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MULTICULTURAL DIPLOMACY: A NEW APPROACH TO EMBASSY OUTREACH

BRIDGET CARR

Since 2001, U.S. public diplomacy to the Arab world has largely focused on expanding access to U.S. friendly news stories and increasing exposure to American youth culture through traditional media. These efforts have largely failed and are viewed by many as propagandistic and culturally insensitive.

This brief proposes an alternative model for public diplomacy that promotes multiculturalism to help Muslim immigrants in Europe integrate into their host societies. Building on current U.S. Embassy efforts in Paris, multicultural public diplomacy would involve cultural and educational initiatives that: (1) highlight and celebrate immigrant culture on its own merits and as it contributes to the host nation; (2) encourage dialogue, mutual respect, and tolerance among communities; and (3) promote the benefits of democratic multiculturalism by emphasizing the successes of minorities and immigrants in the United States. The goal of multicultural diplomacy is to engender positive feelings toward the United States among Muslim immigrants – and, through those immigrants, their relatives in their home countries – by supporting much needed outreach initiatives that aid integration.

Growing Anti-Americanism in the Muslim World

Among Muslims in both the Middle East and Europe, confidence in and positive opinions toward the United States remain low.

The Greater Middle East

- In Turkey, Pakistan, and Egypt, only 17% of the population holds a positive opinion of the United States (the Egyptian rating dropped ten percentage points between 2009 and 2010), while 21% of Jordanians and 52% of Lebanese view the United States favorably.¹

Muslim Immigrants in Europe

- In the 2006 Pew Global Attitudes poll, 62% of British Muslims, 60% of German Muslims, and 58% of French Muslims viewed relations between Westerners and Muslims as generally bad.²
- In the 2006 poll, 64% of British Muslims, 48% of German Muslims, and 45% of French Muslims characterized Westerners as arrogant. Among these groups, 67%, 57%, and 51% respectively characterized Westerners as selfish.³

U.S. Public Diplomacy toward the Arab World Since 2001

Since September 11, 2001, the United States has made little effort to culturally engage Arabs in a dialogue or to foster deeper social connections with specific communities. Instead, U.S. public diplomacy has sought to influence public opinion in the Middle East by providing increased access to U.S.-friendly information and exposure to American youth culture. These initiatives have largely faltered and are viewed by many in the region as propagandistic and culturally insensitive.⁴

Major public diplomacy programs since 2001 include:

- *Arabic Radio Station, Radio Sawa*: Provides youth-oriented music and lifestyle programming in addition to news that presents the United States in a positive manner. Broadcast online and in Egypt, Iraq, Israel, Lebanon, Morocco, Pakistan, Syria, and Sudan. Replaced Voice of America Arabic Service in 2002.

Strength: Provides access to American youth culture and helps combat news stories in the Arab media that are unfavorable to the United States.

Weakness: Programming considered to too light for a serious news source and often interpreted as U.S. propaganda. According to former Voices of America Director Robert Reilly, “The more like commercial radio U.S. broadcasting becomes, the less reason it has to exist. After all, the image of America created by the popular media is the cliché that often repels much of the world.”⁵ Ayman Bardawil, a Palestinian broadcaster for al-Quds Educational TV adds that he is “fed up with hearing everything through the American filters” and that he questions whether the “news on Sawa might prevent some people from listening to the music,” effectively highlighting the problems inherent in maintaining a station that attracts young listeners while conveying a pro-American message.⁶

- *Arabic Youth Lifestyle Magazine, Hi*: Designed to showcase American popular culture while simultaneously dispelling negative American stereotypes. Associated with an Arab and English language website launched in 2004.

Strength: Aimed to build inter-cultural bonds by highlighting similarities among global youth.

Weakness: Magazine and website suspended in 2005, pending investigation as to whether content met State Department objectives for public diplomacy. According to surveys in the Middle East, critics of the magazine see it “just like *Sawa*...as ‘soft-sell propaganda,’ the apolitical content of which fails to bridge any gaps with Arabs.” Prominent *Al-Ahram* (a weekly on-line Egyptian newspaper) columnist Salama Ahmed Salama described *Hi* as “too naïve and superficial to bridge any gaps, not even cultural ones” and is “similar to dozens of other Arab magazines presenting trivial material on pop stars for unpoliticized youths.”⁷ The Under Secretary of State for Public Diplomacy, Karen Hughes, suspended the publication of the magazine to “take a look and see if [the State Department was] actually effective in reaching [its] intended audience with this particular vehicle”⁸ and “because it was unclear how widely it was read.”⁹ The magazine was never re-circulated.

- *Arabic Language TV Station, al-Hurra:* Provides news and American lifestyle programming in the form of sports, cooking, fashion, technology, and entertainment programs.¹⁰ Broadcast throughout the Middle East. Referred to as the “American answer to Al Jazeera.”¹¹

Strength: Delivers world news with a pro-Western point of view.

Weakness: Past broadcasts of culturally insensitive and terrorist-produced material illustrate its poor management and negative reviews. In 2006, *al-Hurra* unintentionally broadcasted several controversial messages including a “68-minute call to arms against Israelis by a senior figure of Hezbollah, deferential coverage of President Ahmadinejad’s Holocaust denial conference, and a factually flawed piece on a splinter group of Orthodox Jews who oppose the state of Israel” because, according to Broadcasting Board of Governors member Joaquin Blaya, “top officials in the network’s chain of command could not understand what was being said on *al-Hurra* broadcasts.”¹² A 2008 poll conducted by University of Maryland and Zogby International in Egypt, Morocco, Jordan, Lebanon, Saudi Arabia, and the United Arab Emirates revealed that only two percent of the population in these countries watches *al-Hurra*. A 2009 follow-up indicated a further 0.5 percent decrease in viewership.¹³

- *Middle East Partnership Initiative:* Provides funding for partnerships with non-governmental actors such as NGOs, educational institutions, local governments, and private businesses to strengthen civil society and the rule of law, empower women and youth, improve and expand education, encourage economic development, and increase political participation.¹⁴

Strength: Uses non-traditional and non-governmental resources to expand programming and expertise through interaction with private citizens and operates directly within communities to build lasting and meaningful relationships.¹⁵

Weakness: Both Middle Eastern and U.S. governmental regulations limit the amount of programs and reforms possible because they interfere with the flexibility and effectiveness of aid delivery systems, do not foster regional expertise, and cannot establish critical programs that may be in conflict with other U.S. policies. The State Department is often reluctant to pursue those programs that damage economic and security-based relationships with autocratic regimes and is “largely working within the boundaries set by Arab governments”¹⁶ that do not want to implement initiatives that attack “the thornier questions of political reform.”¹⁷

- *Shared Values Initiative:* Created a series of mini-documentaries designed to dispel mistruths about American treatment of and discrimination against Muslims.

Strength: Provided information about American freedoms and the benefits of tolerant, democratic society through an accessible media.¹⁸

Weakness: Although initially thought to be successful, the project failed, as it was interpreted as abject propaganda by the Muslim world and discontinued less than a month after its release. Although a study conducted by Jami Fullerton and Alice Kendrick registered an increase in positive attitudes held toward the U.S. government and Americans after watching the documentaries, only 5.8 percent of the initial sample and 17 percent of the secondary sample were Muslim and, therefore, the measured impact was fairly irrelevant.¹⁹ “Experts who follow the Arab press say Beers’ ad campaigns [Shared Values Initiative included] are regularly mocked and derided in the Arabic media. ‘The premise of U.S. propaganda in the Middle East is that Muslims and Arabs are idiots – simple-minded, feeble-minded idiots.’”²⁰

Multicultural Public Diplomacy

Multicultural public diplomacy seeks to improve Arab perceptions of the United States by culturally engaging immigrant Muslim populations in Europe. This engagement would involve initiatives that: (1) highlight and celebrate immigrant culture on its own merits and as it contributes to the host nation, (2) encourage dialogue, mutual respect, and tolerance among communities, and (3) promote the benefits of democratic multiculturalism by highlighting the successes of minorities and immigrants in the United States.

The Need: Muslim Communities in Europe

Although officials often refer to all those who phenotypically appear to be foreign-born as “immigrants,” it is important to distinguish between foreign-born Muslims and European-born Muslims to properly assess new and pressing security concerns and trends regarding this segment of the population. Counter-terror strategies have primarily focused on foreign-born Muslims, but evidence shows that European-born Muslims represent both a greater threat and potentially a more receptive target for focused public diplomacy efforts.²¹

- *Foreign-born Muslims (Immigrants)*: This group is often considered the most pressing security threat to the West because its members are associated with a majority of recent terrorist attacks.²² Immigrants migrate to Europe to seek asylum, escape authoritarian regimes, study in Western institutions of higher learning, or, in extreme cases, become part of “ sleeper cells ” responsible for committing terrorist acts. These immigrant extremists – who represent a very small portion of the overall population – usually commit terrorist acts to satisfy a *pre-meditated desire* rather than in response to conditions in the host country. The vast majority of Muslim immigrants that come to Europe peacefully to seek increased economic opportunities (even in the face of discrimination) and are more focused on surviving economically than on organizing political action or joining terrorist organizations.²³
- *European-born Muslims*: Often incorrectly referred to as immigrants, European-born Muslims are raised in a society governed by liberal institutions which promise freedom, equality, and brotherhood for all, but experience disappointment when their host countries fail to adhere to these principles in dealing with “ outsiders. ” This group is very likely to participate in communitarian activism and is susceptible to radicalization.²⁴ European-born Muslims represent a significant threat to U.S. security because potential terrorists born in the European Union not only have free movement throughout Europe, but also to the United States without a visa or entry interview.²⁵ Perhaps foreshadowing a future trend, all organizers of the various major terrorist attacks on Europe were born in the Middle East except those who carried out the most recent bombings in London in 2005.²⁶

The Paris Embassy Success

Recent U.S. public diplomatic efforts in Paris have consisted of relatively simple yet pointed efforts to increase the visibility of minority communities accustomed to being forgotten or oppressed as a result of French laws that forbid preferential treatment for a specific group. These laws, in practice, help perpetuate the existence of shantytowns, suppress religious expression, and segregate rather than integrate.²⁷ According to *banlieue* resident Aziz Senni (founder of a taxi service and an investment fund designed to encourage economic development in these suburbs), giving recognition to the *banlieues* is “ worth more as much as gold, ”²⁸ while Rokhaya Diallo, leader of “ Les Indivisibles ” (a group which

promotes racial harmony) observes, “a foreign country identifies us as potential leaders. Here we receive no recognition [by the French government].”²⁹

Successful U.S. Embassy in Paris programming to this marginalized community includes the following:

- *Create Today*: A cultural entrepreneurship initiative that highlights ways to pursue a career in the arts both through private and public channels. The program is designed reinforce the concept of “shared values” between the United States and France to “defend artistic creativity” in any form.³⁰

Impact: According to a United States embassy official, the program was extremely well-received by members of these communities (many of them Muslims) who want to increase global understanding of their culture through art.³¹

- *Mural Arts Program*: A partnership between a Philadelphia-based arts group and local community leaders in Villiers-le-Bel, Bondy, and Bagnolet to create murals commemorating the message of Dr. Martin Luther King, Jr.³²

Impact: Increases the visibility of a community, reinforces peaceful and moderate values within disaffected populations. The mayor of Bondy, M. Roger, notes that residents of the *banlieues* “have the sense that the United States looks upon our areas with much more deference and respect [than the French government].”³³

- *Unconventional “Speakers Programs”*: Personal connections with the ambassador brought Samuel L. Jackson to Bondy where he spoke with youth about growing up in Tennessee during segregation, the importance of education, and capitalizing on opportunities.

Impact: Emphasizes the possibilities associated with the “American Dream” (even for a marginalized minority group), a philosophy that can easily be extended throughout the world.³⁴ According to one of the students in attendance, Widad Ketfi, “American attention is proof that ‘these young people are succeeding’ and that ‘we’re not invisible.’” Claude Grunitzky, founder of Trace TV (an urban culture network) and author of *Transculturalismes (Transculturalisms)*, notes that “The United States is truly invested in the problem of the *banlieues* and those of the urban youth who reside there. [The United States’ government] knows that the ‘American Dream’ is very present in the collective conscious and wants to support that [in these areas].”³⁵

Building On Success

In light of French embassy success in underserved neighborhoods composed of largely Muslim populations, the Department of State should expand similar programs throughout Europe and sharpen the focus of these initiatives on Muslim communities. As noted by the

mayor of Vénissieux (a *banlieue* south of the industrial city of Lyon), André Gérin, “These [new diplomatic] practices are logical to the United States. France under-estimates the terrorist threats, in contrast to Americans who magnify them. Their involvement in the *banlieues* follows.”³⁶ The major objectives of these programs should be:

- 1) To highlight and celebrate immigrant culture on its own merits and as it contributes to the host nation.

