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# Assessing the Global Threat of Nuclear Terrorism

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***Abstract***
Nuclear terrorism continues to be one of the greatest threats to U.S. national security and global security and stability. To date, our understanding of the threat of global nuclear terrorism has been informed by the growing number of studies on the *general* causes or roots of terrorism. However, we argue that nuclear terrorism is a subset of terrorism and that an assessment of the nuclear terrorism threat must include consideration of nuclear capacity, nuclear development and possession of special nuclear materials. We develop an original global index that assesses the threat of nuclear terrorism.

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***Note: This is a work in progress. We acknowledge that our results are very preliminary***

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## I. Introduction

Nuclear terrorism, the illicit possession and trafficking of special nuclear materials (SNM), continues to be one of the greatest threats to U.S. national security and to global security and stability. Hundreds of tons of plutonium and weapons-usable uranium in Russia have yet to receive "even rudimentary security improvements, while stocks of Soviet-origin, weapons usable uranium remain vulnerable at research centers in other former Soviet states."[3] Since 1992, there have been almost twenty cases of illicit trafficking in plutonium and highly enriched uranium (HEU). Just last year, Moldovan police seized a 4.4. grams of HEU enriched uranium — material that can be used in a nuclear weapon — from a group of middlemen from Moldova and the Russian Federation that were trying to sell it to a buyer from North Africa.

In addition, there are a number of cases of stolen radiological materials that could be used to make a dirty bomb. According to the former director of the International Atomic Energy Agency, Mohamed El Baradei, "a large percentage of the materials reported as lost or stolen are never recovered" and "a large percentage of materials which are recovered have not been previously reported as missing."[4]

This growing concern regarding the "gravest danger we face" has prompted two nuclear security summits in just as many years – the latest of which was held in March 2012 in South Korea. More than 50 countries participated.

Understanding the causes or roots of terrorism has garnered much attention, particularly after September 11, 2001. However, much less research has focused on *nuclear* terrorism in particular. In addition, by and large, our understanding of the terrorist threat has been based on qualitative assessments rather than theoretically informed, methodologically rigorous tools.

This paper improves our understanding of the threat of global nuclear terrorism. Specifically, we develop a theoretically informed, methodologically rigorous tool for assessing the threat of nuclear terrorism around the world. Using theoretically informed measures, this original global nuclear terrorism threat index examines the nuclear terrorism threat and evaluates this against the quantity a of country's stock of nuclear materials. The contribution of this model is that we have developed a rigorous, analytical index of the threat of nuclear terrorism for 159 countries in the world.

Section II of this paper summarizes some of the background literature on the threats of terrorism and outlines our argument. In Section III, we describe the data and methods of our global nuclear terrorism risk index. Section IV provides analysis of the findings and Section V provides some concluding remarks.

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[3] Charles D. Ferguson, William C. Potter, Amy Sands, Leonard Spector, and Fred Wehling. 2004. The Four Faces of Nuclear Terrorism. Center for Nonproliferation Studies at the Monterey Institute of International Studies.

[4] Nuclear Threat Initiative. 2012. NTI Nuclear Materials Security Index: Building a Framework for Assurance, Accountability, and Action, p. 19. http://www.ntiindex.org/static/pdfs/nti_index_final.pdf

## II. Background

Since the collapse of the Soviet Union, sensitive nuclear technologies and materials have become increasingly available. Globalization and the inadequate enforcement of treaties and export controls have allowed the proliferation of nuclear weapons materials. International terrorist organizations have stated that they seek to employ weapons of mass destruction (WMD).[5] The specific threat which is of concern to security analysts is both the acquisition of nuclear materials and weapons and delivery of a weapon or 'dirty bomb' to its target.

While analysts acknowledge that it is unlikely that terrorist organizations have the capacity to develop full-fledged programs in the near term, preventing the acquisition of sensitive nuclear technologies, materials and weapons by terrorist groups is a priority of the U.S. and our allies.

Social scientists have examined the determinants of terrorism.[6] This rich collection of studies has produced a rich understanding of the roots or causes of terrorism which has subsequently informed a series of policy strategies. For example, a number of cross-national studies have verified the relationship between high economic development and the increased likelihood of terrorist attacks (Eyerman 1998; Tavares 2004; Blomberg et al. 2004; Kurrild-Klithgaard et al. 2006; Plumper and Neumayer 2010; Blomberg and Hess 2008a, 2008b; Krueger and Laitin 2008).

