

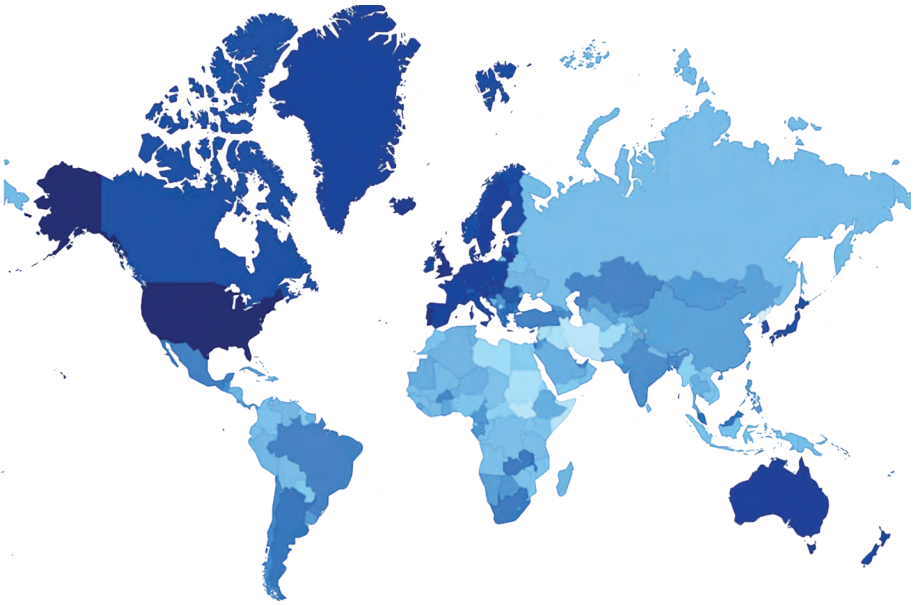
2023-2024



THE
PEDDLING PERIL
INDEX



DAVID ALBRIGHT / SARAH BURKHARD / SPENCER FARAGASSO / LINDA KEENAN



THE PEDDLING PERIL INDEX (PPI) 2023/2024

RANKING NATIONAL STRATEGIC TRADE CONTROL SYSTEMS

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SPENCER FARAGASSO, AND LINDA KEENAN**

INSTITUTE FOR SCIENCE AND INTERNATIONAL SECURITY
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Institute for Science and International Security

The Institute for Science and International Security is a non-profit, non-partisan institution dedicated to informing the public about science and policy issues affecting international security. Its primary focus is on stopping the spread of nuclear weapons and related technology to additional nations and to terrorists, bringing about greater transparency of nuclear activities worldwide, strengthening the international nonproliferation regime, and achieving deep cuts in nuclear arsenals.

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*World Map: The PPI scores represented by country,
where darker indicates a higher score.*

*Dedicated to all those who work to prevent dangerous WMD
and military programs from accessing the goods, equipment,
know-how and funds that allow them to succeed.*

CREDITS AND ACKNOWLEDGEMENTS

The *Peddling Peril Index* (PPI) project is a result of thousands of hours of methodological research, data collection, and analysis by Institute for Science and International Security staff, past and present. This version builds on the three previous editions and is forever indebted to those who contributed to earlier versions. For this version, we wish to especially thank Institute staff Victoria Cheng, Chloe DeVere, and Kendall Roach for their research and contributions, along with several subject matter consultants. We also thank Anna Lea Albright for computing the cluster analysis and a principal component analysis. We extend special thanks to Michael Rosenthal for his invaluable contributions to the PPI, and more specifically to the policy recommendations, and to Ralf Wirtz, for sharing his experience from decades working in the industry. Thank you to those who shared their knowledge with us but wish to remain anonymous. This book benefited greatly from the layout and cover design by Stewart A. Williams Design.

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PREFACE TO THE 2023/2024 PPI

Strategic trade controls have developed into a critical countermeasure against trafficking in nuclear, missile, WMD, and military-related commodities. In 2022 and 2023, strategic trade controls have taken on new importance, when Russia invaded Ukraine, attacked its capital, and started an unprovoked and unjustified war of aggression that continues to this day. Russia's war efforts are powered by military supplies from like-minded or sympathetic countries, but also by large numbers of dual-use goods—those with military and civilian applications—that make their way to Russia, including from countries opposing Russia's military aggression.

Strategic trade with Iran and North Korea has been tightly regulated for decades, including on the international level, by dozens of United Nations Security Council resolutions. But challenges remain as Iran's and North Korea's weapons of mass destruction (WMD) and missile programs continue to follow a dangerous trajectory— as of 2023, North Korea's leadership pledged to increase their nuclear arsenal “exponentially”, and Iran's timeline to enough weapon-grade uranium for a nuclear weapon is as short as ever, measured in days, not weeks. In these circumstances, national strategic trade controls represent a critical and proven strategy to thwart Iran's and North Korea's abilities, one that can and must be always employed, complementing policies of diplomacy and deterrence alike. Without access to goods from abroad, Iran's and North Korea's nuclear programs, as well as their ballistic missile and advanced weapons programs, would grind to a halt.

Iran's, North Korea's, and Russia's dependence on foreign materials, equipment, and technology is no exception. Since the creation of the first atomic bomb, one case after another, from Russia to China, Pakistan to India, Taiwan to North Korea, Iraq to Iran, Argentina to Brazil, and South Africa to Libya, have shown that almost all countries that have sought nuclear weapons face an essential challenge in that they cannot domestically produce all the goods they need or afford the creation of an indigenous industry to do so. Case studies, many of which the Institute has published on its website, have shown that virtually all countries seeking nuclear weapons capabilities have depended on acquisition from abroad of a wide range of critical technologies and know-how, raw materials, equipment, and components.

Although no single tool can completely stop determined countries like Iran, North Korea, and Russia from acquiring illicitly the goods they seek, strategic trade controls have proven important in slowing and complicating those efforts. They have also stimulated and provided tools to responsible nations for better and earlier detection of secret efforts to create, for example, the most worrisome nuclear weapons capabilities, particularly those in regions of tension such as the Middle East, South Asia, and Northeast Asia. By detecting these programs earlier and causing delays, strategic trade control systems have provided more time for diplomacy and other counter-proliferation tools to seek solutions to the fundamental problem of nuclear and other types of proliferation.

Today, strategic trade control laws are well implemented in supplier countries. For example, the Nuclear Suppliers Group (NSG) has established a wide range of norms and principles over several decades for its members, as well as extensive control lists of equipment, materials, and technology relevant to nuclear proliferation. However, enforcement is not consistent across the board. Cases of nuclear commodity trafficking show that some NSG countries implement and enforce their laws far better than other members. Moreover, about three quarters of all countries and territories are not members of the NSG. These non-NSG states often have far weaker strategic trade control laws, or none at all.

In response to the enactment and improvement of trade controls, states whose aim it is to acquire or maintain weapons of mass destruction have developed increasingly sophisticated national and transnational networks to acquire goods illicitly for covert, unsafeguarded, or sanctioned

nuclear programs, as well as other WMD, missile, and military efforts. To stay up to par, supplier states need to continually improve their strategic trade controls. Moreover, case studies of illicit procurement make clear that it is not enough for just a few countries to have adequate controls over the export of key goods.¹ In fact, Iran, North Korea, and others often base their efforts in “safe haven” countries with less effective controls that have trade relations with supplier countries, as they seek to acquire goods from countries with advanced technological sectors, such as the United States and Germany. They often declare a false end-user, transship the goods, and route the payment through third-party countries with less effective or nonexistent controls. In essence, proliferators look for the weak links in the fabric of international strategic trade controls. Experience teaches that they find many opportunities to bypass controls and sanctions.

These issues arose at a 2015 Institute for Science and International Security workshop involving a unique range of law enforcement officials, Congressional staff, and non-governmental experts. These experts could not agree on how to better target efforts to prevent the spread of strategic commodities and gauge weak links in global trade controls. There was agreement that there is little chance of thwarting strategic commodity trafficking efforts without knowing the sufficiency of trade control systems around the world. Participants concluded that there was a deep need for a better way to evaluate trade control systems worldwide, and thereby establish a basis from which policymakers could mitigate gaps and develop counter-proliferation initiatives. The *Peddling Peril Index* (PPI) was envisioned at this workshop as a way to help accomplish this. At the workshop, Mark Dubowitz recommended this name as a follow-on to Albright’s 2010 book, *Peddling Peril*, on illicit nuclear trade and the A.Q. Khan network that operated out of Pakistan.² As the project developed, it became clear that a biennial review was necessary to measure progress.

In the endeavor to thwart commodity trafficking and bolster strategic trade controls, the passage of United Nations Security Council resolution (UNSCR) 1540 in 2004 was an important milestone. It recognized the need for all nations to put in place appropriate, effective trade controls to prevent the spread of the wherewithal to make weapons of mass destruction. UNSCR 2325, passed in late 2016, and UNSCR 2663, passed in late 2022, lay out steps and actions to build upon UNSCR 1540, highlighting the need for higher levels of state compliance. The follow-on resolutions

call for more attention to enforcement and counter-proliferation financing measures—both key topics in the PPI—as well as the need to adapt to new challenges by taking into account developments on the evolving nature of the risk of proliferation and rapid advances in science and technology. Yet, these resolutions today remain under-implemented.

Nonetheless, there remains no measure that mandates the evaluation of the effectiveness of national strategic trade controls on a global scale or the creation of a body to perform independent evaluations. This is where the PPI steps in. The PPI ranks 200 countries, territories, and entities according to their adoption and implementation of strategic trade controls and assesses how well those systems are performing at preventing the trafficking in nuclear and other strategic commodities.³ The ranking is derived from over 100 indicators pertinent to strategic trade controls and nonproliferation. The PPI's data and analysis allow for comprehensive, straightforward assessments on the sufficiency of strategic trade control systems currently and over time.

The PPI for 2023/2024 is the fourth edition of the index. It encompasses information gathered during 2022 and 2023 and remains the only comprehensive public effort to systematically score and rank national strategic trade control systems.

As in the earlier versions, the PPI measures the effectiveness of strategic trade controls using a set of criteria relating to a country's existing laws, regulations, procedures, practices, international obligations, and actions. Its fundamental purpose is to identify in a measurable manner the relative strengths and weaknesses of national strategic trade control systems throughout the world.

Section I of the book includes information on the index's development, methodology and data. The final chapter introduces the overall scores and rankings. Annex 1 provides a full ranking and lists scores for all 200 countries, territories, and entities. We include a cluster analysis, which divides countries by score into four groups. The cluster analysis allows for quick determination of a country's placement in a high or low-scoring group (or a group in-between), and for easy cross-country comparisons. Annex 2 lists the countries in each of the four clusters.

Section II presents key rankings in the index by grouping countries into three distinct tiers, each of which represents countries that are alike in their supply potential, economic development, and other measures. The

usefulness of this type of approach was recognized in UNSCR 2325, when it urged the 1540 Committee, in its work, to take into account “the specificity of States, *inter alia*, with respect to their ability to manufacture and export related materials, with a view to prioritizing efforts and resources where they are most needed without affecting the need for comprehensive implementation of resolution 1540.” In brief, Tier One in the PPI includes those nations that can supply, at least partially but significantly, the wherewithal to make nuclear weapons, other WMD, or the means to deliver them. Tier Two includes countries of transshipment concern, and Tier Three includes the remainder of the countries.

Section IV discusses approaches aimed at improving scores and strategic trade control implementation. Comparisons to previous rankings are drawn and statistical analysis is applied to the data. Like the 2017 and 2021 editions, the new edition contains a chapter on recommendations. Among others, it introduces an element of global implementation of strategic trade controls that has gathered momentum in recent years but has yet to emerge out of the discussion stage: the development of an international standard on export controls. However, the recommendation chapter is not meant to be comprehensive; rather it is a careful selection of the most timely, pressing, and actionable issues relevant to the PPI. For additional recommendations, we encourage interested readers to explore Chapter 12 and Chapter 16 in the 2017 and 2021 editions, respectively, as well as the PPI webpage on our website, which features additional PPI applications created as external reports.⁴

In many ways, the 2023 PPI paints an improving picture. In comparison with earlier editions, it shows that global trade controls are slowly but steadily headed in the right direction. The scores have improved across all areas in the index.

We are thankful for the positive reception to the project and to those who took the time to share their comments and recommendations. We were pleased that several governments reached out to share additional information for this update and to learn more about how they could improve their strategic trade control implementation. As in the previous versions, it is our hope that the PPI will be valuable to states, organizations, researchers, and the general public. We aspire for it to motivate strategic trade control efforts worldwide and reduce the chances that additional states or non-state actors will obtain the wherewithal to fabricate nuclear and other destructive weapons.

NOTES

1. David Albright, Sarah Burkhard, Spencer Faragasso, Linda Keenan, and Andrea Stricker *Illicit Trade Networks: Connecting the Dots, Volume 1* (Washington, DC: Institute for Science and International Security, 2020), <https://isis-online.org/books/detail/illicit-trade-networks-connecting-the-dots-volume-1>. Also available as an e-book at Amazon.
2. David Albright, *Peddling Peril: How the Secret Nuclear Trade Arms America's Enemies* (New York: Free Press, 2010).
3. A shortened United Nations-derived name for each country is used throughout the report. We also use an abbreviated name for non-UN recognized territories or entities.
4. See: *Peddling Peril Index*, Institute for Science and International Security, <http://www.isis-online.org/ppi>.

HIGHLIGHTS

The *Peddling Peril Index's* scores are pictorially represented in Figure I.1 for each country, territory, or entity. Dark blue represents higher scores and light blue represents lower scores. In general, the scores in the northern hemisphere were higher than in the southern hemisphere, and developed nations scored higher than developing countries.

Countries could receive a total of 1300 points. The overall average score is 579, up from 546 points in 2021, and the overall median is 542, up

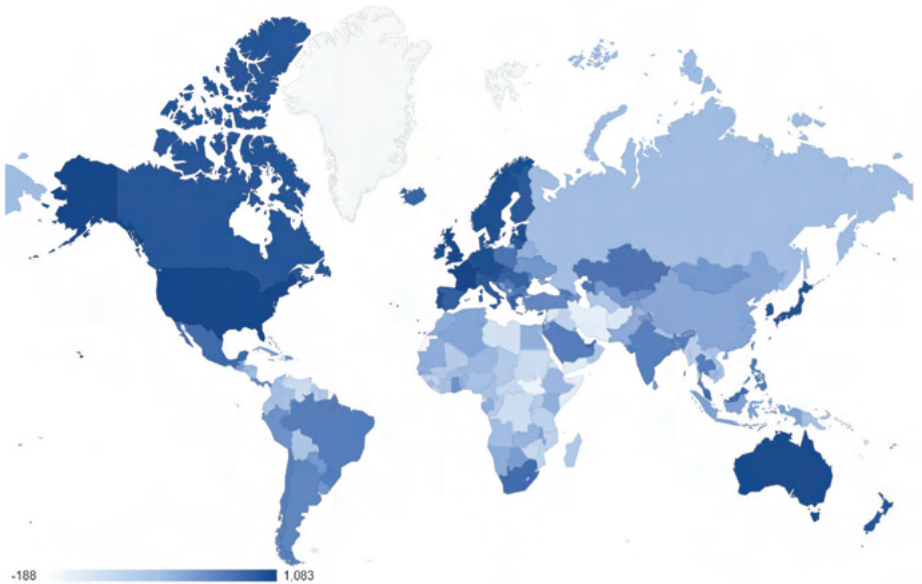


Figure I.1. The PPI scores are represented by country, where darker blue indicates a higher score.

from 508 points. The average score thus improved by 33 points from the last PPI edition published in 2021.¹

Figure I.2 shows that scores ranged from -188 and 1083, meaning that no country received more than 83 percent of the possible points, and a few countries had very low scores. The figure also shows that the score distribution remains fundamentally bimodal in shape, as in the previous rankings. Like the Peddling Peril Indices of 2017, 2019, and 2021, the 2023 edition found that less than half of all countries, or 40 percent of the world's national trade control systems, received more than half of the available points.

However, there is an upward trend in points. In the 2023 PPI, there are more countries in the higher point intervals, leading to a shift toward the left in the chart, compared to the previous editions. For example, while in 2021 only six countries had a score of 1000 points or higher, there are 20 in 2023 that exceeded that mark.

Forty-one countries, up from 36 in 2021, achieved two-thirds or more of the available points, and an additional 38 countries (up from 33) achieved more than half but less than two-thirds of the possible points. At the same time, more than half of all countries, the remaining 121 of the 200 evaluated countries, received less than half of the available points. Of those, 64 countries (down from 80) received less than one-third of the total points. This wide range of performance is alarming, given the central importance of strategic trade controls in stopping proliferation.

A deeper look into the scoring reveals several reasons for the many relatively low scores. The 2023 PPI uses 104 indicators to calculate a final score, which are categorized into five pillars of strategic trade controls:

1. **International Commitment** to preventing strategic commodity trafficking;
2. **Legislation** in place that regulates and oversees trade in strategic commodities, and criminalizes and aims to prevent strategic commodity trafficking;
3. **Ability to Monitor and Detect Strategic Trade;**
4. **Ability to Prevent Proliferation Financing;** and
5. **Adequacy of Enforcement** against strategic commodity trafficking.

Proliferation financing has not traditionally been considered when debating the efficacy of strategic trade controls. However, the PPI results

2023 Total PPI Point Distribution

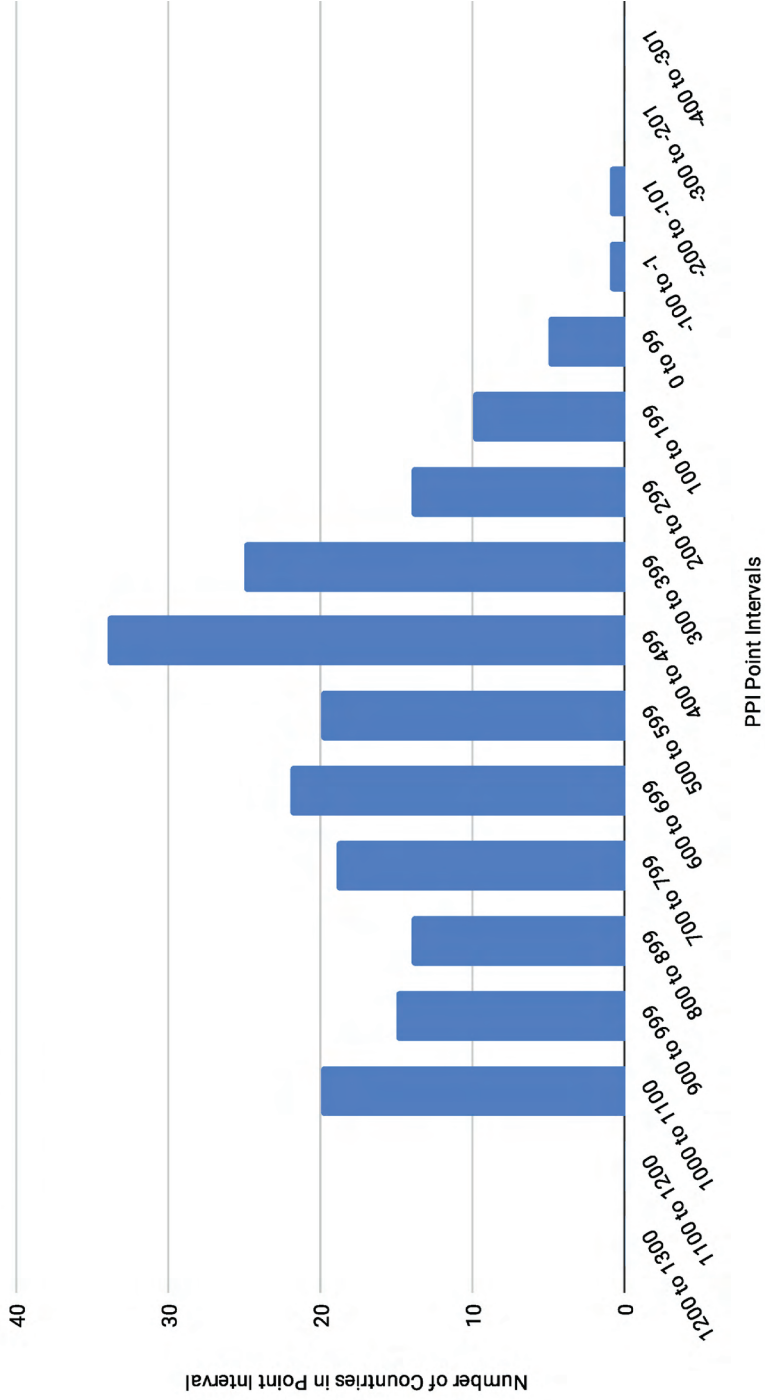


Figure I.2. Distribution of total points in intervals of 100 points.

lead to the Institute’s assertion that it should be a central part of any such deliberations. In recent years, this view appears to be increasingly adopted by other groups, organizations, and also governments.

The average scores for all countries together were highest in *Legislation*, followed by *International Commitment*, and lowest in *Ability to Prevent Proliferation Financing*. Yet, only 63 percent of the possible points are collectively achieved under *Legislation*. This number drops to 58 percent in *International Commitment*; 54 percent in *Ability to Monitor and Detect Strategic Trade*; 42 percent in *Adequacy of Enforcement*; and 30 percent in *Ability to Prevent Proliferation Financing*. Compared to 2021, this average percentage increased most in *Ability to Prevent Proliferation Financing* and in *International Commitment*.

Figure I.3 shows the fraction of points achieved in each super criterion for all countries, where a stacked light green and red bar represents the total points available in each super criterion, after weighting. The light green portion represents the achieved points by all countries, and the tan bar shows the missing points. As can be seen, the *Proliferation Financing* and *Enforcement* super criteria are the most heavily weighted in this analysis, and the super criteria missing the most points.

Beyond the scores, the PPI found that under the *Legislation* super criterion, which examines national laws on import, export, transit, and transshipment controls separately, only 76 countries have export control legislation with the desired comprehensiveness in place, covering exports of nuclear direct and dual-use items, with Morocco being the only new country to join this group since the 2021 PPI. A handful of additional countries have drafted, but not yet adopted a comprehensive export control law. That means the majority of countries do not have adequate strategic trade control laws and regulations in place.

To make more realistic country comparisons, the full ranking is also divided into three distinct sets of countries, termed “tiers”. The three tiers are organized based on their potential for supplying strategic commodities and their likelihood of being exploited by illicit procurement networks as transshipment points. In brief, Tier One in the PPI includes those nations that can supply, at least partially but significantly, the wherewithal to make nuclear weapons, other WMD, or the means to deliver them. Tier Two includes countries of transshipment concern, and Tier Three includes the remainder of the countries. Figure I.4 shows the average scores for the three

2023 Globally Achieved PPI Points

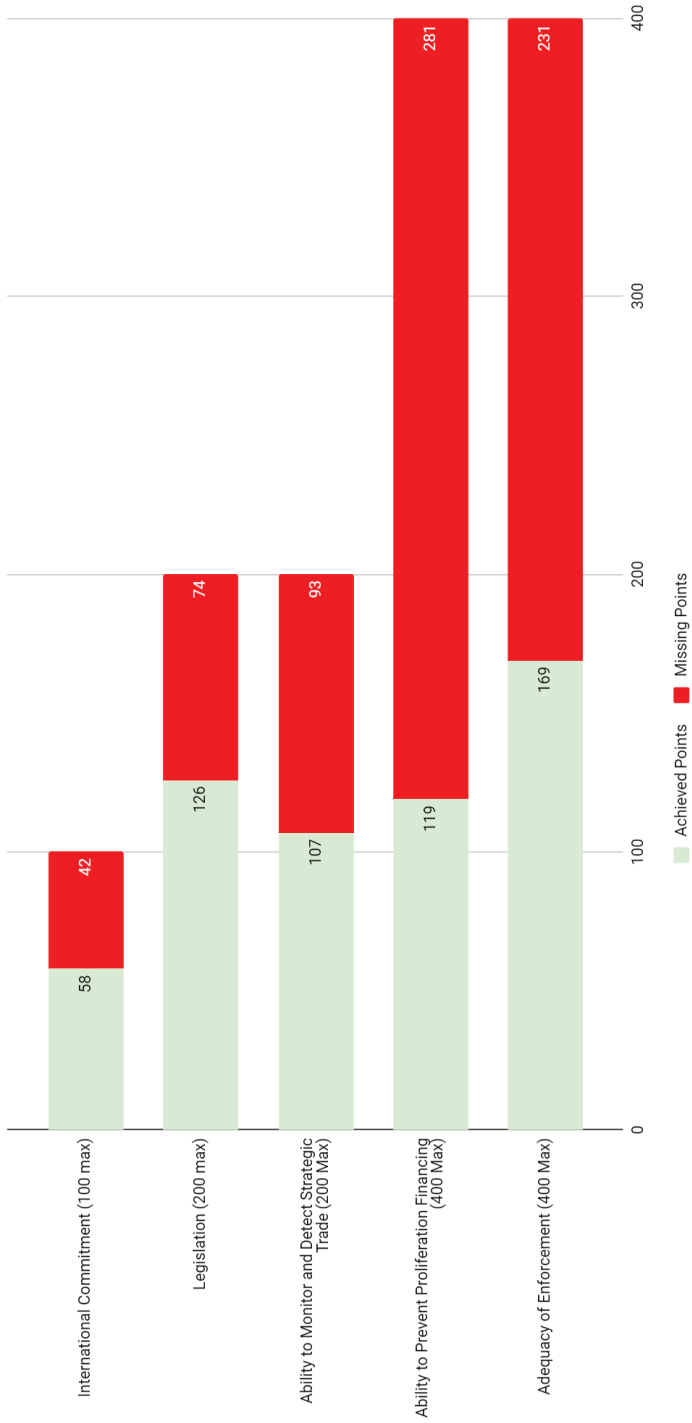


Figure I.3. Collective average scores for all countries by super criteria.

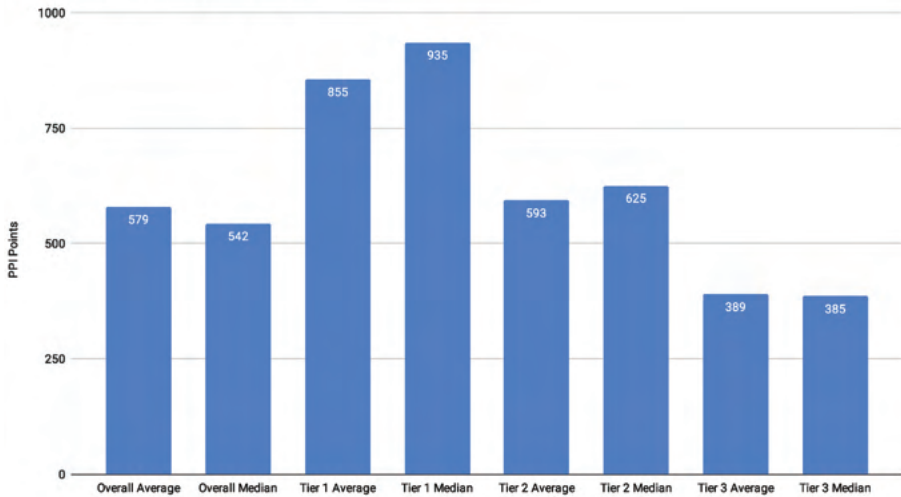
2023 Average and Median Scores

Figure I.4. Average and median scores for the overall PPI and the three tiers. The overall average is 579, up from 546 points in 2019, and the overall median is 542, up from 508 points. As can be seen, Tier One did considerably better than Tiers Two and Three, where a high median in Tier One suggests a bimodal distribution within the Tier as well.

tiers. Tier One scores are, on average, considerably higher than the scores achieved by countries in Tiers Two and Three. The bimodal shape of the score distribution in Figure I.2 can be explained by the difference in the average scores in the tiers.

A natural question is how the scores relate to evaluations of the effectiveness of national strategic trade control systems. The answer is complicated by the need to constantly counter more sophisticated efforts to thwart trade controls and sanctions, which necessarily involves improving controls, even in the highest-scoring countries. Nonetheless, within that context, countries also need to know if they are on the right track.

