



INSTITUTE FOR DEFENSE ANALYSES

**Review of the Fiscal Year 2012 (FY12)
Defense Environmental International
Cooperation (DEIC) Program:
Unclassified Version**

Susan L. Clark-Sestak

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Executive Summary

The Defense Environmental International Cooperation (DEIC) is a tool available for the Office of the Secretary of Defense (OSD) and the Combatant Commands (CCMD) to use in engagement activities with other nations. The projects it supports focus on defense-related, environmental themes, with special priority placed on projects that promote mission sustainment, innovative approaches to environment, safety and occupational health (ESOH) risk management, and/or building capacity for strategic partnerships. The Institute for Defense Analyses (IDA) reviewed the execution of the Fiscal Year 2012 (FY12) DEIC program within each of the CCMD areas of responsibility (AOR) and assessed the program's performance for that year. This assessment included an identification of several examples of the value DEIC has provided; these can be used as one form of metric for the program.

For FY12, the DEIC program had a final budget of \$3.68 million, a significant increase over its FY11 budget of \$1.1 million. The notable increase in funds is attributable to DEIC's identification in the 2010 *Quadrennial Defense Review Report* as a useful mechanism for addressing international aspects of military adaptation to climate change. A three-member Advisory Group reviewed proposals totaling approximately \$6.9 million and then recommended to the Deputy Under Secretary of Defense for Installations and Environment how these funds should be allocated among the AORs of the different geographic CCMDs.

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1. Overview of the Defense Environmental International Cooperation (DEIC) Fiscal Year 2012 (FY12) Program

In its previous assessment of the DEIC program, the Institute for Defense Analyses (IDA) described the purpose of DEIC, the types of activities it has funded over the years, and the established submission and approval process for the program.¹ This document, therefore, assumes familiarity with the program and focuses strictly on the execution of projects funded by DEIC in Fiscal Year 2012 (FY12).

Residing within the Environmental Readiness and Safety (ERS) office of the Deputy Under Secretary of Defense for Installations and Environment (DUSD(I&E)), the DEIC program was originally funded in FY12 at \$4,265,000. At the conclusion of the fiscal year, the actual funding level was \$3,681,000, which amounted to a 14 percent cut from its original budget. Part of this reduction came as a result of the Assistant DUSD(I&E) redirection of funding to support other I&E priorities. Despite this cut, the final funding level marked a significant increase over DEIC's FY11 budget of \$1.1 million; the increase is attributable to DEIC's identification in the 2010 *Quadrennial Defense Review Report* as a useful mechanism for addressing international aspects of military adaptation to climate change.²

The project proposals submitted for consideration by the DEIC Advisory Group totaled \$6,926,800.³ Appendix A contains the spreadsheet listing all projects. As in previous years, the Advisory Group adopted the approach of identifying *first tier* projects that should have highest priority (funding for which is listed in the "approved" column of the spreadsheet) and those that were also valid projects, but ranked as *second tier* (in the spreadsheet, listed in the column "reconsider"). The Advisory Group recommended

¹ See Susan L. Clark-Sestak, *Assessment of the FY10 Defense Environmental International Cooperation (DEIC) Program*, IDA Document D-4287 (Alexandria, VA: Institute for Defense Analyses, June 2011) and Susan L. Clark-Sestak, *Review of the Fiscal Year 2011 (FY11) Defense Environmental International Cooperation (DEIC) Program*, IDA Document D-4528 (Alexandria, VA: Institute for Defense Analyses, February 2012). For Official Use Only.

² U.S. Department of Defense, *Quadrennial Defense Review Report* (Washington, DC: Government Printing Office, February 2010), 85.

³ The DEIC Advisory Group consists of a representative from the Environmental Readiness and Safety (ERS) office in the Office of the Deputy Under Secretary of Defense for Installations and Environment, a representative from OSD (Policy), and a representative from the Joint Staff. Its review process is described in detail in Clark-Sestak (June 2011).

funding first tier projects that totaled 80 percent of the original budget, anticipating likely budget cuts and the challenges imposed by operating under the federal government's Continuing Resolution (CR). Thus, when additional funds became available after the CR was lifted, the Advisory Group was able to select among a range of valid second tier projects, offering DEIC more flexibility to decide which projects were most likely to be executable within the remainder of the fiscal year.

The Advisory Group did not limit the total cost of projects in the second tier funding category to the remaining 20 percent of the original budget. Thus, even if a project were listed for such funding, it did not mean that it would automatically be funded even if the full DEIC budget were available since the total costs for such projects exceeded the overall remaining DEIC budget (before any cuts). This approach was adopted to clarify whether the Advisory Group felt the proposal merited DEIC funding; if it was not recommended for either category of funding, this indicated that the Advisory Group believed DEIC money should not be used for that proposal, no matter what DEIC's budget might have permitted.

The dramatic increase in DEIC's FY12 budget made for a very successful and more robust program overall. Nevertheless, there were still difficulties in execution due to both domestic and international considerations. Domestically, the process imposed by the federal government's disbursement of the budget through a series of CRs continued to present challenges to the CCMDs in the planning and execution of approved projects. Internationally, as in previous years, changes in the security environment and/or in the host nation's capacity (or willingness) to stage the event forced the cancellation, postponement or reconfiguration of some projects.

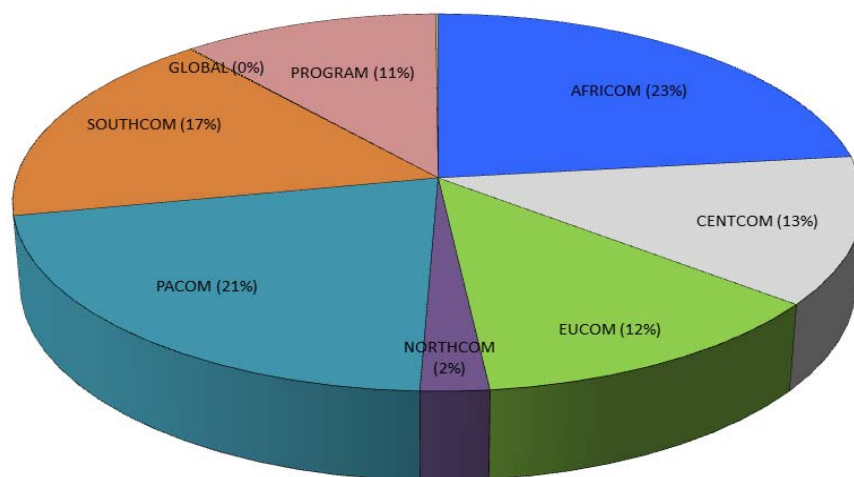


Figure 1. DEIC FY11 Spending, by Area of Responsibility

Figure 1 illustrates the allocation of funding by area of responsibility (AOR), as the program was actually executed. A summary of projects by CCMD offers more detail on the program's execution in FY12. They are listed in the order in which they appear on the spreadsheet for FY12 DEIC projects (see Appendix A). As described above, this spreadsheet lists all proposed projects by project number and title, the DEIC funds requested for each, the funding for approved (first tier) projects, second tier projects, and the funding levels as actually executed ("revised" column). Notably, in the majority of cases, funding sent to the CCMDs for these projects was supplemented by other funding sources, such as Traditional Commander's Activity (TCA) funding.

