                                                                                              |
| Give guests a copy of the questions to read                                                                                            |
| Use less military terms to allow other participants to understand                                                                      |
| Test the questions - maybe with PACOM International Liaison Officers                                                                   |

4) The Day 2 Lecture Track approach was an effective way to feature a variety of speakers. **83.0%** (*1<sup>st</sup> year this approach was used*)

1                      2                      3                      **4.32**                      5

What track theme was the best?

| Track Topic               | % Best Votes |
|---------------------------|--------------|
| <b>Climate Change</b>     | <b>37.0%</b> |
| Water Security            | 28.3%        |
| State Partnership Program | 26.1%        |
| Waste                     | 4.3%         |
| Energy                    | 4.3%         |

What other topics would you have preferred?

| <b>Other Preferred Topics – Day 2 lecture track</b> |
|-----------------------------------------------------|
| HA/DR                                               |
| Geoengineering                                      |
| Wildlife Conservation                               |
| Wildlife Trafficking                                |
| Natural Disasters                                   |
| Biodiversity                                        |
| Waste water management                              |
| Policy development and enforcement                  |
| Oil spill response                                  |

Please Comment on the Day 2 morning track format. How could we improve it?

| <b>Day 2 Morning Track Format<br/>Summary of Comments/Improvements</b>                                   |
|----------------------------------------------------------------------------------------------------------|
| Well organized and effective, perfect, great concise format, excellent approach                          |
| The pace was too fast                                                                                    |
| Allocate more time for speakers, 30 minutes instead of 20 minutes so time for Q&A                        |
| Add panel discussion                                                                                     |
| Make sure there is a clear release/break for transition                                                  |
| Shave off some of the games from Day 1 to allow more time in the program for tracks                      |
| Give presenters guidance on how to make connections from their specific projects to other regional areas |

|                                                                                                                                                                                                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Day 2 Morning Track Format</b><br><b>Summary of Comments/Improvements (continued)</b>                                                                                                                                                                                                                                                                   |
| Tracks covered broad themes and permitted delegates to attend a variety of areas of particular interest - this approach is highly positive as it accommodates the unique interests/challenges of delegates; There is a tension between brevity and providing an appropriate level of information - at times I think the 20 minute approach was too rushed. |

5) The Day 2 site visit was educational and worthwhile. **87.2% (↑ 6.8% increase from last year's site visit)**

1                      2                      3                      **4.49**                      5

Please rank the tour sites (1 - 4) in order of favorite site visit.

(Preference of most favorite (1) to least favorite (4) was analyzed by applying a weighted score as follows: 1 = 4; 2 = 3; 3 = 2; 4 = 1. Then the absolute score was divided by the number of responses [44] to obtain the average weighted score. The percentage/grade was calculated by dividing the weighted score by the highest weight given [4]).

| Site Visits                 | Average Weighted Score | Percentage/Grade |
|-----------------------------|------------------------|------------------|
| 1=Sport Fish Hatchery       | 2.91                   | 72.7%            |
| 2=Methane Power Plant       | 2.89                   | 72.2%            |
| 3=Eagle River Flats         | 2.23                   | 55.7%            |
| 4=Wildlife Education Center | 1.95                   | 48.9%            |

6) The Day 3 biodiversity exercise advanced my understanding of potential threats and solutions. **76.0%** (**↓ 10.1% decrease from last year's Day 3 activity**)

1                      2                      3                      **4.04**                      5

How could we improve it?

| <b>Day 3 Biodiversity Exercise<br/>Summary of Recommended Improvements</b>                                                |
|---------------------------------------------------------------------------------------------------------------------------|
| Be sensitive to English language abilities                                                                                |
| It would be better to combine with some field visit                                                                       |
| Show media clips                                                                                                          |
| More time for interaction, discussion and Q&A is needed                                                                   |
| Look for strategic solutions as participants are generally high ranking ministers                                         |
| Put civil and military maps and put more complex problems/challenges                                                      |
| Need more explanation about the problem from each country in their own environment                                        |
| Assign different sets of topics to groups, as there were too many topics to choose                                        |
| Perhaps a more realistic scenario to be able relate the potential threats and help us come up with more viable solutions. |
| Some participants had limited experience. Make sure there is a good civ/mil mix in the group.                             |
| Make the exercise more about civ/mil engagement                                                                           |
| Less US centric - Test the questions before the conference (with PACOM ILO's)                                             |

7) The delivery of four presentations followed by a panel session on Days 1 and 3 was an effective means of showcasing event themes.