To address this set of issues, the PPI project decided to identify relatively high-scoring countries which have a strategic trade control system score above a certain point cutoff. The cutoff was weighted toward realistic expectations of the tiers. It was selected at two-thirds of the total points for Tier One countries and one-half for Tiers Two and Three. In Tier One, 36 out of 56 countries, up from 33, achieved over two-thirds of the points, and in Tier Two, 25 countries out of 58, up from only 15 in 2021, achieved

over half of the total points. In Tier 3, six of the 86 countries met the cutoff of fifty percent. In total, 67 out of 200 countries, about 30 percent, satisfied these cutoffs. Table I.1 lists the countries in this group, along with their tier. Table I.2 lists the top 50 countries.

How to choose and characterize these initial cutoffs was intensely debated by the PPI team. It was decided that these levels do not signify adequacy of strategic trade controls, but simply serve to highlight the highest-scoring countries. This placement in the leading-score group does not mean that these countries' trade control systems do not need improving or are somehow free of significant gaps. The overall scores do not support that view.

Many other countries with scores lower than those of this high-scoring group are on the right track. However, some countries that scored relatively low likely need significant improvement, and on an expedited basis. For those few countries that fall at the very bottom of the scoring, strategic goods supplier countries need to exercise extreme caution or in some cases avoid trading with these countries.

In addition to comparing countries within tiers of supply potential, the PPI team finds it useful to group countries and analyze score distribution by performing a cluster analysis of the scores and ranks. This statistical method groups scores around a set of relative peaks in the scores, which in this case numbered four. This method allows for a more effective look at the structure of the scores than the simple bimodal analysis conveyed in Figure I.2.

Figure I.5 shows the results of the cluster analysis. Cluster 1 (Group 1) includes the ranks 1 to 41; Cluster 2 (Group 2) includes the ranks 42 to 91; Cluster 3 (Group 3) includes the ranks 92 to 162; and Cluster 4 (Group 4) includes the ranks 163 to 200. It is noticeable that Group 3 includes 71 countries, which is more than any of the other groups. Group 1 has 41 countries; Group 2 has 50 countries; and Group 4 has 38 countries. The countries in each cluster are listed in Annex 2.

In Figure I.5, a key value in each cluster is its "centroid," identified as "k-means centroid," defined as the arithmetic mean. The centroid is presented as an ordered pair, representing the average score and rank in each cluster. The average may not correspond to an actual country. Group 1 has an average score of 982 points; Group 2 has an average of 714 points; Group 3 has an average of 455 points; and Group 4 has an average score of 197 points (see Chapter 7). The corresponding score ranges are 1083 to 878

LEADING-SCORE COUNTRIES BASED ON CUTOFFS IN SCORES

Tier One (scores met or exceeded two-thirds of the total points)	Australia
	Austria
	Belgium
	Canada
	Croatia
	Czech Republic
	Denmark
	Estonia
	Finland
	France
	Germany
	Greece
	Hungary
	Iceland
	Ireland
	Israel
	Italy
	Japan
	Latvia
	Lithuania
	Luxembourg
	Mexico
	Netherlands
	New Zealand
	Norway
	Portugal
	Republic of Korea
	Romania
	Slovakia
	Slovenia
	South Africa
Spain	
Sweden	
Switzerland	
United Kingdom of Great Britain and Northern Ireland	
United States of America	

Tier Two (scores met or exceeded half of the total points)	Albania
	Armenia
	Azerbaijan
	Bangladesh
	Chile
	Costa Rica
	Cyprus
	Dominican Republic
	Georgia
	Ghana
	Jamaica
	Kyrgyzstan
	Malaysia
	Malta
	Moldova (Rep of the)
	Mongolia
	Panama
	Peru
	Philippines
	Saudi Arabia
Singapore	
Sri Lanka	
Thailand	
United Arab Emirates	
Uzbekistan	
Tier Three (scores met or exceeded half of the total points)	Andorra
	Bahrain
	Macedonia
	Mauritius
	Montenegro
Uruguay	

Table I.1. Sixty-seven high-scoring countries, based on cutoffs in scores, listed alphabetically and by tier.

TOP 50 COUNTRIES

Rank	Country	Points (out of 1300)	Rank	Country	Points (out of 1300)
1	France	1083	25	Finland	981
2	United States of America	1075	26	Lithuania	977
3	United Kingdom of Great Britain and Northern Ireland	1065	27	Slovakia	969
4	Australia	1050	28	Spain	958
5	Singapore	1041	29	Switzerland	954
6	Latvia	1037	30	Hungary	938
7	Czech Republic	1030	31	Cyprus	934
8	Belgium	1030	32	Romania	933
9	Portugal	1028	33	Greece	929
10	Sweden	1028	34	Luxembourg	928
11	Germany	1026	35	Iceland	907
12	Norway	1026	36	United Arab Emirates	899
13	Netherlands	1024	37	Croatia	891
14	Austria	1018	38	Mexico	887
15	Ireland	1018	39	Israel	883
16	Estonia	1010	40	Malaysia	882
17	Malta	1008	41	South Africa	878
18	Japan	1008	42	Poland	843
19	Republic of Korea	1004	43	Kazakhstan	842
20	Denmark	1003	44	Georgia	827
21	Canada	996	45	Bulgaria	824
22	Slovenia	994	46	Serbia	816
23	New Zealand	986	47	Moldova (Rep of the)	810
24	Italy	983	48	Philippines	807
			49	Armenia	804
			50	Brazil	793

Table I.2. The top 50 scoring countries in the PPI, all of which achieved more than half of the available points, listed by rank and score.

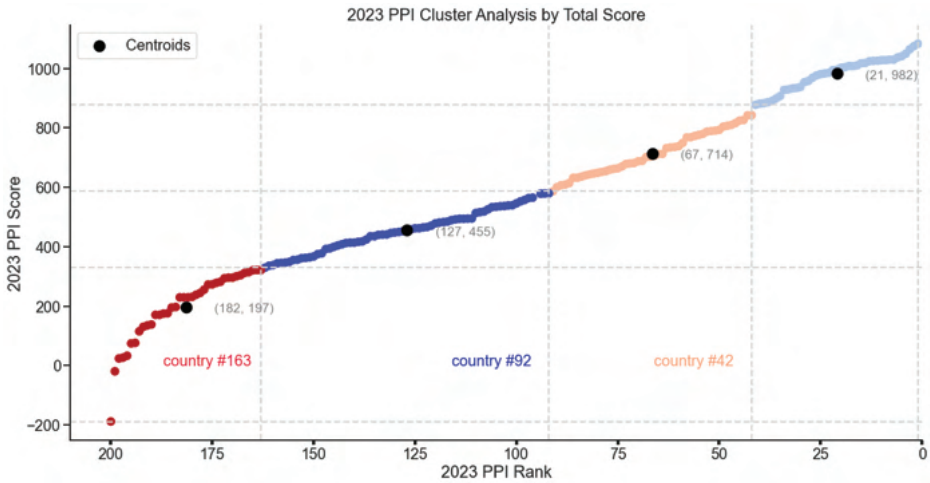


Figure I.5. The 2023 PPI countries plotted by rank and score clustered into four groups. The single red dot at the 200 mark on the x-axis represents the lowest scoring country. The four black dots are the centroids, representing the average score and rank in each cluster, which may not correspond to an actual country.

for Cluster 1, 842 to 586 for Cluster 2, 579 to 329 for Cluster 3, and 321 to negative 188 for Cluster 4.

Of the 41 members of Cluster 1, the highest-scoring cluster, 36 are Tier One countries. All 36 Tier One countries are leading-score countries as listed in Table I.1. Of the five remaining members in Cluster 1, all are Tier Two countries and are leading scorers (see Table I.1). Cluster 2 has 50 members and is comprised of a mix of 12 Tier One, 29 Tier Two, and nine Tier Three countries. Twenty Tier Two countries and six Tier Three countries met the cutoff score of their tier (50 percent of the total points) to be considered a leading-score country in this cluster. All of the 12 Tier One countries also received 50 percent or more of the points, but the score cutoff to be considered a high-scoring country in Tier One is two-thirds of the total points, which no country received. Clusters 3 and 4 have 71 and 38 members, respectively, none of which are listed in Table I.1 as high-scoring countries. In Cluster 3, six countries are from Tier One, 17 are from Tier Two, and 48 from Tier Three. Cluster 4 is comprised of two Tier One, seven Tier Two, and 29 Tier Three countries. The Tier One countries in Cluster 4 are Iran and North Korea.

Although uncertainties should be borne in mind, placement in the first and second clusters represents better implementation of effective strategic

trade controls than placement in the third and fourth clusters. In an ideal world, there would only be one, high-scoring cluster. At least, the cluster with the most countries in it would be the highest-scoring cluster, and not, as is currently the case, Cluster 3, where the mean score is only 455 points, or 35 percent of the total points. As strategic trade controls gradually improve, and PPI scores rise, we hope to see low-scoring clusters shrink in size in future PPI editions.

A comparison with the 2021 PPI reveals both welcome and surprising developments. Compared to 2021, the average score in Cluster 1 rose by 45 points, in Cluster 2 by 89 points, in Cluster 3 by 72 points, and by 61 points for Cluster 4. All are higher increases in average than the total PPI average increase of 33 points.

An unexpected, parallel development was the decrease in cluster size in the high-scoring clusters. From 2021 to 2023, Cluster 1 decreased by five countries, Cluster 2 by six, and Cluster 3 by four, while Cluster 4 grew by 15 countries. This appears to indicate that the higher scoring clusters are becoming more exclusive: as the average in each cluster rose, some countries were pushed into the next lower cluster. Countries that are newly part of cluster 4 were apparently not able to keep up with the point improvements in the 162 countries in Clusters 1, 2 and 3. The countries that are new in Cluster 4 are Comoros, Congo (Rep), Djibouti, Guinea, Guyana, Holy See², Iraq, Kiribati, Liberia, Mozambique, Palau, Tanzania, Tonga, Uganda, and Venezuela.

NOTES

1. From a strict data science standpoint, making direct, quantitative comparisons between the 2021 and 2023 PPI presents challenges due to small changes in the underlying model, such as changes in the source data. However, the PPI evaluated scores achieved in 99 sub-criteria that remained exactly the same, and found they experienced an increase in global average points, affirming our qualitative conclusion that STC systems worldwide improved slowly but steadily.
2. The Holy See is difficult to rank because of its small size and lack of any industrial capability or exports.

SECTION I
PEDDLING PERIL INDEX
METHODOLOGY

CHAPTER 1

INTRODUCTION TO THE METHODOLOGY

The 2023/2024 edition of the *Peddling Peril Index* (PPI) utilizes 104 different sub-criteria (or indicators) organized under five super criteria, that evaluate and measure the performance and the enforcement capability of strategic trade controls in 200 nations, territories, and entities. The goal of the PPI is to determine not just the existence of strategic trade controls, but also the extent of their implementation and enforcement, and to track progress over time. The indicators primarily concern nuclear and nuclear-related trade, but also factor in other forms of trade controls, such as those covering strategic commodities relevant to the development of missiles, non-nuclear weapons of mass destruction (WMD), and conventional military programs. With many countries still far away from adopting national strategic trade control laws, the PPI includes indicators to assess a government's overall commitment to non-proliferation and a country's readiness for comprehensive strategic trade control laws, in essence, the countries' ability to support and implement a strategic trade control law were a country's legislature to pass it. This keeps the number of indicators at a manageable number while covering a range of national capabilities relevant to strategic trade control implementation.

The PPI is intended to be a tool and resource that states can utilize to improve their own strategic trade control systems and aid others in capacity building efforts. The PPI also provides an indication of a state's vulnerability to illicit procurement schemes and measures the extent of a

country's compliance with international obligations to have a trade control system in place, such as UN Security Council Resolution 1540.

In the first phase of the 18-month development of the first edition of the PPI—the “2017 PPI”—about 150 sub-criteria (or indicators) in 13 major categories (later titled “super criteria”) were identified. A goal was to identify criteria that provide simple answers and are quantifiable, since the PPI assigns points to determine rankings. Another goal was to maximize the use of open-source data and minimize the use of expert judgment, which can be subjective, although this was not possible to do completely, as will be discussed in subsequent chapters.

When creating the index, the PPI team was conscious to avoid modeling criteria on the United States' trade control system but instead looked more broadly and with an open mind at trade controls in a wide variety of countries. Many countries do not have trade controls that are as extensive as the United States' but still have effective systems tailored to their level of international trade engagement or have systems that could support the development of effective strategic trade controls in the future.

After the selection of the basic list of sub-criteria, and the initiation of the data collection phase of the project, we found that adequate data were lacking for many sub-criteria, at least at the level needed to be able to use them in the PPI's comprehensive scoring system. In some cases, data were not available for enough countries to warrant using certain sub-criteria. Moreover, as data were sought and found for sub-criteria, some of the definitions needed to be revised or broadened. The first PPI, published in 2017, finally settled on a total of 97 indicators, categorized into five major areas, or overarching “super criteria.”

The challenge of optimizing the set of criteria was re-addressed in the development of the subsequent editions, the “2019 PPI,” the “2021 PPI,” and this latest “2023 PPI.” All three began with a comprehensive review of the criteria used in previous editions, where all sub-criteria and corresponding country data were revisited and vetted. Keeping in mind that comparability between PPI versions is essential to track a country's performance over time, improvements were made. The five super criteria remained the same, but new valuable sub-criteria were added, while weaker criteria were strengthened or eliminated. Between 2021 and 2023, changes were minimal. For the 2023 PPI, the project decided on a total of 104 indicators: 88 positive, point-earning sub-criteria, nine negative,

point-deducting sub-criteria, five extra credit opportunities, and two rounds of expert judgment where a country could gain or lose points. Only one sub-criterion was eliminated from 2021 to 2023, and no new sub-criteria were added. Some sub-criteria were strengthened in their definition.

The **five major super criteria** are, and include information about, a country's:

1. **International Commitment** to preventing strategic commodity trafficking;
2. **Legislation** in place that regulates and oversees trade in strategic commodities, and criminalizes and aims to prevent strategic commodity trafficking;
3. **Ability to Monitor and Detect Strategic Trade**;
4. **Ability to Prevent Proliferation Financing**; and
5. **Adequacy of Enforcement** against strategic commodity trafficking.

The sub-criteria under each super criterion category are listed and explained in subsequent chapters in Section I, where one chapter is devoted to each super criterion. Each sub-criterion is independently assigned a weight by the project based on its assessed relevance to effective strategic trade controls.

Countries are assigned a final score and a resulting ranking by combining the five super criteria scores. The full ranking and scores included in Annex I compare all 200 countries, entities, and territories. To obtain the ranking, the super criteria are themselves weighted differently as to their significance. The *Ability to Prevent Proliferation Financing* and *Adequacy of Enforcement* super criteria are weighted the most; *Legislation* and *Ability to Monitor and Detect Strategic Trade* are given half the impact of those; and *International Commitment* is given a quarter of the impact of *Ability to Prevent Proliferation Financing* and *Enforcement*. In total, countries could receive a maximum of 1,300 points.

Rankings of countries under each super criterion are not provided, but the scores by super criteria are included in the Annex. The *Legislation* super criterion remains for this update the only super criterion that includes a breakdown into five groups of countries by the comprehensiveness of their export control legislation, using a color-coding scheme. Export control legislation (or lack thereof) for almost all of the 200

countries and territories was identified and evaluated. Because many laws were not in English, PPI project staff and consultants performed a great deal of translation from a variety of languages, including Chinese, French, Arabic, Spanish, German, and Hindi, among others.

The original goal of the PPI was to qualitatively assign each country to one of four areas of strategic trade control adequacy. This has been accomplished via the cluster analysis (see Chapter 7).

As the project developed, groupings of similar countries were also established, with the aim of guiding the improvement of trade control systems of similar countries. For example, the PPI grouped countries by strategic commodity supply and transshipment potential. Instead of only assessing countries by a full ranking and comparing them against one another – for example, regardless of whether they are small island nations without much participation in international trade or major world economies, or comparing non-nuclear weapon states without access to domestic nuclear technology to nuclear weapon states that have a higher capacity to transfer this technology – the project decided to separate countries into three tiers, discussed in the Highlights chapter and detailed in Section II. This manner of evaluating countries acknowledges that smaller countries and countries that trade less, and those that have fewer resources to devote to trade controls, are not realistically expected to match the trade control performance of major world economies. The tiering system shows better how comparable countries rank next to their peers in their potential to prevent the trafficking of strategic commodities. This approach is also consistent with UNSCR 2325 (2016).

It is necessary to note that no index is without limitations. The PPI depends on open-source data, in particular information available online. This approach has advantages, but it also has disadvantages. Many of the sub-criteria that were unfeasible would have depended on government-held data that are not typically published, or are even classified, such as a government's knowledge of supply chains in its country; the existence of technical reach-back capabilities; the transfer of internal investigations into trade control enforcement efforts; and internal capabilities of domestic intelligence agencies to detect illicit trade networks.

Sending project staff to visit all 200 countries or even a significant number of them was judged as too costly and time consuming. In-person visits are ideal for an in-depth survey of one country's capabilities, but

not for a biennial assessment of the global state of trade controls. The project also decided not to send out survey questionnaires to all the countries. Part of the reason was that the 1540 matrices and Financial Action Task Force evaluation reports, which were used for proliferation financing data, already contain a considerable amount of national self-reporting that is directly relevant to the PPI sub-criteria. In addition, project staff did not believe that enough countries would have an incentive to respond any differently or more completely than they do to the 1540 Committee and FATEF, particularly concerning more sensitive trade control enforcement information. Moreover, the project lacked the resources to verify survey information.

To compensate for some of these limitations, the PPI project sought to confirm, whenever feasible, information gathered via open sources. It confirmed, and as necessary, supplemented, the data in the UN Security Council Resolution 1540 matrices. For example, unless otherwise specified in the sub-criterion definition, the attributes of legislation declared in the 1540 matrices were confirmed individually by looking at primary source documents. If there was no entry in the matrix or it was not possible to confirm the source, government websites and other legislation databases were consulted until the PPI could identify and evaluate each country's export control legislation or approach.

The project utilized the Institute's extensive in-house resources and expertise of staff on strategic commodity controls and trafficking. In particular, the project benefited from hundreds of Institute case studies and a 2020 book on strategic commodity trafficking¹ that shed light on specific countries' capabilities to control trade and to detect, prevent, or prosecute those making illicit exports.

Project staff also conducted a number of interviews with experts from a range of countries. Those interviews focused on gaining information from individuals with specific, direct knowledge of countries' trade control systems and their implementation. Many had provided capacity building or expert consultation in a number of countries or worked on programs that extended capacity building assistance. Information on over 60 countries was collected from these experts. The interviews helped add to the evaluation of the effectiveness and enforcement efforts of countries' trade control systems.

Lastly, the PPI team is willing to engage with individual countries and share the collected data and full breakdown of the country's score, if the country reaches out to the PPI team. For this, the Institute has developed different methods of presenting the collected data (see Chapter 7). Several countries have used this opportunity to identify gaps in their system and draw out actionable information, including "low-hanging fruits" or areas where major reforms are needed.

NOTES

1. See: David Albright, Sarah Burkhard, Spencer Faragasso, Linda Keenan, and Andrea Stricker, *Illicit Trade Networks - Connecting the Dots, Volume 1* (Washington, D.C.: Institute for Science and International Security, 2020), <https://isis-online.org/books/detail/illicit-trade-networks-connecting-the-dots-volume-1>. Also available as an e-book at Amazon.

CHAPTER 2

SUPER CRITERION INTERNATIONAL COMMITMENT

Super Criterion *International Commitment* focuses on a state's international commitment to the nonproliferation of nuclear weapons, other weapons of mass destruction (WMD), missiles, and other weapons capabilities, as well as preventing the spread of sensitive or controlled materials and equipment. This super criterion measures memberships and adherence to a range of nonproliferation conventions, treaties, regimes, and groups. Commitment is not a measure of effectiveness or implementation of the principles or provisions of these instruments on a national level, but it is an important first step. It demonstrates a state's willingness to follow international standards, potentially improve their own performance, dedicate resources to doing so, share information with other countries and regimes, and shows responsiveness to international best practices.

A state's international commitment to nonproliferation-related treaties and conventions is seen in the quality and quantity of the regimes it is party to. Super Criterion *International Commitment* includes 21 sub-criteria, in this case key international regimes or agreements, as indicators of performance. Each of the sub-criteria is weighted as low-, medium-, or high-impact by PPI staff. This super criterion only consists of "positive indicators," where of the 21 sub-criteria, three are considered low-impact, eleven are medium-impact, and seven are high-impact. They are worth five, 10, and 15 points, respectively. A country could receive a raw total of 230 points. Since *International Commitment* does not assess performance,

only membership and participation in international regimes or being a party to legal instruments, it has a relatively low value compared to the other super criteria when the final score is calculated. This choice reflects the greater emphasis placed in the PPI on implementation and effectiveness of trade control systems.

This raw score is used later to arrive at a total, weighted score of 100 possible points used for the final rank. The weighted score is also used to derive a ranking under the three tiers of countries discussed in detail in Section II.

Partial credit (usually half of the possible sub-criterion points) was given if a country has only signed but not yet ratified an agreement. It should be noted that, in general, an individual country might not be able to achieve 100 percent of the available points. For example, membership in export control arrangements such as the Nuclear Suppliers Group is by invitation, which might not be forthcoming for some. A country might also be in a location for which there is no relevant nuclear weapon-free zone, such as most of Europe and the Middle East. In addition, the PPI has been constructed for a number of entities whose status makes them ineligible to adhere formally to international legal instruments, for example, Taiwan.

SUB-CRITERIA¹

• Member of Nuclear Suppliers Group (NSG)²

While not legally binding, NSG members are expected to follow certain guidelines regarding the export of sensitive nuclear and nuclear-related facilities, commodities, and material. Specific membership requirements apply, including the adoption of a comprehensive export control list into national legislation. Members generally have the capability of supplying goods classified as nuclear or nuclear dual-use.³ Some countries, such as Israel, adhere to the NSG guidelines, but are not members. Formal adherents receive partial points. NSG membership is a high-impact sub-criterion.

- **Party to the Convention for the Suppression of Acts of Nuclear Terrorism⁴**

This legally binding convention requires countries to actively counter and prevent the possibility of nuclear terrorism. State parties are required to make a wide range of activities related to nuclear and other radioactive material and nuclear facilities criminal offenses, which results in stronger deterrence of illicit conduct by individuals. For 2023, Botswana and Saint Kitts and Nevis are newly award full points. It is a high-impact sub-criterion.

- **Member of the Missile Technology Control Regime (MTCR)⁵**

Although not legally binding, members of the MTCR commit to adhere to stringent export control measures for a specific set of missile-related technologies. Joining the MTCR shows awareness and openness to being governed by regulations relating to preventing the spread of ballistic and cruise missiles and their technologies. Membership eligibility also depends on a country's Nuclear Non-Proliferation Treaty, Chemical Weapons Convention (CWC), and Biological Weapons Convention (BWC) statuses. Adherents received half points. It is a high-impact sub-criterion.

- **Participant in the Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods⁶**

The Wassenaar Arrangement is a voluntary, non-legally binding multi-lateral agreement where states agree to adhere to recommendations and guidelines on their exports of conventional arms and dual-use goods and technology. Specifically, parties agree to control exports in categories of dual-use goods and technologies and munitions contained on control lists to ensure they would not undermine the goal of international security.⁷ They also agree to use the guidelines in the drafting of their national export control legislation. Membership eligibility also depends on a country's Nuclear Non-Proliferation Treaty (NPT), Chemical Weapons Convention (CWC), and Biological Weapons Convention (BWC) statuses. Some countries adhere to the arrangement but are not official members. In that case, the 2023 PPI awarded partial points. It is a high-impact sub-criterion.

- **Participant in the Proliferation Security Initiative (PSI)⁸**

Not legally binding, the PSI is a voluntary initiative to network with other states to prevent WMD-related illicit trade by land, sea, or air. States commit to “impede and stop shipments of WMD, delivery systems, and related materials” based on a set of “Interdiction Principles.” This is arguably one of the most directly relevant international agreements for the PPI. There are no new members as of 2023, and the Russian Federation is no longer a participant of the PSI. It is a high-impact sub-criterion.

- **Member of the World Customs Organization (WCO)⁹**

Being a member of the WCO has no direct legal implications, however, the WCO introduces recommendations, declarations, and initiatives, and sponsors legally-binding conventions administered by its Customs Cooperation Council. State willingness to maintain high customs safeguards and standards plays a crucial role in the prevention of commodity trafficking. Equatorial Guinea and the Solomon Islands are recent new members. WCO membership is a high-impact sub-criterion.

- **Has an International Atomic Energy Agency (IAEA) Additional Protocol (AP) to its Comprehensive Safeguards Agreement (CSA) in force¹⁰**

Although states are not required to conclude Additional Protocols (AP), the AP is a binding agreement once ratified. It provides the IAEA with enhanced verification tools designed to aid in detecting undeclared nuclear material and activities. According to the IAEA, it is granted legal “expanded rights of access to information and locations in the States. For States with a CSA, the Additional Protocol aims to fill the gaps in the information reported under a CSA.” Export control-related AP provisions include Article 2.a.(ix), under which States need to report exports of Annex II items on a quarterly basis and imports upon IAEA request, and Article 5.b., under which IAEA inspectors have greater physical access to where imported items are located. Reporting requirements create, at a minimum, an incentive for improved record keeping. Overall, bringing an AP into force shows high nonproliferation commitments and will allow a thorough IAEA evaluation of a state’s nuclear program. The AP is therefore a high-impact sub-criterion.

Countries with an AP in force received full points; signature allowed for partial points. Countries that signed the AP more than ten years ago and still have not entered it into force received no points. Points previously assigned to Iran for provisionally implementing the Additional Protocol were removed for the 2023 PPI. Countries that newly received points for entering their Additional Protocols into force include Zimbabwe, Eritrea, Sao Tome and Principe, Cape Verde (Cabo Verde).

• **Party to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT)¹¹**

The NPT is a foundational step for a country in committing never to manufacture, otherwise acquire, or transfer nuclear weapons. Five PPI countries or entities did not receive points. One of the countries, Kosovo, is not recognized by the United Nations as a state. The four states that did not receive points are Israel, India, Pakistan, and South Sudan. The Democratic People's Republic of Korea (DPRK) received points for signing the NPT, even though it withdrew in 2003, only because the IAEA does not recognize its withdrawal reason and still considers the DPRK a party to the NPT. Taiwan, as an original signatory of the NPT, remains committed to its measures. Hong Kong adopted the NPT through China. The PPI grants two states, the Cook Islands and Niue, partial points for considering themselves bound to the NPT, even though they have not signed it. It is a medium-impact sub-criterion.

• **Has an IAEA CSA in force¹²**

A comprehensive safeguards agreement allows the IAEA to safeguard all nuclear facilities and material in peaceful uses within a country to ensure their exclusively non-military use. The CSA allows the IAEA to implement safeguards on all such nuclear material to ensure they are not diverted to the manufacture of nuclear weapons or nuclear explosive devices for purposes unknown. All non-nuclear weapons states that are parties to the NPT are required to conclude a CSA. Countries that have concluded a CSA received full points. Countries with a CSA and the revised 2005 Small Quantities Protocol (SQP) also receive full points. Countries that are only party to the 1974 version of the SQP receive no points for the CSA, because it is too restrictive for modern safeguards standards. Eight nuclear weapon states received full points for their safeguards agreement, independent of what their overseas territories have. The DPRK is the only

state with nuclear weapons to not receive points. Eritrea, Micronesia, Sao Tome and Principe, Cape Verde (Cabo Verde) are countries that newly brought their CSA into force. This is a medium-impact sub-criterion.

- **IAEA reached a positive Safeguards Conclusion for the country in 2022¹³**

A safeguards conclusion is a public IAEA evaluation made each year for all safeguarded states. If a country has a CSA but no AP in place, the IAEA can reach a “conclusion” that all declared nuclear material remained in peaceful uses. The IAEA can also try to reach the more time-consuming “broader conclusion” for those countries that have ratified the AP, meaning the IAEA confirms that, in general, there is no evidence of diversion of nuclear material and all nuclear material remains in peaceful uses in the state as a whole. No conclusions can be reached for countries that have not signed a CSA or have signed but not ratified it. The 2023 PPI used safeguards conclusion data for 2022, published in 2023. It is a medium-impact sub-criterion.