2. U.S. Africa Command (AFRICOM) Execution of DEIC Projects

The Advisory Group recommended \$594K (thousand) in first tier projects for the AFRICOM AOR and another \$644K in second tier projects. Actual funding for this AOR was \$853K, of which \$61K supported OSD (Policy) initiatives; the balance was sent to AFRICOM, which subsequently returned \$50K to OSD. As in previous years, the challenges of executing an engagement program on the African continent, where portions of it continue to experience instability and unrest, dictated the need for flexibility in altering the locations of some events and postponing others.

The following projects were approved for funding, but were not executed for the reasons noted below:

- **Uganda, Environmental Considerations in Military Activities (AFFY12010, \$48K)** was scheduled more than once, most recently for end-September 2012, but each time had to be postponed, once because of an Ebola outbreak. In addition, because so many other engagements were planned with Uganda over the past two years, the U.S. country team requested postponing some of them, of which this DEIC event was one.
- **Senegal, Oil Spill Preparedness and Fisheries Management (AFFY12013, \$48K)** was requested to be moved to Togo or Benin by AFRICOM because the embassy country team was concerned about potential security issues in connection with elections in the country. While AFRICOM began planning for events on this topic elsewhere (first in Benin or Togo, then in Ghana), the workshops themselves could not be executed in FY12; the event date is yet to be determined, as of the writing of this document.
- **Tanzania, Oil Spill Preparedness and Fisheries Management (AFFY12017, \$47K)** encountered scheduling difficulties, in part due to the timing of Ramadan. AFRICOM used this funding, as well as the funding for Senegal (AFFY12013) to begin planning for alternative venues, as described above.
- **Burkina Faso, Environmental Considerations in Military Activities (AFFY12018, \$46K)** was postponed at the request of the host nation military, as were all other engagements, until both countries agree on an engagement strategy. This event would now be considered for execution in FY13 or FY14, subject to approval of such a strategy.

In addition, three projects were executed, but the venues changed:

- **East Africa Regional Environmental Workshop (AFFY12006, \$156K)** was not executed due to a request by the U.S. embassy not to host an event there during FY12. In its place, AFRICOM executed a regional workshop in the Southern region (AFFY12009, \$152K).
- **Nigeria, Oil Spill Preparedness and Fisheries Management (AFFY12021, \$50K)** was approved for funding, but before funds could be released, the security situation in the country had changed and the embassy country team requested that it be postponed. As a result, ERS provided funding for a project on the same topic, but in Namibia instead (AFFY12020, \$44K).
- **Democratic Republic of Congo (DRC), Environmental Considerations in Military Activities (AFFY12014, \$50K)** was executed instead in the Central African Republic (CAR).

Finally, in May 2012, when additional DEIC funding became available, ERS provided funding for a new project that had not been part of AFRICOM's original DEIC submission. This project was to be conducted in Nigeria on environmental considerations in military activities (AFFY12022, \$87K), and was proposed after the security situation in part of Nigeria had improved. AFRICOM conducted planning activities for the event, but was not able to execute the workshop itself in FY12; the event date is yet to be determined, as of the writing of this document.

The executed projects in the AFRICOM AOR and some of their key themes or findings are described in the following paragraphs.

OSD Support to the U.S.-South Africa Defense Committee (DEFCON) (AFFY12001 and AFFY12002, \$61K). This project covered the costs of participation in an interim DEFCON meeting in South Africa, a DEFCON meeting, and an initial planning meeting in South Africa for a workshop on the theme of "outreach for mission sustainability." Some of the funds were to be used to secure the conference venue for the workshop. However, at the DEFCON meeting in September 2012, the decision was made to eliminate the Environmental Security Working Group. As a result, ERS decided to cancel the workshop; the workshop funds were then applied to other DEIC activities being supported by the Institute for Defense Analyses.

West Africa Region (Ghana), Regional Environmental Workshop (AFFY12007, \$151K). AFRICOM conducted three large-scale workshops covering a range of environmental issues. The West Africa region workshop held in Accra, Ghana in June 2012, was attended by more than fifty participants from thirteen countries, including both military and non-military environmental authorities. In addition to presentations on a range of U.S. environmental security programs, most participating countries also made

presentations on issues impacting environmental security in their countries or organizations. In addition, each country was asked to identify the top three environmental security topics, which will help focus areas for future cooperation, either bilaterally or regionally.

Central Africa Region (Gabon), Regional Environmental Workshop (AFFY12008, \$115K). As a result of postponements of several other funded projects, AFRICOM was able to apply some of these savings to this regional workshop, as it did not receive the full \$165K originally requested. Held in Libreville, Gabon in September 2012, the workshop included over fifty participants from five African countries, some seven international organizations, as well as various regional ministries and non-governmental organizations (NGOs). It was conducted in cooperation with the United Nations Environmental Program (UNEP) Abidjan Convention Secretariat. The workshop was designed to promote interagency and multinational cooperation among regional military and non-military stakeholders on environmental issues. Presentations covered topics such as climate change, water security, land degradation, and military training areas. To assist in targeting future cooperation, each of the five African nations participating identified five priority areas for their country, such as coastal erosion, oil spills, and marine pollution.

Southern Africa Region (Namibia), Regional Environmental Workshop (AFFY12009, \$156K). Similar to the regional workshop in Gabon, this symposium also sought to promote interagency and multinational cooperation among regional military and non-military stakeholders on environmental issues. Held in Windhoek, Namibia in August 2012, the workshop had forty-five participants from six African countries as well as international organizations, NGOs, and the U.S. Agency for International Development (USAID). Presentations covered topics such as the effects of climate change on international security, waste management, oil spill preparation and response, and military training areas. To assist in targeting future cooperation, each of the six African nations participating identified priority areas, both for their countries as a whole and specifically for their militaries.

