



**Enhancing Theater Security Cooperation in the 21st Century:
How the U.S. Navy Can Help**

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THE WHARTON RISK MANAGEMENT AND DECISION PROCESSES CENTER

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From 2004 to 2006 he commanded the submarine repair ship USS Emory S. Land when that ship was stationed in La Maddalena, Italy. While aboard the Land he made two theater security cooperation deployments along the west coast of Africa, including port calls in seven countries from Senegal to Angola.

From fall 2006 to summer 2007 he was a senior research fellow with the Chief of Naval Operations Strategic Studies Group, investigating future naval operational concepts related to cyberspace. CAPT Budney is a graduate of the U.S. Naval Academy, and has earned Masters degrees in Electrical Engineering at the Naval Postgraduate School and Business Administration from the University of Maryland University College.

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During his assignment to Commander Sixth Fleet staff in Gaeta, Italy he was selected to serve on Commander Sixth Fleet's strategic Mediterranean Think Tank. In addition Captain Dzinowicz has served in the Office of the Secretary of Defense, as Deputy Director for Asian and Pacific Affairs and as the Head Aviation Officer Community Manager, and later Head Officer Plans and Policy, on the Chief of Naval Operations staff.

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He has authored or coauthored over 40 publications and two books focusing on the intersection of financial management and global emerging risks/opportunities, including *Seeds of Disaster, Roots of Response: How Private Action Can Reduce Public Vulnerability* (with P. Auerswald, L. Branscomb, and T. LaPorte, Cambridge University Press, 2006; Preface by General Robert Marsh), which is the first attempt to analyze the private efficiency/public vulnerability trade-off in the context of national and international security. (See www.seedsofdisaster.com.)

From 2003 to 2005, he served on the OECD Terrorism Insurance Task Force, and in 2005, he co-led, with Howard Kunreuther, the Wharton initiative on the future of terrorism risk financing in the United States (TRIA and Beyond). He has studied and collaborated with several research institutions in North America (including McGill, Columbia and Harvard) and is also Faculty Research Associate at the Ecole Polytechnique in Paris, where he completed his doctoral studies in mathematics and economics before joining Wharton in 2002.

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Enhancing Theater Security Cooperation in the 21st Century: How the U.S. Navy Can Help¹

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Changing TSC in a changing world

Just as the U.S. military has adapted its application of force to counter a more diverse array of threats since 2001, so it must alter its approach to Theater Security Cooperation (TSC) operations to effectively prevent the emergence of future crises. In particular, current U.S. Navy TSC efforts, while in many cases more innovative than previous efforts, require a radical overhaul if they are to provide the long-term strategic changes that can stabilize emerging regions and secure the maritime domain. With globalization of social and economic activities and increasing interdependencies, the world is changing faster than we have witnessed in past decades. So it is imperative that we formulate a new approach in developing nations that recognizes not only this globalization but also directly impacts local needs through sustainable economic initiatives that create real trust.

A major challenge in new or re-invigorated military security cooperative operations in developing countries is the risk that they might raise suspicions of neo-colonialism through perceived attempts at regional military domination (Ploch, L., 2007). Confirming this perception, African officers, in discussions with the CNO Strategic Studies Group in fall 2006, expressed concern that an approach which assumes a primarily military appearance will not, in general, tackle the most pressing issues in their nations. Rather, government agencies teaming up with U.S. corporations already in country could first gain an understanding of the economic benefits

¹ Some of the ideas developed in this article emerged when two of the authors (Budney and Dziminowicz) served as fellows with the Chief of Naval Operations Strategic Studies Group in 2006-2007. We would like to thank Peter G. Roberts of FLAG International who provided us with insightful comments on a previous version of this article.

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related to the local community's true needs. This knowledge would then aid in creating sustainable solutions that generate trust in the hosts' eyes.

TSC as a means of influence

Fundamentally, TSC is intended to develop awareness, capacity and influence at regional and local levels in conjunction with the U.S. Ambassador's Mission Performance Plans for each nation. Awareness of social, economic, military and governmental situations provides military commanders with knowledge of the local environment. This knowledge, combined with operational skills, provides military leaders with options and the capacity to make correct decisions that aid in increasing influence, and in turn gain the access required to enable the success of current and future operations. The key enabler, however, upon which all such efforts depend, is implementation of a plan that *effectively builds trust* among all involved parties.