- **Party to a Nuclear Weapon Free Zone (NWFZ) treaty¹⁴**

A NWFZ Treaty is a regional, legally binding agreement where individual countries commit to keeping the whole region nuclear weapons-free. While countries in certain zones (North America, the Middle East, and Europe) have not yet established NWFZs, there are five successful, established NWFZs: Treaty of Tlatelolco for Latin America and the Caribbean, Treaty of Rarotonga for the South Pacific, Treaty of Bangkok for Southeast Asia, Treaty of Pelindaba for Africa, and the Central Asian NWFZ. Mongolia maintains its own one-state NWFZ and received full points. These zones include countries that once pursued or inherited, but then renounced, nuclear weapons programs and indicate a strong commitment to nonproliferation. It is a medium-impact sub-criterion.

- **Party to the Convention on the Physical Protection of Nuclear Material (CPPNM)¹⁵**

Through this legally binding IAEA convention, states commit to adhere to international standards governing the protection of nuclear facilities and materials during use, storage, and transport. The 2023 PPI awarded full points to countries that ratified the CPPNM and its 2015 CPPNM amendment. Half points were awarded to those that ratified the original

CPPNM. If a country only signed the original CPPNM, it did not receive any points. Congo (Rep) and Zimbabwe newly ratified the CPPNM; Angola newly ratified the amendment. It is a medium-impact sub-criterion.

• **Party to the Chemical Weapons Convention¹⁶**

Legally binding adherence to the treaty commits countries to not pursue chemical weapons and to collaborate internationally to eliminate them altogether. Adherence to the CWC results in greater information sharing, as well as access to training and equipment in many areas that are applicable to countering broader strategic commodity trafficking, such as improved export and border control measures. It is a medium-impact sub-criterion.

• **Party to the Biological Weapons Convention¹⁷**

Legally binding adherence to the treaty commits countries to not pursue chemical weapons and to collaborate internationally to eliminate them altogether. Adherence to the BWC results in greater information sharing, as well as access to training and equipment in many areas that are applicable to countering broader strategic commodity trafficking, such as improved export and border-control measures. The sub-criterion is of medium impact.

• **Party to the Convention on Combating Bribery of Foreign Public Officials in International Business Transactions¹⁸**

This convention is administered by the Organisation for Economic Co-operation and Development (OECD) and “establishes legally binding standards to criminalize bribery of foreign public officials in international business transactions.” It also established a Working Group to monitor implementation and publishes country implementation reports and recommendations. The PPI assessed that signature to the convention would likely ensure more regulated trade of strategic commodities and equipment by reducing corruption and bribery of officials involved in regulating export processes. This is a medium-impact sub-criterion.

• **Member of the Australia Group (AG)¹⁹**

The AG is one of the four major global export control and nonproliferation groups. While participation is not legally binding, the group supports strict and streamlined export controls of chemical and biological weapons and their precursors, as well as related equipment and technologies.

Not all countries are eligible for membership; prior to joining the AG, a country must fulfill certain criteria demonstrating a firm commitment to nonproliferation of chemical and biological weapons. The group also offers a platform for information sharing and assists countries with their implementation of the BWC and CWC. Adherents received half of the available points. AG membership is a medium-impact sub-criterion.

- **Member of the International Atomic Energy Agency**²⁰

The IAEA was granted a mandate in 1957 to work with United Nations member states and other partners to “promote safe, secure and peaceful nuclear technologies”²¹ and to “establish and administer safeguards designed to ensure that special fissionable and other materials, services, equipment, facilities, and information...are not used in such a way as to further any military purpose; and to apply safeguards, at the request of the parties, to any bilateral or multilateral arrangement, or at the request of a State, to any of that State’s activities in the field of atomic energy.”²² As of January 2023, 176 states were members of the IAEA, meaning its Board of Governors had recommended them, and they had deposited an instrument of ratification of the IAEA Statute and its terms. However, rather than for nonproliferation reasons, states mainly join the IAEA to benefit from its promotion of the peaceful use of nuclear energy. The countries that newly received points for being an IAEA member are Comoros, Gambia, Saint Kitts and Nevis, Samoa, and Tonga. In the 2023 PPI, this sub-criterion remains a low-impact criterion.

- **Reports to the IAEA Incident and Trafficking Database (ITDB)**²³

Countries that report incidents involving trafficking of nuclear-related materials or related incidents within their territories increase international collaboration and help the IAEA and all other countries identify strengths and weaknesses regarding abilities to monitor and secure nuclear equipment and material. Antigua and Barbuda, Papua New Guinea, and Rwanda newly received points. It is a low-impact sub-criterion.

- **Party to the Hague Code of Conduct against Ballistic Missile Proliferation (HCOC)**²⁴

Not legally binding, this voluntary effort strengthens state efforts against ballistic missile proliferation, specifically the proliferation of missiles capable of delivering WMD. The guidelines set out in the Code of Conduct

promote transparency and information sharing; for example, subscribing members voluntarily commit to “provide pre-launch notifications (PLNs) on ballistic missile and space-launch vehicle launches (SLVs) and test flights.” They also commit to submit annual declarations of their national policies on ballistic missiles and SLVs. It is a low-impact sub-criterion.

- **Party to the Convention for the Suppression of Unlawful Acts Against the Safety of Maritime Navigation and SUA 2005 Protocol**²⁵

The Convention for the Suppression of Unlawful Acts Against the Safety of Maritime Navigation (SUA) prohibits acts that threaten the safety and security of ships. The treaty criminalizes the hijacking of ships, the use of explosives on ships, and threats made to passengers and crew. The additional SUA 2005 Protocol is particularly relevant for the PPI. The 2005 Protocol contains language that makes the unlawful use of ships to transport explosive or biological, chemical, or nuclear material (BCN), as well as any “equipment, materials or software or related technology that significantly contributes to the design, manufacture or delivery of a BCN weapon” an offence of the Convention. States party to the treaty are required to prosecute illicit transfers of BCN weapons/materials, which results in an enhanced deterrent for illicit conduct. Full points were assigned for a State that ratified the protocol and half points for being a party to the Convention. It is a medium-impact sub-criterion.

- **Party to the Convention of the Suppression of Unlawful Acts Relating to International Civil Aviation (Beijing Convention, 2010)**²⁶

The Beijing Convention (2010) mandates that all parties to the Convention agree to implement national legislation that criminalizes the use of a civilian aircraft “for the purpose of causing death, serious bodily injury, or serious damage to property or the environment.” Pertaining to the PPI, the Convention contains language that binds nations to criminalize the unlawful and intentional transport of BW, CW, and NW and related materials. A signature to the Convention demonstrates a commitment by a country to develop and implement legislation that regulates the use of aircraft and the transport of BCN items/materials. Countries that are a party to the convention and have it in force received full points, while countries that are only signatories of the convention received half points. Countries

that newly received full points in the 2023 PPI are Gambia, Uruguay, Germany, Botswana, Honduras, Luxembourg, Portugal, Rwanda, Seychelles, Cape Verde (Cabo Verde), Oman, Russian Federation, and Singapore. This is a medium-impact sub-criterion.

IMPACT OF SUB-CRITERIA

As discussed above, the PPI assigns a low to high impact for weighting each of the sub-criteria. **Table 2.1** compiles how each indicator is weighted in the evaluation and how much of an impact it therefore has on a country's score and rank within the super criterion.

SCORING

Of the 21 sub-criteria, three are considered low-impact, eleven are medium-impact, and seven are high-impact. They are worth five, 10, and 15 points, respectively. A country could receive a raw total of 230 points. This raw score is used later to arrive at a total, weighted score and rank. It is also used to derive a ranking under the three tiers.

High Impact (7)	Medium Impact (11)	Low Impact (3)
Nuclear Suppliers Group	Nuclear Non-Proliferation Treaty	IAEA Member
Additional Protocol	Comprehensive Safeguards Agreement*	Hague Ballistic Missile Code
Convention for the Suppression of Acts of Nuclear Terrorism	IAEA Safeguards Conclusion 2022	Reporting to IAEA Trafficking
Missile Tech Control Regime	OECD Convention on Bribery	
Wassenaar Arrangement	Nuclear Weapon Free Zone	
Proliferation Security Initiative	Chemical Weapons Convention	
World Customs Organization	Biological Weapons Convention	
	Australia Group	
	Physical Protection of Nuclear Material & Amendment	
	Convention of the Suppression of Unlawful Acts Relating to International Civil Aviation	
	Convention for the Suppression of Unlawful Acts Against the Safety of Maritime Navigation and associated 2005 protocol	

Table 2.1. The impact of each *International Commitment* sub-criterion. An asterisk indicates that a change in source data or point assignment was made for the 2023 PPI.

NOTES

1. This fourth edition of the PPI removed the sub-criterion “Has in place a SQP to CSA.” Some information previously collected under this sub-criterion is now used for sub criterion “Has an IAEA CSA In Force.”

No new sub-criteria were added.

2. “Participants,” *Nuclear Suppliers Group*, 2022, <https://www.nuclearsuppliersgroup.org/en/participants1>.

3. According to the NSG, factors taken into account for participation include the following:

- The ability to supply items (including items in transit) covered by the Annexes to Parts 1 and 2 of the NSG Guidelines;
- Adherence to the Guidelines and action in accordance with them;
- Enforcement of a legally based domestic export control system which gives effect to the commitment to act in accordance with the Guidelines;
- Adherence to one or more of the NPT, the Treaties of Pelindaba, Rarotonga, Tlatelolco, Bangkok, Semipalatinsk or an equivalent international nuclear nonproliferation agreement, and full compliance with the obligations of such agreement(s);
- Support of international efforts towards nonproliferation of weapons of mass destruction and of their delivery vehicles.

4. United Nations, “International Convention for the Suppression of Acts of Nuclear Terrorism,” *United Nations Treaty Collection*, June 2022, https://treaties.un.org/Pages/ViewDetailsIII.aspx?src=TREATY&mtdsg_no=XVIII-15&chapter=18&Temp=mtdsg3&lang=en.

5. “MTCR Partners,” *Missile Technology Control Regime*, June 2022, <https://mtcr.info/partners/>. In addition to Latvia and Estonia, half points were also assigned to Kazakhstan, Israel, Macedonia, Romania, and Slovakia for adhering to the regime.

6. “National Contacts,” *Wassenaar Arrangement*, June 2022, <https://www.wassenaar.org/participating-states/>.

7. “About Us.” Wassenaar Arrangement, 2023, <https://www.wassenaar.org/about-us/>.

8. “Endorsing States List.” *Proliferation Security Initiative*, April 4, 2023, <https://www.psi-online.info/psi-info-en/botschaft/-/2205942>.

9. “Membership,” *World Customs Organization*, February 6, 2023, <http://www.wcoomd.org/en/about-us/wco-members/membership.aspx>.

10. International Atomic Energy Agency, “Status List: Conclusion of Safeguards Agreements, Additional Protocols and Small Quantities Protocols,” IAEA Office of Legal Affairs, June 2022, <https://www.iaea.org/sites/default/files/20/01/sg-agreements-comprehensive-status.pdf>. Taiwan receives full points for its safeguards agreement equivalent to the AP.
 11. United Nations, “Status of the Treaty: Treaty on the Non-Proliferation of Nuclear Weapons,” United Nations office for Disarmament Affairs, 2022, <http://disarmament.un.org/treaties/t/npt>.
 12. International Atomic Energy Agency, “Status List: Conclusion of Safeguards Agreements, Additional Protocols and Small Quantities Protocols,” *IAEA Office of Legal Affairs*, 2020, <https://www.iaea.org/sites/default/files/20/01/sg-agreements-comprehensive-status.pdf>.
 13. “A Safeguards Statement for 2022,” *International Atomic Energy Agency*, 2022, https://www.iaea.org/sites/default/files/23/06/20230612_sir_2022_part_ab.pdf.
 14. United Nations Office for Disarmament Affairs, “Nuclear-Weapon-Free Zones,” *United Nations Office for Disarmament Affairs*, June 2022, <https://www.un.org/disarmament/wmd/nuclear/nwzf/>.
 15. “Convention on the Physical Protection of Nuclear Material,” International Atomic Energy Agency, 2022, https://www-legacy.iaea.org/Publications/Documents/Conventions/cppnm_status.pdf. The CPPNM entered into force in 1987. It addressed international transport of nuclear material. It was amended in 2005 to extend its reach to nuclear material in domestic use and to nuclear facilities. The amendment entered into force in 2016. The amendment calls for the amended treaty to be named the Convention on Nuclear Material and Facilities. However, “the IAEA Secretariat, in line with established depositary practice, will continue to refer to the ‘CPPNM’ and to the ‘Amendment to the CPPNM’ until all States Parties to the CPPNM have consented to be bound by the Amendment” in order to not give the impression that, “alongside the original convention, there is now a new convention and that states could join one or the other.” “Amendment to the Convention on the Physical Protection of Nuclear Material,” International Atomic Energy Agency, 2022, https://www-legacy.iaea.org/Publications/Documents/Conventions/cppnm_amend_status.pdf.
 16. United Nations, “Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction,” United Nations Office for Disarmament Affairs, 2022, <http://disarmament.un.org/treaties/t/cwc>.
- ; United Nations, “Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction,” United Nations Treaty Collection, June 2022, https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVI-3&chapter=26.
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CHAPTER 3

SUPER CRITERION LEGISLATION

Super Criterion Legislation assesses whether a country has legislation, authorities, and regulations in place to control trade in strategic commodities, with a focus on nuclear and nuclear-related goods. It assesses 14 sub-criteria, or indicators of performance, one of which is an extra credit opportunity. The ability of a country to act to prevent strategic commodity trafficking lies at the heart of the PPI. Without the legal basis and tools to act against illicit procurement, such efforts cannot be detected, investigated, and shut down, and key actors cannot be prosecuted. Legislation does not need to be the same for each country, but legislation that is adequate to achieve its mission should include provisions addressing import and export controls including national control lists of dual-use items, licensing regulations for controlled goods, controls on the transit and transshipment of goods, and catch-all controls. It should also provide for the national use of proper documentation for imports and exports that help with regulation.

Experts were consulted in the development of the list of legislative sub-criteria. The goal was to develop a list of key indicators of strategic trade control laws, which could demonstrate the extent of control legislation and differentiate between countries' controls.

All countries, and not only major economies involved in international trade or NSG member countries, have an opportunity to score points under this super criterion if the state has strong regulations on

imports, exports, transit and transshipment in general, rather than only strategic commodities. Of the 14 sub-criteria, four are considered low-impact, five are medium-impact, and four are high-impact, worth five, 10, and 15 points respectively, and one is an extra credit opportunity. A country could receive a raw total of 130 points under this super criterion. This raw score is used later to arrive at a total, weighted score out of 200 possible points and a rank for each country. It is also used to derive a ranking for the country under the three tiers. In addition, the project scores the comprehensiveness of all 200 countries', territories', and entities' export control legislation (not including import, transit, and transshipment) and divides them into five sub-categories of comprehensiveness.

Significant effort was put into finding all relevant legislation or confirming its existence by a reliable third party (such as the IAEA or European Parliament). Effort was made to ensure that non-English language legislation and scanned documents, which are non-searchable, were detected and included. In addition to government websites, helpful resources were: the UN Office for Disarmament Affairs database, the 2020 round of Committee-approved Resolution 1540 matrices, the Arms Trade Treaty Baseline Assessment Project, and GunPolicy.org.¹

SUB-CRITERIA

- **National export control legislation includes a catch-all clause²**

A catch-all clause is a component of legislation that is designed to “catch” the export of goods that may not be listed on export control lists but that may be destined for use in sensitive military, sanctioned, or unsafeguarded programs. As such, they require authorization for export. The 1540 matrix provides information on which countries include a catch-all clause as a part of their national export control legislation. For countries that did not report a catch-all clause to the 1540 Committee, an effort was made to individually verify whether similar legislation exists in the country. For the 2023 PPI, the United Arab Emirates (UAE) and Morocco newly received points for having a catch-all clause in their export control legislation. This is a high-impact sub-criterion.

- **Comprehensiveness of export control legislation such as encapsulating NSG Parts 1 and 2 lists³**

The most rigorous national export control legislation encapsulates a comprehensive list of controlled items that include the NSG Parts 1 and 2 lists and goes even further by adding additional items. An attempt was made to find a list of export-controlled items for each country. However, in some cases, national legislation refers to a set of controlled items without a country making a detailed list easily and publicly available. In that case, the PPI looked at the comprehensiveness of the law referring to the list. For the 2023 PPI, Morocco newly received points for having a comprehensive export control law covering dual-use goods. Additional countries that have drafted comprehensive export control laws but have yet to officially pass the law did not receive new points. This includes Chile, Laos, and Tunisia. This is a high-impact sub-criterion.

- **Transit control legislation is in place⁴**

This indicator sought to collect trade regulations for each country addressing the treatment of nuclear weapons-related materials⁵ in transit. Many countries have reported the existence of such regulations to the 1540 Committee. For the PPI, the data are taken from the 1540 committee-approved matrices and 1540 National Reports from 2019 and 2020. These data are corroborated by information already collected under export control legislation. Morocco is one country that newly received full points for 2023. This is a high-impact sub-criterion.

- **Transshipment control legislation is in place⁶**

This indicator sought to collect trade regulations for each country addressing the treatment of nuclear weapons-related materials that are being transshipped through the country. For the PPI, the data are taken from the 1540 committee-approved matrices and 1540 National Reports from 2019 and 2020, and cross-examined with information already collected under export control legislation. Morocco is one country that newly received full points for 2023. This is a high-impact sub-criterion.

- **Presence of a licensing process for export licenses**

The presence of a licensing process for export licenses refers to whether a country has a formal process for the licensing application or decision

for export permits or licenses for companies to export any type of controlled good. Newly for the 2023 edition, those countries receiving full or near-full points for having a comprehensive export control law only received points for having a licensing process if the process applies to goods on their dual-use control list. This change affected countries that have recently passed comprehensive export control laws but where the PPI team has not been able to identify necessary licensing processes, such as Thailand, Panama, and Kenya. Information for this sub-criterion was collected through individual internet searches on a country-by-country basis. This is a medium-impact sub-criterion.

- **Country has a criminal investigation agency⁷**

The Institute identified national criminal investigation agencies around the world and assigned full points (10) for each country that has one. An agency tasked with the investigation of criminal violations of the law sets the basis for the enforcement of intentional violations or conspiracies to violate strategic trade controls. While all countries have at least a small police force, some countries have larger forces with specialized sub-units for investigating trade or customs violations, such as the Customs Criminal Agency (Zollkriminalamt) in Germany, or the National Directorate of Intelligence and Customs Investigations (Direction Nationale du Renseignement et des Enquêtes Douanières) in France. This is a medium-impact sub-criterion.

- **Import control legislation includes a list of controlled goods**

This indicator refers to legislation in place that lists all controlled and banned imports, especially with regard to nuclear direct-use goods, radioactive materials, or goods that are capable of being used in weapons of mass destruction (WMD). These data include an itemized list of controlled imports for countries. Sufficient import controls are especially relevant for countries in Tiers Two and Three, which pose a transfer or diversion concern rather than a supplier concern for strategic commodity trafficking. This is a medium-impact sub-criterion.

- **End-use statements are required for export licenses⁸**

An end-use statement is a legal declaration made by an importing party and discloses the final destination and intended use of a good. This is especially important to have in place for countries that can supply WMD

direct- and dual-use goods or those countries in Tier One. End-use statements can be used to later check whether the good is being used by the intended party and for the authorized use. This is a medium-impact sub-criterion.

- **Import license or declaration is required to import goods⁹**

This indicator refers to whether or not an import license or declaration is required to import goods. This is especially important for countries that are heavily involved in the re-export of goods, or Tier Two countries, because it allows authorities the chance to detect illicit goods crossing their territories. The PPI assigned the same points for those countries that require an import permit or license, and those that only require an import declaration at customs. As the requirement is not specifically for nuclear direct- or dual-use goods, but all goods in general, this indicator was weighed as having low impact.

- **Certificates of Origin are required for imports or re-exports¹⁰**

The International Chamber of Commerce defines a Certificate of Origin as “an important international trade document that certifies that goods in a particular export shipment are wholly obtained, produced, manufactured or processed in a particular country.”¹¹

The World Bank’s “Ease of Doing Business” database provides information for almost all countries on whether a Certificate of Origin is required for the import or re-export of certain goods. As the requirement is not specified for nuclear direct- or dual-use goods, but all goods in general, this indicator was weighed as having low impact.

- **Bills of Lading (BOL) are required for carriers during transport¹²**

A BOL assigns legal responsibility for goods during transport. According to a definition published by *The Economic Times*, a BOL “...acts as a receipt and a contract. A completed BOL legally shows that the carrier has received the freight as described and is obligated to deliver that freight in good condition to the consignee.”¹³

It is relevant for preventing strategic commodity trafficking as it adds accountability and monitoring of goods during transport. The World Bank’s “Ease of Doing Business” database provides information for almost all countries on whether a Bill of Lading is required for the shipment of goods. This sub-criterion also assigned points for countries

that utilized what are typically called “CMR notes.” A CMR note is a document prepared by an exporter and a freight forwarder “that govern[s] the responsibilities and liabilities of the parties to a contract for the carriage of goods,” requiring the consignee to sign the form on delivery, which enables the carrier to confirm the delivery of the goods.¹⁴

Countries that require a BOL or CMR received full points if both import and export were covered. No points were given to countries if the BOL or CMR covered only imports or only exports. As the requirement is not specifically for nuclear direct- or dual-use goods, but all goods in general, this indicator was weighed as having low impact.

- **Intellectual Property is protected¹⁵**

The protection of sensitive information is highly valuable in sectors that both use and export strategic commodities. Ideally, the PPI authors would want to compare how countries protect from unintended use, in particular, weapons-related knowledge and expertise, including, for example, electronic information, designs, or calculations. This was not possible to determine for each country. In addition, there is no international agreement, even among the United States and its allies, as to what constitutes classified or sensitive weapons information. In the nuclear area, the NSG is also struggling with establishing controls on the export of information. As a result, the PPI settled on a far lesser criterion, namely the assessment of the regulation and protection of know-how in general, using data from the World Economic Forum Global Competitiveness Report, indicator 1.15 “Intellectual Property Protection.” Since these scores are used for their potential implications only, this indicator was determined to be low-impact.

- **1540 matrix has an “X” under intangible technology transfer¹⁶**

Intangible technological transfer is the transfer of non-physical technological goods from one location to another. Intangible technology comes in the form of software packages, technical assistance, and expertise and knowledge. Illicit intangible technology transfers are used by proliferating actors to obtain sensitive or controlled information. The PPI consulted the 2020 round of UN Security Council Resolution committee-approved 1540 matrices for information pertaining to a state’s regulations on intangible technological transfers. Those states with confirmed reported regulations to the 1540 Committee pertaining to intangible technological

transfers received full points. The information was cross-referenced with national export control legislation collected for other sub-criteria to determine what additional countries should receive full points. This is a medium-impact sub-criterion.

EXTRA CREDIT INDICATOR

- **Party to nuclear cooperation agreement containing provision to forgo reprocessing and enrichment¹⁷**

Countries that have a “gold standard” condition in a section 123 peaceful nuclear cooperation agreement (named after section 123 in the Atomic Energy Act) with the United States or another supplier country are awarded extra credit points. This so-called “gold standard” nuclear cooperation provision requires a country to agree to strict nonproliferation requirements that it forego seeking or developing enrichment and reprocessing capabilities. The country has an added incentive to apply additional scrutiny to the movement of strategic goods entering and exiting the country, which is often expressed in the form of strong strategic trade control laws. The United Arab Emirates and Taiwan are the only two PPI entities to date with such an agreement. Up to 50 extra credit points are available, but newly in 2023 PPI, extra credit points were capped as to not exceed the maximum total number of points under this super criterion, which resulted in awarding not more than 15 points, or the equivalent of a high-impact criterion, to either of the two countries.

IMPACT OF SUB-CRITERIA

The PPI assigned a low to high impact for weighting each of the sub-criteria. **Table 3.1** shows how each indicator was weighted in the evaluation and how much of an impact it therefore had on a country’s score within the super criterion.

SCORING

Of the 14 sub-criteria, four are considered low-impact, five are medium-impact, and four are high-impact, worth five, 10, and 15 points respectively, and one is an extra credit opportunity. A country could

SIDEBAR: CONSIDERED SUB-CRITERIA

Project staff considered one new, additional sub-criterion but were unable to find information for a sufficient number of countries (roughly two-thirds is desirable):

1) Country has a Border Management Strategy

The PPI staff searched for countries with a public report outlining the country's border management strategy to implement and coordinate trade and border controls. Typically, the strategy sets conditions to harmonize strategic goals and actions related to the prevention of cross-border crime and illicit border crossings by goods and persons and identifies responsible authorities. An example of a border management strategy that was found is the European integrated border management (IBM) for the European Union (EU), which works to manage and address cross-border crimes. The Republic of Serbia, as part of its reforms to join the EU, has a published integrated border management strategy that outlines actions for "prevention of smuggling of goods, narcotics, arms, and persons across borders, danger of spreading diseases infectious to people, animals and plants, strengthened control due to threats of international terrorism, protection of the unlawful interference in the operation of the equipment, and others."

While having a border management strategy is important for any country, the border control requirements vary widely from country to country, and as such it is difficult to assess whether a border management strategy is effective. For a more detailed discussion on border management requirements and the need for international guidelines, see Chapter 15 on Recommendations. The PPI team will continue to collect border management strategies published by countries and will continue to consider how to quantify the collected information for the PPI. Any insights and recommendations are welcome.

For additional previously considered sub-criteria, please consult the 2021/2022 PPI.

High-Impact (4)	Medium-Impact (5)	Low-Impact (4)
Catch-all Clause	Licensing Regulations*	Import License or Declaration
Comprehensive Export Control Legislation	End-use Statement Required for Exports	Certificates of Origin
Transit Control	Criminal Investigation Agency	Bills of Lading
Transshipment Control	Import Control List	Intellectual Property
	1540 matrix has an X under Intangible Technology Transfer	
<i>Extra Credit: Nuclear cooperation agreement that forgoes enrichment/reprocessing</i>		

Table 3.1. High, Medium, and Low Impact of Legislation sub-criteria. An asterisk indicates that a change in source data or point assignment was made for the 2023 PPI.

receive a raw total of 130 points under this super criterion. This raw score is used later to arrive at a total, weighted score and rank for each country. It is also used to derive a ranking for the country under the three tiers.

Under the sub-criterion *Comprehensive export control legislation*, the PPI team evaluated the quality and comprehensiveness of the export control legislation of the 200 countries, territories, and entities. The results were used to assign points towards a country's final PPI score, but also to place countries in one of the following five sub-categories. Existence of comprehensive legislation is not to be confused with its effective implementation, which will be discussed in subsequent super criteria chapters.

- **Dark Green (legislation is comprehensive):** Legislation or agreements includes controls or clauses relating to export of nuclear direct-use and nuclear dual-use goods, (nuclear and nuclear-dual use commodity controls such as implementation of NSG Parts 1 & 2 or their equivalent), in addition to conventional weapons. The most commonly used lists are the European Union (EU) Control List and Wassenaar Arrangement list. This category counted 76 countries.
- **Light Green (legislation is somewhat comprehensive):** Legislation or agreements includes controls or clauses relating to export of nuclear direct-use goods (nuclear commodity controls such as implementation of NSG Part 1 list or an equivalent),

in addition to conventional weapons. This category counted 6 countries.

- **Yellow (legislation is deficient):** Countries have comprehensive, overarching nuclear safety and security laws which place transfer controls on nuclear material and equipment. If the PPI was unable to locate relevant legislation, the 2023 Nuclear Threat Initiative (NTI) Nuclear Security Index was consulted, specifically its data on whether a country has or does not have a national legal framework for the Convention on the Physical Protection of Nuclear Material. These countries are not viewed as having effective trade control laws governing the export of nuclear and nuclear-related commodities, but their existing legislation is viewed as better in a relevant trade control sense than the legislation or lack of legislation in the Red and Orange categories. This category counted 28 countries.
- **Orange (legislation has serious deficiencies):** Legislation covers only exports of conventional weapons as laid out under the Arms Trade Treaty. This is not considered comprehensive trade control legislation for the PPI. This category counted 35 countries.
- **Red (legislation is non-existent or severely deficient):** Legislation includes exports of small arms and light weapons (SALW), and/or radioactive materials under environmental laws. This is not considered comprehensive trade control legislation for the PPI. This category counted 55 countries.