**80.6% (↓ 6.0% decrease from last year's panel session delivery)**

1

2

3

4.22

5

Improvements/Strategies?

| Day 3 Presentations and Panel Session                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Summary of Recommended Improvements/Strategies                                                                                                                                                                                       |
| More talks or speakers would be great                                                                                                                                                                                                |
| Define questions for presenters to address                                                                                                                                                                                           |
| Provide more visuals to attract the eyes                                                                                                                                                                                             |
| Ensure panelists are thematically linked so that all speakers are involved in discussions                                                                                                                                            |
| Avoid break in the middle of the panel, as it was disruptive                                                                                                                                                                         |
| All presentations should be either in Day 1 or 3. During tracks some presentations were there but presence was less due to tracks                                                                                                    |
| Allow more time for Q&A/ discussion                                                                                                                                                                                                  |
| Handouts of the presentation should be distributed to the audience before each presentation                                                                                                                                          |
| Recommend that presentations should focus on environment security rather than internal security issues. The forum is a good venue to bring the other NGOs or IOS into the fore with government focused environ programs and policies |
| Yes very effective but need to focus on land and sea activity                                                                                                                                                                        |
| Do some joint presentations so can see state partner & country partner perspectives side by side                                                                                                                                     |

8) The Day 4 Project Collaboration activity helped identify potential environmental security activities that civil and military organizations in the region may be able to support. **85.2% (No comparison to last year available given different formatting)**

1                      2                      3                      **4.41**                      5

Improvements/Strategies?

| <b>Day 4 Collaboration Activity</b>                                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Summary of Improvements/Strategies</b>                                                                                                                  |
| Follow-up with country team to ensure that the project or potential project is thoroughly supported and vetted. This is especially important for Cambodia. |
| Inform participants to bring up records of issues with detail                                                                                              |
| Make participants aware of end goals - to collaborate on specific and measurable projects                                                                  |
| Civilian personnel, such as from environmental ministries, should be invited as well (from every country)                                                  |
| A brief of this project could have been provided a day earlier so as to increase time to brainstorm.                                                       |
| Participants should be given the purpose of the day 4 at the 1st day of the forum                                                                          |
| Needs more introduction in terms of: funding; management; conditions of project identification; timeline                                                   |
| Army Combined Readiness Training Area (CRTA) - Master development plan with focus and emphasis on environment sustainment                                  |
| Provide slightly more time and gather all necessary partners                                                                                               |
| Inform all participant early before the event to prepare their project                                                                                     |

|                                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Day 4 Collaboration Activity<br/>Summary of Improvements/Strategies (continued)</b>                                                 |
| Keep the end in mind throughout Days 1-4. Encourage the participants to think about potential projects up front.                       |
| Maybe prep participants with instruction so that they can start developing ideas prior to coming. Also, give them project ideas/types. |
| Good process, maybe push for more than 1 project per country.                                                                          |

9) Is there advance reading material or any other preparation that would make Day 4 (Project Collaboration Day) more productive?

| Yes   | No    | Blank |
|-------|-------|-------|
| 60.0% | 10.9% | 29.1% |

Comments/Suggestions?

|                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Advanced Reading Material Summary of Comments/Suggestions</b>                                                                                                                      |
| Perhaps a short summary of each category covered in PESF (Climate change, waste management, water, energy, etc.)                                                                      |
| The possibility to create a regional project                                                                                                                                          |
| Inform every participant to bring some important proposals on priority basis                                                                                                          |
| Provide project forms before the forum starts                                                                                                                                         |
| Project collaboration heads up prior to come to this event (PESF 2017)                                                                                                                |
| Recommend a resource tab on the website                                                                                                                                               |
| Before coming to the forum, participants may be requested to bring at least 3 projects proposal from their country and may discuss with concerned personnel to improve the proposals. |