Proposed Programs: Arts-exchange programs, micro-grants for entrepreneurial cultural expositions, and religious festivals to increase awareness and understanding of moderate Islam.

Desired Outcome: De-politicize discussion of Arab-Muslim culture in order to better understand how this community can retain its cultural integrity while being effectively integrated into the existing Western framework.

- 2) To encourage dialogue, mutual respect, and tolerance among communities.

Proposed Programs: Alternative interaction with local law enforcement (such as police-taught self-defense classes)³⁷, educational seminars for community leaders on topics ranging from political participation to effective media application, and townhall-style meetings with politically neutral moderators.

Desired Outcome: Cultivate and encourage moderate and peaceful leadership within the Muslim communities that work productively within the system instead of violently against it. Connect law enforcement and local government officials with historically marginalized communities in order to “humanize” each group’s objectives and establish a network of trust between opposing groups regardless of past injustices or abuse.

- 3) To promote the benefits of democratic multiculturalism by highlighting the successes of minorities and immigrants in the United States.

Proposed Programs: Non-academic speakers series conducted by celebrities, entrepreneurs, non-profit organizers, etc., distribution of multi-media educational materials created for minority groups by minority groups, and personal address by President Barack Obama in a *banlieue* such as Bondy.³⁸

Desired Outcome: Demonstrate that liberal ideology and democratic institutions can help minorities achieve economic progress and social acceptance without a loss of identity.

Strengths and Weaknesses of Multicultural Diplomacy

Strength

- Focuses on reaching out to populations in democratic countries at risk of radicalization.
- Emphasizes the ways that Muslims can enrich their host country through projects that increase their visibility and showcase their talents. In doing so, these programs demonstrate the United States' respect of immigrant culture and Islam.
- Creates and expands a network of "moderate Muslims" that serve as role models for feasibility of integration of Muslim tradition and republican values in the greater Middle East.

Weakness

- Potentially perceived as outside the traditional constraints of diplomatic efforts and, therefore, inappropriate.³⁹

Response: Although these new multicultural diplomacy programs often address social problems that should ideally be managed by the host nation government, the goal is to positively impact and reinforce pro-Western attitudes and values within marginalized Muslim populations regardless of which nation effectively accomplishes it. Rhetoric and access to media are not sufficient to change attitudes among disenfranchised population. The United States must champion the benefits of democratic multiculturalism by providing programming that educates and helps immigrants integrate into their host societies.

- Susceptible to criticism from host nation populations who fear infiltration or unwanted influence from the United States within their immigration policy.⁴⁰

Response: All of the efforts proposed should be conducted with the consent of or in partnership with the host government.⁴¹ Much of the criticism for programs conducted in Paris have come from nationalist, reactionary groups who resent *any* kind of outside influence, whether from an allied nation or immigrant communities in general. Their exaggerated response is not credible in the eyes of the majority of the French people.

¹ Pew Global Attitudes Project, “Obama More Popular Abroad Than At Home, Global Image of U.S. Continues to Benefit,” *Pew Research Center*, June 17, 2010, <http://pewglobal.org/2010/06/17/obama-more-popular-abroad-than-at-home/>.

² Pew Global Attitudes Project, “The Great Divide: How Westerners and Muslims View Each Other,” *Pew Research Center*, June 22, 2006, <http://pewglobal.org/2006/06/22/the-great-divide-how-westerners-and-muslims-view-each-other/>.

³ Pew Global Attitudes Project, “The Great Divide.”

⁴ United States’ government-run mass media programs designed to communicate a specific message operated in a region already “saturated” with information. This represents a failure to tailor public diplomacy strategy popular during the Cold War era to the changing nature of global conflict. The “War of Ideas” is no longer a bipolar conflict; therefore, creating networks of positive U.S. influence is of paramount concern in reaching target audiences. Some of the most pressing problems emerge from this outdated methodology because efforts focus on control of communication channels rather than effective navigation of them. Therefore, the United States lacks credibility in its dissemination of messages in the media and critics can easily distort and filter “universal messages” offered. R. S. Zaharna, “The Network Paradigm of Strategic Public Diplomacy,” *Foreign Policy in Focus* 10, no. 1 (2005): 1–2.

⁵ Ilan Berman, “Messaging to the (Muslim) Masses,” *The Journal of International Security Affairs* Fall 2009, no. 17.

⁶ George Gedda, “Radio Sawa: Music as a Tool,” *Foreign Service Journal* 79, no. 12 (November 2002): 53-56.

⁷ Gihan Shahine, “Hi is not enough,” *Al-Ahram*, November 18, 2003, <http://weekly.ahram.org.eg/2003/656/eg8.htm>.

⁸ Sean McCormack, “State Department Briefing, December 22,” *GlobalSecurity.org*, December 22, 2005, <http://www.globalsecurity.org/military/library/news/2005/12/mil-051222-usia02.htm>.

⁹ Saul Hudson, “US halts Arabic magazine meant to boost US image,” *Reuters*, December 22, 2005.

¹⁰ Jeremy M. Sharp, *The Middle East Television Network: An Overview*, CRS Report for Congress (The Library of Congress: Congressional Research Service, August 17, 2005).

¹¹ Matthew Craft, “US Arabic channel a turn-off,” *guardian.co.uk*, February 16, 2004, <http://www.guardian.co.uk/media/2004/feb/16/broadcasting.usnews>.

¹² Brian Ross, “U.S. Government Gave Airtime to Terrorists, Official Admits,” *The Blotter*, May 22, 2007, http://blogs.abcnews.com/theblotter/2007/05/us_government_g.html.

¹³ Dafna Linzer, “Alhurra Bleeding Viewers, Poll Finds, But Spending is Up,” *ProPublica*, May 29, 2009, <http://www.propublica.org/article/alhurra-bleeding-viewers-poll-finds-but-spending-is-up-529>.

¹⁴ Jeremy M. Sharp, *The Middle East Partnership Initiative: An Overview*, CRS Report for Congress (The Library of Congress: Congressional Research Service, July 20, 2005).

¹⁵ Zaharna, “The Network Paradigm.”

¹⁶ Thomas Carothers, *A Better Way to Support Middle East Reform* (Carnegie Endowment for International Peace, February 2005).

¹⁷ Tamara Cofman Wittes and Sarah E. Yerkes, “The Middle East Partnership Initiative: Progress, Problems, and Prospects,” *Brookings*, November 29, 2004, http://www.brookings.edu/papers/2004/1129middleeast_wittes.aspx.

¹⁸ Sheldon Rampton, “Shared Values Revisited,” *The Center for Media and Democracy's PR Watch*, December 17, 2007, <http://www.prwatch.org/node/6465>.

¹⁹ Jami A. Fullerton and Alice Kendrick, *Advertising's War on Terrorism: The Story of the U.S. State Department's Shared Values Initiative* (Marquette Books, 2006).

²⁰ Michelle Goldberg, “To know America is to love America?,” *Salon.com*, December 19, 2002, <http://dir.salon.com/story/news/feature/2002/12/19/beers/index.html>.

²¹ “A Nixon Center study of 373 *mujahideen* in western Europe and North America between 1993 and 2004 found more than twice as many Frenchmen as Saudis and more Britons than Sudanese, Yemenites, Emiratis, Lebanese, or Libyans. Fully a quarter of the jihadists it listed were western European nationals – eligible to travel visa-free to the United States.” Robert S. Leiken, “Europe’s Angry Muslims,” *Foreign Affairs* 84, no. 4 (July 2005): 120-135.

²² Six first-generation immigrants from Morocco (Jamal Zougam, Othman el-Gnaoui, Youssef Belhadj, Hassan el Haski, Abdulmajid Bouchar and Rafa Zouhier) carried out the 2005 Madrid bombings, and suicide bombers from the Salafia Jihadia congregation, an offshoot of the Moroccan Islamic Combatant Group, executed the 2003 and 2007 Casablanca bombings. “Madrid bombing suspects,” *BBC NEWS*, March 10, 2005, <http://news.bbc.co.uk/2/hi/europe/3560603.stm>. “Terrorist Organization Profile: Salafia Jihadia,” *National Consortium for the Study of Terrorism and Responses to Terrorism*, 2011, http://www.start.umd.edu/start/data_collections/tops/terrorist_organization_profile.asp?id=4257.

²³ Leiken, “Europe’s Angry Muslims.”

²⁴ Leiken, “Europe’s Angry Muslims.”

²⁵ In an interview originally published in *Le Parisien*, Justin Vaïsse discussed American Embassy initiatives in Paris and noted specifically that the Americans started to concern themselves with the *banlieues* after September 11, 2001 because of security concerns: any French citizen can enter the United States without a visa which leaves the United States vulnerable to French radicals. Original quote: “L’intérêt commence vraiment le 11 Septembre. Pour des questions sécuritaires d’abord. Tout citoyen français peut alors se rendre aux Etats-Unis sans visa. Cette absence de contrôle les rend vulnérables face à des éléments radicalisés détenteurs de passeports français.” Justin Vaïsse, “Les Américains cherchent à se créer un réseau,” *Brookings*, April 21, 2008, http://www.brookings.edu/interviews/2008/0421_france_vaïsse.aspx.

²⁶ Most recent major terrorist attacks include the September 11, 2001 attacks on the United States, the Madrid bombing of 2004, and the London bombing of 2005.

²⁷ Shantytowns or *bidonvilles* (although formerly believed to have been effectively eradicated by aggressive implementation of social programs in the 1960s and 1970s) still exist on the outskirts of major cities such as Lyon. Elisa Frisullo, “La multiplication des bidonvilles inquiète,” *20 minutes*, June 23, 2006, <http://www.20minutes.fr/article/93801/Lyon-La-multiplication-des-bidonvilles-inquiete.php>

²⁸ Scott Sayare, “Feeling Slighted by France, and Respected by U.S.,” *The New York Times*, September 22, 2010, <http://www.nytimes.com/2010/09/23/world/europe/23france.html>.

²⁹ John Lichfield, “Stallone joins US invasion of French ghettos,” *The Independent*, August 4, 2010, <http://www.independent.co.uk/news/world/europe/stallone-joins-us-invasion-of-french-ghettos-2042511.html>.

³⁰ “Create Today - French and American perspectives on Young Cultural Entrepreneurs,” *Embassy of the United States Paris, France*, June 24, 2010, <http://france.usembassy.gov/event100624b.html>.

³¹ U.S. Embassy official in Paris, February 4, 2011.

³² One can draw a pointed comparison between the plight of African Americans in the 1960s and that of Muslim immigrants and their families in France. However, French Muslims do not have a uniting, pacifistic figure like Martin Luther King, Jr. to lead them. By encouraging the youthful generation in *banlieues* to effectively participate within the constraints of the current democratic system, it is possible that the United States Embassy could help mentor the next great moderate Muslim leader in France or in all of Europe. Steven Philip Kramer, “The End of French Europe?,” in *Foreign Affairs*, vol. 85 (Foreign Affairs, 2006), 126-138.

³³ Sayare, “Feeling Slighted.”

³⁴ Sayare, “Feeling Slighted.”

³⁵ Original quote: “Les Etats-Unis sont vraiment investis dans le problème des banlieues et celui des jeunes urbaines qui y résident. Ils savent que le rêve américain est bien présent dans les consciences collectives et veulent l’entretenir.” From “Banlieues: OPA américaine sur les beurs et les blacks Pauline Delassus » 22 April 2008 *Marianne 2*

³⁶ Original quote: “De telles pratiques sont logiques aux Etats-Unis. La France sous-estime la menace terroriste, à l’inverse des Américains qui l’amplifient. Leur implication dans les banlieues en découle.” Pauline Delassus, “Banlieues: OPA américaine sur les beurs et les blacks,” *Marianne 2*, April 22, 2008, http://www.marianne2.fr/Banlieues-OPA-americaine-sur-les-beurs-et-les-blacks_a86469.html.