Table 3.2. Export control legislation comprehensiveness
(in terms of goods covered) by color category.

Dark Green (Legislation is comprehensive in terms of goods covered)	Light Green (Legislation is somewhat comprehensive)	Yellow (Legislation is deficient)	Orange (Legislation has serious deficiencies)	Red (Legislation is non-existent or severely deficient)
Albania	Cambodia	Algeria	Benin	Afghanistan
Andorra	Morocco ¹⁸	Bangladesh	Bhutan	Angola
Argentina	Myanmar	Botswana	Bolivia	Antigua and Barbuda
Armenia	Tajikistan	Cameroon	Brunei Darussalam	Bahamas
Australia	Uzbekistan	Cape Verde	Burkina Faso	Bahrain
Austria	Viet Nam	Chile	Costa Rica	Barbados
Azerbaijan		Cuba	Cote d'Ivoire	Belize
Belarus		Ghana	Dominican Republic	Burundi
Belgium		Guatemala	Ecuador	Central African Republic
Bosnia and Herzegovina		Indonesia	Eritrea	Chad
Brazil		Jamaica	Ethiopia	Colombia
Bulgaria		Malawi	Fiji	Comoros
Canada		Mauritania	Gabon	Congo (Dem Rep of the)
China		Mozambique	Gambia	Congo (Rep of the)
Croatia		Namibia	Grenada	Cook Islands
Cyprus		Nicaragua	Lao People's Democratic Republic	Djibouti
Czech Republic		Nigeria	Lebanon	Dominica
Denmark		Niue	Lesotho	DPRK
Estonia		Peru	Libya	Egypt
Finland		Qatar	Mongolia	El Salvador
France		Rwanda	Nauru	Equatorial Guinea
Georgia		Saudi Arabia	Niger	Guinea
Germany		Sierra Leone	Palau	Guinea-Bissau

CHAPTER 3

Dark Green (Legislation is comprehensive in terms of goods covered)	Light Green (Legislation is somewhat comprehensive)	Yellow (Legislation is deficient)	Orange (Legislation has serious deficiencies)	Red (Legislation is non-existent or severely deficient)
Greece		Sri Lanka	Saint Kitts and Nevis	Guyana
Hong Kong		Tanzania (United Republic of)	Samoa	Haiti
Hungary		Tuvalu	Senegal	Holy See
Iceland		Uganda	Seychelles	Honduras
India		Uruguay	Solomon Islands	Iran (Islamic Republic of)
Iraq			Syrian Arab Republic	Kiribati
Ireland			Timor-Leste	Kuwait
Israel			Togo	Liberia
Italy			Trinidad and Tobago	Madagascar
Japan			Turkmenistan	Maldives
Jordan			Vanuatu	Mali
Kazakhstan			Venezuela (Bolivarian Republic of)	Marshall Islands
Kenya				Mauritius
Kosovo				Micronesia (Federated States of)
Kyrgyzstan				Nepal
Latvia				Oman
Liechtenstein				Palestine (State of)
Lithuania				Papua New Guinea
Luxembourg				Paraguay
Macedonia				Saint Lucia
Malaysia				Saint Vincent and the Grenadines
Malta				Sao Tome and Principe

Dark Green (Legislation is comprehensive in terms of goods covered)	Light Green (Legislation is somewhat comprehensive)	Yellow (Legislation is deficient)	Orange (Legislation has serious deficiencies)	Red (Legislation is non-existent or severely deficient)
Mexico				Somalia
Moldova (Rep of the)				South Sudan
Monaco				Sudan
Montenegro				Suriname
Netherlands				Swaziland (Eswatini)
New Zealand				Tonga
Norway				Tunisia
Pakistan				Yemen
Panama				Zambia
Philippines				Zimbabwe
Poland				
Portugal				
Republic of Korea				
Romania				
Russian Federation				
San Marino				
Serbia				
Singapore				
Slovakia				
Slovenia				
South Africa				
Spain				
Sweden				
Switzerland				
Taiwan				
Thailand				
Turkey				
Ukraine				

CHAPTER 3

Dark Green (Legislation is comprehensive in terms of goods covered)	Light Green (Legislation is somewhat comprehensive)	Yellow (Legislation is deficient)	Orange (Legislation has serious deficiencies)	Red (Legislation is non-existent or severely deficient)
United Arab Emirates				
United Kingdom of Great Britain and Northern Ireland				
United States of America				

NOTES

1. Unfortunately, some countries report environmental laws or similar as WMD-relevant export control laws to the 1540 Committee.
2. “Committee Approved Matrices row 11 of Table OP3 (c) and (d),” *United Nations Security Council Committee established pursuant to resolution 1540* (2004), <https://www.un.org/en/sc/1540/national-implementation/1540-matrices/committee-approved-matrices.shtml>; National Reports, *United Nations Security Council Committee established pursuant to resolution 1540* (2004), <https://www.un.org/en/sc/1540/national-implementation/national-reports.shtml>.
3. Individual searches; “Committee Approved Matrices row 5 of Table OP3 (c) and (d),” *United Nations Security Council Committee established pursuant to resolution 1540* (2004), <https://www.un.org/en/sc/1540/national-implementation/1540-matrices/committee-approved-matrices.shtml>; “2023 NTI Nuclear Security Index: indicator 4.2 Domestic Nuclear Materials Security Legislation, sub-indicator 4.2.2 National legal framework for CPPNM,” *Nuclear Threat Initiative*, July 2023, https://www.ntiindex.org/wp-content/uploads/2023/07/2023_NTI-Index_Report.pdf; “ATT Initial Reports Data 2020,” ATT Monitor, https://attmonitor.org/wp-content/uploads/2020/08/EN-ATT_2020_Initial-Reports-Data-Tables.pdf.
4. “Committee Approved Matrices row 12 of Table OP3 (c) and (d),” *United Nations Security Council Committee established pursuant to resolution 1540* (2004), <https://www.un.org/en/sc/1540/national-implementation/1540-matrices/committee-approved-matrices.shtml>; National Reports, *United Nations Security Council Committee established pursuant to resolution 1540* (2004), <https://www.un.org/en/sc/1540/national-implementation/national-reports.shtml>. A “X” in the “National Legal Framework” cell relating to NW (nuclear weapons) was taken as confirmation that sufficient legislation exists. A question mark was given partial credit. An empty cell received no points.
5. The UN 1540 Committee defines “related materials” in the matrices as: “materials, equipment and technology covered by relevant multilateral treaties and arrangements, or included on national control lists, which could be used for the design, development, production or use of nuclear, chemical and biological weapons and their means of delivery.”
6. “Committee Approved Matrices row 13 of Table OP3 (c) and (d),” *United Nations Security Council Committee established pursuant to resolution 1540* (2004), <https://www.un.org/en/sc/1540/national-implementation/1540-matrices/committee-approved-matrices.shtml>; National Reports, *United Nations Security Council Committee established pursuant to resolution 1540* (2004), <https://www.un.org/en/sc/1540/nationalimplementation/national-reports.shtml>. In row 13 of a specific country’s matrix, an “X” in the “National Legal Framework” cell relating to NW (nuclear weapons) was taken as confirmation that sufficient legislation exists. A question mark was given partial credit. An empty cell received no points.

7. Individual internet searches. “World - A global presence,” Interpol, 2022, <https://www.interpol.int/Member-countries/World>.
8. Individual internet searches.
9. “Ease of Doing Business Report: Measuring Business Regulations,” The World Bank, 2020, <https://www.doingbusiness.org/en/data>. The World Bank Doing Business Report was discontinued and will be replaced by the World Bank Business Ready (B-Ready) report, which is expected to be published in 2024: <https://www.worldbank.org/en/businessready>. Therefore, the 2023 PPI utilized the 2020 Doing Business report data as a supplement for three sub-criteria: Import license, Certificate of Origin, and Bill of Lading.
10. “Ease of Doing Business Report: Measuring Business Regulations,” The World Bank, 2020, <https://www.doingbusiness.org/en/data>. See footnote 11.
11. “Ease of Doing Business Report: Measuring Business Regulations,” The World Bank, 2020, <https://www.doingbusiness.org/en/data>. See footnote 11.
12. “Ease of Doing Business Report: Measuring Business Regulations,” The World Bank, 2020, <https://www.doingbusiness.org/en/data>. See footnote 11.
13. “Definition of ‘Bill of Lading,’” *The Economic Times*, <https://economictimes.indiatimes.com/definition/bill-of-lading>.
14. “Transport Documents: CMR, Bill of Lading, Air Waybill,” *Global Negotiator*, 2023, https://www.globalnegotiator.com/blog_en/transport-documents-cmr-bill-of-lading-air-waybill/.
15. Klaus Schwab and the World Economic Forum, “The Global Competitiveness Report,” World Economic Forum, 2019, https://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf.
16. “Committee Approved Matrices row 8 of Table OP3 (c) and (d),” *United Nations Security Council Committee established pursuant to resolution 1540 (2004)*, <https://www.un.org/en/sc/1540/national-implementation/1540-matrices/committee-approved-matrices.shtml>.
17. “123 Agreements for Peaceful Cooperation,” *United States Department of Energy National Nuclear Security Administration*, 2023, <https://www.energy.gov/nnsa/123-agreements-peaceful-cooperation>; Richard Nephew, “Reconsidering U.S. Nuclear Cooperation Agreements,” *Columbia University Center on Global Energy Policy*, 2020, <https://www.energypolicy.columbia.edu/publications/reconsidering-us-nuclear-cooperation-agreements/>; Mary Beth Nikitin, Mark Holt, and Mark Manyin, “U.S.-Vietnam Nuclear Cooperation Agreement: Issues for Congress,” *Congressional Research Service*, 2014, <https://fas.org/sgp/crs/nuke/R43433.pdf>.
18. See indicator 4.2 “Domestic Nuclear Materials Security Legislation,” sub-indicator 4.2.2 “National legal framework for CPPNM,” by Nuclear Threat Initiative and The Economist Intelligence Unit, “EIU Methodology,” *NTI Nuclear Security Index*, 2023, <https://www.ntiindex.org/>.

CHAPTER 4

SUPER CRITERION ABILITY TO MONITOR AND DETECT STRATEGIC TRADE

Super Criterion Ability to Monitor and Detect Strategic Trade assesses the mechanisms that allow a state to monitor and control strategic or sensitive trade, and the hospitableness of the state environment to achieving the mission. It focuses mostly on tangible outcomes under 19 sub-criteria, rather than simply on the theoretical abilities of a country, by factoring in various performance metrics or views about performance such as statistics, surveys, and rankings conducted by other non-governmental organizations or international organizations. For example, quantitative assessments about countries' internal stability, use of electronic trade documentation, customs diligence, and customs inspection rates are included. These factors can significantly add to or take away from a country's ability to monitor and detect strategic trade.

This super criterion is one of the most challenging for countries to score highly on as it measures tangible outcomes rather than pledges or intentions made in treaties or laws. In the 19 sub-criteria, it measures actions, efficiencies, transparencies, and stability. Most countries can only improve their performance under this super criterion through systematic and long-term improvements. Of the 19 sub-criteria, three are considered low-impact, eleven are medium-impact, and four are high-impact, worth five, 10, and 15 points, respectively, and one is an extra-credit opportunity.

A country could receive a total of 185 points under this super criterion. This raw score is used later to arrive at a total, weighted score out of 200 points and rank for each country. It is also used to derive a ranking for the country under the three tiers.

SUB-CRITERIA

- **Has ability to track and trace consignments¹**

The 2023 Logistics Performance Index (LPI) produced by the World Bank provides a score for countries on their ability to track and trace consignments. Countries with higher scores under “tracking and tracing” demonstrate a greater capacity to perform this function, which indicates a country’s capacity to monitor and control the movement of strategic goods inside and outside of the country. As such, this indicator is given a high impact.

- **Risk management is applied for customs inspection²**

Formerly called, “Physical inspection of shipments,” the source for this sub-criterion was changed for the 2023 PPI. The previous source, the 2018 Logistics Performance Index (LPI), was replaced by the Global Express Association customs database. Countries where risk assessment is reported to be the primary basis for inspection (physical or documentary) received full points. This is a high-impact sub-criterion.

- **Percentage of import shipments physically inspected multiple times³**

The Logistics Performance Index (LPI) estimates the percentage of shipments that are physically inspected multiple times by each country. Like the previous sub-criterion, “Has ability to track and trace consignments,” the 2023 PPI utilized the 2018 LPI data for this sub-criterion, as the 2023 LPI no longer contained this information. In cases where the 2018 LPI did not contain data on a specific country, data from the 2016 LPI were utilized. The World Bank finds multiple inspections to be a poor means of policing imports because it renders the entire customs system inefficient; on the other hand, the PPI found that multiple inspections increase the chances that a sensitive commodity will be detected in transit. Because

the source data are from 2018, the impact of this sub-criterion was lowered from high to medium impact.

- **Use of electronic export declarations⁴**

This sub-criterion draws on a combination of information from the World Customs Organization annual reports for 2022 and 2023. The PPI uses the percentage of electronically filed export declarations. Strong and modern export declaration mechanisms make it easier for countries to monitor trade; therefore, it is categorized as a high-impact sub-criterion.

- **Use of automated customs system⁵**

Having an automated or electronic customs system, versus one that uses paper documents, typically indicates a more efficient and advanced customs system. It usually implies that a country inspects packages or cargo based on information about shipments that optimizes inspections using a risk-based approach. A majority of countries use automated customs systems, particularly since the UN Conference on Trade and Development started to promote and assist with the implementation of its ASYCUDA (Automated System for Customs Data) software. The PPI collected information for each country individually, but did not differentiate among the different types of electronic systems when assigning the points. It is a medium-impact sub-criterion.

- **Ease of starting a business⁶**

Countries that make starting a business straightforward generally have a transparent and well-regulated process in place, such as obtaining legitimate licenses and documents. The PPI assessed that those countries with such a process in place may be less likely to have companies engaged in illicit activities. The World Bank ranks 190 countries on the ability to start a business. This is a medium-impact sub-criterion.

- **Efficiency of customs clearance process⁷**

The data for this sub-criterion were drawn from the 2023 World Bank Logistics Performance Index “Customs” Score. Countries were given a score for the efficiency of their customs clearance process on a scale from 1 to 5, with 5 being the most efficient. Countries with efficient clearance processes have the mechanisms in place to clear imports and exports, and thus, would be more likely to have trained and knowledgeable customs

officials able to identify illicit imports and exports. This is a medium-impact sub-criterion.

• **Internal stability/Absence of violence/terrorism – World Bank estimate⁸**

Countries that are described by the World Bank as more stable and having a lower presence of violence and terrorism are correlated by the PPI as more able to effectively implement mechanisms to monitor exports and imports and detect illicit activity. These processes and related organizations are less likely to be negatively influenced by corruption, high official turnover, and other disrupting factors. The World Bank 2022 Worldwide Governance Indicator on internal stability and absence of violence/terrorism is used to assign points for this sub-criterion. It is assigned a medium impact.

• **State works with and informs the public about UNSCR 1540 implementation⁹**

A country received full 10 points if the state works with the public on UNSCR 1540 awareness as indicated by an X in the country's committee-approved 1540 matrix. This is a medium-impact criterion.

• **State has point of contact for UNSCR 1540 implementation¹⁰**

A country received full 10 points if the state has a point of contact for UNSCR 1540 implementation as indicated by an X in the committee-approved 1540 matrix. This is a medium-impact criterion.

• **State conducts industry outreach on strategic trade¹¹**

To prevent strategic commodities from being mistakenly or purposefully exported to sanctioned or nefarious end-users, government agencies must conduct outreach to train and inform officials at companies about the country's laws and procedures for licensing, as well as on detecting and preventing illicit procurement attempts. Newly for 2023, a country only received full points for recent and active industry outreach, such as via conferences, notifications, publications or Wiesbaden conference participation. Half points were received if the country reported to the UNSCR 1540 Committee that it conducts industry outreach on 1540 implementation. Newly in the 2023 PPI, this criterion is of high impact.

• **Party to the Convention on Transit of Land-locked States/Party to the UN Convention on the Law of the Sea**¹²

These two conventions are taken as a single sub-criterion. They have similar provisions regarding transshipment regulations. They are relevant for the PPI since they add clarity to countries' legal responsibilities and rights regarding the transport of goods through one or more countries. According to the Convention on the Law of the Sea, Article 125 *Right of access to and from the sea and freedom of transit*:

1. *Land-locked States shall have the right of access to and from the sea for the purpose of exercising the rights provided for in this Convention including those relating to the freedom of the high seas and the common heritage of mankind. To this end, land-locked States shall enjoy freedom of transit through the territory of transit States by all means of transport.*
2. *The terms and modalities for exercising freedom of transit shall be agreed between the land-locked States and transit States concerned through bilateral, subregional or regional agreements.*
3. *Transit States, in the exercise of their full sovereignty over their territory, shall have the right to take all measures necessary to ensure that the rights and facilities provided for in this Part for land-locked States shall in no way infringe their legitimate interests.*

Additionally, the Convention on the Law of the Sea introduces language in Article 25 that gives transit countries the legal authority for interdicting cargo. Specifically, the coastal state (transit country) may “take the necessary steps in its territorial sea to prevent passage which is not innocent.” This language could be used as a basis to learn more about shipments of controlled strategic goods.

This sub-criterion is of medium impact.

• **Interagency review required for licensing transfers of nuclear weapons-related materials**¹³

Legislation requiring interagency review for licenses and licensing regulations regarding “border crossings, export/import and other transfers” of nuclear weapons and related materials¹⁴ ensures that they are consistent and compatible across multiple agencies and that there are not duplicate policies that slow down or confuse the process. Countries with legislation

that requires interagency review of licenses can better monitor licenses given out and nuclear-related trade in general. Countries receive full points for the existence of legislation requiring interagency review of licenses for nuclear weapons and related materials, as indicated by an X in the country's 1540 matrix, in national reports to the 1540 committee, or in national legislation. This is a medium-impact sub-criterion.

• **Level of state control of the economy**¹⁵

The Heritage Foundation's Index of Economic Freedom for 2022 measures the level of state control of the economy, or "economic freedom," based on 12 factors in four categories: Rule of Law (property rights, government integrity, judicial effectiveness); Government Size (government spending, tax burden, fiscal health); Regulatory Efficiency (business freedom, labor freedom, monetary freedom); and Open Markets (trade freedom, investment freedom, financial freedom). These pillars support an efficient and reliable trade control system. Since they support, but do not guarantee efficiency and reliability, this indicator was judged by the PPI as having a low impact on overall *Ability to Monitor and Detect Strategic Trade*.

• **Percentage of firms that export directly or indirectly**¹⁶

The percentage of firms that export directly and indirectly at least one tenth of their total sales is used as an indirect measure of a government's knowledge of its supply potential. A low percentage of firms that export more than ten percent of their total sales reduces the number of suppliers of potentially sensitive goods. This, in turn, may make it easier for the government to conduct industry outreach, as well as to detect and prevent the existence and activities of shell companies. Indirect exporting means that a firm uses a third party to sell its products. The firm has little to no involvement in the export process. Direct exporting means the firm sells and exports its product directly to a customer. In this case, the firm is responsible for exporting the product. This score measures the fraction of potential exporting suppliers in a country, where a low fraction is rewarded. This is a low-impact sub-criterion.

- **Registration is required for a company to export goods or to apply for an export license for controlled goods¹⁷**

A country may require registration before a company can make any exports, or at least, before it can apply for an export license for any controlled good. Such procedures help avoid the creation of shell companies and prevent illicit exports and eventual transshipment of strategic goods. Ideally, the PPI sought to assign points only for countries that require a company to register specifically as a dual-use supplier. However, this information was difficult to find for many countries, and the registration as a dual-use supplier may occur later in the export registration or license application process. This is a low-impact sub-criterion.

- **Country has a closed ship registry¹⁸**

Ship registries are important tools states use to monitor, tax, and regulate the ownership and registration of vessels. Ship registries can be open or closed. A closed registry requires the vessel and its principal owner to both be incorporated in the country of registration. Countries with an open registry enable any vessel, regardless of the original country of ownership, to be registered under that country's flag and to be assessed under that country's regulations and taxes. A business does not have to be incorporated in that country in order to qualify for the open registry. Open registries have been criticized for being "Flags of Convenience," (FOC) where businesses will register a vessel in that country because of its "cheap registration fees, low or no taxes, and freedom to employ cheap labor." Vessels registered in FOC states have been criticized for promoting poor vessel operating and safety standards. More than half of all current vessels registered are registered in FOC states. Many FOC vessels have been documented to have participated in illicit trade schemes. The International Transport Workers' Federation (ITF) Fair Practices Committee ("a joint committee of ITF seafarers' and dockers' unions") maintains a comprehensive list of all known FOC states. The list contains 35 countries.

This criterion assigns points to those countries that do not have an open registry. It is a medium-impact sub-criterion.

- **Country has a Single Window system for trade facilitation (as a measure of interagency cooperation)**¹⁹

The United Nations Economic Commission for Europe (UNECE) defines a single window system as “a facility that allows parties involved in trade and transport to lodge standardized information and documents with a single entry point to fulfill all import, export, and transit-related regulatory requirements.”²⁰ Single Window systems have the capability to increase processing efficiency by reducing export/import administrative processing time drastically. It is important to note that having a Single Window system does not necessarily imply enhanced export control capabilities for that country, however, it is a steppingstone towards a streamlined process and creates potential for important interagency cooperation.

The 2023 PPI collected data on whether a country has an operational Single Window system and assigned full points to those that did. This is a medium-impact sub-criterion.

- ***Extra Credit:*** PSI ship boarding agreement²¹

The Proliferation Security Initiative (PSI) is a tool used by the international community “to break up black markets, detect and intercept WMD materials in transit, and use financial tools to disrupt this dangerous trade.”²² PSI member states are encouraged to sign bilateral agreements that enable states to interdict shipments that are suspected to carry biological, chemical, or nuclear materials or other illicit goods. Countries with active PSI ship-boarding agreements were deemed to demonstrate a strong commitment to nonproliferation and bilateral cooperation with states to detect and prevent illicit shipments. Due to the small number of countries that have entered into this ship-boarding agreement, this sub-criterion is an extra credit opportunity. Countries with a PSI ship-boarding agreement received full extra credit points equivalent to a high-impact sub-criterion.

IMPACT OF SUB-CRITERIA

The PPI assigned a low to high impact for weighting each of the sub-criteria. **Table 4.1** shows how each indicator was weighted in the evaluation and how much of an impact it therefore had on a country’s score and rank within the super criteria.

High Impact (4)	Medium Impact (11)	Low Impact (3)
Track & Trace Consignments	Automated Customs System	State Control of Economy
Risk Management is Applied for Customs Inspection*	Ease of Starting Business	Percentage of Firms that Export Directly or Indirectly (at least 10% of their total sales)
State Works with Industry on Strategic Trade Control*	Customs Clearing Efficiency	Registration Required for a Company to Export or to Apply for a License
Use of Electronic Export Declarations	Political Stability	
	Multiple Inspections of Imports*	
	State Works with the Public on 1540 Implementation	
	State has Point of Contact for 1540 Implementation	
	Landlocked States/Law of the Sea	
	Country Has Exclusively Closed Ship Registry	
	Single Window User	
Extra Credit: PSI ship boarding agreements		

Table 4.1. The impact of each sub-criterion under Super Criterion Ability to Monitor and Detect Strategic Trade. An asterisk indicates that a change in source data or point assignment was made for the 2023 PPI.

SCORING

Of the 19 sub-criteria, three are considered low-impact, eleven medium-impact, and four high-impact, and one is an extra credit opportunity. They are worth five, 10, and 15 points, respectively, leading to a total of 185 points under this super criterion. This raw score is used later to arrive at a total, weighted score and rank for each country. It is also used to derive a ranking for the country under the three tiers.

NOTES

1. “Logistic Performance Index: 2023,” *The World Bank*, 2023, <https://lpi.worldbank.org/international/global>.
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6. “Starting a Business,” The World Bank, 2019, <http://www.doingbusiness.org/data/exploretopics/starting-a-business>. Unfortunately, the World Bank Doing Business Report was discontinued and will be replaced by the World Bank Business Ready (B-Ready) report, which is expected to be published in 2024: <https://www.worldbank.org/en/businessready>. Therefore, the 2023 PPI continued to utilize the 2019 Doing Business report.
7. “Logistic Performance Index: 2023: Customs,” The World Bank, 2023, <https://lpi.worldbank.org/international/global>. “Customs” score of 2023: “The efficiency of customs and border management clearance”
8. “Worldwide Governance Indicators,” *The World Bank*, 2022, <http://databank.worldbank.org/data/reports.aspx?source=worldwide-governance-indicators>.
9. “Committee Approved Matrices” *United Nations Security Council Committee established pursuant to resolution 1540 (2004)*, <https://www.un.org/en/sc/1540/national-implementation/1540-matrices/committee-approved-matrices.shtml>.
10. “Committee Approved Matrices” *United Nations Security Council Committee established pursuant to resolution 1540 (2004)*, <https://www.un.org/en/sc/1540/national-implementation/1540-matrices/committee-approved-matrices.shtml>.

11. Individual internet searches; “Committee Approved Matrices” *United Nations Security Council Committee established pursuant to resolution 1540* (2004), <https://www.un.org/en/sc/1540/national-implementation/1540-matrices/committee-approved-matrices.shtml>; “National Reports,” *United Nations Security Council Committee established pursuant to resolution 1540* (2004), <https://www.un.org/en/sc/1540/national-implementation/1540-matrices/committee-approved-matrices.shtml>.
12. “Convention on Transit Trade of Land-locked States,” *United Nations*, 2022, [https://treaties.un.org/Pages/ViewDetails.aspx?src=IND&mtdsg_no=X-3&chapter=10&clang=_en](https://treaties.un.org/Pages/ViewDetails.aspx?src=IND&mtdsg_no=X-3&chapter=10&clang=_en;); “Convention on the Law of the Sea,” *United Nations*, 2022, https://treaties.un.org/pages/ViewDetailsIII.aspx?src=IND&mtdsg_no=XXI-6&chapter=21&Temp=mtdsg3&clang=_en.
13. “Committee Approved Matrices: Table OP 3 c and d, row 12,” *United Nations Security Council Committee established pursuant to resolution 1540* (2004), 2020, <http://www.un.org/en/sc/1540/national-implementation/1540-matrices/committee-approved-matrices.shtml>. Of note, the corresponding cell is missing in the consolidated committee-approved matrices for 2020. Information supplementing the 2015 matrices was obtained directly from National Reports and from individual research. National Reports, *United Nations Security Council Committee established pursuant to resolution 1540* (2004), <https://www.un.org/en/sc/1540/national-implementation/1540-matrices/committee-approved-matrices.shtml>.
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CHAPTER 5

SUPER CRITERION ABILITY TO PREVENT PROLIFERATION FINANCING

Super Criterion Ability to Prevent Proliferation Financing evaluates a country's ability to prevent the raising and using of funds for WMD proliferation, encompassing a relatively new approach to detecting and preventing strategic commodity trafficking. Overall, international effort devoted to assessing and countering proliferation financing is slowly increasing. Moreover, states are increasingly accepting proliferation financing as a key part of strategic trade controls. This is visible by the inclusion of proliferation financing in export control fora, and by proliferation financing becoming a new priority in bilateral export control related trainings and capacity-building.

This super criterion draws heavily on evaluations conducted by the Financial Action Task Force (FATF), the major international organization seeking to establish standards and assess efforts at preventing money laundering and other financial crime. In the PPI sub-criteria development process, experts with knowledge of proliferation financing advised the project on the most relevant FATF-collected data and ways to extrapolate proliferation financing data from broader FATF reporting. In addition to FATF data, the super criterion *Ability to Prevent Proliferation Financing* utilizes measures and information about countries' susceptibility to being exploited or involved in proliferation financing, such as

the prevalence of corruption or the size of a country's trade value gap. Of note, this super criterion is the one under which countries collectively performed the worst.

