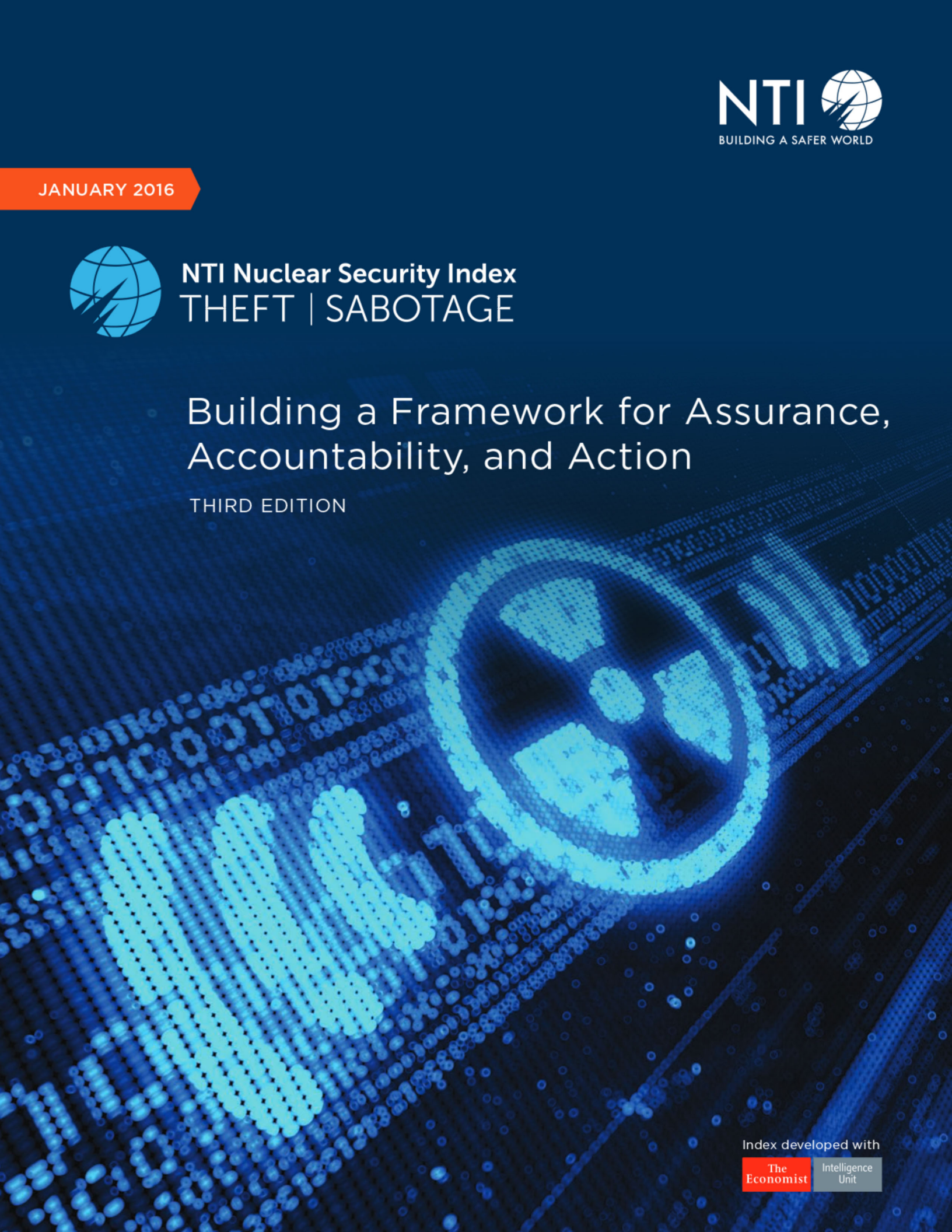
NTI
BUILDING A SAFER WORLD

JANUARY 2016

NTI Nuclear Security Index
THEFT | SABOTAGE

Building a Framework for Assurance, Accountability, and Action

THIRD EDITION



Index developed with
The Economist Intelligence Unit

THE 2016 NTI NUCLEAR SECURITY INDEX: THEFT AND SABOTAGE

Developed with the Economist Intelligence Unit (EIU) and with input from a respected international panel of nuclear security experts, the Nuclear Threat Initiative (NTI) Nuclear Security Index assesses the security of the world's deadliest materials: highly enriched uranium and plutonium. A first-of-its-kind resource, the NTI Index is designed to encourage governments to take actions and build confidence in the security of their materials. Now in its third edition, the NTI Index is recognized as the premiere resource and tool for tracking progress on nuclear security and identifying priorities.

The NTI Index assesses nuclear materials security conditions in 24 countries with one kilogram or more of weapons-usable nuclear materials across a broad framework capturing policies, actions, and other conditions that shape their nuclear security. An additional 152 countries with less than one kilogram of weapons-usable nuclear materials or none at all are assessed across a subset of the framework. This "theft ranking" was included in the 2012 and 2014 editions of the NTI Index.

For the first time, the 2016 NTI Index also looks at a third set of countries in a new "sabotage ranking." An act of sabotage against a nuclear facility could result in a significant radiological release with consequences on the same or larger scale as the accident at Fukushima, Japan. This assessment reviews the nuclear security conditions of 45 states with respect to the protection of nuclear facilities against sabotage. Importantly, this new assessment provides a first-time look at the security conditions of states with less than one kilogram of or no weapons-usable nuclear materials but that have nuclear power plants or research reactors.

The NTI Index is presented in three formats:

- The **print report**, which contains NTI observations and recommendations, an overview of the EIU methodology, selected data, and country profiles
- The **website**, www.ntiindex.org, which shows high-level results and country profiles in an easily accessible format, as well as new infographics and video content
- A **downloadable version of the 2016 NTI Index**, which is available through the website and shows detailed results and data and which provides extended interactive features in an Excel format.

This initiative is led by Page Stoutland, NTI Vice President, and Samantha Pitts-Kiefer, Senior Program Officer, Scientific and Technical Affairs.

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Correction

The version of the 2016 NTI Nuclear Security Index released on January 14, 2016, included several data errors which affected scores for some countries. This print report—and the data on the website and the Excel model—reflect the corrections. The revised data does not change the overall NTI Index findings.

In the theft ranking for countries with materials, there was one error in the United Kingdom's score. In the theft ranking for countries without materials, there were eight errors that affected the scores of Chile, Egypt, Hungary, Indonesia, Morocco, Peru, Sweden, and Taiwan. In the sabotage ranking, there were seven errors that affected the scores of Hungary, India, Iran, Israel, Mexico, North Korea, and Taiwan. As a result of these errors, there are 16 minor changes in overall score that have been corrected. In addition, rankings for countries whose scores were unaffected by the corrections may have shifted up or down slightly from the rankings announced in January 2016

Details about each of the errors, the corrections made, and the impact on country scores are available at www.ntiindex.org under "News and Resources" and in the updated Excel models.

This edition of the report includes these corrections.

NTI and the EIU apologize for the error.

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ACKNOWLEDGMENTS

We are grateful to Nuclear Threat Initiative (NTI) Co-Chairman and Chief Executive Officer Sam Nunn for his unparalleled leadership on securing nuclear materials globally and to NTI President Joan Rohlfing for her strategic vision on this global assessment. We are also grateful for our successful partnership with the Economist Intelligence Unit (EIU)—in particular Leo Abruzzese, EIU Director of Global Forecasting; Hilary Steiner, EIU Principal, Custom Research, Americas; and Katherine Stewart, EIU Research Assistant—and its network of analysts.

We owe a deep debt of gratitude to our international panel, which includes some of the most highly respected experts from around the world. They have been extremely generous with their time and intellectual contributions, and we have done our best to ensure that this report reflects their collective wisdom.

We also appreciate the many officials and experts from around the world who participated in briefings and provided critical insights that have resulted in important improvements to the third edition of the NTI Index. They included government officials who took the time to review and comment on the data gathered by the EIU. In addition, NTI's consultations with representatives from the nuclear industry were invaluable in constructing the new sabotage ranking.

Additionally, we would like to thank the NTI Board of Directors for its support, and we give special thanks to NTI's generous funders, including underwriting for the NTI Index from the John D. and Catherine T. MacArthur Foundation, the Peter G. Peterson Foundation, and the Carnegie Corporation of New York—as well as ongoing support from Warren Buffett and NTI Co-Chairman Ted Turner.

Finally, we are indebted to all of our colleagues at NTI who have provided invaluable contributions to this project in big ways and small. In particular, we thank Mimi Hall, Carmen MacDougall, and Deborah Rosenblum. We also thank NTI's Michelle Nalabandian, Catherine Crary, Carter Bates, Elise Rowan, and Alexandra Van Dine (Herbert Scoville Jr. Peace Fellow) for their support.

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FOREWORD
By Sam Nunn, NTI Co-Chairman

Six years ago, 47 world leaders gathered in Washington, D.C., to work together to protect against the greatest security threat facing the world: catastrophic nuclear terrorism. The first Nuclear Security Summit was the largest gathering of heads of government since the founding of the United Nations 45 years earlier, and it put an essential spotlight on the imperative to lock down vulnerable nuclear materials.

At that 2010 summit, the leaders launched a major initiative to reduce and secure the more than 2,000 metric tons of weapons-usable nuclear materials then spread across hundreds of sites around the globe. The task was awesome—and so was the leaders' joint commitment to it.

It was a watershed moment for nuclear security.

As leaders prepare to gather again in Washington for what will be their fourth and final summit, they can point to significant progress made on their pledge—progress documented in the two previous editions of the NTI Nuclear Security Index.

Since the start of 2010, a dozen countries have eliminated weapons-usable nuclear materials from their territories, nuclear security policies and practices have been strengthened in dozens more, and the entry into force of a key international treaty has moved closer to reality.

In large part as a result of the summit process, global leaders today understand that nuclear materials security is much more than just a sovereign concern. It is clear that because of the catastrophic nature of the threat, poor security in one country has the potential to affect us all. And it is also clear that we need to establish an effective global system for nuclear materials security.

The White House, previous summit hosts South Korea and the Netherlands, and other leaders who have made nuclear materials security a priority have good reason to be proud of their achievements, both in practical steps taken and in raising greater awareness about the risk.

As the 2016 summit approaches, however, leaders also have cause for concern. Their final meeting in Washington comes at a particularly perilous time for global security. Relations are frayed across the Euro-Atlantic region as one

The three Nuclear Security Summits led to significant progress, but leaders must agree at the fourth and final summit on a path to sustain momentum.

The 2016 NTI Index assesses security conditions related to the threat of sabotage against nuclear facilities such as power plants and research reactors.

crisis seems only to give way to another. Brutal attacks and incidents by ISIL (the Islamic State of Iraq and the Levant), Boko Haram, al Qaeda, and other organizations with deadly intent are on the rise. A sting in Southeast Europe revealed last year exposed a vibrant and shockingly audacious black market in nuclear materials.

The 2016 NTI Nuclear Security Index, the third edition of our biennial assessment of nuclear security conditions around the world, reveals another problem: amid this global chaos, progress on the goals set at the 2010 summit has slowed.

In contrast to 2014, when the NTI Index reported that seven countries had eliminated their weapons-usable nuclear materials in the previous two years, this edition finds that only one country, Uzbekistan, has removed all of its dangerous nuclear materials since the last NTI Index came out. Progress in a host of other areas has also slowed, raising questions about the ability to sustain progress on this important initiative after the 2016 summit. Without the high-level attention and impetus provided by the summits and with so many competing priorities in a deeply unsettled world, can governments remain focused on the need to tighten nuclear materials security? It's a troubling question given how much is left undone and the potential consequences of inaction.

Today, 24 states still have one kilogram or more of weapons-usable nuclear materials, and although the amount is down from two years ago, nearly 2,000 metric tons of weapons-usable nuclear materials remain stored around the world, much of it still too vulnerable to theft. The risk is compounded by the fact that a terrorist group wouldn't need much nuclear material to make a nuclear bomb. Enough highly enriched uranium to fill a five-pound bag of sugar or a quantity of plutonium the size of a grapefruit is all terrorists would need to build and detonate a weapon. The result: catastrophic consequences that would stretch across the globe for economies, commerce, militaries, public health, the environment, civil liberties, and the stability of governments.

Meanwhile, cyber attacks are increasing—nuclear facilities are just as vulnerable as other key infrastructure—and a growing number of states are exploring nuclear energy even though they lack the legal, regulatory, and security frameworks to ensure that their facilities are secure as well as safe.

Today, 24 states still have one kilogram or more of weapons-usable nuclear materials, and although the amount is down from two years ago, nearly 2,000 metric tons of weapons-usable nuclear materials remain stored around the world, much of it still too vulnerable to theft.

In addition to assessing the security of nuclear materials, the 2016 NTI Index assesses for the first time important emerging threats and vulnerabilities, adding indicators to determine how well states are prepared to handle cyber threats and potential acts of sabotage to nuclear facilities. The results are troubling.

I believe it is fair to say that today we are at a crossroads on nuclear security. When the 2016 Nuclear Security Summit opens, leaders will have important questions to answer: Will they take the difficult steps needed to better protect against nuclear theft, attack, and sabotage? Will they work together to build the global architecture needed to protect against catastrophic nuclear terrorism? Will they sustain the momentum that the summit process created?

We at NTI believe leaders must show even greater resolve today in the face of escalating threats. Because the consequences of an act of nuclear terrorism would reverberate around the globe, leaders also have an obligation to work together. We are in a race between cooperation and catastrophe, and the world's leaders must run faster.

Sam Nunn
Co-Chairman and Chief Executive Officer
Nuclear Threat Initiative

EXECUTIVE SUMMARY
Slowed Momentum on Nuclear Security

Six years ago, world leaders gathered for the first time to collectively address the growing threat of catastrophic nuclear terrorism. At that first Nuclear Security Summit in 2010, the leaders launched a major initiative to lock down the more than 2,000 metric tons of weapons-usable nuclear materials then spread across the globe and to reduce stocks of plutonium and highly enriched uranium, which are the key ingredients needed to build a nuclear weapon.

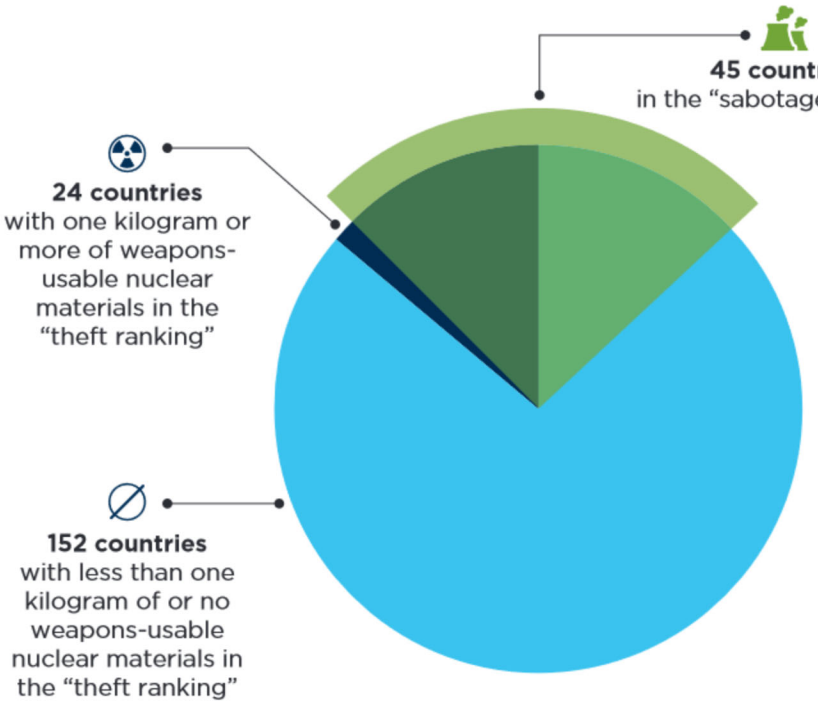
Today, as leaders prepare to gather in Washington, D.C., for their fourth and final summit, they can cite progress on their pledge to protect vulnerable nuclear materials from theft by terrorists seeking weapons of mass destruction and to build a robust nuclear security system involving all states in the ongoing protection of dangerous nuclear materials. Since early 2010, a dozen countries have eliminated weapons-usable nuclear materials from their territories, dozens more have strengthened their nuclear security practices and policies, and a key international treaty is closer to entry into force.

However, the global threat environment has worsened. At the same time, progress on goals set during the first three summits has slowed, according to the results of the 2016 NTI Nuclear Security Index (NTI Index). It's a troubling development at a time of escalating and evolving threats from sophisticated and well-financed terrorist organizations, from nuclear smugglers, and from hackers capable of launching devastating cyber attacks at nuclear facilities.

In addition, the current global nuclear security system still has major gaps that prevent it from being truly comprehensive and effective. For instance, no common set of international standards and best practices exists, there is no mechanism for holding states with lax security accountable, and the legal foundation for securing materials is neither complete nor universally observed.

Without a comprehensive and effective global system in place, states' approaches to nuclear security continue to vary widely, thereby creating dangerous weak links that terrorists could exploit as they seek the easiest path to weapons-usable nuclear materials.

COUNTRIES INCLUDED IN THE THEFT AND SABOTAGE RANKINGS



All 45 countries in the sabotage ranking also are included in one of the two versions of the theft ranking—22 of the 45 countries have one kilogram or more of weapons-usable nuclear materials, and 23 of the 45 countries have less than one kilogram of or no weapons-usable nuclear materials. Two countries with weapons-usable nuclear materials—Belarus and Italy—have highly enriched uranium in storage, but do not have a nuclear power plant or research reactor, and are not included in the sabotage ranking.

Given the global challenges in the past two years—from an increase in terrorist atrocities in the Middle East to deepening tensions across the Euro-Atlantic region to the complex negotiations over Iran's nuclear program and threats out of North Korea—there's no question that it has been a challenging time for governments to keep nuclear materials security atop their priority lists.

As leaders prepare for the fourth and final Nuclear Security Summit in Washington this spring, it is also fair to acknowledge that six years is a relatively short time in which to initiate and execute major changes in the perception of threats and priorities.

In addition to assessing the risks posed by vulnerable nuclear materials and insufficient security policies in states that don't have materials, the 2016 NTI Index assesses for the first time the potential risks to nuclear facilities posed by sabotage and cyber attack. The NTI Index assesses progress, highlights areas for improvement, and offers recommendations for action.

SLOWED PROGRESS: THE NTI INDEX DATA

Progress on reducing the amount of dangerous nuclear materials worldwide and on better securing existing stocks has slowed. Since 2014, no improvements have been made in the core protection and control measures assessed by the NTI Index, including on-site physical protection, control and accounting, insider threat prevention, physical security during transport, or response capabilities. The 2016 NTI Index also finds that across the entire Index, 43 improvements have been made since 2014, compared with 59 improvements found in the 2014 NTI Index.

In addition, the 2016 NTI Index finds that only one state from the "theft ranking" for countries with one kilogram or more of weapons-usable nuclear materials, Uzbekistan, has removed its materials in the past two years—compared with seven states that had removed their materials in the two years before the 2014 NTI Index was published.

HOW THE **THEFT RANKING** MEASURES NUCLEAR SECURITY CONDITIONS

The theft ranking assesses countries with weapons-usable nuclear materials based on these five categories. Countries without materials were assessed on three categories.

KEY

Countries with weapons-usable nuclear materials

Countries without weapons-usable nuclear materials

*This indicator does not apply to countries without nuclear materials.

Note: For information about data sources used for scoring, see the full EIU Methodology at www.ntiindex.org.

HOW THE **SABOTAGE RANKING** MEASURES NUCLEAR SECURITY CONDITIONS

The sabotage ranking assesses countries with nuclear facilities based on these five categories.

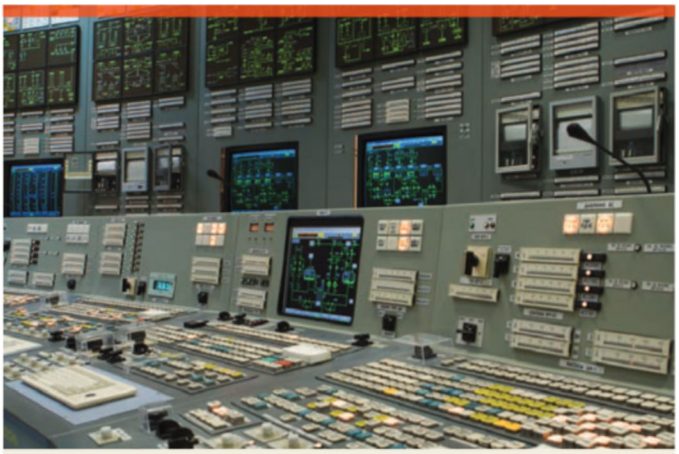
Note: For information about data sources used for scoring, see the full EIU Methodology at www.ntiindex.org.

Jamaica, which already had less than one kilogram of weapons-usable nuclear materials, also removed its materials.

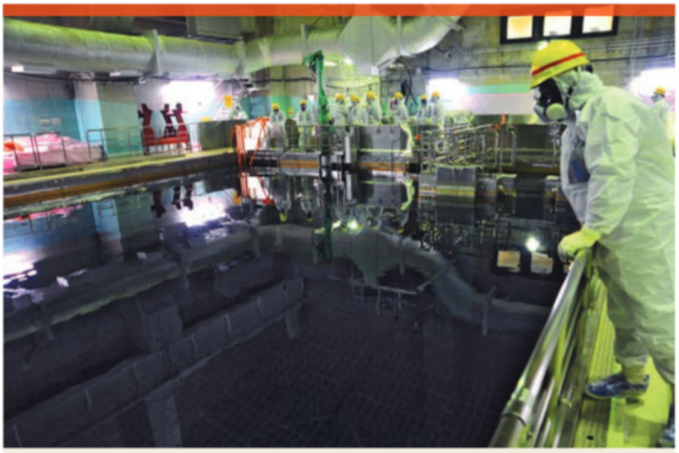
Finally, the NTI Index identifies a trend toward a plateau or even an increase in nuclear material stockpiles, with the end of the U.S.-Russia HEU Purchase Agreement and with India, Japan, the Netherlands, North Korea, Pakistan, and the United Kingdom all increasing their stocks of weapons-usable materials over the past four years.

ILL-PREPARED FOR THE EMERGING CYBER THREAT

With evolving global threats in mind, this year's NTI Index assesses for the first time how states are protecting their nuclear facilities against cyber threats. Like critical infrastructure, nuclear facilities are not immune to cyber attack—a particular concern, given the potentially catastrophic consequences. Such an attack could facilitate the theft of nuclear materials or an act of sabotage.



Nuclear facility control rooms are increasingly digitized and vulnerable to cyber attacks.



An act of sabotage at a nuclear facility that affects cooling systems could lead to a significant radiological release similar to the disaster at Fukushima.

The 2016 NTI Index includes a set of basic indicators relating to cybersecurity, and the results show that although some countries have been taking steps to protect nuclear facilities from cyber attack, many do not yet have the laws and regulations needed to provide effective cybersecurity:

- Too many states require virtually no effective security measures at nuclear facilities to address the threat posed by hackers.
- Of the 24 countries with weapons-usable nuclear materials, 9 received a maximum score for the cybersecurity indicator; 7 states scored 0. Of the 23 countries that have nuclear facilities but no weapons-usable nuclear materials, 4 received a maximum score for the cybersecurity indicator; 13 states scored 0, including some that are expanding the use of nuclear power.
- In the past two years, eight countries with weapons-usable nuclear materials have updated their laws and regulations with respect to cybersecurity at nuclear facilities. In the period between 2012 and 2014, nine countries made similar updates.

KEY SHORTFALLS IN PROTECTING NUCLEAR FACILITIES FROM SABOTAGE

Also for the first time, the NTI Index assesses nuclear security conditions related to the protection of nuclear facilities against acts of sabotage. This new set of rankings assesses 45 countries where an act of sabotage against a nuclear facility could result in a significant radiological release similar in scale to the release in Japan in 2011 when a tsunami hit the Fukushima Daiichi Nuclear Power Plant.

Once again, the 2016 NTI Index finds shortfalls. In addition to the concerns related to cybersecurity, many developing states, including those actively considering the introduction of nuclear energy, are struggling to put in place the measures necessary to protect nuclear facilities from sabotage.

AFTER THE SUMMIT: SUSTAIN PROGRESS ON DEVELOPMENT OF A GLOBAL SYSTEM

In the 2014 Nuclear Security Summit Communiqué, leaders wrote, "Continuous efforts are needed to achieve our common goal of strengthening the international nuclear

security architecture, and we recognize that this is an ongoing process."

As the high-profile Nuclear Security Summit process comes to a close, reaching agreement on an ongoing process to build an effective global nuclear security system and to sustain high-level political attention on nuclear security must be a top priority. This NTI Index offers specific recommendations for the global community to sustain progress in the short and longer term, including (a) identifying a coalition of willing partners who will maintain momentum; (b) tracking and catalyzing future progress through the Convention on the Physical Protection of Nuclear Material, the key legal agreement underpinning nuclear materials security; and (c) providing appropriate resources to the International Atomic Energy Agency (IAEA) to meet an expanded role.

Next is a summary of observations and recommendations. Comprehensive results, country-specific recommendations, methodology, and more resources are available at www.ntiindex.org.

OBSERVATIONS: THE STATE OF NUCLEAR SECURITY

Key Trends

Progress in securing and eliminating materials has slowed. In the 2016 NTI Index, no improvements have been made in the core protection and control measures assessed by the NTI Index, which include (a) on-site physical protection, (b) control and accounting, (c) the ability to mitigate the insider threat, (d) physical security during transport, and (e) response capabilities—a troubling finding. In addition, since the last NTI Index, a single country from the theft ranking for countries with one kilogram or more of weapons-usable nuclear materials—Uzbekistan—removed all of its weapons-usable nuclear materials. In 2014, seven states were on that list. Jamaica, which already had less than one kilogram of weapons-usable nuclear materials, also removed its quantities.

On the upside, of the 24 countries with materials, 4 became parties to key international agreements related to nuclear materials security, 6 made new voluntary commitments (such as contributing to the IAEA Nuclear Security Fund), and 8 passed or updated laws and regulations on cybersecurity. Twelve other states have decreased their quantities of materials over the most recent four-year period measured.

Global stocks of weapons-usable nuclear materials have decreased overall, but trends point to an increase in the near future. Twelve of the 24 countries with materials—including nuclear-armed France, Russia, and the United States—decreased their quantities of weapons-usable nuclear materials over the most recent four-year period measured by the NTI Index, and Uzbekistan removed all of its weapons-usable nuclear material.

Despite that progress, trends indicate that global stocks are expected to plateau or even increase in the immediate future. Japan, the Netherlands, and the United Kingdom

WHAT AN EFFECTIVE GLOBAL SYSTEM TO SECURE NUCLEAR MATERIALS SHOULD LOOK LIKE

Over three years, NTI worked with senior government officials, representatives from international organizations such as the International Atomic Energy Agency, leading experts, and nuclear industry representatives to reach a consensus on the following four elements of an effective global nuclear security system:

1. All weapons-usable nuclear materials and facilities should be covered by the system, including materials outside civilian programs (or "military materials").
2. All states and facilities holding those materials should adhere to international standards and best practices.
3. States should help build confidence in the effectiveness of their security practices and should take reassuring actions to demonstrate that all nuclear materials and facilities are secure.
4. States should work to reduce risk through minimizing or, where feasible, eliminating weapons-usable nuclear materials stocks and the number of locations where they are found.

have increased quantities for their civilian nuclear energy sectors; India and Pakistan have increased quantities for both civilian and military purposes; and North Korea is taking new steps to produce new weapons-usable nuclear materials.

States without materials are supporting global norms and implementing international commitments. Notable security improvements have been made among the 152 states with less than one kilogram of or no weapons-usable materials—important because those states' territories could be used as safe havens, staging grounds, or transit points for terrorist operations. Of the 152 states, Sweden ranks first, and Djibouti is most improved. The majority of improvements involved states becoming parties to key international legal agreements and making voluntary commitments to support global security efforts.

Remaining Challenges

The Nuclear Security Summits have had a positive effect, but the strategic goal of developing an effective global nuclear security system remains unachieved. The summits have placed an important spotlight on the urgency of nuclear materials security and have raised it to the head-of-state level. A number of states have eliminated all of their inventories of weapons-usable nuclear materials, a significant achievement. Yet despite recent progress toward the goal of securing all weapons-usable nuclear materials, the current global system for securing nuclear materials still has major gaps that prevent it from being truly comprehensive and effective.

For example, no common set of international standards and best practices exists, there is no mechanism for holding states with lax security accountable, and the legal foundation for securing materials is neither complete nor universally observed. In addition, 83 percent of all stocks are military materials and thus remain outside existing international security mechanisms, such as the IAEA guidelines for the protection of civilian materials.

Finally, participation in international peer review—a tool for improving performance and building confidence in others about the effectiveness of a state's security—or other measures that would build confidence in the security of materials remain limited. Of the 24 states with weapons-usable nuclear materials, 16 have had a nuclear security peer review in the past five years, and 7 have never had one. As the threats escalate, it is therefore clear that the summits have not achieved the essential goal of developing an effective global nuclear security system that fully addresses and fills current systemic gaps. With the summit process coming to a close, it may be even more difficult to sustain the political attention and momentum needed to fill those gaps.

Countries with new or emerging nuclear energy programs struggle to meet the threat. Of the 45 states in the new sabotage ranking, 23 have less than one kilogram of or no weapons-usable nuclear materials but are included because they have nuclear power reactors or research reactors with a capacity of two megawatts or greater. Many of them are developing countries or countries with new programs (or are considering them) and have yet to establish effective nuclear security regimes. For instance, Chile, Egypt, and Indonesia are considering new nuclear energy programs but do not yet have the legal and regulatory structure in place that is required for effective

COUNTRY HIGHLIGHTS

Theft Ranking

- Australia again ranks first among 24 states with weapons-usable nuclear materials.
- Japan is the most improved state. France, the United States, and the United Kingdom score the highest among nuclear-armed states.
- The United States, India, Russia, and the United Kingdom are the most improved nuclear-armed states.
- Among states with less than one kilogram of or no weapons-usable nuclear materials, Sweden ranks first, and Djibouti is the most improved.

Sabotage Ranking

- Finland ranks first among the 45 states that have nuclear facilities vulnerable to sabotage.

See additional country highlights beginning on page 36.

THE CYBER THREAT

The cyber threat has expanded exponentially in recent years, with a series of damaging, high-profile attacks that have made headlines around the world. Recent attacks against banking and commerce systems, private companies, and national governments highlight the growing gap between the threat and the ability to respond to or manage it.

Like all critical infrastructure, nuclear facilities are not immune to cyber attack. That reality is particularly worrisome, however, given the potentially catastrophic consequences of a cyber attack on a nuclear facility. Such an attack could facilitate the theft of nuclear materials or an act of sabotage. For example, access control systems could be compromised, thus allowing the entry of unauthorized persons seeking to obtain nuclear material or to damage the facility. Accounting systems could be manipulated so that the theft of material goes unnoticed. Reactor cooling systems could be deliberately disabled, resulting in a Fukushima-like disaster.

Government authorities and facility operators are struggling to keep pace with this new threat, and national and international guidance is still evolving. With the increasing use of digital systems, such challenges will only continue to grow.

Given the vulnerabilities and potentially serious consequences, cybersecurity at nuclear facilities has recently received greater attention at the IAEA, among national regulators and facility operators, and within the Nuclear Security Summit process. In recognition of the growing threat, the 2016 NTI Index now includes a cybersecurity indicator to provide a more complete picture of nuclear security around the world.

The new cybersecurity indicator, included in both the theft ranking and sabotage ranking, asks the following four questions:

- Do domestic laws, regulations, or licensing requirements require nuclear facilities to have protection from a cyber attack?
- Do domestic laws, regulations, or licensing requirements require nuclear facilities to protect critical digital assets from a cyber attack?
- Does the state consider cyber threats in its threat assessment or design basis threat for nuclear facilities?
- Does the regulator require a performance-based program, which includes tests and assessments of cybersecurity at nuclear facilities?

Those questions were designed and selected with input from the International Panel of Experts, as well as the results of a study funded by NTI and conducted by the Institute for Safety and Security at the Brandenburg University of Applied Sciences to characterize the cyber-nuclear security regulatory frameworks in five different countries. For more information about this study and NTI's cyber-nuclear security program, see www.nti.org/cyber.

security. In addition, some states with established nuclear energy programs, such as South Korea and Taiwan,[1] received scores in the Security and Control Measures category that were average for countries with nuclear power.

Nuclear facilities are not prepared for the growing cyber threat. Of the 24 states with weapons-usable nuclear materials and the 23 states that have nuclear facilities but no weapons-usable nuclear materials, 13 receive a maximum score for cybersecurity: Australia, Belarus, Bulgaria, Canada, Finland, France, Hungary, the Netherlands, Russia, Switzerland, Taiwan, the United Kingdom, and the United States. Twenty states score 0 and

[1] For information on Taiwan's status and its treatment in the NTI Index, see the full EIU Methodology at www.ntiindex.org.

Although the Fukushima disaster was triggered by a tsunami, this type of catastrophe also could be caused by an act of sabotage.

Uzbekistan removed all of its materials in 2015. Here, highly enriched uranium (HEU) fuel is being returned to Russia.

do not even have basic requirements to protect nuclear facilities from cyber attacks.

RECOMMENDATIONS: AN AGENDA FOR ASSURANCE, ACCOUNTABILITY, AND ACTION

Building an Effective Global Nuclear Security System

Although states have begun to think more globally about their nuclear security responsibilities—shifting from the view that security is only a sovereign responsibility—there is still no effective global system in place for securing all weapons-usable nuclear materials. A truly effective global system is one that would cover all materials, including "military materials," where all states and facilities would adhere to international standards and best practices, where states would take reassuring actions to build confidence in the effectiveness of the security of their materials, and where states would reduce risks through minimizing or, where feasible, eliminating stocks of weapons-usable nuclear materials and the number of locations where they are found.

To build such a system, states need to address critical gaps, specifically:

- **Strengthen and build confidence in the security of military materials.** States with military materials should secure those materials to the same or higher standards as civilian materials, including through the application of standards and best practices that are at least consistent with IAEA nuclear security guidelines, and these states should take steps to reassure others that they are securing the materials properly.
- **Bolster the international legal foundation for nuclear security.** To move closer to a common set of guidelines and best practices that states can apply, all states must become parties to the International Convention for the Suppression of Acts of Nuclear Terrorism and the Convention on the Physical Protection of Nuclear Material (CPPNM) and must work to bring the 2005 Amendment to the CPPNM into force. Even before signing or ratifying those conventions, states should voluntarily implement the requirements and should publicize those actions when they do. Finally, states should also implement IAEA nuclear security guidance.
- **Increase international confidence in the effectiveness of nuclear security, and help build accountability.** Words alone are not enough to give states confidence in one another's security practices. States must take specific steps to assure others and be held accountable for their actions, such as

ADDRESSING SABOTAGE

On March 11, 2011, a tsunami caused by a major earthquake slammed into the Fukushima Daiichi Nuclear Power Plant in Japan, disabling the backup power supplies and cooling ability of three of the plant's reactors. The loss caused a partial meltdown of three of the reactor cores, resulting in a significant radioactive release and leading to the evacuation of people within 20 kilometers of the plant. The accident brought comparisons to perhaps the world's most infamous nuclear disaster, the 1986 accident at Chernobyl, Ukraine, where a routine test went wrong, causing a catastrophic release of radiation.

Neither of those events was the result of sabotage, but an attack that deliberately disrupts or damages a nuclear facility—through a physical attack, a cyber attack, or a combination of both—could produce a similar release of radiation. Given these widespread dangers, the 2016 NTI Index includes the first-ever assessment of nuclear security conditions related to the protection of nuclear facilities against acts of sabotage.

To assess the quality of states' protections against sabotage, NTI considered facilities, the sabotage of which could result in a significant radiological release causing serious off-site health consequences. The assessment includes 45 countries that have one or more of the following facilities:

- Operating nuclear power reactors or nuclear power reactors that have been shut down within the last five years
- Research reactors with a capacity of two megawatts or greater
- Reprocessing facilities
- Spent fuel pools, only if the fuel has been discharged in the last five years and if not associated with an operating reactor.

With input from the International Panel of Experts and other outside advisors, the NTI Index framework was adjusted for sabotage. Although most measures to protect against theft apply equally to protecting nuclear facilities against sabotage, there are some differences, such as the focus on protecting certain equipment, systems, and devices that, if damaged, could lead to a radiological release.

Twenty-three of those countries have less than one kilogram of or no weapons-usable nuclear materials, and therefore their security measures are being assessed for the first time.

participating in peer reviews and publishing nuclear security regulations. States should make voluntary commitments, such as (a) contributing to organizations that promote best practices, (b) participating in workshops and training on security, and (c) providing security assistance to other states.

- **Commit to further decreasing stocks of weapons-usable nuclear materials.** The more material and sites, the greater the exposure to risk of theft, so all states should work to minimize their use of weapons-usable nuclear materials in civilian energy programs, and they should reduce or eliminate stockpiles of those materials where possible.

Sustaining High-Level Political Attention on Nuclear Security

If the summits end without a mechanism to enable continued progress and to ensure implementation of existing commitments, nuclear security efforts risk backsliding. Defining a path to sustain momentum and high-level attention must be a priority for the 2016 summit.

Countries meet at the IAEA in 2014 to encourage entry into force of the 2005 Amendment to the Convention on the Physical Protection of Nuclear Material, a key goal of the summit process.

To sustain progress in both the short and longer terms, leaders need to identify a coalition of willing partners who will maintain momentum; track and catalyze future progress through the CPPNM, which is the key legal agreement underpinning nuclear materials security; and provide appropriate resources to the IAEA to meet an expanded role.

Improving Individual State Stewardship of Nuclear Materials

To improve their stewardship, states should take the following actions:

- **Strengthen cybersecurity at nuclear facilities and build technical capacity.** Governments should include the cyber threat within the national threat assessment for their nuclear facilities and should put in place a clear set of laws, regulations, standards, and licensing requirements for all nuclear facilities that require protection of digital systems from cyber attack. At the facility level, leadership must prioritize cybersecurity, determine potential consequences, and ensure that digital assets and networks are characterized and secure and that security systems are routinely tested.
- **Improve security and control measures to protect materials from theft and facilities from sabotage.** States and private industry should protect against theft and sabotage by strengthening physical protection and control and accounting measures. At a minimum, nuclear security laws and regulations should be in line with IAEA guidance, and states and private industry should take the radiological consequences of an act of sabotage into account when designing physical protection. States and plant owners should also (a) continually test whether their security is adequate, (b) build a culture of security excellence at facilities, and (c) encourage the exchange of best practices.
- **Ensure that effective nuclear security regimes are in place before building nuclear energy programs.** Before or in tandem with planning new nuclear energy programs, states must put the necessary legal and regulatory frameworks in place for proper security. States should turn to the IAEA, the World Institute for Nuclear Security, and other states with established programs for guidance.
- **Establish independent regulatory agencies, and strengthen existing ones.** Without an independent agency, it is impossible to regulate security and provide oversight and accountability for those with nuclear security responsibilities, and states cannot reassure themselves or others that their nuclear materials are accounted for and safe.
- **Deliver on nuclear security commitments.** Many commitments made at the 2010, 2012, and 2014 Nuclear Security Summits have not yet been fulfilled, including important pledges related to securing radioactive sources, which are not covered by the NTI Index. Governments must first and foremost fulfill those pledges and also share appropriate information to enable accurate tracking in the future.

For more on the radiological threat, visit www.nti.org.

MAP AND RESULTS TABLES

The map and tables on the following pages provide high-level results for the NTI Index theft ranking for countries with materials and countries without materials, and for the NTI Index sabotage ranking. The tables provide country rankings and scores, overall and by each category. The two theft ranking tables also include changes from 2014 and cumulative changes from 2012, when the first NTI Index was released.

As a result of changes to the theft ranking framework, comparisons between the 2016 edition and previous editions would not have been possible. To allow for accurate year-on-year comparisons, the EIU rescored the previous editions using the new framework. The EIU also reviewed newly available information and made updates or corrections to past data, where necessary. The scores and changes in scores included in this report reflect these updates.