Traditional geographic Combatant Commanders' Theater Security Cooperation (TSC), aimed at enabling allies to build sufficient military capacity and capability to defend their own nations, are also meant to develop relationships that will enable U.S. military cooperation to resolve future crises. As so many developing nations continue to struggle against all manner of health, economic, social, military and political challenges, some might reasonably argue that this strategy has done little for the overall welfare of these nations. A re-vitalized and radically re-engineered TSC program in emerging nations, one better integrated with other agencies and non-military organizations, should be part of a more diversified structure.

The U.S. Navy, therefore, as it determines how it might best contribute to the TSC mission, must focus first on the objective and how it might best be achieved. Such an effects-based approach will at the outset disregard the capabilities at hand and begin by determining the true needs of a potential partner. Next, the ideal methodology for creating the sustainable economic and military capacity desired of emerging security partners would be developed. In some cases, addressing a partner's most essential needs might result in an approach that does not call into play the Navy's most recognizable asset – ships – in the near term, in order to create relationships which would enable the use of U.S. ships in later stages, if necessary.

Development of truly sustainable security capabilities can best occur in an environment where the military's contribution to economic welfare is readily recognizable, for in many developing nations, economic and social issues are far more pressing than solely naval concerns.

In many instances, where the current maritime security threat is low, an initial focus on economic matters may be required to permit the eventual development of naval capabilities that will curtail the development of future threats. This, more often than not, requires leveraging the skills and local knowledge of non-governmental organizations and commercial businesses, including both U.S. and host nation firms, through new partnerships. Differences in cultural, social, economic and security conditions in a continent as vast as Africa, for example, prevent assuming a “one-size fits all” approach.

The essential element of strategy development that the U.S. must employ in the transformation of TSC is *innovation aimed at long-term relationship development* with emerging security partners. Taking a long-term perspective allows the opportunity to see higher return on investment and to test our new partners along the way. As a timely example, we examine the extraordinary opportunity offered by the formation of the new U.S. Africa Command (USAFRICOM) as a vehicle to develop our approach to revitalize TSC. The concept we propose, however, would be applicable in any military partnership with developing nations where the U.S. might desire to dramatically increase TSC effectiveness.

Today’s TSC

U.S. Navy ships possess significant capacity to bring personnel and equipment to remote areas via their sovereign sea-based platforms. Thus, in both the U.S. European Command (USEUCOM) and U.S. Southern Command (USSOUTHCOM), the Navy is experimenting with a revised version of a 19th century concept, that of Global Fleet Stations (GFS).

Recent GFS deployments have used combined USN, USCG, USMC and State Department teams focused on aiding partners in port security, professional development, operational risk management, medical care and some material readiness (U.S. Southern Command, 2007a; Commander Navy Europe-Commander Sixth Fleet, 2007a). In addition, they have conducted a variety of Humanitarian Assistance operations such as construction of disaster relief warehouses, emergency operations centers, shelters, medical clinics, schools, roads and waterwheels (U.S. Southern Command, 2007b and 2007c).

As demonstrated in Figure 1, the U.S. military is also conducting a wide range of new and long-standing TSC operations in Africa to develop host nation anti-terrorism, peace keeping,

communication, medical readiness and operational capabilities. African peace keeping forces have also reaped benefits from training provided through the Congressionally funded Global Peace Operation Initiative. Finally, the Defense Security Cooperation Agency coordinates funding of programs such as International Military Education and Training (IMET) as well as humanitarian assistance, disaster relief, and foreign military financing, and sales programs.



Figure 1. Recent U.S. Theater Security Cooperation Activities in Africa

But despite this good work, the U.S. is not the preferred partner in many areas for a number of African governments. Moreover, the GFS is meant to provide a “persistent sea base of operations” uniquely situated for building long-term relationships with emerging defense partners by providing maintenance, training, information fusion centers, and medical services (Mullen, ADM M. & Hagee, Gen. M., 2006). But duplicating the success of previous GFSs that maintained a permanent overseas presence without permanent bases (Tiron, 2007) will be monumentally challenging in the 21st century.