Over the years, there have been a number of attempts to assess the threat or risk of terrorism. Many of these have been authored by private actors. Among these are AON, the global reinsurance company,[7] and Maplecroft, a global risks advisory firm.[8] Unfortunately, it was difficult to uncover much detail about their variables, methodology or analysis.

In addition, the U.S. has also attempted to produce an internal assessment of the terrorist risk. During 1995-1999, the U.S. State Department's (now defunct) Office of the Coordinator of Terrorism produced a yearly document entitled "Patterns of Global Terrorism Index" which provided a description of terrorist activities around the world based on newspaper reports.

Common to the current known efforts is a lack of methodological rigor and theoretically informed analysis. One recent exception is the Nuclear Threat Initiative's Nuclear Materials Security Index (2012).

Recently, the Nuclear Threat Initiative (NTI) has developed an original NTI Nuclear Materials Security Index. According to NTI, the Nuclear Materials Security Index "assesses and scores each state across a broad range of publicly available indicators of a state's nuclear materials

[5] Global Risk of Nuclear Terrorism, JSS, vol 3(1): 2010. Diez et al.
[6] For a good summary of the literature on the causes of terrorism, read Krieger and Meierrieks (2011).
[7] AON has produced a number of products including the AON Terrorism Threat Map (2009), AON Terrorism and Political Violence Map (2012)
[8] Maplecroft's 2010 Terrorism Risk Index (TRI) used data from June 2009 to June 2010 to assess the frequency of terrorist incidents and the intensity of attacks, which included the number of victims per attack and the chances of mass casualties occurring. It also included a historical component assessing the number of attacks between 2007 and 2009 and looks at whether a country is at risk from a long-standing militant group operating there.

security practices and conditions."[9] NTI assesses over 100 variables and groups them into five categories: quantities and sites, security and control measures, global norms, domestic commitments and capacity and societal factors. They draw heavily on subject matter experts. While the NTI Nuclear Materials Security Index is to be lauded for its level of methodological rigor which stands above the existing indicators, there are a number of issues which makes the measure challenging to interpret. First, the NTI uses subject matter experts to inform the inclusion and content of many of the Index's variables. The result is a "garbage can model" (Achen 2002) that includes many variables without well-developed theoretical expectations. Although this does not inherently generate statistical bias, it does limit theoretical contributions and make replicability difficult. Additionally, it shifts the development of the index from a data and theory driven model to a potentially biased policy-maker model. Second, the NTI divides the world into two – those who have nuclear weapons and those who do not. Because geographic proximity to nuclear materials increases access, regardless of whether the materials are within a country or not, assessments of nuclear security should recognize the threat of contagion and strive to not create a false dichotomy between nuclear and non-nuclear powers. Ideally, the index would produce results whereby those countries that did not have special nuclear materials would rank at the bottom of the index.

Also, the NTI includes a narrow inventory of special nuclear materials very minimally. For the relevant countries, they only include the amount or quantity of materials. In contrast, the NTI does not include nuclear warheads, the number of facilities, research/training facilities, etc. This indicates a very blunt measure of nuclear materials.

Finally, a number of the measures included in the NTI Nuclear Materials Security Index seem to favor a state sponsored view of terrorism. For example, the NTI Index includes a country's participation in several international treaties and agreements. Among these are UNSCR 1540 committee and the Partnership for Global Security. But many terrorism experts acknowledge that nuclear terrorism would not be state sponsored. While states may recognize the nuclear weapons taboo, terrorists will not. As we know, terrorists do not respect international treaties and norms. Measuring state compliance may be useful in that it may predict a state's ability to control individual action but this can be accounted for in other areas (e.g. institutional development). Moreover, in terms of the broader literature on treaty compliance demonstrates that states often fail to comply and that ratification has no statistical meaning ((Hathaway 2007; Hathaway 2002). Because our index focuses on nuclear terrorism, and terrorists are not constrained by international organizations or law, it does not make theoretical sense to include these measures.