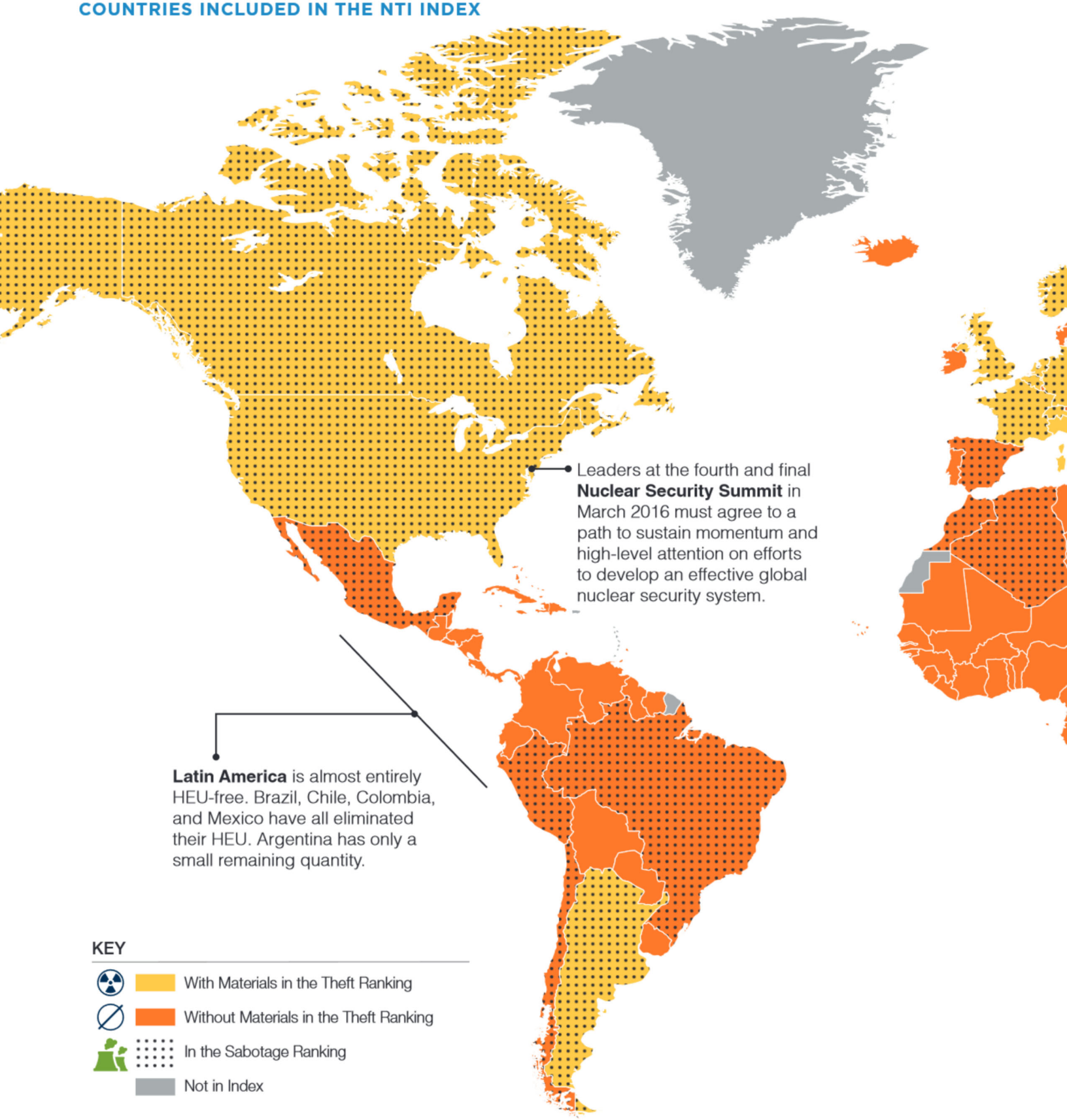
Overall scores are calculated using a weighted sum of category and indicator scores. A full discussion of categories, indicators, and their weighting is included in the EIU Methodology at www.ntiindex.org.

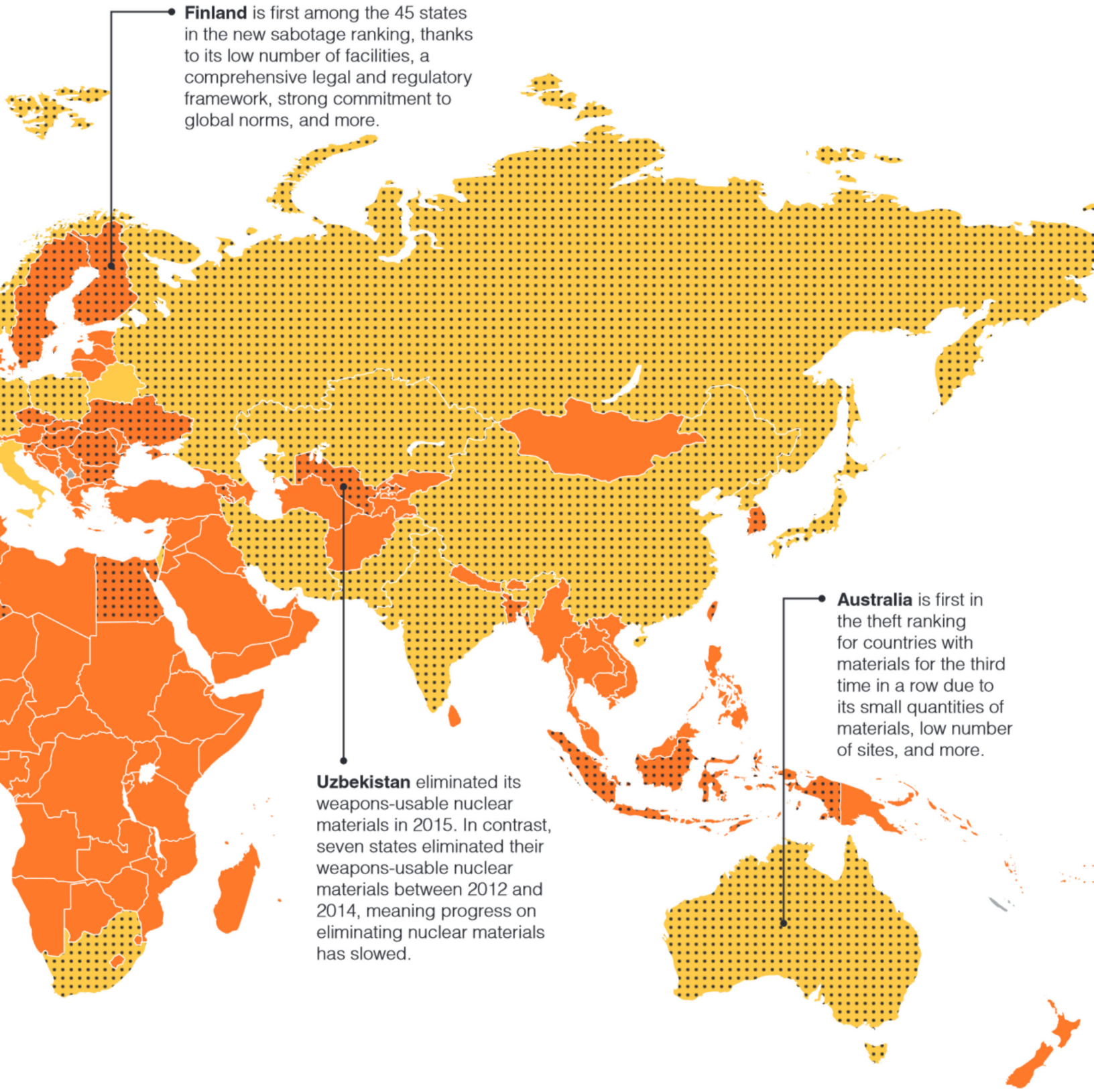
Country rankings preceded by an equal sign (=) indicate a tie with other countries.

Overall and category scores range from 0-100, where 100 equals the most favorable nuclear security conditions. In the NTI Index, scores of 0 and 100 represent the lowest or highest possible score, respectively, as measured by the NTI Index criteria.

The number of countries in the NTI Index was determined by the scope of the Economist Intelligence Unit's Risk Briefing service, which includes almost all countries in the world.

COUNTRIES INCLUDED IN THE NTI INDEX




Finland is first among the 45 states in the new sabotage ranking, thanks to its low number of facilities, a comprehensive legal and regulatory framework, strong commitment to global norms, and more.
Australia is first in the theft ranking for countries with materials for the third time in a row due to its small quantities of materials, low number of sites, and more.
Uzbekistan eliminated its weapons-usable nuclear materials in 2015. In contrast, seven states eliminated their weapons-usable nuclear materials between 2012 and 2014, meaning progress on eliminating nuclear materials has slowed.

THEFT RANKING: COUNTRIES WITH WEAPONS-USABLE NUCLEAR MATERIALS

OVERALL SCORE

Rank / 24		Score / 100	Change since 2014	Change since 2012
1	Australia	93	0	+3
2	Switzerland	91	+2	+4
3	Canada	87	+2	+8
4	Poland	84	+3	+7
=5	Belgium	83	+3	+13
=5	Germany	83	+1	+6
=5	Norway	83	+2	+5
=8	Belarus	81	0	+7
=8	France	81	+1	+3
10	United States	80	+3	+2
=11	Netherlands	79	-1	0
=11	United Kingdom	79	+2	+2
13	Japan	78	+4	+12
14	Italy	75	+3	+3
15	Argentina	73	0	+4
16	South Africa	71	+3	+3
17	Kazakhstan	66	0	0
18	Russia	64	+2	+2
19	China	60	+1	+3
20	Israel	55	0	+1
21	India	46	+2	+4
22	Pakistan	42	0	+4
23	Iran	35	0	0
24	North Korea	24	-4	-4

1. QUANTITIES AND SITES

Rank / 24		Score / 100	Change since 2014	Change since 2012
=1	Argentina	100	0	+5
=1	Australia	100	0	+5
3	Poland	90	+6	+12
4	Iran	89	0	0
5	Norway	88	0	-6
6	South Africa	79	0	0
7	Switzerland	78	+6	+6
=8	Belarus	73	-5	-5
=8	Italy	73	0	0
10	Canada	67	0	0
=11	Belgium	62	+6	+6
=11	Germany	62	0	0
13	Kazakhstan	57	0	-6
14	Netherlands	50	-22	-22
15	Israel	44	0	0
16	France	39	0	0
17	North Korea	38	-17	-17
18	China	34	0	0
=19	Russia	23	0	0
=19	United States	23	0	0
=21	India	22	0	0
=21	Japan	22	0	0
=21	Pakistan	22	0	0
24	United Kingdom	11	0	0

2. SECURITY AND CONTROL MEASURES

Rank / 24		Score / 100	Change since 2014	Change since 2012
1	Switzerland	100	+2	+7
2	United States	98	0	0
3	Belarus	97	0	+21
4	United Kingdom	96	+3	+3
5	Canada	94	+8	+19
6	Australia	90	0	+3
7	France	89	+3	+3
8	Germany	86	0	+16
=9	Japan	82	0	+9
=9	Netherlands	82	+10	+14
11	Belgium	81	0	+30
12	Russia	80	+10	+10
=13	Italy	76	0	0
=13	Poland	76	0	+12
15	China	62	0	0
=16	Kazakhstan	61	0	0
=16	Norway	61	0	+5
18	South Africa	59	+5	+8
19	Israel	56	0	0
20	Argentina	50	0	0
21	India	46	0	0
22	North Korea	38	0	0
=23	Iran	36	0	0
=23	Pakistan	36	+2	+10

Overall and category scores and ranks for 2016 are shown.
All countries are scored 0–100, where 100 = most favorable nuclear materials security conditions.
= denotes tie in rank.

COUNTRIES WITH WEAPONS-USABLE NUCLEAR MATERIALS *(cont'd)*

3. GLOBAL NORMS

Rank / 24		Score / 100	Change since 2014	Change since 2012
=1	Australia	100	0	+8
=1	Belgium	100	+12	+21
=1	France	100	0	+17
=1	Japan	100	+27	+27
=1	Russia	100	0	0
=1	United Kingdom	100	0	0
=1	United States	100	+17	+17
8	Canada	94	0	+17
=9	Kazakhstan	88	0	+6
=9	Netherlands	88	0	0
=9	Norway	88	+15	+15
=9	Poland	88	+6	+6
=9	Switzerland	88	0	0
=14	Germany	81	0	0
=14	India	81	+5	+16
16	Argentina	80	0	+22
17	China	76	0	+5
18	Belarus	74	+6	+6
19	South Africa	69	+12	+7
20	Italy	67	+9	+9
21	Israel	55	0	+8
22	Pakistan	51	0	0
23	Iran	12	0	0
24	North Korea	0	0	0

4. DOMESTIC COMMITMENTS AND CAPACITY

Rank / 24		Score / 100	Change since 2014	Change since 2012
=1	Australia	100	0	0
=1	Belgium	100	0	0
=1	Germany	100	0	0
=1	Italy	100	0	0
=1	South Africa	100	0	0
=1	Switzerland	100	0	0
=7	Canada	96	0	0
=7	France	96	0	0
=7	Japan	96	0	+27
=7	Netherlands	96	0	0
=7	Norway	96	0	0
=7	Poland	96	0	0
=7	United Kingdom	96	0	0
14	United States	93	0	-3
=15	Argentina	92	0	0
=15	Belarus	92	0	0
=15	Kazakhstan	92	0	0
18	Russia	89	0	0
19	Pakistan	85	0	0
20	China	81	0	0
21	Israel	66	0	0
22	India	50	+3	+3
23	Iran	15	0	0
24	North Korea	4	0	0

5. RISK ENVIRONMENT

Rank / 24		Score / 100	Change since 2014	Change since 2012
1	Norway	97	0	+14
2	Japan	83	0	-1
=3	Canada	79	0	0
=3	Germany	79	+5	+6
=3	Switzerland	79	0	+1
6	Australia	76	0	0
7	Netherlands	75	0	0
8	Poland	74	+3	+3
9	United Kingdom	72	+6	+4
=10	Belgium	71	0	0
=10	France	71	0	-2
=10	United States	71	0	0
13	Argentina	58	0	0
=14	Belarus	55	0	+6
=14	South Africa	55	0	-2
16	Italy	53	+5	+4
17	Israel	52	0	0
18	China	40	+5	+7
19	North Korea	34	-8	-8
20	Iran	32	0	+1
21	Kazakhstan	31	-3	-3
22	India	29	0	0
23	Pakistan	16	0	+6
24	Russia	14	-4	-4

Overall and category scores and ranks for 2016 are shown.
All countries are scored 0–100, where 100 = most favorable nuclear materials security conditions.
= denotes tie in rank.

THEFT RANKING: COUNTRIES WITHOUT WEAPONS-USABLE NUCLEAR MATERIALS

OVERALL SCORE

Rank / 152		Score / 100	Change since 2014	Change since 2012
1	Sweden	98	+2	+6
2	Finland	97	+1	+1
3	Denmark	95	-4	-4
4	Slovenia	91	0	0
=5	Czech Republic	90	+2	+1
=5	Hungary	90	+3	+5
=5	Lithuania	90	0	+2
=5	New Zealand	90	+2	+2
=5	Portugal	90	+5	+13
=5	South Korea	90	+8	+8
11	Slovakia	89	-1	+3
12	Spain	88	-1	-2
=13	Austria	87	0	-1
=13	Latvia	87	-1	-1
=15	Iceland	86	+4	+4
=15	Romania	86	+3	+3
=17	Estonia	85	+2	+2
=17	Luxembourg	85	0	+4
=19	Chile	84	+2	+2
=19	Cyprus	84	+3	+6
=19	Malta	84	0	+8
22	Mexico	82	0	+6
23	Bulgaria	80	-1	-1
=24	Armenia	79	0	+4
=24	United Arab Emirates	79	0	-2
26	Brazil	78	+3	+5
=27	Croatia	77	+3	+3
=27	Ireland	77	+4	+1
=27	Turkey	77	+7	+10
=27	Ukraine	77	-2	-2
=31	Macedonia	76	+3	+7
=31	Serbia	76	+2	+2
=33	Peru	75	+7	+7
=33	Singapore	75	+11	+11
35	Georgia	73	+4	+8
=36	Cuba	72	-2	+2
=36	Greece	72	0	+1
=36	Jordan	72	+3	+3

3. GLOBAL NORMS

Rank / 152		Score / 100	Change since 2014	Change since 2012
=1	Czech Republic	100	+7	+7
=1	Denmark	100	0	0
=1	Finland	100	0	0
=1	Hungary	100	+15	+15
=1	Lithuania	100	0	+7
=1	Romania	100	+7	+7
=1	Saudi Arabia	100	+7	+15
=1	South Korea	100	+25	+25
=1	Spain	100	0	0
=1	Sweden	100	+13	+25
=1	Ukraine	100	0	0
=12	Armenia	93	0	+13
=12	Chile	93	+8	+8
=12	Croatia	93	+8	+8
=12	Cyprus	93	+8	+20
=12	Georgia	93	0	+13
=12	Latvia	93	0	0
=12	Libya	93	+8	+8
=12	Macedonia	93	+8	+20
=12	Malta	93	0	+26
=12	Mexico	93	0	+20
=12	Moldova	93	0	+8
=12	Portugal	93	+13	+13
=12	Slovakia	93	0	+13
=12	Slovenia	93	0	0
=12	Turkey	93	+20	+33
=12	United Arab Emirates	93	0	-7
=12	Uzbekistan	93	0	+20
=29	Estonia	87	+7	+7
=29	Ireland	87	+12	+12
=29	Morocco	87	+7	+7
=32	Austria	85	0	0
=32	Bahrain	85	0	0
=32	Djibouti	85	+32	+32
=32	Dominican Republic	85	+12	+20
=32	Luxembourg	85	0	+12
=32	Tunisia	85	+7	+7
=32	Turkmenistan	85	0	0

Overall and category scores and ranks for 2016 are shown.
All countries are scored 0–100, where 100 = most favorable nuclear materials security conditions.
= denotes tie in rank.

COUNTRIES WITHOUT WEAPONS-USABLE NUCLEAR MATERIALS *(cont'd)*

4. DOMESTIC COMMITMENTS AND CAPACITY

Rank / 152		Score / 100	Change since 2014	Change since 2012
=1	Albania	100	0	0
=1	Austria	100	0	0
=1	Bulgaria	100	0	0
=1	Czech Republic	100	0	0
=1	Denmark	100	0	0
=1	Estonia	100	0	0
=1	Finland	100	0	0
=1	Hungary	100	0	+4
=1	Latvia	100	0	0
=1	Lithuania	100	0	0
=1	Portugal	100	0	+21
=1	Romania	100	0	0
=1	Slovakia	100	0	0
=1	Slovenia	100	0	0
=1	South Korea	100	0	0
=1	Spain	100	0	0
=1	Sweden	100	0	0
=18	Brazil	96	0	0
=18	Iceland	96	0	0
=18	New Zealand	96	+5	+5
=18	Serbia	96	0	0
=22	Armenia	93	0	0
=22	Bosnia and Herzegovina	93	0	+4
=22	Mexico	93	0	0
=22	Taiwan	93	0	+6
=22	Turkey	93	0	0
=22	Ukraine	93	0	0
28	Guatemala	89	0	0
=29	Bangladesh	87	0	+21
=29	Jordan	87	+9	+9
=29	Peru	87	0	0
32	United Arab Emirates	85	0	0
=33	Macedonia	83	0	0
=33	Nicaragua	83	0	0
=33	Tajikistan	83	0	0
=36	Chile	80	0	0
=36	Indonesia	80	0	0
=36	Malta	80	0	0

5. RISK ENVIRONMENT

Rank / 152		Score / 100	Change since 2014	Change since 2012
1	New Zealand	99	+1	+3
2	Singapore	96	-2	-2
3	Sweden	94	-5	-5
=4	Finland	91	+4	+3
=4	Luxembourg	91	-2	-2
6	Iceland	87	0	0
=7	Barbados	85	0	0
=7	Denmark	85	-11	-11
=9	Chile	81	0	0
=9	Cyprus	81	+1	0
=9	Malta	81	+1	+1
12	Slovenia	78	0	0
=13	Bahamas	77	0	0
=13	Bhutan	77	+6	+6
=13	Botswana	77	0	0
=13	Costa Rica	77	0	0
=13	Taiwan	77	+1	+1
=18	Brunei	75	0	0
=18	Cape Verde	75	0	0
=18	Uruguay	75	0	0
=21	Austria	74	0	0
=21	Portugal	74	+3	+3
23	Slovakia	72	-2	-2
24	Seychelles	71	0	0
25	Mauritius	70	0	0
=26	Czech Republic	69	-1	-2
=26	Hungary	69	-3	-3
=26	Namibia	69	0	+2
29	South Korea	68	0	0
=30	Lithuania	67	+1	0
=30	Samoa	67	0	0
=32	Cuba	65	-5	-5
=32	Estonia	65	-1	-1
=32	Latvia	65	-2	-2
35	Ireland	64	+1	-9
=36	Ghana	62	-1	-1
=36	Senegal	62	+4	+12
=36	Spain	62	-3	-4

Overall and category scores and ranks for 2016 are shown.
All countries are scored 0–100, where 100 = most favorable nuclear materials security conditions.
= denotes tie in rank.

THEFT RANKING: COUNTRIES WITHOUT WEAPONS-USABLE NUCLEAR MATERIALS *(cont'd)*

OVERALL SCORE

Rank / 152		Score / 100	Change since 2014	Change since 2012
=36	Taiwan	72	+4	+7
40	Albania	71	+2	+2
=41	Bosnia and Herzegovina	70	+3	0
=41	Ghana	70	+2	+6
=41	Mongolia	70	+1	+1
44	Uruguay	68	0	0
45	Qatar	67	+8	+3
=46	Botswana	66	+4	+4
=46	Indonesia	66	+11	+11
=48	Jamaica	65	+8	+10
=48	Moldova	65	0	+9
=50	Algeria	64	0	+2
=50	Uzbekistan	64	0	+6
=52	Costa Rica	63	0	+4
=52	Morocco	63	-1	-1
=52	Seychelles	63	0	0
=52	Tajikistan	63	+4	+6
=56	Bangladesh	62	0	+8
=56	Guatemala	62	0	0
=56	Tunisia	62	+4	+5
=59	Montenegro	61	+2	+2
=59	Nicaragua	61	0	0
61	Azerbaijan	60	+2	+4
=62	Nigeria	59	+3	+7
=62	Rwanda	59	+1	+2
=64	Congo (Democratic Republic of)	58	+1	0
=64	Panama	58	+2	+2
=66	Bahrain	57	0	-1
=66	Gabon	57	+2	+2
=68	Dominican Republic	56	+4	+9
=68	Turkmenistan	56	+1	+1
70	Philippines	55	0	+2
=71	Burkina Faso	54	+6	+3
=71	Colombia	54	+4	+4
=71	Niger	54	0	-3
=74	Côte d'Ivoire	53	0	+25
=74	El Salvador	53	0	0
=74	Fiji	53	0	+3

3. GLOBAL NORMS

Rank / 152		Score / 100	Change since 2014	Change since 2012
=39	Azerbaijan	80	0	+7
=39	Bosnia and Herzegovina	80	+7	+7
=39	Bulgaria	80	0	0
=39	Greece	80	0	+5
=39	Iraq	80	+40	+65
=39	Jordan	80	0	-7
=39	Kyrgyz Republic	80	+25	+25
=39	Panama	80	0	0
=39	Singapore	80	+38	+38
=39	Tajikistan	80	+13	+20
=49	Algeria	78	0	+7
=49	Fiji	78	0	+7
=49	Indonesia	78	+33	+33
=49	Jamaica	78	+25	+25
=49	Kenya	78	0	0
=49	Nigeria	78	+7	+33
=49	Peru	78	+20	+20
=49	Qatar	78	+25	+25
=57	New Zealand	75	0	0
=57	Philippines	75	0	+8
=59	Afghanistan	73	0	+13
=59	Albania	73	0	+13
=59	Brazil	73	+8	+15
=59	Colombia	73	+13	+13
=59	Ghana	73	+8	+20
=59	Iceland	73	+13	+13
=59	Kuwait	73	+8	+20
=59	Mongolia	73	0	0
=59	Serbia	73	0	0
=59	Yemen	73	+33	+33
=69	Cuba	71	0	+13
=69	Gabon	71	0	0
=69	Lesotho	71	0	+13
=69	Mali	71	0	0
=69	Mauritania	71	0	0
=69	Niger	71	0	0
=75	Cambodia	67	0	0
=75	Montenegro	67	+7	+7

Overall and category scores and ranks for 2016 are shown.
All countries are scored 0–100, where 100 = most favorable nuclear materials security conditions.
= denotes tie in rank.

COUNTRIES WITHOUT WEAPONS-USABLE NUCLEAR MATERIALS *(cont'd)*

4. DOMESTIC COMMITMENTS AND CAPACITY

Rank / 152		Score / 100	Change since 2014	Change since 2012
=36	Uruguay	80	0	0
=40	Cuba	79	0	0
=40	Cyprus	79	0	0
=40	Greece	79	0	0
=40	Ireland	79	0	0
=40	Luxembourg	79	0	0
45	Mongolia	78	0	0
=46	Algeria	76	0	0
=46	Croatia	76	0	0
=46	Moldova	76	0	+21
=46	Tanzania	76	0	0
=46	Uzbekistan	76	0	0
=51	Botswana	74	0	0
=51	Ghana	74	0	0
=51	Morocco	74	0	0
=51	Nigeria	74	0	0
=55	Azerbaijan	73	+4	+4
=55	Congo (Democratic Republic of)	73	0	0
57	Rwanda	72	0	0
58	Uganda	69	0	0
59	Qatar	67	0	0
60	Georgia	66	0	0
61	Montenegro	64	0	0
=62	Jamaica	60	0	0
=62	Niger	60	0	0
=62	Philippines	60	0	0
65	Namibia	58	0	+5
=66	Burkina Faso	55	0	0
=66	Costa Rica	55	0	0
=66	Ecuador	55	0	0
=66	Mali	55	0	0
=66	Seychelles	55	0	0
=66	Singapore	55	0	0
=66	Tunisia	55	0	0
=73	Afghanistan	51	0	0
=73	Kenya	51	0	0
=73	Lebanon	51	0	0
=73	Paraguay	51	0	0

5. RISK ENVIRONMENT

Rank / 152		Score / 100	Change since 2014	Change since 2012
=39	Croatia	61	+1	+1
=39	Georgia	61	+12	+11
=41	Brazil	60	+1	+1
=41	Lesotho	60	0	+3
=43	Jamaica	59	+1	+6
=43	United Arab Emirates	59	0	+1
=45	Malaysia	58	+7	+7
=45	Mongolia	58	+3	+5
=45	Panama	58	+7	+7
=48	Belize	57	-2	-2
=48	Mexico	57	0	0
=48	Oman	57	+6	+4
=48	Peru	57	+3	+4
=52	Bulgaria	56	-2	-3
=52	Qatar	56	+2	-15
=52	Rwanda	56	+1	-1
=52	Zambia	56	0	0
=56	El Salvador	55	-1	-1
=56	Greece	55	+1	0
=56	Romania	55	+2	+2
=56	Tonga	55	0	-1
=56	Trinidad and Tobago	55	0	0
=56	Vanuatu	55	0	+2
62	Vietnam	54	-1	-1
=63	Dominican Republic	53	0	+10
=63	Serbia	53	+6	+6
=63	Suriname	53	0	0
=63	Swaziland	53	0	+2
=67	Gabon	52	0	0
=67	Kuwait	52	0	+1
=67	Montenegro	52	+1	+1
=70	Madagascar	51	-2	+6
=70	Sri Lanka	51	+1	-1
=72	Guyana	50	0	0
=72	Macedonia	50	0	0
=72	Mozambique	50	-2	-2
=72	Timor-Leste	50	0	+11
=76	Bolivia	49	+3	+2

Overall and category scores and ranks for 2016 are shown.
All countries are scored 0–100, where 100 = most favorable nuclear materials security conditions.
= denotes tie in rank.

THEFT RANKING: COUNTRIES WITHOUT WEAPONS-USABLE NUCLEAR MATERIALS *(cont'd)*

OVERALL SCORE

Rank / 152		Score / 100	Change since 2014	Change since 2012
=74	Namibia	53	0	+2
=74	Paraguay	53	-2	-2
=79	Kenya	52	0	-4
=79	Saudi Arabia	52	+4	+7
=79	Vietnam	52	+1	+15
82	Tanzania	51	0	0
=83	Djibouti	50	+13	+13
=83	Lebanon	50	0	0
=83	Uganda	50	+2	+3
=86	Ecuador	49	0	+1
=86	Kuwait	49	+2	+8
=86	Lesotho	49	0	+5
=89	Bahamas	48	+3	+3
=89	Mali	48	-4	-9
=91	Malaysia	46	+4	+6
=91	Sri Lanka	46	+1	0
=93	Cambodia	45	+4	+4
=93	Madagascar	45	-1	+2
=95	Cape Verde	44	0	0
=95	Kyrgyz Republic	44	+7	+6
=95	Libya	44	-4	-1
=95	Mozambique	44	-1	-1
=99	Afghanistan	43	0	+4
=99	Mauritius	43	0	0
=101	Senegal	42	+1	+3
=101	Trinidad and Tobago	42	+3	+5
=103	Iraq	41	+7	+18
=103	Mauritania	41	0	+1
=103	Thailand	41	0	+2
=106	Brunei	40	+5	+5
=106	Cameroon	40	+2	+1
=106	Malawi	40	+7	+7
=106	Oman	40	+2	+2
110	Swaziland	39	0	+3
=111	Bolivia	38	+1	+1
=111	Honduras	38	0	0
=113	Guyana	37	+2	+2
=113	Tonga	37	0	-1

3. GLOBAL NORMS

Rank / 152		Score / 100	Change since 2014	Change since 2012
=75	Vietnam	67	+7	+45
=78	Bangladesh	65	0	0
=78	Congo (Democratic Republic of)	65	0	0
=78	Côte d'Ivoire	65	0	+50
=78	El Salvador	65	0	0
=78	Lebanon	65	0	0
=78	Paraguay	65	0	0
=78	Seychelles	65	0	0
=85	Burkina Faso	58	+13	+13
=85	Central African Republic	58	0	0
=85	Costa Rica	58	0	+13
=85	Malawi	58	+25	+25
=85	Nicaragua	58	0	0
90	Sri Lanka	55	0	0
91	Madagascar	53	0	0
=92	Comoros	51	0	0
=92	Guinea-Bissau	51	0	0
94	Malaysia	49	+7	+14
=95	Bahamas	47	+7	+7
=95	Honduras	47	0	0
=95	Oman	47	0	0
=98	Botswana	45	+12	+12
=98	Ecuador	45	0	0
=98	Guatemala	45	0	0
=98	Guyana	45	+7	+7
=98	Mozambique	45	0	0
=98	Rwanda	45	0	+7
=98	Senegal	45	0	0
=98	Swaziland	45	0	+7
=98	Togo	45	0	+7
=98	Uruguay	45	0	0
108	Thailand	42	0	+7
=109	Cameroon	40	+7	+7
=109	Taiwan	40	+13	+13
=109	Trinidad and Tobago	40	+7	+15
=109	Uganda	40	+7	+7
113	Guinea	38	0	0
=114	Bolivia	33	0	0

Overall and category scores and ranks for 2016 are shown.
All countries are scored 0–100, where 100 = most favorable nuclear materials security conditions.
= denotes tie in rank.

COUNTRIES WITHOUT WEAPONS-USABLE NUCLEAR MATERIALS *(cont'd)*

4. DOMESTIC COMMITMENTS AND CAPACITY

Rank / 152		Score / 100	Change since 2014	Change since 2012
=77	Côte d'Ivoire	49	0	+21
=77	Gabon	49	+5	+5
79	Venezuela	48	0	0
=80	Colombia	46	0	0
=80	Turkmenistan	46	0	0
82	Bahrain	44	0	0
=83	El Salvador	41	0	0
=83	Panama	41	0	0
85	Cameroon	40	0	0
=86	Iraq	39	0	+4
=86	Libya	39	0	0
=86	Vietnam	39	0	+4
89	Mozambique	38	0	0
=90	Fiji	37	0	0
=90	Vanuatu	37	0	+9
=92	Cambodia	35	+9	+9
=92	Dominican Republic	35	0	0
=92	Egypt	35	0	0
=92	Madagascar	35	0	0
=92	Malaysia	35	0	0
=92	Mauritius	35	0	0
=92	Sri Lanka	35	0	0
=92	Thailand	35	0	0
=100	Bolivia	33	0	0
=100	Tonga	33	0	0
=100	Trinidad and Tobago	33	0	0
=103	Honduras	30	0	0
=103	Kyrgyz Republic	30	0	+4
=103	Syria	30	+4	+4
106	Cape Verde	29	0	0
=107	Gambia	28	0	0
=107	Kuwait	28	0	+4
=109	Barbados	26	0	0
=109	Belize	26	0	0
=109	Bhutan	26	0	0
=109	Brunei	26	0	0
=109	Ethiopia	26	0	0
=109	Laos	26	0	0

5. RISK ENVIRONMENT

Rank / 152		Score / 100	Change since 2014	Change since 2012
=76	Burkina Faso	49	+8	-1
=76	Djibouti	49	0	0
=76	Solomon Islands	49	0	+7
=80	Ethiopia	48	0	+1
=80	Thailand	48	-1	0
=82	Armenia	47	+1	+1
=82	Benin	47	0	0
=82	Côte d'Ivoire	47	0	+4
=82	Fiji	47	0	+2
=82	São Tomé and Príncipe	47	+2	+3
=87	Ecuador	46	+3	+4
=87	Jordan	46	0	+8
=87	Laos	46	0	0
=87	Tunisia	46	+5	+8
=91	Bahrain	45	0	-1
=91	Colombia	45	-1	0
=93	Angola	44	0	0
=93	Congo (Brazzaville)	44	0	-3
=93	Gambia	44	0	-1
=93	Guatemala	44	0	0
=93	Malawi	44	-5	-2
=93	Saudi Arabia	44	+6	+9
99	Paraguay	43	-7	-7
=100	Nepal	42	+1	+1
=100	Papua New Guinea	42	+1	+2
102	Liberia	40	-5	-4
=103	Turkey	39	0	-1
=103	Turkmenistan	39	+1	+1
=105	Cameroon	38	-2	-7
=105	Honduras	38	+1	+1
=105	Tanzania	38	0	0
=105	Zimbabwe	38	-4	-2
=109	Eritrea	37	0	0
=109	Indonesia	37	+4	+4
=109	Nicaragua	37	0	+1
=109	Sierra Leone	37	0	+1
=109	Venezuela	37	-3	-1
=114	Algeria	36	+1	+1

Overall and category scores and ranks for 2016 are shown.
All countries are scored 0–100, where 100 = most favorable nuclear materials security conditions.
= denotes tie in rank.

THEFT RANKING: COUNTRIES WITHOUT WEAPONS-USABLE NUCLEAR MATERIALS *(cont'd)*

OVERALL SCORE

Rank / 152		Score / 100	Change since 2014	Change since 2012
=115	Barbados	36	0	0
=115	Vanuatu	36	+3	+6
117	Central African Republic	35	-2	-3
=118	Bhutan	34	+2	+2
=118	Laos	34	0	+2
=120	Comoros	33	0	0
=120	Samoa	33	0	0
=120	Solomon Islands	33	0	+2
=120	Togo	33	0	+2
=124	Belize	32	-1	-1
=124	Venezuela	32	-1	0
=126	Egypt	30	-2	0
=126	Yemen	30	+5	+6
=128	Guinea-Bissau	29	0	0
=128	Zambia	29	0	0
130	Sierra Leone	28	0	+1
=131	Angola	27	0	0
=131	Burundi	27	-1	-2
=131	Ethiopia	27	0	0
=134	Benin	26	0	0
=134	Guinea	26	+2	+2
=134	Haiti	26	0	+1
=134	Suriname	26	0	0
=138	Nepal	25	0	0
=138	Papua New Guinea	25	0	+3
=138	Timor-Leste	25	0	+3
=141	Gambia	24	0	-1
=141	Liberia	24	-1	-1
=141	Sudan	24	+1	+1
=144	Myanmar	23	0	+2
=144	Zimbabwe	23	+1	+2
=146	Chad	22	+2	+2
=146	Congo (Brazzaville)	22	0	+2
=146	Equatorial Guinea	22	0	0
=146	São Tomé and Príncipe	22	+1	+1
150	Eritrea	19	0	0
151	Syria	18	-3	-6
152	Somalia	3	-4	-4

3. GLOBAL NORMS

Rank / 152		Score / 100	Change since 2014	Change since 2012
=114	Burundi	33	0	0
=114	Cape Verde	33	0	0
=114	Laos	33	0	+8
=114	Namibia	33	0	0
=114	Sudan	33	0	0
=114	Tanzania	33	0	0
=121	Egypt	27	0	+7
=121	Liberia	27	0	0
=121	Mauritius	27	0	0
=124	Equatorial Guinea	25	0	0
=124	Solomon Islands	25	0	0
=124	Tonga	25	0	0
127	Brunei	22	+15	+15
=128	Benin	20	0	0
=128	Haiti	20	0	0
=128	Sierra Leone	20	0	0
=128	Syria	20	0	0
=132	Angola	15	0	0
=132	Belize	15	0	0
=132	Chad	15	+8	+8
=132	Nepal	15	0	0
=132	Papua New Guinea	15	0	+8
=132	Vanuatu	15	+8	+8
=132	Zambia	15	0	0
=132	Zimbabwe	15	+8	+8
=140	São Tomé and Príncipe	13	0	0
=140	Timor-Leste	13	0	0
=142	Congo (Brazzaville)	7	0	0
=142	Eritrea	7	0	0
=142	Ethiopia	7	0	0
=142	Myanmar	7	0	0
=142	Samoa	7	0	0
=142	Venezuela	7	0	0
=148	Barbados	0	0	0
=148	Bhutan	0	0	0
=148	Gambia	0	0	0
=148	Somalia	0	0	0
=148	Suriname	0	0	0

Overall and category scores and ranks for 2016 are shown.
All countries are scored 0–100, where 100 = most favorable nuclear materials security conditions.
= denotes tie in rank.

COUNTRIES WITHOUT WEAPONS-USABLE NUCLEAR MATERIALS *(cont'd)*

4. DOMESTIC COMMITMENTS AND CAPACITY

Rank / 152		Score / 100	Change since 2014	Change since 2012
=109	Myanmar	26	0	0
=109	Samoa	26	0	0
=109	Sierra Leone	26	0	0
=109	Solomon Islands	26	0	0
=109	Suriname	26	0	0
=120	Angola	24	0	0
=120	Bahamas	24	0	0
=120	Central African Republic	24	0	0
=120	Djibouti	24	+9	+9
=120	Haiti	24	0	0
=120	Senegal	24	0	0
=120	Togo	24	0	+4
=127	Lesotho	22	0	0
=127	Malawi	22	0	0
=127	Mauritania	22	0	+5
=127	Swaziland	22	0	0
=131	Guyana	20	0	0
=131	Nepal	20	0	0
=131	Oman	20	0	0
=131	Papua New Guinea	20	0	0
=131	Saudi Arabia	20	0	0
=131	Sudan	20	0	0
=131	Yemen	20	0	0
=131	Zambia	20	0	0
=139	Burundi	17	0	0
=139	Chad	17	0	0
=139	Comoros	17	0	0
=139	Congo (Brazzaville)	17	0	+8
=139	Zimbabwe	17	0	0
=144	Benin	15	0	0
=144	Eritrea	15	0	0
=144	Timor-Leste	15	0	0
=147	Equatorial Guinea	9	0	0
=147	Guinea	9	0	0
=147	Guinea-Bissau	9	0	0
=147	Liberia	9	0	0
=147	São Tomé and Príncipe	9	0	0
=147	Somalia	9	0	0

5. RISK ENVIRONMENT

Rank / 152		Score / 100	Change since 2014	Change since 2012
=114	Equatorial Guinea	36	0	0
=114	Guinea	36	+6	+6
=114	Mauritania	36	0	0
=114	Uganda	36	0	+1
=119	Cambodia	35	+2	+3
=119	Chad	35	0	0
=119	Haiti	35	0	+4
=119	Myanmar	35	+1	+5
123	Ukraine	34	-6	-7
=124	Burundi	33	-4	-8
=124	Comoros	33	0	0
=124	Togo	33	+1	-4
=127	Albania	32	+5	-8
=127	Lebanon	32	0	-1
=129	Congo (Democratic Republic of)	31	+2	-1
=129	Guinea-Bissau	31	0	0
=129	Niger	31	0	-7
=132	Bosnia and Herzegovina	29	0	-16
=132	Philippines	29	0	0
134	Egypt	28	-4	-8
=135	Bangladesh	27	+1	-1
=135	Morocco	27	-9	-9
=137	Central African Republic	26	-7	-10
=137	Kenya	26	0	-13
=139	Kyrgyz Republic	25	-1	-13
=139	Moldova	25	0	-1
141	Azerbaijan	24	+1	+1
142	Nigeria	23	+4	-9
=143	Sudan	22	+4	+4
=143	Tajikistan	22	0	-1
145	Uzbekistan	20	0	0
146	Mali	16	-14	-29
147	Iraq	6	-16	-11
148	Afghanistan	2	0	0
149	Libya	1	-20	-12
=150	Somalia	0	-13	-13
=150	Syria	0	-16	-25
=150	Yemen	0	-16	-13

Overall and category scores and ranks for 2016 are shown.
All countries are scored 0–100, where 100 = most favorable nuclear materials security conditions.
= denotes tie in rank.