| <b>Advanced Reading Material - Summary of Comments/Suggestions (continued)</b>                                                                                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Provide case studies and successful projects references                                                                                                                                                                                        |
| Provide reading materials on biodiversity conservation, climate change, food security & sustainable development                                                                                                                                |
| Maybe some context to the kind of projects that could be undertaken - some listed in intro but could provide slide deck and rolling presentation during the brainstorming session to stimulate expansive thoughts and what could be achieved   |
| Need advance reading material about environmental security                                                                                                                                                                                     |
| Explanation of how and to what extent PACOM should be involved in order for the project to be successful in the process moving forward                                                                                                         |
| Advanced reading materials on successes of environmental security related projects would have been helpful                                                                                                                                     |
| Making a paper detailing the project can be handed out to representatives before making this way to the conference. In this way representatives could have worked on the critical projects and priorities which require inter-agency feedback. |
| Participants should know earlier about the purpose of Day 4 in order to prepare for choosing topic                                                                                                                                             |
| Talk about the "why" of the projects                                                                                                                                                                                                           |
| Suggestion: Require participants to bring along materials that would be needed for the activity. This could be done by sending through email the topics/objectives of the forum beforehand                                                     |
| Make more clear that activity before the conference so US partner country ideas could be germinating ahead of time                                                                                                                             |
| More communication with domestic sections involved would be helpful, since the participants here may not have the authority or specialty on the collaboration project.                                                                         |

| <b>Advanced Reading Material - Summary of Comments/Suggestions (continued)</b>                                               |
|------------------------------------------------------------------------------------------------------------------------------|
| Reading for facilitators to become more familiar with J45 TSCP priorities or the J4 priorities for a country.                |
| I think a constant drumbeat on project collaboration is necessary throughout the week to enable more creative project ideas. |

10) I feel I was given an adequate amount of time to discuss my viewpoints on environmental security. **79.7% (↓ 3.2% decrease from last year's event)**

1                      2                      3                      **4.06**                      5

How else could we have discussed your views?

| <b>Viewpoints - Summary of Recommendations</b>                                                                                                                                                                                                                                                                         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| By exchanging participants with neighbor countries                                                                                                                                                                                                                                                                     |
| Sharing experience; networking                                                                                                                                                                                                                                                                                         |
| An appropriate level was provided in small groups and in panel discussion. I wonder if a group approach to development of some key themes or focus areas for the next PESF could not be developed on the last day (get 1 rep from each country to provide top 3 focus areas for example then provide combined results) |
| If we don't have enough time for discussion, we could ask written questions                                                                                                                                                                                                                                            |
| Allow more time for Q&A                                                                                                                                                                                                                                                                                                |
| More small group focused discussions with SMEs and scenarios                                                                                                                                                                                                                                                           |
| Asking in small groups people to identify their problems, their priorities                                                                                                                                                                                                                                             |
| Some time for additional discussion between panel presentations would be beneficial                                                                                                                                                                                                                                    |

11) I think the length of the forum was appropriate. **81.1% (↓ 2.1% decrease from last year's event)**

1                      2                      3                      **4.25**                      5

Should it be shorter or longer?

| Shorter | Longer | Appropriate Length | Blank/NA |
|---------|--------|--------------------|----------|
| 12.7%   | 20.0%  | 34.5%              | 32.7%    |

12) I believe the event was prepared and delivered in a professional and worthwhile manner. **93.4% (↑ 2.2% increase from last year's event)**

1                      2                      3                      **4.74**                      5

13) There were adequate recesses between sessions so I could interact with other participants I wished to meet. **86.5% (↓ 2.9% decrease from last year's event)**

1                      2                      3                      **4.46**                      5

Suggestions on how to improve?

| Recesses Between Sessions - Summary of Suggestions                                                             |
|----------------------------------------------------------------------------------------------------------------|
| Have interactions, parties, socialization                                                                      |
| Give time allocations for praying time to Muslim especially                                                    |
| Open with a simple requirement that participants turn to neighbors, shake hands, and exchange cards - Each day |

| <b>Recesses Between Sessions - Summary of Suggestions (continued)</b> |
|-----------------------------------------------------------------------|
| More breaks but shorter in length                                     |
| Start time should be 8. Maximize days commitments                     |
| More numerous 15 min breaks                                           |
| More social activities will be welcomed                               |
| Provide time for every participant to introduce themselves.           |

Were assigned seats of value? How?