In sum, our index differs from the NTI index in numerous ways. First, and foremost, the indices analyze fundamentally different questions, with the NTI index focusing on general nuclear materials safety and our index focusing on future patterns of nuclear terrorism. Second, the NTI index divides the world in nuclear and non-nuclear states, while we develop a broader spectrum of nuclear capacity that also accounts for geographic proximity. Finally, unlike the NTI index, which is policy-maker informed and includes almost 70 variables, we focused on theoretical relevance and developing a parsimonious model.

[9] Nuclear Threat Initiative. 2012. NTI Nuclear Materials Security Index: Building a Framework for Assurance, Accountability, and Action, p. 6. http://www.ntiindex.org/static/pdfs/nti_index_final.pdf

### *Our Global Nuclear Terrorism Threat Index*

Our understanding of the nuclear terrorist threat is based on a growing number of studies that have examined the roots or causes of general terrorism, using either case studies or cross-national, over time qualitative analyses. But, we argue that nuclear terrorism is a different beast from general terrorism because of the limited availability of special nuclear materials, the higher costs to securing nuclear materials and the geographic concentration of materials. A realistic, useful assessment of the global nuclear terrorist threat must take into account the nuclear capacity, nuclear development and possession of special nuclear materials. As such, we develop an original global index that assesses the global nuclear terrorism threat using historical data.

Our index of the global threat of nuclear terrorism improves upon existing measurements in several ways. First, our indicator includes a much more expanded notion of nuclear materials. Specifically, we include information on the domestic presence of nuclear materials, including materials from research reactors, nuclear power plants, and nuclear warheads. This includes the total number of research reactors, thermal power from research reactors, number of nuclear power plants, and total nuclear power plant capacity. As such, our indicator acknowledges the stated concerns regarding the proliferation risks associated with the renaissance of nuclear energy, particularly in the developing world.

Second, we opt for a more parsimonious selection of variables that are theoretically driven as opposed to throwing in the 'kitchen sink' of variable. Third, we compile a single global database rather than separating the sample into two distinct categories based on the quantity of special nuclear materials in possession.

Finally, we adhere to the widely respected body of literature that assumes most terrorism (and nuclear terrorism) would not be state sponsored. As such, we acknowledge that states will recognize international agreements and treaties acknowledging stronger safeguards and protections of nuclear materials, etc. In contrast, terrorist groups (and individual actors) will not and may seek to obtain and use special nuclear materials in ways that could significantly and negatively impact a significant size of the population.

We acknowledge that our index, as currently presented, does not take into account a country's efforts to secure its nuclear materials. As we know, nuclear security policies and measures are critical to discouraging and minimizing the illicit acquisition and trafficking of nuclear materials. We realize that this is a gap in our current index. We anticipate that the next iteration of our index will more explicitly consider the security of materials.

## III. Data Sources and Methodology

To assess the global threat of nuclear terrorism, we collected data for all countries formally recognized by the United Nations for the years 2000-2010. However, in conducting a global study, the degree of missing data both between and within cases was significant. As demonstrated in previous research (Schafer 1997; Rubin and Little 1987; Rubin and Schenker 1986; King et al. 2001)), a high degree of missingness creates significant bias. To address missingess and minimize the bias associated with it, we utilized a two-pronged strategy.

First, we focused data collection on variables that consistently displayed significance when subjected to quantitative testing. By focusing on parsimony, rather than a "garbage can model" (Achen 2002), the number of included variables was minimized, while data for the remaining variables had more complete coverage. Second, we averaged the collected data over the decade to develop a single statistic. Because time series data consistently displays a strong degree of autocorrelation across close time points, most countries displayed high consistency across observations. Thus, averaging over the course of the decade allowed us to capture not only longer-term trends, but also minimized missing data within the cases. In total, complete data was collected for 159 countries.

**Table 1: Variables Included in the Global Nuclear Terrorism Threat Index**

| **Likelihood of Future Terrorism** | |
|---|---|
| | Economic Deprivation<br>Modernization Strain<br>Institutional Order/Political Transformation<br>Identity Conflict<br>Global Order<br>Previous History of Terrorism |
| **Nuclear Development/Capacity** | |
| | Availability of Nuclear Materials |

In developing a theoretically informed ranking of the threat of nuclear terrorism, we classified data into seven theoretically relevant categories. The first six categories focus on the likelihood of future terrorism. These include economic deprivation, modernization strain, institutional order and political transformation, identity conflict, global order, and previous history of terrorism (Krieger and Meierrieks 2008). The seventh category, which includes nuclear development, focuses on the availability of nuclear materials and technical knowledge within a country.