SABOTAGE RANKING

OVERALL SCORE

Rank / 45		Score / 100
1	Finland	95
2	Australia	92
=3	Canada	90
=3	United Kingdom	90
5	Japan	89
=6	Hungary	88
=6	Switzerland	88
=6	United States	88
9	Sweden	87
=10	France	86
=10	Netherlands	86
=10	Romania	86
13	Czech Republic	84
=14	Bulgaria	83
=14	Germany	83
=14	Norway	83
=14	Poland	83
=14	Slovenia	83
19	Belgium	82
20	South Korea	81
21	Slovakia	77
=22	Russia	72
=22	South Africa	72
24	Armenia	70
=25	Argentina	68
=25	Brazil	68
=25	Spain	68
28	Kazakhstan	67
29	Chile	66
30	Ukraine	65
31	Indonesia	63
=32	Peru	61
=32	Taiwan	61
34	China	59
35	Uzbekistan	56
=36	India	55
=36	Israel	55
38	Pakistan	54
39	Mexico	53
=40	Bangladesh	49
=40	Morocco	49
42	Algeria	47
43	Egypt	33
=44	Iran	24
=44	North Korea	24

1. NUMBER OF SITES

Rank / 45		Score / 100
=1	Algeria	100
=1	Armenia	100
=1	Australia	100
=1	Bangladesh	100
=1	Bulgaria	100
=1	Chile	100
=1	Egypt	100
=1	Israel	100
=1	Mexico	100
=1	Morocco	100
=1	Peru	100
=1	Poland	100
=1	Slovenia	100
=1	Uzbekistan	100
=15	Argentina	80
=15	Brazil	80
=15	Czech Republic	80
=15	Finland	80
=15	Hungary	80
=15	Indonesia	80
=15	Iran	80
=15	Kazakhstan	80
=15	Netherlands	80
=15	North Korea	80
=15	Norway	80
=15	Pakistan	80
=15	Romania	80
=15	Slovakia	80
=15	South Africa	80
=30	Belgium	60
=30	Canada	60
=30	India	60
=30	South Korea	60
=30	Spain	60
=30	Sweden	60
=30	Switzerland	60
=30	Taiwan	60
=30	Ukraine	60
=39	China	40
=39	Germany	40
=39	United Kingdom	40
=42	France	20
=42	Japan	20
=42	Russia	20
45	United States	0

2. SECURITY AND CONTROL MEASURES

Rank / 45		Score / 100
=1	Hungary	98
=1	Switzerland	98
=1	United States	98
4	United Kingdom	95
5	Canada	93
6	Finland	92
7	Bulgaria	91
8	Romania	90
9	Australia	89
=10	France	88
=10	Japan	88
=10	Netherlands	88
=10	Russia	88
14	Czech Republic	85
15	Germany	83
16	Poland	76
17	Slovenia	74
=18	Sweden	73
=18	Taiwan	73
20	South Korea	72
21	Belgium	70
22	South Africa	67
23	Armenia	64
=24	Norway	62
=24	Ukraine	62
=26	India	60
=26	Slovakia	60
28	China	59
29	Kazakhstan	56
30	Indonesia	54
=31	Argentina	53
=31	Peru	53
33	Uzbekistan	49
=34	Chile	47
=34	Pakistan	47
36	Spain	45
37	Israel	44
38	Brazil	42
39	Algeria	35
=40	Iran	30
=40	North Korea	30
42	Mexico	26
43	Morocco	24
44	Bangladesh	21
45	Egypt	10

Overall and category scores and ranks for 2016 are shown. All countries are scored 0–100, where 100 = most favorable nuclear security conditions.
= denotes tie in rank.

SABOTAGE RANKING *(cont'd)*

3. GLOBAL NORMS

Rank / 45		Score / 100
=1	Australia	100
=1	Belgium	100
=1	Canada	100
=1	Finland	100
=1	France	100
=1	Japan	100
=1	Russia	100
=1	South Korea	100
=1	Spain	100
=1	Sweden	100
=1	United Kingdom	100
=1	United States	100
13	Romania	95
=14	Kazakhstan	92
=14	Netherlands	92
=14	Norway	92
=17	Hungary	87
=17	Poland	87
=19	India	85
=19	Ukraine	85
=21	Argentina	83
=21	Brazil	83
=23	Armenia	81
=23	Chile	81
=23	Slovakia	81
=23	Slovenia	81
=23	Switzerland	81
=28	Czech Republic	79
=28	Mexico	79
30	South Africa	78
31	Germany	77
32	Indonesia	76
33	Bulgaria	75
34	China	71
35	Peru	68
=36	Bangladesh	62
=36	Uzbekistan	62
38	Pakistan	61
39	Morocco	59
40	Algeria	55
41	Israel	46
42	Taiwan	38
43	Egypt	31
44	Iran	13
45	North Korea	0

4. DOMESTIC COMMITMENTS AND CAPACITY

Rank / 45		Score / 100
=1	Australia	100
=1	Belgium	100
=1	Czech Republic	100
=1	Finland	100
=1	France	100
=1	Germany	100
=1	Japan	100
=1	Romania	100
=1	Slovakia	100
=1	Slovenia	100
=1	United Kingdom	100
=1	United States	100
=13	Brazil	95
=13	Bulgaria	95
=13	Canada	95
=13	Hungary	95
=13	Norway	95
=13	Poland	95
=13	South Korea	95
=13	Sweden	95
=13	Switzerland	95
=22	Kazakhstan	89
=22	Netherlands	89
=22	Russia	89
=25	Pakistan	87
=25	South Africa	87
=27	Bangladesh	84
=27	Indonesia	84
=27	Morocco	84
=27	Uzbekistan	84
=31	Argentina	82
=31	Armenia	82
=31	Spain	82
=31	Ukraine	82
=35	China	71
=35	Israel	71
=37	Chile	60
=37	Peru	60
39	Egypt	58
=40	Algeria	54
=40	Mexico	54
=42	India	47
=42	Taiwan	47
44	North Korea	13
45	Iran	5

5. RISK ENVIRONMENT

Rank / 45		Score / 100
1	Norway	97
2	Sweden	94
3	Finland	90
4	Japan	83
5	Chile	82
=6	Canada	79
=6	Germany	79
=6	Slovenia	79
=6	Switzerland	79
10	Taiwan	77
11	Australia	76
12	Netherlands	75
13	Poland	74
14	Slovakia	73
15	United Kingdom	72
=16	Belgium	71
=16	France	71
=16	United States	71
=19	Czech Republic	70
=19	Hungary	70
21	South Korea	68
22	Spain	63
23	Brazil	62
=24	Bulgaria	59
=24	Mexico	59
=24	Peru	59
27	Argentina	58
28	Romania	57
29	South Africa	55
30	Israel	52
31	Armenia	49
=32	China	40
=32	Indonesia	40
34	Algeria	37
35	Ukraine	36
36	North Korea	34
37	Iran	32
38	Kazakhstan	31
=39	Bangladesh	29
=39	India	29
41	Egypt	28
42	Morocco	27
43	Uzbekistan	21
44	Pakistan	16
45	Russia	14

Overall and category scores and ranks for 2016 are shown. All countries are scored 0–100, where 100 = most favorable nuclear security conditions.
= denotes tie in rank.

OBSERVATIONS
The State of Nuclear Security

On the basis of the data in the 2016 NTI Index, progress to secure, minimize, and eliminate weapons-usable nuclear materials has slowed, despite the global spotlight of the Nuclear Security Summit process. At the same time, the threat environment has worsened, with the rise of terrorist groups such as ISIL (the Islamic State of Iraq and the Levant), which has demonstrated extreme brutality and has already reportedly used chemical weapons. On the eve of the fourth and final Nuclear Security Summit in Washington, the results of this report should sound a warning not only that the work of securing all weapons-usable nuclear materials is unfinished, but also that attention and commitment to preventing a terrorist from building and using a nuclear weapon must intensify.

Following are observations about key overall trends, country highlights, and ongoing challenges.

KEY TRENDS

Progress in Securing and Eliminating Materials Has Slowed

Following a period of tangible advances between 2012 and 2014, progress toward securing, minimizing, and eliminating weapons-usable nuclear materials over the past two years has generally slowed:

- Since 2014, no improvements have been made in the core protection and control measures assessed by the NTI Index, including on-site physical protection, control and accounting procedures, the ability to mitigate the insider threat (i.e., the risk that personnel with authorized access to materials could steal and potentially aid terrorists or criminals), physical security during transport, and response capabilities—a troubling finding. This situation is in contrast to the 2014 NTI Index, which captured 19 specific score improvements between 2012 and 2014 in those areas.

WHY HAS PROGRESS SLOWED?

The 2016 NTI Index shows that progress to secure weapons-usable nuclear materials has slowed, even in states otherwise committed to strengthening their security. To understand why, NTI surveyed a few countries to better understand what affected progress:

- **Politics.** Other issues shift leaders' attention from nuclear security. That is exacerbated by a lack of public engagement on nuclear security and therefore a lack of political pressure from constituents to take action.
- **Bureaucratic inertia.** Well-meaning government processes to review and strengthen domestic nuclear security frameworks can be slowed or halted indefinitely because of bureaucratic hurdles and inertia.
- **Lack of resources.** States with very small nuclear programs may not provide sufficient resources to create and maintain an effective nuclear security regime.
- **Culture.** This factor particularly affects the threat posed by malevolent insiders. In cultures where trust is high or where privacy is highly valued, the concept of intrusive personnel vetting through background checks that include drug testing and psychological tests may be unpopular or considered unnecessary.

- Twelve of the 24 states with weapons-usable nuclear materials receive a maximum score for on-site physical protection, 11 states follow the latest International Atomic Energy Agency (IAEA) guidelines for physical security during transport, and many states are still not doing enough to combat the insider threat.
- Compared with a total of 59 specific score improvements in the 2014 NTI Index (between 2012 and 2014), the 2016 NTI Index captures 43 specific score improvements (between 2014 and 2016).
- One state from the ranking for countries with one kilogram or more of weapons-usable nuclear materials—Uzbekistan—has removed all of its weapons-usable nuclear materials in the past two years, compared with the 2014 NTI Index, which found that seven states had done so. Jamaica, which already had less than one kilogram of weapons-usable nuclear materials, also removed its materials.[2]
- The number of improvements shown in the NTI Index resulting from fulfilled summit commitments has declined since the 2014 Index, which found 13 such improvements. The 2016 NTI Index reports six specific score improvements in five states that were a direct result of fulfilling summit commitments, from removing weapons-usable nuclear materials to ratifying key international legal agreements. In addition, a number of summit commitments, including some made in 2010, have not yet been implemented.

Despite the lack of progress in key areas, some improvements occurred among the countries with materials:

- Fifteen states improved their overall scores in the 2016 NTI Index.[3]
- Twelve states other than Uzbekistan decreased their quantities of materials over the most recent four-year period measured by the 2016 NTI Index.[4]
- Four states became parties to key international legal agreements related to nuclear materials security, moving the world closer to a more robust legal foundation for global nuclear security.[5]
- Six states made new voluntary commitments that support global efforts to improve security by (a) contributing to the IAEA's Nuclear Security Fund, (b) contributing to the World Institute for Nuclear Security,

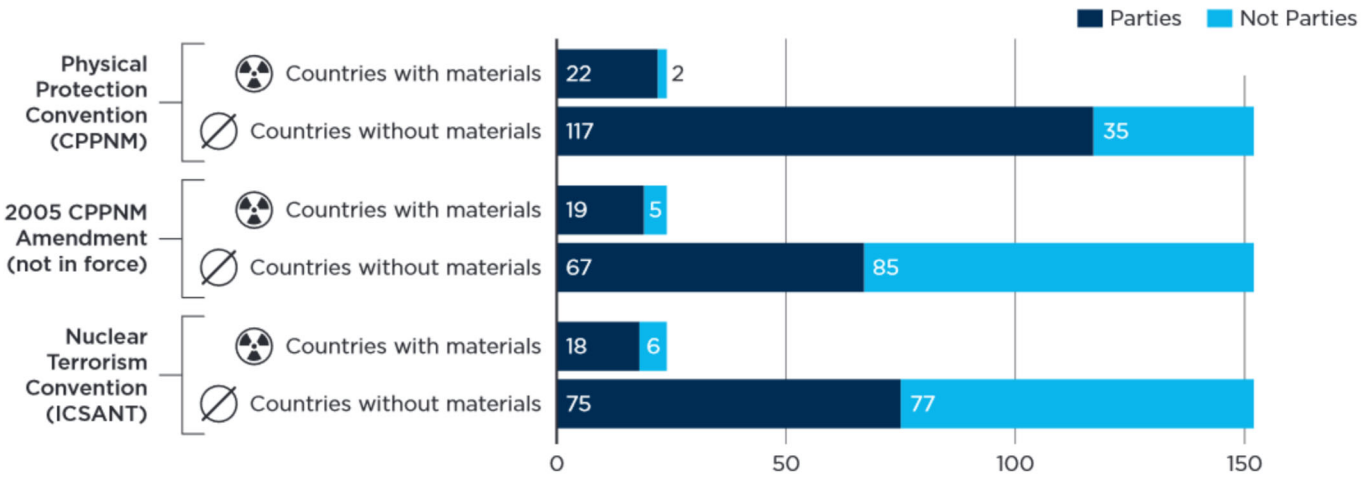
[2] Unlike Uzbekistan, which was previously included in the theft ranking for countries with one kilogram or more of weapons-usable nuclear materials and has now moved to the theft ranking for countries with less than one kilogram of or no materials, Jamaica was already in the theft ranking for countries with less than one kilogram of or no materials.

[3] Belgium, Canada, China, France, Germany, India, Italy, Japan, Norway, Poland, Russia, South Africa, Switzerland, the United Kingdom, and the United States.

[4] Argentina, Australia, Canada, France, Germany, Italy, Kazakhstan, Poland, Russia, South Africa, Switzerland, and the United States.

[5] Italy, Japan, Norway, and the United States.

EXISTING LEGAL FOUNDATION OF THE INTERNATIONAL SYSTEM REMAINS WEAK



The CPPNM and its 2005 Amendment is the only international legal agreement that requires countries to protect their materials. ICSANT commits states to criminalize acts of nuclear terrorism and cooperate in bringing those who commit such crimes to justice. Those treaties are important building blocks for the foundation of global nuclear security and would be more valuable if they were universally implemented.

or (c) providing or receiving bilateral or multilateral security assistance, which demonstrates the importance of cooperative action.[6]

- Eight states have passed new laws and regulations or updated existing ones to strengthen cybersecurity requirements at nuclear facilities,[7] although seven states score 0 for this indicator.

Global Stocks of Weapons-Usable Nuclear Materials Have Decreased Overall but Trends Point to an Increase in the Near Future

One state from the theft ranking for countries with one kilogram or more of weapons-usable nuclear materials—Uzbekistan—has removed all of its weapons-usable nuclear materials since 2014,[8] and 12 other states have decreased their quantities of weapons-usable nuclear materials over the most recent four-year period measured by the NTI Index, including 3 nuclear-armed states—France, Russia, and the United States.[9]

That is good news in the short term, but trends indicate that global stocks of weapons-usable nuclear materials are expected to plateau or even increase in the immediate future.

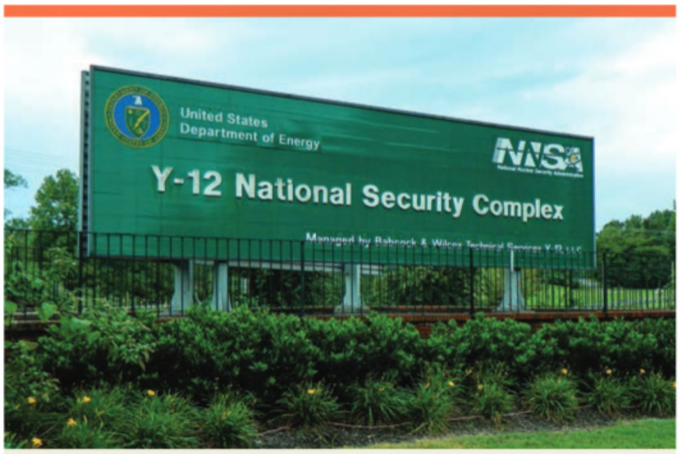
[6] Australia, Belarus, India, Kazakhstan, the Netherlands, and Poland.

[7] Canada, France, the Netherlands, Pakistan, Russia, South Africa, Switzerland, and the United Kingdom.

[8] Jamaica, which already had less than one kilogram of weapons-usable nuclear materials, also removed its materials. Unlike Uzbekistan, which was previously included in the theft ranking for countries with one kilogram or more of weapons-usable nuclear materials and has now moved to the theft ranking for countries with less than one kilogram of or no materials, Jamaica was already in the theft ranking for countries with less than one kilogram of or no materials.

[9] Although most questions in the NTI Index look at actions taken over the past two years, the production and elimination trends indicator measures trends over the longer four-year period to account for short periods during which quantities remain unchanged despite a policy of elimination or removal of material.

A sting operation in Moldova exposed a vibrant black market in nuclear materials in Southeast Europe. In this 2011 photo, Teodor Chetrus is detained by a police officer in Chisinau, Moldova.



Three peace activists, including an 82-year-old nun, broke into the Y-12 Nuclear Security Complex in Oak Ridge, Tennessee, in 2012, demonstrating that more must be done to improve the security of military materials.

Six states have increased their stocks of weapons-usable nuclear materials over the most recent four-year period measured by the NTI Index, up from four in 2014:

- India and Pakistan have increased materials for both civilian and military purposes.
- Japan and the United Kingdom increased quantities for their civilian nuclear energy sectors, producing or receiving plutonium faster than it was consumed by reactors during the measurement period.
- The Netherlands has also seen an increase in its materials quantities as a result of the introduction of mixed oxide (MOX) fuel into a reactor, which until recently was fueled by low-enriched uranium (LEU). The Netherlands' use of MOX fuel is a way to assist other states with the reduction of their plutonium stockpiles, but it also has the effect of increasing its quantities of materials for as long as it continues this practice.
- North Korea's recent announcements by its government regarding restarting its five-megawatts electric (MWe) reactor and the operation of an enrichment facility indicate that its quantities have begun to increase and will continue to do so in the future.

It is possible that Japan's stocks could increase further in the medium to long term. Japan announced at the 2014 Nuclear Security Summit that it would ship more than 500 kilograms of highly enriched uranium (HEU) and plutonium to the United States before the 2016 summit—a substantial reduction of its existing stocks, but it also plans to restart the Rokkasho Reprocessing Plant in the next few years. Given that the vast majority of the country's power reactors will not be online and able to consume the reprocessed plutonium, the result could be a substantial buildup in its stocks of separated plutonium.

In addition, the U.S.-Russia HEU Purchase Agreement,[10] which was responsible for a large portion of declining global stocks of highly enriched uranium, ended in 2013.

Finally, as the Nuclear Security Summit process comes to an end, the attention that the summits have brought to efforts to eliminate weapons-usable nuclear materials almost certainly will further wane.

[10] Under the 20-year HEU Purchase Agreement, signed in 1993 and also known as the Megatons to Megawatts Program, Russia agreed to downblend 500 tons of HEU, equivalent to about 20,000 bombs. As of the end of 2013, when the agreement expired, 475.2 tons of HEU had been recycled into 13,723 tons of LEU and generated 10 percent of U.S. electricity between 1993 and 2013.

States without Materials Are Supporting Global Norms and Implementing International Commitments

All states play an important role in improving global nuclear security, even those without weapons-usable nuclear materials because their territories could be used as safe havens, staging grounds, or transit points for terrorist operations. Notable improvements in the 152 states with less than one kilogram of or no weapons-usable nuclear materials have been made since 2014:

- Sweden ranks first of the 152 states, improving by 2 points because of its ratification of the International Convention for the Suppression of Acts of Nuclear Terrorism (ICSANT) and scoring well across all categories. Djibouti is the most improved, increasing its score by 13 points as a result of becoming a party to the 2005 Amendment to the Convention on the Physical Protection of Nuclear Material (CPPNM) and ICSANT and of becoming a member of and entering into safeguards agreements with the IAEA.
- Twenty-two states became parties to key international legal agreements related to nuclear materials security.[11] Four acceded to the CPPNM, 15 became parties to the 2005 Amendment to the CPPNM, and 8 ratified ICSANT.[12] However, acceptance of those three international legal agreements is far from universal: 35 of the 152 have not yet ratified the CPPNM, 85 have not yet become parties to the 2005 Amendment to the CPPNM, and 77 have not yet ratified ICSANT.
- Among the 152 states, 37 made new voluntary commitments that support global efforts to improve security by (a) becoming a member of the IAEA, the Proliferation Security Initiative, the Global Initiative to Combat Nuclear Terrorism, or the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction; (b) contributing to the IAEA Nuclear Security Fund; (c) providing or receiving bilateral or multilateral assistance; or (d) hosting a new Center of Excellence.

COUNTRY HIGHLIGHTS

Australia Again Ranks First among States with Weapons-Usable Nuclear Materials

For the third time in a row, Australia ranks first among 24 states with weapons-usable nuclear materials. As before, Australia's score can be attributed to its small quantities of material and low number of sites and its strong commitment to global norms, as demonstrated through its ratification of relevant treaties, its participation in international initiatives, and its contribution to international organizations.

In the two years since the release of the 2014 NTI Index, Australia has made an additional contribution to the IAEA Nuclear Security Fund, a voluntary fund established to support, among other things, the implementation of nuclear security activities to prevent, detect, and respond to nuclear terrorism. Although that action did not increase Australia's overall score—it already receives a full score for voluntary commitments, which is capped at 5 points—it sets an example for all states that they can do more to continuously improve long-term global nuclear security.

Japan Is the Most-Improved State

Japan improved its overall score by 4 points and is the most improved among 24 states with weapons-usable nuclear materials. Japan was also among the most improved states in the 2014 NTI Index. For the 2016 NTI Index, Japan further improved its score by becoming a party to the 2005 Amendment to the CPPNM, publishing both nuclear security laws and regulations and an

[11] The CPPNM requires states to apply physical protection measures to nuclear materials in international transit. The 2005 Amendment to the CPPNM significantly expands the agreement's scope to include material in use, in storage, and in domestic as well as international transit. Because not enough parties to the CPPNM have become parties to the 2005 Amendment, it has not yet entered into force. ICSANT commits states to criminalize acts of nuclear terrorism and promotes cooperation among countries on investigations and extraditions. Although ICSANT is in force, it is not yet universal.

[12] The full list of states that have newly become parties to these agreements since the 2014 NTI Index is as follows: Iraq, the Kyrgyz Republic, Malawi, and Singapore became parties to the CPPNM; Botswana, Burkina Faso, Colombia, Djibouti, the Dominican Republic, Iceland, Ireland, Italy, Jamaica, Japan, Morocco, Peru, Qatar, Singapore, South Korea, Tajikistan, Turkey, and the United States became parties to the CPPNM Amendment; Djibouti, Indonesia, Jamaica, Norway, Portugal, Qatar, South Korea, Sweden, the United States, and Yemen became parties to ICSANT. Morocco took this action after NTI Index data collection ended, and it is not reflected in its score. In addition, Taiwan now receives credit for the CPPNM Amendment even though Taiwan cannot officially become a party to treaties, because it has obligated itself to the terms of the amendment through its nuclear energy cooperation agreement with the United States.

A distinguished panel of experts from around the world played an important role in defining the NTI Index framework.

Participants in a World Institute for Nuclear Security (WINS) workshop study best practices. About 3,000 professionals from 115 countries belong to WINS.

annual report, and hosting an IAEA International Physical Protection Advisory Service (IPPAS) peer review mission, which involved independent experts assessing its nuclear security.

Other notable improvements were made by Belgium, Italy, Poland, South Africa, and the United States, each of which improved its overall score by 3 points:

- Belgium was among the most improved states in the 2014 NTI Index. For the 2016 NTI Index, Belgium further improved its score by hosting an IAEA IPPAS peer review mission. In addition, Belgium's bulk-processing facility is in the final stages of decommissioning.
- Both Italy and the United States improved by ratifying the 2005 Amendment to the CPPNM. The United States also ratified ICSANT. Those two critical international agreements bolster the legal framework for requiring states to protect materials.
- Poland decreased its quantities of materials and participated in a multilateral nuclear security exercise in 2014.
- South Africa updated its laws and regulations for protecting nuclear facilities against cyber attacks and hosted an IAEA International Nuclear Security Advisory Service peer review mission to review its border security arrangements.

Finland Ranks First among States in the New Assessment Related to the Threat of Sabotage

Of the 45 states in NTI's new sabotage ranking, Finland ranks first. Finland scores well because of its low number of sites, its comprehensive nuclear security legal and regulatory framework, its favorable risk environment, and its strong commitment to global norms, as demonstrated through (a) ratification of relevant treaties, (b) participation in international initiatives, and (c) contribution to international organizations. Australia is ranked second, scoring the highest of those countries with weapons-usable nuclear materials in the sabotage ranking.

Highlights from Nuclear-Armed States

The nine nuclear-armed states—China, France, India, Israel, North Korea, Pakistan, Russia, the United Kingdom, and the United States—possess more than 98.5 percent of the global stocks of weapons-usable nuclear materials in both military and civilian use. Those states have a special responsibility to ensure that materials are effectively secured and to build international confidence in the effectiveness of their security. That responsibility applies

Several alarming incidents at facilities containing military nuclear materials, including in the United States and United Kingdom, underscore the need to strengthen the security of military materials.

to materials in civilian programs and to materials outside civilian programs, known as "military materials," which make up 83 percent of all global stocks of weapons-usable nuclear materials. Several alarming security incidents at facilities containing military materials make it clear that more must be done to improve the security of military materials; some of those incidents are outlined on page 43.

In the 2016 NTI Index, the scores of the nine nuclear-armed states in the theft ranking remain mostly static. France, the United States, and the United Kingdom score the highest among the nuclear-armed states, with France tied for 8th with Belarus, the United States ranked 10th, and the United Kingdom tied for 11th with the Netherlands. The United States, India, Russia, and the United Kingdom improved their scores modestly by 3, 2, 2, and 2 points, respectively. The other nuclear-armed states improved their scores by 1 point, remained unchanged, or declined in score.

Following are some notable findings:

- China's score improved by 1 point because of decreased levels of corruption, although it continues to score low because of its large quantities of materials and number of sites, and because its regulatory structure lacks key requirements for securing materials, including cybersecurity requirements.
- France upgraded its laws and regulations related to cybersecurity measures at nuclear facilities and improved its score by 1 point.
- India improved its score by 2 points because it participated in new bilateral assistance activities with the United States and its Additional Protocol went into effect. India continues to score low because it is increasing its quantities of materials, it does not yet have an independent regulatory agency, and it has regulations that lack key requirements for securing materials.
- North Korea's score declined because it is now increasing its quantities of materials and because of changes in its risk environment.
- Although Pakistan passed new cybersecurity regulations, thereby improving its score in the Security and Control Measures category, the improvement was too small to change the overall score.
- Russia's score increased by 2 points after upgrading its laws and regulations related to cybersecurity measures at nuclear facilities. However, Russia continues to score low in areas related to political stability, effective governance, and corruption, as well as its large quantities of materials and number of sites.
- The United Kingdom's score increased by 2 points because of new cybersecurity laws and regulations and improvements in its risk environment.

REMAINING CHALLENGES

The Nuclear Security Summits Have Had a Positive Effect, but the Strategic Goal of Developing an Effective Global Nuclear Security System Remains Unachieved

The previous three Nuclear Security Summits have played a vital role in raising high-level political attention on the urgency of securing all nuclear materials. Yet despite recent progress toward the goal of securing all weapons-usable nuclear materials, the current global system for securing nuclear materials still has major gaps that prevent it from being truly comprehensive and effective.

As the threat continues to escalate, it is clear that the summits have not achieved the larger strategic goal of developing an effective global nuclear security system.

As the threat continues to escalate, it is clear that the summits have not achieved the larger strategic goal of developing an effective global nuclear security system that fully addresses and fills current systemic gaps. In particular, the 2016 NTI Index data highlight the following critical gaps in the global system:

- **States do not adhere to a common set of international standards and best practices.** There is currently no common set of international standards that all states must follow to secure their weapons-usable nuclear materials because the two key mechanisms that come closest to providing international standards are not being used to their full potential. The CPPNM, and its 2005 Amendment, is the only international legal agreement that requires countries to protect their materials. However, the CPPNM applies only to civilian materials or just 17 percent of global stocks, and its amendment, which significantly expands the treaty's scope and requirements, is not yet in force. The IAEA's more detailed nuclear security guidelines for securing nuclear materials (guidelines that are the closest thing to nuclear standards that currently exist) are voluntary and apply only to civilian materials. Because states are left to interpret international treaties themselves or selectively apply IAEA guidance, approaches to nuclear security vary. This situation is borne out by the results of the NTI Index, which confirm that states have disparate approaches to nuclear security.[13] This ad hoc approach, combined with a lack of any accountability mechanism, reduces international confidence in the global system.

- **The existing nuclear security legal foundation remains weak.** In addition to the CPPNM and its 2005 Amendment,[14] ICSANT commits states to criminalize acts of nuclear terrorism and to cooperate in bringing those who commit such crimes to justice. However, neither agreement is universally observed or implemented. Those treaties are important building blocks for the foundation of a global nuclear security system and would be more valuable if they were universally implemented and their underlying mechanisms for reporting and review conferences were fully used. The 2005 Amendment to the CPPNM will not enter into force until two-thirds of states that are parties to the CPPNM ratify it. There are 152 parties to the CPPNM and 90 parties to the 2005 Amendment as of December 10, 2015; therefore, 12 more states must become parties to the 2005 Amendment for it to enter into force.[15]

- **Among global stocks of weapons-usable nuclear materials, 83 percent remains outside existing international nuclear security mechanisms.** Although military materials represent the largest share of the world's stockpiles of nuclear materials—approximately 83 percent—there are no internationally recognized standards for their security, nor are there multilateral arrangements designed to build international confidence in their security. The CPPNM and its 2005 Amendment apply to nuclear materials used

[13] The following are several examples: Some states require only routine checks of criminal history in vetting their personnel whose positions would allow access to sensitive areas of facilities. Others require additional drug testing and mental fitness checks. Some states require annual rescreening of existing personnel, whereas others require rescreening only every five years or require no further vetting. Although the majority of states with weapons-usable nuclear materials require facilities with such materials to have armed personnel to protect those facilities and the materials contained within against an attack, several states have no such requirement and rely instead on external forces, such as local police, to come to the aid of the facility's security personnel in the event of an attack. Finally, some states take a prescriptive approach to nuclear security, whereas others simply suggest measures but give licensees discretion about how to secure materials.

[14] United Nations Security Council Resolution 1540, which obligates states to maintain "appropriate effective measures" to account for, secure, and provide physical protection for nuclear weapons and materials, does not provide specific guidance on how to implement those obligations.

[15] Of the states with one kilogram or more of weapons-usable nuclear materials that are parties to the CPPNM, Belarus, Pakistan, and South Africa have not yet become parties to the 2005 Amendment. Of the states with less than one kilogram of or no weapons-usable nuclear materials but with nuclear facilities that are parties to the CPPNM, Bangladesh and Brazil have not yet become parties to the amendment.

for peaceful purposes. The IAEA nuclear security guidelines are intended for the protection of civilian materials. Although UN Security Council Resolution 1540 requires countries to apply effective physical protection for all nuclear materials, including those in nuclear weapons, it does not provide specific guidelines for doing so. Recent security incidents at facilities containing military materials underscore the danger of assuming that those materials are effectively secured.

- **Participation in international peer review is still limited.** International peer review is an evaluation of security processes or practices that uses independent, qualified reviewers from international organizations and other states to make impartial assessments and to provide recommendations for improvement. As such, peer review is an important tool for improving security performance and for building confidence about the effectiveness of a state's security. The Nuclear Security Summits have urged states to participate in international peer reviews, such as IAEA IPPAS missions, as a means to strengthen security and to share best practices; however, this practice is still not the norm.

  Of the 24 states with weapons-usable nuclear materials, 16 have had a nuclear security peer review in the past five years. One state has had a peer review before that time, and 7 have never had one. Of the 23 states without weapons-usable nuclear materials but with nuclear facilities included in the assessment related to sabotage, 11 have had a nuclear security peer review in the past five years. An additional 9 states have had a peer review before that time, and 3 have never had one. Until all states regularly participate in peer reviews, confidence that all states with weapons-usable nuclear materials and nuclear facilities have effective nuclear security will remain lacking. However, the IAEA does not currently have adequate human or financial resources to significantly expand the number of IPPAS missions and other peer review services it offers, even if demand increases.

With the summit process coming to a close, it may be even more difficult to sustain the political attention and momentum needed to fill these gaps.

Countries with New or Emerging Nuclear Energy Programs Struggle to Meet the Threat

Of the 45 states in NTI's new sabotage ranking, 23 have less than one kilogram of or no weapons-usable nuclear materials but are included because they have nuclear power reactors or research reactors with a capacity of two megawatts or greater.

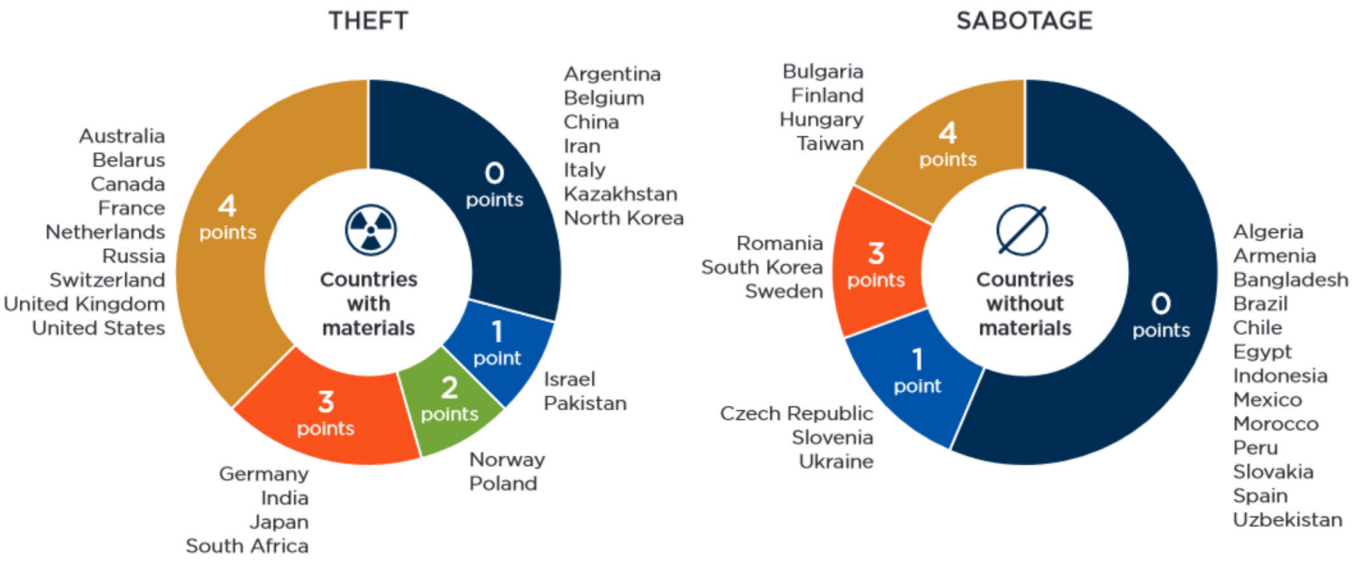
Many of those 23 are developing countries or countries with new nuclear programs (or are considering them). As expected, the 2016 NTI Index finds that many developing states with only research reactors, such as Algeria, Bangladesh, and Morocco, have yet to establish effective domestic nuclear security regimes to protect their nuclear facilities from sabotage. Three countries that have only research reactors but are considering new nuclear energy programs—Chile, Egypt, and Indonesia—do not yet have the legal and regulatory structure in place required for effective security of their nuclear facilities. More worrying, states that have well-established nuclear energy programs (and in some cases are exporting nuclear power), such as South Korea and Taiwan, have scores in the Security and Control Measures category that are average for countries with nuclear power programs.

Nuclear Facilities Are Not Prepared for the Growing Cyber Threat

The cyber threat has expanded exponentially in recent years, with a series of damaging, high-profile attacks that have made headlines around the world. Recent attacks against banking and commerce systems, private companies, and even national governments highlight the growing gap between the threat and the ability to respond to or manage it.

Like critical infrastructure generally, nuclear facilities are not immune to cyber attack. That reality is particularly worrisome, however, given the potentially catastrophic consequences of a cyber attack on a nuclear facility. Such an attack could facilitate the theft of nuclear materials or an act of sabotage. For example, access control systems could be compromised, allowing the entry of unauthorized persons seeking to obtain nuclear material or to damage the facility. Accounting systems could be manipulated so that the theft of material goes unnoticed. Reactor cooling

CYBER SCORES



The 2016 NTI Index includes a set of basic questions about a country's legal and regulatory requirements for securing nuclear facilities against cyber attacks. Countries can receive up to 4 points for this new indicator. This chart shows the breakdown in possible scores for the 24 countries with materials in the theft ranking and the 23 countries without materials but with nuclear facilities in the sabotage ranking.

systems could be deliberately disabled, resulting in a Fukushima-like disaster.

Government authorities and facility operators are struggling to keep pace with this new threat, and national and international guidance is still evolving. Given the increasing use of digital systems, such challenges will only continue to grow.

The NTI Index results reflect the challenges and show that although some states have been taking steps to protect their nuclear facilities from cyber attacks, many are still unprepared to deal with cyber attacks that might lead to the theft of nuclear material or the sabotage of a nuclear facility:

- In the theft ranking, 9 of the 24 states with materials received a maximum score for cybersecurity.[16] Among the 24 states, 7 scored 0 for cybersecurity and do not have even a basic requirement to protect nuclear facilities from a cyber attack.
- Of the 23 states with nuclear power reactors or research reactors, but with less than one kilogram of or no weapons-usable nuclear materials, 4 states received a maximum score for cybersecurity.[17] Among the 23 states, 13 scored 0 for cybersecurity, including some states that are considering expanding their use of nuclear power or beginning new programs. Also among the 23 states, 15 do not have even a basic requirement to protect nuclear facilities from a cyber attack.
- In the past two years, eight states with weapons-usable nuclear materials have updated their laws and regulations with respect to cybersecurity at nuclear facilities. In the period between 2012 and 2014, nine states made similar updates.

See "The Cyber Threat" on page 13 for further details.

[16] Australia, Belarus, Canada, France, the Netherlands, Russia, Switzerland, the United Kingdom, and the United States.

[17] Bulgaria, Finland, Hungary, and Taiwan.

RECOMMENDATIONS
An Agenda for Assurance, Accountability, and Action

As global leaders prepare to gather for a final Nuclear Security Summit in Washington, D.C., they can look at their accomplishments to date with a mix of pride and concern. Despite progress in the six years since the Nuclear Security Summit began, the 2016 NTI Index shows that progress to secure, minimize, and eliminate weapons-usable nuclear materials has slowed significantly over the past two years, and considerable challenges remain.

Following are recommendations for advancing the global nuclear security agenda by (a) building an effective global nuclear security system, (b) sustaining high-level political attention on nuclear security, and (c) improving individual state stewardship of nuclear materials.

BUILDING AN EFFECTIVE GLOBAL NUCLEAR SECURITY SYSTEM

The top recommendation in both the 2012 and the 2014 NTI Index was to reach consensus on priorities for securing nuclear materials and the key principles of a strengthened global system. The 2014 Nuclear Security Summit showed that states have begun to think more globally with regard to their nuclear security responsibilities—shifting away from the view that nuclear security is an exclusively sovereign responsibility to a recognition that they must work together to address a shared threat. However, major gaps mean that the current system is far from being truly comprehensive and effective, and many states still need to strengthen their own legal and regulatory frameworks for securing nuclear materials and facilities, particularly in the face of emerging threats, such as cyber attacks.

An effective global system for securing all weapons-usable nuclear materials (a) must cover all weapons-usable nuclear materials, including “military materials”;

(b) must be based on common international standards and best practices; (c) must build confidence that each state is effectively securing its materials and hold states accountable for their security; and (d) must reduce risk by minimizing or, where feasible, eliminating weapons-usable nuclear materials stocks and the number of locations where they are found. The recommendation to reach consensus on the key principles of a global system takes on additional urgency in 2016 with the Nuclear Security Summit process drawing to a close. To build an effective global nuclear security system, states need to address critical gaps, specifically the following:

Strengthen and Build Confidence in the Security of Military Materials

Effective global nuclear security requires that all weapons-usable nuclear materials be secured. Yet there are no internationally recognized standards for the security of military materials, which account for 83 percent of global stocks, or multilateral arrangements designed to build confidence in their security. Work is needed to strengthen the security of civilian materials, but several alarming security incidents at facilities containing military materials indicate that more must be done to improve the security of military materials as well:

- Three peace activists, including an 82-year-old nun, managed to break into the Y-12 National Security Complex in Oak Ridge, Tennessee, in 2012. The activists spent nearly one and a half hours on the facility compound before a single guard noticed and arrested them for trespassing. Known as the "nuclear Fort Knox," the Y-12 facility is operated by the U.S. Department of Energy and houses thousands of kilograms of highly enriched uranium.
- U.S. nuclear missile launch officers in 2013 were found sleeping with a blast door open to their missile launch control capsule.
- As many as 50 UK Defense Ministry law enforcement personnel were investigated in 2013 for sleeping on the job and not completing patrols at the Atomic Weapons Establishment in Burghfield, Berkshire, a UK government-owned, contractor-operated site where nuclear warheads are constructed, maintained, and disassembled.