| <b>Were assigned seats of value? – Summary of Responses</b>                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------|
| Yes, it pushed people to engage in dialogue with strangers                                                                                 |
| I would concur - Perhaps 2 days assigned - 2 days with partners. I would recommend letting SPP accompany their partners on the field trip. |
| Yes, allowed interaction                                                                                                                   |
| Yes, it actively spread out staff from the same country                                                                                    |
| Groups were good, but maybe add flags to seats will help identify delegation                                                               |
| Mixed up and forced to meet new people                                                                                                     |
| Yes, forced early interaction on introverts                                                                                                |
| Somewhat. Representatives from countries which have similar environmental issues.                                                          |
| Yes. Enhanced controlled interaction, which is good.                                                                                       |
| Not necessarily - with exception of group exercises no real interaction occurs during presentations                                        |
| Not really; movement helps in developing network                                                                                           |
| Yes. I was able to interact with the different participants as well as secretariat members.                                                |
| Remain in that frame was good ways to meet each other in the very first time                                                               |

| <b>Were assigned seats of value? – Summary of Responses (continued)</b>                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Yes, allow us to meet the pertinent people with relations in our job/area                                                                                     |
| No - When people left early, it was noticeable                                                                                                                |
| Very much, have opportunity to get along with various nationals and share the themes                                                                          |
| Yes, made it easy and comfortable to enter area and interact                                                                                                  |
| Yes - This enabled me (and I think all participants) to interact with each other and learn of each other's environmental security issues/information sharing. |
| Was a good way to encourage meeting new people                                                                                                                |
| Yes, stimulated conversation                                                                                                                                  |

14) Can you please list the primary environmental Point of Contact for your organization so RESF event planners can continue to work with your country?

- a. Dan Lister, LTC, State Partnership Program Director; Idaho National Guard, [Danial.Lister.mil@mail.mil](mailto:Danial.Lister.mil@mail.mil); c: 208-608-4915; o: 208-272-3695; United States
- b. Col Borworn Wungsanggan, Director of Disaster Relief Division; Ministry of Defence, [borworn.w@mod.go.th](mailto:borworn.w@mod.go.th)/ [borworn.w@gmail.com](mailto:borworn.w@gmail.com); 66 1817768882/ f66 26223606, Thailand
- c. Chairman Mr. Rohana Perera, Marine Environment Protection Authority; Ministry of Development & Environment; [www.mepa.lk](http://www.mepa.lk); 011-269-0605; Sri Lanka
- d. Dr. Gen Operation, MCMU, S.L. Navy, [www.navy.lk](http://www.navy.lk)/ 0094-11-221-0000; Sri Lanka

- e. Bouakhan Soulivanh, Deputy Director; Ministry of Natural Resources and Environment; [boua456789@gmail.com](mailto:boua456789@gmail.com); 856 20 9977 9249; Laos
- f. Colonel Mike Goodyer, Senior Environmental Planner; Headquarters Joint Operations Command; [mike.goodyer@defence.gov.au](mailto:mike.goodyer@defence.gov.au); +612 6128 4096; Australia
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- h. Col Ian Cumming, Climate Advisor, Department of Defense, [ian.cumming@defence.gov.au](mailto:ian.cumming@defence.gov.au); Australia
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- o. Mohamed Zuhair; Minister of State; Ministry of Defence and National Security; [zuhair@defence.gov.my](mailto:zuhair@defence.gov.my); +960-779-1232; Maldives

- p. King Sam; Program Manager, Protected Areas Network Office; Ministry of Natural Resources, Environment & Tourism; [esuroil@gmail.com](mailto:esuroil@gmail.com); 680-767-5435
- q. Mr. Lim Say; Deputy Director; Ministry of Environment; [saylimmeer@yahoo.com](mailto:saylimmeer@yahoo.com); 855-17-669-566; Cambodia
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- x. Terry Tulang, Deputy Commander, Vanuatu Mobile Forces, [ttulang@vanuatu.gov.vu](mailto:ttulang@vanuatu.gov.vu); 00678 7790210; Vanuatu
- y. Diana Ramirez; Dr. Acting Manager; Wildlife Department's Wildlife Rescue Unit; [wildliferescueunit@gmail.com](mailto:wildliferescueunit@gmail.com); +60 128026 304; Malaysia
- z. Larry Phyfe; Program Manager; Chief, Environmental & Special Programme; USACE; [larry.m.phyfe@usace.army.mil](mailto:larry.m.phyfe@usace.army.mil); 907-753-2638; United States
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- bb. Purevjav, Project Manager; Water Supply C. Ulaanbaatar; [purevjavb@yahoo.com](mailto:purevjavb@yahoo.com); 976-95114997; Mongolia