The variables included in compiling our original global nuclear terrorism threat index have been verified by other studies (many of which were cross-national, over time quantitative analyses) to have a significant relationship to the causes or roots of terrorism. In the paragraphs that follow, we summarize those relationships.

Economic deprivation, which captures poverty and within-country inequality, is consistently found to decrease the likelihood of terrorist attacks, as radicalized groups are more likely to resort to rebellion in poor countries and terrorism in richer ones. This occurs because terrorism is the most cost-effective form of rebellion for fringe groups in wealthy countries (Blomberg et al. 2004). Further, the relationship between high economic development and the increased likelihood of terrorist attacks has been consistently confirmed in cross-national, quantitative testing (Eyerman 1998; Tavares 2004; Blomberg et al. 2004; Kurrild-Klithgaard et al. 2006; Plumper and Neumayer 2010; Blomberg and Hess 2008a, 2008b; Krueger and Laitin 2008). Because of this, we include both economic development, measured as gross domestic product (GDP) per capita (US$), and economic growth, measured as the annual percent change in GDP

per capita. The average for both variables was calculated over the decade and the variables were combined using a linear equation in which both variables are expected to increase the likelihood of a nuclear terrorist attack.

Modernization strain, which captures economic, political, social, and ideological changes, may create social grievances that are exacerbated by population strains (Robison et al. 2006). During the transition from a traditional to modern society, terrorists may capitalize on the grievances generated by the new class of "losers" within the system (Ross 1993). Modernization strain, measured as both population and population growth, is consistently found to increase the probability of terrorism (Krueger and Maleckova 2003; Burgoon 2006; Lai 2007; Plumper and Neumayer 2010; Freytag et al. 2008; Piazza 2008b; Krueger and Laitin 2008). In these findings, social and political conflict is found to increase as demographic stress increases. To capture modernization strain, we calculated the decade average for total population, population growth (measured as percent change), and size of the adult population (% of total population). The data were combined using a linear equation in which all variables were expected to increase the likelihood of a nuclear terrorist attack.

Institutional order and political transformation capture the degree to which a political system produces grievances and is equipped to handle them. Democratic systems are expected to be less likely to produce grievances and more likely to channel grievances through formal political institutions. Because citizens have a legitimate outlet for their grievances, they are less likely to resort to violence. This expectation is supported by various research, as democratic countries are less likely to generate terrorism (Krueger and Maleckova 2003; Burgoon 2006; Kurrid-Klitgard et al. 2006; Plumper and Neumayer 2010; Krueger and Laitin 2008; Piazza 2008b). To capture regime type, we include the POLITY IV composite measure that captures the degree of institutional democracy or autocracy and ranges from -10 (most autocratic) to 10 (most democratic) (Marshall and Jaggers 2010).

Regardless of regime type, stronger political systems, such as those that have been in place longer) or face fewer social, political, or security threats, are expected to be better able to deter terrorist threats. Further, governments with a greater capacity for spending and policing are also better able to deter terrorism (Burgoon 2006; Freytag et al. 2008). To capture institutional order, we include measures of both regime durability and state fragility. Regime durability, take from the POLITY IV dataset, is measured as the highest number of years since the most recent regime change (Marshall and Jaggers 2010). State fragility is measured using the State Fragility Index (Marshall and Cole 2011), which evaluates countries based on effectiveness and legitimacy on the performance dimensions of security, politics, economics, and society.[10] To create an index in which higher scores are associated with an increased likelihood of nuclear terrorism, regime type and durability were reverse scaled. The data were combined using a linear equation in which all variables were expected to increase the likelihood of a nuclear terrorist attack.