³⁷ As implemented by the Brazilian law enforcement in the infamous slums of Rio de Janeiro. “Years of hate and mistrust are thawing in some of Rio’s most violent slums...Rio officials have embarked on an ambitious plan to wrest control of the slums from ruthless drug gangs...The peace officers are central to that effort, flooding in after the military police clear the streets in gun battles...Their job is part tradition policing, part social work. They devote themselves to winning over residents scarred by decades of violence – some at the hands of the police.” Alexei Barrionuevo, “In Rough Slum, Brazil’s Police Try Soft Touch,” *The New York Times*, October 10, 2010, http://www.nytimes.com/2010/10/11/world/americas/11brazil.html?_r=2.

³⁸ Authors for the French news website *Rue89* François Durpaire and Jean Claude Tchicaya interviewed French high school students from the *banlieues* about their views on the possibility of the election of Barack Obama to the President of the United States. One student exclaimed that Obama’s victory would be the “liberation of all the world’s blacks. [His election] would mean that everything is possible.” (Original quote: “La victoire d’Obama serait ‘la libération de tous les Noirs du monde. Cela voudrait dire que tout est possible!’”) The authors also note that an American diplomat believes that any public diplomacy efforts conducted in Paris could not come close to the positive impact that Obama’s election would have on America’s image in the *banlieues* (which is currently “marked by strong feelings of anti-Americanism.”) The embassy official believed that with Obama in office “three-quarters of our work would already be done.” (Original quote: “L’objectif est de modifier progressivement l’opinion des banlieues marquée par un fort antiaméricanisme. Mais de l’avis d’un diplomate américain, cette politique ne serait rien par rapport au gain d’image qu’apporterait l’élection du sénateur de l’Illinois: Obama président, les trois quarts

de notre travail seraient faits!” François Durpaire and Jean Claude Tchicaya, “Grâce à Obama, les Etats-Unis mieux perçus dans les banlieues,” *Rue89*, May 6, 2008, <http://www.rue89.com/campagnes-damerique/grace-a-obama-les-etats-unis-mieux-percus-dans-les-banlieues>.

³⁹ Emeline Cazi, “Pourquoi les Etats-Unis s'intéressent à nos banlieues,” *Le Parisien*, April 21, 2008, <http://www.leparisien.fr/une/pourquoi-les-etats-unis-s-interessent-a-nos-banlieues-21-04-2008-3298451396.php>.

⁴⁰ André Gérin (Vénissieux mayor) comments on the United States' involvement in the *banlieues*: “I was surprised to learn [about these programs] in a newspaper article and I will be curious to know the position of the French government and the President of the Republic on these programs. A problem results from the point of view of the authority of our institutions and the independence of France vis-à-vis the United States.” Original quote “J’ai été étonné d’apprendre ça à la une d’un journal et je serais curieux de connaître la posture du gouvernement français et du président de la République sur ces actions. Un problème se pose d’un point de vue de l’autorité de nos institutions et de l’indépendance de la France vis-à-vis des Etats-Unis.” Delassus, “Banlieues.”

⁴¹ U.S. Embassy official in Paris, February 4, 2011.

ENERGY SECURITY THROUGH WILD DIATOMIC MICROALGAE CULTIVATION IN LATIN AMERICA

ELEANOR HANSEN

Dependence on petroleum imports from a small clique of potentially unfriendly and unstable countries jeopardizes U.S. security by granting these nations unprecedented political leverage, draining U.S. financial resources, and funding international terrorism. U.S. alternative fuel policy has centered on the use of corn ethanol, a highly inefficient and costly biofuel. This brief proposes that the United States instead encourage wild diatomic microalgae cultivation in Latin American through a pilot program in Panama. Wild algae have high oil content, are easily cultivated, place little strain on fresh water resources and arable land, and cleanse water of pollutants. By developing a wide algae supplier base in the Americas, the United States can contribute to regional economic development and environmental quality while moving in the direction of energy security.

The Dangers of Oil Dependence

The United States' heavy dependence on petroleum imports from a small number of authoritarian and politically unstable suppliers leaves the economy vulnerable to price spikes and funds anti-American activity.

Reliance on Imported Energy

- In 2009, the United States imported approximately half of its needed petroleum with OPEC nations providing by far the largest percentage of imports at 48%.¹
- The U.S. spent an average of \$272 billion per year between 2005 and 2009 on oil imports,² accounting for approximately 17% of its total imports.³
- Persian Gulf nations control 64% of world oil supplies, while Venezuela, Nigeria, and Mexico control an additional 11%.⁴

Economic Vulnerability

- Oil market disruptions impact both U.S. price levels and price volatility.⁵ A negative supply shock of 7 million barrels per day would lead to a nearly 3% decrease in U.S. GDP.⁶
- Every \$10 increase in per barrel cost of oil raises Department of Defense energy costs by more than \$1.3 billion.⁷

Funding Anti-American Activities

- Venezuela's Hugo Chavez and Iran's Mahmoud Ahmedinejad have directly linked their nations' oil abundance to an ability to block U.S. foreign policy goals.⁸
- Since the late 1980's, Saudi Arabia's semi-official charities sent over \$70 billion, largely raised from oil revenues, to spread Wahhabist Islamic doctrine abroad by establishing mosques, schools, and Islamic centers that create a support network for radical terrorists.⁹

Criteria for Achieving Energy Security

Energy security for the United States rests on having as many suppliers for our energy needs as possible. As the number of U.S. energy suppliers grows, competition holds down the price of energy, opponents see less opportunity to manipulate energy dependence as a coercive tool, and political instability within supplying nations carries less weight for the U.S. economy.

To achieve long-term energy security, the United States should encourage:

- A diversified supplier base that lessens dependence on one group of states for energy needs.
- A sustainable and reliable renewable fuel source that will provide long-term energy security as excess demand for petroleum depletes global oil reserves.

Current Biofuel Policy: Corn Ethanol

U.S. biofuel policy heavily relies on the production of corn ethanol, which constituted 7% of the U.S. fuel market in 2008.¹⁰ While congress seeks to increase biofuel production from the current 12 billion gallons per year to 36 billion gallons per year by 2022,¹¹ relying on corn ethanol to provide this increase will encourage reliance on an unsustainable, inefficient and costly biofuel.

Inefficiency of Corn Ethanol

Due to corn's poor photosynthetic efficiency, corn ethanol fuel is incapable of satisfying U.S. energy needs.

- Corn ethanol has a low net energy balance, producing only 25% more energy than used in its production.¹²
- Even if current biofuel crops, including those used for both ethanol and biodiesel, covered all arable land across the world, the resulting oil would supply less than half of global energy needs.¹³ Producing enough corn ethanol to meet even half of current U.S. energy needs would require over eight times the U.S.'s current cropland.

Economic Costs of Ethanol

The use of corn as a biofuel crop places upward pressure on food prices, triggering social unrest, trade barriers, and increased hunger and malnutrition for the world's poor.

- Global cereal prices have more than doubled since 2000;¹⁴ increased biofuel production triggered between 10% and 33% of this price rise.¹⁵
- Rising food prices caused worldwide protests, such as those in Mexico, Italy, China, and Pakistan in 2007-2008.¹⁶
- As domestic food prices rise, agricultural exporters such as Russia and Argentina have limited or blocked exports, causing further scarcity and rising prices.¹⁷
- According to the World Bank, doubling food prices decreases caloric intake among the global poor by 20%, a potentially life-threatening reduction for many.

The Promise of Algae in Latin America: Panama as a Test Case

For long-term energy security, the United States should encourage algae biofuel production globally – particularly in Latin America. Wild diatomaceous algae can sustainably produce a large amount of fuel oil and can be cultivated throughout the Americas as a local energy source, a water purification system, and a potential export crop. Widespread production of algae fuel will significantly lower energy prices, lessen the oil producers' cartel power, and offer a promising renewable fuel source.

- *Algae's High Energy Efficiency:* Marine algae have a net energy balance 15 to 300 times that of corn ethanol and can produce 5,000 to 15,000 gallons of oil per acre annually. Even at a conservative estimate, algae yield approximately 278 times as much energy as corn ethanol.¹⁸ Technological advances could further boost this already impressive yield.¹⁹

- *Cultivation:* To minimize costs, cultivation would center on wild diatomaceous microalgae, which can be sustainably cultivated at relatively low cost in pre-existing brackish lakes and ponds. Central America's warm, sunny climate proves ideal for rapid algae growth and frequent harvests, allowing a high volume of production.

Pilot Program in Panama

In order to develop and test a cultivation model, the United States should promote a pilot program in Panama. The nation's stable political climate, pre-existing transport infrastructure, and favorable geography qualify it as an excellent test site for algae development to provide a model that other Central American nations could adopt with minor modifications.

Why Latin America?

- *Favorable Geography and Climate:* Central America and the northern part of South America enjoy a warm tropical climate with high levels of sunshine and rainfall and relatively consistent year round temperatures. This environment favors rapid year-round algae growth with a harvesting cycle of under ten days, allowing very high yields.²⁰ Also, since nearly 30% of South America lies within 62 miles of the coast, the region has relatively high access to non-potable salt water for algae growth.
- *Proximity to the United States:* The region's geographic proximity to the United States enhances the sustainability and lowers the cost of exported algae fuel. Reducing the expense, fuel consumption, and air pollution involved in transport would enhance algae fuel's cost-competitiveness with petroleum and reduce the environmental damage associated with extensive transport.

Why Panama?

- *Political Stability:* Panama stands out as a stable Central American nation, with relatively high per capita GDP and relatively low crime rates for the region. Poverty rates have fallen by 10% since 2002, while economic growth was 7% in 2010.²¹ Panama has seen five successive civilian elections, and retains close economic and political ties with the United States.
- *Transport Infrastructure:* For algae fuel exports to be economically viable, pre-existing transport infrastructure must exist within the producing nation. The Panama Canal, which is currently undergoing expansions that will double its capacity,²² provides an ideal gateway for export for the entire hemisphere. Since 77% of the economy rests on service industries, most of which revolve around the Panama Canal, transport infrastructure and services within the nation are highly developed.²³

Algal Production Techniques

Many species of algae hold promise for fuel production. Diatomic microalgae hold particular advantages as the fastest-reproducing species on earth with an oil production rate of 45.6 tons of oil/hectare/year.²⁴ Cultivating wild algae instead of a forced monoculture in pre-existing natural lakes, ponds, or man-made bodies of water would avoid much of the expense and labor involved in eliminating unwanted algae species.

- Panama's Lago Gatun, a large man-made lake with an area of about 166 mi² that abuts the Panama Canal,²⁵ provides a large, convenient test site. Even if only 15% of the lake's surface area were utilized, the lake's area is large enough to produce roughly 2.15 million barrels of biofuel per year, depending on production yields. At the largest estimate, this yield amounts to 0.14% of U.S. oil imports from OPEC nations in 2009.²⁶
- Estimated operating costs of open-pond algae cultivation run about \$3.1 million per square mile.²⁷ Assuming a 15% cultivation rate for Lago Gatun, the cost of cultivating algae would run \$77 million at the highest. However, the actual figure would likely be considerably lower, since this model calculates costs based on maintaining a monoculture. By cultivating pre-existing wild algae instead, growers would eliminate maintenance costs associated with herbicides and other treatments to eliminate unwanted species.²⁸
- To cultivate diatomaceous microalgae within Lago Gatun, producers would suspend an algal turf scrubber covered with nylon netting on which algae would grow. Necessary inputs include CO₂, nitrogen, and phosphorous. Since these elements can be obtained from polluted or waste water, algae prove an excellent water filtration and carbon sequestration mechanism.²⁹
- Once removed, the algae would be channeled through on-site refineries to produce usable fuel. Although costs for algae refineries remain highly variable, standard biodiesel refineries run about \$25 million.³⁰
- The lake's location along the Panama Canal would allow easy transport of algae biofuel throughout the nation and the entire hemisphere.

The Benefits of Algae in the Americas

Fulfills Energy Security Requirements

Because algae thrive in a wide variety of environments, widespread production across Latin America would reduce the leverage of oil-supplying nations and provide a sustainable long-term fuel source.

- *Diverse Production Base:* Eleven nations in Central and South America, including Honduras, El Salvador, Nicaragua, Costa Rica, Panama, Belize, Venezuela, Guyana, Suriname, Brazil, and the coast of Colombia possess the 20°-30°C temperature range ideal for year-round high-yield algae cultivation.³¹ With such widespread production potential, no state in Latin America, or globally, would likely dominate the algae market as Saudi Arabia dominates the petroleum market.
- *Algae's Sustainability:*
 - Algae grow in salt or wastewater and thrive in virtually any warm location. As a result, algae production does not place greater strain on scarce arable land or fresh water sources.
 - Aside from minerals such as nitrogen and phosphorous already present in contaminated water, wild algae requires no fertilizer or chemical inputs.
 - Because algae feed on a combination of carbon dioxide and nitrogen dioxide, they remove CO₂ from the air in a process known as “carbon capture.” Growing algae near factories with high air pollution rates could significantly improve local air quality.³²
 - Algae are a renewable, fast growing, and energy rich biofuel crop whose production can be scaled to meet global energy demands.