- cc. Sumarji Bimoaji; CDR Navy; Indonesian Navy;  
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- hh. Mr. Bruce Kijiner (RMF National Focal Point), Permanent  
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+692 625-2699/2763; Marshall Islands
- ii. Ms. Moriana Phillip (Cooperational Focal Point), General  
Manager; RMI Environmental Protection Agency;  
[morianaphillips@gmail.com](mailto:morianaphillips@gmail.com); +692 625-5203; 692-625-3035;  
Marshall Islands

The overall participant results can be found in the below table:

|   | 1    | 2 | 3 | 4    | 5    | 6    | 7    | 8    | 9 | 10   | 11   | 12   | 13   | 14 | Total |
|---|------|---|---|------|------|------|------|------|---|------|------|------|------|----|-------|
| 1 | 0    |   |   | 0    | 0    | 0    | 0    | 0    |   | 0    | 0    | 0    | 0    |    | 0     |
| 2 | 0    |   |   | 0    | 0    | 2    | 0    | 1    |   | 1    | 0    | 0    | 0    |    | 4     |
| 3 | 1    |   |   | 3    | 3    | 7    | 4    | 3    |   | 9    | 7    | 0    | 1    |    | 38    |
| 4 | 31   |   |   | 28   | 15   | 30   | 34   | 20   |   | 26   | 26   | 14   | 26   |    | 250   |
| 5 | 23   |   |   | 19   | 23   | 13   | 16   | 25   |   | 14   | 20   | 39   | 25   |    | 217   |
|   | 55   |   |   | 50   | 41   | 52   | 54   | 49   |   | 50   | 53   | 53   | 52   |    |       |
| 0 | 85.0 |   |   | 83.0 | 87.2 | 76.0 | 80.6 | 85.2 |   | 76.5 | 81.1 | 93.4 | 86.5 |    | 83.4  |

***Overall, this year's event was rated 3.6% lower than last year, and 2.7% lower than two years ago.***

### 13. COUNTRY EVALUATION SUMMARY

In the afternoon, Col Mike Matheis conducted the After-Action Review session. Each country stood up and shared (1) what they thought worked best at the PESF, (2) areas for improvement, and (3) how to involve their country more in future PESF collaboration. A common point of feedback was participants would be better prepared if they could receive environmental security materials in advance and better understand the goal of developing project concepts on Day 4. Several participants also mentioned that there were other agencies in their country that should be engaged, depending on the themes of the forum.

A summary of each country's response can be found below.

- Australia

1. Overall management of the event went well and achieved the stated objectives. The track approach was ideal because it provided a diversity of insights and country perspectives. The site visits worked well and tied in the forum themes.
2. Some of the panel discussions could have been enhanced with greater thematic linkages. On the last day, sessions could start earlier so people could catch flights. Target audience should be clarified, whether working level or senior representation.
3. Conduct preliminary work on project conception and design in advance of the forum. We could add and contribute more if we know in advance what involvement each country needs to provide.

- Bangladesh
  1. The journey was long, but the forum was impressive. Biodiversity conservation theme and site visits worked well.
  2. Can improve by letting us know ahead of time the forum would be about developing projects, we can start thinking about it
  3. A lot of cooperation activities can take place between our countries; we can talk to our ministries and departments to determine future projects.
- Cambodia
  1. It was a positive experience overall. The organizers and participants shared important information and knowledge, which enables us to be working together on the environment.
  2. Invite more partners and different sectors to the forum.
  3. Continue working and sharing information between Asia, Europe, and the U.S.
- China
  1. The forum provided a good platform for enhancing cooperation with countries in the region and happy see the military getting involved and paying attention to environmental security. It was impressive to see and talk with the local people about climate change and glaciers melting, spring coming earlier than it has in the past.
  2. To improve, it would be more constructive if the forum focused more on military activities. One topic that could be covered is humanitarian assistance/disaster response, which is an important topic with natural disasters happening more frequently because of climate change. Rather than having as

many games, we could have more group discussions and put some of the background terms and knowledge in preparation materials.

3. China would like to be a more active participant in the PESF and hopes to be a host country in the future.

- Fiji

1. The forum provided a good platform for collaboration in the Pacific. It reaffirms the reality that exists in Fiji, fighting climate change, ocean acidification and other threats.
2. Perhaps can appoint focal points in participating countries to have more continuous dialogue.
3. We have the U.S. Embassy that looks after Fiji, Tonga, and others; the DATT is another resources and could help providing dialogue in advance of next forum.