Other nations, such as China, are developing extremely influential power bases by providing aid to African countries, often in return for trade deals involving extractive industries such as mining and crude oil production. Their continuous interactions are being seen as a proof

of long-term commitment to African development, while the U.S. continues to rotate exercises and cooperative training among African nations. As Ambassador (ret.) Perter Chaveas, Director, Africa Center for Strategic Studies, recently observed, “One aspect of Africans’ experience going back decades, is that Americans start great initiatives and then five years later do not follow through on it. So Africans look at these things skeptically with that in mind” (Commander Navy Europe-Commander Sixth Fleet [CNE-C6F], 2007a). To compete effectively in the new international environment, the U.S. military must institute more stable aid programs. These programs *must be perceived by partner nations* as directly targeting sustainable development; and developing such programs must become an integral part of the U.S. TSC security equation. It should be remembered from the outset that successful TSC does not rely on how the U.S. government views itself, but rather, it depends on how others view the U.S. over the long-term.

The history of U.S. aid to African nations indeed results in an ambiguous message. From a military aspect, Africans’ skepticism regarding U.S. commitment is understandable. As seen in Figure 2, the United States ranks last among major arms suppliers in Africa. In terms of Official Developmental Aid, while the U.S. is the single largest donor country to Africa in real terms (Figure 3), it also ranks last among donors in terms of percentage of GNI (Figure 4). Prevention of future conflict will require a TSC methodology that overcomes the mixed message partners perceive from U.S. aid programs of all types. To achieve this, the U.S. military, and the Navy in particular, must engage on a broader economic and social front than has been its tradition.

African Arms Transfer Agreements 1998 - 2005

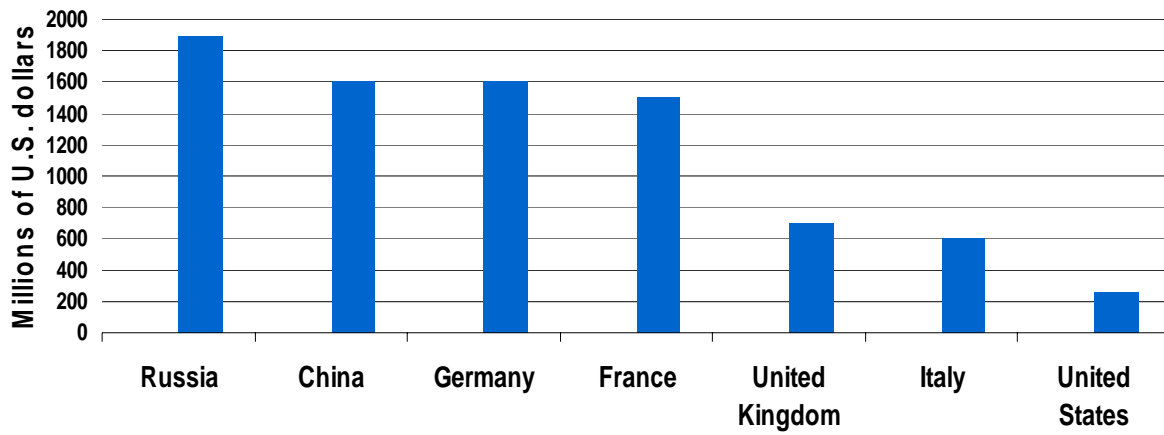


Figure 2. African Nation Arms Transfers

(Source: Grimmett, 2007)