Local Water Purification

- Algae remove heavy metals from contaminated water. When supplemented with sand screens to remove water-borne bacteria and parasites, algae could provide an inexpensive, sustainable water filtration system for remote villages without clean water infrastructure.
- South American nations have notoriously poor water quality, with 77 million citizens lacking access to clean water.³³ Cultivating algae as a dual-purpose fuel source and water filtration mechanism would contribute greatly to human development within the region and increase political support for algae cultivation.

Economic Development in Latin America

- Algae for biodiesel would provide a lucrative, high-demand export crop that does not compete with the resources needed for Central America's current agricultural exports, such as coffee and tropical fruits, and would constitute a valuable and easily produced export crop.

- Algae infrastructure would provide employment and income for many the region’s residents, who often survive through subsistence farming in impoverished rural areas. Operating the cultivation process would not require some training but no extensive education, allowing employment opportunities for relatively low-skill workers, while refineries would offer employment opportunities for higher-educated workers.

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**BUILDING THE INDIAN COUNTERWEIGHT:
A STRATEGIC DIVISION OF LABOR TO SECURE
LONG-TERM INDIAN OCEAN STABILITY**

LINDSAY HUNDLEY

China's rapid development towards a blue water navy threatens U.S. access to the Indian Ocean, a region vital to commerce and energy security. To counter this threat, the United States has sought an alliance with India based on joint training and the sale of advanced weapons technology, facilitating India's quest for sea control capability.

This brief argues that an Indian naval doctrine premised on sea control is shortsighted and undermines its ability to balance against China by accelerating a costly arms race. Instead, the United States and India should agree to an interim division of labor in the Indian Ocean. India would pursue cost-effective sea denial at strategic chokepoints to deter any potential Chinese aggression and reallocate resources towards its economic growth. The United States, in turn, would continue to ensure open sea lines of communication in the short-to-medium term with the goal of increasingly involving India in this effort. This proposed partnership is a proactive intermediate step for achieving long-term stability in the Indian Ocean by fostering the emergence of India as an economically and militarily robust counter to China.

The Threat of Chinese Naval Ambitions and Expansion in the Indian Ocean Region

Due to its strategic vulnerability at the Malacca Straits, China has adopted an expansionist naval strategy to secure commercial trade and energy resources in the Indian Ocean.¹

The following characteristics of China's naval expansion threaten U.S. interest in the region:

- *Acquisition of Offensive and Denial Capabilities:* Since 2000, the PLAN has doubled the number of vessels entering into service. In addition to its ten 093 class nuclear submarines, China plans to develop five aircraft carriers by 2020.² The military has also unveiled new anti-access/area denial (A2/AD) technology, including the DF-21D anti-ship ballistic missile (ASBM) and J-20 stealth fighter, which can penetrate even the most advanced U.S. naval defense systems.³
- *Naval Presence near the Strait of Hormuz:* Currently, China is building a deep water port at Gwadar, only 250 miles from the Strait of Hormuz. Upon completion, China will be

able to both monitor U.S. naval activity and potentially threaten access to Persian Gulf oil supplies.⁴

- *Growing Influence in the Indian Ocean:* China is establishing a number of friendly ports in littoral states, such as Myanmar and Bangladesh, under its “String of Pearls” strategy. Since many of the ports serve as surveillance and logistical facilities, these sites provide the support necessary for the PLAN to execute disruptive submarine warfare against opponents’ sea lines of communication (SLOCs).⁵

With such offensive capability and technological sophistication, China could potentially disrupt critical Indian Ocean SLOCs, through which 20% of world energy resources and 45% of global commerce must transit.⁶ Without a regional counterweight, the United States would have to shoulder the burden of checking China’s growing naval capabilities.

Responding to Chinese Expansion: Indian Sea Control

To counter China’s naval expansion, India is also pursuing blue water capabilities under a sea control strategy. This strategy not only encompasses the ability to impose sea denial, but also requires a costly and extensive navy to ensure dominance outside of coastal waters.⁷

Current Indian naval strategy has the following three primary components:

- *Power Projection through Carrier Fleets:* By 2020, India expects to have three aircraft carriers in service, two of which will be indigenously built.⁸ A three carrier fleet will enable India to maintain one carrier group on each seaboard to respond to diverse combat contingencies.⁹
- *Efforts to Control the Malacca Straits:* India plans to expand the Andaman and Nicobar Command (ANC)—stationed approximately 1,000 miles from the Malacca Straits—into the Far Eastern Naval Command in 2012. This command would require 12,000 additional troops; six primary airbases; and advanced fighter squadrons, including the Sukhoi, Jaguar, Mirage-2000, and MiG aircrafts.¹⁰ Moreover, the Andaman and Nicobar islands will likely host two floating docks of Navy (FDN) by 2014, allowing India to dock all naval vessels except aircraft carriers and oil tankers.¹¹
- *Expansion of Submarine Fleet:* India is currently building six indigenous Scorpene “next-generation” submarines under French supervision with plans for six more in the near future. Moreover, India aims to develop a 5-6 indigenous, nuclear submarine fleet. Its first nuclear-propelled submarine, the INS *Arihant*, debuted in July, 2009.¹²

U.S. Alliance-Seeking and the Expansion of Indian Military Capability

The United States seeks an alliance with India to contain China's expanding military capability while avoiding direct confrontation with a valuable trading partner. To date, the United States has used weapon sales and joint training exercises to foster a closer relationship with India and expand its military capability.

U.S. Weapon Transfers to India

Recent U.S. arms transfers to India include:

- 12 P-8I Maritime Patrol and Reconnaissance Aircraft;¹³
- 6 C-130J Hercules Transport Aircraft;¹⁴
- 10 C-17 Globemaster-III Strategic Airlift Aircraft;¹⁵
- 1 USS Trenton Amphibious Transport Dock (Renamed the INS *Jalashwa*);¹⁶

U.S. Arms Suppliers are also competing for a \$10-\$12 billion deal to sell India 126 new multi-role fighters. If acquired, the United States will provide lifetime maintenance and support for these aircrafts.¹⁷

U.S.-India Joint Training Exercises

The United States and India have increased military cooperation throughout the past decade, as evidenced by its participation in nine joint land exercises in 2010-2011 alone. Both nations' air forces and navies are also planning similar programs.¹⁸ Such exercises promote interoperability through the exchange of tactics, techniques, and procedures.

Prominent U.S.-India Joint Operations include:

- Yudh Abhyas, an annual, bilateral conventional-forces training exercise;
- Cope India, a regularly-scheduled, bilateral air-combat exercise;
- Exercise Habu Nag, an annual, bilateral amphibious training exercise;
- Exercise Malabar, an exercise focusing on strategic naval operations;¹⁹
- U.S. Red Flag, an advanced aerial combat exercise for close U.S. allies.

The Flaw of Current Policy: Accelerating a Costly and Unsustainable Arms Race

U.S. policy hinges on the assumption that India will prove able to counter China's growing naval capabilities. India's current naval doctrine, however, accelerates an unsustainable and costly arms race. Underlying economic problems will likely prevent India in the long run from being able to match China's expansion.

The Excessive and Unnecessary Expense of Sea Control

India does not yet require a navy capable of sea control and can avoid the economic burden of developing such capability.

- *The Economic Burden of Sea Control:* Aircraft carriers, the primary vessels required for sea control, are incredibly expensive to acquire and maintain.²⁰ For example, the cost of the INS *Vikramaditya* carrier is valued at \$2.33 billion, approximately 80% of the Indian navy's 2011 acquisition budget.²¹ Although India's indigenously developed carriers are expected to be significantly less expensive, their initial costs still constitute over 25% of the acquisition budget and could likely increase in price during construction.²²
- *Minimal Deterrence Necessary to Protect SLOCs:* China current fleet does not pose a significant threat to either the U.S. or Indian navies in the Indian Ocean, nor will it likely in the near future. Until China reaches a settlement over Taiwan, the first and second island chains will restrict the movement of large naval task forces into the Indian Ocean.²³ Therefore, the most significant naval presence China could hold in the region would be dispersed through the distant nodal ports established under its String of Pearl strategy. As a result, India's geographic advantages would enable it to conduct both naval and aerial operations from land-based stations capable of countering Chinese aggression.²⁴ Thus, India does not need the extensive carrier task forces necessary for sea control.

The Acceleration of Arms Racing

India's current sea control naval doctrine requires a massive expansion of its naval fleet, launching the nation into a maritime "Great Game" with China.²⁵ Its quest for naval dominance in the Indian Ocean has produced a parallel increase in Chinese naval power and activity, which then further provokes Indian naval expansion.

This naval arms racing has led to the buildup of offensive capabilities around strategic chokepoints throughout the Indian Ocean. If this trend continues, the area may soon host competing aircraft carrier fleets and an array of other advanced naval vessels.²⁶ In essence, India's sea control doctrine has already and will continue to accelerate a dangerous, naval arms race with China.

Impeding India's Economic Development

Despite its recent emergence as a world power, India still faces many economic obstacles which hinder its long-term development into a robust counter to China.

Three notable impediments include:

- *Power Shortages:* The World Bank identifies power shortages as the “biggest bottleneck to investment and industrial growth.”²⁷ To date, approximately 20% of all villages remain off-grid, without any access to electricity. Moreover, limited implementation capacities and a shortage of skilled labor create energy shortages of roughly 11%. These inadequacies are estimated to cost India around 6% of its 2010 GDP.²⁸
- *Lack of Proper Sanitation Facilities:* According to the Water and Sanitation Program (WSP), improper sanitation causes India to incur costs associated with disease treatment, premature deaths, lost productivity, and losses in tourist revenue. Combined, these costs accounted for a 4% loss in India's 2010 GDP.²⁹
- *High Malnutrition Rates:* Approximately 40% of children in India are malnourished.³⁰ Because these children tend to develop physical and mental impairments, the World Bank estimates India sacrifices at least 3% of its GDP to productivity losses.³¹

The Failure to Balance in the Long-Run

With its underlying economic barriers, India cannot currently hope to match China's naval expansion in the long-run. By 2030, China's economy is projected to be more than triple the size of India's economy:

- China's 2030 GDP is projected to be \$22.4 trillion, assuming an average growth rate of 5.56%.³² India's 2030 GDP is projected to be \$6.0 trillion, assuming an average growth rate of 6.19%.³³
- China's 2011 defense budget increased by 12.7% to \$91.5 billion.³⁴ In comparison, India's 2011 defense budget increased by 11.59% to \$36.5 billion.³⁵
- Assuming both China and India maintain a defense budget at its current proportion to GDP, China's defense budget will be approximately \$360 billion whereas India's defense budget will only be about \$160 billion in 2030.

Thus, China's disproportionately large economy enables it to devote more resources to its naval expansion. Former Indian naval chief of staff, Arun Prakash, has stated that India is already losing the naval arms race with China.³⁶ The gap the Chinese and Indian

economies—and consequently, the amount each can spend on naval expansion—will only increase with time.

A Strategic Partnership: The India-U.S. Maritime Cooperation Initiative

In order to facilitate India's rise as a strong counterweight to China, the United States should encourage India to agree to an interim and strategic division of labor in the Indian Ocean. This arrangement would allow India to focus on economic development while simultaneously serving as a deterrent to potential Chinese aggression.

The Role of India

Two primary tasks comprise India's responsibilities under the proposed division of labor:

- *Minimal Sea Denial*: Sea denial naval strategies seek to disrupt or deny an adversary's access to key SLOCs. A minimal sea denial strategy uses the bare minimum number of vessels and weaponry necessary to pose a significant threat to an adversary's ability to transit key maritime chokepoints.

India would invest in advanced conventional submarines, long range airpower, long range anti-ship missiles, and C3I capability.³⁷ By capitalizing on India's geographic advantages and China's gross dependence on oil imports and external trade, such investments enable India to threaten China's access to the Indian Ocean through the Malacca and Lombok Straits with relatively few military assets.³⁸ The simple ability to disrupt—even temporarily—these critical SLOCs will serve as a strong deterrent to any potential military aggression.