- Indonesia

1. It was a good opportunity for us to get together with participants from all over the world and learn about developing environmental security projects.
2. From Indonesian side, we think that the next event could be improved by inviting participants from the Ministry of Environment because they know more about potential projects.
3. It is very important to develop project collaboration more frequently, coordinate and keep in touch, as well as communicate about the next event and other activities.

- Lao PDR
  1. It was Lao's first time at the PESF. They felt they learned a lot about environmental security and will take the knowledge into the field.
  2. Lao cannot see any room for improvement, as they felt their experience was already very good for them.
  3. For future involvement, it would be good to include an additional ministry, such as Ministry for Environment.
- Malaysia
  1. The best thing was getting to know each other and sharing knowledge between countries, networking on similar issues. It was the first time for Malaysia to participate in a PESF.<sup>4</sup>
  2. As far as improvements, Malaysia thought everything was fantastic.
  3. In the future, in addition to the Ministry of Environment, include the Ministry of Defense.
- Maldives
  1. The interpersonal connections were the best thing, along with the wide range of expertise.
  2. One idea for improvement would be to prepare a paper and distribute before we come, so we are prepared to discuss the issues with other agencies.<sup>5</sup> We could involve agencies prior to

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<sup>4</sup> Editor's note: Malaysia has attended past PESF events.

<sup>5</sup> Editor's note: The planning team needs to emphasize with the SCOs that they should share the Information Paper with the participants in advance. The Administrative Notes should also include reference to the Information Paper and provide a brief description of the forum's focus.

the forum and hold regional group discussions. It would be nice to have more dialogue outside of the forum; good things can come from more interactions.

3. To involve our country more, we need to include our environmental protection agency in the forum. It would be very beneficial to integrate our environmental security efforts.

- Marshall Islands

1. Everything was great and a positive experience, but the site visits were really nice. The methane power plant was excellent.
2. Marshall Islands couldn't think of anything to criticize.
3. To involve their country more in the future, the PESF could be held in Marshall Islands.

- Mongolia

1. The forum was well organized, subjects covered by different countries were very interesting (energy and water especially), and site trips were also very interesting. The methane landfill seems like an expensive project, but thinking about using it in Mongolia instead of burning trash.
2. Could include different ministries in the forum, defense and construction or whatever topics are being covered.
3. Mongolia will be hosting the PESF next year and everyone is invited. Focusing on water and energy issues in the future will make Mongolia more involved.

- Nepal

1. The most important part of the forum for Nepal was building partnerships among colleagues and building an enlightening network to share best practices. Our understanding is that

environment and ecology is very dynamic, interrelated, and interlinked.

2. Keep organizing these events; they will become more advanced and we can compile best practices.
3. To involve Nepal more in the future, implement the projects we design and develop.

- New Zealand

1. The best part was breaking into sessions where we discuss different projects; never been to a forum like this where we not only talk and listen, but produce projects.
2. Flights were a little hard coming so far, but the rest is just minor; not much to improve.
3. In the future, could discuss regulatory issues more. Climate change and water supplies are topics of continual interest and getting more of colleagues involved.

- Palau - *Already departed.*

- Philippines

1. The Philippines thanks everyone and especially the event organizers for putting together the event.
2. It would help to focus more on natural disasters, including real time event occurrence to study the viability of projects.
3. Keep involving the Philippines in the forum activities.

- Solomon Islands - *Already departed.*

- South Korea - *Already departed.*

- Sri Lanka
  1. The forum was a rare opportunity and the best experience to participate. It was very important forum to obtain knowledge and information and get involved with other countries.
  2. It would help to know more what the issues are in other countries.
  3. Help to implement sustainable solutions in Sri Lanka.
- Thailand
  1. The PESF is a very unique event. I have been working with PACOM since 2015 and know it's very challenging to find speakers on relevant themes.
  2. To improve, we should involve civilian agencies that are related to the themes or topics of focus; one military agency and one or more civilian agencies.
  3. Invite Ministry of Defense.
- Timor L'este
  1. It was a comprehensive forum and the level of interaction was important. Timor L'este appreciated the different people who attended. It's difficult to get people to come together and reach a common goal, like climate change. We all need to come together because one country would not be able to respond on its own to tsunamis or sea level rise. PESF is not just for talking, but for creating projects. The topics covered were relevant to Timor L'este.
  2. Improvement would be to increase the time allocation for speakers. It would be nice to have 25-30 minutes to get points across to the audience and answer questions.