Official Developmental Aid to African Nations by OECD Members

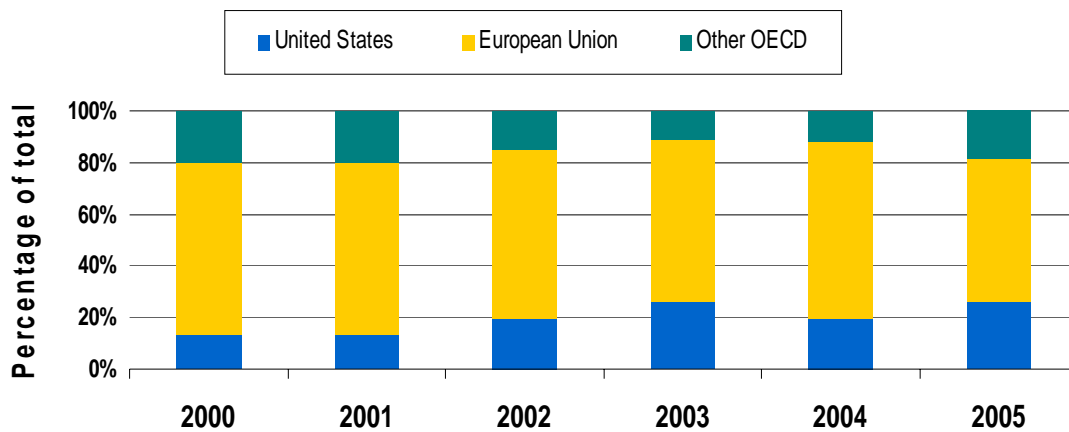


Figure 3. OECD Official Developmental Aid to African Nations

(Source: OECD, 2007)

2005 Total Aid (official and private) to Developing Nations as a Percentage of Donors' GNI

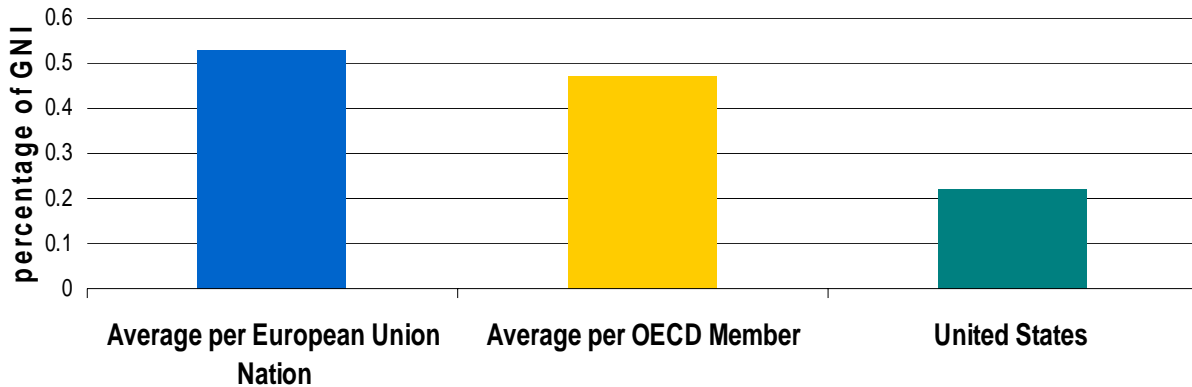


Figure 4. Aid to Developing Nations as a Percentage of Donors' GNI

(Source: OECD, 2007)

A change of heading

One of Commander Navy Europe-Commander Sixth Fleet's (2007b) strategic priorities is the development of partner nation capabilities such that they can make sustained contributions to regional initiatives. Achieving such an objective is not a simple task, and requires new thinking that goes beyond merely influencing a developing region's navies. Emerging countries' naval forces often exert little influence on governmental, economic, or social policies due to their small size and a perceived lack of contribution to overall national welfare. Because they are little valued they are often under-funded, therefore their capacity to be effective is limited – a downward spiral.

In parallel, U.S. Navy activities as currently formulated are not sustainable, both because of their cyclical nature, even in the GFS concept, and because they are essentially “short-term relief” focused as opposed to “development” focused. An operational concept that continually introduces new ships, crews, and even senior personnel to a region results in a cyclical trust relationship that is always being rebuilt, rather than being strengthened in a way that advances and gains momentum. A focus on relief efforts means that the country's internal situation is not fundamentally changed, and thus when U.S. forces leave, even if only for a few months, it

rapidly deteriorates into its pre-TSC condition. This is not effective in developing an emerging defense partner who is a self-sustaining, contributing member to both their own and collective security operations.

In the case of the Navy's participation in USAFRICOM, there is the great potential to create a new approach for developmental aid that will emphasize war prevention as opposed to war. However, this will only be realized if the Navy acknowledges the basic premise that it must formulate a new approach that addresses the fundamental issues of the region in a sustainable manner. As J. Peter Pham, of the Nelson Institute for International and Public Affairs at James Madison University, points out, "the mission of AFRICOM will necessarily require a major break with conventional doctrinal mentalities both within the armed services themselves and between government agencies" (Ploch, 2007, p. 5).