- *Resource Reallocation to Economic Development*: Avoiding the excessive economic burden of sea control will allow India to focus additional resources on economic development in the short-to-medium term. The World Bank identifies the following two areas as avenues for promoting economic growth by through increased export competitiveness:
 - *Structural Reforms*: To lower the cost of conducting business, India needs to further relax red tape restrictions on Foreign Direct Investments (FDI) in the banking, insurance, and retail trade sectors. India must also institutionalize cross-state monitoring of FDI performance in order to adhere to international standards.³⁹
 - *Infrastructure Investment*: Investment in infrastructure—most prominently, in India's power sector—would increase both productivity levels and standard of living.⁴⁰ For investments to be effective, India would create public-private partnerships (PPPs) worth up to \$500 billion for large-scale building projects.⁴¹

The Role of the United States

The United States would perform the following functions under the proposed division of labor:

- *Ensuring Open SLOCs*: The United States Naval Force Central Command (NAVCENT) will continue to protect open SLOCs throughout the northwestern Indian Ocean through Combined Task Force (CTF) 150, CTF 151, and CTF 152.⁴² As India's naval capabilities mature, the United States will increasingly coordinate with the Indian Navy to include it as a major component and potential leader of these multilateral efforts.⁴³
- *U.S.-India Intelligence Sharing Agreement*: As part of a growing security relationship, the United States and India should agree to an intelligence sharing arrangement to increase incentives for close cooperation between the two naval forces. Provision of satellite imagery to India will help it monitor maritime activity in the region and increase the efficiency in which India allocates its resources.⁴⁴

Policy Benefits

- *Minimizing Offensive Arms Racing and its Dangers*: Focusing on the ability to deter Chinese aggression with minimal military assets, rather than developing the capability to force open sea lines of communication, removes a provocation for further Chinese naval expansion in the Indian Ocean. In addition, a minimal sea denial strategy reduces the number of military vessels operating in crowded shipping lanes and decreases the possibility that unforeseen accidents will lead to a military clash.
- *Enhancing Long-Term Stability*: By curtailing India's naval expenditures in the interim, the proposed partnership allows India to focus on economic development and the removal of underlying barriers that impede its growth. The resulting expansion of the Indian economy lays the needed foundation for building a strong counter to China's growing naval capability.

Policy Criticisms

- *Straining the U.S.-Pakistan Alliance*: U.S.-Indian alignment could make Pakistan even more resistant to cooperation with the United States in combating the Taliban in Pakistan's Federally Administered Tribal Areas and North-West Frontier Province.⁴⁵
 - *Response*: The proposed partnership primarily focuses on maritime cooperation and development of Indian and regional naval capabilities. It does not increase India's land threat to Pakistan and may provide a vehicle for naval cooperation between the two rivals.

- *China's Perception of a U.S.-India Partnership*: Because much of China's insecurity regarding its "Malacca Dilemma" derives from increased cooperation between the United States and India, a formal U.S.-India partnership could further exacerbate China's concerns about its energy security and provoke even more rapid Chinese naval expansion.⁴⁶
 - *Response*: The proposed strategy is based on the minimal deployment of military assets and, therefore, should mitigate the need for or severity of naval arms racing between India and China.

The Need for a Long-Term Strategy for Maintaining Stability in the Indian Ocean

The Indian Ocean is too economically valuable to leave it to chance or even probability that China's ambitions will remain peaceful. As global energy competition increases, the incentives for an aggressive disruption of SLOCs will only increase. Moreover, even if their intentions do remain peaceful, the current clustering of offensive weaponry around narrow chokepoints dramatically increases the probability of naval accidents and misunderstandings which could devolve into military conflict.⁴⁷

Therefore, the United States must act now to minimize the threat of arms racing while simultaneously enhancing the prospects for long-term regional security. Simply put, India is too premature in its economic rise to handle this task on its own. Only through a strategic division of can the United States:

- (1) Secure the open access of SLOCs in both the short- and long-term;
- (2) Ensure both a continued influential position in the Indian Ocean;
- (3) Foster India's emergence as a militarily and economically robust counterweight to China.

¹ Approximately 80% of China's sea-borne petroleum imports must travel through this narrow waterway. Despite efforts to decrease its reliance on this Strait through natural gas pipelines and plans to build a canal at the Isthmus of Kra, a significant amount of its energy needs will still need to pass through this strait. Robert Kaplan, "Center Stage for the 21st Century," *Foreign Affairs*, March/April 2009, <http://www.foreignaffairs.com/articles/64832/robert-d-kaplan/center-stage-for-the-21st-century>.

² The 093 Class Nuclear Submarines (Shang Class) have been enlarged from the original SSN class submarine to allegedly include YJ-82 ASMs, a wide range of ASW equipment, and LACM. "Type 093 (Shang Class) Nuclear-Powered Attack Submarine," *Sino Defense*, April 4, 2009, <http://www.sinodefence.com/navy/sub/type093shang.asp>.) China's current aircraft carrier program seeks to revamp the ex-Soviet *Varyag* carrier and then to develop similarly designed carriers. These carriers will likely carry YJ-63 long-range ASM, medium range SAMs, and Type 730 30-mm CIWS. Moreover, these carrier's air wings will likely consist of the Shenyang Aircraft Corp's copy of the Su-33 aircraft. The Su-33 copy fighter will feature active phased-array radar, 5th-generation AAM, and air-launched versions of the 600-plus km range YJ-63 missiles. (Richard D. Fisher, Jr., "China Has Plans For Five Carriers." *Aviation Week*, January 5, 2011,

http://www.aviationweek.com/aw/generic/story_generic.jsp?channel=dti&id=news/dti/2011/01/01/DT_01_01_2011_p71-272520.xml)

³ Although the drive to develop A2/AD capabilities are in large an effort to discourage U.S. military intervention over Taiwan, the DF-21D ASBM will be able to strike and sink a U.S. aircraft carrier at a range of 2000km with only one missile in less than 12 minutes after launch. "Report: Chinese Develop Special "Kill Weapon" to Destroy U.S. Aircraft Carriers" (U.S. Naval Institute, March 31, 2009), <http://www.usni.org/news-and-features/chinese-kill-weapon>.

⁴ China has contributed 80% of the funding for the construction of the Gwadar deep water port, insisting that its interests in the port are purely commercial. However, China has recently secured both commercial *and* naval access to the port. First and foremost, China will be able to use Gwadar as a listening post to maintain close surveillance on U.S. and Indian Naval activity. Second, Gwadar provides China with a base for large naval ships and submarines. Moreover, the Indian naval analysts argue that this port will enable China and Pakistan to exercise control over key energy routes. Christopher Jaffrelot, "A Tale of Two Ports," *Yale Global*, January 7, 2011, <http://yaleglobal.yale.edu/content/tale-two-ports>.

⁵ You Ji, "Dealing with the Malacca Dilemma: China's Effort to Protect its Energy Supply," *Strategic Analysis* 31, No. 3, 2007, 484.

⁶ Ellen Laipson and Amit Pandya, *The Indian Ocean: Resource and Governance Challenges*, (Stimson Center, 2009), 68, http://www.stimson.org/images/uploads/research-pdfs/Indian_Ocean-Chapter_6_Laipson.pdf.

⁷ *Freedom to Use the Seas: India's Maritime Military Strategy* (Integrated Headquarters Ministry of Defense, 2007), http://indiannavy.nic.in/maritime_strat.pdf.

⁸ The INS *Viraat* is set to be decommissioned after 2012, but the INS *Viramaditya* is planned to be placed in service by then. In addition, India plans to construct two indigenous aircraft carriers under "Project 71." The first, known by the acronym IAC, is set to be commissioned by 2014/2015. While details surrounding the IAC-II are unclear, it is suggested that it will be commissioned by 2020 at the latest.

⁹ Iskander Rehman argues that these aircraft carriers can be useful in conducting anti-piracy operations in deep water and anti-submarine warfare by reconfiguring the vessels' air wings. Iskander Rehman, "India's Future Aircraft Carrier Force and the Need for Strategic Flexibility," *Institute for Defence Studies & Analyses*, June 1, 2010, http://www.idsa.in/idsacomments/IndiasFutureAircraftCarrierForceandtheNeedforStrategicFlexibility_irehman_010610.

¹⁰ Rajat Pandit, "Strategically-important A&N Command to get a boost," *The Times of India*, February 6, 2010, http://articles.timesofindia.indiatimes.com/2010-02-06/india/28115911_1_anc-airfield-andamans.

¹¹ The Andaman and Nicobar Command (ANC) already hosts India's FDN-1, which is able to dock all Indian naval vessels except aircraft carriers and oil tankers. The FDN-2, which will be ready by 2014, is slightly smaller, but will play a vital role in increasing the number of vessels which can be docked at the ANC. Anantha Krishnan, "Indian Navy to Get Another Floating Dock By 2014," *Aviation Week*, September 28, 2010, http://www.aviationweek.com/aw/generic/story_generic.jsp?topicName=india&id=news/awx/2010/09/28/awx_09_28_2010_p0-257672.xml.

¹² "Submarine Proliferation: India Current Capabilities," *Nuclear Threat Initiative*, October 2010, <http://www.nti.org/db/submarines/india/index.html>

¹³ After a US\$2.1 billion deal in 2009 for the transfer of eight Boeing P-81 Aircrafts, the Indian Navy decided to purchase four additional aircrafts in February 2011. The P-81 Poseidon, with 1,200+ nautical mile range, will play a vital role in long-range anti-submarine warfare against China. Moreover, the aircraft will also conduct critical intelligence and surveillance operations. "Indian Navy to Order Four Additional Boeing P-81 Poseidon Reconnaissance Aircraft," *India Defense*, February 3, 2011, <http://www.india-defence.com/reports-4986>.

¹⁴ In 2007, India signed a US\$1 billion deal to purchase six C-130J Hercules Airlifters, possessing the ability to conduct precision low-level flying operations and critical airdrops. This aircraft can carry up to eight 463L pallets, 97 medical litters, 24 CDS bundles, 128 combat troops, and 92 paratroops. "India's Lockheed Martin C-130J Super Hercules Airlifter," *Lockheed Martin*, <http://www.lockheedmartin.com/products/c130/india/index.html>.

¹⁵ Boeing sold India ten C-17 Globemaster III aircrafts in early 2010 for approximately US\$5.8 billion. The C-17 will replace aging supply chain aircrafts and will increase airlift capacity. Moreover, India's humanitarian assistance and disaster relief capabilities will increase largely with the acquisition of these aircrafts. "India Requests C-17 Globemaster III Aircraft," *Defense Talk*, April 28, 2010, <http://www.defencetalk.com/india-requests-c-17-globemaster-iii-aircraft-25970/>.

¹⁶ With the ability to carry 968 troops, six UH-3H utility helicopter an, and four LCMs, The INS Jalashwa plays a vital role in India's power project platform, the transport and launching of expeditionary forces, and large-scale humanitarian missions. Marissa Kaylor, "Indian Navy Commissions INS Jalashwa at Naval Station Norfolk," *U.S. Navy*, June 22, 2007, http://www.navy.mil/search/display.asp?story_id=30207.

¹⁷ Sunil Dasgupta and Stephen Cohen, "Arm Sales for India," *Foreign Affairs*, March/April 2011, <http://www.foreignaffairs.com/articles/67462/sunil-dasgupta-and-stephen-p-cohen/arms-sales-for-india>.

¹⁸ Chinese naval analysts note that India's peninsular formation and location at the heart of the Indian Ocean enables the nation to dominate the entirety of the Indian Ocean very easily, calling it a "never-sinking aircraft carrier." "India, U.S. Armies to Conduct Nine Joint Land Exercises," *India Defense Online*, April 6, 2010, <http://indiadefenceonline.com/1788/india-u-s-armies-to-conduct-nine-joint-land-exercises/>.

¹⁹ Exercise Malabar is typically a bilateral exercise between the United States and India to increase training in anti-submarine warfare, surface warfare maneuvers, and air defense. However, the Indian Navy extended an invitation to the Japan maritime Self-Defense Force to participate in Exercise Malabar 09. U.S. 7th Fleet Public Affairs, "U.S. 7th Fleet to Conduct Exercise Malabar 09 with Japan, Indian Navies," *U.S. Navy*, April 23, 2009, http://www.navy.mil/search/display.asp?story_id=44602. Exercise Malabar 07 also saw participation by Japan, Australia, and Singapore. "Malabar 2007: India, United States, Japan, Australia, Singapore Begin Massive 5-Day Naval Exercises." *India Defense*, September 3, 2007, <http://www.india-defence.com/reports-3519>. Such extension of invitation signals India's desire to use regional allies to balance against China's growing naval ambitions.