3. It would be great to have the forum in Timor L'este in the future.
- United States
    1. The presentations were really good. The design and planning was tremendous; everything was deliberately planned so by Friday we already had discussions, made new friends, and learned about other countries so that when we got together to develop projects it was easier. The long breaks gave an opportunity to have robust discussions. Site visits were excellent.
    2. It may make more sense to start the forum on a Monday given travel times. For the track sessions on Day 2, be more conscientious about the time or have more time for Q&A. During the site visits, the link to environmental security wasn't always made explicit. It would be good to make the strong connection to what we're doing at the forum.
    3. For speakers, look into USAID mission directors or technical specialists, or host country partners. Continue to invite USAID and USFWS to the forum. Both agencies want to be an asset to the PESF.
  - Vanuatu - *Already departed.*

- Vietnam
  1. The forum helped us learn a lot about dealing with environmental problems; climate change, waste, biodiversity.
  2. No need for any improvement.
  3. Vietnam would like to hold the forum in their country in the future.

## OPPORTUNITIES

Throughout the PESF, a myriad of collaborative opportunities were identified for future environmental security partnerships. This included confirmation of Mongolia hosting the 2018 Northeast Asia Regional Environmental Security Forum, and New Zealand potentially hosting the 2019 Pacific Environmental Security Forum.

Additionally, on Day 4 of the PESF, participants worked in country groups with a facilitator to identify future environmental security projects that could be accomplished. Participants were given time to brainstorm three to five project ideas, and then add detail to one or two priority projects. A summary of the potential environmental security projects can be found below. The project ideas are organized by country, and a summary of their draft scope of work is listed. These projects remain concepts, and will require more coordination before formal proposals can be written and submitted for funding. In the past, only a few of the projects are typically funded due to budgetary constraints.

### Bangladesh

Bangladesh identified two priority projects during the Day 4 PESF session. The main project concepts were a water quality monitoring system for the Dhaleshwary River and an aquifer recharging evaluation for Dhaka City. The Dhaleshwary River water quality monitoring system would install a real-time online tool to ensure quality of water conforms to Department of Environment

standards. The Dhaka aquifer refresh effort would conduct a feasibility study for practical options to recharge, as well as introduce a metering system concept in Dhaka (Dhaka) for excessive groundwater use.

## Cambodia

Cambodia identified two priority projects during the Day 4 PESF session. The main project concepts were Counter-Wildlife Trafficking in Cambodian National Parks and mobile water quality testing in the field for the Department of Water Quality Management in Phnom Penh City. The Counter-Wildlife Trafficking effort would increase the capability of the Cambodian National Park to communicate and coordinate with law enforcement to control illegal trade practices. Mobile water quality testing would provide efficient and accurate results to ensure the water quality meets the Department of Water Quality Management standards.

## China

China identified one priority project during the Day 4 PESF session. The main project concept is an academic exchange workshop between China and the US military. The academic exchange workshop would be used to discuss ecological development of military areas with the goal of reducing pollutant discharge, improving resource efficiency, constructing green barracks, and enhancing ecological conditions of military training and residential areas.

## Fiji

Fiji identified one priority project during the Day 4 PESF session. The main project concept is creating a regional support plan for vessel salvage. The support plan would include exchanging information with RFMF on proper techniques of vessel salvage due to environmental security concerns with marine life and navigational concerns.

## Indonesia

Indonesia identified one priority project during the Day 4 PESF session. The main project concept is a fish hatchery program. The plan would be a civil-military partnership to expand fish hatchery programs to provide sustainable food resources to communities with a limited regional fish supply due to IUU fishing and climate change.

## Lao PDR

Lao PDR identified one priority project during the Day 4 PESF session. The main project concept is a solid waste management plan and ecological disposal plan for plastics using shared vision planning techniques. The project will include preparing a social media, print, and radio campaign to change waste management practices in Vientiane.

## Maldives

Maldives identified one priority project during the Day 4 PESF session. The main project concept is a de-flooding/firefighting

facility with on-site equipment. This dual purpose facility would assist by dewatering flooded communities which are prone to flash flooding and provide firefighting capabilities during emergencies.