Central African Republic (CAR), Environmental Considerations in Military Activities (AFFY12014, \$50K). Originally scheduled to be held in the DRC, AFRICOM held this two-day bilateral event at the U.S. embassy in Bangui, CAR in late August 2012. Topics covered included waste management, environmental considerations in peace support operations, and unexploded ordnance handling. In addition to representatives from the Ministry of Defense (MOD), six other CAR ministries and an international organization were represented. This was AFRICOM's first DEIC engagement with CAR. It helped develop a dialogue between military and civilian stakeholders and identified topics for future cooperation.

Namibia, Oil Spill Preparedness and Response/Fisheries Management (AFFY12020, \$44K). In addition to the regional workshop described above, AFRICOM conducted a bilateral engagement with Namibia to help determine its capabilities, procedures, and preparedness in the event of an oil or hazardous substance spill at sea or in port. In addition to presentations, the meeting included role-playing exercises. This engagement was held in Walvis Bay, Namibia in early February 2012 and brought together thirty-five Namibian participants from a range of agencies and organizations. The effort demonstrated that Namibia has some logistics and response capacity, but requires more coordination and training to fully develop the required capabilities to protect its environmental and economic assets in and around the Port of Walvis Bay.

3. U.S. Central Command (CENTCOM) Execution of DEIC Projects

The Advisory Group recommended a total of \$466K for five projects submitted by CENTCOM as well as one \$20K project to cover OSD support to CENTCOM events as part of DEIC's first tier funding. Of that total, CENTCOM returned approximately \$80K from two projects. Although it incurred some planning costs, CENTCOM had to delay execution of one project (U.S.-Qatar bilateral on camp sustainability, CEFY12106, \$73K); it will be conducted instead in the first quarter of FY13 at Qatar's request. CENTCOM also decided to withdraw the proposal to conduct a camp sustainability workshop in Afghanistan (CEFY12108, \$31K).

The executed projects in the CENTCOM AOR and some of their key themes or findings are described in the following paragraphs, with the exception of the project for OSD participation in CENTCOM events (CEFY12101, \$20K), since the events themselves are summarized below in the project descriptions. In its after action reports, CENTCOM noted that by conducting rehearsals with all U.S. speakers at CENTCOM headquarters, overall execution during the events themselves went very smoothly and it plans to adopt this approach for all future DEIC activities.

Multinational (Jordan) Camp Sustainability Environmental Management Workshop (CEFY12107, \$100K). DEIC covered the costs of the five-day workshop, which was held at the Middle Eastern Scientific Institute for Security, Amman Jordan, in June 2012. While proposed as a multinational workshop, other international events caused it to be executed as a bilateral event; it had the participation of forty Jordanian officers. CENTCOM and the Jordanians have expressed interest in conducting a DEIC-funded multinational activity in FY13. The workshop included small group interactions: one set of junior officers focused on hazardous waste operations and emergency response, another set of junior officers addressed establishing base-level environmental programs, and the senior officer group was tasked with developing a comprehensive outline of the Jordanian Armed Force's (JAF) first environmental regulation.

Kyrgyzstan, Camp Sustainability Environmental Management Workshop (CEFY12109, \$121K). In June 2012, CENTCOM conducted a four-day workshop in Bishkek, Kyrgyzstan with twenty-eight representatives from six different agencies of the Kyrgyz government. The participants expressed particular interest in practices such as composting, water, and operational energy that could be used at remote locations. As this was the first bilateral environmental engagement with Kyrgyzstan, CENTCOM solicited

inputs on their greatest perceived threats to the country. After illicit drug trafficking, perceived threats from toxic chemicals, natural disasters and nuclear waste all ranked close behind. For future engagements, the Kyrgyz expressed interest in environmental issues at border outposts, composting, and environmental cleanup processes and procedures.

Tajikistan, Camp Sustainability Environmental Management Workshop (CEFY12110, \$121K). Also in June 2012, CENTCOM conducted a two-day workshop in Dushanbe, Tajikistan with thirteen engineers and radioactive chemical troops of the Tajik military. (It was originally planned for four days, including a site visit to a military base, but access denial by the MOD and a Tajik holiday reduced the undertaking to two days.) As this was the first bilateral environmental engagement with Tajikistan, CENTCOM solicited inputs on their greatest perceived threats to the country. After terrorist attacks, perceived threats from toxic chemicals and nuclear waste ranked close behind. For future engagements, the Tajiks expressed interest in alternative energy sources and environmental cleanup processes and procedures.

4. U.S. European Command (EUCOM) Execution of DEIC Projects

One OSD project, comprising several OSD-led initiatives, and four EUCOM proposals were recommended for first tier funding, totaling \$72K and \$412K, respectively. Funding for three of the first tier projects,⁴ as well as one second tier project, was ultimately provided to EUCOM over the course of the fiscal year for a total of \$481K. Of the approved projects, the project in Albania for an Adriatic workshop for climate change resiliency and spill response (EUFY12211, 67K) was not executed based on a coordinated decision by the U.S. DOD and Department of State. A total of \$7K was expended on planning efforts before it was cancelled, so EUCOM returned the remaining funds (\$60K).

The executed projects in the EUCOM AOR and some of their key themes or findings are described in the following paragraphs.

OSD Support to European/NATO/EU Activities (EUFY12201 and EUFY12203, \$72K). OSD used only about \$30K of DEIC funds for these activities. DEIC funded travel for one ERS representative to attend the annual Defense Network (DEFNET) meeting in Warsaw, Poland in October 2011; one ERS representative to conduct the U.S.-Finnish Principals' meeting in Turku, Finland in September 2012; and subject matter experts (SMEs) for one meeting of the U.S.-Sweden-Finland trilateral "environmental toolkit for deploying forces" initiative in Boston, MA. Cost savings were possible because fewer people traveled, OSD did not send representatives to participate in some planned meetings, and other sources of funding covered some travel.