²⁰ To illustrate, the average annual life-cycle cost of maintaining the USS *Nimitz*, the oldest aircraft carrier in the United States' fleet, is estimated to be \$444 million. "CNV-68 Nimitz-Class: Overview," *Federation of American Scientists*, <http://www.fas.org/programs/ssp/man/uswpns/navy/aircraftcarriers/cvn68nimitz.html>.

²¹ Indian-Military.org, "Russia to Upgrade Admiral Gorshkov for India on Time," May 5, 2010, <http://www.indian-military.org/news-archives/indian-navy-news/776-russia-to-upgrade-admiral-gorshkov-for-india-on-time.html>.

²² "Indian Navy," *Indian Defense News*, <http://www.defencenews.in/indian-navy.html>.

²³ Feng Liang and Duan Tingzhi, "Characteristics of China's Sea Geostrategic Security Strategy in the New Century," *Zhongguo Junshi Kexue* [Chinese Military Science], January 1, 2007, p. 22-29; See also Bai Yalin, "Island Chains and the Chinese Navy," *Dangdai Haijun* [Modern Navy], October 2007, p. 18.

²⁴ Iskander Rehman, "China's String of Pearls and India's Enduring Tactical Advantage," *Institute for Defence Studies and Analyses*, June 8, 2010, http://www.idsa.in/idsacomments/ChinasStringofPearlsandIndiasEnduringTacticalAdvantage_irehman_080610.

²⁵ Economic rivalry for influence over the similar markets, a history of violent border disputes, and particularly strategic vulnerabilities create a relationship of mistrust and suspicion between Indian and China and lead to what Kaplan calls a maritime "Great Game." To illustrate, China's construction of the Gwadar deep water port exacerbated India's fears about its dependence on the Strait of Hormuz—known as the "Hormuz Dilemma"—for approximately 20% of its energy needs. Thus, India's responded by expanding the ANC near the mouth of the Malacca Strait, exacerbating China's fears about its own "Malacca Dilemma." See Kaplan, "Center Stage."

²⁶ In fact, China already plans to station the Varyag carrier at its southernmost naval base on the Hainan Island. See Fisher, "China Has Plans."

²⁷ *India's Power Sector* (The World Bank Group, 2011), <http://www.worldbank.org.in/WBSITE/EXTERNAL/COUNTRIES/SOUTHASIAEXT/INDIAEXTN/0,,contentMDK:22545935~pagePK:141137~piPK:141127~theSitePK:295584,00.html>.

²⁸ *Ibid.*

²⁹ It is estimated that only 50% of India's urban population has access to sanitary excreta disposal facilities, 28% to a sewage system. To illustrate, a 2010 UN study showed that more people in India have access to cellular phones than proper sanitation facilities. *The Economic Impacts of Inadequate Sanitation in India*, (Water and Sanitation Program, 2006), <http://www.wsp.org/wsp/node/1150>.

³⁰ To put this number in perspective, a 40% percentage rate in child malnutrition is higher than the rate in most sub-Saharan Africa.. India's Integrated Childhood Development Services (ICDS) has largely failed in its effort to cut the malnutrition in half by 2015 due to substantial operational challenges, including inadequate skilled workers, equipment shortages, and lack of funding. Michele Grangnolati, Meera Shekar, Monica Das Gupta, Caryn Bredenkamp, and Yi-Kyoung Lee, *India's Undernourished Children: A Call for Reform and Action* (World Bank, 2005), 7-8.

³¹ *Ibid.*, 8.

³² Dadush, Uri, and Bennett Stancil. "The G20 in 2050." *Carnegie Endowment for International Peace*. <http://www.carnegieendowment.org/ieb/?fa=show&id=24195>.

³³ Ibid.

³⁴ For more on China's dramatic increase in its 2011 defense budget, see Reuters, "China's 2011 Defense Budget Rises Nearly 13% to \$91.5 Billion," *CNBC*, March 3, 2011,

http://www.cnbc.com/id/41898717/China_s_2011_Defense_Budget_Rises_Nearly_13_to_91_5_Billion.

³⁵ For more on India's dramatic increase in its 2011 defense budget, see IANS, "Union Budget 2011: 11% Hike in Defense Allocation," *The Times of India*, February 28, 2011, <http://timesofindia.indiatimes.com/home/union-budget-2011/Union-Budget-2011-11-hike-in-defence-allocation/articleshow/7594077.cms>.

³⁶ "The Elephant at Sea: India's Maritime Strategy," *Woodrow Wilson International Center for Scholars*, March 10, 2010, http://wilsoncenter.org/index.cfm?fuseaction=news.item&news_id=604113.

³⁷ India is largely already in the process of obtaining and/or developing the proposed technology under this strategy—such as Sukhoi 35 fighters and the French-designed Scorpene class submarines. The difference under a minimal sea denial strategy lies in reducing the number of vessels employed particularly around the Malacca Straits to lessen China's security concerns and thus remove further provocation of rapid, aggressive naval expansion. However, the primary departure from India's current acquisition plans is the deferring of the drive for multiple aircraft carriers and nuclear submarines to a later date. Just as aircraft carriers, nuclear submarines are both incredibly expensive and unnecessary for the current naval threats India faces. To illustrate, the INS *Airhant* cost India approximately \$2.9 billion dollars—constituting over 80% of the 2011 naval acquisition budget—to develop. Moreover, the primary advantages of nuclear submarines over advanced-conventional submarines lie in the increased distance and duration of operations that can be performed. Once again, however, India's geographic advantages remove the need for such ability, especially in the short-to-medium term. See John Le Fever, "India Joins Elite Group with Launch of INS Arihant Nuclear Sub," *Thaindian News*, July 26, 2009, http://www.thaindian.com/newsportal/india-news/india-joins-elite-group-with-launch-of-the-ins-arihant-nuclear-sub_100223340.html.

³⁸ Literature on the security of China's energy transit from the Indian Ocean largely ignores the value of the Lombok Strait, located between the Bali and Lombok islands in Indonesia. Because Very Large Crude Carriers must pass through this wider and deeper Strait, this sea route is almost of equal importance as the Malacca Straits in terms of volume of oil shipped. See Ian Storey, "China's 'Malacca Dilemma,'" *China Brief* 6, no. 8, 2006, http://www.jamestown.org/programs/chinabrief/single/?tx_ttnews%5Btt_news%5D=31575&tx_ttnews%5BbackPid%5D=196&no_cache=1.

³⁹ *OECD Investment Policy Reviews: India* (Organization for Economic and Development, December 2009). http://www.oecd.org/document/50/0,3343,en_2649_34893_44153906_1_1_1_1,00.html.

⁴⁰ *India Economic Update* (The World Bank: Economic Policy and Poverty Team South Asia Region, December 2010). <http://siteresources.worldbank.org/INDIAEXTN/Resources/295583-1298351570365/IndiaEconomicUpdateDecember2010LATEST.pdf>.

⁴¹ Sachin Sandhir, *Policy and Procedural Reforms* (Royal Institution of Chartered Surveyors, July 2010), http://www.rics.org/site/scripts/documents_info.aspx?categoryID=637&documentID=856&pageNumber=4

⁴² India's increasing economic dependence on this region is most typically cited for the need for sea control. However, these CTFs already ensure the safe transit of India's energy and sea-borne trade from West Africa and Persian Gulf against both conventional and nonconventional threats. "Combined Maritime Forces," (U.S. Naval Forces Central Command), <http://news.rediff.com/column/2009/sep/24/china-worried-over-us-india-military-cooperation.htm>.

⁴³ Although CFTs are ultimately responsible to the NAVCENT and U.S. 5th Fleet, these task forces are all headed separately by different states participating in these multilateral patrol efforts.

⁴⁴ Rehman, "China's String of Pearls."

⁴⁵ This criticism is based on past reaction of Pakistan to increased U.S.-Indian cooperation. The Obama administration argues that Pakistan became more intent on the expansion of its forces against India—and consequentially more ambivalent about its efforts in the Global War on Terror—after George W. Bush offered assistance to India's civilian nuclear program in 2005. See Dasgupta, "Arms Sales for India."

⁴⁶ D.S. Rajan, "China Worried over U.S.-India Military Cooperation," *Rediff News*, September 24, 2009, <http://news.rediff.com/column/2009/sep/24/china-worried-over-us-india-military-cooperation.htm>.

⁴⁷ "Into the Wide Blue Yonder," *The Economist*, June 5, 2008,

http://www.economist.com/node/11496828?story_id=E1_TTQJGRNR.

**AEROSTATS AND MARITIME PIRACY:
PROVIDING COST EFFECTIVE SURVEILLANCE OFF THE HORN OF AFRICA**

ROBERT SNYDER

Widespread maritime piracy off the Horn of Africa constitutes a costly threat to international shipping and perpetuates instability in Somalia. The international community has judged this threat severe enough to deploy a multilateral naval coalition to the region. Current efforts, however, rely on inadequate and costly aerial surveillance to monitor a vast area, resulting in a relatively ineffective naval response to pirate attacks.

This brief proposes that the United States augment maritime situational awareness through the use of existing aerostat technology to deploy a low cost persistent radar surveillance network off the coast of Somalia. This maritime awareness network would provide real time tracking of shipping off the Somali coast and facilitate the identification of suspicious vessels or activity. Using low cost aerostats will allow the international community to employ its scarce naval resources in a more effective manner and will help commercial shipping avoid potential threats. The use of aerostats will also allow the United States to cost effectively deploy its limited and expensive manned and unmanned winged surveillance platforms to areas of greater strategic importance.

Maritime Piracy off the Coast of Somalia

According to International Maritime Bureau records, incidents of maritime piracy and armed robbery have risen dramatically since 2006.

Frequency

- Pirates seized a total of 53 vessels in 2010, with Somali pirates responsible for all but four of these hijackings for ransom.¹ This level of activity was a marked increase from the 14 hijackings in 2006, 11 of which were by Somalis.²
- Globally, pirates took 1,181 crew members hostage during 2010. This figure is over six times the number captured during 2006 and Somali pirates accounted for 1,016 of this total.³

- Annual reported pirate attacks doubled between 2006 and 2010, with 239 attacks in 2006 and 445 in 2010.⁴ Somali pirates perpetrate approximately half of all attacks.⁵

The Piracy Business Model

- After receiving ransoms, Somali pirate bosses and financiers typically pocket 20% of the total. Pirate leaders invest another 20% to support future missions and earmark 30% as bribes for government officials.⁶ The pirate rank-and-file take 30%, which translates to incomes that are still two to three times higher than that of the average worker.⁷
- Average ransom payments rose sharply from \$3.4 million in 2009 to \$5.4 million in 2010.⁸ For impoverished Somalis and corrupt government officials alike, piracy is becoming an increasingly lucrative and well entrenched alternative.

Economic Costs and Dangers of Unchecked Piracy

- Ransom payments, elevated insurance premiums, route adjustments, increased salaries for crewmembers, counter-piracy precautions, and legal expenses associated with piracy raise the costs of global commerce by up to \$50 billion per year.⁹
- In addition to the immediate and substantial financial costs of Somali piracy, its long-term intensification increases the danger of major security or environmental crises, such as:
 - Pirate seizure of a ship carrying sensitive cargo;¹⁰
 - Damage to transiting tankers that carry 12% of global petroleum supplies—possibly precipitating a disastrous oil spill;¹¹
 - Closer relations between Islamist militants and pirates, which could provide terrorists with new sources of income.

Current International Counter-Piracy Efforts

The international community to-date is unwilling to embark upon an extensive nation building effort to address the land-based roots of Somali piracy. Instead, many countries have focused on suppressing piracy off the Somali coast.

Background: By 2008 and 2009, several states had sent warships to guard against piracy off the Horn of Africa and secure the heavily trafficked Gulf of Aden. At present, counter-piracy forces in the region include Combined Task Force 151, European Union

Operation Atalanta, NATO's Operation Ocean Shield, and unilateral contributions from Russia, China, India, and Japan, among others. At any given time, a total of up to 50 warships are on patrol in the region.¹²

Strength: Combined with greater industry awareness, international patrols have hindered pirate operations.

- Somali pirates' hijack success rate fell to 22% in 2009, down sharply from 34% the previous year and 63% in 2007.¹³
- In the Gulf of Aden, vessels reported only 45 attacks during the first nine months of 2010 compared with 100 attacks over the same period in 2009.¹⁴
- Currently, naval forces are thought to disrupt approximately one-fifth of pirate attacks.¹⁵

Weakness: Pirates soon adapted and began to rely on motherships to expand their activity into lightly patrolled waters far from the Somali coast. Several enduring challenges constrain the response of counter-piracy forces.