## Malaysia

Malaysia identified two priority projects during the Day 4 PESF session. The main project concepts were a wildlife policy and an assessment on the Wildlife Health Genetic and Forensic Laboratory. The development of a National Wildlife Policy would include training and collaboration between wildlife authorities, police, and army on law and enforcement to counter wildlife trafficking. The laboratory assessment will determine if erosion control/renovation or relocation would better suit the needs and longevity of the laboratory which has been damaged by sloughing and landslides.

## Marshall Islands

Marshall Islands identified two priority projects during the Day 4 PESF session. The main project concepts were a waste oil re-use power plant study and a medical waste study. The study on waste oil re-use would determine the options of reducing stockpiled waste oil which is currently being mixed with other wastes and can contaminate groundwater and surface water resources. The medical waste study would determine the size and scope of a medical waste treatment that is needed to correctly handle medical waste which requires incineration.

## Mongolia

Mongolia identified two priority projects during the Day 4 PESF session. The main project concepts were permafrost mapping and remediation assessment. Permafrost mapping would be used to evaluate the feasibility of an aquafer recharge system to address the growing population in Ulaanbaatar which is threatening the underground aquafer water supply. Assessment of the Nalaikh area would determine the scope of the remediation that is needed which has been degraded by artisanal mining.

## Nepal

Nepal identified three priority projects during the Day 4 PESF session. The main project concepts were a training module, site management plan, and an early warning system. The training module would be to train frontline and protected area staff of eight SAWEN member countries to combat poaching and illegal trade of endangered wild species (plants and animals) which threatens the social and ecological region. A site management plan of the Himalayan region would provide solutions to reverse the biodiversity degradation, loss species, and water scarcity. An early warning system is needed when glacier lake outburst flooding occurs to warn downstream communities which are at an increased risk in the Himalayan region due to climate change.

## Palau

Palau identified one priority project during the Day 4 PESF session. The main project concept is a remote fueling station for

aerial and marine support vessels on Helen Reef Atoll. Currently in the remote southern islands none exists which limits boat and aircraft patrols for emergency responses.

## Philippines

Philippines identified two priority projects during the Day 4 PESF session. The main project concepts were an environmental impact statement and a health clinic. An environmental impact statement for the 815 acre training area would assess the impacts on the environment that is planned for development. The health clinic would benefit the local population in the southern part of the Philippines which has an ongoing insurgency problem and may be a beneficial tool to empower local well-being while addressing conflict resolution.

## Sri Lanka

Sri Lanka identified two priority projects during the Day 4 PESF session. The main project concepts were recycling facilities and water pipeline repair. The design and construction of recycling facilities would include collection and transfer stations as well as encouraging greater participation and collaboration with an educational workshop. The water pipeline repair includes 28km of pipeline that supplies water to the city from a water source that is located in the Headworks wildlife sanctuary. Sections of the pipeline may not be repairable and will need to be replaced.

## Thailand

Thailand identified four projects during the Day 4 PESF session. The project concepts were reservoirs analysis, water supply development, a watershed study, and disaster recovery construction plan. The economic analysis of constructed reservoirs would be compared to predicted benefits and make recommendations for key factors that drive the economics at the micro and macro level. The development of a reliable water supply to the ammunition plant would involve relocating the intake, refilling the reservoir, and connecting the reservoir directly to the plant. A watershed study would determine which reservoirs are needed to provide drinking water, how to protect the local community from flooding, and provide recommendations for repairs. A Disaster Recovery Construction Plan would be used to plan for future responses and develop flood maps to show the proper elevation to raise or rebuild houses before floods.

## Timor L'este

Timor L'este identified three priority projects during the Day 4 PESF session. The main project concepts were a coastal resource survey, a hazardous waste management plan, and a water management plan. The survey would map and identify corals to protect and manage these resources with the projected increase in tourist activity and economic growth. The hazardous waste management plan would use techniques to address issues with waste disposal, aggravated by poor access to remote areas. A water management plan would use shared vision planning techniques for long-term treatment and distribution strategies to help development throughout the country.

## Vietnam

Vietnam identified two priority projects during the Day 4 PESF session. The main project concepts were a Border Command workshop and a dioxin assessment. A workshop would be conducted to expose the Border Command staff to techniques from other countries to combat crime, including wildlife trafficking. A dioxin assessment would involve sampling and analysis of soil and sediment to determine the level of contamination at the border between Vietnam and Laos which has remains contaminated from the war.