Adriatic Regional (Croatia) Field Water Supply Workshop (EUFY12208, \$40K). Held in Zagreb, Croatia in July 2012, EUCOM altered the theme of this workshop to focus on water security. Participants expressed particular interest in critical infrastructure protection, water infrastructure risk assessment, regional climate change impacts, and flood prediction and protection. The workshop also served as a post-assessment for the Sava River modeling project conducted in 2010 by EUCOM Civic Engagement. Twenty-seven military and civilian participants came from six nations, helping to promote regional as well as interagency cooperation on water security issues.

⁴ The one project which was approved but for which funds were not sent was Eurasia Partnership Capstone 2012 (EUFY12207, 14K). Prior to funds being available, EUCOM opted not to have an environmental component in this event.

Themes addressed during the workshop included community outreach, interoperability, and common planning and response processes. The participation of a Latvian speaker offered a model for showing how a small country that was formerly part of the Eastern Bloc could develop a viable maritime security and pollution response capability. This workshop represented a follow-on event to activities previously funded by DEIC: a Croatian oil spill workshop and EUCOM participation in the Baltic Sea oil spill response exercise (BALEX), both conducted in 2010.

Latvia, U.S. participation in Baltic Exercise Delta (BALEX D) (EUFY12212, \$8K). Held in August 2012 in Helsinki, Finland, BALEX D is an annual exercise to promote environmental protection and oil spill response. The 2012 exercise included eighteen oil recovery vessels supported by fifty other ships and boats, representing eleven nations. The U.S. participants embarked on a Latvian Coast Guard vessel as observers, and discussed best practices and lessons learned for spill response with crew members and other Latvian observers. EUCOM has noted the importance of this engagement opportunity, in part because Latvia is the only Baltic nation with which EUCOM engages on defense environmental issues.

Arctic Security Forces Roundtable—Military Adaptation to Climate Change (EUFY12213, EUFY12214, and EUFY12202, total of \$366K). The Arctic Security Forces Roundtable initiative had two components: a meeting of two SME working groups that met in Oslo, Norway in May 2012 and a General Officer/Flag Officer (GO/FO)-level meeting held in Bodo, Norway in August 2012. The two working groups focused on maritime domain and communications. The results of these deliberations were then presented at the latter meeting and it was agreed that tangible actions must be made by each participating nation outside of the annual meetings. In addition to fifteen GO/FOs from seven nations, the Bodo meeting had another forty-six participants from a total of ten nations.

5. U.S. Northern Command (NORTHCOM) Execution of DEIC Projects

NORTHCOM submitted two projects for DEIC consideration in FY12, both of which were approved for a total funding of \$85K. However, due to changes in one of the projects as described below, NORTHCOM subsequently returned \$15K to ERS.

North American Aerospace Defense Command (NORAD)-NORTHCOM-Canada Limited Objective Experiment (LOE) 8: The Arctic (NOFY12306, \$57K). In March 2012, NORAD and U.S. NORTHCOM hosted a workshop focused on NORTHCOM responsibilities in the Arctic. Of the sixty-nine participants from various government and non-government agencies, three representatives from Canada also attended. The workshop included a tabletop exercise examining oil spill response and rescue operations off the Alaska North Slope. The findings of this exercise included a recognition of the importance of establishing and maintaining relationships with state and federal agencies in that region.

Multinational Environment, Safety and Occupational Health (ESOH) Risk Assessment Workshop (NOFY12307, \$28K). NORTHCOM addresses the ESOH theme with its partner nations on an annual basis. In FY12, due to foreign country changes in commitment to this activity (the Mexican Army did not participate), the cost of the event was reduced to \$13K; NORTHCOM returned the balance of the funds to ERS for redistribution within the DEIC program. The focus of this year's discussion was how each country determines and prepares aerospace medical guidance for its forces in advance of and in response to natural disasters. Representatives from the Canadian Defense Forces, the Mexican Navy, the Royal Bahamian Defense and National Emergency Management Agency participated in these discussions with NORTHCOM representatives.

6. U.S. Pacific Command (PACOM) Execution of DEIC Projects

OSD designated first tier DEIC money for bilateral events with China (\$60K) and to support the United States-Australia-Canada-United Kingdom engagement program (\$40K). No events with China occurred, so this money was reprogrammed to other DEIC activities, to include projects addressing the Agent Orange issue, as described below. PACOM received funding for four of the projects it had proposed, amounting to a total of \$580K. Because additional DEIC money became available due to changes in project execution in other AORs, projects focused on the PACOM AOR ultimately accounted for \$782K in FY12, which represented 21 percent of all DEIC funding for the year.

The executed projects in the PACOM AOR and some of their key themes or findings are described in the following paragraphs, with the exception of the project for OSD participation in PACOM events associated with DEIC projects (PAFY12403, \$40K), since the events themselves are summarized below.

Trilateral Environmental Security Cooperation (United States-Australia-Canada-United Kingdom) (PAFY12401, \$40K). The annual meeting among the environmental principals from Australia, Canada, United Kingdom, and the United States was held in April 2012 in Australia. The meeting included a range of site visits as well as discussions on topics such as climate change adaptation and bio-security challenges. It also provided the opportunity to review planning for the Pacific Environmental Security Conference (see PAFY12407, described below). Funding covered the costs of three U.S. participants, two from ERS and one from PACOM.

Agent Orange (PAFY12404, \$40K). When some DEIC approved projects were not able to be executed by the CCMDs, ERS identified an emerging requirement for additional documentation on the issue of Agent Orange. DEIC funds were coupled with another OSD source of funding to perform this work. This project investigated allegations of Herbicide Orange use on Okinawa through exhaustive reviews of historical records. The study concluded that there is no documentation to validate claims that Herbicide Orange was shipped either to or through Okinawa, nor that it was unloaded, used or buried there. The final report is, as of the writing of this document, in draft form.

Herbicide Orange Primer (PAFY12405, \$82K). A primer on Herbicide Orange is in the process of being prepared, and will be delivered to ERS in April 2013. The work is progressing as planned, but, at the time of the writing of this document, there is no documentation from this project available.

FY12 Multinational MOD/Ministry of Environment (MOE) Environmental Security Workshop (Indonesia) (PAFY12406, \$150K). PACOM and the Republic of Indonesia MOE co-hosted a Southeast Asia regional environmental conference, held in Jakarta, Indonesia in April 2012. The event drew over 135 participants from twelve countries in the region, as well as from multiple international organizations. With a focus on regional and civil-military engagement, the workshop offered briefings on environmental and disaster management scenarios, problem-solving sessions on regional environmental issues, and an environmental disaster response exercise. The workshop identified a wide range of issues that would benefit from further cooperation, as well as the need to better clarify roles and responsibilities among various institutions. Some of these could be pursued during the next regional environmental security workshop scheduled to be held in Australia in 2013.