- *A Vast Area of Operations*: Somali pirates have increased their range to include over 2.5 million square miles of sea.¹⁶
- *An Uneconomical Approach*: While naval commanders have been unable to arrest the rise in pirate attacks, governments hesitate to commit more warships against a relatively marginal threat. Deploying a single frigate-class vessel for patrols costs \$1.3 million per month, and the total annual cost of the counter-piracy coalition is approximately \$1.5 billion per year.¹⁷
- *Inadequate Surveillance*: Manned surveillance aircraft and unmanned drones currently provide some wide area surveillance coverage, but these platforms are in high demand elsewhere and are costly to deploy continuously over the region.¹⁸ For example, the hourly operating cost of the E-2C Hawkeye surveillance plane is estimated at \$18,700, forcing many commanders to accept incomplete coverage.¹⁹

Naval forces' consequent lack of real-time maritime awareness results in:

- 1) Lack of Advanced Warning for Naval Forces: Pirate attacks are typically concluded after 15 to 30 minutes. As a result, warships are unable to assist most vessels unless they receive a timely distress call from a ship located only a few miles away.²⁰
- 2) Lack of Advanced Warning for Merchant Vessels: Distress calls usually come too late because small, fast pirate skiffs are typically not detected on

merchant ships' radar. Even if they are detected, skeleton crews and overworked watch officers on commercial vessels are often slow to recognize incoming threats.²¹

A Potential Solution: The Broad Area Maritime Surveillance Program

The Navy plans to deploy the Broad Area Maritime Surveillance (BAMS) program in 2015. This unmanned, high-altitude platform is a maritime version of Northrop Grumman's Global Hawk that will operate over long ranges for more than 30 hours at a time.²² Its sensor package will enable optical and electronic surveillance in addition to a wide area radar system with a detection radius of approximately 125 miles.²³ According to current plans, the Navy will station BAMS at bases in the 5th Fleet's area of responsibility to establish persistent maritime surveillance.

Strength: BAMS is a sophisticated strategic surveillance platform that can provide greater maritime awareness in the Gulf of Aden and off the Somali coast.

Weakness: BAMS is an expensive solution to the low strategic value threat of maritime piracy.

- Each of the Navy's 68 BAMS systems will cost \$55 million.²⁴
- Per flight hour, Global Hawk UAVs cost \$27,000 to operate—a sum even greater than the manned E-2C Hawkeye.²⁵
- Several BAMS platforms will be needed to maintain continual surveillance of the Gulf of Aden and the Somali coast, diverting this highly capable asset from missions of greater strategic importance.

Drawing Lessons from Aerostat-Based Drug Interdiction

In the late 1980s and early 1990s, the Army and Coast Guard moored aerostats to leased commercial vessels to aid drug interdiction efforts in the Gulf of Mexico. The Small Aerostat Surveillance System and the Sea-Based Aerostat program together provided eight ship-based aerostats whose radars could detect ships and planes suspected of drug smuggling.²⁶ Each aerostat had a detection range of 70 miles and guarded maritime chokepoints, including the Mona Passage, the Windward Passage, and the Yucatan Channel.²⁷ Manned radar aircraft and a budding network of land-based aerostats along the southern border supplemented the sea surveillance systems so that drug smugglers faced a formidable "radar fence."

Strength: Drug smugglers were gradually forced to transport their contraband using less desirable modes of transportation and along riskier routes.

- By 1993, aerostats contributed significantly to reducing the level of aerial smuggling by 75% from peak levels in 1982. Smugglers changed practices in light of increased risks and complicated the logistics of drug distribution.²⁸
- Aerostats proved to be sources of relatively cheap persistent surveillance. In fiscal year 1992, the Department of Defense spent \$40.7 million on the entire network of sea aerostats and base ships, and the acquisition cost of each aerostat was a mere \$10 million.²⁹ The Department of Defense’s coordinator for drug enforcement policy identified aerostats as the government’s “most cost-effective counternarcotics detection and monitoring asset.”³⁰

Implication: Despite the success of aerostats in drug interdiction, Clinton administration officials grew frustrated when large quantities of drugs continued to enter the United States. President Clinton gradually reoriented U.S. drug policy and issued Presidential Decision Directive 14 in 1993. The new approach reallocated resources away from interdiction in transit zones in favor of interdiction efforts in the source countries of South America.³¹ Sea-based aerostats and other surveillance and interdiction assets were dismantled, resulting in a “measurable increase in ‘trafficking events per month’” in the Gulf of Mexico, according to the Drug Enforcement Agency.³² Despite the government’s altered interdiction priorities, aerostats’ proven capacity for wide area, persistent, and cost-effective surveillance provides a model for a new maritime network.

Towards Persistent Surveillance and Proactive Interdiction off the Coast of Somalia

Shifting to a strategy that prioritizes early detection and proactive interdiction will mitigate the shortcomings of current counter-piracy efforts. To be successful, such a strategy must increase the responsiveness of coalition forces while respecting constraints on available naval resources. This brief makes two main recommendations for the United States to explore with its maritime allies and partners.

- 1) **Harness Aerostats to Augment Interdiction:** In addition to their previous counter-drug role, surveillance aerostats have deployed to Iraq and Afghanistan to observe bases and key roadways. Counter-piracy forces should further adapt these systems to form a new sea-based aerostat network.

Available Technology: At present, the Tethered Aerostat Radar System (TARS) is the United States’ most established aerostat program and has operated along the southern border since the 1980s. TARS relies on Lockheed Martin’s L88 wide area surveillance radar, which can detect maritime surface targets. When stationed at 12,000-15,000 feet above sea level, the system boasts an impressive radar detection radius of up to 230 miles.³³ It is capable of remaining aloft for 30 days while supplying persistent, wide area surveillance coverage.³⁴ Although high winds and storms can ground these aerostats, pirates are less likely to be active in

these conditions. If moored to naval vessels, TARS or a similar platform could greatly increase the operational efficiency of naval forces—especially if teamed with “ScanEagle” class UAVs launched from warships to provide optical surveillance.

Deployment: There are three major shipping lanes off the Horn of Africa. The first runs east-west along the Arabian Sea and the second closely skirts the northern rim of the Indian Ocean. Neither route is as well-defined compared to the third, which is narrow and hugs the African coast.³⁵ The United States should deploy a surveillance network of seven aerostats to secure the Gulf of Aden and these routes. Pirates disproportionately concentrate their attention on these areas, which also see the heaviest container and tanker traffic. Deploying a wide area surveillance system would significantly reduce the number of attacks and damage the pirate business model by denying pirates their most lucrative targets.

A Cost Effective Approach: Since 1992, operations and maintenance costs for TARS sites have fallen by more than 50% to the current annual rate of \$2.8 million.³⁶ This translates to a per flight hour price of \$300 to \$500—slightly cheaper than other aerostat models deployed in Iraq and Afghanistan.³⁷ If similar savings can be achieved in a sea-based network, these systems would supply a cheap and effective means of raising maritime awareness. The network would necessitate the modification of existing naval vessels or the transfer of personnel to operate and defend newly acquired base vessels. These added costs, however, would be relatively marginal compared to the cost of providing comparable coverage using other manned and unmanned surveillance platforms.

2) Establish a Maritime Information Network: Naval forces should use radar data to construct an overview of potential pirate threats and share this information with merchant vessels to give them warning of attacks. Virtually all vessels engaged in oceangoing trade are equipped with Automatic Identification System (AIS) transponders that constantly broadcast a ship’s location, heading, speed, and other details via a VHF transmitter.³⁸ Smaller vessels such as fishing trawlers, pirate skiffs, and motherships typically do not possess such transponders.³⁹ Once equipped to receive AIS data from merchant vessels, surveillance aerostats could:

- Expand friendly naval forces’ awareness of shipping activity by providing a wide-area, real-time overview of merchant traffic
- Relay coordinates of unidentified radar contacts to nearby merchant vessels with increased awareness of potential threats, ship captains would have more time to enact evasive or preventive countermeasures. Naval commanders would also receive more timely distress calls, which would increase the responsiveness and success of interdiction efforts.

Conclusion

Enhanced surveillance and interdiction cannot solve what is ultimately a land-based problem. Such measures are only one part of a solution that must include other elements, such as the development of Somali authority and increased international cooperation in prosecuting pirates. While piracy will continue for the foreseeable future, the international community can expect an aerostat-based maritime information network to inexpensively bolster current counter-piracy operations and enhance deterrence.

¹ "Hostage-taking at Sea Rises to Record Levels, Says IMB," *ICC Commercial Crime Services*, January 17, 2011, <http://www.icc-ccs.org/news/429-hostage-taking-at-sea-rises-to-record-levels-says-imb>.

² Anthony Barker, "Ship Piracy up, Somali and Nigerian Waters Worsen," *Reuters*, January 9, 2008, <http://www.reuters.com/article/2008/01/09/idUSL09370792>.

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CLEAN-TECH MINERAL SECURITY: A THREE-PRONGED STRATEGY FOR SUPPLY DIVERSIFICATION IN LATIN AMERICA

JULIA ZAMECNIK

In order to decrease dependence on fossil fuels, the U.S. military and private sector are increasing investment in clean-technology energy sources, such as solar, wind, and electric power. Clean energy development, however, is promoting dependency on a small set of states who currently supply the majority of clean-technology minerals. Competition for these minerals will grow as global energy demands increase and more countries adopt clean energy policies.

To prevent mineral shortages, costly price increases, and political costs associated with this dependence, the United States should adopt a three-pronged clean-technology mineral policy in Latin America. To diversify and stabilize the supply of these crucial minerals, this policy combines repayable contributions for American mineral exploration, conditional export-based development aid, and foreign fellowships in geology and mining technology.

Greening the Global Economy

Global Clean-Tech Energy Growth

The global middle class is expanding by 70 million new members a year¹, causing a predicted 49% increase in energy consumption by 2035.² Skyrocketing energy demand, combined with increased clean-energy policies, will deepen competition for clean-tech minerals:

- *Clean Energy Policies:* China spent \$221 billion of its 2009 stimulus package on clean energy and requires utilities to produce 8% of their power from renewable sources by 2020.³ In 2010, India launched a program to become "a global leader in solar energy" manufacturing and installations.⁴
- *Clean Energy Projections:* Wind generated power is projected to increase from 1.6% to 8.4% of world electricity production by 2019,⁵ and solar installations are expected to increase to 12.5 times their current numbers in the next ten years.⁶

United States Clean-Tech Energy Growth

Forty-seven states now offer incentives for alternative-energy use,⁷ and the Department of Defense adopted a comprehensive energy strategy to develop clean power sources for the military.⁸ Certain technologies will become increasingly critical in this transition:

- *Solar Panels*: Construction of the world's largest solar array is underway in California.⁹ Solar panels already power UAVs¹⁰ and military bases, and the Defense Department plans to increase the use of portable solar panels for on-site energy generation.¹¹
- *Electric Vehicles*: 108 electric-drive vehicle models are predicted to be on the U.S. market by 2015, up from 22 hybrid models and one fully electric vehicle model in 2010.¹² It is predicted that the United States will be able to make 40% of the world's advanced batteries by 2015.¹³
- *Wind Turbines*: Large wind farms are under development along the Atlantic and Pacific coastlines,¹⁴ and the Army has begun testing portable wind turbines for rapid and deployable energy generation.¹⁵

Critical Clean-Tech Minerals

The transition to clean energy relies on a dozen non-fuel minerals which will become increasingly critical and pose potential supply risks to the United States. These minerals include:

Heavy Rare Earths (e.g. Dysprosium, Europium, Terbium, Neodymium, and Yttrium)

- *Clean-Tech Uses*: These minerals are critical to the manufacture of batteries, electric vehicles, solar panels, and wind turbines.
- *Current Sources*: The United States relies on China for 97% of its rare earth elements (REE) and has no domestic source of production or refinement.¹⁶
- *Supply and Demand Projections*: Each of these elements is deemed "critical" by the Department of Energy (DOE).¹⁷ Between 2008 and 2014, world demand for REE will increase by approximately 150%, driven by increasing consumption of clean technology. Expert projections indicate that heavy rare earths will likely be the first to suffer shortages,¹⁸ with demand for terbium, dysprosium, and yttrium all expected to equal or outpace supply by 2014.¹⁹

Indium

- *Clean-Tech Uses*: Indium is primarily used in solar panels, particularly copper-indium-selenide (CIS) thin-film solar cells.²⁰

- *Current Sources:* The U.S. is 100% import-reliant on indium, and China accounts for 40% of all indium imports to the United States. Most indium refinery production occurs in China, Japan, and South Korea, all of which have booming high-tech industries and will have high internal demand competing for refined indium supplies.²¹
- *Supply and Demand Projections:* Indium is deemed “near-critical” by the DOE and critical by the UN Environment Programme (UNEP). Rapid growth in CIS thin-film photovoltaic cells and other technologies is expected to increase indium demand eight-fold by 2030.²² Moreover, recycling possibilities for indium are limited.²³

Lithium

- *Clean-Tech Uses:* Lithium is the key component of lithium-ion batteries used in hybrid-electric vehicles (HEV).²⁴
- *Current Sources:* From 2005-2008, 98% of lithium imported to the United States came from either Chile or Argentina, and all domestic production came from a single U.S. company.²⁵
- *Supply and Demand Projections:* Lithium is considered “near-critical” by the DOE.²⁶ The percentage of lithium used in batteries continues to expand significantly, and recent projections show hybrid electric vehicles (HEV) as the major use of lithium worldwide by 2050.²⁷ The automotive market alone is projected to reach \$337 million in 2012 and \$1.6 billion in 2015.²⁸ Mitsubishi estimates that demand for lithium will surpass supply in under 10 years unless new supplies are found.²⁹

Additional Clean-Tech Minerals

- Other “green minor metals,” or metals used in clean technology, include germanium, tantalum, cobalt, gallium, PGMs, tellurium, and the “light” rare earths.³⁰ These elements are all critical to clean technology; however, they currently show less vulnerability to supply shortages and strong foreign dependencies.