This super criterion first *assigns* points to countries based on sub-criteria derived mostly from the FATF determinations. These sub-criteria assess countries' theoretical capabilities to prevent proliferation financing and financial crime more generally based on their financial regulatory systems and counter-illicit financing programs. These thirteen sub-criteria are characterized as "positive indicators." The PPI then *takes away* points according to five "negative indicator" sub-criteria, or concrete information and examples of poor controls, such as when countries are known to have been hubs for money laundering or are listed as high-risk jurisdictions by FATF or the EU. The positive and negative indicators are assigned a low, medium, or high impact for scoring purposes. The project next assigns or takes away available "extra credit" points according to three other FATF-related sub-criteria. Finally, the judgment of experts in proliferation financing who were consulted for the PPI is used to take away or assign points based on their knowledge of proliferation financing in certain countries. This super criterion contains a total of 22 sub-criteria, of which 13 are positive, five are negative, three are extra-credit opportunities, and one is an expert judgment. Of the 13 positive sub-criteria, one is considered low-impact, ten are medium-impact, and two are high-impact. They are worth 5, 10, and 15 points, respectively. Absent extra credit and expert knowledge points, a country could receive a total of 135 points under this super criterion. This raw score is used later to arrive at a total, weighted PPI score out of 400 possible points and a rank for each country. It is also used to derive a ranking for the country under the three tiers.

Because there remain relatively few independent, direct measures of the capabilities of countries to prevent proliferation financing, the PPI continues to rely heavily on FATF evaluations, including drawing relevant proliferation financing information from more general FATF data. FATF added language on proliferation financing in 2012, but only to two out of forty FATF recommendations (and to an additional one in October 2020.)¹ The recent FATF evaluations, based on the modified 2012 and later recommendations, include evaluations of a country's ability to implement international financial sanctions and of the effectiveness of its controls against those countries under international financial sanctions,

including investigation and enforcement actions. A limitation is that not all countries have yet undergone a FATF mutual evaluation process since the 2012 recommendations were introduced. Therefore, to avoid penalizing those states which are still in the process of conducting a post-2012 evaluation report, these evaluation data were used in the PPI as extra credit information.

POSITIVE INDICATORS

- **Compliance with selected FATF recommendations.** The FATF provides the most data regarding a country's banking regulations and practices. The FATF's objectives are to set standards and promote effective implementation of legal, regulatory, and operational measures for combating money laundering, terrorist financing, and other related threats to the integrity of the international financial system. It publishes a periodically updated set of recommendations that all member countries should follow to prevent financial crimes and subsequently publishes evaluations of individual countries' compliance with each of those recommendations. Evaluations are conducted by the FATF or its regional bodies and are titled "Mutual Evaluation Reports." For each recommendation, potential deficiencies are listed, and a final conclusion is drawn, which can be that the country is Not Compliant, Partially Compliant, Largely Compliant, or Compliant with the specific recommendation. With the emergence of additional threats to the international financial system, including terrorist financing, and subsequently proliferation financing, the FATF recognized the need to update its recommendations in 2003, and again in 2012. The 2003 guidelines versus the 2012 guidelines often number their recommendations differently, and as a result, the PPI lists a recommendation and its associated year, such as FATF Recommendation 2 (2012), meaning it is the one from the 2012 guidelines. As of August 2022, 126 countries have undergone an evaluation based on the 2012 standards.² To establish common ground between countries that have undergone a FATF evaluation before and after 2012, the PPI took into consideration recommendations found in both the new and old guidelines, and used data only found in the new round of evaluations for the extra credit indicators. The following FATF recommendations (FATF R.'s) have been carefully evaluated and selected by consulting experts on financing of proliferation as most relevant

to preventing proliferation financing, based on their experience with what governments need the most to prevent this illicit activity³:

- **FATF Recommendation 2 (2012) 31 (2003) National Co-ordination**^{4,5}: “Countries should have national [anti-money laundering/counter-terrorist financing] policies [...]. Countries should ensure that [...] relevant competent authorities, at the policymaking and operational levels, have effective mechanisms in place which enable them to cooperate, and, where appropriate, coordinate domestically with each other concerning the development and implementation of policies and activities to combat money laundering, terrorist financing and the financing of proliferation of weapons of mass destruction.” This is a high-impact indicator.
- **FATF Recommendation 40 (2012 and 2003) International Cooperation / Other Forms of Cooperation**:⁶ “Countries should ensure that their competent authorities can rapidly, constructively, and effectively provide the widest range of international cooperation in relation to money laundering, associated predicate offences and terrorist financing.” This is a high-impact sub-criterion.
- **FATF Recommendation 10 (2012) 5 (2003) Customer Due Diligence (CDD)**:⁷ “Financial institutions should be prohibited from keeping anonymous accounts or accounts in obviously fictitious names. [...] The principle that financial institutions should conduct CDD should be set out in law. [...] Financial institutions should be required to verify the identity of the customer and beneficial owner before or during the course of establishing a business relationship or conducting transactions for occasional customers.” This is a medium-impact indicator.
- **FATF Recommendation 13 (2012) 7 (2003) Correspondent Banking**:⁸ Financial institutions should collect additional information before conducting cross-border correspondent banking, and they “should be prohibited from entering into, or continuing, a correspondent banking relationship with shell banks.” It is a medium-impact sub-criterion.
- **FATF Recommendation 26 (2012) 23 (2003) Regulation and Supervision**:⁹ Financial institutions should be licensed, registered, regulated, and subject to monitoring. “[...] Countries

should not approve the establishment, or continued operation, of shell banks.” This is a medium-impact sub-criterion.

- **FATF Recommendation 30 (2012) 27 (2003) Law Enforcement Responsibilities:**¹⁰ “Countries should ensure that designated law enforcement authorities have responsibility for money laundering and terrorist financing investigations [...]” This is a low-impact indicator.

The PPI assigned up to 65 raw points based on country compliance with this selected set of FATF recommendations, which encapsulate critical elements or essential features of a system that prevents proliferation financing.

- **Low Trade-Related Illicit Financial Flows Identified**¹¹

This indicator, formerly titled “Low average illicit financial outflows as percentage of total trade,” measures the sum of the value gaps identified between a developing country and all of its trading partners in 2018. A value gap represents a mismatch in reported bilateral trade data to UN Comtrade. For example, if country X reports exporting USD 10 million of goods to country Y, but country Y only reports receiving USD 5 million of goods from country X, then there is a value gap of USD 5 million. Data for 135 developing countries are collected and published by Global Financial Integrity (GFI).

Countries with a lower total trade value gap were awarded more points. The 2023 PPI assigned points based on the rank of a country in relation to all other countries included in the GFI report. This sub-criterion measures one aspect of the inadequacy of national financial oversight and is indirectly related to proliferation financing. It is deemed a medium-impact sub-criterion.

- **Country has FATF or FATF Regional Body Membership**¹²

The FATF has established eight regional bodies to promote global dissemination and coordination to promote better understanding and implementation of its international standards, as highlighted in the FATF 40 (49 for post-2003) recommendations. Most countries are either FATF members or members of a FATF-style regional body. Some are members of both. The level of organization and dynamic varies within the different groups. Before being able to become a FATF member, countries undergo

a rigorous review process. Full points are awarded to countries that are members of both FATF and a FATF-style regional body, as this demonstrates a level of commitment on a regional and global level. The regional bodies are:

- The Eurasian Group (EAG)
- Asia/Pacific Group (APG)
- Caribbean Financial Action Task Force (CFATF)
- Committee of Experts on the Evaluation of Anti-Money Laundering Measures and the Financing of Terrorism of the Council of Europe (MONEYVAL)
- Eastern and Southern Africa Anti-Money Laundering Group (ESAAMLG)
- Financial Action Task Force on Latin America (GAFILAT)
- Intergovernmental Action Group Against Money Laundering in West Africa (GIABA).
- Middle East and North Africa Financial Action Task Force (MENAFATF)
- The Task Force on Money Laundering in Central Africa (GABAC)

This is a medium-impact indicator.

• FATF compliance score¹³

The FATF compliance score is available for 141 jurisdictions (123 of which are evaluated by the PPI) on the 2022 Financial Secrecy Index (FSI), published by the Tax Justice Network. In the FSI, FATF compliance is indicator 17, “Anti-Money Laundering.” According to the FSI report, compliance with all available recommendations (49 recommendations post-2003, or 40 recommendations plus 11 Immediate Outcomes post-2012) was calculated as a percentage of non-compliance with the recommendations, where a 100 percent score rating “indicates that all recommendations have been rated as ‘non-compliant’ or ‘low level of effectiveness,’” whereas a 0 percent rating “indicates that the jurisdiction is ‘entirely compliant/highly effective.’”¹⁴ In line with this, the PPI assigned points inversely proportional to a country’s percentage score. Working with FATF to comply with general recommendations by implementing regulations and best practices is the first step for a country to prove its

full commitment to financial transparency and anti-money laundering efforts. Despite some degree of duplication with the FATF recommendations above, this is a good indicator of general ability to prevent financial crimes. This is a medium-impact indicator.

- **Public Registry of Company Beneficial Ownership¹⁵**

Having a public registry of companies and their beneficial ownership helps ensure that front companies and shell companies cannot exist and operate. Transparency is important in countering proliferation, and therefore beneficial ownership information should be made public. Not many countries have a public registry of companies, but several countries have an internal list for law enforcement and other purposes, and many new countries are committed to creating a database for beneficial ownership. The UN Convention against Corruption highlighted Beneficial Ownership Transparency (BOT) as a key anti-corruption tool, providing further impetus for countries to develop such a database. Further, the European Union's relatively new anti-money laundering requirements obligate its member states to collect information on the beneficial ownership of corporate entities and establish a registry where the information will be deposited. A free and publicly accessible beneficial ownership registry served as the ideal standard; however, states also received points if the registry was limited to "legitimate interest parties" or if access was blocked behind a paywall. Partial points were received by those that committed to creating a registry. This is a medium-impact sub-criterion.

- **Member of the Egmont Group¹⁶**

The Egmont Group works to prevent money laundering and terrorist financing by providing a secure space for the exchange of financial intelligence. It is made up of 170 "Financial Intelligence Units" from various countries. It works to support the international efforts of the UN Security Council and FATF at combating money laundering and terrorist financing. This is a medium-impact sub-criterion.

- **Financial intelligence units (FIU) websites or annual report mentions proliferation¹⁷**

Financial intelligence units, as collectors of analysis of information relevant to financial crimes, are the natural responsible party to gather information on proliferation financing activities. While many states have

FIUs, their involvement in counter-proliferation varies. The PPI assessed countries' most recent FIU annual reports, and if unavailable, the FIU's website, to determine if counter-proliferation measures were addressed. For example, points were assigned if the country has conducted, participated in, or trained in any counter-proliferation finance activities. In some cases, FIUs were contacted directly via email to obtain information. The impact of the criteria is medium.

- **FATF MER references 1540 resolution¹⁸**

Mutual Evaluation Reports (MER) are peer-reviewed assessments conducted by the Financial Action Task Force (FATF) and FATF-style regional bodies. The goal of a MER is to evaluate the progress made by states in implementing FATF recommendations and to analyze a state's system to prevent financial crimes. This sub-criterion evaluated a country's MER and its respective follow-up report (if available) to determine if 1540 resolution measures are included. References to the 1540 resolution demonstrate that a state is actively considering or acting to implement the resolution. MER or MER follow-up reports that did include information pertaining to the UNSCR 1540 received full points. This is a medium-impact sub-criterion.

NEGATIVE INDICATORS

Because the number of positive sub-criteria based on FATF information is relatively low and FATF information is not complete, an additional set of negative indicators was added to more effectively rank countries under this super criterion. These sub-criteria focus on negative outcomes, such as having significant trade-related illicit financial flows, countries identified by governments as posing financial risk, or countries having sanctioned entities. A negative sub-criterion means that points are subtracted instead of added. Ten or 15 points are subtracted for a negative performance under these indicators since they are all medium or high impact.

- **Presence of denied parties by United States¹⁹**

Countries with entities on the U.S. Office of Foreign Assets Control (OFAC) Specially Designated Nationals and Blocked Persons (SDN) List likely failed to detect illicit activity until after it occurred. While entities

are added as a penalty for a range of U.S. foreign policy and national security reasons, entities on the list include, among others, “those engaged in activities related to the proliferation of weapons of mass destruction.”²⁰ It is measured as a negative indicator with high impact, since it indicates actual instances where illicit activities have been detected.

- **Appearance on the 2022 State Department published list of countries posing money laundering and financial crime concerns²¹**

The State Department Bureau for International Narcotics and Law Enforcement Affairs identified in its March 2022 report “Countries/Jurisdictions of Primary Concern” for “Money Laundering and Financial Crimes.” Using country profiles, the report points out weaknesses in those countries’ enforcement or justice systems which pose challenges to the implementation of financial regulations. Examples of observed implementation challenges include “limited resources, lack of technical expertise, and poor infrastructure” as well as “administrative hurdles” and “corruption.” This sub-criterion has a medium impact.

- **Significant trade-related illicit financial flows²²**

This indicator, formerly named “Significant average illicit financial outflows as percentage of total trade,” used data collected and published by Global Financial Integrity (GFI) measuring total trade value gap as a percentage of total trade data between developing countries and all trade partners over the period 2009-2018. A value gap represents a mismatch in reported trade data. For example, if country X reported exporting US\$15 million of goods to country Y, but country Y only reported receiving US\$10 million of goods from country X, then there is a value gap of US\$5 million. The 2023 PPI deducted points from the top ten countries with the largest total trade value gaps percentagewise and absolute, as identified by GFI. Data are only collected for developing countries; countries not included by GFI cannot be rewarded in the positive criterion, but also not penalized in the negative criterion. Beneficial for the PPI is that this criterion aids in setting apart developing countries that otherwise cluster together in the PPI final scores. It is a medium-impact indicator.

- **Influence of corruption**²³

Corruption can interfere significantly in the implementation of financial controls and their implementation. Companies engaged in exporting may ignore any legal export or financial requirements if they believe there is little likelihood of being investigated or prosecuted. Corruption would likely inhibit strong financial controls and enforcement. For this sub-criterion, the 2022 Global Corruption Index is used as a measure for corruption in 196 countries. This index was selected from a variety of corruption measures and indices, mainly because this index lists the most countries among the alternatives to the popular Corruption Perceptions Index, which is used in the *Enforcement* super criterion. The points in this sub-criterion were deducted in an inversely proportional way to their relative rank, where rank 1 got 0 points deducted. If the country or entity did not appear on the index, it was not deducted any points. This sub-criterion has a medium impact.

- **Country is on a monitored jurisdiction list (FATF or EU)**²⁴

The 2023 PPI deducted points from states that appeared on the following lists: the FATF “Jurisdictions under Increased Monitoring (2023),” the FATF “High-Risk and Other Monitored Jurisdictions (2022),” and the European Union “High-Risk Third Countries.” Appearing on any of these lists indicates that a state is deficient in its capabilities to prevent financial crime and therefore at risk for illicit actors and other groups to utilize for proliferation financing purposes, requiring extra vigilance by international authorities and competent organizations.

“EXTRA CREDIT” OPPORTUNITIES

For the 126 countries that were evaluated according to post-2012 FATF standards, the PPI offered three “extra credit opportunities,” which allowed for the addition (or in a few cases the subtraction) of points. Information on those countries is included in the PPI scoring because the 2012 standards are of higher relevance than the previous sets of recommendations. For the first time, a recommendation specifically addresses a country’s ability to implement targeted financial sanctions related to proliferation as laid out under relevant UN Security Council resolutions. Because of the direct relevance and importance of these post-2012 evaluations,

the PPI adjusted its methodology to include the data in a way that did not punish the other 74 countries. Therefore, the above-mentioned 126 countries were able to obtain extra points (or suffer subtractions) on top of the 135 total possible unweighted or 400 total possible weighted points.

EXTRA CREDIT INDICATORS:

- **Compliant or largely compliant with FATF Recommendation 7 (2012)²⁵**

FATF Recommendation 7 (2012) refers to implementation of targeted financial sanctions related to proliferation. It states, “Countries should implement targeted financial sanctions to comply with United Nations Security Council resolutions relating to the prevention, suppression and disruption of proliferation of weapons of mass destruction and its financing. These resolutions require countries to freeze without delay the funds or other assets of, and to ensure that no funds and other assets are made available, directly or indirectly, to or for the benefit of, any person or entity designated by, or under the authority of, the United Nations Security Council under Chapter VII of the Charter of the United Nations.” A largely compliant (LC) or compliant (C) score for Recommendation 7 would allow a country to receive five (LC) or ten (C) additional points, respectively. Non-compliant countries had ten points deducted.

- **FATF Immediate Outcome (IO) 11: Proliferation financial sanctions²⁶**

Immediate Outcome 11 states, “Persons and entities involved in the proliferation of weapons of mass destruction are prevented from raising, moving and using funds, consistent with the relevant UNSCRs.” As such, IO 11 also refers to implementation of targeted financial sanctions related to proliferation. IO 11 is measured in terms of a low, moderate, substantial, or high level of effectiveness, where a country only received points for “substantial” or “high.” Examples of outcomes evaluated by the FATF are concrete actions that have been taken, including investigations and prosecutions relating to sanctions. A substantial or high rating for IO 11 allows a country to gain five or ten points, respectively. Five points were deducted if a country achieved a rating of “low” effectiveness. Of note, in all currently available mutual evaluation reports including IO 11, as was

already the case in the 2021 PPI, only two countries have received a “high” rating.

- **Effectiveness of National Coordination: FATF Immediate Outcome 1 (IO 1)**²⁷

FATF Immediate Outcome 1 requires, “[...] where appropriate, actions [are] coordinated domestically to combat money laundering and the financing of terrorism and proliferation.” The creation or involvement of relevant authorities, assessment of necessary policies, implementation of said policies, and cooperation between any and all relevant authorities are necessary to combat those three types of financial crime. IO 1 is measured in terms of low, moderate, substantial, or high effectiveness. This sub-criterion is extra credit as well as a penalty. Five points were given if a country achieved “substantial” and 10 points for “high” effectiveness, but five points were deducted if a country achieved “low” effectiveness. Of note, in all currently available mutual evaluation reports including IO 1, as was already the case in the 2021 PPI, only one country has received a “high” rating.

EXPERT JUDGMENT

One final modification to the super criterion score resulted from extensive expert discussions. The PPI considered the fact that there may be missing data relevant to the sub-criteria and experts often have the best, first-hand information about a country performing significantly better or worse than scored. In some cases, experts judged that a country had received too many or too few points based on specific knowledge and information about that country. Thirteen countries were affected by this evaluation.

IMPACT AND FLOW CHART OF SUB-CRITERIA

The PPI assigned a low to high impact for weighting each of the positive and negative sub-criteria. **Table 5.1** shows how each indicator was weighted in the evaluation and how much of an impact it therefore had on a country’s score and rank within the super criteria. The steps of the process are indicated in the flow chart where negative indicators take away

points, extra credit takes away or adds points, and expert judgment is factored in.

SCORING

The *Ability to Prevent Proliferation Financing* super criterion incorporates 13 positive sub-criteria, five negative sub-criteria, three extra credit opportunities, and finally expert judgment, where countries could receive or lose additional points. The positive and negative sub-criteria are evaluated in terms of low, medium, or high impact. Of the 13 positive sub-criteria, one is considered low-impact, ten are medium-impact, and two are high-impact. They are worth five, 10, and 15 points, respectively. Of the five negative sub-criteria, four are medium-impact and one is high-impact. Absent extra credit and expert knowledge points, a country could receive a total of 135 unweighted points under this super criterion. This raw score is used later to arrive at a total, weighted score and rank for each country. It is also used to derive a ranking for the country under the three tiers.

The pie chart below (Figure 5.1) shows the fraction of countries that have scores exceeding fifty percent of the total, between fifty percent and twenty-five percent of the total, less than twenty-five percent down to a score of 0, and below a score of 0. Fifty countries achieved more than half of the available points, while twenty-two countries received negative scores.

OBSERVATIONS

During the initial vetting process for the proliferation financing sub-criteria, the PPI noted that, for an accurate ranking, it cannot rely only on data extracted from FATF mutual evaluation reports. The PPI found that the way compliance judgments are made is not standardized throughout the regional FATF bodies. While some FATF bodies appear very strict and require that all deficiencies are removed before awarding a country with the two highest levels of compliance (largely compliant and compliant), other evaluating bodies seem to be more generous in assigning compliance levels. For example, the PPI found that the European regional FATF body tended to be harsher in its assessments. The CFATF, or Caribbean

regional body, and GAFILAT, or Latin American regional body, seemed more generous in their assessments.²⁸

Additionally, compliance judgments published in follow-up FATF reports, for example, are derived based on a less rigorous evaluation process than the full reports. In follow-up reports, self-reporting plays a much greater role.²⁹

Through PPI research and consulting with experts, an overriding conclusion is that a majority of countries face challenges in effectively preventing proliferation financing, including countries that are otherwise widely considered to have some of the best export control systems. Several of the usual “white knights” perform poorly due to having excessive bank secrecy, providing tax havens, lack of beneficial ownership registries, and being places where front companies find it easier to finance nefarious activities. Other countries simply lack regulations and effective institutions.

2023 PPI Countries' Score Distribution in Super Criterion Ability to Prevent Proliferation Financing

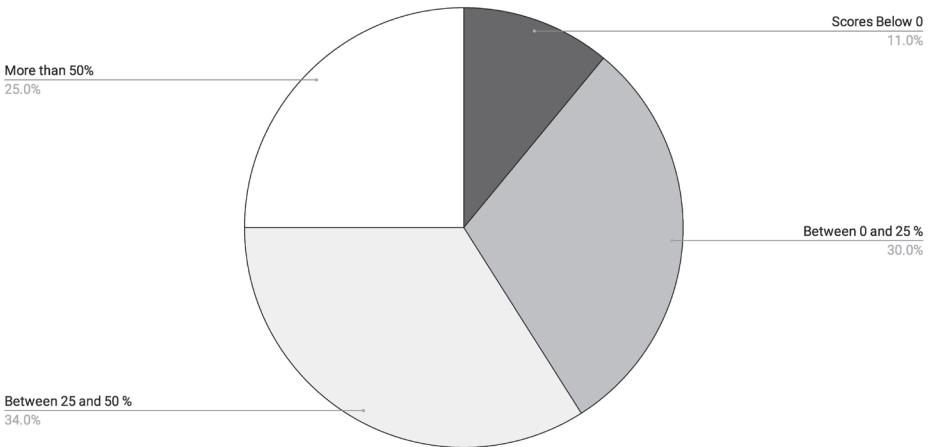


Figure 5.1. The pie chart shows the score distribution of countries in their Ability to Prevent Proliferation Financing. Over 40 percent of the countries score less than 25 percent of the available points.

SUPER CRITERION ABILITY TO PREVENT PROLIFERATION FINANCING

High Impact (3)	Medium Impact (14)	Low Impact (1)
Positive Indicators (13)		
FATF R: National Coordination	FATF R: Customer Due Diligence	FATF R: Law Enforcement Responsibilities
FATF R: International Cooperation	FATF R: Correspondent Banking	
	FATF R: Regulation and Supervision	
	Low Trade-Related Illicit Financial Flows Identified	
	FATF Compliance Score	
	FATF/Regional Body Member	
	Member of Egmont Group	
	Public Registry of Company Beneficial Ownership	
	FIU Website or Annual Report Mentions Proliferation	
	FATF MER References 1540 Resolution	
Negative Indicators (5)		
Denied Parties by the U.S. and EU	2020 State Department List of Countries Posing Money Laundering and Financial Crime Concerns	
	Influence of Corruption	
	Significant Trade-Related Illicit Financial Flows	
	Country is on Monitored Jurisdiction List (FATF or EU)	
Extra Credit		
FATF Recommendation 7 (2012)		
FATF Immediate Outcome 1		
FATF Immediate Outcome (IO) 11		
Expert Judgement		

Table 5.1. The assigned impacts for all sub-criteria for Super Criterion *Ability to Prevent Proliferation Financing*.

NOTES

1. FATF Recommendations 2 and 7. A proliferation financing component was added to Recommendation 1 in October 2020. Recommendation 1 requires countries to “identify, assess, and understand the proliferation financing risks for the country,” but makes clear that this requirement only refers to proliferation financing as defined under Recommendation 7, namely the implementation of UNSC targeted financial sanctions related to WMD. A comprehensive Guidance on Proliferation Financing Risk Assessment and Mitigation was published in June 2021 and can be found here: <https://www.fatf-gafi.org/content/dam/fatf-gafi/guidance/Guidance-Proliferation-Financing-Risk-Assessment-Mitigation.pdf.coredownload.pdf>. The PPI will monitor the implementation of Recommendation 1 and associated public risk assessments and will evaluate if this is a significant development and possible future criterion, or if the narrow focus on financial sanctions prevents the risk assessments from contributing notably to improvements of counterproliferation financing efforts overall.
2. These 126 countries are: Albania, Andorra, Antigua and Barbuda, Armenia, Australia, Austria, Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Benin, Bhutan, Botswana, Bulgaria, Burkina Faso, Cambodia, Cameroon, Canada, Cape Verde, Chile, China, Colombia, Congo (Dem Rep of the), Cook Islands, Costa Rica, Croatia, Cuba, Cyprus, Czech Republic, Denmark, Dominican Republic, Egypt, Ethiopia, Fiji, Finland, France, Georgia, Ghana, Greece, Grenada, Guatemala, Guinea-Bissau, Haiti, Holy See, Honduras, Hong Kong, Hungary, Iceland, Indonesia, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kyrgyzstan, Latvia, Liechtenstein, Lithuania, Madagascar, Malawi, Malaysia, Mali, Malta, Mauritania, Mauritius, Mexico, Moldova (Rep of the), Mongolia, Morocco, Mozambique, Myanmar, New Zealand, Nicaragua, Niger, Nigeria, Norway, Pakistan, Palau, Panama, Peru, Philippines, Poland, Portugal, Republic of Korea, Russian Federation, Saint Kitts and Nevis, Saint Lucia, Samoa, San Marino, Saudi Arabia, Senegal, Serbia, Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, Solomon Islands, South Africa, Spain, Sri Lanka, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania (United Republic of), Thailand, Tonga, Trinidad and Tobago, Tunisia, Turkey, Uganda, Ukraine, United Arab Emirates, United Kingdom of Great Britain and Northern Ireland, United States of America, Uruguay, Uzbekistan, Vanuatu, Vietnam, Zambia, Zimbabwe.
3. For the full text of recommendations see: FATF, *International Standards on Combating Money Laundering and the Financing of Terrorism and Proliferation - The FATF Recommendations*, Paris, France, published February 2012, updated February 2023, <https://www.fatf-gafi.org/en/publications/Fatfrecommendations/Fatfrecommendations.html>.
4. This formulation reflects the fact that Recommendation 2 in 2012 standards is the equivalent of Recommendation 31 in 2003 standards.
5. “Consolidate Assessment Ratings, 4th Round Ratings, FATF Recommendations 2012: R.2.,” Financial Action Task Force, 2012, <https://www.fatf-gafi.org/publications/mutualevaluations/documents/assessment-ratings.html>.