Planning for Multinational MOD Environmental Security Workshop (Australia) (PAFY12407, \$168K). PACOM identified the need for a planning and execution cycle of approximately eighteen months to organize the next regional environmental security workshop. During FY12, PACOM worked with Australian DOD counterparts, who will be co-hosting the event in April 2013, to develop the agenda, identify likely participants, determine the most effective format and deliverables, etc. PACOM participated in an Initial Planning Conference (IPC) in August 2012, and provided a briefing on the results to date. The overarching theme is building military resilience to the impacts of climate change. DEIC funding in FY12 included \$100K for contractor costs.

U.S. Marine Corps (USMC)-Thai Bilateral: Science and Technology (S&T) in Crimson Viper Exercise (PAFY12409, \$151K). S&T engagement with the Royal Thai Armed Forces focuses on information exchange, joint experimentation, and joint projects. The USMC Pacific's Experimentation Center conducts an annual field experiment called Crimson Viper, which is designated as a venue for joint technology assessments in an operationally realistic environment. During FY12, the evaluated technologies were in the areas of water purification, shelter construction, alternative energy, and unmanned aerial vehicles (UAVs). The event was deemed to be successful for technology insertion and S&T collaboration with the Thai armed forces.

USMC-Philippines Bilateral: S&T in Balikatan Exercise (PAFY12401, \$111K). The USMC Pacific's Experimentation Center is also the Executive Agent for S&T engagement with the Armed Forces of the Philippines. During the 2012 Balikatan Exercise, sixteen technologies pertaining to humanitarian assistance/disaster relief (HA/DR) were tested by U.S. and Philippine personnel. Attended by thousands of military personnel from both countries, the event was deemed to be successful for technology insertion and S&T collaboration with the Philippine armed forces.

7. U.S. Southern Command (SOUTHCOM) Execution of DEIC Projects

The Advisory Group recommended \$45K in funding for ERS to support the United States-Chile Defense Consultative Commission (DCC) as well as one project to cover OSD support to CENTCOM events. It also recommended funding for six SOUTHCOM projects totaling \$571K.

The executed projects in the SOUTHCOM AOR and some of their key themes or findings are described in the following paragraphs, with the exception of the project for OSD participation in SOUTHCOM's DEIC project events (SOFY12502, \$10K), since the events themselves are summarized below.

United States-Chile Defense Consultative Commission (DCC) (SOFY12501, \$45K). DEIC funding supported the participation of six U.S. representatives in the Energy and Environment Subcommittee of the U.S.-Chilean DCC meeting in Santiago, Chile in June 2012. The subcommittee focused its discussions on military adaptation to climate change (specifically with respect to impacts on infrastructure, training areas, and operations); sustainability; and operational risk management.

Green Building Practices to Achieve Net Zero in Expeditionary Bases (SOFY12507, \$140K). Co-hosted by the Chief of Engineers of the Chilean Army, this workshop included exchanges of information on topics such as sustainable building practices including in the military, net zero environmental impact programs and interagency cooperation on this topic, water sustainability and renewable energy initiatives. The event, held in Santiago, Chile in June 2012, concluded with a roundtable on how to incorporate energy and environmental sustainability into military planning.

Effect of Anthropogenic Environmental Changes on Infectious Diseases (SOFY12510, \$40K). Five SOUTHCOM representatives attended a NORTHCOM-sponsored conference examining biosafety, biosecurity, and readiness for outbreaks of dangerous and emerging pathogen outbreaks. This participation laid the groundwork for future SOUTHCOM bilateral and multilateral events to build partner capacity in topics such as emerging infectious diseases, preventive medicine, and force protection.

Tsunami Preparedness in Latin America (SOFY12512, \$74K). This meeting focused on tsunami modeling and brought together over 100 participants representing the full spectrum of organizations (civilian and military) involved in this issue in Chile. The

Chilean Navy has an agency dedicated to watching for indications of an impending tsunami and working with other Chilean agencies; what does not yet exist in Chile is a tsunami modeling capability. This is particularly important to develop because, as sea levels rise and alter coastlines, the impact of a tsunami changes. Another important contribution came from presentations by Japanese representatives based on their recent tsunami experiences. The meeting reinforced interest in civilian-military cooperation in improving the coverage of bathymetrically charted waters in Chile.

Incorporating Energy and Environmental Security in Military Ministerial Discussions (SOFY12514, \$80K). SOUTHCOM identified a number of events in which to incorporate defense-related environmental issues. DEIC funding covered the participation of SOUTHCOM or SME participation in these events and/or the costs of preparing for some of these discussions. These events included: Eastern Caribbean Security Conference; Central America Security Conference; South America Defense Conference; and Rio +20.

Security Impacts of Changes in Ice Cover in Latin America and Antarctica (SOFY12515, \$74K). Held at the Chilean Army's mapping and geospatial organization in July 2012, the conference addressed the issue of changes in ice cover as a specific component of climate change, with a particular interest in bringing together both civilian and military players. Of the 100 participants, only 13 were U.S. SMEs and 3 came from the Brazilian Navy; all others were from Chile. As a result of the meeting, there was a commitment to greater interagency cooperation in Chile, as well as the foundation for future U.S.-Chilean cooperation on satellite imagery of glaciers and strategies for using UAVs to monitor glaciers.

Climate Change Resiliency: Challenges for Military Adaptation and Readiness (SOFY12523, \$163K). SOUTHCOM hosted a regional workshop on environmental variability and the challenges this presents for military resiliency and readiness. Held in Miami, Florida in August 2012, the event drew fifty-nine participants from nine Central and South American countries, as well as interagency representation from the United States. The agenda included panel discussions on regional perspectives concerning this theme as well as the development of Service-specific common frameworks for incorporating environmental variability into military planning.