States with military materials should take steps to strengthen the security of those materials. As a general rule, they should secure military materials to the same or higher standards as comparable civilian materials, including through the application of standards and best practices that are at least consistent with the IAEA nuclear security guidelines. In addition, states with military materials should take steps to reassure others that they are appropriately and consistently discharging their nuclear security mission. For more specific recommendations of the NTI-convened Military Materials Security Study Group, see www.nti.org/militarymaterials.

Bolster the International Legal Foundation for Nuclear Security

Two important international instruments form the basic foundation for global materials security today: the International Convention for the Suppression of Acts of Nuclear Terrorism (ICSANT) and the Convention on the Physical Protection of Nuclear Material (CPPNM). However, neither instrument is universal, and with the 2005 Amendment to the CPPNM not yet in force and with no set of universally accepted or applied security standards, the foundation for a global nuclear security system is weak. That the 2005 Amendment has not yet entered into force leaves a particularly large gap. All states must become parties to these international legal agreements and, in particular, must work to bring the 2005 Amendment to the CPPNM into force. Even before signing or ratifying the conventions, states should voluntarily implement their requirements and should announce their actions publicly when they do.

At the 2014 summit, 35 states signed a joint statement on "Strengthening Nuclear Security Implementation," through which they committed to implementing IAEA nuclear security guidance and to engaging in actions to continuously improve their national nuclear security regimes, such as peer review. By signing that initiative, those states agreed to go beyond their existing international legal obligations, thus demonstrating a high level of ambition toward strengthening global nuclear security. In October 2014, the 35 states requested that the joint statement be circulated by the IAEA Secretariat as an IAEA Information Circular. It became INFCIRC/869 and is now open for all IAEA member states to join.

By ratifying and fully implementing important international legal agreements and committing to implement IAEA nuclear security guidance through INFCIRC/869 or otherwise, the international community can move closer toward the goal of adhering to a common set of international security guidelines and best practices that all states apply.

Increase International Confidence in the Effectiveness of Nuclear Security and Help Build Accountability

In an effective global system for securing nuclear materials, words alone are not enough to give states confidence in one another's security practices. States must instead take steps to build the confidence of others in their security and to be held accountable for their commitments. States can do so by taking the following actions:

- **Make regular international peer reviews the norm.** International peer review is a powerful tool for improving security performance and for building the confidence of others in a state's commitment to continued improvement. States can further build the confidence of other governments and stakeholders in their nuclear security practices by publishing the results of the review (redacted for sensitive information). All states with weapons-usable nuclear materials and nuclear facilities—the sabotage of which could result in a radiological release—should participate in regular international peer reviews, for instance, the International Physical Protection Advisory Service missions offered by the IAEA.
- **Publish nuclear security regulations and other information that provide broad outlines for security arrangements.** Twelve of 24 states with weapons-usable nuclear materials and 9 of 23 states without weapons-usable nuclear materials but with nuclear facilities publish both their regulations and an annual report.[18] Public release of official documents increases confidence that the basic legal and regulatory framework for nuclear security is in place. Such information can be published without revealing details about specific site security measures while protecting sensitive information.
- **Declare inventory quantities for both highly enriched uranium (HEU) and plutonium.** Declarations of overall quantities of materials are needed to assess and track inventory trends and to monitor whether inventories are growing or declining. They also reassure others that material is properly accounted for without compromising national security interests. Nine states voluntarily declare their civilian plutonium holdings to the IAEA. In addition, the United Kingdom and the United States have declared their military materials holdings; both have released the production history for the HEU and plutonium in their military programs.
- **Join voluntary nuclear security initiatives.** States should make voluntary commitments, such as contributing to the IAEA's Nuclear Security Fund or the World Institute for Nuclear Security, or participating in the Global Initiative to Combat Nuclear Terrorism or the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction. Participating in training and workshops to share best practices, hosting a Center of Excellence or Nuclear Security Training and Support Center for nuclear security training, and providing and accepting bilateral or multilateral assistance further demonstrate a commitment to improving security and participating in a strengthened global system. By taking voluntary measures and publishing information about those activities, states can build confidence in the effectiveness of their security.

Commit to Further Decreasing Stocks of Weapons-Usable Nuclear Materials

The more materials and sites, the greater the exposure to the risk of theft. Therefore, all states should do more to minimize their use of weapons-usable nuclear materials in civilian energy programs, and they should reduce or eliminate stockpiles of those materials where possible.

The use of highly enriched uranium, a central ingredient needed to build a bomb, should be ended wherever possible for civilian purposes, and production for such purposes should cease where it is still occurring. Since 1992, the international community has removed and eliminated thousands of kilograms of HEU, converted HEU-

[18] The 12 states are Argentina, Australia, Belgium, Canada, France, India, Japan, Pakistan, Russia, South Africa, the United Kingdom, and the United States. The nine states are Brazil, Finland, Romania, Slovakia, Slovenia, South Korea, Spain, Sweden, and Taiwan.

The use of highly enriched uranium, a central ingredient needed to build a bomb, should be ended wherever possible for civilian purposes, and production for such purposes should cease where it is still occurring.

fueled reactors to use low-enriched uranium (LEU), which is not weapons-usable, and promoted the adoption of LEU alternatives for medical isotope production. Although most HEU is designated for nuclear weapons purposes, significant amounts remain in civilian programs and non-weapons applications.

Given that nearly all civilian and naval applications of HEU fuel have proven LEU alternatives, the international community must take steps now to accelerate efforts to minimize—and ultimately eliminate—HEU in the civilian and naval spheres. States should commit to a roadmap for eliminating civilian and naval HEU through (a) HEU reactor conversions or shutdowns, (b) HEU fuel removals, (c) LEU alternatives for medical isotope production, (d) development of LEU naval fuels, and (e) HEU downblending.

To consolidate achievements in eliminating HEU, states should also consider creating regional HEU-free zones that would help cement a global norm against civilian HEU use in much the same way that nuclear-weapon-free zones have strengthened global non-proliferation and disarmament efforts. For more detail, see "A Roadmap to Minimize and Eliminate Highly Enriched Uranium" and "The Case for Highly Enriched Uranium-Free Zones," available at www.nti.org.

In the case of separated plutonium, states with plutonium stocks should focus in the near term on prudent management practices for minimizing the security risks from the way plutonium is handled—that is, produced, stored, processed, transported, and used. States should also work to keep their stocks of separated plutonium to minimum levels, thereby adhering to a policy of keeping new plutonium production in balance with consumption in any given cycle.[19] In the long term, states must grapple with the challenge of how to consume or dispose of accumulated stocks of separated plutonium and must explore alternative technologies to reprocessing.

SUSTAINING HIGH-LEVEL POLITICAL ATTENTION ON NUCLEAR SECURITY

With the Nuclear Security Summit process coming to an end, now a principal hurdle is the need to sustain high-level political attention on nuclear security so that work toward building a strengthened global nuclear security system and improving nuclear security globally does not go unfinished—perhaps with disastrous consequences. To sustain high-level political attention on nuclear security after the Nuclear Security Summit process ends, states should:

Agree on a Post-Summit Path, and Make It a National Priority

The Nuclear Security Summits have brought high-level attention to the threat of nuclear terrorism and have catalyzed actions by the 53 participating states to strengthen their own security and to work collectively to strengthen global security. However, the job of securing all weapons-usable nuclear materials and of building an effective global nuclear security system is far from finished. As the Nuclear Security Summit draws to a close, no process is in place to continue building an effective global system for assurance, accountability, and action.

[19] The IAEA INFCIRC/549 plutonium management guidelines note the importance of balancing supply and demand and of allowing for reasonable working stocks. States that have committed to INFCIRC/549 are Belgium, China, France, Germany, Japan, Russia, Switzerland, the United Kingdom, and the United States.

Sustained political leadership is needed to ensure that a terrorist can never use a nuclear weapon or cause the dispersal of radioactive material through sabotage or a dirty bomb. If the summits end without a mechanism to enable continued progress and to ensure implementation of existing commitments, the international community risks seeing efforts to strengthen nuclear security languish or, worse, backslide. The 2016 summit should make defining a path to sustain momentum and high-level attention a priority outcome. Doing so will ensure that collective efforts to strengthen the global nuclear security system and to reduce the threat of nuclear terrorism do not fade after the summit process ends.

The following four recommendations provide a path to sustain high-level political attention on and ensure implementation of nuclear security after the summit process ends:

- **A core group must drive progress.** A core group of countries must keep nuclear security high on international and national agendas through continued meetings focused on an ambitious program. Doing so will allow states to continue building consensus on a global system for materials security, will assess implementation of nuclear security commitments, will serve as a forum for reporting and accountability, and will provide opportunities for new individual and joint commitments. Without an effort to drive the nuclear security mission forward, momentum from the summits will be lost, and gaps in the existing security architecture will not be closed.

- **A vehicle is needed to ensure long-term attention and accountability.** In addition to leadership, states will need a way to sustain high-level attention on nuclear security in the long term. The Convention on the Physical Protection of Nuclear Material provides a mechanism for regular review conferences at intervals of at least five years. The stated purpose of the CPPNM's review conference mechanism is to review the implementation of the CPPNM and its adequacy "in the light of the then prevailing situation." Apart from the mandatory review conference that was held five years after the CPPNM's entry into force, the review conference mechanism has never been exercised. However, it could provide the legal basis and structure to serve as a framework for progress after the summit, particularly after the 2005 Amendment to the CPPNM enters into force, which will trigger a mandatory review conference after five years.[20]

  The CPPNM review conference provision provides the flexibility necessary to address a broad range of nuclear security topics, including the security of military materials, and it brings to the conversation a broader group of states than those at the summits. However, this mechanism will be used to good effect only if states choose to do so, because it requires a majority of states that are party to the CPPNM to request a meeting. The core group of states that drives the process after the 2016 summit ends will need to push so that the CPPNM can meet its full potential as a vehicle for continued progress.

- **The IAEA's central role must be strengthened.** The IAEA must be strengthened so that it can enhance its already central role in nuclear security through its Nuclear Security Series recommendations and guidance, through IAEA services (such as peer review), through training programs and workshops, and through its Nuclear Security Conferences. States that praise the IAEA's nuclear security work should back up their words by providing human and financial resources and additional political support so the IAEA can intensify its work with member states to strengthen nuclear security, including the nine countries with weapons-usable nuclear materials that have not contributed to the IAEA's Nuclear Security Fund in the past two years.[21] As depositary for the CPPNM, the IAEA will also play an important role in international discussions to strengthen global nuclear security by serving as the designated convener of regular CPPNM review conferences, thus acting in a secretariat role.

- **States must prioritize national resources to support nuclear security.** To support sustained high-level political attention and action on nuclear security after the summits end, each state should ensure that it has

[20] For further details on how the CPPNM review conference mechanism could provide a path forward for further progress after the summit process ends, see Jonathan Herbach and Samantha Pitts-Kiefer, "More Work to Do: A Pathway for Future Progress on Strengthening Nuclear Security," *Arms Control Today*, October 2015, p. 8.

[21] The nine countries are Argentina, Belarus, Iran, Israel, North Korea, Pakistan, Poland, South Africa, and Switzerland. All of those countries, except Belarus, Iran, and North Korea participate in the summit process, which has emphasized the central role of the IAEA in nuclear security.

an office to coordinate and track nuclear security efforts and should provide political support, staff, and financial resources to that office to ensure that its work remains a top priority and that it can properly coordinate activities within and between governments.

IMPROVING INDIVIDUAL STATE STEWARDSHIP OF NUCLEAR MATERIALS

To improve state stewardship, states should take the following actions:

Strengthen Cybersecurity at Nuclear Facilities, and Build Technical Capacity

A cyber attack against a nuclear facility could facilitate the theft of nuclear materials or an act of sabotage leading to a catastrophic radiation release. Yet most states are not effectively prepared to deal with this emerging threat.

Given the potential consequences, all states must work aggressively to ensure that their nuclear facilities are protected from cyber attacks. Governments should include the cyber threat within the national threat assessment for their nuclear facilities, and they should put in place a clear set of laws, regulations, standards, and licensing requirements for all nuclear facilities that require protection of digital systems from cyber attacks. At the facility level, leadership must prioritize cybersecurity, determine potential consequences, and implement a program that ensures that digital assets and networks are characterized and secured and that the security is routinely tested. Because a potential exists for blended cyber-physical attacks (whereby a cyber attack and a physical attack could together defeat physical security systems), cybersecurity and physical security programs should be integrated.

Recognizing the challenge of finding technically trained and competent cybersecurity personnel, states should take advantage of the IAEA, the World Institute for Nuclear Security (WINS), and other means to strengthen awareness and to develop the capacity necessary to protect and respond to cyber attacks.[22] Just as in other sectors, it will be difficult to develop and maintain the necessary capacity in every country with nuclear facilities. Consideration should be given to the development of alternative means of filling gaps in national capacities.

Improve Security and Control Measures to Protect Materials from Theft and Facilities from Sabotage

The foundation of security measures to protect against theft and sabotage includes physical protection, control, and accounting measures, and states should strengthen those measures in a way that is commensurate with the threat. At a minimum, nuclear security laws and regulations should be in line with IAEA guidance. On the critically important measures needed to prevent a malevolent insider from gaining access to nuclear materials, nearly half the states with weapons-usable nuclear materials or nuclear facilities received less than half the possible points for this indicator, suggesting serious shortfalls in many states. States and operators also must take the radiological consequences of an act of sabotage into account when designing physical protection measures for nuclear materials and systems, equipment, and devices.

Strengthening nuclear security laws and regulations is one way states can improve their overall security and demonstrate commitment to fulfilling their security obligations. However, laws and regulations are only a first step. States and operators should also continually test whether security measures are adequate, should build a culture of security excellence among those who work at nuclear facilities, and should encourage those who are responsible for implementing security to participate in the exchange of best practices. They could accomplish those objectives through WINS or through training and workshops offered by the IAEA and regional Centers of Excellence or Nuclear Security Training and Support Centers.

[22] Protection of nuclear facilities from cyber attacks requires a diverse set of technical skills that includes knowledge of a wide range of commercial and custom computer systems and digital controllers, as well as the processes and equipment within the facility—a far more extensive skill set than is broadly recognized or available at many facilities.

With the summit process ending, states should recommit to delivering on their summit commitments and should provide information on their progress.

Ensure That Effective Nuclear Security Regimes Are in Place before Building Nuclear Energy Programs

States planning new nuclear energy programs must first put in place the legal and regulatory frameworks necessary to ensure effective security of their nuclear facilities. States should take advantage of (a) IAEA guidance on setting up a national nuclear security regime, (b) IAEA recommendations on physical protection, and (c) WINS best-practice documents. They should also seek assistance from states with well-established nuclear programs before embarking on their own. It is important that states considering or currently developing new programs—such as Jordan, Lithuania, Turkey, the United Arab Emirates, and Vietnam—seek guidance from the IAEA and other partners to ensure the safe and secure operation of new nuclear facilities.

Establish Independent Regulatory Agencies and Strengthen Existing Ones

One of the most important steps that a state can take to strengthen security is to establish an independent regulatory authority to regulate nuclear security and to provide oversight and accountability for those with nuclear security responsibilities. Without such an authority, a state cannot reassure itself or others that its nuclear materials are secure and accounted for. Three states with weapons-usable nuclear materials—India, Iran, and North Korea—still do not have an independent regulatory agency to provide appropriate nuclear security oversight. And five states without weapons-usable nuclear materials but with nuclear facilities—Algeria, Chile, Mexico, Peru, and Taiwan—do not have an independent regulatory agency. Those states should establish independent regulatory agencies,[23] and states that already have agencies in place should strengthen them to ensure that they are independent of influence from those being regulated and from other political pressures.

Deliver on Nuclear Security Commitments

The Nuclear Security Summits have contributed greatly to security improvements and reshaping norms among states about what information can and should be shared for their own benefit and that of others. However, many commitments from the 2010, 2012, and 2014 summits have yet to be fulfilled, including important pledges related to the security of radioactive sources. Governments must still do more to share appropriate information to enable accurate tracking over time, a path many states have taken without compromising security. With the summit process ending, states should recommit to delivering on their summit commitments and should provide information on their progress.

[23] India has pledged to establish an independent regulatory agency for nuclear security, but legislation aimed at doing so has been stalled. On April 1, 2013, North Korea's official news agency released the "Law on Consolidating Position of Nuclear Weapons State Adopted," in which the North Korean government clarified its position on international regulations and noted the important role of internal oversight over its civil nuclear activity, although the independence of any regulator in North Korea cannot be ensured.

DEVELOPING THE NTI INDEX

Taking advantage of the extensive expertise of the Economist Intelligence Unit (EIU) in developing indices, NTI and the EIU rely on a rigorous and transparent process to develop the NTI Index. Key elements of that process are as follows:

- **Broad framework.** Recognizing the need for a holistic approach to security, the NTI Index framework is intentionally broad and is made up of the five categories of indicators shown on pages 8–9. A subset of categories and indicators was used in the assessment of countries without materials and in the assessment related to sabotage. The categories and indicators are weighted in a way that reflects their relative importance, as determined by NTI in conjunction with the International Panel of Experts.
- **Robust data and analysis.** The research process is led by the EIU and takes advantage of its global network of analysts skilled in researching country laws and regulations. EIU analysts rely on public and open-source information, including national laws and regulations, government reports and public statements, and reports from non-governmental organizations and international organizations such as the International Atomic Energy Agency. The NTI Index does not provide a facility-by-facility assessment of security practices.
- **International perspective.** The International Panel of Experts (members and their roles are detailed on page 51) guides the overall Index process and informs the selection of indicators and their relative weights. In addition, the panel helps ensure that the NTI Index reflects diverse viewpoints and ongoing international discussions on priorities.

Members of the International Panel of Experts guide the NTI Index process and inform the selection of indicators and their relative importance.

- **Transparent process.** Engagement with governments is key to ensuring that the process by which the NTI Index is created is as transparent as possible. The 24 governments with weapons-usable nuclear materials, as well as 23 governments without weapons-usable nuclear materials but included in the sabotage ranking, were offered briefings about the NTI Index. In addition, those governments were offered the opportunity to review and comment on preliminary results to ensure that the NTI Index reflects the most accurate and up-to-date information possible. Of the 24 states, 14 took advantage of this opportunity, and of the 23 states, 11 took advantage of this opportunity.[24]

For further details about the methodology and NTI Index development process, see the Frequently Asked Questions in the Appendix and the complete EIU Methodology at www.ntiindex.org.

[24] Australia, Belarus, Belgium, Bulgaria, Canada, Chile, the Czech Republic, Finland, France, Germany, Hungary, Italy, Japan, Mexico, the Netherlands, Norway, Poland, Slovakia, Slovenia, South Korea, Sweden, Switzerland, Taiwan, the United Kingdom, and the United States.

APPENDICES

ABOUT THE INTERNATIONAL PANEL OF EXPERTS

In developing the NTI Index, the Economist Intelligence Unit (EIU) and NTI convened highly respected nuclear materials security experts from around the world. This group included experts with a broad range of expertise and who were from nuclear-weapon and non–nuclear-weapon states and from developed and developing nations. The panel included experts from Argentina, Australia, China, India, Japan, Kazakhstan, Pakistan, Russia, South Africa, Sweden, the United Kingdom, the United States, and Vietnam. Of those, one is a representative from the World Institute for Nuclear Security, and one is a former International Atomic Energy Agency (IAEA) official.

The panel advised NTI and the EIU on the selection of indicators and their relative importance. Panel members were instrumental in considering options (for example, the inclusion of the new cybersecurity indicator) for strengthening the NTI Index and for advising on the development of the framework for the new sabotage ranking. Input from the panel helps ensure that the NTI Index has an international point of view and reflects the ongoing international discussion on nuclear security priorities.

Panel members do not represent their country's interests or score individual countries. Instead, they play an advisory role in their personal, not professional, capacities. Participation in the International Panel of Experts does not imply endorsement of every aspect of the NTI Index or its findings and recommendations. On the contrary, panel meetings demonstrated a range of views and the need for a continuing dialogue on priorities.

Dauren Aben, Senior Research Fellow, Nazarbayev University and Kazakhstan Institute for Strategic Studies under the President of the Republic of Kazakhstan

John Carlson, Counselor, NTI; former Director General, Australian Safeguards and Non-Proliferation Office

Anatoly S. Diakov, Researcher, Center for Arms Control, Energy and Environmental Studies

Roger Howsley, Executive Director, World Institute for Nuclear Security

Feroz Khan, Lecturer, U.S. Naval Postgraduate School; Retired Brigadier-General in the Pakistani Army

Frans Mashilo, Senior Manager, Security Services, South African Nuclear Energy Corporation

Steve Nesbit, Director, Nuclear Policy and Support, Duke Energy Corporation

Anita Nilsson, Executive Director, AN & Associates; Advisor, Federation of American Scientists; Senior Fellow of the CITS, University of Georgia; former Director of IAEA Office of Nuclear Security

Raúl Racana, Professor, Nonproliferation for Global Security Foundation

Scott D. Sagan, The Caroline S. G. Munro Professor of Political Science and Senior Fellow, Center for International Security and Cooperation, Stanford University

Sheel Kant Sharma, Distinguished Fellow, Centre for Air Power Studies; former Ambassador of India to Austria and Permanent Representative of India to the United Nations and the IAEA

Tatsu Suzuki, Professor and Vice Director, Research Center for Nuclear Weapons Abolition, Nagasaki University; former Vice Chairman, Japan Atomic Energy Commission

Tuan Ta Minh, Visiting Professor, Diplomatic Academy of Vietnam

Hui Zhang, Senior Research Associate, Project on Managing the Atom, Harvard University

ABOUT NTI AND THE EIU

NUCLEAR THREAT INITIATIVE
www.nti.org

The Nuclear Threat Initiative (NTI) is working to protect our lives, livelihoods, environment, and quality of life for this and future generations from the growing risk of catastrophic attacks from weapons of mass destruction and disruption—nuclear, biological, radiological, chemical, and cyber-nuclear.

The world has entered a new and dangerous era. Technologies, scientific know-how, and deadly materials once held by only a few countries are now widely available. A growing number of individuals, well-financed terrorist organizations, and states are seeking and developing the capacity to build and use those weapons. Governments struggle to keep up with the threat.

Our operating model is unique. We design innovative threat reduction projects that we carry out with partners to directly reduce threats, to show governments the way, and to build momentum and support for action on a larger scale.

Founded in 2001 by former U.S. Senator Sam Nunn and philanthropist Ted Turner, NTI is guided by a prestigious, international board of directors. We rely on the generosity of donors to support our work.

ECONOMIST INTELLIGENCE UNIT
www.eiu.com

The Economist Intelligence Unit (EIU) is the research arm of The Economist Group, publisher of The Economist. As the world's leading provider of country intelligence, it helps governments, institutions, and businesses by providing timely, reliable, and impartial analysis of economic and development strategies. Through its public policy practice, the EIU provides evidence-based research for policymakers and stakeholders who are seeking measureable outcomes, in fields ranging from gender and finance to energy and technology. It conducts research through interviews, regulatory analysis, quantitative modeling, and forecasting, and it displays the results using interactive data visualization tools.

Through a global network of more than 350 analysts and contributors, the EIU continuously assesses and forecasts political, economic, and business conditions in more than 200 countries.

FREQUENTLY ASKED QUESTIONS
2016 NTI Index Methodology

This appendix summarizes the 2016 NTI Index methodology for the two theft rankings and the sabotage ranking. More detailed information is available in the full methodology prepared by the Economist Intelligence Unit (EIU) at www.ntiindex.org.

THEFT RANKING

What is the theft ranking?

The "theft ranking" refers to the two rankings that assess the nuclear materials security conditions of 24 countries with one kilogram or more of weapons-usable nuclear materials and 152 countries with less than one kilogram of or no weapons-usable nuclear materials with respect to the risk of theft of weapons-usable nuclear materials.[25] Countries without materials are included because they have a responsibility to ensure that they do not serve as safe havens, staging grounds, or transit routes for illicit nuclear activities. The 2012 and 2014 editions of the NTI Index included only these theft rankings. The 2016 NTI Index includes the third edition of the theft ranking, as well as a new sabotage ranking.

What are weapons-usable nuclear materials?

For purposes of the theft ranking, the term "weapons-usable nuclear materials" includes highly enriched uranium (HEU), which is uranium enriched to 20 percent or more in the isotope U-235 (including spent fuel); separated plutonium, which is plutonium separated from irradiated nuclear fuel by reprocessing; and the plutonium content in fresh mixed oxide fuel, which consists of blended uranium and plutonium used to fuel nuclear power plants.

What does the theft ranking assess?

The theft ranking assesses nuclear materials security conditions with respect to the theft of weapons-usable nuclear materials that could be used to build a nuclear device. The theft ranking does not assess security for low-enriched uranium or for the radiological materials needed to build a "dirty bomb," proliferation risks, or disarmament. All of those areas are critical and must also be addressed by governments.

The theft ranking for countries with materials assesses countries against a broad framework of five categories with 20 indicators and 60 subindicators. The theft ranking for countries without materials assesses countries against only three categories with 9 indicators and 27 subindicators. Indicators reflect policies, actions, and other conditions that shape a state's overall nuclear materials security.

Charts with a list and description of the categories and indicators are included at the end of this appendix.

[25] The threshold of one kilogram was selected and takes into account the International Atomic Energy Agency's INFCIRC/225, Rev. 5, which states that quantities greater than one kilogram of HEU should be afforded higher levels of protection. NTI recognizes that some states may have gram quantities of weapons-usable nuclear materials in multiple locations that, added together, may bring totals to more than one kilogram. For the purposes of the theft ranking and the need to rely on publicly available information, those states are grouped with states that have no weapons-usable nuclear materials.

Indonesia was included in the theft ranking for countries with less than one kilogram of or no weapons-usable nuclear materials on the basis of publicly available sources assessing it to have less than one kilogram of materials. Immediately before the EIU finalized the NTI Index data, however, the U.S. General Accountability Office released a report in September 2015 saying that Indonesia has three kilograms of highly enriched uranium used as targets in its molybdenum 99 production, which it plans to downblend before the 2016 summit. Given the late timing of this information's availability and the fact that Indonesia will downblend the material in the coming months, NTI decided not to include Indonesia in the theft ranking for countries with material. However, Indonesia is included in the sabotage ranking.

What changes have been made to the theft ranking since the 2014 edition?

As was the case in 2014, the 2016 theft ranking includes several modifications to the framework, including adjustments to the relative weights to account for those changes. One new cybersecurity indicator with four subindicators was added. Three subindicators—law enforcement response training, review of security arrangements, and UNSCR 1540 implementation—were slightly altered. The Security and Control Measures category weight and indicator weights within that category were adjusted to reflect the addition of the new cybersecurity indicator. All other weights remained the same.

In addition, because Uzbekistan removed all of its weapons-usable nuclear materials, it moved out of the ranking of countries with materials to the ranking of countries without materials. The ranking for countries with materials now has 24 countries, and the ranking for countries without materials now has 152 countries. For more information on those changes, see the full EIU Methodology at www.ntiindex.org.

If the theft ranking has changed, how are scores compared between 2012, 2014, and 2016?

As a result of changes to the NTI Index framework, direct year-on-year, or "apples to apples," comparisons between the 2016 edition, the 2014 edition, and the 2012 edition would not have been possible. To allow for accurate year-on-year comparisons needed for tracking progress, the EIU rescored the countries in the 2012 and 2014 editions of the NTI Index using the new framework and the data that would have been available in 2011 and 2013, respectively, when research for the 2012 and 2014 editions was conducted.

In addition, the results from the 2012 and 2014 editions were thoroughly reviewed and researched again to ensure accuracy. In a limited number of cases, research or responses to the data review and confirmation process indicated that new information had become available, a relevant law or regulation had not been captured, or researchers disagreed on a score. In those instances, the EIU revised the 2012 and 2014 scores to reflect the most accurate data. As a result, the 2012, 2014, and 2016 scorings can be accurately compared, and the comparisons contained in this report reflect those new scorings.

SABOTAGE RANKING

What is the sabotage ranking?

The "sabotage ranking" refers to a new, third ranking that assesses the nuclear security conditions of 45 countries with nuclear facilities, the sabotage of which could result in a significant radiological release causing serious off-site health consequences. All 45 countries are also included in one of the two versions of the theft ranking—22 of the 45 countries have one kilogram or more of weapons-usable nuclear materials, and 23 of the 45 countries have less than one kilogram of or no weapons-usable nuclear materials. The sabotage ranking is included for the first time in the 2016 NTI Index.

What does the sabotage ranking measure?

The sabotage ranking measures nuclear security conditions with respect to the sabotage of nuclear facilities. For purposes of the NTI Index related to sabotage, nuclear facilities are defined as those facilities, the sabotage of which could result in a significant radiological release causing serious off-site health consequences. They include (a) operating nuclear power reactors or nuclear power reactors that have been shut down within the last five years, (b) research reactors with a capacity of two megawatts or greater, (c) reprocessing facilities, and (d) spent fuel pools only if the fuel has been discharged in the last five years and if not associated with an operating reactor.

The sabotage ranking assesses countries against five categories with 16 indicators and 51 subindicators. A chart with a list and description of the categories and indicators is included at the end of this appendix. Indicators reflect policies, actions, and other conditions that shape a state's overall nuclear security.

A more detailed description of scoring criteria and sources is available in the full EIU Methodology at www.ntiindex.org.

What are the differences between the theft ranking and the sabotage ranking?

Because security measures to protect nuclear facilities and to protect materials against theft and sabotage are often related, NTI and the EIU—with input from the International Panel of Experts and technical advisors—looked at the framework for the theft ranking to determine which indicators and subindicators would be relevant to sabotage in their current format, which indicators and subindicators would need to be edited or deleted, and whether the sabotage ranking should include any new indicators and subindicators that are relevant to sabotage but not theft.

As a result of that analysis, 14 subindicators from the theft ranking were not included, 5 subindicators were added, and 6 subindicators were revised. Those changes are indicated in the chart beginning on page 61.

GENERAL METHODOLOGY

How are scores calculated, and what do they mean?

The overall score (0–100) for each country in the NTI Index is a weighted sum of the categories. Each category is scored on a scale of 0–100, where 100 represents the most favorable nuclear security conditions, and 0 represents the least favorable conditions in the NTI Index. The subindicator scores (ranging from 0 to 8, depending on the question) are summed to determine the indicator score. Each category is normalized on a scale of 0–100 on the basis of the sums of underlying indicator scores, and a weight is then applied. Weights are based on input of the International Panel of Experts and reflect the relative importance and relevance of each category and indicator.

A score of 100 in the NTI Index does not indicate that a country has perfect nuclear security conditions, and a score of 0 does not mean that a country has no security; instead, the scores of 100 and 0 represent the highest and lowest possible scores, respectively, as measured by the NTI Index criteria.

How was the data gathered?

The EIU employed country experts and regional specialists from its global network of more than 350 analysts and contributors around the world. Most of the research was conducted between January and July 2015, although data was updated as new information became available until November 1, 2015. Therefore, actions taken by countries after November 1, 2015, are not captured in this edition of the NTI Index.

What types of information were used to score countries?

In creating the NTI Index, the EIU relied on publicly available sources, including (a) primary legal texts and legal reports; (b) government publications and reports; (c) academic publications and reports; (d) websites of government authorities, international organizations, and non-governmental organizations; (e) interviews with experts; and (f) local and international news media reports. In addition, the EIU proprietary country rankings and reports (specifically “Risk Briefing” and the “Business Environment Ranking”) were used to score indicators in the Risk Environment category. Government responses to the data review and confirmation request provided additional information.

The NTI Index does not provide a facility-by-facility assessment of security practices, and neither the EIU nor NTI conducts research at facilities. Although facility-level assessments would provide important “ground truth” information, that type of information is not currently available owing to the sensitive nature of specific security arrangements.

In the cases of Iran, Israel, North Korea, and Pakistan, where publicly available information was lacking but which rely on military (or, in the case of Israel, civil defense force) protection for nuclear sites, scores were assigned using a proxy indicator—military capability or sophistication. In some cases, scores relied on expert input or other secondary expert sources. For a detailed description on how challenging countries were scored, see the full EIU Methodology at www.ntiindex.org.

Were governments consulted during the development of the NTI Index?

Countries with one kilogram or more of weapons-usable nuclear materials in the theft ranking and all countries in the sabotage ranking were offered briefings on the NTI Index at the beginning of the process. Of those 47 countries, 36 accepted a briefing—21 countries with one kilogram or more of materials in the theft ranking and an additional 15 countries without materials in the sabotage ranking.[26]

In addition, after researching and gathering data, NTI and the EIU provided the 47 countries with an opportunity to review and comment on the EIU's preliminary results. The purpose of this data review and confirmation process was to ensure the accuracy of the 2016 NTI Index data, given that much of the research involved subjects for which information is not always publicly available. Of the 47 countries, 14 countries with one kilogram or more of materials in the theft ranking and 11 additional countries without materials in the sabotage ranking participated in the data confirmation process.[27]

What other experts were consulted during the development of the NTI Index?

NTI and the EIU received input from the International Panel of Experts. A list of members of the panel as well as a description of their role is included on page 51. In addition to the international panel, three technical advisors were consulted: Clifford Glantz of Pacific Northwest National Laboratory; Dmitry Kovchegin, an independent consultant; and Lonnie Moore of the Centerra Group.

Where can I find all of the scores and data?

All information is available on the NTI Index website, www.ntiindex.org. The scores for indicators and subindicators in both versions of the theft ranking and in the sabotage ranking are included in three models available as Excel workbooks. The models offer a wide range of analytic tools, thereby allowing a deeper investigation of measures of nuclear security globally. Users can filter countries by region, for example, or by membership of international organizations or multilateral initiatives. A user can compare any two countries directly and can examine correlations between indicators. Individual country profiles are also included in the models, thus permitting a deeper dive into the nuclear security conditions in a given country.

The weights assigned to each indicator can be changed to reflect different assumptions about the importance of categories and indicators. A user can also change individual subindicator scores to see how a country's overall scores would have been different if it had, for example, ratified a treaty or taken some other action captured in the NTI Index. Finally, the model allows the final scores to be benchmarked against external factors that may potentially influence nuclear security.

[26] Argentina, Armenia, Australia, Belarus, Belgium, Brazil, Bulgaria, Canada, Chile, China, the Czech Republic, Egypt, Finland, France, Germany, Hungary, India, Italy, Japan, Kazakhstan, Mexico, the Netherlands, Norway, Pakistan, Poland, Romania, Russia, Slovakia, Slovenia, South Africa, South Korea, Sweden, Switzerland, Taiwan, the United Kingdom, and the United States.

[27] Australia, Belarus, Belgium, Bulgaria, Canada, Chile, the Czech Republic, Finland, France, Germany, Hungary, Italy, Japan, Mexico, the Netherlands, Norway, Poland, Slovakia, Slovenia, South Korea, Sweden, Switzerland, Taiwan, the United Kingdom, and the United States.

FRAMEWORK FOR THE THEFT RANKING

The chart that follows provides the framework—categories, indicators, subindicators, and weights—for the theft ranking. Weights (as percentages) are shown for the theft ranking for countries with weapons-usable nuclear materials. Weights for countries without materials, as well as a more detailed description of scoring criteria and sources, are available in the EIU Methodology at www.ntiindex.org.

1	**QUANTITIES AND SITES**	**16%**
1.1	**Quantities of Nuclear Materials** ***The larger the quantity of nuclear materials held, the greater the materials management requirements and potential risk that materials could be stolen.***	**42%**
1.1.1	Quantities of nuclear materials	
1.2	**Sites and Transportation** ***The greater the number of sites with nuclear materials and the frequency of transport of those materials, the greater the potential risk of security breaches.***	**35%**
1.2.1	Number of sites	
1.2.2	Bulk processing facility	
1.2.3	Frequency of materials transport	
1.3	**Material Production and Elimination Trends** ***Increasing or decreasing the quantities of nuclear material in a state changes the potential risk of materials being stolen.***	**23%**
1.3.1	Material production/elimination trends	
2	**SECURITY AND CONTROL MEASURES**	**29%**
2.1	**On-Site Physical Protection** ***Essential measures for securing sites and facilities.***	**20%**
2.1.1	Mandatory physical protection	
2.1.2	On-site reviews of security	
2.1.3	Design Basis Threat	
2.1.4	Security responsibilities and accountabilities	
2.1.5	Performance-based program	
2.2	**Control and Accounting Procedures** ***Materials control and accounting (MC&A) is a necessary element of a comprehensive security system.***	**15%**
2.2.1	Legal and regulatory basis for material control and accounting	

2.2.2	Measurement methods	
2.2.3	Inventory record	
2.2.4	Material Balance Area(s)	
2.2.5	Control measures	
2.3	**Insider Threat Prevention** ***The qualifications of personnel, the strength of the security culture, and the use of certain surveillance measures are critical to how well security procedures are followed and decrease vulnerability to insider threats.***	**19%**
2.3.1	Personnel vetting	
2.3.2	Frequency of personnel vetting	
2.3.3	Reporting	
2.3.4	Surveillance	
2.4	**Physical Security during Transport** ***Materials in transit are particularly vulnerable to theft.***	**18%**
2.4.1	Physical security during transport	
2.5	**Response Capabilities** ***Response capabilities are part of a layered security system and may enable materials to be recovered should they be stolen from a site.***	**18%**
2.5.1	Emergency response capabilities	
2.5.2	Armed response capabilities	
2.5.3	Law enforcement response training	
2.5.4	Nuclear infrastructure protection plan	
2.6	**Cybersecurity** ***Nuclear materials and facilities are vulnerable to cyber attacks as well as physical attacks. Therefore, cybersecurity is a critical component of protecting against theft.***	**10%**
2.6.1	Mandatory cybersecurity	
2.6.2	Critical digital asset protection	
2.6.3	Cybersecurity Design Basis Threat	
2.6.4	Cybersecurity assessments	

3	**GLOBAL NORMS**	**17%**
3.1	**International Legal Commitments** ***International legal commitments are the basis for domestic legislation, regulations, and security capacity.***	**42%**
3.1.1	Convention on the Physical Protection of Nuclear Material (CPPNM)*	
3.1.2	2005 Amendment to the CPPNM*	
3.1.3	International Convention for the Suppression of Acts of Nuclear Terrorism (ICSANT)*	
3.2	**Voluntary Commitments** ***Voluntary commitments demonstrate a state's support for nuclear materials security as a global agenda.***	**27%**
3.2.1	International Atomic Energy Agency (IAEA) membership*	
3.2.2	Proliferation Security Initiative (PSI) membership*	
3.2.3	Global Initiative to Combat Nuclear Terrorism (GICNT) membership*	
3.2.4	Global Partnership Against the Spread of Weapons and Materials of Mass Destruction membership*	
3.2.5	World Institute for Nuclear Security (WINS) contributions*	
3.2.6	IAEA Nuclear Security Fund contributions*	
3.2.7	Bilateral or multilateral assistance*	
3.2.8	Centers of Excellence*	
3.3	**International Assurances** ***International assurances enhance international confidence in the effectiveness of a country's nuclear security conditions.***	**31%**
3.3.1	Published regulations and reports	
3.3.2	Public declarations and reports about nuclear materials	
3.3.3	Review of security arrangements	
4	**DOMESTIC COMMITMENTS AND CAPACITY**	**20%**
4.1	**UN Security Council Resolution (UNSCR) 1540 Implementation** ***UNSCR 1540 obliges action on nuclear materials security, and its implementation demonstrates a state's commitment level.***	**20%**
4.1.1	UNSCR 1540 reporting*	
4.1.2	Extent of UNSCR 1540 implementation[o]	

4.2	**Domestic Nuclear Materials Security Legislation** ***The implementation of security measures is rooted in domestic nuclear materials security legislation.***	**31%**
4.2.1	CPPNM implementation authority*	
4.2.2	National legal framework for CPPNM*	
4.3	**Safeguards Adherence and Compliance** ***States compliant with safeguards measures take seriously their responsibilities related to their stewardship of nuclear materials.***	**22%**
4.3.1	IAEA safeguards agreement (excluding Additional Protocol)º	
4.3.2	IAEA Additional Protocol*	
4.3.3	Facility exclusion from safeguards	
4.3.4	Safeguards violations*	
4.4	**Independent Regulatory Agency** ***A robust and independent regulatory structure helps ensure compliance with nuclear materials–related regulations.***	**27%**
4.4.1	Independent regulatory agency	
5	**RISK ENVIRONMENT**	**18%**
5.1	**Political Stability** ***A lack of political stability may enable lapses in nuclear materials security.***	**26%**
5.1.1	Social unrest*	
5.1.2	Orderly transfers of power*	
5.1.3	International disputes or tensions*	
5.1.4	Armed conflict*	
5.1.5	Violent demonstrations or violent civil or labor unrest*	
5.2	**Effective Governance** ***A lack of effective governance can compromise a country's ability to establish and sustain policies to secure nuclear materials.***	**25%**
5.2.1	Effectiveness of the political system*	
5.2.2	Quality of the bureaucracy*	

5.3	**Pervasiveness of Corruption** ***Corruption affects the potential for theft of nuclear materials and the rigor with which nuclear materials security measures are implemented.***	**22%**
5.3.1	Pervasiveness of corruption*	
5.4	**Group(s) Interested in Illicitly Acquiring Materials** ***The presence and capabilities of terrorist or criminal groups, particularly those with the goal of illicitly acquiring nuclear materials, raise the risk of theft of nuclear materials.***	**27%**
5.4.1	Group(s) interested in illicitly acquiring materials*	

* Denotes that the indicator or subindicator was scored for both countries with weapons-usable nuclear materials and countries without.