6. “Consolidate Assessment Ratings, 4th Round Ratings, FATF Recommendations 2012: R.40.” Financial Action Task Force, 2012, <https://www.fatf-gafi.org/publications/mutualevaluations/documents/assessment-ratings.html>.
7. “Consolidate Assessment Ratings, 4th Round Ratings, FATF Recommendations 2012: R.10.” Financial Action Task Force, 2012, <https://www.fatf-gafi.org/publications/mutualevaluations/documents/assessment-ratings.html>.
8. “Consolidate Assessment Ratings, 4th Round Ratings, FATF Recommendations 2012: R.13.” Financial Action Task Force, 2012, <https://www.fatf-gafi.org/publications/mutualevaluations/documents/assessment-ratings.html>.
9. “Consolidate Assessment Ratings, 4th Round Ratings, FATF Recommendations 2012: R.26.” Financial Action Task Force, 2012, <https://www.fatf-gafi.org/publications/mutualevaluations/documents/assessment-ratings.html>.
10. “Consolidate Assessment Ratings, 4th Round Ratings, FATF Recommendations 2012: R.30.” Financial Action Task Force, 2012, <https://www.fatf-gafi.org/publications/mutualevaluations/documents/assessment-ratings.html>.
11. “Trade Related Illicit Financial Flows in 135 Developing Countries: 2009-2018,” Global Financial Integrity, 2021, <https://gfiintegrity.org/report/trade-related-illicit-financial-flows-in-134-developing-countries-2009-2018/>.
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13. “Financial Secrecy Index 2022: Secrecy Indicator 17: Anti-Money Laundering,” Tax Justice Network, 2022, <https://fsi.taxjustice.net/country-detail/#country=US&period=22>.
14. “Financial Secrecy Index 2022 Methodology: Section 3.17.1: What is measured?”
15. Individual internet research. The following sources were helpful: “Anti-corruption pledge tracker 2022,” Transparency International UK, 2022, <https://www anticorruptionpledgetracker.com/>; “Financial Secrecy Index Database: Country Profiles,” Tax Justice Network, 2022, <https://fsi.taxjustice.net/>; “Ultimate Beneficial Ownership,” *ACAMS Today*, 2017, <https://www.acamstoday.org/ultimate-beneficial-ownership/>; “Disclosure of Beneficial Ownership in Selected Countries,” Library of Congress, 2017, <https://www.loc.gov/law/help/beneficial-ownership/disclosure-beneficial-ownership.pdf>; “Commitments on Beneficial Ownership Transparency at Anti-Corruption Summit,” *Wilton Park UK*, 2016, <https://www.wiltonpark.org.uk/wp-content/uploads/WP1502-Comments-on-beneficial-ownership-transparency-and-open-contracting-and-public-procurement-at-Anti-Corruption-Summit.pdf>; “The Open Ownership map: Worldwide commitments and action,” *Open Ownership*, <https://www.openownership.org/en/map/>.
16. “Members by Region,” Egmont Group, 2022, <https://egmontgroup.org/members-by-region/>.

17. Individual research conducted by Institute staff on countries' FIU websites. "Members by Region," Egmont Group, 2022, <https://egmontgroup.org/members-by-region/>.
18. Individual research and analysis of Mutual Evaluation Reports (MER).; "Mutual Evaluations," Financial Action Task Force, 2022, [http://www.fatf-gafi.org/publications/mutualevaluations/?hf=10&b=0&s=desc\(fatf_releasedate\)](http://www.fatf-gafi.org/publications/mutualevaluations/?hf=10&b=0&s=desc(fatf_releasedate)).
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26. "Mutual Evaluations," Financial Action Task Force, 2022, [http://www.fatf-gafi.org/publications/mutualevaluations/?hf=10&b=0&s=desc\(fatf_releasedate\)](http://www.fatf-gafi.org/publications/mutualevaluations/?hf=10&b=0&s=desc(fatf_releasedate)).

27. “Mutual Evaluations,” Financial Action Task Force, 2022,

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28. For more details and an interpretable graph, see: David Albright, Sarah Burkhard, Allison Lach, and Andrea Stricker, *The Peddling Peril Index for 2017* (Washington, D.C.: Institute for Science and International Security, 2018), pp. 48-49.

29. See Organisation for Economic Co-operation and Development, Annex 2. A1, “A Note on FATF Data,” *Illicit Financial Flows from Developing Countries: Measuring OECD Responses*, 2014, https://www.oecd.org/corruption/Illicit_Financial_Flows_from_Developing_Countries.pdf.

CHAPTER 6

SUPER CRITERION ADEQUACY OF ENFORCEMENT

Super Criterion Adequacy of Enforcement assesses the adequacy of a state's enforcement activities or efforts against strategic commodity trafficking. It assesses a range of 28 sub-criteria, including the national legal basis to act to penalize strategic commodity trafficking. The *Enforcement* super criterion also assesses participation or lack thereof in applicable treaties, cooperation with countries that are strong on enforcement, and participation in foreign trainings and outreach. It factors in issues that could inhibit enforcement. Of the 23 positive sub-criteria, eight are considered low-impact, ten are medium-impact, and five are high-impact. They are worth five, 10, and 15 points, respectively. In five negative sub-criteria, points are subtracted from countries. For example, point deductions were made if a country was involved in violations of international sanctions on North Korea, as documented by the UN Panel of Experts on North Korea, and analyzed by the Institute. Further, if there is prevalence of government-sanctioned undermining of strategic trade controls and regime guidelines, points were subtracted, as well as for countries where enforcement is assessed to be affected by loss of government control due to militia groups and widespread organized crime. A country could receive up to 215 points under this super criterion. This raw score is used later to arrive at a total, weighted score of 400 possible points and a rank for each country. It is also used to derive a ranking for the country under the three tiers.

SUB-CRITERIA

- **Existence of legal basis or entity ensuring enforcement of the laws on transit of nuclear weapons and related materials¹**

Data for this sub-criterion come from matrices developed by the oversight committee of UN Security Council Resolution 1540. The Committee provides information on the status of a country's implementation of this sub-criterion. Specifically, relevant data are from individual 1540 country matrices, namely Table OP 3 (c) and (d).² Just over half of all countries have reported to the Committee on this matter. Roughly 119 countries' reported enforcement mechanisms have been confirmed by the Committee.³ This sub-criterion is judged as high-impact.

- **Existence of legal basis or entity ensuring transshipment law enforcement**

As above, these data are from the 1540 status of implementation matrix, namely Table OP 3 (c) and (d).⁴ About 17 fewer countries have reported to the Committee in this sub-criterion than the preceding one, despite many countries referencing the same piece of legislation in both sub-criteria. Roughly half of all countries have reported some data to the Committee for this sub-criterion, and of those, 88 countries' reported enforcement mechanisms have been confirmed by the Committee. In some cases, PPI research revealed that other countries met this sub-criterion but had not reported that fact to the Committee. This sub-criterion is judged as high-impact.

- **Participant in international legal assistance mechanisms**

Countries that take advantage of existing international legal assistance mechanisms were awarded points. This is a high-impact indicator, as certain international assistance agreements are considered especially effective by the PPI.

The international legal assistance mechanisms considered are:

1. Customs Mutual Assistance Agreements, a bilateral agreement with the United States;⁵
2. Nairobi Convention, a WCO legally binding convention on customs assistance;⁶

3. Program of Measures, EU countries only. The full name of the program is Programme of Measures to Implement the Principle of Mutual Recognition of Decisions in Criminal Matters. It supports judicial cooperation within the European Union, facilitating investigations and prosecutions;⁷
4. Inter-American Convention on Mutual Assistance in Criminal Matters. States agree to “render to one another mutual assistance in investigations, prosecutions, and proceedings that pertain to crimes;”⁸
5. ASEAN Treaty on Mutual Assistance in Criminal Matters, which is similar to the Inter-American Convention above;⁹ and
6. Mutual Legal Assistance (MLA) agreements with the United Kingdom.¹⁰

- **Ability to conduct investigations**

The World Justice Project scores countries’ ability to conduct investigations, a critical process for successful enforcement of national and international law. The results are part of the annual publication of the Rule of Law Index for 2022. The score is extracted from each country’s profile and can be found under Criminal Justice, indicator 8.1, “Effective investigations.”¹¹ It is considered a high-impact sub-criterion.

- **Has own sanctions list¹²**

This sub-criterion refers to a country having established its own nationally binding list of sanctioned persons, entities, and groups that are denied exports. EU countries without their own national list received half points for establishing the EU denied parties list, since it is difficult to determine which countries contribute most to administering and maintaining that list. Countries that enshrined the UN sanctions list into their national legislation received half points. This is a medium impact sub-criterion.

- **Party to the Arms Trade Treaty and brokering controls¹³**

Countries with an implementation record of Brokering Controls as required under the Arms Trade Treaty receive a full 10 points. Countries that ratified the ATT but have no public implementation record of brokering controls received half points. Countries that do not have the ATT ratified but have dual-use brokering controls as part of their STC law also receive full points. Countries with brokering controls for small arms

and light weapons (SALW) receive half points. This is a medium impact sub-criterion.

- **Participates in foreign training and outreach on improving trade control efforts¹⁴**

Combating illicit trade is an international effort. Many countries that have been identified as lacking sufficient trade controls reach out to the international community for training and assistance with the goal of improving their practices. Different forms of training and outreach exist. Trainings range from hour-long online courses to week-long onsite drills and exercises. Since there is not necessarily a direct correlation of the amount of training received with enforcement effectiveness, points were only awarded for participation in specific sets of training programs. Both recipient countries and assistance-providing countries receive points. The EXBS and EU P2P programs are judged as the most relevant and most selective and participant countries received full points. Countries participating in two other trainings received two-third points, and countries participating in one other training received one-third points. The point assignment for this sub-criterion was increased for the 2023 PPI. This sub-criterion now has a high impact in scoring.

- **Lack of influence of corruption**

Corruption can interfere significantly in the implementation of trade controls and their enforcement. Companies engaged in exporting may think they can simply ignore any legal export requirements if they believe there is little likelihood of being investigated or prosecuted. Corruption would likely inhibit strong enforcement, just as it does in countering the financing of proliferation, which is why a measure of corruption is also used in Super Criterion *Ability to Prevent Proliferation Financing*. This sub-criterion uses the 2022 Corruption Perceptions Index, or CPI, by Transparency International.¹⁵ This index was selected from a variety of corruption measures and indices, mainly because this index lists the most countries and is widely respected. The PPI used the rank of a country in the CPI to assign points, rather than the score derived by Transparency International. The points in this sub-criterion were assigned in an inversely proportional way to their relative rank. If the country or entity did not appear on the CPI, it was not assigned points. This sub-criterion has a medium impact.

- **Member of Interpol¹⁶**

Cross-border investigations are crucial to preventing, detecting, and dismantling commodity trafficking and activities of their procurement networks. Interpol aims to “facilitate international police cooperation even where diplomatic relations do not exist between particular countries.” As such, being a member of Interpol is an indicator of a willingness and openness to prevent transnational crime such as import and export violations. As of the summer of 2023, 193 PPI entities had Interpol membership. It is a medium-impact sub-criterion.

- **Legal authority in place to conduct undercover investigations¹⁷**

The legal authority to conduct undercover operations to detect, arrest, and prosecute those involved in illicit exports or to stop trade control violations is important to enforcement efforts. The PPI assessed whether undercover police operations pertaining to money-laundering (ML), terrorist-financing (TF), trade violations, or corruption have a legal basis in a country. The 2019 PPI assessed countries on the basis that relevant laws provided legal authority explicitly to export control violations; however, the number of countries where relevant legislation was identified was small, and the 2023 PPI includes legal authority to investigate ML, TF, corruption, and trade violations (including narcotics and cross-border operations). This is a medium-impact indicator.

- **Lack of parties on select United States and European Union screening lists¹⁸**

Many countries have individuals or companies listed on one of the following screening and sanctions lists: U.S. Commerce Department Bureau of Industry and Security (BIS) Entity List, State Department Bureau of International Security and Nonproliferation (ISN) Nonproliferation Sanctions list, or the EU Restrictive Measures list. A country was awarded points under this sub-criterion if it does not appear on any of the three lists. When assigning points for this criterion, the number of entities was not taken into consideration, and points were only awarded if a country does not have a single entity on any of those sanctions or screening lists. Most countries have either no sanctioned or flagged entities, or they have many. For example, Iran has 38 active entities on the ISN Nonproliferation Sanctions list alone, followed by China with 16 (4 additional for Hong Kong), and

Russia with seven. The BIS Entity List was selected, rather than the BIS Denied Persons List, because the former has entities sorted by country instead of by name. This sub-criterion is measured as medium-impact.

- **National law requires or incentivizes Internal Compliance Programs (ICPs) for companies¹⁹**

An ICP is a set of procedures that companies use to help ensure their adherence to national export control laws. Establishing and maintaining an ICP requires company resources, but it is incentivized by many governments with the promise of privileges, such as fast-tracked approval for global export authorization, and bulk licensing. Few countries require ICPs, but many incentivize it. This is a medium-impact sub-criterion.

- **Dual-use export control list is readily accessible²⁰**

This sub-criterion was only applied to countries known to have a dual-use export control list, i.e., PPI countries that fall under the dark green category for export control legislation. A control list that is available online is useful in readily determining what, if any, license is required to export a good. It also helps governments to hold suppliers accountable since licensing requirements are easily accessible. The link to the control list should be easily found on at least one government website, not only on a third-party website, such as a consulting group. Full points were awarded if a PPI staff member was able to find the control list in roughly ten minutes or less. This sub-criterion is judged as medium-impact.

- **Contracting party to the Revised Kyoto Convention and acceptance of customs controls in Free Trade Zones (FTZs)²¹**

Chapter 2 of Specific Annex D to the Revised Kyoto Convention addresses FTZs and calls for streamlined controls. Specifically, recommendation 4 states that “customs shall have the right to carry out checks at any time on the goods stored in a free zone.”²² Of the 132 contracting countries, only 27 have accepted Annex D2, Recommendation 4. Full points were assigned if a country is a contracting party to the convention and accepts Specific Annex D, Chapter 2, Recommendation 4. Half points were assigned if a country is only a contracting party. This is a medium-impact sub-criterion.

- **Has Border Guard Agency²³**

Formerly titled, “Has border seizure authority,” the Institute assigned full five points to states that have an identifiable designated border guard agency for a green/land border. Countries without a green/land border were able to receive points for a coast guard which is tasked with border security. A border guard agency is charged with enforcing the security of a country’s border. Ideally it is part of a broader border management strategy with the aim of securing areas that are not official points of entry, with one goal being preventing illicit trade. In the 2023 PPI, countries with an identifiable border guard agency, with or without broader strategy, received the full points, which is why this is a low impact sub-criterion.

- **Enacts criminal penalties for illegal transportation of nuclear weapons by non-state actors²⁴**

These data are from the 1540 status of implementation matrices for individual countries, in this case from Table OP 2. The PPI awarded points for having in place legislation enacting criminal penalties, because making the transport of a readily deployable nuclear weapon a crime is part of the bare minimum that any country can do to prevent the proliferation of nuclear weapons. A total of 135 countries or entities were individually confirmed by the PPI to have this legislation. It is assigned a low impact.

- **Enacts criminal penalties for illegal transfer of nuclear weapons by non-state actors²⁵**

These data are from the 1540 status of implementation matrices for individual countries, and as above, from Table OP 2. The PPI awarded points for having legislation in place enacting criminal penalties, because making the transfer of a readily deployable nuclear weapon a crime is also part of a minimum that any country can do to prevent the proliferation of nuclear weapons. A total of 152 countries or entities were confirmed to have this legislation. It is assigned a low impact.

- **Has an extradition treaty with the United States or United Kingdom²⁶**

Extradition treaties with the United States and United Kingdom, both strong trade control enforcement states, are a good indicator of willingness to subject citizens to and participate in the rule of law. The signatory

country must surrender U.S. or UK nationals, in this case, for trade control violations, and the United States or the United Kingdom can ask for the extradition of foreign nationals who are suspected of violating or have violated trade control laws, to be investigated and prosecuted. This serves not only as a deterrent to foreign nationals who would violate U.S. and UK trade control laws, but also as a deterrent for proliferators against setting up illegal procurement channels in the signatory country. Many countries, especially developing countries, have signed and ratified U.S. or UK extradition treaties. Countries that have ratified the European Convention on Extradition also received full points. Importantly, in all extradition cases there must be “dual criminality” for the treaty to be honored; the violation for which a person can be extradited must also be a violation in the signatory country. Some countries, such as Georgia, have not signed a U.S. extradition treaty but are known to extradite upon request. As more countries with extradition treaties adopt strategic trade control laws, this criterion may gain importance. This is a low-impact criterion.

- **Utilizes voluntary tax disclosure procedures, as an indicator of voluntary WMD/dual-use proliferation disclosure procedures²⁷**

The PPI ideally sought to identify whether each country has a procedure for companies to voluntarily disclose to the government that an inadvertent or deliberate export of controlled or sensitive strategic goods occurred in violation of the laws or regulations.²⁸ However, no such information could be systematically found. As a result, another indicator, voluntary tax disclosure procedures, or self-disclosures of issues with tax filings, was identified as indirectly measuring the potential use or existence of voluntary disclosures for commodities. The assumption is that a country employing tax disclosure procedures increases the likelihood of there being a self-disclosure procedure involving commodities. Because of the assumption in deriving points in this sub-criterion, it is assigned a low impact.

- **Member of the Harmonized System (HS)²⁹**

The harmonized system is a multipurpose international product nomenclature developed by the World Customs Organization. The system is used by participants as a tool for international trade and customs. Use of the system is an indirect measure for interagency cooperation and coordination. However, the HS product classification codes are very broad,

and they need further development, especially with respect to strategic commodities. Therefore, it is a low-impact sub-criterion.

- **Existence of national regulatory authority to account for nuclear weapons/related material production³⁰**

A national regulatory authority accounts for, secures, and protects nuclear weapons and related materials.³¹ About two-thirds of all countries have legislation in place that requires such an authority. This information is taken from the 2020 round of Committee-approved Resolution 1540 matrices. It is a low-impact sub-criterion.

- **Nuclear industry association with nonproliferation role³²**

This indicator assesses whether an industry association exists specifically for suppliers of nuclear-related goods and technologies in the country and whether it assumes an active nonproliferation role. The PPI assigned full points for nuclear industry associations that take an active role to prevent proliferation, as indicated on their website or through hosted events. Many of the associations serve as platforms for workshops, awareness building, and information exchange, including the promotion of nonproliferation measures. For example, FORATOM is an umbrella nuclear association for European countries, with a membership of fifteen national nuclear associations. FORATOM lists nonproliferation as one of the key topics it deals with (among others, such as energy supply and nuclear safety)³³ and as such, FORATOM members received full points. Countries that are members of the International Framework for Nuclear Energy Cooperation (IFNEC) also received full points. The IFNEC is an important international organization that works to build cooperation among participating states to ensure the peaceful use of nuclear energy and related technology. As with other criteria, the PPI is willing to assign points to other countries that come forward and show that they have a nuclear industry association that takes an active role in nonproliferation. This is a medium-impact indicator.

- **Positive record of submitting sanctions implementation reports on North Korea³⁴**

UN Security Council Resolution 1718 (2006) is a key resolution in a series of resolutions imposing sanctions on the DPRK. The sanctions prohibit UN member states from engaging in direct or indirect supply,

sale, or transfer of certain goods to the DPRK, including “items, materials, equipment, goods and technology [...] which could contribute to DPRK’s nuclear-related, ballistic missile-related or other weapons of mass destruction-related programmes.”³⁵ The 2023 PPI only assigns full points for consistent submission of the required reports. The PPI evaluated the records for states submitting reports for the following United Nations Security Council Resolutions: 2397 (2017), paragraph 8, midterm and final report; 2397 (2017), paragraph 17; 2375 (2017), paragraph 19; 2371 (2017), paragraph 18. These reports represent the five most recent UNSC resolutions. The consistent submission of implementation reports is important as it is a representation of the commitment made by states to enforce international sanctions on the DPRK. Points are assigned proportionally to the number of reports submitted, meaning if a country submitted five of the evaluated resolution reports, that country received the full five points. This is a low-impact sub-criterion.

NEGATIVE INDICATORS

- **Government unwillingness or inability to enforce trade controls**

Points were deducted for 41 countries based on the following: A government’s complicity in violating strategic trade control laws and regulations; multiple, significant illicit exports ignored by the state and no sign of improvement; significant loss of control over territory due to organized crime or (para)military organizations and activity; or loss of ability to govern due to prevalence of terrorism or civil war. A wide variety of additional sources were consulted, including the Global Terrorism Index for 2023, the Fragile State Index for 2023, UN reporting, such as the UNODC World Drug Report, reporting on UN arms and missile embargo violations (excluding North Korea related violations), government reporting or listing of countries of significant end-use or transshipment concern, and media reporting of mercenary strongholds in a country. A minimum of two independent sources indicating a systemic problem in a country’s ability or willingness to control strategic trade was needed for any deduction to take place. Deductions were assigned proportionally to the severity of the problem and relevance to strategic trade. The average deduction was 33 points, with a median of 25 points.

- **Percentage of firms expected to submit bribes to obtain an import license³⁶**

Providing a bribe to acquire an import license is associated with the activities of front or shell companies in illicitly importing controlled goods. This indicator, based on World Bank data, measures the percentage of total firms estimated to provide “gifts” to import goods, pointing to systemic corruption within a country and specifically among trade control officials. In some countries, 20 percent or more of firms are expected to provide official bribes to obtain an import license. In 50 PPI entities, more than 10 percent of firms are expected to provide gifts or bribes for imports. These entities lose five points. This is a low-impact, negative sub-criterion.

- **North Korea-related UNSC sanctions violations³⁷**

For this sub-criterion, the 2023 PPI drew on the Institute’s annual analyses of UNSC Panel of Experts reports on DPRK sanctions violations, and deducted points from states that were involved in documented violations.³⁸ As a basis, if a country was involved in one or two violations in the 2022 annual report, five points were deducted. If a country was involved in three to six violations, 10 points were deducted, for more than six, 15 points, and for more than 15 violations, 20 points were deducted. If a country was involved in a military-related DPRK sanctions violation, an *additional* 10 points were deducted. Countries identified by the Institute as repeat violators had an *additional* five points subtracted, where a country identified as repeat military-offender had additional ten points subtracted instead. Twelve countries were allegedly involved in military-related cooperation with the DPRK, including the training and procurement of military related supplies, and aiding the DPRK in establishing supply chains for ballistic missile development: China, Congo (Republic of the), Ethiopia, Fiji, Mozambique, Myanmar, Niger, Nigeria, Philippines, Russian Federation, Syria, and Tanzania. The maximum points subtracted for a country was 35 points for China; it was involved in more than 15 violations documented (-20), was identified as a repeat offender (additional -5) and was identified as involved in military-related violations (additional -10).

- **Country has Conducted Hostage for Prisoner Swaps with Iran³⁹**

The PPI deducts points from countries that have conducted one or more hostage for prisoner swaps with Iran in the timespan covered by the PPI,

where Iran has seized individuals arbitrarily as hostages and holds them to be swapped in return for Iranian agents or nationals investigated, indicted, and/or sentenced for violating national export control laws or sanctions. The release of the duly convicted individuals not only disrupts the pursuit of justice, but also incentivizes Iran to seize additional foreign nationals as bargaining chips. No countries have engaged in such swaps during the timespan covered by the 2023/2024 PPI.

• Expert Judgment

In the 2019 PPI, based on expert judgment, about two dozen countries that had been sanctioned by the United States and European Union had points subtracted on a one-time basis. These subtractions did not change in the 2023 PPI and affected countries the most with known strategic trade control issues, such as Belarus, China, Hong Kong, and Russia. They also affected a range of countries in Tier Two and a few countries in Tier Three. In about half of the cases, subtractions were relatively small (less than 10 points in the final PPI score, which is out of 1,300 points).

IMPACT OF SUB-CRITERIA

The PPI assigned a high to low impact for weighting each of the sub-criteria. **Table 6.1** shows how each indicator was weighted in the evaluation and how much of an impact it therefore had on a country's score within the super criterion.

SCORING

Of the 23 positive sub-criteria, eight are considered low-impact, ten are medium-impact, and five are high-impact. They are worth five, 10, and 15 points, respectively. There are five additional, negative indicators, including expert judgment where points were subtracted on a one-time basis in 2019. A country could receive up to 215 points under this super criterion. This raw score is used later to arrive at a total, weighted out of 400 possible points score and a rank for each country. It is also used to derive a ranking for the country under the three tiers.ment was made for the 2023 PPI.

SUPER CRITERION ADEQUACY OF ENFORCEMENT

High Impact (6)	Medium Impact (11)	Low Impact (9)
Positive Indicators (23)		
Transit Enforcement	Country Has a National Sanctions List*	Extradition Agreement with US or UK
Transshipment Enforcement	Brokering Controls for WMD and Conventional Weapons*	Voluntary Tax Disclosure Procedures
Ability to Conduct Investigations	Lack of Denied Parties by the U.S. and EU	Criminal Penalties-NW transport
International legal Assistance Mechanisms	Lack of Corruption Influence	Criminal Penalties-NW transfer
Training/Outreach Participant*	Interpol Member	Identifiable Border Guard Agency
	Undercover Investigations	Member of the Harmonized System
	Existence of Nuclear Industry Association and International Framework for Nuclear Energy Cooperation member	National Regulatory Authority for NW
	Incentivizes Internal Compliance Programs	Positive Record of Submitting Sanctions Implementation Reports on North Korea
	Control List Readily Available	
	Contracting Party to the Revised Kyoto Convention	
Negative Indicators (3)		
North Korea-Related UNSC Sanctions Violations	Prisoner Swaps with Iran	Percentage of Firms Expected to Submit Bribes to Obtain an Import License
Negative Indicator: Government Unwillingness or Inability to Enforce Trade Controls		
Negative Indicator: Expert Judgement		

Table 6.1. The impact of each sub-criterion under Super Criterion *Adequacy of Enforcement*. An asterisk indicates that a change in source data or point assignment took place.

NOTES

1. The UN 1540 Committee defines “related materials” in the matrices as: “materials, equipment and technology covered by relevant multilateral treaties and arrangements, or included on national control lists, which could be used for the design, development, production or use of nuclear, chemical and biological weapons and their means of delivery.”
2. “Committee Approved Matrices Row 12 of Tables OP 3 (c) and (d),” *United Nations Security Council Committee established pursuant to resolution 1540* (2004), <https://www.un.org/en/sc/1540/national-implementation/1540-matrices/committee-approved-matrices.shtml>. For example, see the 1540 Committee Matrix of Afghanistan, row 12, <http://www.un.org/en/sc/1540/documents/Afghanistan%20revised%20matrix.pdf>. In row 12 of a specific country’s matrix, a “X” in the “Enforcement: civil/criminal penalties, and measures of implementation, etc” cell relating to NW (nuclear weapons) was taken as confirmation that sufficient enforcement mechanisms exist. A question mark was given partial credit. An empty cell received no points.
3. “Committee Approved Matrices Row 13 of Tables OP 3 (c) and (d),” *United Nations Security Council Committee established pursuant to resolution 1540* (2004), <https://www.un.org/en/sc/1540/national-implementation/1540-matrices/committee-approved-matrices.shtml>.
4. *Ibid.* In row 13, a “X” in the “Enforcement: civil/criminal penalties, and measures of implementation, etc” cell relating to NW (nuclear weapons) was taken as confirmation that sufficient enforcement mechanisms exist. A question mark was given partial credit. An empty cell received no points.
5. “Customs Mutual Assistance Agreements,” *U.S. Customs and Border Protection*, 2022, <https://www.cbp.gov/border-security/international-initiatives/international-agreements/cmaa>.
6. “International Convention on Mutual Administrative Assistance for The Prevention, Investigation and Repression of Customs Offences: Nairobi,” World Customs Organization, June 9, 1977, <http://www.wcoomd.org/~media/wco/public/global/pdf/about-us/legal-instruments/conventions-and-agreements/nairobi/naireng1.pdf?la=en>; “Position as Regards Ratifications and Accessions: International Convention on Mutual Administrative Assistance for The Prevention, Investigation and Repression of Customs Offences: Nairobi,” *World Customs Organization*, August 8, 2012. <http://www.wcoomd.org/~media/wco/public/global/pdf/about-us/legal-instruments/conventions-and-agreements/conventions/eg0019e1.pdf?la=en>.
7. “Programme of Measures to Implement the Principle of Mutual Recognition of Decisions in Criminal Matters,” *European Union*, 2001, <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32001Y0115%2802%29>.