8. Global and Program Support Projects Executed under the DEIC Program

The ERS office uses DEIC money to support initiatives on a more global and programmatic level (i.e., not CCMD-specific). The Advisory Group recommended a total of \$427K for first tier projects and another \$483K in second tier projects; actual execution totaled \$411K. Although the following projects were approved for first tier funding, they were either not executed or executed at a significantly lower level of effort, as explained below:

- **Climate Change Outreach (GLFY12602, \$30K)** was reprogrammed because there were no pressing outreach opportunities once funding for this project was available, after the lifting of the CR.
- **ERS participation at the Environment, Energy Security and Sustainability (E2S2) conference (GLFY12603, \$7K)** was reduced to \$2K when only one of three ERS representatives attended the conference. Attendance at this conference also afforded an important opportunity for the ERS representative to interact with foreign delegations with which ERS has on-going cooperative initiatives.
- Funding for one representative from each geographic CCMD to participate in a **DEIC workshop and contractor support for this workshop (GLFY12604 and GLFY12606, \$35K and \$15K, respectively)** was readjusted. The \$35K was reprogrammed to other DEIC projects, while the \$15K was sent to the support contractor, but used for general support of the DEIC program. These changes were necessary because the funds were not made available under the CR and ERS determined that the workshop would not meet its objectives if held after the lifting of the CR.
- Funding for **Oak Ridge National Laboratory to support CCMD DEIC engagements (GLFY12607, \$50K)** was reprogrammed.
- **Theater liaison initiatives between ERS and the CCMDs (PRFY12701, \$40K)** was also reprogrammed when opportunities for ERS visits to the CCMDs became limited and the visits that were executed were paid for by a separate account in OSD's Acquisition, Technology & Logistics office.

The following describes program support projects that were executed with DEIC funds in FY12, which were either added or were identified as second tier projects that were able to be executed when other projects were not.

IPA Support to DEIC (PRFY12706, \$50K). Approved by the Advisory Group as a second tier project for up to \$288K, DEIC expended \$50K of its funds to secure a modest amount of staff-level capability, which ensured a sufficient allowance of man-hours to help manage the DEIC program.

Contractor Support to ERS (PRFY12707 and PRFY12712, total of \$257K). As part of its execution of the DEIC program, ERS relies on contractor support to track DEIC activities throughout the year and to participate in several of the engagement initiatives. This funding covered these contractor expenses. During FY12, work included participation in the trilateral team (with Finland and Sweden) to develop a toolkit on environmental education for contingency operations and participation in a bilateral team (with South Africa) to develop a workshop on outreach for mission sustainability. It also covered the cost of preparing this document. The funding for this contractor support was provided in two increments at different times during the FY, hence the two project number designations for this work.

9. Program Assessment

The DEIC program continues to serve as a successful engagement tool with other nations on environmental issues. It contributes to the development of military-to-military relationships and interagency contacts, not only between the United States and the partner nation(s), but also within and among those partner nations. During FY12, as in previous years, DEIC has supported the creation of a number of useful products addressing defense-related environmental issues that can be used worldwide. It has maintained its focus on efforts that address mission sustainment or ESOH risk management, and/or those initiatives that seek to promote access or build capacity for strategic partnerships. In FY12 it also began a more concerted effort to address issues related to military adaptation to climate change.

Based on interactions with the DEIC leads in the various CCMDs and the reports submitted following the execution of the projects, it is possible to identify several examples of the value DEIC projects provide. The project descriptions contained in this document serve to highlight some of these benefits. In addition, during 2012, there were several statements by high-ranking U.S. DOD personnel and foreign officials that reinforced DEIC's contributions. This document concludes with a sampling of such evidence:

- In coverage of the Southeast Asia regional environmental security conference held in Jakarta, Indonesia (PAFY12406), *The Jakarta Post* cited the Indonesian Minister of Environment who welcomed PACOM's involvement in recognizing the role that the military can play in addressing environmental issues.⁵ In addition, a survey of the participants showed that more than 80 percent of them had (1) gained a better understanding of environmental issues and threats in the region and (2) developed a better understanding of the connection between environmental issues and disaster preparedness, response, and prevention.
- As a follow-up to AFRICOM's Southern Africa regional environmental workshop held in Namibia (AFFY12009), a Lieutenant Colonel who had participated in the event sent an email to AFRICOM's DEIC program lead with this statement about the importance of this work: "I must thank you guys for the initiative. Sometimes starting something is not easy, but when many people see the importance of the effort being made and look at the end result, they often

⁵ "U.S., ASEAN Cooperate on Environment," *The Jakarta Post*, 3 April 2012.

have a change of heart. We will make efforts to implement what we have learned and to advise our superiors accordingly.”⁶

- In the case of EUCOM’s Arctic Security Forces Roundtable (EUFY12213), the importance of this event was noted at the very highest level of the Command: Admiral James Stavridis (Commander, U.S. EUCOM and Supreme Allied Commander, Europe) highlighted in his blog the contributions that this roundtable had made to his discussions with the Northern European Chiefs of Defense when meeting in Helsinki, Finland in October 2012, as evolving Arctic concerns was one of four topics addressed at this meeting.⁷

Documentation of DEIC’s value may become particularly important should budgets for such engagement programs come under increased scrutiny. Metrics such as these will be important to track DEIC program execution in FY13 and beyond.

⁶ Personal email to Mr. Artur Kolodziejski, 23 August 2012.

⁷ Admiral James Stavridis, “Up North,” 19 October 2012, <http://www.eucom.mil/blog-post/24365>.

Appendix A

DEIC FY12 Spreadsheet¹

¹ Explanations about the meaning of each column in the spreadsheet are included in Chapter 1 of this document.