° Denotes that the indicator or subindicator was scored for both countries with weapons-usable nuclear materials and countries without, but that the scoring scheme for the latter differed.

FRAMEWORK FOR THE SABOTAGE RANKING

The chart that follows provides the framework—categories, indicators, subindicators, and weights—for the sabotage ranking. A more detailed description of scoring criteria and sources is available in the EIU Methodology at www.ntiindex.org.

1	**NUMBER OF SITES**	**5%**
1.1	**Number of Sites** ***The greater the number of nuclear facilities, the greater is the potential risk of acts of sabotage.***	**100%**
1.1.1	Number of sites†	
2	**SECURITY AND CONTROL MEASURES**	**33%**
2.1	**On-Site Physical Protection** ***Essential measures for securing sites and facilities.***	**22%**
2.1.1	Mandatory physical protection	
2.1.2	On-site reviews of security	
2.1.3	Design Basis Threat	
2.1.4	Security responsibilities and accountabilities	
2.1.5	Performance-based program	
2.2	**Control and Accounting Procedures** ***Control and accounting is a necessary element of a comprehensive security system.***	**17%**
2.2.1	Legal and regulatory basis for material control and accounting	
2.2.2	Radiological consequences (materials)§	

2.2.3	Radiological consequences (equipment, systems, and devices)§	
2.2.4	Control measures†	
2.2.5	Access control§	
2.3	**Insider Threat Prevention** ***The qualifications of personnel, the strength of the security culture, and the use of certain surveillance measures are critical to how well security procedures are followed and decrease vulnerability to insider threats.***	**21%**
2.3.1	Personnel vetting	
2.3.2	Frequency of personnel vetting	
2.3.3	Reporting	
2.3.4	Surveillance†	
2.4	**Response Capabilities** ***Response capabilities are part of a layered security system to prevent and mitigate acts of sabotage.***	**20%**
2.4.1	Emergency response capabilities	
2.4.2	Armed response capabilities†	
2.4.3	Law enforcement response training	
2.4.4	Nuclear infrastructure protection plan	
2.5	**Cybersecurity** ***Nuclear facilities are vulnerable to cyber attacks as well as physical attacks. Therefore, cybersecurity is a critical component of protecting against acts of sabotage.***	**20%**
2.5.1	Mandatory cybersecurity	
2.5.2	Critical digital asset protection	
2.5.3	Cybersecurity Design Basis Threat	
2.5.4	Cybersecurity assessments	
3	**GLOBAL NORMS**	**19%**
3.1	**International Legal Commitments** ***International legal commitments are the basis for domestic legislation, regulations, and security capacity.***	**42%**
3.1.1	Convention on the Physical Protection of Nuclear Material (CPPNM)	
3.1.2	2005 Amendment to the CPPNM	

3.1.3	International Convention for the Suppression of Acts of Nuclear Terrorism (ICSANT)	
3.1.4	Convention on Nuclear Safety§	
3.2	**Voluntary Commitments** ***Voluntary commitments demonstrate a state's support for nuclear security as a global agenda.***	**27%**
3.2.1	International Atomic Energy Agency (IAEA) membership	
3.2.2	Global Initiative to Combat Nuclear Terrorism (GICNT) membership	
3.2.3	Global Partnership Against the Spread of Weapons and Materials of Mass Destruction membership	
3.2.4	World Institute for Nuclear Security (WINS) contributions	
3.2.5	IAEA Nuclear Security Fund contributions	
3.2.6	Bilateral or multilateral assistance	
3.2.7	Centers of Excellence	
3.3	**International Assurances** ***International assurances enhance international confidence in the effectiveness of a country's nuclear security conditions.***	**31%**
3.3.1	Published regulations and reports	
3.3.2	Review of security arrangements	
4	**DOMESTIC COMMITMENTS AND CAPACITY**	**23%**
4.1	**UN Security Council Resolution (UNSCR) 1540 Implementation** ***UNSCR 1540 obliges action on nuclear security, and its implementation demonstrates a state's commitment level.***	**27%**
4.1.1	UNSCR 1540 reporting	
4.1.2	Extent of UNSCR 1540 implementation†	
4.2	**Domestic Nuclear Security Legislation** ***The implementation of security measures is rooted in domestic nuclear security legislation.***	**38%**
4.2.1	CPPNM implementation authority	
4.2.2	National legal framework for CPPNM	
4.2.3	Convention on Nuclear Safety report§	

4.3	**Independent Regulatory Agency** ***A robust and independent regulatory structure helps ensure compliance with nuclear security–related regulations.***	35%
4.3.1	Independent regulatory agency	
5	**RISK ENVIRONMENT**	**20%**
5.1	**Political Stability** ***A lack of political stability may enable lapses in nuclear security. Political stability is assessed for a two-year period.***	26%
5.1.1	Social unrest	
5.1.2	Orderly transfers of power	
5.1.3	International disputes or tensions	
5.1.4	Armed conflict	
5.1.5	Violent demonstrations or violent civil or labor unrest	
5.2	**Effective Governance** ***A lack of effective governance can compromise a country's ability to establish and sustain policies to secure nuclear facilities.***	25%
5.2.1	Effectiveness of the political system	
5.2.2	Quality of the bureaucracy	
5.3	**Pervasiveness of Corruption** ***Corruption affects the potential for acts of sabotage and the rigor with which nuclear security measures are implemented.***	22%
5.3.1	Pervasiveness of corruption	
5.4	**Group(s) Interested in Committing Acts of Nuclear Terrorism** ***The presence and capabilities of terrorist or criminal groups, particularly those with the goal of committing acts of nuclear terrorism, raise the risk of sabotage of nuclear facilities.***	27%
5.4.1	Group(s) interested in committing acts of nuclear terrorism†	

† Denotes indicators and subindicators that are also in the theft ranking but have been altered.

§ Denotes indicators and subindicators that are new to the sabotage ranking.

SELECTED COUNTRY SUMMARIES

This section includes country summaries for the 24 countries with weapons-usable nuclear materials that are assessed in the theft ranking and the 45 countries assessed in the sabotage ranking. Twenty-two countries appear in both the theft ranking for countries with materials and the sabotage ranking and therefore have two separate country summaries. All country summaries, including those for the 152 countries with less than one kilogram of or no weapons-usable nuclear materials, can be easily accessed online at www.ntiindex.org.

Each summary provides a snapshot of a country's scores and rankings overall and in each of the major index categories, as well as changes in scores since the 2014 NTI Index. Rankings preceded by an equal sign (=) indicate a tie with another country. In the NTI Index, scores of 0 and 100 represent the lowest or highest possible score, respectively, as measured by the NTI Index criteria.

For each country, indicators are placed into one of three categories: green, indicating an above-average score; yellow, indicating an average score; or red, indicating a below-average score. Countries seeking to improve their nuclear security conditions can focus their efforts on those indicators in the yellow and red categories.

THEFT RANKING

The 24 countries in the theft ranking for countries with one kilogram or more of weapons-usable nuclear materials are:

- Argentina
- Australia
- Belarus
- Belgium
- Canada
- China
- France
- Germany
- India
- Iran
- Israel
- Italy
- Japan
- Kazakhstan
- Netherlands
- North Korea
- Norway
- Pakistan
- Poland
- Russia
- South Africa
- Switzerland
- United Kingdom
- United States

SABOTAGE RANKING

The 45 countries in the sabotage ranking are:

- Algeria
- Argentina
- Armenia
- Australia
- Bangladesh
- Belgium
- Brazil
- Bulgaria
- Canada
- Chile
- China
- Czech Republic
- Egypt
- Finland
- France
- Germany
- Hungary
- India
- Indonesia
- Iran
- Israel
- Japan
- Kazakhstan
- Mexico
- Morocco
- Netherlands
- North Korea
- Norway
- Pakistan
- Peru
- Poland
- Romania
- Russia
- Slovakia
- Slovenia
- South Africa
- South Korea
- Spain
- Sweden
- Switzerland
- Taiwan
- Ukraine
- United Kingdom
- United States
- Uzbekistan

ARGENTINA

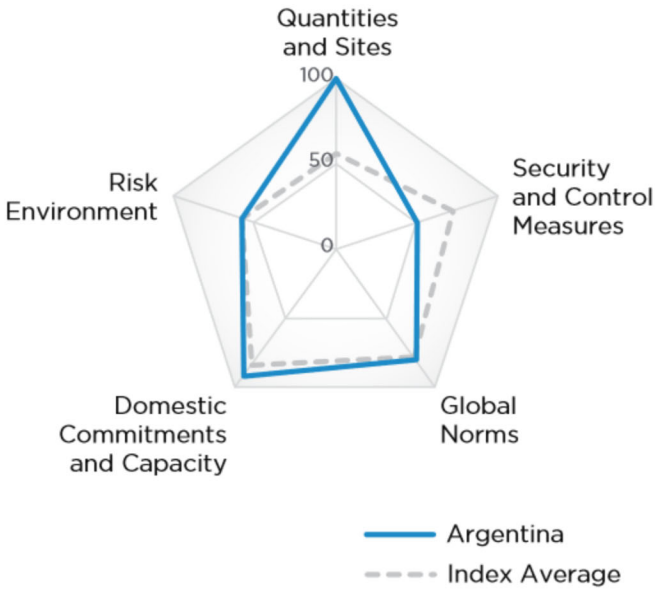
	2016 Score	Δ Score	Rank / 24
OVERALL SCORE	**73**	**–**	**15**
Quantities and Sites	100	–	=1
Security and Control Measures	50	–	20
Global Norms	80	–	16
Domestic Commitments and Capacity	92	–	=15
Risk Environment	58	–	13

= denotes tie in rank

Δ denotes change in score between 2014 and 2016

– denotes no change between 2014 and 2016

Scores are normalized (0–100, where 100 = most favorable nuclear materials security conditions)



ABOVE AVERAGE (scores greater than 66)		Δ
Quantities and Sites		
Quantities of Nuclear Materials	100	–
Sites and Transportation	100	–
Material Production / Elimination Trends	100	–
Security and Control Measures		
On-site Physical Protection	80	–
Control and Accounting Procedures	86	–
Response Capabilities	71	–
Global Norms		
International Legal Commitments	80	–
Voluntary Commitments	80	–
International Assurances	80	–
Domestic Commitments and Capacity		
UNSCR 1540 Implementation	80	–
Domestic Nuclear Materials Security Legislation	100	–
Safeguards Adherence and Compliance	83	–
Independent Regulatory Agency	100	–

ABOVE AVERAGE (scores greater than 66)		Δ
Risk Environment		
Group(s) Interested in Illicitly Acquiring Materials	100	–

AVERAGE (scores between 34 and 66)		Δ
Security and Control Measures		
Insider Threat Prevention	44	–
Risk Environment		
Political Stability	50	–
Effective Governance	50	–

BELOW AVERAGE (scores less than 34)		Δ
Security and Control Measures		
Physical Security During Transport	0	–
Cybersecurity	0	–
Risk Environment		
Pervasiveness of Corruption	25	–

AUSTRALIA

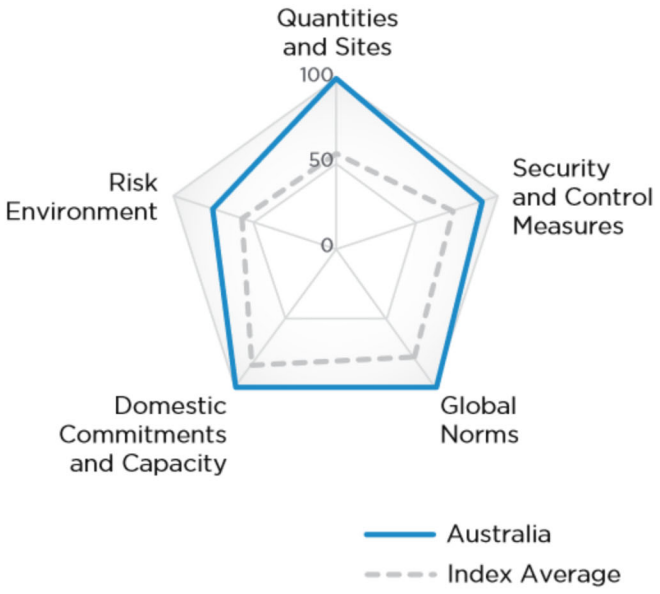
	2016 Score	Δ Score	Rank / 24
OVERALL SCORE	**93**	**–**	**1**
Quantities and Sites	100	–	=1
Security and Control Measures	90	–	6
Global Norms	100	–	=1
Domestic Commitments and Capacity	100	–	=1
Risk Environment	76	–	6

= denotes tie in rank

Δ denotes change in score between 2014 and 2016

– denotes no change between 2014 and 2016

Scores are normalized (0–100, where 100 = most favorable nuclear materials security conditions)



ABOVE AVERAGE (scores greater than 66)		Δ
Quantities and Sites		
Quantities of Nuclear Materials	100	–
Sites and Transportation	100	–
Material Production / Elimination Trends	100	–
Security and Control Measures		
On-site Physical Protection	80	–
Control and Accounting Procedures	100	–
Insider Threat Prevention	67	–
Physical Security During Transport	100	–
Response Capabilities	100	–
Cybersecurity	100	–
Global Norms		
International Legal Commitments	100	–
Voluntary Commitments	100	–
International Assurances	100	–
Domestic Commitments and Capacity		
UNSCR 1540 Implementation	100	–
Domestic Nuclear Materials Security Legislation	100	–
Safeguards Adherence and Compliance	100	–
Independent Regulatory Agency	100	–
Risk Environment		
Political Stability	85	–
Effective Governance	75	–
Pervasiveness of Corruption	100	–

AVERAGE (scores between 34 and 66)		Δ
Risk Environment		
Group(s) Interested in Illicitly Acquiring Materials	50	–

BELOW AVERAGE (scores less than 34)	Δ
None	

BELARUS

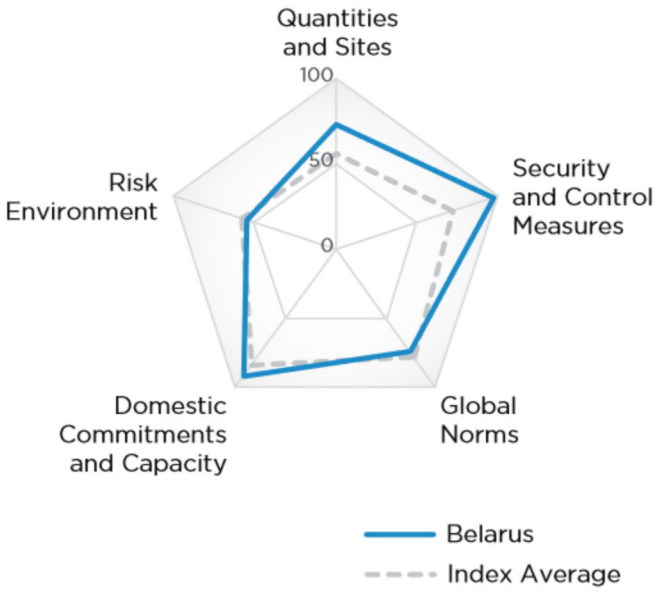
	2016 Score	Δ Score	Rank / 24
OVERALL SCORE	**81**	**–**	**=8**
Quantities and Sites	73	-5	=8
Security and Control Measures	97	–	3
Global Norms	74	+6	18
Domestic Commitments and Capacity	92	–	=15
Risk Environment	55	–	=14

= denotes tie in rank

Δ denotes change in score between 2014 and 2016

– denotes no change between 2014 and 2016

Scores are normalized (0–100, where 100 = most favorable nuclear materials security conditions)



ABOVE AVERAGE (scores greater than 66)		Δ
Quantities and Sites		
Sites and Transportation	83	–
Material Production / Elimination Trends	75	-25
Security and Control Measures		
On-site Physical Protection	100	–
Control and Accounting Procedures	100	–
Insider Threat Prevention	100	–
Physical Security During Transport	100	–
Response Capabilities	86	–
Cybersecurity	100	–
Global Norms		
International Legal Commitments	80	–
Voluntary Commitments	80	+20
Domestic Commitments and Capacity		
UNSCR 1540 Implementation	80	–
Domestic Nuclear Materials Security Legislation	100	–
Safeguards Adherence and Compliance	83	–

ABOVE AVERAGE (scores greater than 66)		Δ
Independent Regulatory Agency	100	–
Risk Environment		
Group(s) Interested in Illicitly Acquiring Materials	100	–

AVERAGE (scores between 34 and 66)		Δ
Quantities and Sites		
Quantities of Nuclear Materials	63	–
Global Norms		
International Assurances	60	–
Risk Environment		
Political Stability	40	–
Pervasiveness of Corruption	50	–

BELOW AVERAGE (scores less than 34)		Δ
Risk Environment		
Effective Governance	25	–

BELGIUM

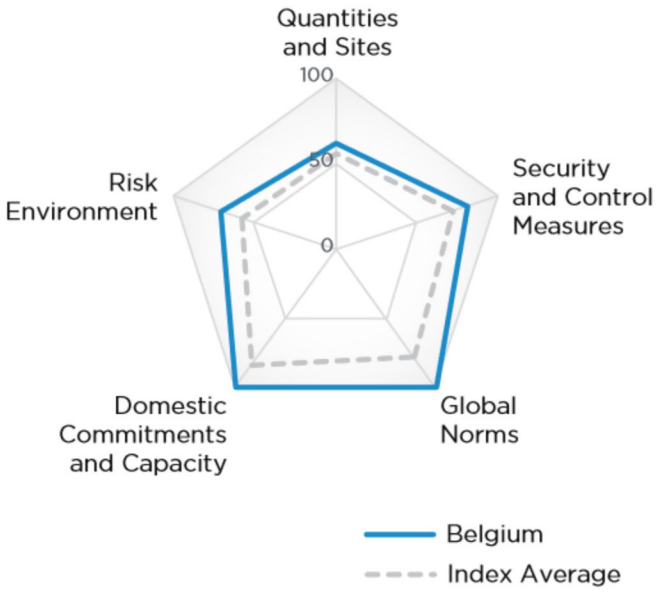
	2016 Score	Δ Score	Rank / 24
OVERALL SCORE	**83**	**+3**	**=5**
Quantities and Sites	62	+6	=11
Security and Control Measures	81	–	11
Global Norms	100	+12	=1
Domestic Commitments and Capacity	100	–	=1
Risk Environment	71	–	=10

= denotes tie in rank

Δ denotes change in score between 2014 and 2016

– denotes no change between 2014 and 2016

Scores are normalized (0–100, where 100 = most favorable nuclear materials security conditions)



ABOVE AVERAGE (scores greater than 66)		Δ
Quantities and Sites		
Sites and Transportation	67	+17
Material Production / Elimination Trends	75	–
Security and Control Measures		
On-site Physical Protection	100	–
Control and Accounting Procedures	100	–
Insider Threat Prevention	67	0
Physical Security During Transport	100	–
Response Capabilities	86	–
Global Norms		
International Legal Commitments	100	–
Voluntary Commitments	100	–
International Assurances	100	+40
Domestic Commitments and Capacity		
UNSCR 1540 Implementation	100	–
Domestic Nuclear Materials Security Legislation	100	–
Safeguards Adherence and Compliance	100	–

ABOVE AVERAGE (scores greater than 66)		Δ
Independent Regulatory Agency	100	–
Risk Environment		
Political Stability	75	–
Effective Governance	88	–
Pervasiveness of Corruption	75	–

AVERAGE (scores between 34 and 66)		Δ
Quantities and Sites		
Quantities of Nuclear Materials	50	–
Risk Environment		
Group(s) Interested in Illicitly Acquiring Materials	50	–

BELOW AVERAGE (scores less than 34)		Δ
Security and Control Measures		
Cybersecurity	0	–

THEFT RANKING: COUNTRY SUMMARIES

CANADA

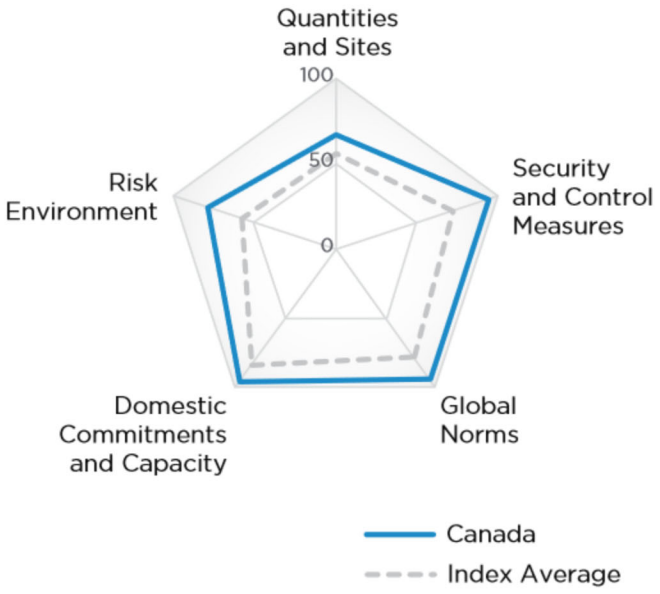
	2016 Score	Δ Score	Rank / 24
OVERALL SCORE	**87**	**+2**	**3**
Quantities and Sites	67	–	10
Security and Control Measures	94	+8	5
Global Norms	94	–	8
Domestic Commitments and Capacity	96	–	=7
Risk Environment	79	–	=3

= denotes tie in rank

Δ denotes change in score between 2014 and 2016

– denotes no change between 2014 and 2016

Scores are normalized (0–100, where 100 = most favorable nuclear materials security conditions)



ABOVE AVERAGE (scores greater than 66)		Δ
Quantities and Sites		
Sites and Transportation	67	–
Material Production / Elimination Trends	100	–
Security and Control Measures		
On-site Physical Protection	100	–
Control and Accounting Procedures	100	–
Insider Threat Prevention	67	–
Physical Security During Transport	100	–
Response Capabilities	100	–
Cybersecurity	100	+75
Global Norms		
International Legal Commitments	100	–
Voluntary Commitments	100	–
International Assurances	80	–
Domestic Commitments and Capacity		
UNSCR 1540 Implementation	80	–
Domestic Nuclear Materials Security Legislation	100	–

ABOVE AVERAGE (scores greater than 66)		Δ
Safeguards Adherence and Compliance	100	–
Independent Regulatory Agency	100	–
Risk Environment		
Political Stability	85	–
Effective Governance	88	–
Pervasiveness of Corruption	100	–

AVERAGE (scores between 34 and 66)		Δ
Quantities and Sites		
Quantities of Nuclear Materials	50	–
Risk Environment		
Group(s) Interested in Illicitly Acquiring Materials	50	–

BELOW AVERAGE (scores less than 34)	Δ
None	

CHINA

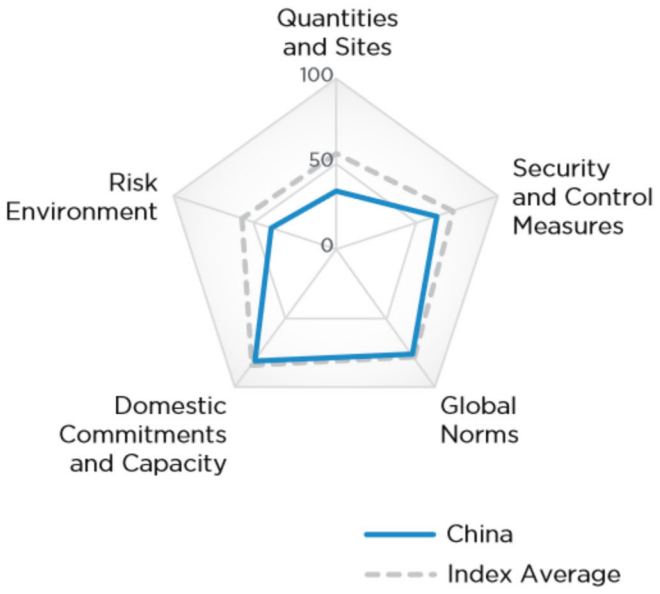
	2016 Score	Δ Score	Rank / 24
OVERALL SCORE	**60**	**+1**	**19**
Quantities and Sites	34	0	18
Security and Control Measures	62	0	15
Global Norms	76	0	17
Domestic Commitments and Capacity	81	0	20
Risk Environment	40	+5	18

= denotes tie in rank

Δ denotes change in score between 2014 and 2016

– denotes no change between 2014 and 2016

Scores are normalized (0–100, where 100 = most favorable nuclear materials security conditions)



ABOVE AVERAGE (scores greater than 66)		Δ
Quantities and Sites		
Material Production / Elimination Trends	75	–
Security and Control Measures		
On-site Physical Protection	80	–
Control and Accounting Procedures	100	–
Response Capabilities	86	–
Global Norms		
International Legal Commitments	100	–
Voluntary Commitments	80	–
Domestic Commitments and Capacity		
Domestic Nuclear Materials Security Legislation	100	–
Safeguards Adherence and Compliance	67	–
Independent Regulatory Agency	100	–

AVERAGE (scores between 34 and 66)		Δ
Security and Control Measures		
Physical Security During Transport	50	–

AVERAGE (scores between 34 and 66)		Δ
Global Norms		
International Assurances	40	–
Domestic Commitments and Capacity		
UNSCR 1540 Implementation	40	–
Risk Environment		
Political Stability	45	–
Effective Governance	38	–
Group(s) Interested in Illicitly Acquiring Materials	50	–

BELOW AVERAGE (scores less than 34)		Δ
Quantities and Sites		
Quantities of Nuclear Materials	25	–
Sites and Transportation	17	–
Security and Control Measures		
Insider Threat Prevention	33	–
Cybersecurity	0	–
Risk Environment		
Pervasiveness of Corruption	25	+25

FRANCE

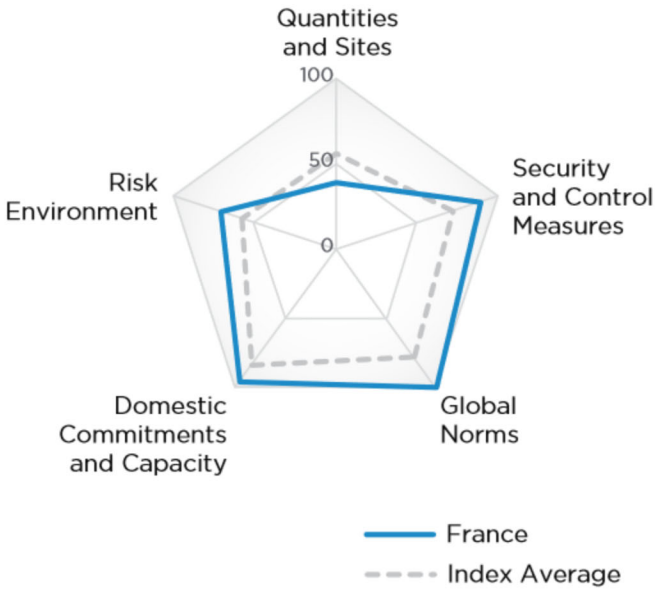
	2016 Score	Δ Score	Rank / 24
OVERALL SCORE	**81**	**+1**	**=8**
Quantities and Sites	39	–	16
Security and Control Measures	89	+3	7
Global Norms	100	–	=1
Domestic Commitments and Capacity	96	–	=7
Risk Environment	71	–	=10

= denotes tie in rank

Δ denotes change in score between 2014 and 2016

– denotes no change between 2014 and 2016

Scores are normalized (0–100, where 100 = most favorable nuclear materials security conditions)



ABOVE AVERAGE (scores greater than 66)		Δ
Quantities and Sites		
Material Production / Elimination Trends	100	–
Security and Control Measures		
On-site Physical Protection	100	–
Control and Accounting Procedures	100	–
Physical Security During Transport	100	–
Response Capabilities	86	–
Cybersecurity	100	+25
Global Norms		
International Legal Commitments	100	–
Voluntary Commitments	100	–
International Assurances	100	–
Domestic Commitments and Capacity		
UNSCR 1540 Implementation	100	–
Domestic Nuclear Materials Security Legislation	100	–
Safeguards Adherence and Compliance	83	–
Independent Regulatory Agency	100	–

ABOVE AVERAGE (scores greater than 66)		Δ
Risk Environment		
Political Stability	75	–
Effective Governance	88	–
Pervasiveness of Corruption	75	–

AVERAGE (scores between 34 and 66)		Δ
Security and Control Measures		
Insider Threat Prevention	56	–
Risk Environment		
Group(s) Interested in Illicitly Acquiring Materials	50	–

BELOW AVERAGE (scores less than 34)		Δ
Quantities and Sites		
Quantities of Nuclear Materials	25	–
Sites and Transportation	17	–

GERMANY

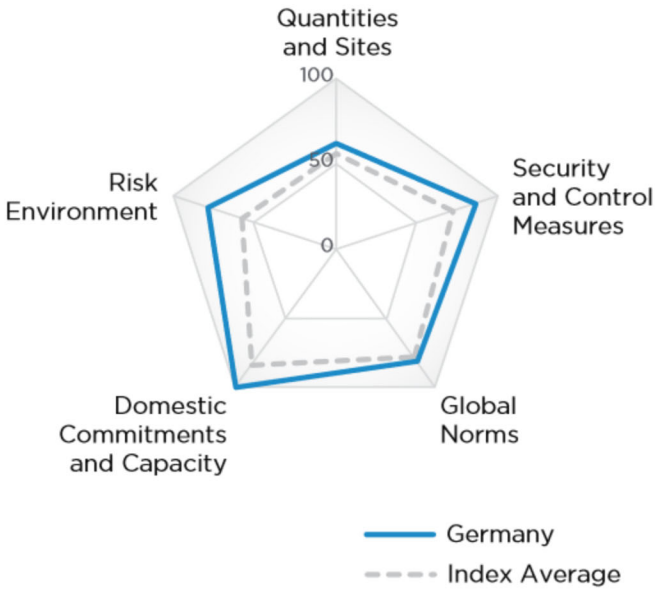
	2016 Score	Δ Score	Rank / 24
OVERALL SCORE	**83**	**+1**	**=5**
Quantities and Sites	62	–	=11
Security and Control Measures	86	–	8
Global Norms	81	–	=14
Domestic Commitments and Capacity	100	–	=1
Risk Environment	79	+5	=3

= denotes tie in rank

Δ denotes change in score between 2014 and 2016

– denotes no change between 2014 and 2016

Scores are normalized (0–100, where 100 = most favorable nuclear materials security conditions)



ABOVE AVERAGE (scores greater than 66)		Δ
Quantities and Sites		
Sites and Transportation	67	–
Material Production / Elimination Trends	100	–
Security and Control Measures		
On-site Physical Protection	100	–
Control and Accounting Procedures	100	–
Physical Security During Transport	100	–
Response Capabilities	86	–
Cybersecurity	75	–
Global Norms		
International Legal Commitments	100	–
Voluntary Commitments	100	–
Domestic Commitments and Capacity		
UNSCR 1540 Implementation	100	–
Domestic Nuclear Materials Security Legislation	100	–
Safeguards Adherence and Compliance	100	–
Independent Regulatory Agency	100	–

ABOVE AVERAGE (scores greater than 66)		Δ
Risk Environment		
Political Stability	85	–
Effective Governance	88	–
Pervasiveness of Corruption	100	+25

AVERAGE (scores between 34 and 66)		Δ
Quantities and Sites		
Quantities of Nuclear Materials	38	–
Security and Control Measures		
Insider Threat Prevention	56	–
Global Norms		
International Assurances	40	–
Risk Environment		
Group(s) Interested in Illicitly Acquiring Materials	50	–

BELOW AVERAGE (scores less than 34)	Δ
None	

THEFT RANKING: COUNTRY SUMMARIES

INDIA

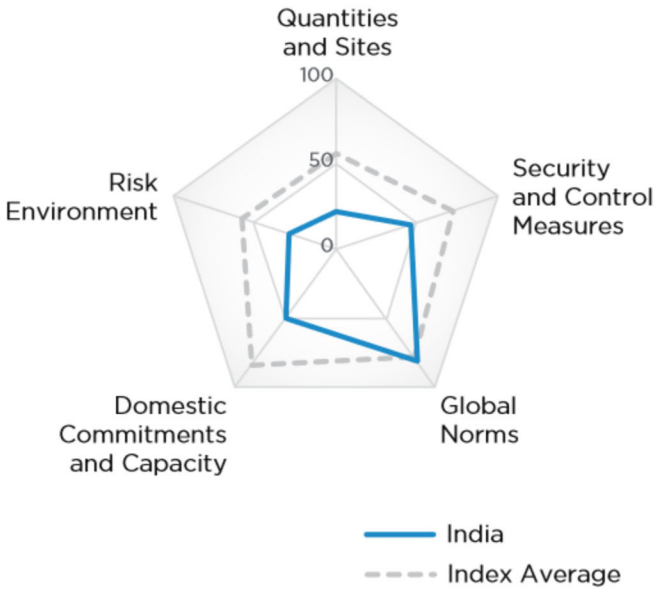
	2016 Score	Δ Score	Rank / 24
OVERALL SCORE	**46**	**+2**	**21**
Quantities and Sites	22	–	=21
Security and Control Measures	46	–	21
Global Norms	81	+5	=14
Domestic Commitments and Capacity	50	+3	22
Risk Environment	29	–	22

= denotes tie in rank

Δ denotes change in score between 2014 and 2016

– denotes no change between 2014 and 2016

Scores are normalized (0–100, where 100 = most favorable nuclear materials security conditions)



ABOVE AVERAGE (scores greater than 66)		Δ
Security and Control Measures		
Response Capabilities	86	–
Cybersecurity	75	–
Global Norms		
International Legal Commitments	100	–
Voluntary Commitments	100	+20
Domestic Commitments and Capacity		
UNSCR 1540 Implementation	100	–
Safeguards Adherence and Compliance	67	+17

AVERAGE (scores between 34 and 66)		Δ
Quantities and Sites		
Quantities of Nuclear Materials	38	–
Security and Control Measures		
On-site Physical Protection	60	–
Global Norms		
International Assurances	40	–
Domestic Commitments and Capacity		
Domestic Nuclear Materials Security Legislation	50	–

AVERAGE (scores between 34 and 66)		Δ
Risk Environment		
Political Stability	55	–
Effective Governance	38	–

BELOW AVERAGE (scores less than 34)		Δ
Quantities and Sites		
Sites and Transportation	17	–
Material Production / Elimination Trends	0	–
Security and Control Measures		
Control and Accounting Procedures	29	–
Insider Threat Prevention	33	–
Physical Security During Transport	0	–
Domestic Commitments and Capacity		
Independent Regulatory Agency	0	–
Risk Environment		
Pervasiveness of Corruption	25	–
Group(s) Interested in Illicitly Acquiring Materials	0	–

IRAN

	2016 Score	Δ Score	Rank / 24
OVERALL SCORE	**35**	**–**	**23**
Quantities and Sites	89	–	4
Security and Control Measures	36	–	=23
Global Norms	12	–	23
Domestic Commitments and Capacity	15	–	23
Risk Environment	32	–	20

= denotes tie in rank

Δ denotes change in score between 2014 and 2016

– denotes no change between 2014 and 2016

Scores are normalized (0–100, where 100 = most favorable nuclear materials security conditions)

ABOVE AVERAGE (scores greater than 66)		Δ
Quantities and Sites		
Quantities of Nuclear Materials	88	–
Sites and Transportation	100	–
Material Production / Elimination Trends	75	–
Security and Control Measures		
Response Capabilities	71	–

AVERAGE (scores between 34 and 66)		Δ
Security and Control Measures		
On-site Physical Protection	40	–
Physical Security During Transport	50	–
Domestic Commitments and Capacity		
Safeguards Adherence and Compliance	50	–
Risk Environment		
Political Stability	35	–
Effective Governance	38	–
Group(s) Interested in Illicitly Acquiring Materials	50	–

BELOW AVERAGE (scores less than 34)		Δ
Security and Control Measures		
Control and Accounting Procedures	14	–
Insider Threat Prevention	22	–
Cybersecurity	0	–
Global Norms		
International Legal Commitments	0	–
Voluntary Commitments	20	–
International Assurances	20	–
Domestic Commitments and Capacity		
UNSCR 1540 Implementation	20	–
Domestic Nuclear Materials Security Legislation	0	–
Independent Regulatory Agency	0	–
Risk Environment		
Pervasiveness of Corruption	0	–

ISRAEL

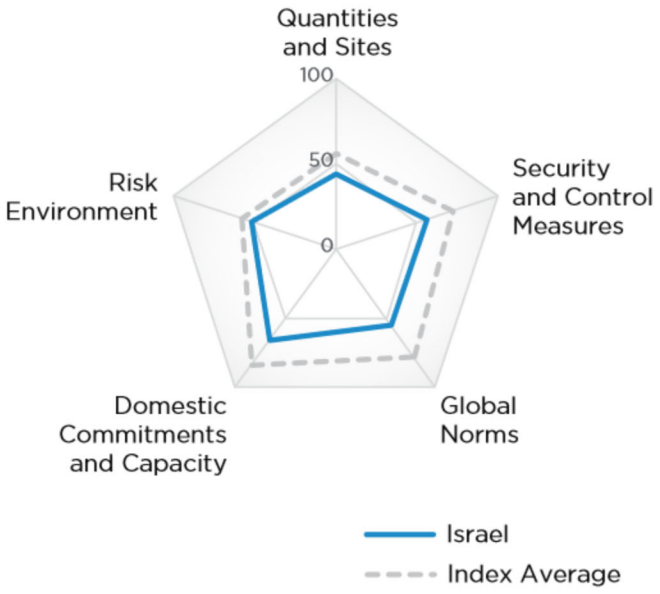
	2016 Score	Δ Score	Rank / 24
OVERALL SCORE	**55**	**–**	**20**
Quantities and Sites	44	–	15
Security and Control Measures	56	–	19
Global Norms	55	–	21
Domestic Commitments and Capacity	66	–	21
Risk Environment	52	–	17

= denotes tie in rank

Δ denotes change in score between 2014 and 2016

– denotes no change between 2014 and 2016

Scores are normalized (0–100, where 100 = most favorable nuclear materials security conditions)



ABOVE AVERAGE (scores greater than 66)		Δ
Quantities and Sites		
Material Production / Elimination Trends	75	–
Security and Control Measures		
On-site Physical Protection	80	–
Physical Security During Transport	100	–
Response Capabilities	71	–
Global Norms		
International Legal Commitments	80	–
Voluntary Commitments	80	–
Domestic Commitments and Capacity		
Independent Regulatory Agency	100	–
Risk Environment		
Effective Governance	75	–

AVERAGE (scores between 34 and 66)		Δ
Quantities and Sites		
Quantities of Nuclear Materials	50	–
Domestic Commitments and Capacity		
UNSCR 1540 Implementation	60	–
Domestic Nuclear Materials Security Legislation	50	–
Safeguards Adherence and Compliance	50	–
Risk Environment		
Political Stability	35	–
Pervasiveness of Corruption	50	–
Group(s) Interested in Illicitly Acquiring Materials	50	–

BELOW AVERAGE (scores less than 34)		Δ
Quantities and Sites		
Sites and Transportation	17	–
Security and Control Measures		
Control and Accounting Procedures	0	–
Insider Threat Prevention	33	–
Cybersecurity	25	–
Global Norms		
International Assurances	0	–