Identity conflict, which captures ethnic and racial fractionalization, may generate social grievances and create ideologies that make it easier to mobilize society in support of terrorism. More homogenous societies have demonstrated a reduced risk of terrorism (Piazza 2008b). Further, the intrastate violence and political instability generated from identity conflict also

[10] Higher scores indicate instability, while lower scores indicate stability.

increases the likelihood of terrorism (Lai 2007; Piazza 2008b; Piazza 2007). To capture identity conflict and the violence often associated with it, we include numerous variables from the Minorities at Risk Dataset (2009).[11] These variables measure the proportion of the population comprised by a minority group, the degree of economic and political discrimination, the separatism of minority groups, and the presence of intergroup conflict, guerilla warfare or violent coercion. To calculate the identity conflict score, we calculated the average minority proportion and the maximum degrees of discrimination and violence. All variables were combined using a linear equation and are expected to increase the likelihood of nuclear terrorism.

Global order, which accounts for the international factors that influence the probability of terrorism, captures the international influences on a country. Evidence suggests that global integration through international organizations, alliances and political cooperation reduces the likelihood of terrorism (Blomberg and Hess 2008; Sandlier 20050, while political antagonism, such as international war, increase the likelihood of terrorism (Piazza 2008b; Lai 2007). To capture these factors, we include a measure of formal alliances and years of international conflict taken from the Correlates of War (COW) formal alliances dataset (Gibler and Sarkees 2004). To capture the number of international war years, we utilized the longest running international war for the decade. To capture formal alliances, we utilized the decade average. To create an index in which higher scores are associated with an increased likelihood of nuclear terrorism, the number of international alliances was reverse scaled. The variables were combined using a linear equation in which the index is expected to increase the likelihood of a nuclear terrorist attack.

Previous history of terrorism accounts for the path dependent nature of terrorism, in that historical counts of terrorism are expected to influence future events. To measure terrorist history, we include the total count of terrorist incidents between 2000 and 2010 within a country. This data was obtained from the National Consortium for the Study of Terrorism and Responses to Terrorism (START 2011) database. This database defines terrorist incidents as the threatened and/or actual use of illegal violence by a non-state actor with political, economic, religious or social goals and achieved through fear, coercion or intimidation (START 2011). Data on historical terrorist incidents were included because they have consistently demonstrated a strong influence on the probability of future terrorist events (Braithwaite and Li 2007; Li 2005; Li and Schaub 2004; Drakos and Gofas (2006a); Koch and Cranmer 2007).

Nuclear threat accounts for the amount of nuclear materials within a country and the number of locations housing those materials. To capture nuclear threat, we include information on the domestic presence of nuclear materials, including materials from research reactors, nuclear power plants, and nuclear warheads. This includes the total number of research reactors, thermal power from research reactors, number of nuclear power plants, and total nuclear power plant capacity. This data was obtained from the International Atomic Energy Association's (IAEA) Research Reactor database (IAEAa 2011) and the IAEA's database of country nuclear power profiles (IAEAb 2011). The total number of nuclear warheads was taken from the World Nuclear Stockpile Report published by the Ploughshares Fund (Kristensen and Norris, 2012). Data on the presence of nuclear materials was included because access to materials, including both physical materials and the technical knowledge associated with them, is necessary to obtain and detonate a nuclear weapon. We also developed a measure to account for the nuclear capacity of a

[11] Because MAR data is only available to the year 2006, the data was collapsed over the time-frame of 2000-2006.

country's neighbors, as the theft or illegal abuse of nuclear materials is facilitated by geographic proximity. These variables were combined using a linear equation in which increasing amounts of each variable are expected to increase the probability of nuclear terrorism.

## Methodology

To assess the propensity for future terrorist attacks against the nuclear threat, we utilize a scaled index. First to verify the appropriateness of each category's boundaries, we analyzed Cronbach's Alpha at the conventional levels (Cronbach 1951). Upon verification that the measures could be appropriately combined into an index, we standardized variables within their subsets using z-scores. These z-scores were combined using a linear equation in which the final result indicates the total distance from the median case. Z-scores were used for multiple reasons, as their properties allow for comparisons both across and within variables and against the median case. Because z-score indicate the number of standard deviations the data is above or below the mean,[12] they minimize problems associated with utilizing variables with fundamentally different scales of measurement.