		Req FY12 projects	Approved	Reconsider	Revised (as of Sept '12)
DEIC Program FY12 Funding Level (thousands)		\$4,265.0	\$3,412.0	\$853.0	\$3,681.0
Summary Totals (thousands)		\$6,926.8	\$3,412.0	\$2,732.0	\$3,667.0
#	TITLE				
AFFY12001	OSD Support to the US-South Africa DEFCOM	43.7	44.0		21.0
AFFY12002	OSD Support to the US-South Africa DEFCOM-part 2	0.0			40.0
AFFY12003	OSD Support to the US-South Africa DEFCOM-part 3	0.0			0.0
AFFY12006	East Africa region (Kenya), Regional Environmental Workshop	155.7	156.0		156.0
AFFY12007	West Africa region (Ghana), Regional Environmental Workshop	151.0	151.0		151.0
AFFY12008	Central Africa region (Gabon), Regional Environmental Workshop	164.5		165.0	115.0
AFFY12009	Southern Africa region (Botswana), Regional Environmental Workshop	151.8		152.0	
AFFY12010	Uganda, Environmental Considerations in Military Activities	47.2	48.0		48.0
AFFY12011	Kenya, Oil Spill Preparedness and Response	46.7		47.0	0.0
AFFY12012	Nigeria, Oil Spill Preparedness and Response/Fishery Mgmt	49.2	50.0		0.0
AFFY12013	Senegal Oil Spill Preparedness and Response/Fishery Mgmt	47.5	48.0		48.0
AFFY12014	DRC, Environmental Considerations in Military Activities	49.6	50.0		50.0
AFFY12015	Burundi, Environmental Considerations in Military Activities	44.6		45.0	0.0
AFFY12016	Tanzania, Environmental Considerations in Military Activities	46.4		46.0	
AFFY12017	Tanzania, Oil Spill Preparedness and Response	46.4	47.0		47.0
AFFY12018	Burkina-Faso, Environmental Considerations in Military Activities	46.4		46.0	46.0
AFFY12019	Angola, Environmental Considerations in Military Activities	52.1		52.0	
AFFY12020	Namibia, Oil Spill Preparedness and Response/Fishery Mgmt	44.3		44.0	44.0
AFFY12021	Zambia, Environmental Considerations in Military Activities	46.7		47.0	0.0
AFFY12022	Nigeria, Environmental Considerations in Military Activities	0			87
AFFY12023	Egypt, Environmental Considerations in Military Activities	0			0
AFRICOM Total:		\$1,233.8	\$594.0	\$644.0	\$853.0

CEFY12101	OSD(IE) Participation in USCENTCOM led Foreign Defense Events	20.0	20.0		20.0
CEFY12106	US Qatar Bilat - Camp Sustainability Landfill Waste Reduction Workshop (Qatar)	72.7	73.0		73.0
CEFY12107	Multinational mil-mil -- Camp Environmental Mgt Workshop (Jordan host)	100.0	100.0		100.0
CEFY12108	Camp Sustainability Environmental Mgt Workshop (Afghanistan Army host)	30.7	31.0		31.0
CEFY12109	Camp Sustainability Environmental Mgt Workshop (Kyrgyzstan Air Force host)	120.3	121.0		121.0
CEFY12110	Camp Sustainability Environmental Mgt Workshop (Tajikistan Army host)	120.2	121.0		121.0
CEFY12111	Camp Sustainability Environmental Mgt Workshop (Kazakhstan Army host)	120.0		120.0	0.0
CEFY12112	Civ-Mil Bilats "Marine Oil/Hazardous Spill Contingency Plans" workshops (various)	144.4		144.0	0.0
CEFY12113	ROPME Sea Area "Environmental Monitoring & Pollution Prevention" Workshop	105.5		0.0	0.0
CEFY12114	Hormuz Strait Traffic - "Hazardous Matrl & Pollution Prevention" Workshops (various)	127.3		0.0	0.0
CENTCOM Total:		\$961.1	\$466.0	\$264.0	\$466.0
EUFY12201	OSD Support to European/NATO/EU Activities-part 1	71.6	72.0		15.0
EUFY12202	Arctic Roundtable - Military Adaptation to CC-travel for EUFY12213	16.0	16.0		12.0
EUFY12203	OSD Support to Euro-part 2: MIPRs to cover travel	0.0			25.0
EUFY12206	USEUCOM Environmental Engagement Coordinator	63.4		0.0	0.0
EUFY12207	Eurasia Partnership Capstone 2012	14.0	14.0		0.0
EUFY12208	Adriatic Regional Field Water Supply Workshop (Croatia)	40.0	40.0		40.0
EUFY12209	Technology Transfer: Oil Spill Response in Ice-Infested Waters (Norway)	45.1		0.0	0.0
EUFY12210	Net-Zero Strategies for Energy Secy and Environ Conservation	90.5		0.0	0.0
EUFY12211	Adriatic Workshop for Climate Change Resiliency and Spill Response Ex	67.0	0.0	67.0	7.0
EUFY12212	US Participation in BALEX DELTA (Latvia)	7.5	8.0		8.0
EUFY12213	Arctic Roundtable - Military Adaptation to Climate Change	334.0	334.0		334.0
EUFY12214	Arctic Roundtable - Military Adaptation to Climate Change-part 2	0.0			20.0
EUCOM Total:		\$749.1	\$484.0	\$67.0	\$461.0
NOFY12306	NORAD-NORTHCOM-Canada LOE 8: The Arctic	56.3	57.0		57.0
NOFY12307	Multinational ESOH Workshop	28.0	28.0		13.0
NORTHCOM Total:		\$84.3	\$85.0	\$0.0	\$70.0