ITALY

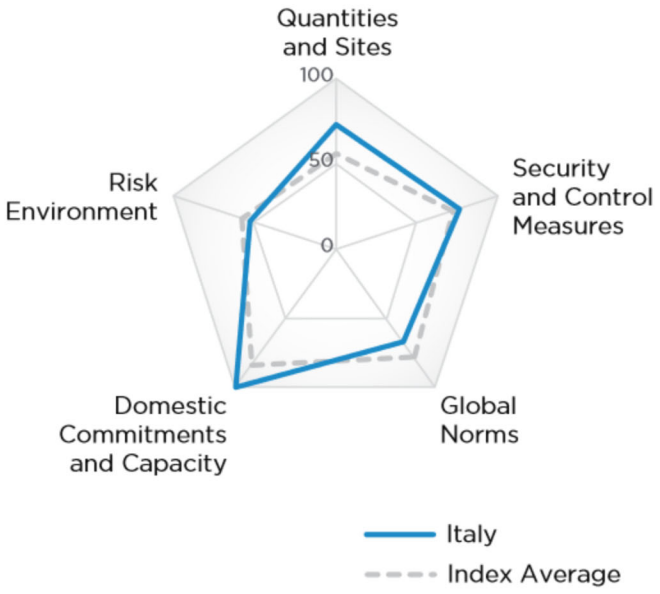
	2016 Score	Δ Score	Rank / 24
OVERALL SCORE	**75**	**+3**	**14**
Quantities and Sites	73	–	=8
Security and Control Measures	76	–	=13
Global Norms	67	+9	20
Domestic Commitments and Capacity	100	–	=1
Risk Environment	53	+5	16

= denotes tie in rank

Δ denotes change in score between 2014 and 2016

– denotes no change between 2014 and 2016

Scores are normalized (0–100, where 100 = most favorable nuclear materials security conditions)



ABOVE AVERAGE (scores greater than 66)		Δ
Quantities and Sites		
Sites and Transportation	67	–
Material Production / Elimination Trends	100	–
Security and Control Measures		
On-site Physical Protection	100	–
Control and Accounting Procedures	100	–
Insider Threat Prevention	67	–
Physical Security During Transport	100	–
Global Norms		
International Legal Commitments	80	+20
Voluntary Commitments	100	–
Domestic Commitments and Capacity		
UNSCR 1540 Implementation	100	–
Domestic Nuclear Materials Security Legislation	100	–
Safeguards Adherence and Compliance	100	–
Independent Regulatory Agency	100	–
Risk Environment		
Political Stability	75	–

AVERAGE (scores between 34 and 66)		Δ
Quantities and Sites		
Quantities of Nuclear Materials	63	–
Security and Control Measures		
Response Capabilities	57	–
Risk Environment		
Effective Governance	38	–
Pervasiveness of Corruption	50	+25
Group(s) Interested in Illicitly Acquiring Materials	50	–

BELOW AVERAGE (scores less than 34)		Δ
Security and Control Measures		
Cybersecurity	0	–
Global Norms		
International Assurances	20	–

JAPAN

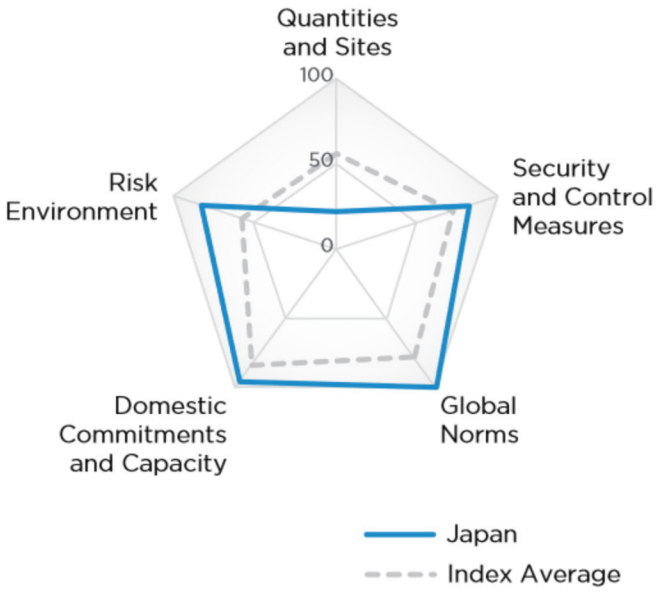
	2016 Score	Δ Score	Rank / 24
OVERALL SCORE	**78**	**+4**	**13**
Quantities and Sites	22	–	=21
Security and Control Measures	82	–	=9
Global Norms	100	+27	=1
Domestic Commitments and Capacity	96	–	=7
Risk Environment	83	–	2

= denotes tie in rank

Δ denotes change in score between 2014 and 2016

– denotes no change between 2014 and 2016

Scores are normalized (0–100, where 100 = most favorable nuclear materials security conditions)



ABOVE AVERAGE (scores greater than 66)		Δ
Security and Control Measures		
On-site Physical Protection	100	–
Control and Accounting Procedures	100	–
Insider Threat Prevention	67	–
Response Capabilities	100	–
Cybersecurity	75	–
Global Norms		
International Legal Commitments	100	+20
Voluntary Commitments	100	–
International Assurances	100	+60
Domestic Commitments and Capacity		
UNSCR 1540 Implementation	80	–
Domestic Nuclear Materials Security Legislation	100	–
Safeguards Adherence and Compliance	100	–
Independent Regulatory Agency	100	–

ABOVE AVERAGE (scores greater than 66)		Δ
Risk Environment		
Political Stability	90	–
Pervasiveness of Corruption	75	–
Group(s) Interested in Illicitly Acquiring Materials	100	–

AVERAGE (scores between 34 and 66)		Δ
Security and Control Measures		
Physical Security During Transport	50	–
Risk Environment		
Effective Governance	63	–

BELOW AVERAGE (scores less than 34)		Δ
Quantities and Sites		
Quantities of Nuclear Materials	25	–
Sites and Transportation	33	–
Material Production / Elimination Trends	0	–

KAZAKHSTAN

	2016 Score	Δ Score	Rank / 24
OVERALL SCORE	**66**	**–**	**17**
Quantities and Sites	57	–	13
Security and Control Measures	61	–	=16
Global Norms	88	–	=9
Domestic Commitments and Capacity	92	–	=15
Risk Environment	31	-3	21

= denotes tie in rank

Δ denotes change in score between 2014 and 2016

– denotes no change between 2014 and 2016

Scores are normalized (0–100, where 100 = most favorable nuclear materials security conditions)

ABOVE AVERAGE (scores greater than 66)		Δ
Quantities and Sites		
Sites and Transportation	67	–
Material Production / Elimination Trends	100	–
Security and Control Measures		
On-site Physical Protection	80	–
Control and Accounting Procedures	100	–
Response Capabilities	71	–
Global Norms		
International Legal Commitments	100	–
Voluntary Commitments	100	–
Domestic Commitments and Capacity		
Domestic Nuclear Materials Security Legislation	100	–
Safeguards Adherence and Compliance	100	–
Independent Regulatory Agency	100	–

AVERAGE (scores between 34 and 66)		Δ
Security and Control Measures		
Insider Threat Prevention	44	–
Physical Security During Transport	50	–
Global Norms		
International Assurances	60	–
Domestic Commitments and Capacity		
UNSCR 1540 Implementation	60	–
Risk Environment		
Political Stability	55	–
Group(s) Interested in Illicitly Acquiring Materials	50	–

BELOW AVERAGE (scores less than 34)		Δ
Quantities and Sites		
Quantities of Nuclear Materials	25	–
Security and Control Measures		
Cybersecurity	0	–
Risk Environment		
Effective Governance	13	-12
Pervasiveness of Corruption	0	–

NETHERLANDS

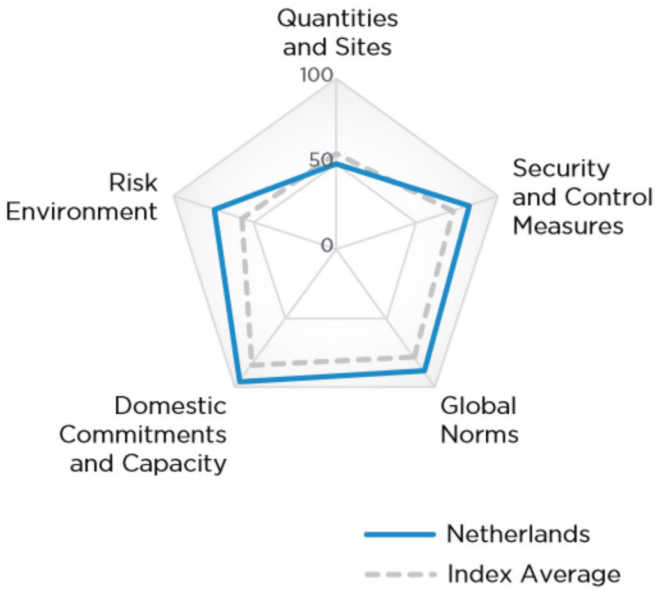
	2016 Score	Δ Score	Rank / 24
OVERALL SCORE	**79**	**-1**	**=11**
Quantities and Sites	50	-22	14
Security and Control Measures	82	+10	=9
Global Norms	88	–	=9
Domestic Commitments and Capacity	96	–	=7
Risk Environment	75	–	7

= denotes tie in rank

Δ denotes change in score between 2014 and 2016

– denotes no change between 2014 and 2016

Scores are normalized (0–100, where 100 = most favorable nuclear materials security conditions)



ABOVE AVERAGE (scores greater than 66)		Δ
Quantities and Sites		
Sites and Transportation	67	–
Security and Control Measures		
On-site Physical Protection	100	–
Control and Accounting Procedures	100	–
Insider Threat Prevention	67	–
Response Capabilities	86	–
Cybersecurity	100	+100
Global Norms		
International Legal Commitments	100	–
Voluntary Commitments	100	–
Domestic Commitments and Capacity		
UNSCR 1540 Implementation	80	–
Domestic Nuclear Materials Security Legislation	100	–
Safeguards Adherence and Compliance	100	–
Independent Regulatory Agency	100	–
Risk Environment		
Political Stability	80	–

ABOVE AVERAGE (scores greater than 66)		Δ
Effective Governance	75	–
Pervasiveness of Corruption	100	–

AVERAGE (scores between 34 and 66)		Δ
Quantities and Sites		
Quantities of Nuclear Materials	63	-12
Security and Control Measures		
Physical Security During Transport	50	–
Global Norms		
International Assurances	60	–
Risk Environment		
Group(s) Interested in Illicitly Acquiring Materials	50	–

BELOW AVERAGE (scores less than 34)		Δ
Quantities and Sites		
Material Production / Elimination Trends	0	-75

NORTH KOREA

	2016 Score	Δ Score	Rank / 24
OVERALL SCORE	**24**	**-4**	**24**
Quantities and Sites	38	-17	17
Security and Control Measures	38	–	22
Global Norms	0	–	24
Domestic Commitments and Capacity	4	–	24
Risk Environment	34	-8	19

= denotes tie in rank

Δ denotes change in score between 2014 and 2016

– denotes no change between 2014 and 2016

Scores are normalized (0–100, where 100 = most favorable nuclear materials security conditions)

ABOVE AVERAGE (scores greater than 66)		Δ
Security and Control Measures		
Response Capabilities	71	–
Risk Environment		
Group(s) Interested in Illicitly Acquiring Materials	100	–

AVERAGE (scores between 34 and 66)		Δ
Quantities and Sites		
Quantities of Nuclear Materials	63	–
Security and Control Measures		
On-site Physical Protection	40	–
Physical Security During Transport	50	–

BELOW AVERAGE (scores less than 34)		Δ
Quantities and Sites		
Sites and Transportation	33	–
Material Production / Elimination Trends	0	-75

BELOW AVERAGE (scores less than 34)		Δ
Security and Control Measures		
Control and Accounting Procedures	29	–
Insider Threat Prevention	22	–
Cybersecurity	0	–
Global Norms		
International Legal Commitments	0	–
Voluntary Commitments	0	–
International Assurances	0	–
Domestic Commitments and Capacity		
UNSCR 1540 Implementation	0	–
Domestic Nuclear Materials Security Legislation	0	–
Safeguards Adherence and Compliance	17	–
Independent Regulatory Agency	0	–
Risk Environment		
Political Stability	25	–
Effective Governance	0	-13
Pervasiveness of Corruption	0	-25

NORWAY

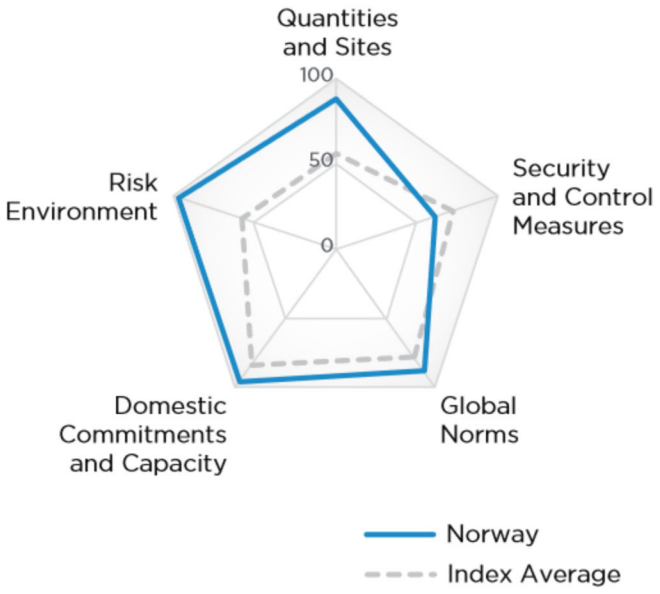
	2016 Score	Δ Score	Rank / 24
OVERALL SCORE	**83**	**+2**	**=5**
Quantities and Sites	88	–	5
Security and Control Measures	61	–	=16
Global Norms	88	+15	=9
Domestic Commitments and Capacity	96	–	=7
Risk Environment	97	–	1

= denotes tie in rank

Δ denotes change in score between 2014 and 2016

– denotes no change between 2014 and 2016

Scores are normalized (0–100, where 100 = most favorable nuclear materials security conditions)



ABOVE AVERAGE (scores greater than 66)		Δ
Quantities and Sites		
Quantities of Nuclear Materials	100	–
Sites and Transportation	83	–
Material Production / Elimination Trends	75	–
Security and Control Measures		
On-site Physical Protection	100	–
Control and Accounting Procedures	100	–
Global Norms		
International Legal Commitments	100	+20
Voluntary Commitments	100	–
Domestic Commitments and Capacity		
UNSCR 1540 Implementation	80	–
Domestic Nuclear Materials Security Legislation	100	–
Safeguards Adherence and Compliance	100	–
Independent Regulatory Agency	100	–

ABOVE AVERAGE (scores greater than 66)		Δ
Risk Environment		
Political Stability	100	–
Effective Governance	88	–
Pervasiveness of Corruption	100	–
Group(s) Interested in Illicitly Acquiring Materials	100	–

AVERAGE (scores between 34 and 66)		Δ
Security and Control Measures		
Physical Security During Transport	50	–
Response Capabilities	43	–
Cybersecurity	50	–
Global Norms		
International Assurances	60	+20

BELOW AVERAGE (scores less than 34)		Δ
Security and Control Measures		
Insider Threat Prevention	22	–

PAKISTAN

	2016 Score	Δ Score	Rank / 24
OVERALL SCORE	**42**	**–**	**22**
Quantities and Sites	22	–	=21
Security and Control Measures	36	+2	=23
Global Norms	51	–	22
Domestic Commitments and Capacity	85	–	19
Risk Environment	16	–	23

= denotes tie in rank

Δ denotes change in score between 2014 and 2016

– denotes no change between 2014 and 2016

Scores are normalized (0–100, where 100 = most favorable nuclear materials security conditions)

ABOVE AVERAGE (scores greater than 66)		Δ
Security and Control Measures		
Response Capabilities	71	–
Global Norms		
Voluntary Commitments	80	–
Domestic Commitments and Capacity		
UNSCR 1540 Implementation	80	–
Domestic Nuclear Materials Security Legislation	100	–
Independent Regulatory Agency	100	–

AVERAGE (scores between 34 and 66)		Δ
Quantities and Sites		
Quantities of Nuclear Materials	38	–
Security and Control Measures		
On-site Physical Protection	40	–
Insider Threat Prevention	56	–
Global Norms		
International Legal Commitments	40	–
International Assurances	40	–

AVERAGE (scores between 34 and 66)		Δ
Domestic Commitments and Capacity		
Safeguards Adherence and Compliance	50	–

BELOW AVERAGE (scores less than 34)		Δ
Quantities and Sites		
Sites and Transportation	17	–
Material Production / Elimination Trends	0	–
Security and Control Measures		
Control and Accounting Procedures	14	–
Physical Security During Transport	0	–
Cybersecurity	25	+25
Risk Environment		
Political Stability	15	–
Effective Governance	25	–
Pervasiveness of Corruption	25	–
Group(s) Interested in Illicitly Acquiring Materials	0	–

POLAND

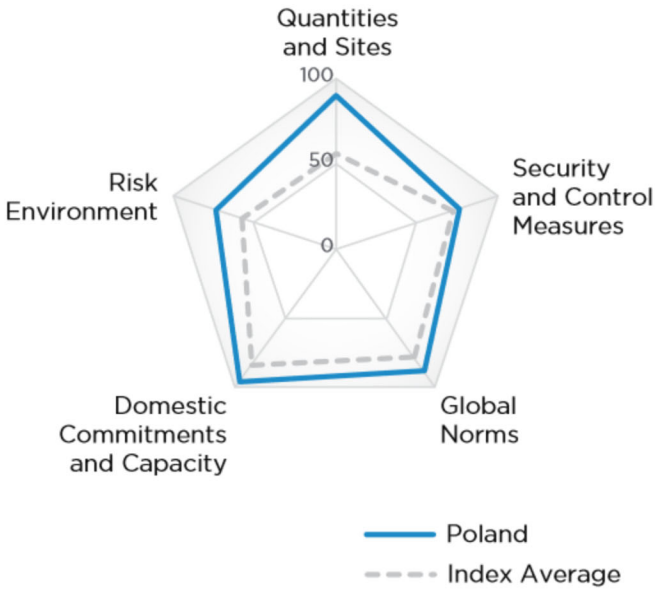
	2016 Score	Δ Score	Rank / 24
OVERALL SCORE	**84**	**+3**	**4**
Quantities and Sites	90	+6	3
Security and Control Measures	76	–	=13
Global Norms	88	+6	=9
Domestic Commitments and Capacity	96	–	=7
Risk Environment	74	+3	8

= denotes tie in rank

Δ denotes change in score between 2014 and 2016

– denotes no change between 2014 and 2016

Scores are normalized (0–100, where 100 = most favorable nuclear materials security conditions)



ABOVE AVERAGE (scores greater than 66)		Δ
Quantities and Sites		
Quantities of Nuclear Materials	75	+12
Sites and Transportation	100	–
Material Production / Elimination Trends	100	–
Security and Control Measures		
On-site Physical Protection	80	–
Control and Accounting Procedures	100	–
Insider Threat Prevention	67	–
Response Capabilities	100	–
Global Norms		
International Legal Commitments	100	–
Voluntary Commitments	100	+20
Domestic Commitments and Capacity		
UNSCR 1540 Implementation	80	–
Domestic Nuclear Materials Security Legislation	100	–
Safeguards Adherence and Compliance	100	–
Independent Regulatory Agency	100	–

ABOVE AVERAGE (scores greater than 66)		Δ
Risk Environment		
Political Stability	80	–
Group(s) Interested in Illicitly Acquiring Materials	100	–

AVERAGE (scores between 34 and 66)		Δ
Security and Control Measures		
Physical Security During Transport	50	–
Cybersecurity	50	–
Global Norms		
International Assurances	60	–
Risk Environment		
Effective Governance	63	+13
Pervasiveness of Corruption	50	–

BELOW AVERAGE (scores less than 34)	Δ
None	

RUSSIA

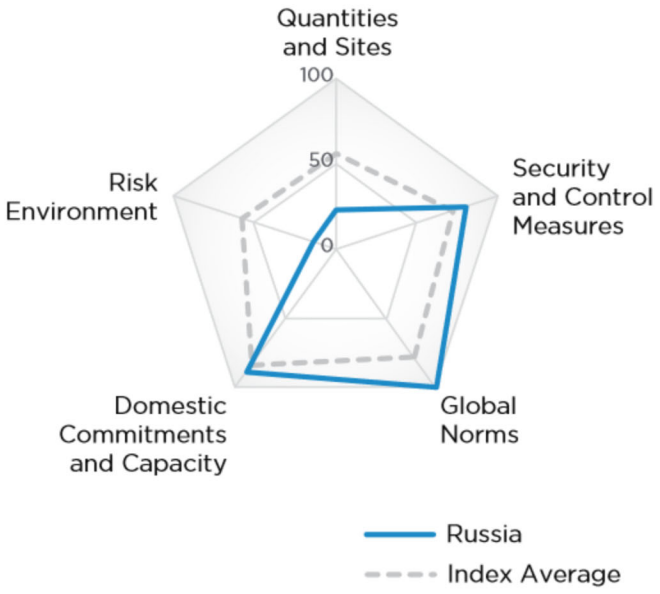
	2016 Score	Δ Score	Rank / 24
OVERALL SCORE	**64**	**+2**	**18**
Quantities and Sites	23	–	=19
Security and Control Measures	80	+10	12
Global Norms	100	–	=1
Domestic Commitments and Capacity	89	–	18
Risk Environment	14	-4	24

= denotes tie in rank

Δ denotes change in score between 2014 and 2016

– denotes no change between 2014 and 2016

Scores are normalized (0–100, where 100 = most favorable nuclear materials security conditions)



ABOVE AVERAGE (scores greater than 66)		Δ
Quantities and Sites		
Material Production / Elimination Trends	100	–
Security and Control Measures		
On-site Physical Protection	80	–
Control and Accounting Procedures	100	–
Insider Threat Prevention	78	–
Response Capabilities	86	–
Cybersecurity	100	+100
Global Norms		
International Legal Commitments	100	–
Voluntary Commitments	100	–
International Assurances	100	–
Domestic Commitments and Capacity		
UNSCR 1540 Implementation	80	–
Domestic Nuclear Materials Security Legislation	100	–
Safeguards Adherence and Compliance	67	–
Independent Regulatory Agency	100	–

AVERAGE (scores between 34 and 66)		Δ
Security and Control Measures		
Physical Security During Transport	50	–

BELOW AVERAGE (scores less than 34)		Δ
Quantities and Sites		
Quantities of Nuclear Materials	0	–
Sites and Transportation	0	–
Risk Environment		
Political Stability	30	-15
Effective Governance	25	–
Pervasiveness of Corruption	0	–
Group(s) Interested in Illicitly Acquiring Materials	0	–

SOUTH AFRICA

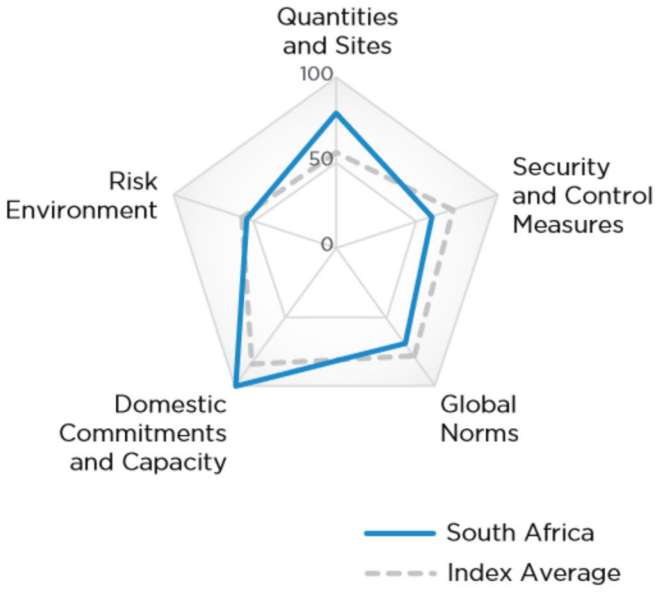
	2016 Score	Δ Score	Rank / 24
OVERALL SCORE	**71**	**+3**	**16**
Quantities and Sites	79	–	6
Security and Control Measures	59	+5	18
Global Norms	69	+12	19
Domestic Commitments and Capacity	100	–	=1
Risk Environment	55	–	=14

= denotes tie in rank

Δ denotes change in score between 2014 and 2016

– denotes no change between 2014 and 2016

Scores are normalized (0–100, where 100 = most favorable nuclear materials security conditions)



ABOVE AVERAGE (scores greater than 66)		Δ
Quantities and Sites		
Sites and Transportation	100	–
Material Production / Elimination Trends	100	–
Security and Control Measures		
Control and Accounting Procedures	86	–
Response Capabilities	100	–
Cybersecurity	75	+50
Global Norms		
International Legal Commitments	80	–
International Assurances	80	+40
Domestic Commitments and Capacity		
UNSCR 1540 Implementation	100	–
Domestic Nuclear Materials Security Legislation	100	–
Safeguards Adherence and Compliance	100	–
Independent Regulatory Agency	100	–
Risk Environment		
Political Stability	70	–

AVERAGE (scores between 34 and 66)		Δ
Quantities and Sites		
Quantities of Nuclear Materials	50	–
Security and Control Measures		
On-site Physical Protection	60	–
Insider Threat Prevention	44	–
Global Norms		
Voluntary Commitments	40	–
Risk Environment		
Effective Governance	50	–
Pervasiveness of Corruption	50	–
Group(s) Interested in Illicitly Acquiring Materials	50	–

BELOW AVERAGE (scores less than 34)		Δ
Security and Control Measures		
Physical Security During Transport	0	–

SWITZERLAND

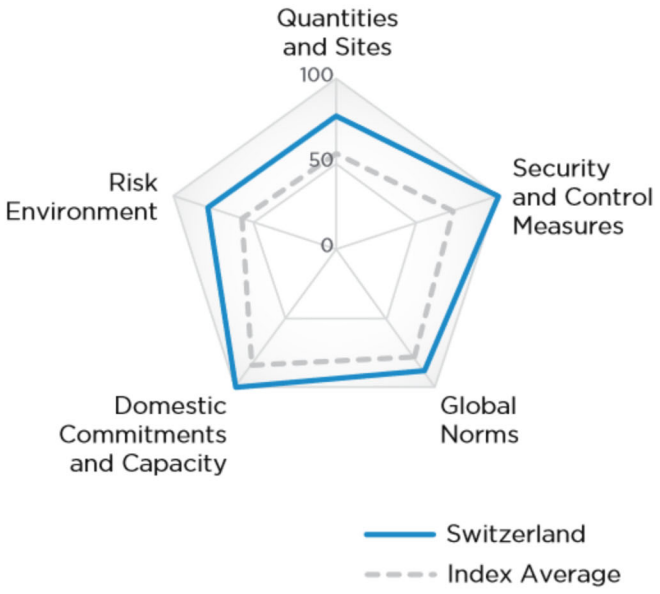
	2016 Score	Δ Score	Rank / 24
OVERALL SCORE	**91**	**+2**	**2**
Quantities and Sites	78	+6	7
Security and Control Measures	100	+2	1
Global Norms	88	–	=9
Domestic Commitments and Capacity	100	–	=1
Risk Environment	79	–	=3

= denotes tie in rank

Δ denotes change in score between 2014 and 2016

– denotes no change between 2014 and 2016

Scores are normalized (0–100, where 100 = most favorable nuclear materials security conditions)



ABOVE AVERAGE (scores greater than 66)		Δ
Quantities and Sites		
Quantities of Nuclear Materials	75	–
Sites and Transportation	67	–
Material Production / Elimination Trends	100	+25
Security and Control Measures		
On-site Physical Protection	100	–
Control and Accounting Procedures	100	–
Insider Threat Prevention	100	–
Physical Security During Transport	100	–
Response Capabilities	100	–
Cybersecurity	100	+25
Global Norms		
International Legal Commitments	100	–
Voluntary Commitments	80	–
International Assurances	80	–
Domestic Commitments and Capacity		
UNSCR 1540 Implementation	100	–
Domestic Nuclear Materials Security Legislation	100	–
Safeguards Adherence and Compliance	100	–
Independent Regulatory Agency	100	–
Risk Environment		
Political Stability	95	–
Effective Governance	75	–
Pervasiveness of Corruption	100	–

AVERAGE (scores between 34 and 66)		Δ
Risk Environment		
Group(s) Interested in Illicitly Acquiring Materials	50	–

BELOW AVERAGE (scores less than 34)	Δ
None	

UNITED KINGDOM

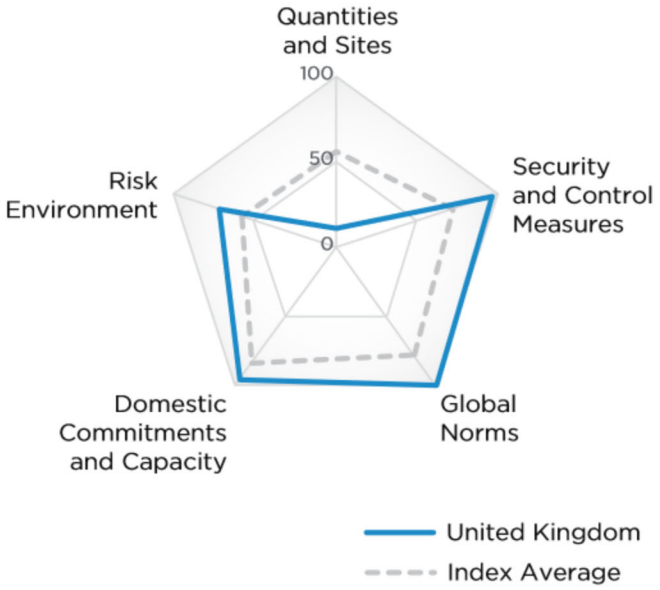
	2016 Score	Δ Score	Rank / 24
OVERALL SCORE	**79**	**+2**	**=11**
Quantities and Sites	11	–	24
Security and Control Measures	96	+3	4
Global Norms	100	–	=1
Domestic Commitments and Capacity	96	–	=7
Risk Environment	72	+6	9

= denotes tie in rank

Δ denotes change in score between 2014 and 2016

– denotes no change between 2014 and 2016

Scores are normalized (0–100, where 100 = most favorable nuclear materials security conditions)



ABOVE AVERAGE (scores greater than 66)		Δ
Security and Control Measures		
On-site Physical Protection	100	–
Control and Accounting Procedures	100	–
Insider Threat Prevention	78	–
Physical Security During Transport	100	–
Response Capabilities	100	–
Cybersecurity	100	+25
Global Norms		
International Legal Commitments	100	–
Voluntary Commitments	100	–
International Assurances	100	–
Domestic Commitments and Capacity		
UNSCR 1540 Implementation	100	–
Domestic Nuclear Materials Security Legislation	100	–
Safeguards Adherence and Compliance	83	–
Independent Regulatory Agency	100	–

ABOVE AVERAGE (scores greater than 66)		Δ
Risk Environment		
Political Stability	70	+5
Effective Governance	75	–
Pervasiveness of Corruption	100	+25

AVERAGE (scores between 34 and 66)		Δ
Risk Environment		
Group(s) Interested in Illicitly Acquiring Materials	50	–

BELOW AVERAGE (scores less than 34)		Δ
Quantities and Sites		
Quantities of Nuclear Materials	13	–
Sites and Transportation	17	–
Material Production / Elimination Trends	0	–

UNITED STATES

	2016 Score	Δ Score	Rank / 24
OVERALL SCORE	**80**	**+3**	**10**
Quantities and Sites	23	–	=19
Security and Control Measures	98	–	2
Global Norms	100	+17	=1
Domestic Commitments and Capacity	93	–	14
Risk Environment	71	–	=10

= denotes tie in rank

Δ denotes change in score between 2014 and 2016

– denotes no change between 2014 and 2016

Scores are normalized (0–100, where 100 = most favorable nuclear materials security conditions)

ABOVE AVERAGE (scores greater than 66)		Δ
Quantities and Sites		
Material Production / Elimination Trends	100	–
Security and Control Measures		
On-site Physical Protection	100	–
Control and Accounting Procedures	100	–
Insider Threat Prevention	89	–
Physical Security During Transport	100	–
Response Capabilities	100	–
Cybersecurity	100	–
Global Norms		
International Legal Commitments	100	+40
Voluntary Commitments	100	–
International Assurances	100	–
Domestic Commitments and Capacity		
UNSCR 1540 Implementation	100	–
Domestic Nuclear Materials Security Legislation	100	–
Safeguards Adherence and Compliance	67	–
Independent Regulatory Agency	100	–
Risk Environment		
Political Stability	85	–
Effective Governance	75	–
Pervasiveness of Corruption	75	–

AVERAGE (scores between 34 and 66)		Δ
Risk Environment		
Group(s) Interested in Illicitly Acquiring Materials	50	–

BELOW AVERAGE (scores less than 34)		Δ
Quantities and Sites		
Quantities of Nuclear Materials	0	–
Sites and Transportation	0	–

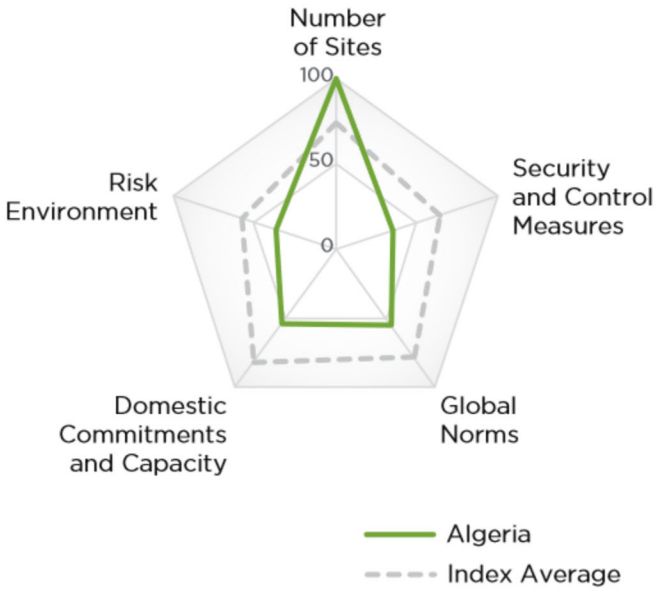
SABOTAGE RANKING: COUNTRY SUMMARIES

ALGERIA

	2016 Score	Rank / 45
OVERALL SCORE	**47**	**42**
Number of Sites	100	=1
Security and Control Measures	35	39
Global Norms	55	40
Domestic Commitments and Capacity	54	=40
Risk Environment	37	34

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	100
Security and Control Measures	
On-site Physical Protection	80
Control and Accounting Procedures	71
Global Norms	
International Legal Commitments	86
Domestic Commitments and Capacity	
Domestic Nuclear Security Legislation	100

AVERAGE (scores between 34 and 66)	
Global Norms	
Voluntary Commitments	40
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	60
Risk Environment	
Political Stability	45
Group(s) Interested in Committing Acts of Nuclear Terrorism	50

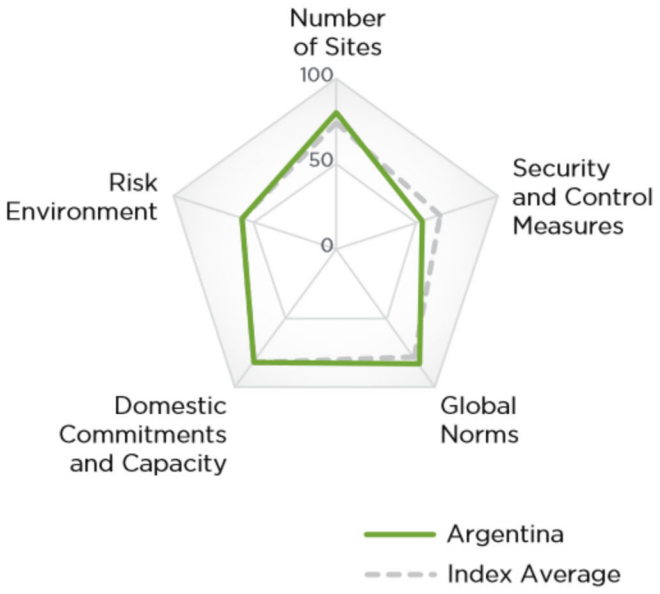
BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
Insider Threat Prevention	0
Response Capabilities	29
Cybersecurity	0
Global Norms	
International Assurances	25
Domestic Commitments and Capacity	
Independent Regulatory Agency	0
Risk Environment	
Effective Governance	25
Pervasiveness of Corruption	25

ARGENTINA

	2016 Score	Rank / 45
OVERALL SCORE	**68**	**=25**
Number of Sites	80	=15
Security and Control Measures	53	=31
Global Norms	83	=21
Domestic Commitments and Capacity	82	=31
Risk Environment	58	27

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	80
Security and Control Measures	
On-site Physical Protection	80
Control and Accounting Procedures	71
Global Norms	
International Legal Commitments	86
International Assurances	100
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	80
Domestic Nuclear Security Legislation	67
Independent Regulatory Agency	100
Risk Environment	
Group(s) Interested in Committing Acts of Nuclear Terrorism	100

AVERAGE (scores between 34 and 66)	
Security and Control Measures	
Insider Threat Prevention	56
Response Capabilities	57
Global Norms	
Voluntary Commitments	60
Risk Environment	
Political Stability	50
Effective Governance	50

BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
Cybersecurity	0
Risk Environment	
Pervasiveness of Corruption	25

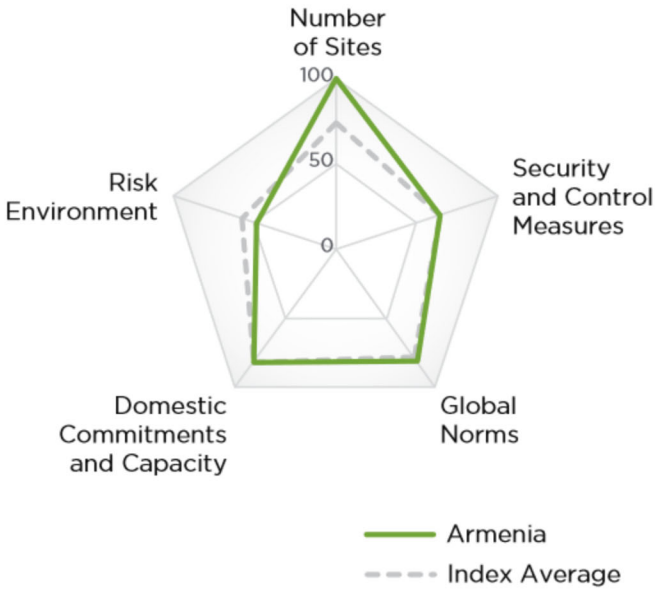
SABOTAGE RANKING: COUNTRY SUMMARIES

ARMENIA

	2016 Score	Rank / 45
OVERALL SCORE	**70**	**24**
Number of Sites	100	=1
Security and Control Measures	64	23
Global Norms	81	=23
Domestic Commitments and Capacity	82	=31
Risk Environment	49	31

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	100
Security and Control Measures	
On-site Physical Protection	80
Insider Threat Prevention	78
Response Capabilities	100
Global Norms	
International Legal Commitments	100
International Assurances	75
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	80
Domestic Nuclear Security Legislation	67
Independent Regulatory Agency	100
Risk Environment	
Group(s) Interested in Committing Acts of Nuclear Terrorism	100

AVERAGE (scores between 34 and 66)	
Security and Control Measures	
Control and Accounting Procedures	57
Global Norms	
Voluntary Commitments	60
Risk Environment	
Political Stability	40

BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
Cybersecurity	0
Risk Environment	
Effective Governance	25
Pervasiveness of Corruption	25

AUSTRALIA

	2016 Score	Rank / 45
OVERALL SCORE	**92**	**2**
Number of Sites	100	=1
Security and Control Measures	89	9
Global Norms	100	=1
Domestic Commitments and Capacity	100	=1
Risk Environment	76	11

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)

ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	100
Security and Control Measures	
On-site Physical Protection	80
Control and Accounting Procedures	100
Insider Threat Prevention	67
Response Capabilities	100
Cybersecurity	100
Global Norms	
International Legal Commitments	100
Voluntary Commitments	100
International Assurances	100
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	100
Domestic Nuclear Security Legislation	100
Independent Regulatory Agency	100

ABOVE AVERAGE (scores greater than 66)	
Risk Environment	
Political Stability	85
Effective Governance	75
Pervasiveness of Corruption	100

AVERAGE (scores between 34 and 66)	
Risk Environment	
Group(s) Interested in Committing Acts of Nuclear Terrorism	50

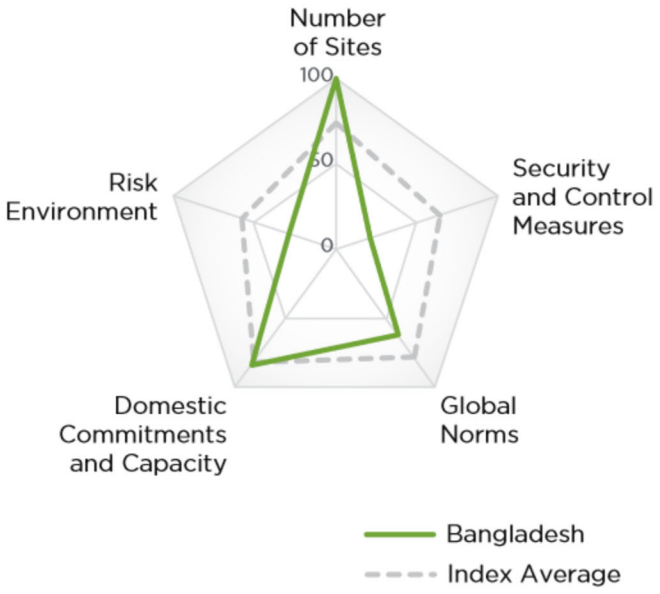
BELOW AVERAGE (scores less than 34)
None