Public-private ventures as a means to sustainable development

In proposing areas that Congress might review concerning the structure of USAFRICOM, we should ask what role private business *partners* will play in developmental operations. The role should be a large one. The goal of USAFRICOM is, according to USEUCOM's Commander General Bantz Craddock, is to be the "pioneer" for a new approach that other commands may later adopt in addressing the key issues of disease, corruption, weak governance and poverty. If these are the problems that most affect security and stability in Africa, then the business community – the institution best able to facilitate sustainable development by creating jobs, then wealth, assuring the operation of critical infrastructures and enhancing private initiative – must be a partner in the process from the outset (Ploch, 2007, pp. CRS-2, 3 & 7).

What is the incentive for private firms to work with government in creating capabilities and facilities that enable regional security? As identified by Branscomb and Michel-Kerjan (2006), today's globalization results in emerging and expanding global threats – terrorism, natural disasters, pandemics, nuclear proliferation, and markets disruptions. Conventional wisdom holds that a single organization can handle these global risks alone, but this is no longer the case. Companies realize now that they need an unprecedented degree of cooperation to tackle this new environment. U.S. companies already operating in Africa and host nation businesses are acutely aware of how security, or lack of it, affects their profit margin. Despite the will of cooperation, as Branscomb and Michel-Kerjan point out, there are often difficulties

related to the sharing of information which can affect government/business relationships. By seeking the input of private firms as well as government agencies in the early stages of the development planning process, commands will build trust relationships that overcome the skepticism which has negatively impacted previous efforts.

Prieto (2006) echoes this concern by pointing out that private organizations often overestimate the quantity and quality of government intelligence or assume that important facts are being withheld from them. Yet he also states that “companies will be more likely to share corporate information when doing so can help them better protect their own assets...” thereby providing improved economic returns (p. 423). Thus, it is incumbent upon government, if it is to benefit from the local cultural, social, economic and political awareness resident in private firms, to identify actionable information that is of value to these companies and share it in as transparent a manner as possible.

Accomplishing the innovation imperative through information technology

Aiding a nation’s Information and Communications Technology (ICT) development has been shown to directly aid economic growth. Röller and Waverman (2001) found that economic growth disparity between developing nations with significant differences in ICT diffusion is twice that of nations with comparable ICT development. Seo and Lee (2006) investigated the effect of ICT on total factor productivity and externality effects and reached a similar conclusion. Numerous examples of ICT-enabled development, from micro-loans for women creating mobile phone services in Bangladesh, to Indian and Tanzanian fishermen searching the mobile phone network for the best port in which to sell their catch have proven the validity of ICT’s significant positive impacts in diverse economies (Coyle, 2005; James, 2001). Exactly how this impact manifests itself can be surprising. For example, in Iran, as a result of the anonymity of the internet, women who have traditionally had difficulty working outside the home in the Islamic state now comprise half of that nation’s open source coders, while in Europe, women make up only 1.5% of this workforce (Vaisman, 2007).

Ericsson, the Swedish based manufacturer of mobile phones, provides an excellent current example of how to create a sustainable operation that meets the need of all parties within a local economy. They are simultaneously growing their core business in developing countries and introducing new economic contributions in wide ranging series of “green” initiatives. They

have employed bio-fuels, solar energy, recycled petroleum products, and other schemes to develop the power required to provide mobile phone coverage in poor, remote areas from Tanzania to India to the island of Sumatra, Indonesia. Essentially new “green” economies are being created around their mobile phone business (Fitchard, 2006; GSMA Development Fund, 2007, Ericsson, 2007).

As a component of USAFRICOM, the Navy might consider implementing the following seven guidelines by utilizing its skills in ICT to address the trust issue while developing a relationship with NGO and private corporations that creates a sustainable security environment (Donahue and Zeckhauser, 2006):

- Set up both short and long-term goals.
- Appraise threat-reduction goals including risks to all other parties.
- Analyze the capabilities, motivations, and potential conflict for potential partners.
- Assign a system of rules and incentives to positively influence all actors.
- Assess the security collaboration as it matures.
- Adjust the system based on continuous assessments.