PAFY12401	Trilateral Environmental Security Cooperation (Australia-Canada-US + UK)	40.0	40.0		40.0
PAFY12402	China: Bilateral Environmental Information Sharing	60.0	60.0		0.0
PAFY12403	OSD(IE) Participation in Pacific Environmental Security Engagements	40.0	40.0		40.0
PAFY12404	Agent Orange (OSD)	0.0			40.0
PAFY12405	Herbicide Orange Primer (OSD)	0.0			82.0
PAFY12406	FY12 Multinational MOD/MOE Environmental Security Workshop (Indonesia H)	149.9	150.0		150.0
PAFY12407	Planning for Multinational MOD Environmental Security Conference (Australia H)	167.3	168.0		168.0
PAFY12408	Civ-Mil Mekong River Watershed Workshop (Laos Host)	142.1		142.0	
PAFY12409	USMC Thai Bilat -- S&T (Energy, Water & Waste) In Crimson Viper Exercise	150.2	151.0		151.0
PAFY12410	USMC Philippines Bilat - S&T (Energy, Water & Waste) in Balikatan Exercise	179.2	111.0		111.0
PAFY12411	Multinational South Asia Disaster Relief & Seismic Response Workshop (Bangl)	165.3		165.0	
PAFY12412	Civ-Mil Mekong Food Security & Emergency Preparedness Workshop (Thai Ho)	136.3		0.0	0.0
PAFY12413	USMC Thai Bilat -- S&T (Energy, Water & Waste) In Cobra Gold Exercise	160.6		161.0	
PAFY12414	USMC Philippines Bilat - S&T Humanitarian Assist/Disaster Relief Workshop	109.1		109.0	
PAFY12415	Civ-Civ, USA hosted - Multinational - Mekong River + Mississippi River Commis	64.6		0.0	0.0
PACOM Total:		\$1,564.6	\$720.0	\$577.0	\$782.0
SOFY12501	US - Chilean Defense Consultative Committee - Energy & Environment Subcm	45.0	45.0		45.0
SOFY12502	OSD(IE) Participation in USSOUTHCOM lead Foreign Defense Engagements	20.0	20.0		10.0
SOFY12506	Renewable Energy Guidebook... in Support of Expeditionary Bases	99.6		100.0	
SOFY12507	Green Building Practices to Achieve Net Zero in Expeditionary Bases	139.6	140.0		140.0
SOFY12508	Establishing New Meteorological and Oceanographic Sensors	66.5		0.0	0.0
SOFY12509	Navies in the SOUTHAM Monitor Maritime Environ Transform f CC	80.7		0.0	0.0
SOFY12510	Effect of Anthropogenic Environ Changes... Infectious Diseases	79.6	40.0		40.0
SOFY12511	Operational Energy Strategy - Mission Assurance thru Exped Energy	62.3		62.0	
SOFY12512	Tsunami Preparedness in Latin America (Chile)	73.3	74.0		74.0
SOFY12513	Reducing Military Carbon Footprint (Advanced Biofuels)	80.7		81.0	
SOFY12514	Incorporate Energy and Environ Secy in MIL Ministerial Discussions	79.9	80.0		80.0
SOFY12515	Security Impacts of Changes in Ice Cover in LatAm and Antarctic	73.3	74.0		74.0
SOFY12516	Armies in AOR Incorporate Envir and Energy in Military Planning	60.6		61.0	
SOFY12517	Force Protection and Disease Outbreak	34.0		34.0	
SOFY12518	Military Storm Water Management Practices	157.7		158.0	
SOFY12519	Military Ops in Natural/Culturally Sensitive Areas - Peten	50.9		51.0	
SOFY12520	Develop Policies for Toxin and Disease-Free Envir for Partner Nations	42.4		42.0	
SOFY12521	Haiti Watershed Demonstration Project	44.4		44.0	
SOFY12522	Oil Spill Workshop: Barbados and Eastern Caribbean Islands	63.9		64.0	
SOFY12523	Climate Change Resiliency: Challenges for Mil Adaptation & Readiness	62.1	163.0		163.0
SOUTHCOM Total:		\$1,416.5	\$636.0	\$697.0	\$626.0

GLFY12601	Arctic Roundtable - Military Adaptation to Climate Change -MOVED TO EUCON	0.0			0.0
GLFY12602	Climate Change Outreach	30.0	30.0		0.0
GLFY12603	E2S2 Symposium and Bilateral Engagement Opportunities	6.3	7.0		2.0
GLFY12604	COCOM Travel -DEIC Workshop	35	35		0.0
GLFY12605	Contingency Basing Sustainability	0			0.0
GLFY12606	Contractor Support to DEIC Workshop	15.0	15.0		0.0
GLFY12607	ORNL Support to COCOM DEIC Engagements	50.0	50.0		0.0
	GLOBAL Total:	\$136.3	\$137.0	\$0.0	\$2.0
PRFY12701	OSD/COCOM Theater Liaison	38.2	40.0		0.0
PRFY12702	Archaeological, Historical and Cultural Resource Guidebook	10.2		0.0	0.0
PRFY12706	IPA Support to DEIC	288.0		288.0	50.0
PRFY12707	Contractor Support to DEIC (IDA)	149.6	150.0		165.0
PRFY12708	Support to COCOMs for DEIC Program Planning + Foreign Engagement Oppor	120.0		120.0	
PRFY12709	DoD Workshop on Overseas Environmental Policy Guidance	55.1		55.0	
PRFY12710	AEPI-INSS Environmental Security Issues	20.0		20.0	
PRFY12711	Corporate Knowledge Management	100.0	100.0		100
PRFY12712	Contractor Support to DEIC (IDA)-part 2	0.0			92
	PROGRAM SUPPORT Total:	\$781.1	\$290.0	\$483.0	\$407.0

Appendix B

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Appendix C

Abbreviations

AAR	After Action Report
AFRICOM	U.S. Africa Command
AOR	Area of Responsibility
BALEX D	Baltic Exercise Delta
CAR	Central African Republic
CCMD	Combatant Command
CENTCOM	U.S. Central Command
CR	Continuing Resolution
DCC	Defense Consultative Commission
DEFCOM	Defense Committee
DEFNET	Defense Network
DEIC	Defense Environmental International Cooperation
DOD	Department of Defense
DRC	Democratic Republic of Congo
E2S2	Environment, Energy Security and Sustainability
ERS	Environmental Readiness and Safety
ESOH	Environment, Safety and Occupational Health
ESWG	Environmental Security Working Group
EU	European Union
EUCOM	U.S. European Command
FY	Fiscal Year
GO/FO	General Officer/Flag Officer
HA/DR	Humanitarian Assistance/Disaster Relief
I&E	Installations and Environment
IPC	Initial Planning Conference
JAF	Jordanian Armed Forces
JS	Joint Staff
LOE	Limited Objective Experiment
MOD	Ministry of Defense
MOE	Ministry of Environment
NATO	North Atlantic Treaty Organization
NGO	Non-Governmental Organization
NORAD	North American Aerospace Defense Command
NORTHCOM	U.S. Northern Command

ODUSD	Office of the Deputy Under Secretary of Defense
OSD	Office of the Secretary of Defense
PACOM	U.S. Pacific Command
SME	Subject Matter Expert
SOUTHCOM	U.S. Southern Command
S&T	Science and Technology
TCA	Traditional Commander's Activity
UAV	Unmanned Aerial Vehicle
UNEP	United Nations Environmental Program
USAID	U.S. Agency for International Development
USMC	U.S. Marine Corps

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14. ABSTRACT The Defense Environmental International Cooperation (DEIC) program is managed by the Director of Environmental Readiness and Safety (ERS) in the Office of the Deputy Under Secretary of Defense for Installations and Environment. DEIC is a tool available for the Office of the Secretary of Defense and the Combatant Commands (CCMD) to use in engagement activities with other nations. The Institute for Defense Analyses (IDA) produced several analyses to support ERS in its execution of the DEIC program: an assessment of the proposals submitted by the CCMDs for fiscal year 2012 funding by the DEIC program; a review of available unclassified images capturing the potential impact of climate change on military assets; and a users' guide for a workbook that IDA developed to track execution of the annual DEIC budget. This document summarizes the key themes and findings from these three efforts.					
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