BANGLADESH

	2016 Score	Rank / 45
OVERALL SCORE	**49**	**=40**
Number of Sites	100	=1
Security and Control Measures	21	44
Global Norms	62	=36
Domestic Commitments and Capacity	84	=27
Risk Environment	29	=39

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	100
Global Norms	
International Legal Commitments	86
Domestic Commitments and Capacity	
Domestic Nuclear Security Legislation	100
Independent Regulatory Agency	100

AVERAGE (scores between 34 and 66)	
Security and Control Measures	
On-site Physical Protection	60
Global Norms	
Voluntary Commitments	40
International Assurances	50
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	40

AVERAGE (scores between 34 and 66)	
Risk Environment	
Political Stability	35
Group(s) Interested in Committing Acts of Nuclear Terrorism	50

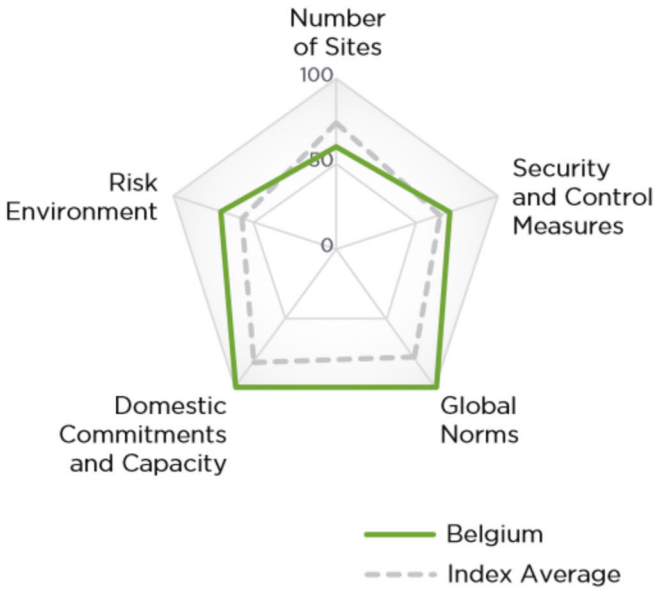
BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
Control and Accounting Procedures	14
Insider Threat Prevention	0
Response Capabilities	29
Cybersecurity	0
Risk Environment	
Effective Governance	25
Pervasiveness of Corruption	0

BELGIUM

	2016 Score	Rank / 45
OVERALL SCORE	**82**	**19**
Number of Sites	60	=30
Security and Control Measures	70	21
Global Norms	100	=1
Domestic Commitments and Capacity	100	=1
Risk Environment	71	=16

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Security and Control Measures	
On-site Physical Protection	100
Control and Accounting Procedures	100
Insider Threat Prevention	67
Response Capabilities	86
Global Norms	
International Legal Commitments	100
Voluntary Commitments	100
International Assurances	100
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	100
Domestic Nuclear Security Legislation	100
Independent Regulatory Agency	100
Risk Environment	
Political Stability	75
Effective Governance	88
Pervasiveness of Corruption	75

AVERAGE (scores between 34 and 66)	
Number of Sites	
Number of Sites	60
Risk Environment	
Group(s) Interested in Committing Acts of Nuclear Terrorism	50

BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
Cybersecurity	0

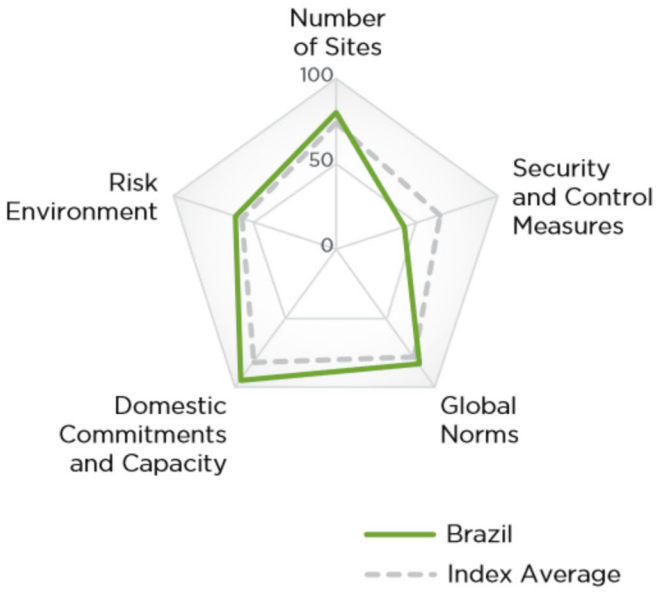
SABOTAGE RANKING: COUNTRY SUMMARIES

BRAZIL

	2016 Score	Rank / 45
OVERALL SCORE	**68**	**=25**
Number of Sites	80	=15
Security and Control Measures	42	38
Global Norms	83	=21
Domestic Commitments and Capacity	95	=13
Risk Environment	62	23

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	80
Security and Control Measures	
Control and Accounting Procedures	100
Global Norms	
International Legal Commitments	86
International Assurances	100
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	80
Domestic Nuclear Security Legislation	100
Independent Regulatory Agency	100
Risk Environment	
Group(s) Interested in Committing Acts of Nuclear Terrorism	100

AVERAGE (scores between 34 and 66)	
Security and Control Measures	
On-site Physical Protection	60
Response Capabilities	57
Global Norms	
Voluntary Commitments	60
Risk Environment	
Political Stability	65
Effective Governance	50

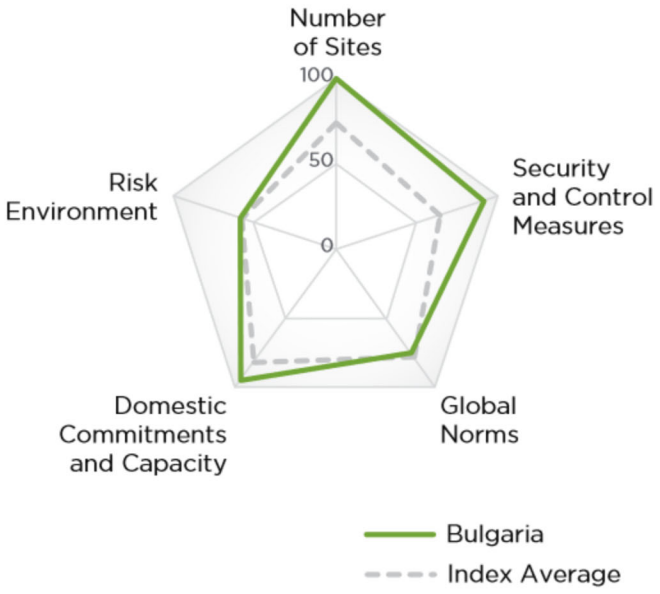
BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
Insider Threat Prevention	0
Cybersecurity	0
Risk Environment	
Pervasiveness of Corruption	25

BULGARIA

	2016 Score	Rank / 45
OVERALL SCORE	**83**	**=14**
Number of Sites	100	=1
Security and Control Measures	91	7
Global Norms	75	33
Domestic Commitments and Capacity	95	=13
Risk Environment	59	=24

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	100
Security and Control Measures	
On-site Physical Protection	100
Control and Accounting Procedures	86
Insider Threat Prevention	67
Response Capabilities	100
Cybersecurity	100
Global Norms	
International Legal Commitments	86
International Assurances	75
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	80
Domestic Nuclear Security Legislation	100
Independent Regulatory Agency	100
Risk Environment	
Group(s) Interested in Committing Acts of Nuclear Terrorism	100

AVERAGE (scores between 34 and 66)	
Global Norms	
Voluntary Commitments	60
Risk Environment	
Political Stability	65
Effective Governance	38

BELOW AVERAGE (scores less than 34)	
Risk Environment	
Pervasiveness of Corruption	25

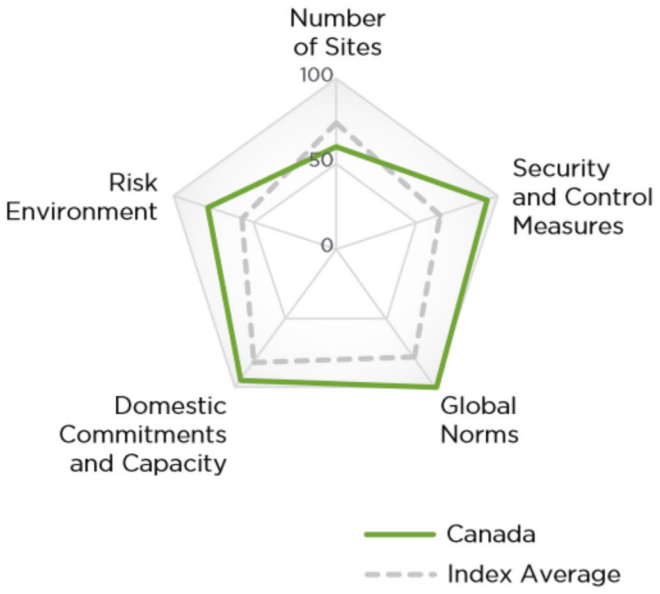
SABOTAGE RANKING: COUNTRY SUMMARIES

CANADA

	2016 Score	Rank / 45
OVERALL SCORE	**90**	**=3**
Number of Sites	60	=30
Security and Control Measures	93	5
Global Norms	100	=1
Domestic Commitments and Capacity	95	=13
Risk Environment	79	=6

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Security and Control Measures	
On-site Physical Protection	100
Control and Accounting Procedures	100
Insider Threat Prevention	67
Response Capabilities	100
Cybersecurity	100
Global Norms	
International Legal Commitments	100
Voluntary Commitments	100
International Assurances	100
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	80
Domestic Nuclear Security Legislation	100
Independent Regulatory Agency	100
Risk Environment	
Political Stability	85
Effective Governance	88
Pervasiveness of Corruption	100

AVERAGE (scores between 34 and 66)	
Number of Sites	
Number of Sites	60
Risk Environment	
Group(s) Interested in Committing Acts of Nuclear Terrorism	50

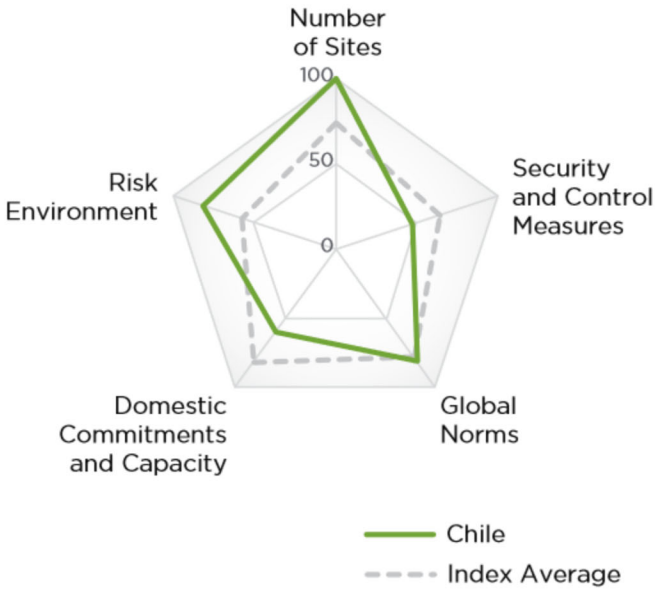
BELOW AVERAGE (scores less than 34)
None

CHILE

	2016 Score	Rank / 45
OVERALL SCORE	**66**	**29**
Number of Sites	100	=1
Security and Control Measures	47	=34
Global Norms	81	=23
Domestic Commitments and Capacity	60	=37
Risk Environment	82	5

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	100
Security and Control Measures	
Control and Accounting Procedures	86
Response Capabilities	71
Global Norms	
International Legal Commitments	100
International Assurances	75
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	80
Domestic Nuclear Security Legislation	100
Risk Environment	
Political Stability	75
Effective Governance	75
Pervasiveness of Corruption	75
Group(s) Interested in Committing Acts of Nuclear Terrorism	100

AVERAGE (scores between 34 and 66)	
Security and Control Measures	
On-site Physical Protection	60
Global Norms	
Voluntary Commitments	60

BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
Insider Threat Prevention	22
Cybersecurity	0
Domestic Commitments and Capacity	
Independent Regulatory Agency	0

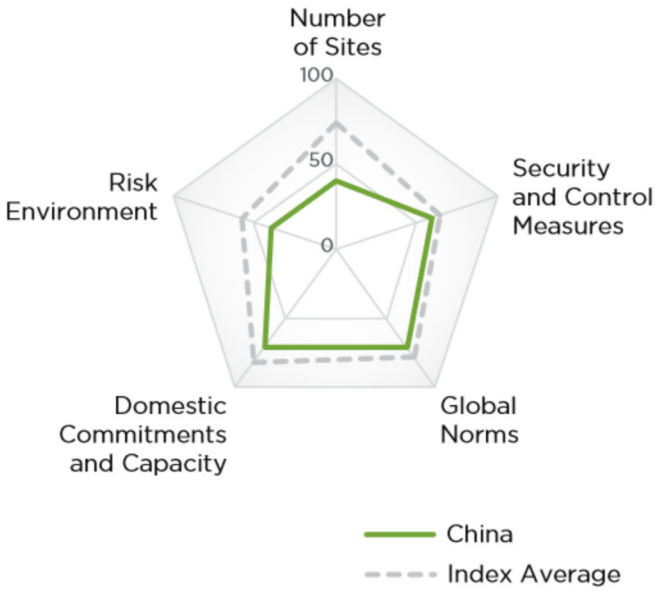
SABOTAGE RANKING: COUNTRY SUMMARIES

CHINA

	2016 Score	Rank / 45
OVERALL SCORE	**59**	**34**
Number of Sites	40	=39
Security and Control Measures	59	28
Global Norms	71	34
Domestic Commitments and Capacity	71	=35
Risk Environment	40	=32

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Security and Control Measures	
On-site Physical Protection	80
Control and Accounting Procedures	100
Response Capabilities	86
Global Norms	
International Legal Commitments	100
Voluntary Commitments	80
Domestic Commitments and Capacity	
Domestic Nuclear Security Legislation	67
Independent Regulatory Agency	100

AVERAGE (scores between 34 and 66)	
Number of Sites	
Number of Sites	40
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	40
Risk Environment	
Political Stability	45
Effective Governance	38
Group(s) Interested in Committing Acts of Nuclear Terrorism	50

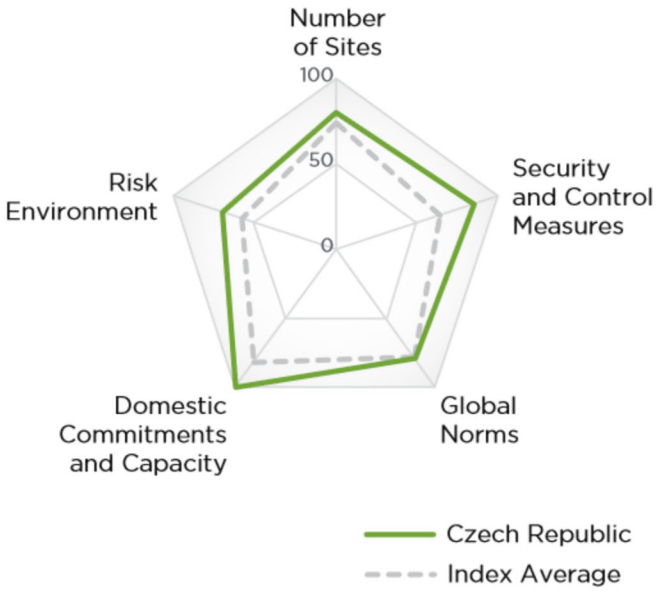
BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
Insider Threat Prevention	33
Cybersecurity	0
Global Norms	
International Assurances	25
Risk Environment	
Pervasiveness of Corruption	25

CZECH REPUBLIC

	2016 Score	Rank / 45
OVERALL SCORE	**84**	**13**
Number of Sites	80	=15
Security and Control Measures	85	14
Global Norms	79	=28
Domestic Commitments and Capacity	100	=1
Risk Environment	70	=19

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	80
Security and Control Measures	
On-site Physical Protection	100
Control and Accounting Procedures	100
Insider Threat Prevention	100
Response Capabilities	100
Global Norms	
International Legal Commitments	100
Voluntary Commitments	80
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	100
Domestic Nuclear Security Legislation	100
Independent Regulatory Agency	100
Risk Environment	
Political Stability	75
Group(s) Interested in Committing Acts of Nuclear Terrorism	100

AVERAGE (scores between 34 and 66)	
Global Norms	
International Assurances	50
Risk Environment	
Effective Governance	50
Pervasiveness of Corruption	50

BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
Cybersecurity	25

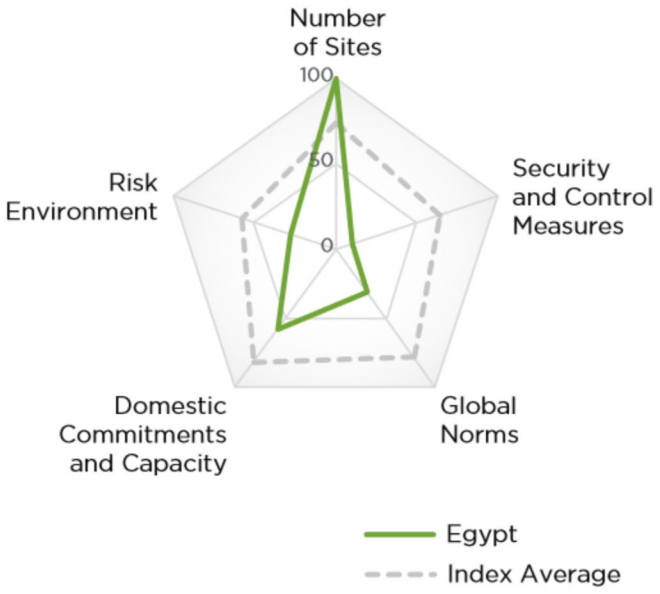
SABOTAGE RANKING: COUNTRY SUMMARIES

EGYPT

	2016 Score	Rank / 45
OVERALL SCORE	**33**	**43**
Number of Sites	100	=1
Security and Control Measures	10	45
Global Norms	31	43
Domestic Commitments and Capacity	58	39
Risk Environment	28	41

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	100
Domestic Commitments and Capacity	
Independent Regulatory Agency	100

AVERAGE (scores between 34 and 66)	
Global Norms	
Voluntary Commitments	40
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	40
Risk Environment	
Political Stability	50
Effective Governance	38

BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
On-site Physical Protection	20
Control and Accounting Procedures	14
Insider Threat Prevention	0
Response Capabilities	14
Cybersecurity	0
Global Norms	
International Legal Commitments	29
International Assurances	25
Domestic Commitments and Capacity	
Domestic Nuclear Security Legislation	33
Risk Environment	
Pervasiveness of Corruption	25
Group(s) Interested in Committing Acts of Nuclear Terrorism	0

FINLAND

	2016 Score	Rank / 45
OVERALL SCORE	**95**	**1**
Number of Sites	80	=15
Security and Control Measures	92	6
Global Norms	100	=1
Domestic Commitments and Capacity	100	=1
Risk Environment	90	3

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)

ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	80
Security and Control Measures	
On-site Physical Protection	100
Control and Accounting Procedures	100
Insider Threat Prevention	78
Response Capabilities	86
Cybersecurity	100
Global Norms	
International Legal Commitments	100
Voluntary Commitments	100
International Assurances	100
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	100
Domestic Nuclear Security Legislation	100
Independent Regulatory Agency	100

ABOVE AVERAGE (scores greater than 66)	
Risk Environment	
Political Stability	75
Effective Governance	88
Pervasiveness of Corruption	100
Group(s) Interested in Committing Acts of Nuclear Terrorism	100

AVERAGE (scores between 34 and 66)
None

BELOW AVERAGE (scores less than 34)
None

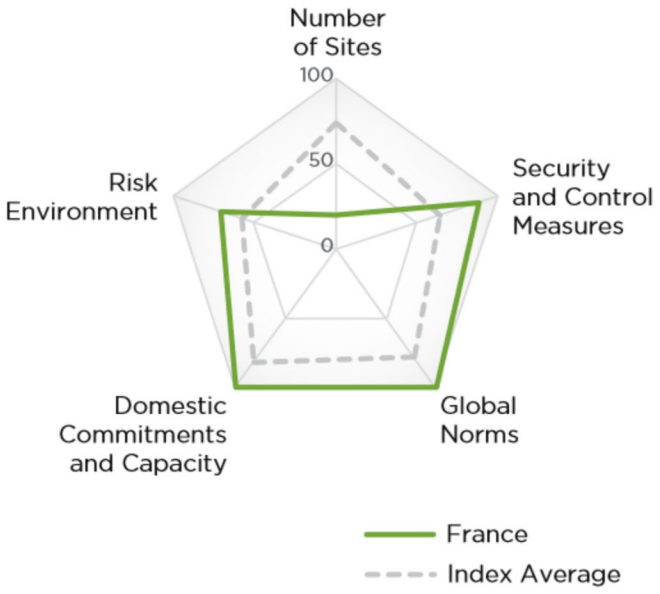
SABOTAGE RANKING: COUNTRY SUMMARIES

FRANCE

	2016 Score	Rank / 45
OVERALL SCORE	**86**	**=10**
Number of Sites	20	=42
Security and Control Measures	88	=10
Global Norms	100	=1
Domestic Commitments and Capacity	100	=1
Risk Environment	71	=16

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Security and Control Measures	
On-site Physical Protection	100
Control and Accounting Procedures	100
Response Capabilities	86
Cybersecurity	100
Global Norms	
International Legal Commitments	100
Voluntary Commitments	100
International Assurances	100
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	100
Domestic Nuclear Security Legislation	100
Independent Regulatory Agency	100
Risk Environment	
Political Stability	75
Effective Governance	88
Pervasiveness of Corruption	75

AVERAGE (scores between 34 and 66)	
Security and Control Measures	
Insider Threat Prevention	56
Risk Environment	
Group(s) Interested in Committing Acts of Nuclear Terrorism	50

BELOW AVERAGE (scores less than 34)	
Number of Sites	
Number of Sites	20

GERMANY

	2016 Score	Rank / 45
OVERALL SCORE	**83**	**=14**
Number of Sites	40	=39
Security and Control Measures	83	15
Global Norms	77	31
Domestic Commitments and Capacity	100	=1
Risk Environment	79	=6

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)

ABOVE AVERAGE (scores greater than 66)	
Security and Control Measures	
On-site Physical Protection	100
Control and Accounting Procedures	100
Response Capabilities	86
Cybersecurity	75
Global Norms	
International Legal Commitments	100
Voluntary Commitments	100
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	100
Domestic Nuclear Security Legislation	100
Independent Regulatory Agency	100
Risk Environment	
Political Stability	85
Effective Governance	88
Pervasiveness of Corruption	100

AVERAGE (scores between 34 and 66)	
Number of Sites	
Number of Sites	40
Security and Control Measures	
Insider Threat Prevention	56
Risk Environment	
Group(s) Interested in Committing Acts of Nuclear Terrorism	50

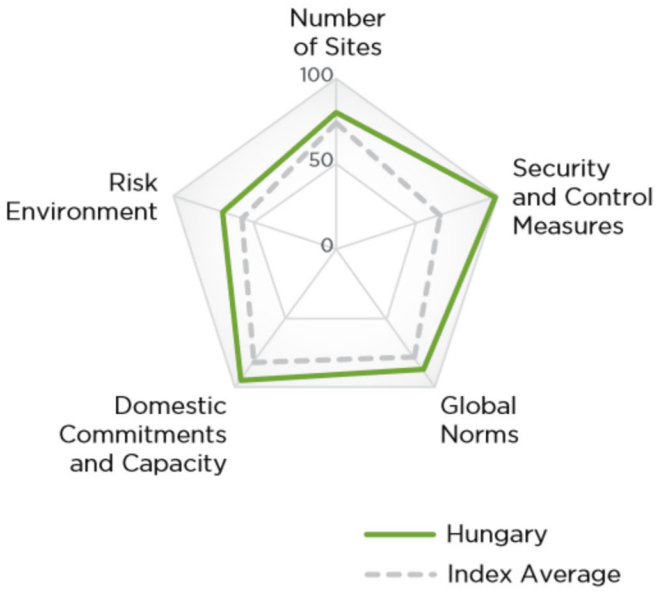
BELOW AVERAGE (scores less than 34)	
Global Norms	
International Assurances	25

HUNGARY

	2016 Score	Rank / 45
OVERALL SCORE	**88**	**=6**
Number of Sites	80	=15
Security and Control Measures	98	=1
Global Norms	87	=17
Domestic Commitments and Capacity	95	=13
Risk Environment	70	=19

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	80
Security and Control Measures	
On-site Physical Protection	100
Control and Accounting Procedures	100
Insider Threat Prevention	89
Response Capabilities	100
Cybersecurity	100
Global Norms	
International Legal Commitments	100
Voluntary Commitments	80
International Assurances	75
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	80
Domestic Nuclear Security Legislation	100
Independent Regulatory Agency	100
Risk Environment	
Political Stability	75
Group(s) Interested in Committing Acts of Nuclear Terrorism	100

AVERAGE (scores between 34 and 66)	
Risk Environment	
Effective Governance	50
Pervasiveness of Corruption	50

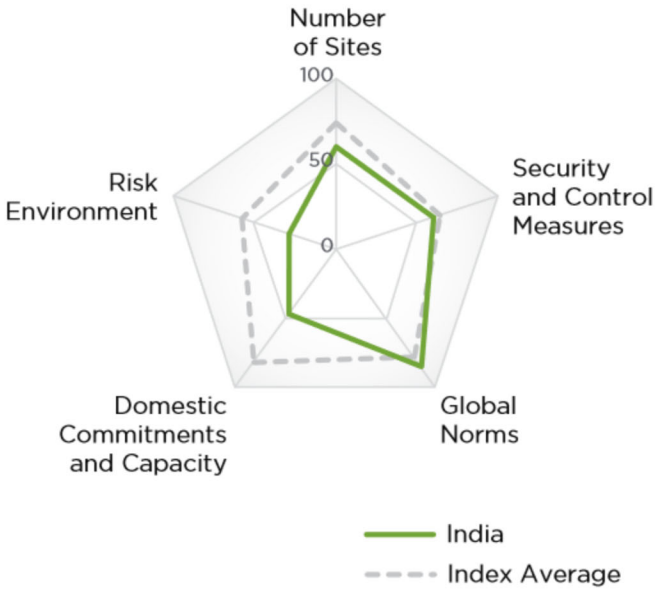
BELOW AVERAGE (scores less than 34)
None

INDIA

	2016 Score	Rank / 45
OVERALL SCORE	**55**	**=36**
Number of Sites	60	=30
Security and Control Measures	60	=26
Global Norms	85	=19
Domestic Commitments and Capacity	47	=42
Risk Environment	29	=39

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Security and Control Measures	
Response Capabilities	86
Cybersecurity	75
Global Norms	
International Legal Commitments	100
Voluntary Commitments	100
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	80
Domestic Nuclear Security Legislation	67

AVERAGE (scores between 34 and 66)	
Number of Sites	
Number of Sites	60
Security and Control Measures	
On-site Physical Protection	60
Control and Accounting Procedures	43
Global Norms	
International Assurances	50

AVERAGE (scores between 34 and 66)	
Risk Environment	
Political Stability	55
Effective Governance	38

BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
Insider Threat Prevention	33
Domestic Commitments and Capacity	
Independent Regulatory Agency	0
Risk Environment	
Pervasiveness of Corruption	25
Group(s) Interested in Committing Acts of Nuclear Terrorism	0

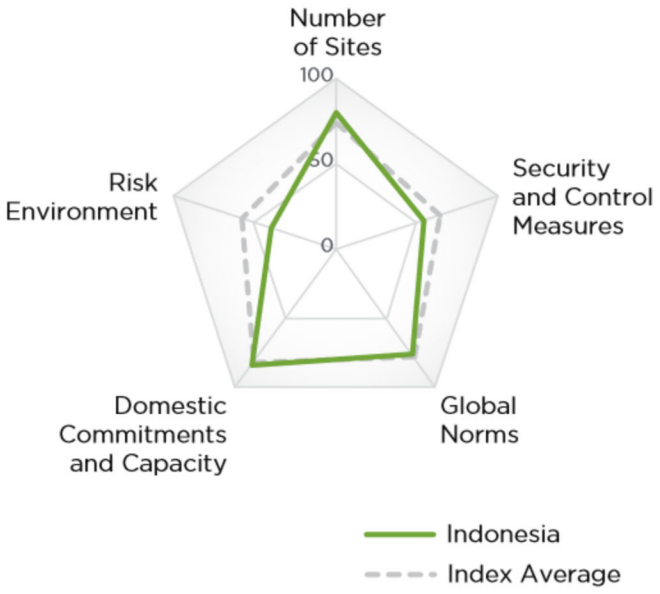
SABOTAGE RANKING: COUNTRY SUMMARIES

INDONESIA

	2016 Score	Rank / 45
OVERALL SCORE	**63**	**31**
Number of Sites	80	=15
Security and Control Measures	54	30
Global Norms	76	32
Domestic Commitments and Capacity	84	=27
Risk Environment	40	=32

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	80
Security and Control Measures	
On-site Physical Protection	80
Control and Accounting Procedures	100
Response Capabilities	71
Global Norms	
International Legal Commitments	100
International Assurances	75
Domestic Commitments and Capacity	
Domestic Nuclear Security Legislation	100
Independent Regulatory Agency	100

AVERAGE (scores between 34 and 66)	
Global Norms	
Voluntary Commitments	40
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	40
Risk Environment	
Political Stability	65
Effective Governance	38
Group(s) Interested in Committing Acts of Nuclear Terrorism	50

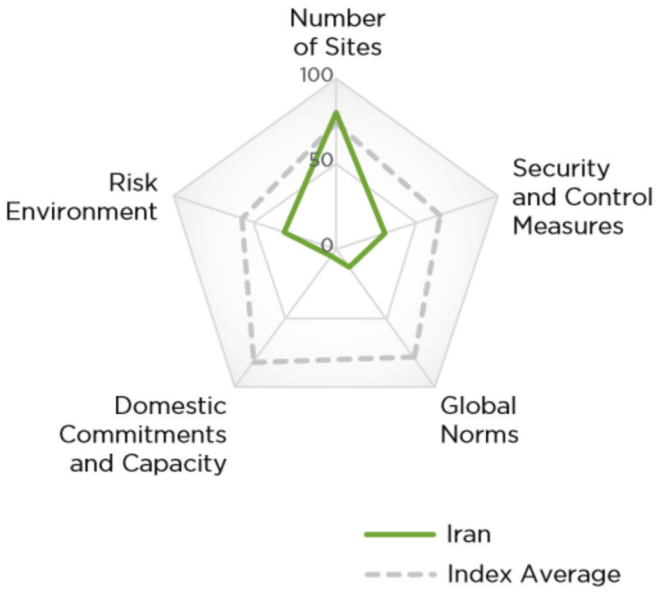
BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
Insider Threat Prevention	22
Cybersecurity	0
Risk Environment	
Pervasiveness of Corruption	0

IRAN

	2016 Score	Rank / 45
OVERALL SCORE	**24**	**=44**
Number of Sites	80	=15
Security and Control Measures	30	=40
Global Norms	13	44
Domestic Commitments and Capacity	5	45
Risk Environment	32	37

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	80
Security and Control Measures	
Response Capabilities	71

AVERAGE (scores between 34 and 66)	
Security and Control Measures	
On-site Physical Protection	40
Risk Environment	
Political Stability	35
Effective Governance	38
Group(s) Interested in Committing Acts of Nuclear Terrorism	50

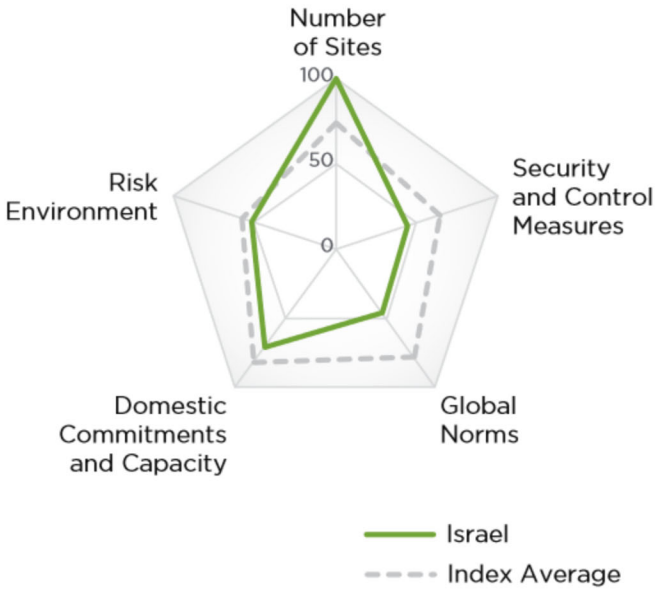
BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
Control and Accounting Procedures	14
Insider Threat Prevention	22
Cybersecurity	0
Global Norms	
International Legal Commitments	0
Voluntary Commitments	20
International Assurances	25
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	20
Domestic Nuclear Security Legislation	0
Independent Regulatory Agency	0
Risk Environment	
Pervasiveness of Corruption	0

ISRAEL

	2016 Score	Rank / 45
OVERALL SCORE	**55**	**=36**
Number of Sites	100	=1
Security and Control Measures	44	37
Global Norms	46	41
Domestic Commitments and Capacity	71	=35
Risk Environment	52	30

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	100
Security and Control Measures	
On-site Physical Protection	80
Response Capabilities	71
Global Norms	
International Legal Commitments	71
Domestic Commitments and Capacity	
Domestic Nuclear Security Legislation	67
Independent Regulatory Agency	100
Risk Environment	
Effective Governance	75

AVERAGE (scores between 34 and 66)	
Global Norms	
Voluntary Commitments	60
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	40
Risk Environment	
Political Stability	35
Pervasiveness of Corruption	50
Group(s) Interested in Committing Acts of Nuclear Terrorism	50

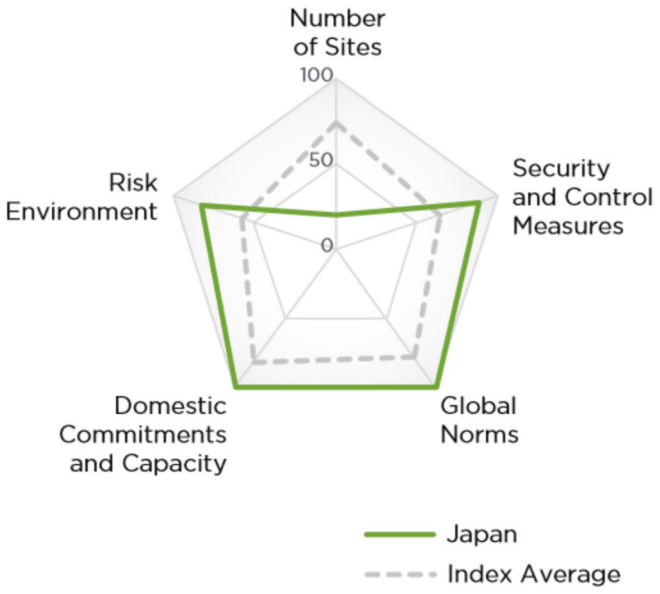
BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
Control and Accounting Procedures	0
Insider Threat Prevention	33
Cybersecurity	25
Global Norms	
International Assurances	0

JAPAN

	2016 Score	Rank / 45
OVERALL SCORE	**89**	**5**
Number of Sites	20	=42
Security and Control Measures	88	=10
Global Norms	100	=1
Domestic Commitments and Capacity	100	=1
Risk Environment	83	4

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Security and Control Measures	
On-site Physical Protection	100
Control and Accounting Procedures	100
Insider Threat Prevention	67
Response Capabilities	100
Cybersecurity	75
Global Norms	
International Legal Commitments	100
Voluntary Commitments	100
International Assurances	100
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	100
Domestic Nuclear Security Legislation	100
Independent Regulatory Agency	100
Risk Environment	
Political Stability	90
Pervasiveness of Corruption	75
Group(s) Interested in Committing Acts of Nuclear Terrorism	100

AVERAGE (scores between 34 and 66)	
Risk Environment	
Effective Governance	63

BELOW AVERAGE (scores less than 34)	
Number of Sites	
Number of Sites	20

SABOTAGE RANKING: COUNTRY SUMMARIES

KAZAKHSTAN

	2016 Score	Rank / 45
OVERALL SCORE	**67**	**28**
Number of Sites	80	=15
Security and Control Measures	56	29
Global Norms	92	=14
Domestic Commitments and Capacity	89	=22
Risk Environment	31	38

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)

ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	80
Security and Control Measures	
On-site Physical Protection	80
Control and Accounting Procedures	86
Response Capabilities	71
Global Norms	
International Legal Commitments	100
Voluntary Commitments	100
International Assurances	75
Domestic Commitments and Capacity	
Domestic Nuclear Security Legislation	100
Independent Regulatory Agency	100

AVERAGE (scores between 34 and 66)	
Security and Control Measures	
Insider Threat Prevention	44
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	60
Risk Environment	
Political Stability	55
Group(s) Interested in Committing Acts of Nuclear Terrorism	50

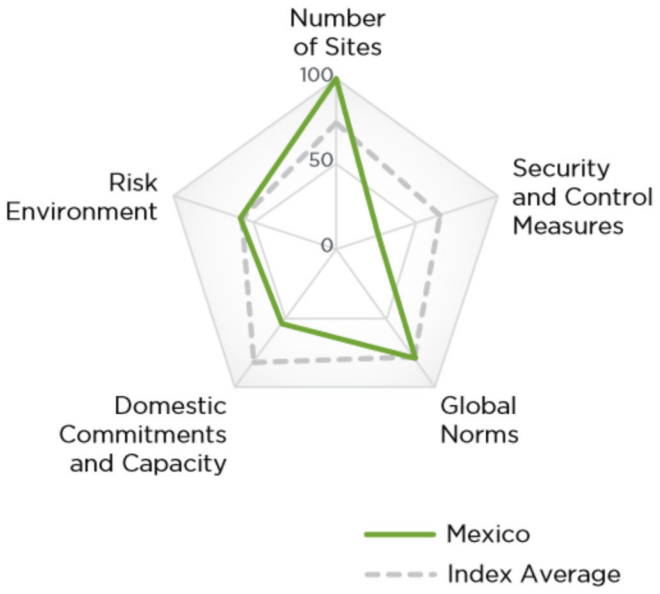
BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
Cybersecurity	0
Risk Environment	
Effective Governance	13
Pervasiveness of Corruption	0

MEXICO

	2016 Score	Rank / 45
OVERALL SCORE	**53**	**39**
Number of Sites	100	=1
Security and Control Measures	26	42
Global Norms	79	=28
Domestic Commitments and Capacity	54	=40
Risk Environment	59	=24

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	100
Global Norms	
International Legal Commitments	100
Voluntary Commitments	80
Domestic Commitments and Capacity	
Domestic Nuclear Security Legislation	100
Risk Environment	
Group(s) Interested in Committing Acts of Nuclear Terrorism	100

AVERAGE (scores between 34 and 66)	
Security and Control Measures	
On-site Physical Protection	60
Global Norms	
International Assurances	50
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	60

AVERAGE (scores between 34 and 66)	
Risk Environment	
Political Stability	55
Effective Governance	50

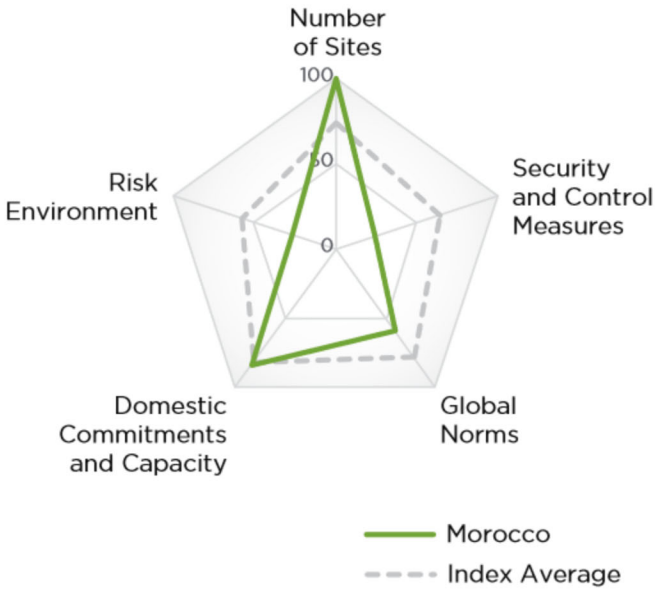
BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
Control and Accounting Procedures	29
Insider Threat Prevention	11
Response Capabilities	29
Cybersecurity	0
Domestic Commitments and Capacity	
Independent Regulatory Agency	0
Risk Environment	
Pervasiveness of Corruption	25