This is an approach with promise that links port security and rapid ICT connectivity with supply-based reliability and demand predictability to achieve maritime domain awareness and the capacity to influence the Economic Exclusion Zone. We suggest that a pilot program be initiated with one or two key regional emerging partners selected as the test-bed for a Cyber Regional Substation (CRS). This facility could serve as a combination port operations center, maritime domain awareness fusion center, a portal into combined intelligence platforms, and/or a commercial partnership providing internet and network enterprise services to the local community. The information sharing and constant connection of such a facility could help maintain the trust relationships that are begun via initial face-to-face interactions. In addition to serving the host military, services provided to the community by the CRS could include information dissemination, distance learning, telemedicine, electronic job markets, weather prediction and electronic agricultural markets, or a variety of other information services that are tailored to enhance local economic conditions. A CRS might be established and constructed by a combined public-private U.S. team and over time be entirely run by the host nation military and

civilian contractors. Continuous U.S. collaboration would be provided via remote, internet-enabled, CONUS-based support.

Stretch TSC thinking, starting with local needs

It is this sort of innovative thinking in which the Navy and other service leaders from a joint perspective must engage if the U.S. is to develop a more effective system of conflict prevention. Whether the use of ICT as postulated here is the right answer remains to be seen, although this example seems promising from cost, utility, and sustainability aspects.

One final caution is in order. Lagadec and Michel-Kerjan (2006) warn that when embarking on innovative initiatives that radically depart from traditional methodology, initial success is important to ensure enduring success. Therefore, we suggest that early efforts be conducted in only a few locations with key partners who both possess the potential to meet objectives and who are important to the overall projects goals – a pilot initiative that could then be deployed on a larger scale. Prieto (2006) further emphasizes that building systems locally] as opposed to nationally leverages interdependencies among local geographic relationships. This course of action will more rapidly raise trust by demonstrating a focus that is more personal and dedicated to one's partners. Ericsson's bio-fuel efforts in Nigeria, unfortunately, fell prey to bureaucratic interference and a desire by the Nigerian government to immediately expand to a national program. Thus, an initially promising innovation that could have had meaningful impact in the country's poorer regions stalled before it could begin. Therefore, USAFRICOM should consider building towards a successful security cooperation tipping point through an interactive process based on incremental, relatively modest initial local successes. Africa is too large of a continent with challenges too diverse for any single solution.

And it is too unstable in many areas to warrant a strategy centered only around improving our position on the arms transfer chart shown earlier in this the article. Only leadership and creativity on a broad scale throughout the full range of military endeavors will reduce the possibility of conflict in the 21st century.