Z-scores also clarify the meaning of scores by providing a frame of reference based on the description and theorization of the median case (Straus 1980). For the purpose of this analysis, this is useful because the median case provides an appropriate reference points for comparison. Further, the use of z-scores is common in cross-subject comparison (Bell et al. 2007, Wu et al. 2001). Further, the results of analyses utilizing a quantitative weighting scheme such as principal component analysis (PCA), are generally very similar to the results produced by z-scores (Wu et al. 2001). Because z-scores are a very simple, well theorized method that make minimal statistical assumptions about the distribution and nature of data, they were the most appropriate method for initially classifying the data. Thus, by assessing examples of the average case on both propensity for terrorism and nuclear threat, z-scores allowed us to determine how extreme other countries are relative to the median case.

For the decade of the 2000s, the median case could be considered a "safe" case in that it has no nuclear power, weapons or facilities (i.e. no nuclear capacity) and a low propensity for future terrorism. Table 2 provides the values for the median case. As shown, the median case has a very limited number of terrorist incidents during the decade, moderate levels of economic development and modernization strain, low levels of intragroup conflict with no overt warfare or legal discrimination, no international war, moderate levels of formal alliances, and a moderate to high degree of institutional development. Examples of cases that fit these criteria are countries such as Costa Rica and New Zealand. The median case and its surrounding observations represent countries where the propensity for terrorism is minimized and access to nuclear materials is lacking. Thus, all countries falling near the median can be considered "safe" states, while countries falling above the median grow increasingly at-risk to the threat of nuclear terrorism. This includes countries with high levels of propensity for terrorism, a historical record including many terrorist events, and the presence of nuclear materials.

[12] For this project, the median case was utilized in calculations, as the data was both severely skewed and often not measured in a level of measurement appropriate for utilizing a mean.

**Table 2. The Median Case: Nuclear Materials and Terrorist Incidents**

| Variable | Median Value |
|---|---|
| Nuclear Warheads | 0 |
| Research Reactors Power | 0 |
| Power Reactors Power | 0 |
| Research Reactors (#) | 0 |
| Power Plant Reactors (#) | 0 |
| Terrorist Incidents | 8.5 |

Once the z-scores were created and the linear equations were utilized to formulate a final score for each subset, the Jenks optimization method was used to identify naturally occurring class breaks so that scores could be scaled to a 1-5 range, where 1 represents the safest case and 5 represents the most at-risk case. The Jenks optimization method (Jenks 1967) is an iterative process that minimizes within group variance and maximizes between group variance. This optimization technique generates classes that are based on natural groupings within the data and identify the appropriate data ranges for each 1-5 class. Upon creating class scores for each subset of influential variables, the values were added across subsets to create cumulative measures of both propensity for terrorism and nuclear threat. The index measuring propensity for terrorism ranges theoretically from 1 to 30, with the highest and lowest scores in the data being 23 (Iraq) and 9 (Costa Rica, Mauritius and Jamaica). The index measuring nuclear threat ranges from 1 to 5, with 5 indicating the maximum nuclear threat and 1 representing the minimum nuclear threat. For both indices, scores falling above the median value are considered at-risk. Table 3 provides descriptive summary statistics.

**Table 3. Summary Statistics: Propensity for Terrorism and Nuclear Threat**

| | N | Mean | Median | Std. Dev. | Min | Max |
|---|---|---|---|---|---|---|
| Propensity for Terrorism | 159 | 13.54 | 13 | 2.58 | 9 | 23 |
| Nuclear Threat | 159 | 1.5 | 1 | 0.80 | 1 | 5 |

## IV. Findings

When plotted against one another, the indices display clear trends about the states most at risk for nuclear terrorism. Table 4 displays alphabetical ordering of countries that have the highest risk. The first column presents those countries that have the highest levels of propensity for future terrorism. Six of the nine countries are on the U.S. Department of Energy (DOE)'s Sensitive Country List. In the second column, we display those countries that have nuclear materials. Four of these countries are on the U.S. DOE's sensitive country list.