MOROCCO

	2016 Score	Rank / 45
OVERALL SCORE	**49**	**=40**
Number of Sites	100	=1
Security and Control Measures	24	43
Global Norms	59	39
Domestic Commitments and Capacity	84	=27
Risk Environment	27	42

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	100
Global Norms	
International Legal Commitments	71
Voluntary Commitments	80
Domestic Commitments and Capacity	
Domestic Nuclear Security Legislation	100
Independent Regulatory Agency	100

AVERAGE (scores between 34 and 66)	
Security and Control Measures	
On-site Physical Protection	60
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	40
Risk Environment	
Political Stability	45
Effective Governance	38

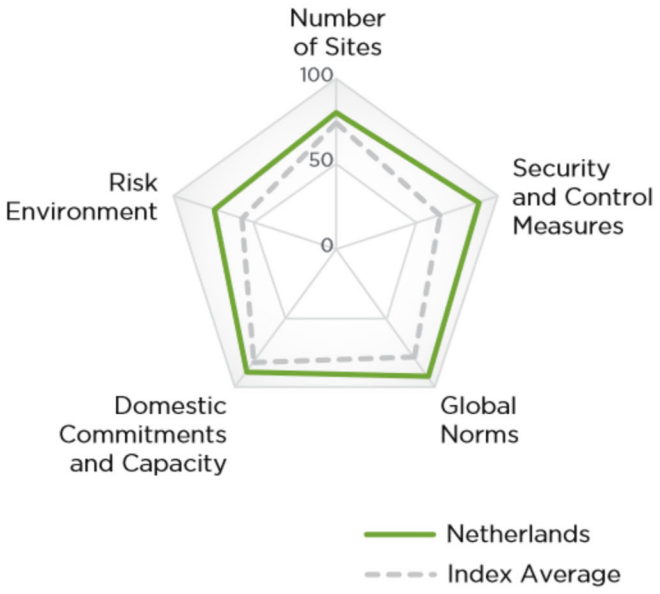
BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
Control and Accounting Procedures	29
Insider Threat Prevention	0
Response Capabilities	29
Cybersecurity	0
Global Norms	
International Assurances	25
Risk Environment	
Pervasiveness of Corruption	25
Group(s) Interested in Committing Acts of Nuclear Terrorism	0

NETHERLANDS

	2016 Score	Rank / 45
OVERALL SCORE	**86**	**=10**
Number of Sites	80	=15
Security and Control Measures	88	=10
Global Norms	92	=14
Domestic Commitments and Capacity	89	=22
Risk Environment	75	12

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	80
Security and Control Measures	
On-site Physical Protection	100
Control and Accounting Procedures	86
Insider Threat Prevention	67
Response Capabilities	86
Cybersecurity	100
Global Norms	
International Legal Commitments	100
Voluntary Commitments	100
International Assurances	75
Domestic Commitments and Capacity	
Domestic Nuclear Security Legislation	100
Independent Regulatory Agency	100
Risk Environment	
Political Stability	80
Effective Governance	75
Pervasiveness of Corruption	100

AVERAGE (scores between 34 and 66)	
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	60
Risk Environment	
Group(s) Interested in Committing Acts of Nuclear Terrorism	50

BELOW AVERAGE (scores less than 34)
None

SABOTAGE RANKING: COUNTRY SUMMARIES

NORTH KOREA

	2016 Score	Rank / 45
OVERALL SCORE	**24**	**=44**
Number of Sites	80	=15
Security and Control Measures	30	=40
Global Norms	0	45
Domestic Commitments and Capacity	13	44
Risk Environment	34	36

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)

ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	80
Security and Control Measures	
Response Capabilities	71
Risk Environment	
Group(s) Interested in Committing Acts of Nuclear Terrorism	100

AVERAGE (scores between 34 and 66)	
Security and Control Measures	
On-site Physical Protection	40

BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
Control and Accounting Procedures	14
Insider Threat Prevention	22
Cybersecurity	0
Global Norms	
International Legal Commitments	0
Voluntary Commitments	0
International Assurances	0
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	0
Domestic Nuclear Security Legislation	33
Independent Regulatory Agency	0
Risk Environment	
Political Stability	25
Effective Governance	0
Pervasiveness of Corruption	0

NORWAY

	2016 Score	Rank / 45
OVERALL SCORE	**83**	**=14**
Number of Sites	80	=15
Security and Control Measures	62	=24
Global Norms	92	=14
Domestic Commitments and Capacity	95	=13
Risk Environment	97	1

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)

ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	80
Security and Control Measures	
On-site Physical Protection	100
Control and Accounting Procedures	100
Global Norms	
International Legal Commitments	100
Voluntary Commitments	100
International Assurances	75
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	80
Domestic Nuclear Security Legislation	100
Independent Regulatory Agency	100
Risk Environment	
Political Stability	100
Effective Governance	88
Pervasiveness of Corruption	100
Group(s) Interested in Committing Acts of Nuclear Terrorism	100

AVERAGE (scores between 34 and 66)	
Security and Control Measures	
Response Capabilities	43
Cybersecurity	50

BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
Insider Threat Prevention	22

PAKISTAN

	2016 Score	Rank / 45
OVERALL SCORE	**54**	**38**
Number of Sites	80	=15
Security and Control Measures	47	=34
Global Norms	61	38
Domestic Commitments and Capacity	87	=25
Risk Environment	16	44

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)

ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	80
Security and Control Measures	
Response Capabilities	71
Global Norms	
Voluntary Commitments	80
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	100
Domestic Nuclear Security Legislation	67
Independent Regulatory Agency	100

AVERAGE (scores between 34 and 66)	
Security and Control Measures	
On-site Physical Protection	40
Control and Accounting Procedures	43
Insider Threat Prevention	56
Global Norms	
International Legal Commitments	57
International Assurances	50

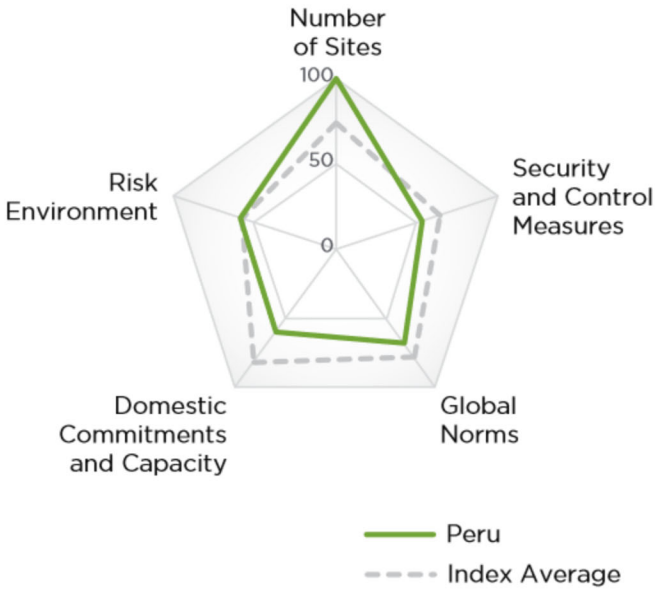
BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
Cybersecurity	25
Risk Environment	
Political Stability	15
Effective Governance	25
Pervasiveness of Corruption	25
Group(s) Interested in Committing Acts of Nuclear Terrorism	0

PERU

	2016 Score	Rank / 45
OVERALL SCORE	**61**	**=32**
Number of Sites	100	=1
Security and Control Measures	53	=31
Global Norms	68	35
Domestic Commitments and Capacity	60	=37
Risk Environment	59	=24

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	100
Security and Control Measures	
On-site Physical Protection	100
Control and Accounting Procedures	71
Response Capabilities	71
Global Norms	
International Legal Commitments	100
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	80
Domestic Nuclear Security Legislation	100
Risk Environment	
Group(s) Interested in Committing Acts of Nuclear Terrorism	100

AVERAGE (scores between 34 and 66)	
Global Norms	
Voluntary Commitments	40
International Assurances	50
Risk Environment	
Political Stability	55
Effective Governance	50

BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
Insider Threat Prevention	22
Cybersecurity	0
Domestic Commitments and Capacity	
Independent Regulatory Agency	0
Risk Environment	
Pervasiveness of Corruption	25

POLAND

	2016 Score	Rank / 45
OVERALL SCORE	**83**	**=14**
Number of Sites	100	=1
Security and Control Measures	76	16
Global Norms	87	=17
Domestic Commitments and Capacity	95	=13
Risk Environment	74	13

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)

ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	100
Security and Control Measures	
On-site Physical Protection	80
Control and Accounting Procedures	86
Insider Threat Prevention	67
Response Capabilities	100
Global Norms	
International Legal Commitments	100
Voluntary Commitments	80
International Assurances	75
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	80
Domestic Nuclear Security Legislation	100
Independent Regulatory Agency	100
Risk Environment	
Political Stability	80
Group(s) Interested in Committing Acts of Nuclear Terrorism	100

AVERAGE (scores between 34 and 66)	
Security and Control Measures	
Cybersecurity	50
Risk Environment	
Effective Governance	63
Pervasiveness of Corruption	50

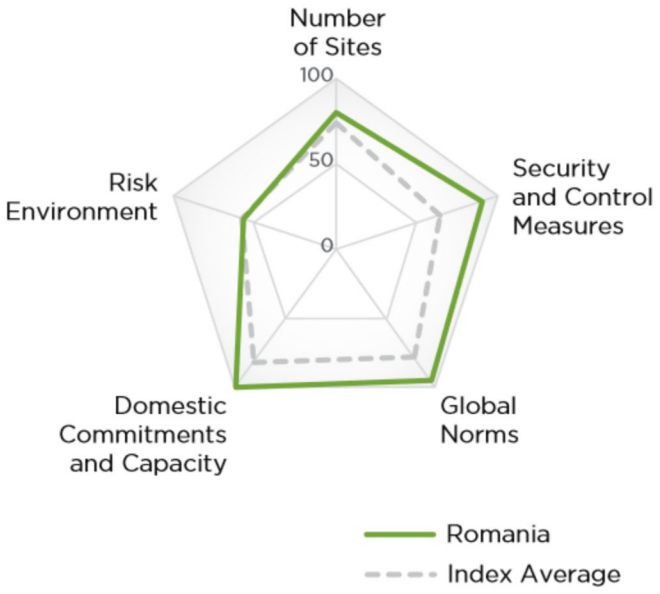
BELOW AVERAGE (scores less than 34)
None

ROMANIA

	2016 Score	Rank / 45
OVERALL SCORE	**86**	**=10**
Number of Sites	80	=15
Security and Control Measures	90	8
Global Norms	95	13
Domestic Commitments and Capacity	100	=1
Risk Environment	57	28

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	80
Security and Control Measures	
On-site Physical Protection	100
Control and Accounting Procedures	100
Insider Threat Prevention	78
Response Capabilities	100
Cybersecurity	75
Global Norms	
International Legal Commitments	100
Voluntary Commitments	80
International Assurances	100
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	100
Domestic Nuclear Security Legislation	100
Independent Regulatory Agency	100
Risk Environment	
Political Stability	70
Group(s) Interested in Committing Acts of Nuclear Terrorism	100

AVERAGE (scores between 34 and 66)
None

BELOW AVERAGE (scores less than 34)	
Risk Environment	
Effective Governance	25
Pervasiveness of Corruption	25

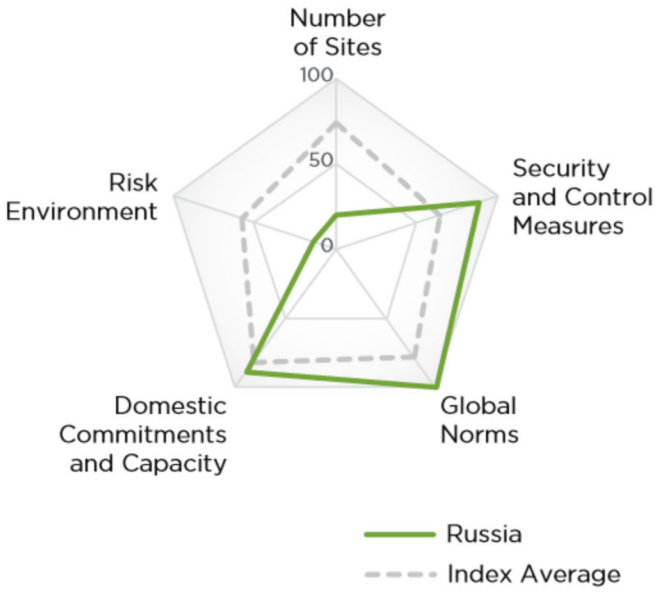
SABOTAGE RANKING: COUNTRY SUMMARIES

RUSSIA

	2016 Score	Rank / 45
OVERALL SCORE	**72**	**=22**
Number of Sites	20	=42
Security and Control Measures	88	=10
Global Norms	100	=1
Domestic Commitments and Capacity	89	=22
Risk Environment	14	45

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Security and Control Measures	
On-site Physical Protection	80
Control and Accounting Procedures	100
Insider Threat Prevention	78
Response Capabilities	86
Cybersecurity	100
Global Norms	
International Legal Commitments	100
Voluntary Commitments	100
International Assurances	100
Domestic Commitments and Capacity	
Domestic Nuclear Security Legislation	100
Independent Regulatory Agency	100

AVERAGE (scores between 34 and 66)	
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	60

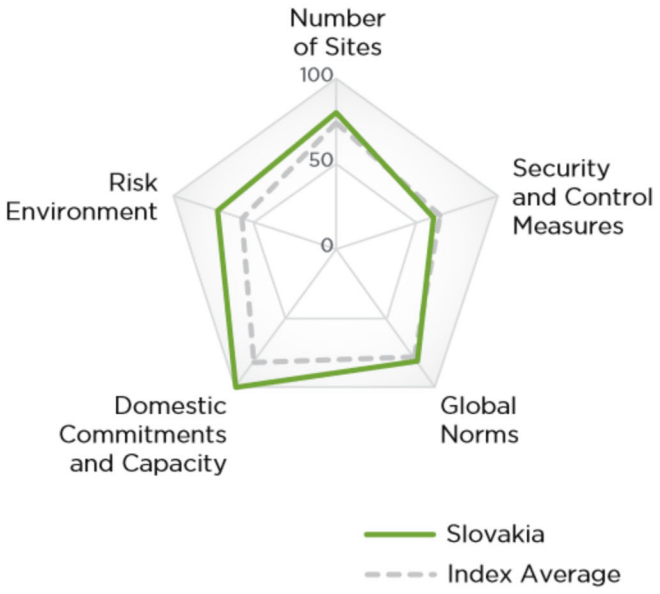
BELOW AVERAGE (scores less than 34)	
Number of Sites	
Number of Sites	20
Risk Environment	
Political Stability	30
Effective Governance	25
Pervasiveness of Corruption	0
Group(s) Interested in Committing Acts of Nuclear Terrorism	0

SLOVAKIA

	2016 Score	Rank / 45
OVERALL SCORE	**77**	**21**
Number of Sites	80	=15
Security and Control Measures	60	=26
Global Norms	81	=23
Domestic Commitments and Capacity	100	=1
Risk Environment	73	14

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	80
Security and Control Measures	
On-site Physical Protection	80
Control and Accounting Procedures	100
Insider Threat Prevention	67
Global Norms	
International Legal Commitments	100
International Assurances	75
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	100
Domestic Nuclear Security Legislation	100
Independent Regulatory Agency	100
Risk Environment	
Political Stability	75
Group(s) Interested in Committing Acts of Nuclear Terrorism	100

AVERAGE (scores between 34 and 66)	
Security and Control Measures	
Response Capabilities	57
Global Norms	
Voluntary Commitments	60
Risk Environment	
Effective Governance	63
Pervasiveness of Corruption	50

BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
Cybersecurity	0

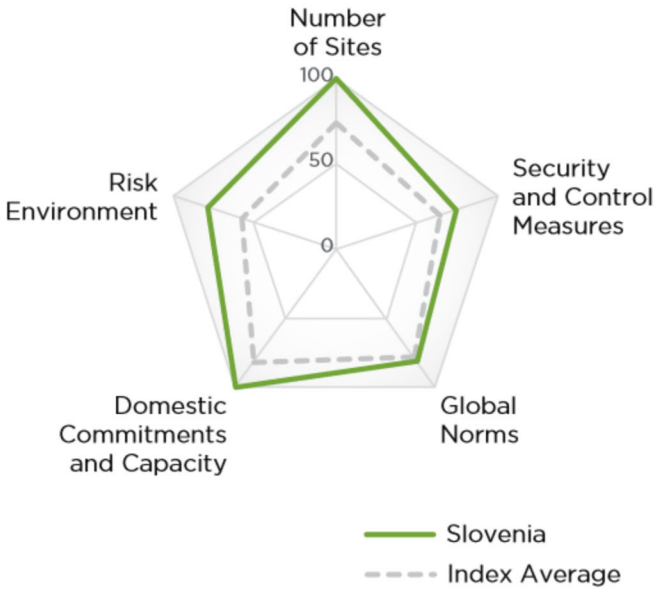
SABOTAGE RANKING: COUNTRY SUMMARIES

SLOVENIA

	2016 Score	Rank / 45
OVERALL SCORE	**83**	**=14**
Number of Sites	100	=1
Security and Control Measures	74	17
Global Norms	81	=23
Domestic Commitments and Capacity	100	=1
Risk Environment	79	=6

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	100
Security and Control Measures	
On-site Physical Protection	80
Control and Accounting Procedures	100
Insider Threat Prevention	67
Response Capabilities	100
Global Norms	
International Legal Commitments	100
International Assurances	75
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	100
Domestic Nuclear Security Legislation	100
Independent Regulatory Agency	100
Risk Environment	
Political Stability	75
Pervasiveness of Corruption	75
Group(s) Interested in Committing Acts of Nuclear Terrorism	100

AVERAGE (scores between 34 and 66)	
Global Norms	
Voluntary Commitments	60
Risk Environment	
Effective Governance	63

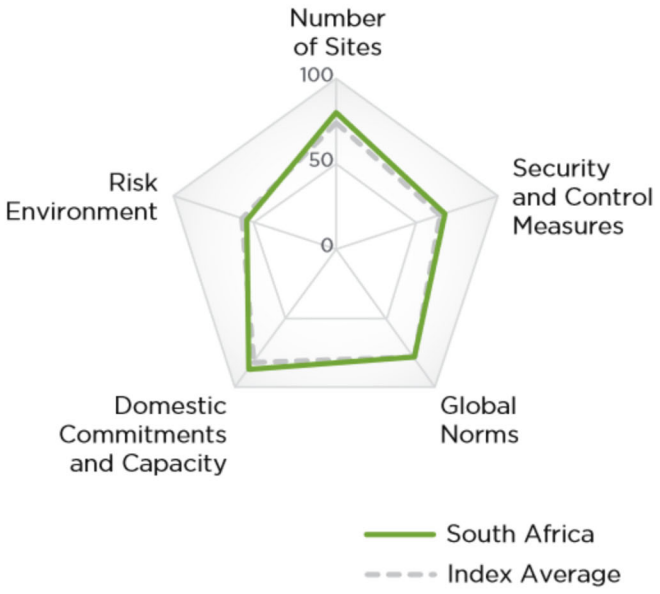
BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
Cybersecurity	25

SOUTH AFRICA

	2016 Score	Rank / 45
OVERALL SCORE	**72**	**=22**
Number of Sites	80	=15
Security and Control Measures	67	22
Global Norms	78	30
Domestic Commitments and Capacity	87	=25
Risk Environment	55	29

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	80
Security and Control Measures	
Control and Accounting Procedures	71
Response Capabilities	100
Cybersecurity	75
Global Norms	
International Legal Commitments	86
International Assurances	100
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	100
Domestic Nuclear Security Legislation	67
Independent Regulatory Agency	100
Risk Environment	
Political Stability	70

AVERAGE (scores between 34 and 66)	
Security and Control Measures	
On-site Physical Protection	60
Global Norms	
Voluntary Commitments	40
Risk Environment	
Effective Governance	50
Pervasiveness of Corruption	50
Group(s) Interested in Committing Acts of Nuclear Terrorism	50

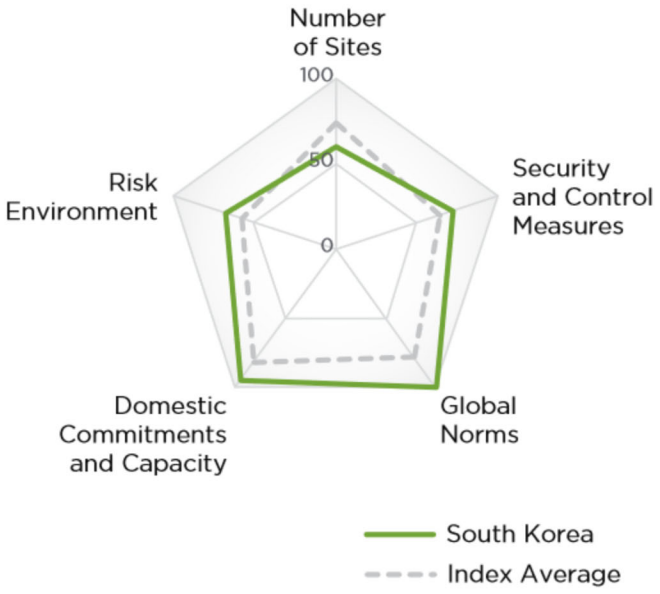
BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
Insider Threat Prevention	33

SOUTH KOREA

	2016 Score	Rank / 45
OVERALL SCORE	**81**	**20**
Number of Sites	60	=30
Security and Control Measures	72	20
Global Norms	100	=1
Domestic Commitments and Capacity	95	=13
Risk Environment	68	21

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Security and Control Measures	
Insider Threat Prevention	78
Response Capabilities	100
Cybersecurity	75
Global Norms	
International Legal Commitments	100
Voluntary Commitments	100
International Assurances	100
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	80
Domestic Nuclear Security Legislation	100
Independent Regulatory Agency	100
Risk Environment	
Effective Governance	75
Group(s) Interested in Committing Acts of Nuclear Terrorism	100

AVERAGE (scores between 34 and 66)	
Number of Sites	
Number of Sites	60
Security and Control Measures	
On-site Physical Protection	60
Control and Accounting Procedures	43
Risk Environment	
Political Stability	45
Pervasiveness of Corruption	50

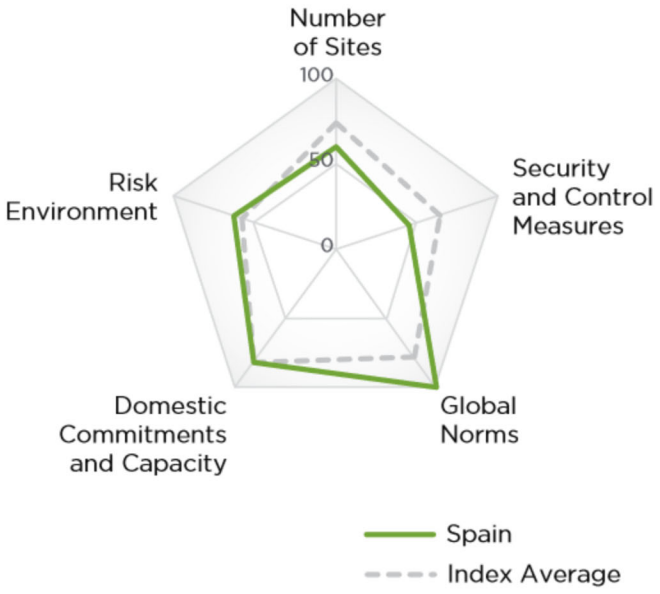
BELOW AVERAGE (scores less than 34)
None

SPAIN

	2016 Score	Rank / 45
OVERALL SCORE	**68**	**=25**
Number of Sites	60	=30
Security and Control Measures	45	36
Global Norms	100	=1
Domestic Commitments and Capacity	82	=31
Risk Environment	63	22

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Security and Control Measures	
Control and Accounting Procedures	71
Response Capabilities	86
Global Norms	
International Legal Commitments	100
Voluntary Commitments	100
International Assurances	100
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	80
Domestic Nuclear Security Legislation	67
Independent Regulatory Agency	100
Risk Environment	
Political Stability	75
Effective Governance	75

AVERAGE (scores between 34 and 66)	
Number of Sites	
Number of Sites	60
Security and Control Measures	
On-site Physical Protection	60
Risk Environment	
Pervasiveness of Corruption	50
Group(s) Interested in Committing Acts of Nuclear Terrorism	50

BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
Insider Threat Prevention	11
Cybersecurity	0

SABOTAGE RANKING: COUNTRY SUMMARIES

SWEDEN

	2016 Score	Rank / 45
OVERALL SCORE	**87**	**9**
Number of Sites	60	=30
Security and Control Measures	73	=18
Global Norms	100	=1
Domestic Commitments and Capacity	95	=13
Risk Environment	94	2

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)

ABOVE AVERAGE (scores greater than 66)	
Security and Control Measures	
On-site Physical Protection	100
Control and Accounting Procedures	86
Response Capabilities	71
Cybersecurity	75
Global Norms	
International Legal Commitments	100
Voluntary Commitments	100
International Assurances	100
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	80
Domestic Nuclear Security Legislation	100
Independent Regulatory Agency	100
Risk Environment	
Political Stability	90
Effective Governance	88
Pervasiveness of Corruption	100
Group(s) Interested in Committing Acts of Nuclear Terrorism	100

AVERAGE (scores between 34 and 66)	
Number of Sites	
Number of Sites	60

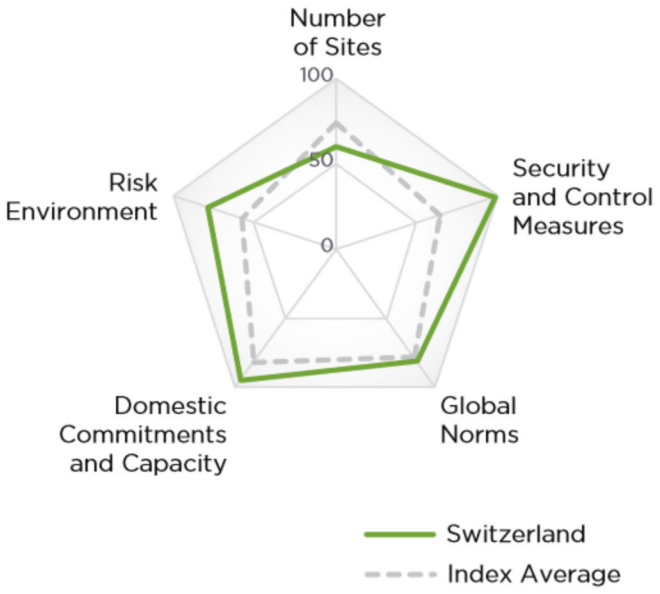
BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
Insider Threat Prevention	33

SWITZERLAND

	2016 Score	Rank / 45
OVERALL SCORE	**88**	**=6**
Number of Sites	60	=30
Security and Control Measures	98	=1
Global Norms	81	=23
Domestic Commitments and Capacity	95	=13
Risk Environment	79	=6

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Security and Control Measures	
On-site Physical Protection	100
Control and Accounting Procedures	100
Insider Threat Prevention	89
Response Capabilities	100
Cybersecurity	100
Global Norms	
International Legal Commitments	100
International Assurances	75
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	80
Domestic Nuclear Security Legislation	100
Independent Regulatory Agency	100
Risk Environment	
Political Stability	95
Effective Governance	75
Pervasiveness of Corruption	100

AVERAGE (scores between 34 and 66)	
Number of Sites	
Number of Sites	60
Global Norms	
Voluntary Commitments	60
Risk Environment	
Group(s) Interested in Committing Acts of Nuclear Terrorism	50

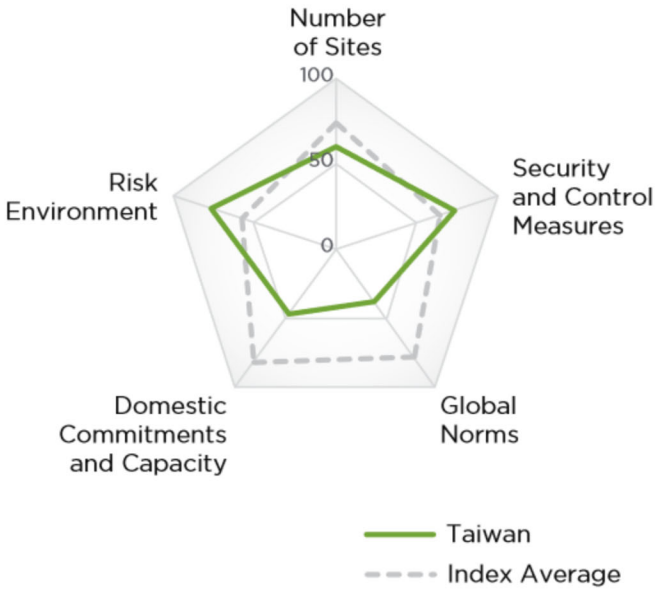
BELOW AVERAGE (scores less than 34)
None

TAIWAN

	2016 Score	Rank / 45
OVERALL SCORE	**61**	**=32**
Number of Sites	60	=30
Security and Control Measures	73	=18
Global Norms	38	42
Domestic Commitments and Capacity	47	=42
Risk Environment	77	10

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Security and Control Measures	
On-site Physical Protection	80
Control and Accounting Procedures	86
Response Capabilities	71
Cybersecurity	100
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	80
Domestic Nuclear Security Legislation	67
Risk Environment	
Political Stability	70
Pervasiveness of Corruption	75
Group(s) Interested in Committing Acts of Nuclear Terrorism	100

AVERAGE (scores between 34 and 66)	
Number of Sites	
Number of Sites	60
Global Norms	
International Assurances	50
Voluntary Commitments	40
Risk Environment	
Effective Governance	63

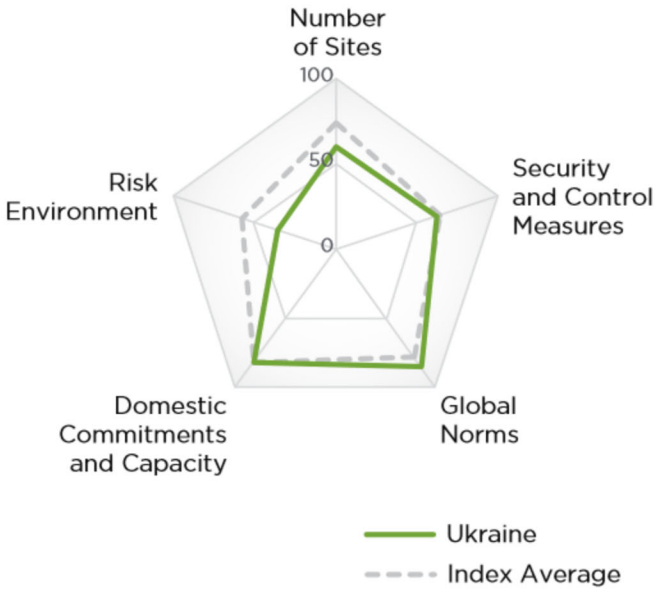
BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
Insider Threat Prevention	33
Global Norms	
International Legal Commitments	29
Domestic Commitments and Capacity	
Independent Regulatory Agency	0

UKRAINE

	2016 Score	Rank / 45
OVERALL SCORE	**65**	**30**
Number of Sites	60	=30
Security and Control Measures	62	=24
Global Norms	85	=19
Domestic Commitments and Capacity	82	=31
Risk Environment	36	35

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Security and Control Measures	
On-site Physical Protection	80
Control and Accounting Procedures	86
Response Capabilities	100
Global Norms	
International Legal Commitments	100
Voluntary Commitments	100
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	80
Domestic Nuclear Security Legislation	67
Independent Regulatory Agency	100
Risk Environment	
Group(s) Interested in Committing Acts of Nuclear Terrorism	100

AVERAGE (scores between 34 and 66)	
Number of Sites	
Number of Sites	60
Global Norms	
International Assurances	50

BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
Insider Threat Prevention	22
Cybersecurity	25
Risk Environment	
Political Stability	10
Effective Governance	25
Pervasiveness of Corruption	0

UNITED KINGDOM

	2016 Score	Rank / 45
OVERALL SCORE	**90**	**=3**
Number of Sites	40	=39
Security and Control Measures	95	4
Global Norms	100	=1
Domestic Commitments and Capacity	100	=1
Risk Environment	72	15

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)

ABOVE AVERAGE (scores greater than 66)	
Security and Control Measures	
On-site Physical Protection	100
Control and Accounting Procedures	100
Insider Threat Prevention	78
Response Capabilities	100
Cybersecurity	100
Global Norms	
International Legal Commitments	100
Voluntary Commitments	100
International Assurances	100
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	100
Domestic Nuclear Security Legislation	100
Independent Regulatory Agency	100
Risk Environment	
Political Stability	70
Effective Governance	75
Pervasiveness of Corruption	100

AVERAGE (scores between 34 and 66)	
Number of Sites	
Number of Sites	40
Risk Environment	
Group(s) Interested in Committing Acts of Nuclear Terrorism	50

BELOW AVERAGE (scores less than 34)
None

UNITED STATES

	2016 Score	Rank / 45
OVERALL SCORE	**88**	**=6**
Number of Sites	0	45
Security and Control Measures	98	=1
Global Norms	100	=1
Domestic Commitments and Capacity	100	=1
Risk Environment	71	=16

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)

ABOVE AVERAGE (scores greater than 66)	
Security and Control Measures	
On-site Physical Protection	100
Control and Accounting Procedures	100
Insider Threat Prevention	89
Response Capabilities	100
Cybersecurity	100
Global Norms	
International Legal Commitments	100
Voluntary Commitments	100
International Assurances	100
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	100
Domestic Nuclear Security Legislation	100
Independent Regulatory Agency	100
Risk Environment	
Political Stability	85
Effective Governance	75
Pervasiveness of Corruption	75

AVERAGE (scores between 34 and 66)	
Risk Environment	
Group(s) Interested in Committing Acts of Nuclear Terrorism	50

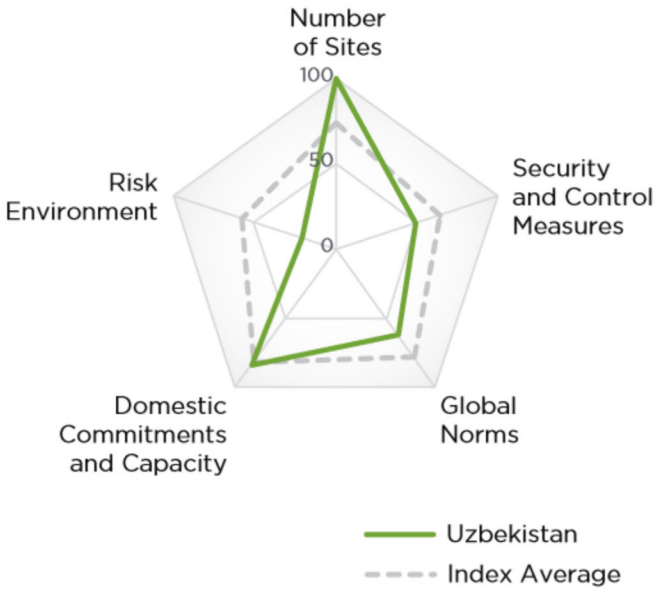
BELOW AVERAGE (scores less than 34)	
Number of Sites	
Number of Sites	0

UZBEKISTAN

	2016 Score	Rank / 45
OVERALL SCORE	**56**	**35**
Number of Sites	100	=1
Security and Control Measures	49	33
Global Norms	62	=36
Domestic Commitments and Capacity	84	=27
Risk Environment	21	43

= denotes tie in rank

Scores are normalized (0–100, where 100 = most favorable nuclear security conditions)



ABOVE AVERAGE (scores greater than 66)	
Number of Sites	
Number of Sites	100
Security and Control Measures	
On-site Physical Protection	80
Response Capabilities	86
Global Norms	
International Legal Commitments	71
Domestic Commitments and Capacity	
Domestic Nuclear Security Legislation	100
Independent Regulatory Agency	100

AVERAGE (scores between 34 and 66)	
Security and Control Measures	
Control and Accounting Procedures	57
Global Norms	
Voluntary Commitments	60
International Assurances	50
Domestic Commitments and Capacity	
UNSCR 1540 Implementation	40
Risk Environment	
Group(s) Interested in Committing Acts of Nuclear Terrorism	50

BELOW AVERAGE (scores less than 34)	
Security and Control Measures	
Insider Threat Prevention	22
Cybersecurity	0
Risk Environment	
Political Stability	30
Effective Governance	0
Pervasiveness of Corruption	0

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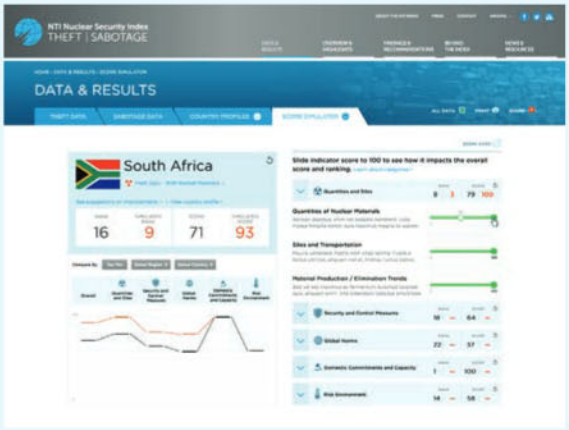
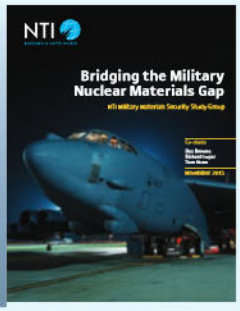


Papers and Reports at www.nti.org



Drawn from input of former military and political officials from nuclear-armed states and co-authored by Des Browne, Richard Lugar, and Sam Nunn, ***Bridging the Military Nuclear Materials Gap*** offers recommendations for governments to tighten control and build confidence in the security of nuclear materials categorized as "military materials."

In ***The Case for Highly Enriched Uranium-Free Zones***, Andrew J. Bieniawski, Miles A. Pomper, and Elena Sokova call for the establishment of regional zones free of HEU.

In ***A Roadmap to Minimize and Eliminate Highly Enriched Uranium***, Andrew J. Bieniawski and Miles A. Pomper lay out a roadmap with five pathways to ending civilian HEU use and beginning the necessary research and development to minimize and ultimately eliminate HEU for naval use.

More Work to Do: A Pathway for Future Progress on Strengthening Nuclear Security by Jonathan Herbach and Samantha Pitts-Kiefer, published in *Arms Control Today,* explores how the 2005 amendment to the Convention on the Physical Protection of Nuclear Material (CPPNM) could create a much-needed forum for continuing discussions aimed at preventing nuclear terrorism after the Nuclear Security Summits.

Crossing the Finish Line: Ending the Civilian Use of HEU, developed for the Stanley Foundation by Miles A. Pomper and Philippe Mauger, describes steps that should be taken at the Nuclear Security Summit to build momentum toward the elimination of civilian HEU.

Global Dialogue on Nuclear Security Priorities at www.nti.org/globaldialogue

The papers below were created for the Global Dialogue, NTI's international, cross-sector discussion among leading government officials, experts, nuclear security practitioners, and other stakeholders.

Challenges and Opportunities for Strengthening the Global Nuclear Security System (September 2014)

High-Level Political Engagement to Strengthen Nuclear Security Beyond 2016 (May 2015)

Nuclear Security Primer: The Existing System (updated, May 2015)

Managing Stocks of Separated Plutonium to Mitigate Security Risks: Near-Term Steps, John Carlson (May 2015)

NEWS COVERAGE OF THE NTI NUCLEAR SECURITY INDEX

"Perhaps the most important finding in the study is connected not to any single nation but rather to the lack of a global system of oversight."

~ *The Washington Post* editorial board on the 2014 NTI Index

"There are many steps the international community can take to prevent nuclear fuel from falling into terrorists' hands, including developing a system of global standards for securing the material and persuading nations to ratify nuclear security treaties. World leaders should push this agenda forward."

~ *The New York Times* editorial board on a key recommendation in the 2014 NTI Index

"The index evaluates countries based on numerous metrics from the quantity of material a country possesses, how it is stored and accounted for and even political factors like corruption and stability."

~ Associated Press on the 2012 NTI Index

"The value of such an index is that it can serve as a public early warning system."

~ David Hoffman, Pulitzer Prize-winning journalist and author, on the 2012 NTI Index

"The Nuclear Threat Initiative, a respected non-proliferation think tank, and the Economic Intelligence Unit have produced a new ranking system to assess the security of the world's scattered stocks of weapons-grade uranium and plutonium."

~ *The Guardian* on the 2012 NTI Index

"Unprecedented."

~ *Yonhap News Agency* (South Korea), on the 2012 NTI Index

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