Necessity of Government Intervention in Transitional Period

The free market is currently unable to address the threat of growing clean-tech mineral dependence. In the short- to medium-term, government intervention is necessary to avoid severe political and economic costs associated with the failure of the markets to diversify and secure new clean-tech mineral supplies.

Causes of Market Failure

The underlying cause of the failure of the markets to resolve this dependence is the large uncertainty associated with exploration, mining, and the potential end demand for these minerals in manufacturing. This uncertainty leads to the following:

- *Concentration of Exploration Activities*: It is in the United States' best interest to diversify mineral supplies to decrease the risk of supply disruptions. Exploration companies, however, are motivated by opposing interests, tending to concentrate their exploration in areas where mining is already underway to decrease risk and primary capital and transaction costs.
- *The "Hold-Up Effect"*: The high sunk costs of exploration create a hold-up effect, limiting new exploration.³¹ Firms are increasingly buying pre-explored properties, rather than taking the risk of grass-roots exploration.³² Early stage, or "grassroots" exploration, has dropped on average 2.5% annually since 2001, reaching 33% of total exploration in 2010.³³ Moreover, grassroots exploration has almost completely disappeared in many high-risk countries. If this trend continues, the finite number of unexplored economic deposits will continue to be lost to foreign companies who can bare the risk of exploration due to government backing, such as Chinese enterprises.
- *Price Volatility*: Extractive industries are highly susceptible to large price volatility. This volatility is credited to the lack of diversification of mining projects among a large number of countries, as well as the growing practice of using the commodity futures market as long-term portfolio items. Volatility in mineral prices is expected to increase due to the growing demand for minerals by developing countries, especially China.

Negative Implications of Market Failure

- *Economic Effects*: Much like oil, the volatile prices of minerals could cause a ripple effect in all levels of government and private business.³⁴ Macroeconomists have considered changes in the real price of oil as a key source of powerful economic fluctuations ("business cycles") and a cause of global economic shock.³⁵
- *Political Effects*: Reliance on a limited number of foreign suppliers could cause the United States to finance or militarily defend hostile regimes. Moreover, the loss of mining sites to foreign companies who can bear greater risk not only has negative consequences for securing minerals, but it results in a loss of American influence in these countries vis-à-vis foreign investors in the region, particularly China.

Insufficiency of Proposed Government Intervention

United States policymakers have proposed various solutions for preventing critical mineral vulnerability, including reconstituting the domestic supply, increased recycling efforts, and stockpiling. These policies, however, prove insufficient to address the scope of escalating global mineral competition. Moreover, they make no attempt to resolve the underlying conflict between the interests of private companies and U.S. mineral security.

Reconstitute Domestic Supply

Rare earth mining sites are set to reopen in California, Idaho, Montana, and Colorado.³⁶

Strength: A greater domestic supply will help negate the risk of both absolute shortages and those due to political conflict.

Weakness: Building a U.S.-only supply chain will not satisfy domestic demands, as the projected resources of the mines currently under development are not expected to meet domestic needs for heavy REE.³⁷ Moreover, other clean-tech minerals exist in much more profitable concentrations outside the United States.

Recycle Clean-Tech Minerals

Specialty metals are currently only recycled at a rate of 1%,³⁸ however, this rate is set to increase as rising specialty metal prices and new recycling technologies make the process more profitable.

Strength: Investment in recycling technology will spur American research and development and allow new, more efficient techniques to develop.

Weakness: Recycling minerals from electronic devices produces small yields, is technically challenging, and very expensive. Each ton of rare metals processed yields only a few hundred grams of recycled specialty metals.³⁹

Stockpile Clean-Tech Minerals

In 1939, the U.S. government created a stockpile of strategic materials to preclude a dangerous and costly raw material dependence on foreign sources in times of national emergency. Currently, the only green minor metals in the stockpile are cobalt and platinum.⁴⁰

Strength: Stockpiling ensures a supply of critical minerals during shortages and would lessen the incentive of foreign nations to strategically cut off mineral exports.

Weakness: Stockpiling only serves as a short-term solution, and stockpiles are expensive to constitute and maintain. Moreover, the Committee on Assessing the Need for a Defense Stockpile has repeatedly concluded that the current design and structure of the NDS is “ineffective in responding to modern needs and threats.”⁴¹

Adopt a Three-Pronged Policy for Clean-Tech Mineral Diversification in Latin America

In order to secure clean-tech mineral supplies, the United States must diversify its access to mineral sources, particularly in Latin America.

Benefits of Clean-Tech Mining in Latin America

Latin America provides the ideal base for greater diversification of clean-tech mineral sources, as it offers both attractive economic potential for corporations and strategic benefits for the United States. These strengths include:

- *Political Stability:* While political stability remains an area of concern for mining in Latin America, as a whole, Latin American countries are more politically stable than African countries. This relative stability lowers exploration risks as well as the political risks caused by negotiating trade agreements with authoritarian states.
- *Ease of Transportation:* 27% of Latin America is within 100 km of the coast, as opposed to Africa’s 18%.⁴² In wartime, the geographic proximity between South America and the United States will require the Navy to protect fewer sea lanes and would allow for over-land transport.
- *Resource Potential:* Latin America offers unparalleled potential for growth in resource exploration. The annual Fraser Institute survey of exploration companies shows that Latin American mineral deposits would be among the most attractive exploration sites in the world; however, lack of infrastructure and unfavorable government policies hinder greater exploration.⁴³ Because geological processes tend to form belts of ore deposits, the large and varied ore deposits present in Latin America suggest that many new ore deposits exist and remain to be explored.⁴⁴

A Three-Pronged Strategy for Securing Minerals in Latin America

The United States should encourage diversification of exploration and mining in Latin America through the implementation of a three-pronged clean-tech mineral policy. This policy combines repayable contributions for American mineral exploration, conditional export-based development aid, and foreign fellowships in geology and mining technology.

1) *Conditionally Repayable Contributions for American Exploration Companies*

The United States government should encourage greater grassroots exploration in Mexico, Columbia, and Peru by providing conditionally repayable contributions to companies who explore for clean-tech minerals in these countries. These contributions would be similar to those Ontario's Northern Energy Program has implemented to support clean renewable energy generation.

The Department of Energy has already offered \$26 billion in loan guarantees under the Energy Policy Act of 2005. While these loans exist to develop green energy technology in the United States, they do not make money available for securing the minerals necessary for the growing demand in these industries.

While lack of infrastructure and concerns over political stability and physical security have deterred FDI in these countries, relatively strong economic and political freedom scores, as well as large known mineral resource deposits, indicate the potential for greater foreign exploration and mining development.

By providing loans which do not have to be repaid in full if the project fails, conditionally repayable contributions for exploration allow the United States government to share the initial financial risk of greater clean-tech mineral exploration in these countries. This lowered risk will diversify the supply of minerals and help secure new raw materials that would otherwise be left unexplored by American companies.

2) *Conditional Export-Based Development Aid*

Export-based development aid packages should be pursued in Bolivia, Ecuador, and Guatemala. While limited infrastructure, lack of geological databases, and uncertainty concerning enforcement of existing mining regulations make extensive FDI politically and economically unviable, these countries show great mineral potential if their exploration could be encouraged.

For these reasons, the United States should engage in government-to-government agreements for exploration and development in these countries. The United States should agree to provide concessional loans and grants for the purchase of American-made capital for exploration and geological database development in exchange for a guaranteed supply of a negotiated percentage of minerals mined during the period of the loan.

The framework for such agreement would be based on the capital-for-resource policies pursued by many oil-importing nations in the 1970s, notably Japan's agreements with the USSR through which Japanese mining equipment was provided in exchange for a guaranteed percentage of all oil and coal mined.⁴⁵ Through these direct purchases, the United States should develop a clean-tech mineral reserve which

would be employed simply as a means for facilitating the transfer of resources between foreign mines and American markets.

3) *Training Fellowships for Specialists, Educators, and Policy-Makers*

The United States should institute scientific exchanges with Latin America based off the fellowship programs already administered by the USDA Foreign Agricultural Service for agricultural training. These fellowships would be made available to Latin American specialists, university faculty, and policy makers who are concerned with clean-tech mineral exploration, development, and trade. These fellows would be matched with mentors for formal training at U.S. technical universities, the USGS and other government agencies, participating private companies, and not-for-profit institutions.

Mining in Latin America Policy Strengths

- *Encouragement of Market Transition:* Unlike previous policy recommendations, each of these three policies will develop the infrastructure and human capital necessary to gradually draw down government involvement by allowing private American firms to find exploration profitable in a diversified set of countries.
- *Diplomatic Engagement:* Both the image and the influence of the United States are rapidly declining in Latin America. As China engages in heightened trade and dialogue with Latin American nations, these countries are increasingly turning to China for loans and for development of their export markets. Moreover, China has been using its increasing economic involvement to influence the recognition of Taiwan by foreign governments. By developing mutually-beneficial trade and exploration policies with Latin America, the United States has the opportunity to mitigate China's growing soft power in the Western Hemisphere.
- *Cost-Effectiveness:* The loan guarantees this strategy proposes will be comparatively inexpensive. Exploration for lithium and REE in 2010 totaled only \$153 million globally for all stages of exploration.⁴⁶ By comparison, the United States spent approximately \$6 billion in 2009 subsidizing biofuels, specifically corn ethanol and soybean-derived biodiesel.⁴⁷
- *Mutually Beneficial Results:* The above policy includes provisions which will be largely beneficial to both the United States and Latin America.
 - Benefits to Latin America include:

Accountability: Much like China's policies in Africa, development funds in the form of mining equipment and education will serve as an agency of

restraint against embezzlement, ensuring funds are being employed for development purposes.

Job Creation: Funds for infrastructure and database development will be a source of local job creation.

Technological Training: Training in mining and geology will provide valuable skills to specialists in these domains to make the extractive industry more efficient and profitable.

– Benefits to the United States include:

Local Skilled-Labor: Training fellowships will give American firms access to local skilled-labor and will lower the barriers to market entry by facilitating the flow of information and reducing cultural barriers. The presence of skilled labor in this field will contribute to the establishment of clean-tech mineral mining industry in these countries which will encourage supply diversification over the long term. Moreover, the time these individuals spend in America is likely to instill positive feelings towards the United States.

Policy Diversification: By incorporating government-to-government agreements, incentives for private industry, and vocational training, this policy takes a comprehensive, long-term approach to resolve dangerous mineral dependencies.

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⁴⁶ “World Exploration Trends.”

⁴⁷ *Using Biofuel Tax Credits to Achieve Energy and Environmental Policy Goals* (Congressional Budget Office, July 2010), <http://www.cbo.gov/ftpdocs/114xx/doc11477/07-14-Biofuels.pdf>.