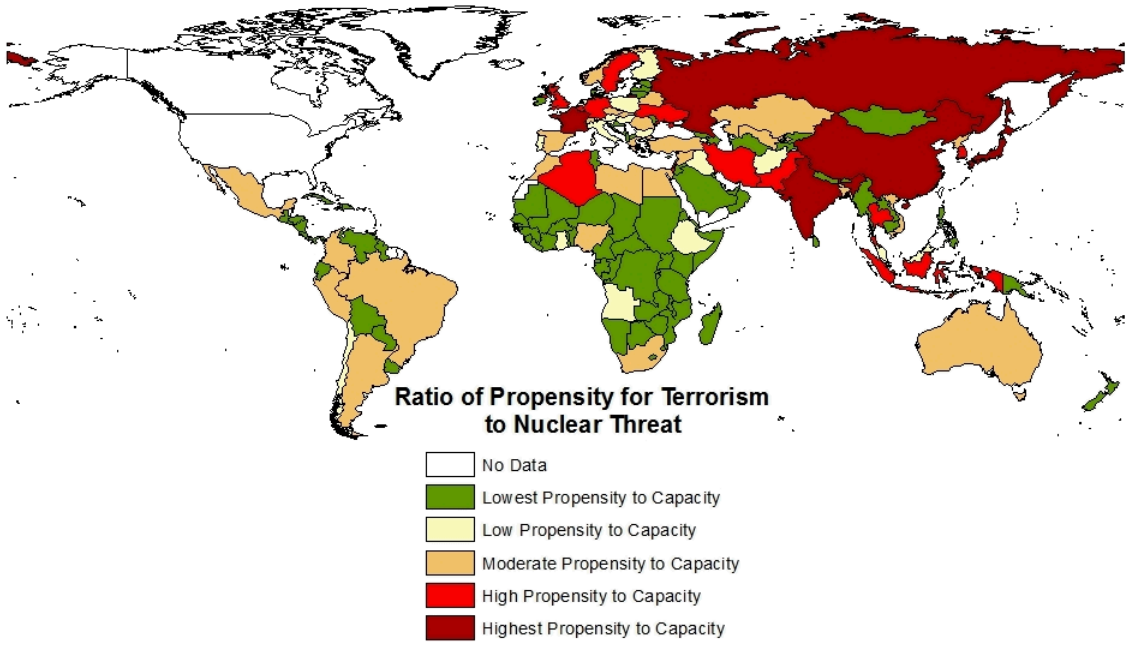
In the final column (titled combined measures), we create a ratio of threat to capacity in which we divide nuclear capacity by the terrorist threat to create a proportion of threat to capacity. As demonstrated in Figure 1, there are numerous problematic regions. Perhaps most problematically, all of Asia and the Middle East demonstrate high threat to capacity ratios,

demonstrating that these regions may be the most likely to face nuclear terrorism in the near future. Africa also displays many states in the high propensity category, although this is overwhelmingly driven by state instability, rather than a high degree of nuclear proliferation. Thus, although the region is at a high risk of future terrorism, the general lack of nuclear materials may minimize the nuclear terrorist threat. Generally, Western Europe and Latin American appear to be the safest regions, as both have a majority of states with moderate to low levels of threat to capacity.

**Table 4. Highest Level of Threat**

| Propensity for Terrorism Only | Nuclear Capacity Only | Combined Measures |
|---|---|---|
| Afghanistan | Belgium | China |
| Angola | China | France |
| China | France | India |
| Ethiopia | Germany | Iran |
| India | India | Iraq |
| Iran | Japan | Japan |
| Iraq | Russia | Pakistan |
| Pakistan | South Korea | Russia |
| Russia | Sweden | |
| | Ukraine | |
| | United Kingdom | |

**Figure 1. Ratio of Propensity for Terrorism to Nuclear Threat**



## V. Concluding Remarks

This project makes an important contribution. First, it provides a theoretically informed, methodologically rigorous assessment of the nuclear terrorism threat around the world over based on historical data. Second, it acknowledges the growing risks of the global nuclear energy renaissance and takes a much broader inventory of nuclear materials. Nevertheless, there are issues that we would like to tackle in the next iteration. In particular, we plan to combine the two categories into a single index.

We argue that this methodologically rigorous, objective analytical tool can help inform policymakers who are charged with distributing limited resources and technical assistance to address the threat of nuclear terrorism. In other words, we believe that this global nuclear terrorism threat index can provide decision-support to policymakers around the world.