References

- Branscomb, L. and Michel-Kerjan, E. (2006). Public-private collaboration on a national and international scale. In Auerswald, P., Branscomb, L., Porte, T. & Michel-Kerjan, E. (Eds.), *Seeds of Disaster, Roots of Response. How Private Action Can Reduce Public Vulnerability* (pp. 395-403). New York: Cambridge University Press.
- Commander Navy Europe-Commander Sixth Fleet [CNE-C6F]. (2007a). *Naval Forces Europe meets with African ambassadors and interagency leaders*. Retrieved September 25, 2007 from the CNE-C6F website at <http://www.c6f.navy.mil/Default.asp?P=News&ID=48>.
- Commander Navy Europe-Commander Sixth Fleet [CNE-C6F]. (2007b). *Strategic Priorities*. Retrieved September 25, 2007 from the CNE-C6F website at <http://www.c6f.navy.mil/Default.asp?P=AboutCNE&SP=Priorities> .
- Coyle, D. (Ed.) (2005, March). Africa: The impact of mobile phones. *The Vodafone Policy Paper Series, Number 3*. Retrieved September 25, 2007 from the vodafone website at http://www.vodafone.com/etc/medialib/attachments/cr_downloads.Par.78351.File.dat/GPP_SIM_p aper_3.pdf.
- Donahue, J. and Zeckhauser, R. (2006). Sharing the watch: Public-private collaboration in infrastructure security. In Auerswald, P., Branscomb, L., Porte, T. & Michel-Kerjan, E. (Eds.), *Seeds of Disaster, Roots of Response. How Private Action Can Reduce Public Vulnerability* (pp. 429-456). New York: Cambridge University Press.
- Ericsson. (2007). Ericsson and Telkomsel deploy solar-driven macro base station in Indonesia. Retrieved November 24, 2007 from <http://www.ericsson.com/ericsson/press/releases/20071121-1169528.shtml>
- Fitchard, K. (2006). The green base station. *Telephony*, 247 (19), 6-8. Retrieved July 7, 2007 from Business Source Premier database.
- Grimmett, R. (2007, Spring). Conventional Arms Transfers to Developing Nations, 1998-2005. *DISAM Journal of International Security Assistance Management*, 29 (2), 21-62. Retrieved on September 27, 2007 from Business Source Premier database.
- GSMA Development Fund. (2007). *Biofuels*. London: Author. Retrieved September 27, 2007 from the LM Ericsson website at http://www.ericsson.com/ericsson/corporate_responsibility/doc/cr06/GSMA%20-%20ERICsson%20Biofuels.pdf.
- James, J. (2001). The global information infrastructure revisited. *Third World Quarterly*, 22 (5), 813-822. Retrieved June 14, 2007 from Academic Search Premier database.
- Lagadec, P. & Michel-Kerjan, E. (2006). The Paris initiative, “anthrax and beyond”: Transnational collaboration among interdependent critical networks. In Auerswald, P., Branscomb, L., Porte, T. & Michel-Kerjan, E. (Eds.), *Seeds of Disaster, Roots of Response. How Private Action Can Reduce Public Vulnerability* (pp. 429-456). New York: Cambridge University Press.
- Mullen, ADM M. & Hagee, Gen. M. (2006). *Naval Operations Concept 2006*. Retrieved September 30, 2007 from the Navy Knowledge Online website at https://wwwa.nko.navy.mil/portal/page?paf_gear_id=ch80002&paf_dm=shared&paf_pageId=pg50003&resubmit=yes&databaseType=everything&requestid=28687#.
- Organization for Economic Co-Operation and Development [OECD] (2007). Aid from Development Assistance Committee (DAC) Members. Retrieved November 20, 2007 from <http://www.oecd.org/wbos/default.aspx>.

- Ploch, L. (2007). Africa Command: U.S. strategic interests and the role of the U.S. military in Africa. *CRS Report for Congress, RL34003*. Retrived September 26, 2007 from <http://www.cnie.org/NLE/CRSreports/07Jun/RL34003.pdf>.
- Prieto, D. (2006). Information sharing with the private sector. In Auerswald, P., Branscomb, L., Porte, T. & Michel-Kerjan, E. (Eds.), *Seeds of Disaster, Roots of Response. How Private Action Can Reduce Public Vulnerability* (pp. 404-428). New York: Cambridge University Press.
- Röller, L. & Waverman, L.(2001). Telecommunication infrastructure and economic development: A simultaneous approach. *The American Economic Review*, 91 (4), 909-923. Retrieved September 25, 2007 from Business Source Premier database.
- Seo, H. & Lee, Y. (2006). Contribution of information and communication technology to total factor productivity and externalities effects. *Information Technology for Development*, 12(2), 159-173. Retrieved September 26, 2007 from Business Source Premier database.
- Tiron, R. (2007, August). Reaching out. *Seapower*, 50 (8), 44-46, Retrieved October 1, 2007 from EBSCO Host Research database.
- U.S. Southern Command. (2007a, September 25). *Global fleet station pilot deployment*. Retrieved September 27, 2007 from U.S. Southern Command website at <http://www.southcom.mil/AppsSC/factFiles.php?id=9>.
- U.S. Southern Command. (2007b, January 26). *Humanitarian Assistance*. Retrieved from the U.S. Southern Command website at <http://www.southcom.mil/AppsSC/pages/humanitarianAssistance.php>.
- U.S. Southern Command. (2007c, May 29). *Exercises/Operations*. Retrieved from the U.S. Southern Command website at <http://www.southcom.mil/AppsSC/pages/exOps.php>.
- Vaisman, D. (2007, Mar/Apr). Expert sittings. *Foreign Policy*, 159, 93. Retrieved July 7, 2007 from Business Source Premier database.