8. “Inter-American Convention on Mutual Assistance in Criminal Matters,” *Organization of American States, 1992*, <http://www.oas.org/juridico/english/treaties/a-55.html>.
9. “Treaty on Mutual Assistance in Criminal Matters,” ASEAN, 2004, <http://agreement.asean.org/media/download/20160901074559.pdf>.
10. “International MLA & Extradition Agreements the UK is Party To,” *Government of the United Kingdom and Northern Ireland*, December 2021, <https://www.gov.uk/government/publications/international-mutual-legal-assistance-agreements/mutual-legal-assistance-and-extradition-treaty-list-accessible-version>.
11. “Rule of Law Index: Factor 8: Criminal Justice, Indicator 8.1: Criminal Investigation System is Effective,” *World Justice Project, 2022*, <https://worldjusticeproject.org/rule-of-law-index/>.
12. Individual research. “Global Sanctions Index,” Castellum AI, <https://www.castellum.ai/global-sanctions-index>. Examples of denied parties lists: Government of Canada, “Consolidated Canadian Autonomous Sanctions List,” updated August 10, 2023, https://www.international.gc.ca/world-monde/international_relations-relations_internationales/sanctions/consolidated-consolide.aspx?lang=eng; European Commission, “Overview of sanctions and related resources,” updated August 2, 2023, https://finance.ec.europa.eu/eu-and-world/sanctions-restrictive-measures/overview-sanctions-and-related-resources_en.
13. Individual research. “ATT: Status of Ratifications and Accessions,” *Arms Trade Treaty, 2022*, <https://thearmstradetreaty.org/treaty-status.html?templateId=209883>; “2021 Annual Report,” *Arms Trade Treaty Monitor, 2021*, <https://thearmstradetreaty.org/annual-reports.html?templateId=209826>; National Reports, Programme of Action on small arms and light weapons, Question 4.1 : 4.1. Does your country have laws, regulations and/or administrative procedures governing brokering of SALW?, <https://smallarms.un-arm.org/national-reports/>.
14. The trainings considered included:
 - 1) The Export Control and Related Border Security (EXBS) Program, assisting countries to “develop and improve their strategic trade and related border control systems,” from “Export Control and Related Border Security Program,” United States Department of State, 2022, <https://www.state.gov/export-control-and-related-border-security-program/>;
 - 2) EU P2P (Partner-to-Partner) Dual-use Export Control Program, assisting countries to “enhance the effectiveness of export control systems of dual-use items,” from “EU P2P Export Control Programme for Dual Use Goods.” European Commission, 2022, [https://cbrn-risk-mitigation.network.europa.eu/eu-p2p-export-control-programme_en](https://cbrn-risk-mitigation.network.europa.eu/eu-p2p-export-control-programme_en;);

3) International Criminal Investigative Training Assistance Program (ICITAP), assisting countries to “to develop professional and transparent law enforcement institution,” from “International Criminal Investigative Training Assistance Program (ICITAP),” United States Department of Justice, April 2022, <https://www.justice.gov/criminal-icitap/file/639486/download>;

4) WCO COSMO 2 Program, providing customs with training in assessing risk, planning, interdicting, and following up to detect and prevent illicit trafficking of strategic goods, see “WCO Operation COSMO 2,” World Custom Organization, January 12, 2018, <http://www.wcoomd.org/en/media/newsroom/2018/january/operation-cosmo-2-global-planning-seminar.aspx>. The program aims to assist countries in developing controls to counter the illicit trafficking of strategic commodities and became a long-term program in 2016. Found in “STCE Programme Outreach,” World Customs Organization, 2022, <https://www.wcoomd.org/en/topics/enforcement-and-compliance/activities-and-programmes/security-programme/stce-project.aspx>. (Per web search.)

5) International Nonproliferation Export Control Program (INECP), Department of Energy, 2023.

15. “Corruption Perceptions Index 20221,” Transparency International, January 2023, <https://www.transparency.org/en/cpi/2022>. PPI entities for which a CPI rank was not available: Andorra, Antigua and Barbuda, Belize, Cook Islands, Holy See, Kiribati, Liechtenstein, Marshall Islands, Micronesia (Federated States of), Monaco, Nauru, Niue, Palau, Palestine (State of), Saint Kitts and Nevis, Samoa, San Marino, Tonga, Tuvalu. Brunei Darussalam is newly included.

16. Non-members include the Cook Islands, North Korea, Kosovo, Niue, Palau, Taiwan, Tuvalu. Micronesia is a new member. See: “Member Countries,” *Interpol*, 2022, <https://www.interpol.int/en/Who-we-are/Member-countries>.

17. Individual research. In the European Union, for example, entrapment is not allowed, but undercover operations are permitted. See: Philip Gounev et al., “Part 3: Legal and Investigative Tools,” *Center on the Study of Democracy*, 2015, https://ec.europa.eu/home-affairs/sites/homeaffairs/files/e-library/docs/20150312_1_amoc_report_020315_0_220_part_2_en.pdf.

18. “Supplement No. 4 to Part 744 - ENTITY LIST,” U.S. Department of Commerce: Bureau of Industry and Security, 2022, <https://www.bis.doc.gov/index.php/policy-guidance/lists-of-parties-of-concern/entity-list>.; “Specially Designated Nationals and Blocked Persons List (SDN) Human Readable Lists,” U.S. Department of Treasury Office of Foreign Asset Control, 2022, <https://home.treasury.gov/policy-issues/financial-sanctions/specially-designated-nationals-and-blocked-persons-list-sdn-human-readable-lists>.; “Nonproliferation Sanctions,” U.S. Department of Commerce: Bureau of International Security and Nonproliferation, 2022, <https://www.state.gov/key-topics-bureau-of-international-security-and-nonproliferation/nonproliferation-sanctions/>.; and “EU Sanctions Map,” European Union, 2022, <https://www.sanctionsmap.eu/#/main>.

19. Individual internet searches; Source for European countries: Official Journal of the European Union, “Council Regulation (EC) No 2021/821 of May 20, 2021 setting up a Community regime for the control of exports, transfer, brokering and transit of dual-use items,” EUR-Lex, November 6, 2021, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32021R0821>.
20. Individual internet searches.
21. “List of the Contracting Parties to the Revised Kyoto Convention,” World Customs Organization, March 2022, http://www.wcoomd.org/en/Topics/Facilitation/Instrument%20and%20Tools/Conventions/pf_revised_kyoto_conv/Instruments.
22. “Specific Annex D,” World Customs Organization, 2008, http://www.wcoomd.org/en/topics/facilitation/instrument-and-tools/conventions/pf_revised_kyoto_conv/kyoto_new/spand.aspx.
23. Internet research.
24. “Committee Approved Matrices Row 5 of Tables OP 2,” *United Nations Security Council Committee Established Pursuant to Resolution 1540* (2004), <https://www.un.org/en/sc/1540/national-implementation/1540-matrices/committee-approved-matrices.shtml>. For example, 1540 Committee Matrix for Afghanistan, in row 5 of Table OP 2, <http://www.un.org/en/sc/1540/documents/Afghanistan%20revised%20matrix.pdf>. An “X” in the “National legal framework” cell relating to NW (nuclear weapons) was taken as confirmation that sufficient enforcement mechanisms exist.
25. For example, 1540 Committee Matrix for Afghanistan, in row 6 of Table OP 2, <http://www.un.org/en/sc/1540/documents/Afghanistan%20revised%20matrix.pdf>. An “X” in the “National legal framework” cell relating to NW (nuclear weapons) was taken as confirmation that sufficient enforcement mechanisms exist. For a question mark, legislation was individually confirmed to exist or not exist by PPI staff.
26. Michael John Garcia and Charles Doyle, “Extradition to and from the United States: Overview of the Law and Recent Treaties,” *Congressional Research Service*, March 17, 2010, <https://fas.org/sgp/crs/misc/98-958.pdf>; Treaty Affairs Staff. Treaty Affairs Staff. “Treaties in Force: A List of Treaties and Other International Agreements of the United States in Force on January 1, 2020,” United States Department of State, January 1, 2020, <https://www.state.gov/wp-content/uploads/2020/08/TIF-2020-Full-website-view.pdf>; Treaty Affairs Staff. “Supplemental List of Treaties and Other International Agreements,” *United States Department of State*, January 1, 2021, <https://www.state.gov/wp-content/uploads/2020/08/TIF-2020-Full-website-view.pdf>; “INTERNATIONAL MLA & EXTRADITION AGREEMENTS THE UK IS PARTY TO,” United Kingdom of Great Britain and Northern Ireland, September 6, 2021, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1042580/Treaty_List_2021.pdf; “Bilateral UK Extradition Agreements,” United Kingdom of Great Britain and Northern Ireland, December 2021,

<https://www.gov.uk/government/publications/international-mutual-legal-assistance-agreements/mutual-legal-assistance-and-extradition-treaty-list-accessible-version#bilateral-uk-extradition-agreements>; “European Convention on Extradition: Chart of signatures and ratifications of Treaty 024,” Council of Europe, June 28, 2022, https://www.coe.int/en/web/conventions/full-list/-/conventions/treaty/024/signatures?p_auth=H5uhD2rk; “Countries Without Extradition 2022,” World Population Review, 2022, <https://worldpopulationreview.com/country-rankings/countries-without-extradition>.

27. Individual Research; “Update on Voluntary Disclosure Programmes: A pathway to tax compliance,” Organisation for Economic Co-operation and Development, August 2015, <https://www.oecd.org/ctp/exchange-of-tax-information/Voluntary-Disclosure-Programmes-2015.pdf>; “Voluntary Compliance Framework.” World Customs Organization, 2014, <http://www.wcoomd.org/-/media/wco/public/global/pdf/topics/facilitation/instruments-and-tools/tools/voluntary-compliance-framework/voluntary-compliance-framework.pdf?db=web>; “Tax Transparency in Africa: Africa Initiative Progress Report 2021” Organisation for Economic Co-operation and Development, 2021, <https://www.oecd.org/tax/transparency/documents/Tax-Transparency-in-Africa-2021.pdf>; “Voluntary Disclosure Programs — Design, Principles, and Implementation Considerations,” April 6, 2022, <https://www.imf.org/en/Publications/TNM/Issues/2022/04/06/Voluntary-Disclosure-Programs-Design-Principles-and-Implementation-Considerations-516211>.

28. In the United States, for export control violations, a voluntary self-disclosure process is administered by the Department of Commerce’s Bureau of Industry and Security. On its website, BIS provides an address and contact number and explains, “BIS encourages the submission of Voluntary Self Disclosures (VSDs) by parties who believe they may have violated the Export Administration Regulations (EAR).” In 2019, according to the 2020 BIS annual report “Don’t let this happen to you,” BIS processed 368 VSDs. Typically, the majority of these cases result in settlements and civil penalties only, increasing the incentive for companies to make voluntary disclosures. See BIS, “Voluntary Self-Disclosure,” <https://www.bis.doc.gov/index.php/enforcement/oe/voluntary-self-disclosure>; James E. Bartlett III and Jonathan C. Poling, “Defending the ‘Higher Walls’ – The Effects of U.S. Export Control Reform on Export Enforcement,” *Santa Clara Journal of International Law*, Vol. 14, Issue 1, December 7, 2015, <http://digitalcommons.law.scu.edu/cgi/viewcontent.cgi?article=1196&context=scujil>.

29. “POSITION OF CONTRACTING PARTIES TO THE HARMONIZED SYSTEM CONVENTION AND NON-CONTRACTING PARTY ADMINISTRATIONS,” in World Customs Organization, September 9, 2022, <http://www.wcoomd.org/en/topics/nomenclature/overview/position-of-contracting-parties-to-the-hs-and-non-contracting-party-administrations.aspx>.

30. “Committee Approved Matrices OP 3 (a) and (b) Row 1,” *United Nations Security Council Committee established pursuant to resolution 1540 (2004)*, <http://www.un.org/en/sc/1540/national-implementation/1540-matrices/committee-approved-matrices.shtml>.

31. The UN 1540 Committee defines “related materials” in the matrices as: “materials, equipment and technology covered by relevant multilateral treaties and arrangements, or included on national control lists, which could be used for the design, development, production or use of nuclear, chemical and biological weapons and their means of delivery.”
32. “Membership,” FORATOM, 2022, <https://www.foratom.org/our-members/>; “List of Nuclear Associations,” Japan Atomic Industrial Forum, 2015, http://www.jaif.or.jp/cms_admin/wp-content/uploads/2015/11/list_of_nuclear_associations_supporting_n4c_stand_carte.pdf; “Membership,” International Framework for Nuclear Energy Cooperation, 2022, https://www.ifnec.org/ifnec/jcms/g_5196/membership.
33. “About Us,” FORATOM, 2022, <https://www.foratom.org/about-us/>.
34. “Implementation Reports,” *United Nations Security Council 1718 Sanctions Committee* (DPRK), October 2021, <https://www.un.org/securitycouncil/sanctions/1718/implementation-reports>.
35. “Implementation Reports,” *United Nations Security Council 1718 Sanctions Committee* (DPRK), October 2021, <https://www.un.org/securitycouncil/sanctions/1718/implementation-reports>.
36. “Corruption,” Enterprise Surveys - World Bank Group, 2022, <http://www.enterprisesurveys.org/data/exploretopics/corruption#--7>.
37. “Selected Sanctions Committee Documents: S/2020/151,” *United Nations Security Council 1718 Sanctions Committee*, 2020, <https://www.securitycouncilreport.org/un-documents/dprk-north-korea/>; “Selected Sanctions Committee Documents: S/2019/691,” *United Nations Security Council 1718 Sanctions Committee*, 2019, <https://www.securitycouncilreport.org/un-documents/dprk-north-korea/>; “Selected Sanctions Committee Documents: S/2019/171,” *United Nations Security Council 1718 Sanctions Committee*, 2019, <https://www.securitycouncilreport.org/un-documents/dprk-north-korea/>; and “Selected Sanctions Committee Documents: S/2018/171,” *United Nations Security Council 1718 Sanctions Committee*, 2018, <https://www.securitycouncilreport.org/un-documents/dprk-north-korea/>.
38. The Institute analyses are available on the Institute website at: <https://isis-online.org/countries/category/korean-peninsula>.
39. Individual research.

CHAPTER 7

TOTAL WEIGHTED SCORE AND RANK

This chapter explains how the PPI arrives at the final score, presents key results of the PPI, and introduces other methods used to describe a country's performance.

For the final score, a key remaining methodological question for the PPI was how to combine the raw super criteria scores to derive final country scores, and subsequently the final PPI rank. The team considered using simple addition of the raw super criteria scores (or scaling them, for example, where each super criterion score is scaled to 100 points and then added with the other super criteria scores) to achieve a total score. However, such an approach would imply that each super criterion is equal in value or weight. Moreover, the project found that the *Ability to Prevent Proliferation Financing* and *Adequacy of Enforcement* super criteria are two of the most important due to their action-oriented or implementation-based nature; the *International Commitment* and *Legislation* super criteria are of reduced importance because the PPI measures the *implementation* of strategic trade controls. The PPI is different from other indices since it focuses on tangible outcomes rather than strictly capacities or legislative capabilities, although these are certainly important. Nonetheless, simply adding the raw super criteria scores, or even scaling each to 100 points and adding, would undermine the intent of the index.

For the presentation of the results, the PPI team decided that in addition to a full, final rank, other ways to present performance are needed.

It developed ways to chart individual country performance and statistical analyses to group countries by performance.

WEIGHTING ARRANGEMENT

The project considered several weighting options for the super criteria. Based on discussions among experts, a favored weighting option emerged. The project decided to scale each super criterion score to 100 points and then apply a weighting factor. Under this methodology, the *Ability to Prevent Proliferation Financing* and *Adequacy of Enforcement* super criteria each received double the scaled points of the *Legislation* and *Ability to Monitor and Control Strategic Trade* super criteria, which in turn received double the scaled points of the *International Commitment* super criterion. For *International Commitment*, *Legislation*, *Ability to Monitor and Detect Strategic Trade*, *Ability to Prevent Proliferation*

	International Commitment	Legislation	Ability to Monitor and Detect Strategic Trade	Ability to Prevent Proliferation Financing	Adequacy of Enforcement	PPI Total (Points)
Raw Points Possible	230	130	185	135	215	895
Scaled, Weighted Points Possible	100	200	200	400	400	1300
Scaled, Weighted	7.7%	15.4%	15.4%	30.8%	30.8%	100.00%

Table 7.1. Raw points are scaled and weighted for each super criterion before they are added to derive the final PPI scores and rank. (The percentages in this table do not add up to exactly 100 percent due to rounding.)

Financing, and *Adequacy of Enforcement*, the weighting factors are, after scaling each to 100 points, 1, 2, 2, 4, and 4, respectively. The conversion of the raw possible super criteria scores from the earlier sections into scaled, weighted scores is summarized in Table 7.1.

Super Criterion International Commitment: The points received under *International Commitment* count toward **7.7 percent** of the total score. As discussed earlier, the *International Commitment* super criterion incorporates 22 sub-criteria—three are considered low-impact, twelve are medium-impact, and seven are high-impact, giving a total raw score of 230 points. This raw score was scaled to 100 and multiplied by its weight factor, in this case one, to contribute up to 100 points or 7.7 percent of the possible 1,300 points.

Super Criterion Legislation and Super Criterion Ability to Monitor and Detect Strategic Trade: 15.4 percent each

The *Legislation* super criterion incorporates 14 sub-criteria—four are considered low-impact, five are medium-impact, four are high-impact, and one is an extra credit criterion—with a total raw score of 130 points. This score was scaled to 100 and multiplied by its weight factor of two to contribute up to 200 points or 15.4 percent of the possible 1,300 points.

The *Ability to Monitor and Detect Strategic Trade* super criterion incorporates 19 positive sub-criteria—three are considered low-impact, 11 are medium-impact, four are high-impact, and one is an extra credit criterion, with a total raw score of 185 points. This score was scaled to 100 and multiplied by its weight factor of two to contribute up to 200 points or 15.4 percent of the possible 1,300 points.

Super Criterion Ability to Prevent Proliferation Financing and Super Criterion Adequacy of Enforcement: 30.8 percent each

The *Ability to Prevent Proliferation Financing* super criterion incorporates 22 sub-criteria, of which 13 are positive, five are negative, three are extra-credit opportunities, and one is an expert judgment. Of the 13 positive sub-criteria, one is considered low-impact, 10 are medium-impact, and two are high-impact. They are worth 5, 10, and 15 points, respectively, for a total raw score of 135 points. This score was scaled to 100 and multiplied by its weight factor of four to contribute up to 400 points or 30.8 percent of the possible 1,300 points.

The *Adequacy of Enforcement* super criterion incorporates 28 sub-criteria, of which 23 are positive sub-criteria, eight are considered low-impact, ten are medium-impact, and five are high-impact. They are worth five, 10, and 15 points, respectively. In five negative sub-criteria, points are subtracted from countries. The total raw score is 215 points. This score was scaled to 100 and multiplied by its weight factor of four to contribute up to 400 points or 30.8 percent of the possible 1,300 points.

After weighting, the PPI obtains a total point score and rank for each of the 200 countries, territories, and entities. Because of the possibility of subtractions, negative scores are possible. The maximum possible score is 1,300. The lower bound is not fixed, but in the 2023 PPI edition the lowest achieved score is -188.

PERFORMANCE FRACTIONS

Although a country's total score is the fundamental measure of the effectiveness of its strategic trade control system, it is difficult to use it to prescribe a way for countries to improve. As a result, the "performance fraction" graphs were developed to chart the extent to which countries have met the sub-criteria. For example, if the PPI assigned zero, five, or 15 points for a country's adherence to the Additional Protocol (zero would entail no signature or ratification, five would denote signature but not ratification, and 15 would be for full ratification), the performance fraction would assess the fraction of possible points achieved, independent of whether the criterion was judged as low (five possible points), medium (10 possible points), or high impact (15 possible points). Performance fractions allow for a basic assessment of where criteria were not fulfilled and provide a straightforward road map for where countries can improve. In essence, performance fractions are calculated to locate omissions or deficiencies in a country's fulfillment of the PPI sub-criteria. Because of space limitations, we are not publishing individual country performance fractions in this report, but they are available for all countries upon request.

Figure 7.1 is an example that shows how Argentina either fulfilled, partly fulfilled, or did not fulfill the sub-criteria in the *International Commitment* super criterion. Argentina, for example, received all 10 out of 10 points for being a member of the IAEA. It therefore has a performance fraction of 1 in the IAEA Membership sub-criterion. With respect to the

Argentina: International Commitment Performance Fractions 2023

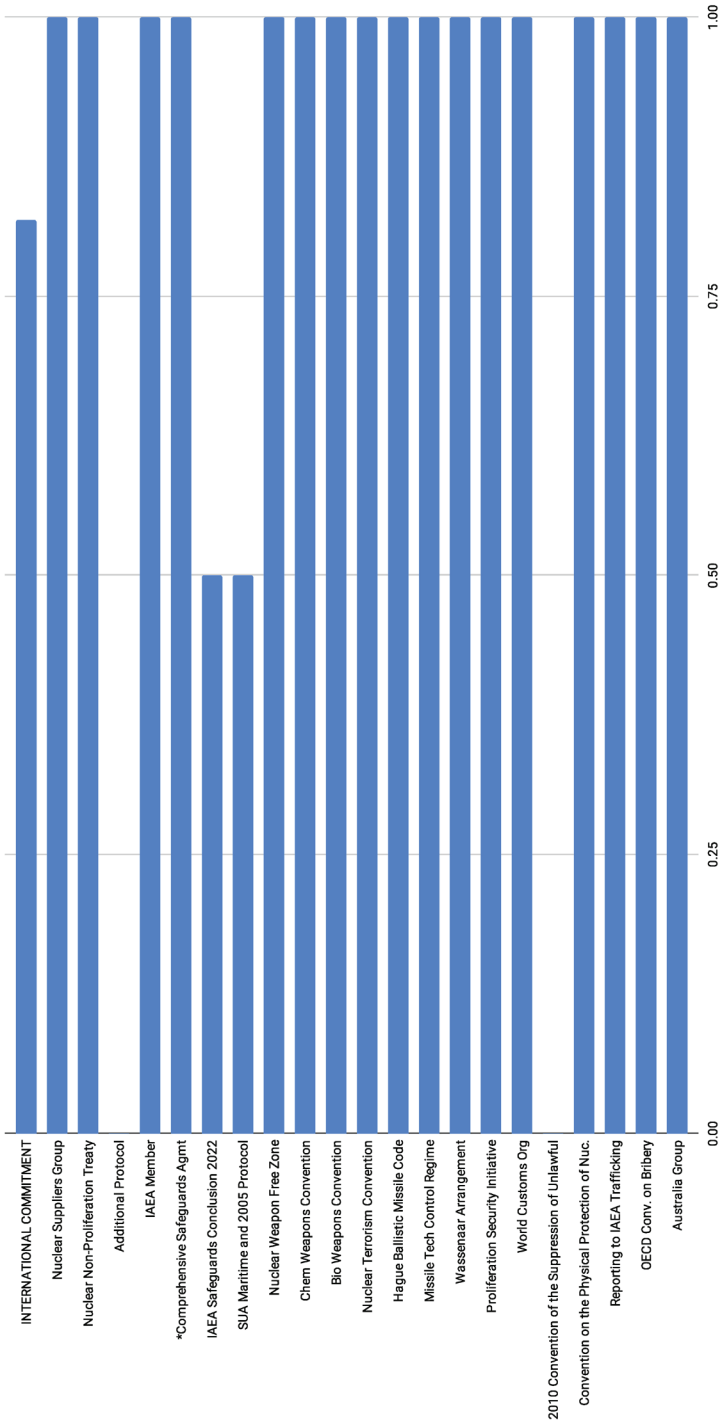


Figure 7.1. Example of a performance fraction graph for Argentina.

IAEA Safeguards Conclusion for 2022, by contrast, Argentina received only five points out of a possible 10 points, and therefore its performance fraction is 0.5 (because it only received the IAEA’s “conclusion” instead of the more ideal “broader conclusion.”)

POINT DEFICIT CHART

Since performance fractions show the extent to which sub-criteria and super criteria were fulfilled, but not how the performance in each criterion impacts the final PPI score, PPI point deficit charts were developed. Factoring in the sub-criteria impacts (high, medium, or low) and the super criteria weights (100, 200, or 400 points), these charts show where final PPI points were received and where points are missing. Figure 7.2 shows an example of a point deficit chart for Argentina. Points that Argentina received toward its final PPI score under *International Commitment* are visualized in light green, while points that are still missing are visualized in red.

UNCERTAINTIES IN THE PPI METHODOLOGY

The PPI has a number of uncertainties that affect the accuracy of the rankings. The largest uncertainty is due to a lack of publicly available data and the difficulty in determining specific, measurable criteria that accurately evaluate the effectiveness of trade controls. As modern WMD illicit procurement continues to evolve, so will the PPI and its methodology in order to accurately measure and assess the realities of the world. Constructive comments and suggestions are always welcomed.

The project initially developed vastly more sub-criteria for each super criterion than staff could find data for, a particularly difficult endeavor when one must find data for the bulk of 200 countries before deciding to include the sub-criterion in the scoring system. In many cases, countries do not provide relevant information to the United Nations agencies, or the 1540 Committee does not collect relevant information in the 1540 matrices or other data sources. In other cases, countries do not publicly release relevant information and thus may receive zero points on that sub-criterion.

The project depended on expert judgment in the adding and subtracting of points under the *Ability to Prevent Proliferation Financing*

2023 Argentina Points and Deficits: International Commitment

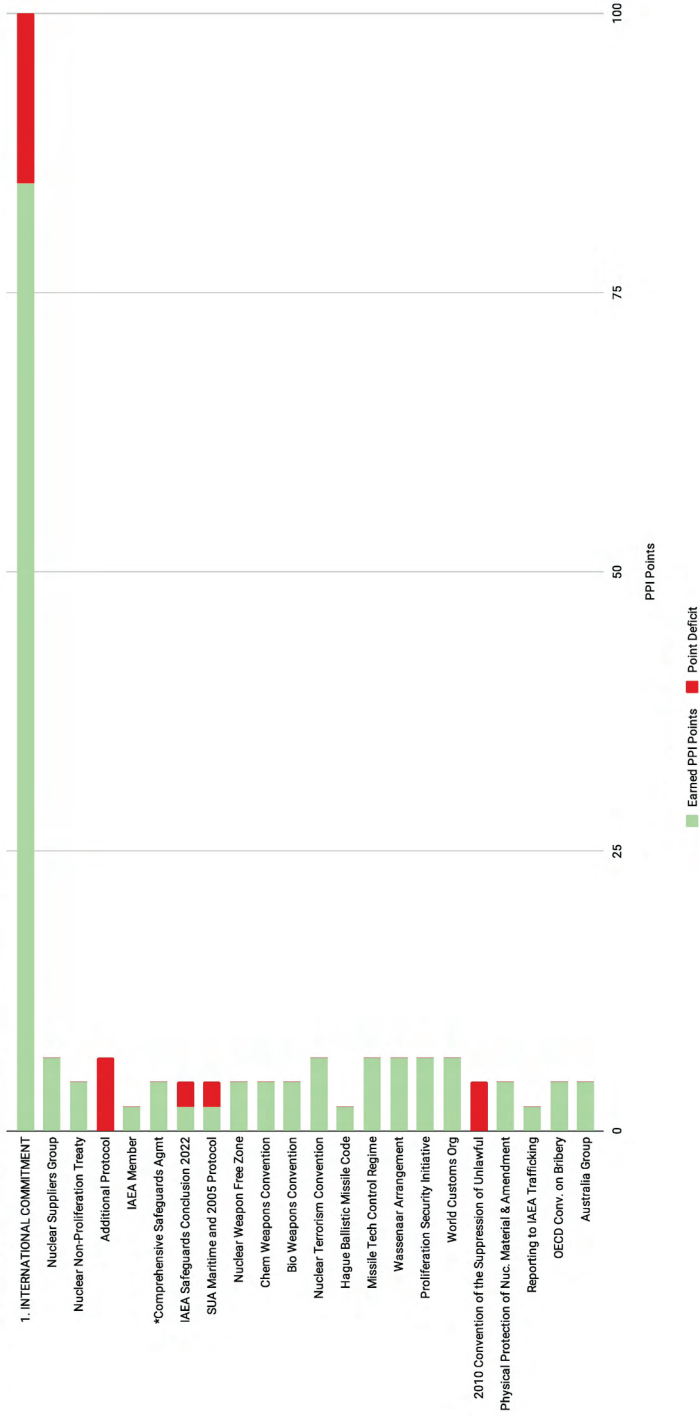


Figure 7.2. Example of a Point Deficit Chart for Argentina in Super Criterion *International Commitment*.

super criterion and in subtracting points under the *Adequacy of Enforcement* super criterion. Although a wide variety of experts were consulted, this approach ultimately entails some subjectivity. On balance, the use of experts was viewed as making the PPI sounder and more credible.

Several countries are difficult to rank because of their dependence on other countries or their non-state status. Monaco relies on France's trade control system, and San Marino on Italy's. Kosovo is a disputed territory. Palestine is under the authority of Israel. The Holy See is difficult to rank as well because of its small size and lack of any industrial capability or exports. Taiwan's non-state status complicates developing a reliable rank for it. Overseas territories of countries, such as the British Virgin Islands and Aruba, were not evaluated or ranked individually, and in most cases, the trade control situation of an overseas territory was not considered in developing the rank of the state proper. For Hong Kong, the 2023 PPI continued to collect information separately from China, but set the final points and rank for Hong Kong equal to China. This was done after the Institute determined that following the implementation of the Law of the People's Republic of China on Safeguarding National Security in the Hong Kong Special Administrative Region in 2020, Hong Kong's export control system can effectively no longer be distinguished from China's, a view shared by the U.S. Commerce Department and the European Union.

Despite the difficulties in finding all the desired data and other uncertainties, the project staff believe they collected enough data involving 104 indicators to rank the 200 countries, territories, or entities in the PPI. However, the total scores, and thus the ranks, should not be considered without due acknowledgement of the uncertainties. Overall, a variation in the total PPI point score by an individual country of up to plus or minus 50 points is not viewed as significant. This equates to a percentage uncertainty of almost seven percent, where the total possible point range is taken as -200 to 1,300 points.

TOTAL POINTS AND RANKINGS

The result of the weighting is a total point score and rank for each of the 200 countries, territories, and entities evaluated in the PPI. The scores varied widely, but no country received more than 83 percent of the total points (the highest score is 1,083 out of 1,300 points). Because points

2023 Total PPI Point Distribution

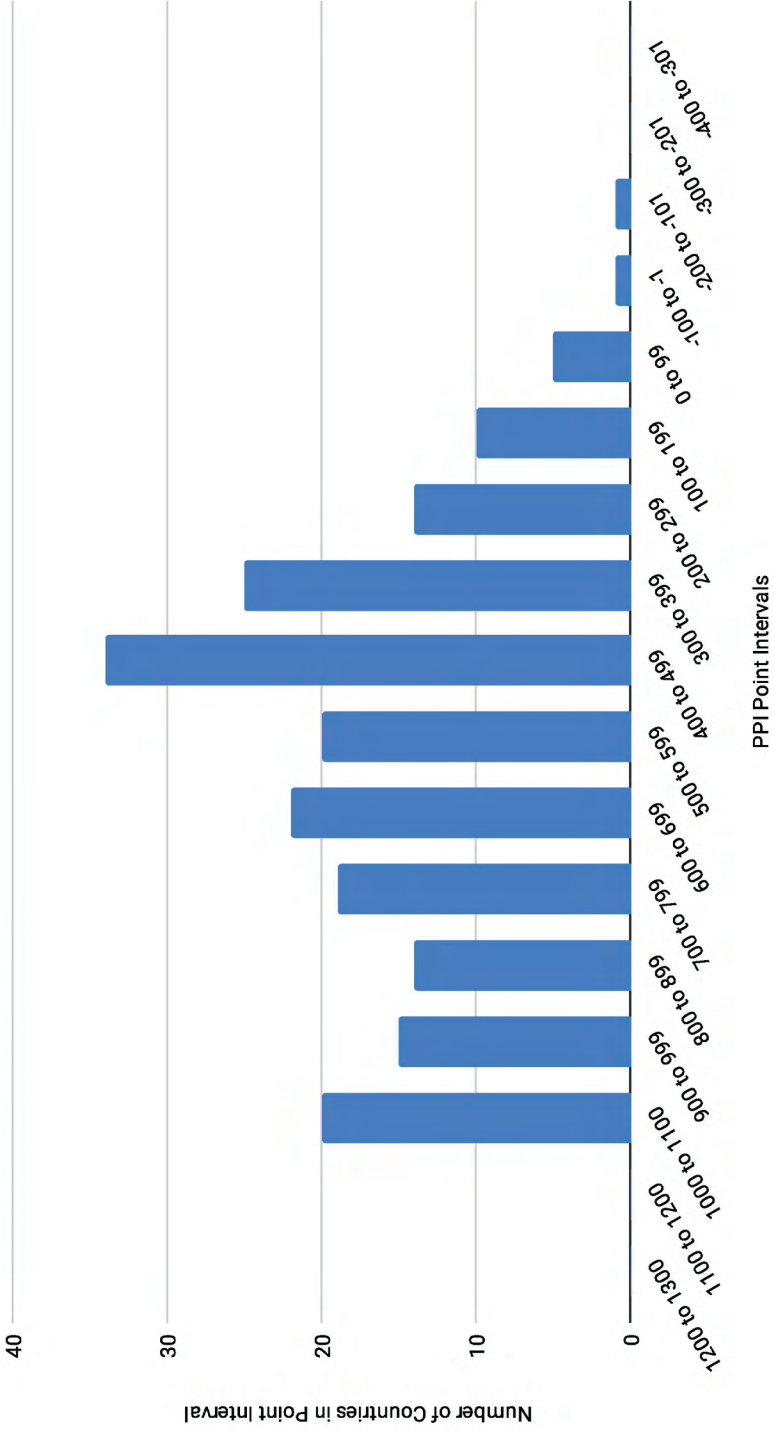


Figure 7.3. Distribution of total points in intervals of 100 points.

were deducted, scores below zero occurred. The lowest score is minus 188 points. Figure 7.3 shows a distribution of the scores. The median is 542 (up from 508 in 2021) points, and the average is 579 (up from 546 points in 2021). The relatively low median suggests that, overall, countries did not score overly high. The average remains somewhat greater than the median, suggesting that the global performance in implementation of trade controls remains bimodal. In Figure 7.3, one peak illustrates that about one quarter of countries have fairly robust strategic trade controls, i.e., comprehensive legislation and effective implementation, and the other shows that about three quarters of countries have far less effective systems.

The highlights chapter contains a list of high scoring countries, which is not repeated here. Annex 1 contains the full PPI ranking, with total points for each country. A cluster analysis, which clusters countries into four groups, is presented below.

Because countries vary so widely on their need for strategic trade controls and the nature of their economies, the project opted to include a discussion of the results in terms of tiers of similar countries (see Section II, Three Fundamental Tiers).

GLOBAL ACHIEVEMENTS BY SUPER CRITERION

Figure 7.4 shows the global performance as percentage of possible points achieved in each super criterion for all countries, where the length of the blue bar indicates the percentage achieved, out of 100 percent. As can be seen, the global average is highest under *Legislation*, and lowest under *Proliferation Financing*.

Figure 7.5 shows the points achieved in each super criterion for all countries, where a stacked light green and red bar represents the total points available in each super criterion, after weighting. The light green portion represents the achieved points by all countries, and the red bar shows the missing points. As can be seen, the *Proliferation Financing* and *Enforcement* super criteria are the most heavily weighted in this analysis, and the super criteria missing the most points.

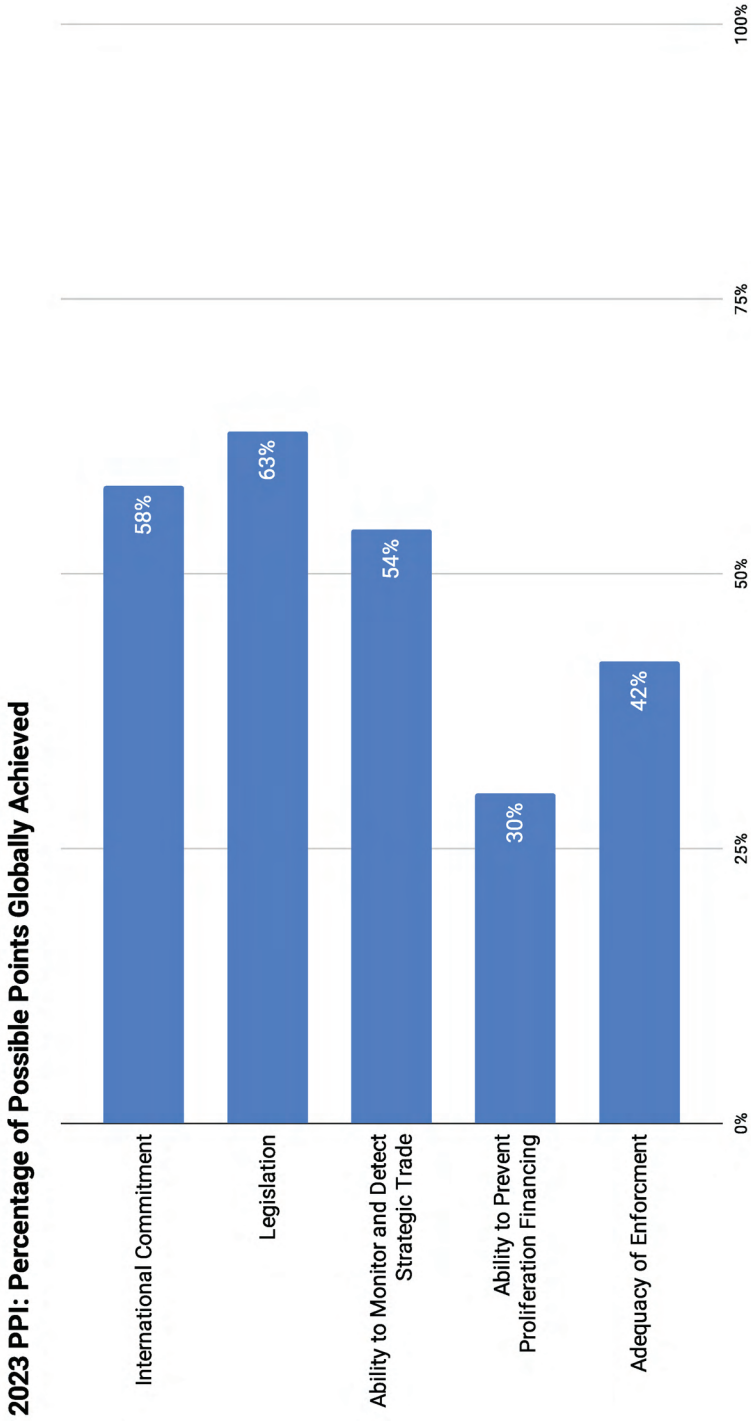


Figure 7.4. Global Percentage of Points Achieved by Super Criterion.

2023 Globally Achieved PPI Points

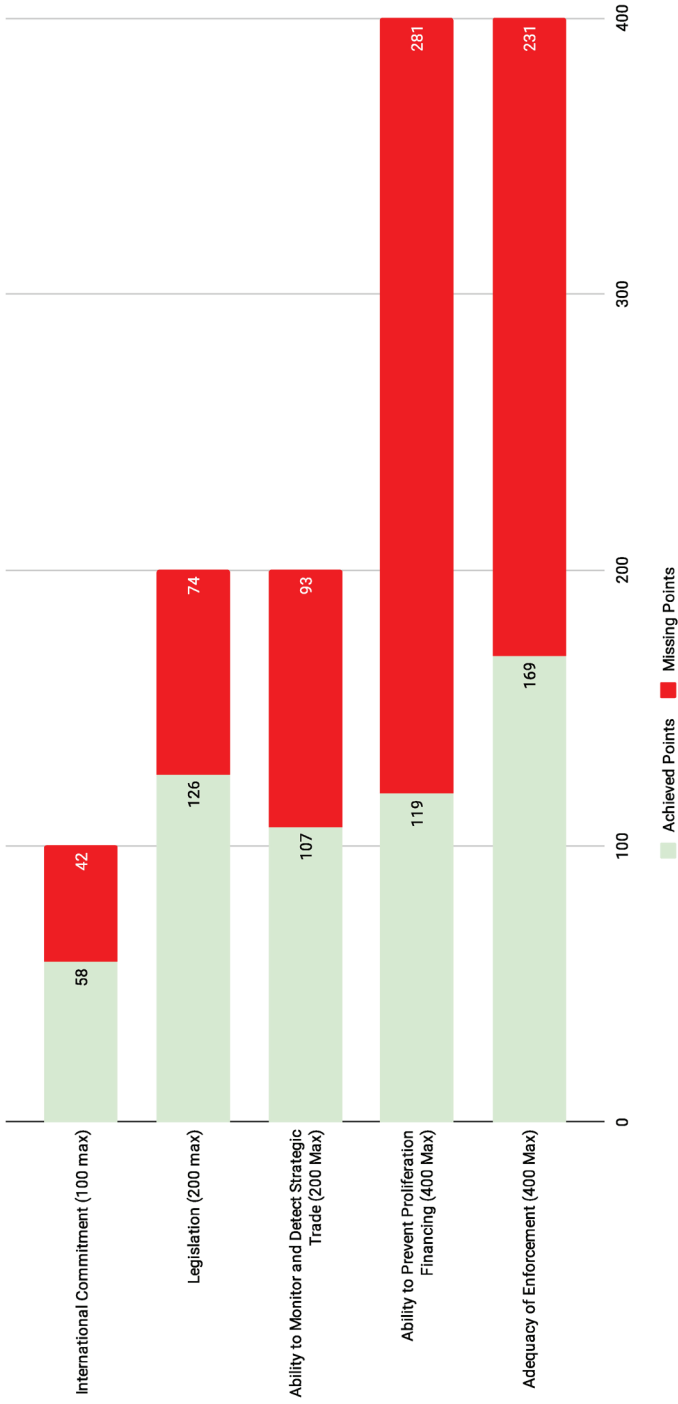


Figure 7.5. Collective average scores for all countries by super criteria.

CLUSTER ANALYSIS

To group countries by similar performance, the PPI includes a cluster analysis of the scores and ranks. This analysis is a multivariate method to classify a sample of subjects, in this case nations or territories, on the basis of a set of measured variables into a number of different clusters, such that similar subjects are placed in the same cluster. In essence, this statistical

	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Number of countries	41	50	71	38
Tier One countries	36	12	6	2
Tier Two countries	5	29	17	7
Tier Three countries	-	9	48	29
Rank range	1 to 41	42 to 91	92 to 162	163 to 200
Score range	1,083 to 878	842 to 586	579 to 329	321 to -188
k-means centroid (average rank, average score)	(21, 982)	(67, 714)	(127, 455)	(182, 197)

Table 7.2. Summarized details of the four clusters.

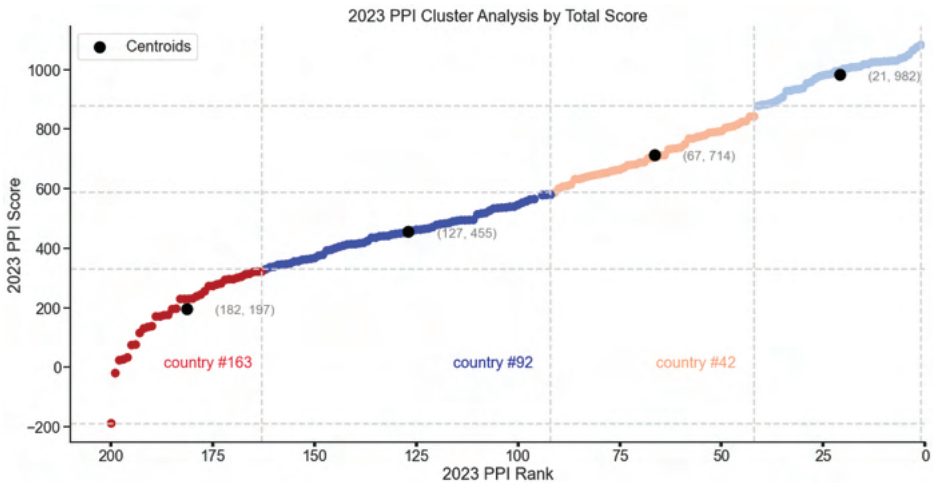


Figure 7.6. The 2023 PPI countries plotted by rank and score clustered into four groups. The single red dot at the 200 mark on the x-axis represents the lowest scoring country. The four black dots are the centroids, representing the average score and rank in each cluster, which may not correspond to an actual country.

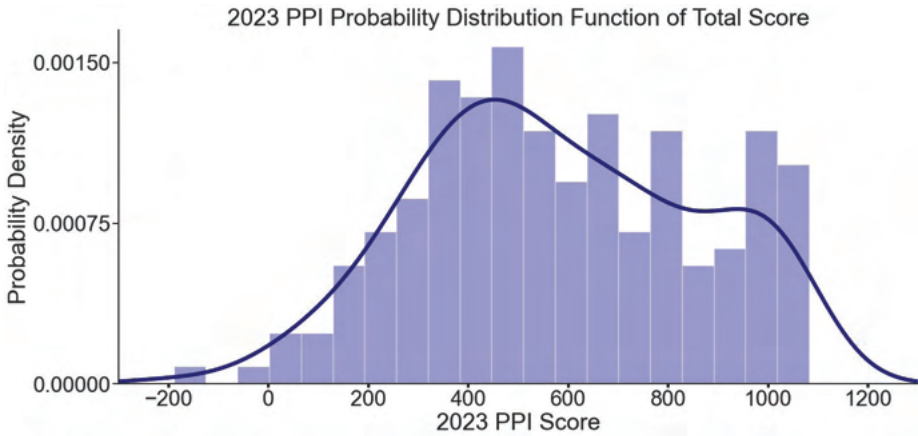


Figure 7.7. The probability distribution function (PDF) of the PPI 2023 scores. Three relative peaks are discernible in clusters 1, 2, and 3. The peak of the second cluster appears visible near a score of 650 - 850.

method groups scores around a set of relative peaks in the scores. This allows for a more effective look at the scores than the simple bimodal analysis conveyed in Figure 7.3.

The cluster analysis, created with the programming language Python, shows the 200 countries and entities evaluated in the PPI clustered into four groups (see Figure 7.6). The number of clusters was set to four after generating the probability density of the scores (Figure 7.7). The probability density graph visualizes the probabilities of a country to receive a certain score. Table 7.2 summarizes statistical details of the four clusters or groups.

Cluster 1 (Group 1) includes the ranks 1 to 41; Cluster 2 (Group 2) includes the ranks 42 to 91; Cluster 3 (Group 3) includes the ranks 92 to 162; and Cluster 4 (Group 4) includes the ranks 163 to 200. The corresponding score ranges are 1,083 to 878 for Cluster 1, 842 to 586 for Cluster 2, 579 to 329 for Cluster 3, and 321 to negative 199 for Cluster 4. It is noticeable that Group 3 includes 71 countries, which is more than any of the other groups. Group 1 has 41 countries; Group 2 has 50 countries; and Group 4 has 38 countries. The countries in each cluster are listed in Annex 2.

In this case, the four clusters emerge around four centroids in scores (k-means centroids), which is defined as the arithmetic mean or average.

The centroid is presented as an ordered pair, representing the average rank and score in each cluster. The average may not correspond to an actual country. Group 1: (rank 21, score 982); Group 2: (67, 714); Group 3: (127, 455); and Group 4: (182, 197). These centroids appear to correlate with additional relative peaks in the probability distribution function, and this analysis provides more insight into the structure of the data (Figure 7.7). The highest peak of the probability distribution function represents Group 3, which has the largest number of countries.

While the average score of 982 for Cluster 1 lies above two-thirds of the available points (76 percent), the mean score for Cluster 2 at 714 points is slightly above half the available points (55 percent). The mean score as percentage of available points drops to just 35 percent for Cluster 3 (455 points), and 15 percent for Cluster 4 (197 points). Thus, the gap between the averages of Clusters is about equal (roughly 20 percent of available points).

STATISTICAL ANALYSES

The PPI conducts statistical analyses to improve understanding of the index, but also to give the reader the opportunity to view the data from different angles. The PPI team collaborated with professional statisticians and developed its own in-house capability to conduct principal component analyses (PCA).

Typically, a principal component analysis is used to understand variance, or spread, in a set of data by calculating the “principal components,” variables derived from a complicated combination of initial variables, where the new variables represent the directions where the original data have a larger variance. These components help identify patterns in data, highlighting their similarities and differences. These patterns can be difficult to determine in a set of data as large as the PPI data, which includes over 100 sub-criteria.

PCA has often been used as a method to reduce the amount of data needed to describe an original data set, where only the first, most important principal components are used to describe the original data set, while preserving much of its information and variance. In the case of the PPI, the immediate goal is to better understand the variance in the data and to add insight into interrelationships among the PPI data. This may allow a

better evaluation as to whether any sub-criteria work together within the most important principal components, leading to a determination of a common underlying characteristic.

Although PCA can illuminate patterns in the data, the PCA principal components can also be difficult to interpret. For example, the number of principal components matches the number of sub-criteria, which is 104 in the 2023/2024 version, although as will be discussed below, some principal components are more important than others.

To conduct a PCA, the PPI data are all combined into one set of data, where each data point is the country's normalized, weighted score for that particular criterion, although the process of normalization removes the effect of the weight. For the PPI, the PCA produces over 100 principal components from the sub-criteria. Eight principal components describe up to 50 percent of the variance, and 25 of these principal components describe up to 75 percent of the variance (see Figure 7.8). However, the first few principal components are not sufficient to capture the bulk of the data, showing that there is considerable variance in the country scores overall. The variance is too great to use a small subset of principal components to predict the ranking.

The first principal component is dominated by multiple criteria that are to first order directly related to having a strategic trade control system

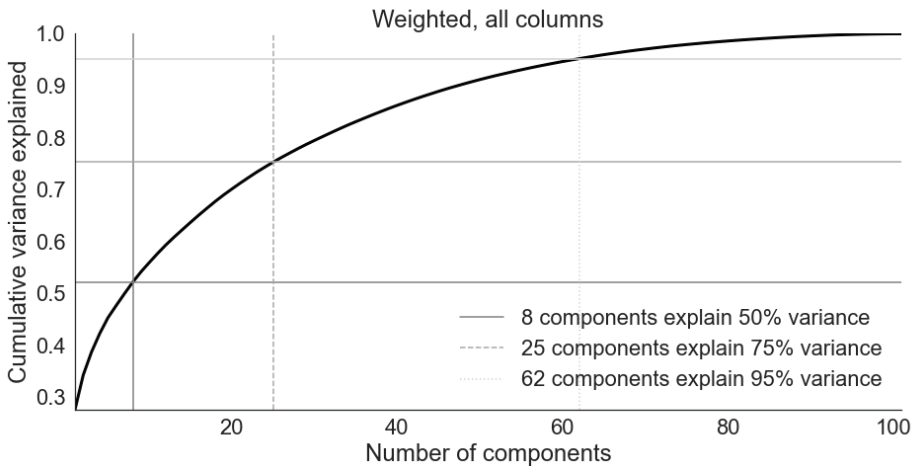


Figure 7.8. Number of principal components needed to explain variance in the data.

in place, or not having one. Multiple indicators included can only be met by countries that have an STC system in place, and thus are not met by those that do not have one, creating a first order division between the large group of 200 countries and entities. Indicators that contribute highly include having intangible technology transfer controls; conducting industry outreach on export controls; having comprehensive export control legislation; being a member or adherent of the Nuclear Suppliers Group; and having a Catch-All Clause.

In the second principal component, the highest variables or subcomponents of this principal component are not directly related to having an STC system but indicative of countries concerned about proliferation of nuclear weapons and illicit trade in dangerous goods more generally. Examples of indicators that are in the top are: World Customs Organization member; IAEA member; Member of Harmonized System; Interpol member; Reporting to IAEA Trafficking Database; and being a Nuclear Weapon Free Zone.

In the third principal component, most of the top positively and negatively correlating criteria are enforcement or financial related, where criteria related to instability, corruption, and willingness to disregard others' strategic trade control laws contribute the most, followed by a series of FATF-related criteria, such as FATF recommendations on International Cooperation; Law Enforcement Responsibilities; Customer Due Diligence; National Coordination; and Regulations and Supervision.

In terms of finding patterns in the country scores, the presence or absence of points in these sub-criteria is what many countries have in common, and were all sub-criteria regarded as equal (e.g., the weight of International Commitment were not reduced), several high-scoring countries would likely share these attributes of scoring high in the positively correlating criteria, but lower in the negatively correlating criteria.

Correlation Matrix. A correlation matrix was calculated for the normalized data. This statistical analysis calculates the correlation between any two sub-criteria. This revealed that, across all five super criteria, the vast majority of sub-criteria are relatively independent.

SECTION II:
THREE FUNDAMENTAL TIERS

CHAPTER 8

DEFINING THE THREE TIERS

The PPI generates a score for each of the 200 countries, territories, and entities to measure the effectiveness of strategic trade control systems. However, not all countries face the same challenges and priorities in creating and implementing trade control systems. Resources available for doing so also vary. As a result, the PPI project presents its findings in terms of tiers of similar countries with respect to trade control challenges and requirements. This tiering approach is unique in its categorization of countries compared to other indices. Instead of assessing countries only by a full ranking and then comparing them against one another—for example, regardless of whether they are a small island nation without significant international trade or a major world economy—the project separates countries into three basic, mutually-exclusive tiers. This manner of evaluating countries acknowledges that smaller countries, and countries that trade less and have fewer resources to devote to trade controls, cannot realistically be expected to match the performance of major world economies. The tiering system allows for a more relevant comparison of countries' ranks among peers in their potential to prevent strategic commodity trafficking. It also serves to create a more transparent method to improve trade controls among peer countries.

The PPI tiering system supports, and hopes to assist, the work of the 1540 Committee, which is urged under Resolution 2325 (2016) to “continue to explore and develop an approach, with regard to implementation and reporting, that takes into account the specificity of States, inter alia,

with respect to their ability to manufacture and export related materials, with a view to prioritizing efforts and resources where they are most needed without affecting the need for comprehensive implementation of resolution 1540 (2004).”¹ The tiering by system requirements is further in line with maturity models used by many assistance providers to plan and track progress.

The definitions of the three tiers have remained the same as in the previous version of the PPI. However, the tier assignments changed for two countries, as discussed below.

The three tiers are defined in broad terms as:

Tier One: Major suppliers of, or capability to supply, nuclear facilities and components, and nuclear-related commodities and ballistic missile programs, other WMD programs, and related strategic commodities.

Tier Two: Potential nuclear, ballistic missile, WMD, and related strategic commodity transshipment countries with limited supply potential. These countries may have limited capabilities to manufacture dual-use items, or they may have limited nuclear infrastructure in place, such as nuclear research or power reactors or uranium mines.

Tier Three: All other countries.

TIER ONE COUNTRIES:

Tier One is comprised of 56 countries, namely the countries known to possess nuclear weapons, other countries or entities that are members or adherents of the Nuclear Suppliers Group, and a few additional countries with otherwise extensive nuclear capabilities. NSG membership is considered under Tier One because membership requires that a country be a supplier of at least some goods on the NSG nuclear direct- and dual-use lists. This tier also includes countries with past nuclear weapons or extensive unsafeguarded programs, such as Argentina, Brazil, South Africa, and Taiwan. As a group, Tier One countries pose the greatest risk of

being suppliers of some of the most sensitive WMD and ballistic missile commodities.

Countries in Tier One include the following:

Argentina, Australia, Austria, Belarus, Belgium, Brazil, Bulgaria, Canada, China, Croatia, Czech Republic, Denmark, DPRK, Estonia, Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, India, Iran, Ireland, Israel, Italy, Japan, Kazakhstan, Latvia, Liechtenstein, Lithuania, Luxembourg, Mexico, Monaco, Netherlands, New Zealand, Norway, Pakistan, Poland, Portugal, Republic of Korea, Romania, Russia, San Marino, Serbia, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Taiwan, Turkey, Ukraine, the United Kingdom, and the United States.

Monaco, Liechtenstein, and San Marino are considered part of Tier One because of their close legal association with France, Switzerland, and Italy, respectively. Taiwan is included, despite its non-state status. For the 2023 PPI, Hong Kong has been added to Tier 1.

TIER TWO COUNTRIES:

Tier Two is comprised of 58 countries that are broadly defined as potential strategic commodity transshipment countries. They do not have extensive nuclear or other sensitive commodity supply capabilities, but nevertheless pose a risk of illicit or unauthorized supply, facilitation, or transfer of such commodities. Tier Two countries include those that (1) are major traffic locations for land, sea, and air containers; (2) are major financial hubs; (3) possess significant manufacturing capabilities; (4) have small nuclear facilities under safeguards; or (5) are exporters of uranium.² Many Tier One countries would also meet these conditions, such as Canada and the United States, but they have greater nuclear, WMD, and missile supply potential that qualify them for Tier One.

Based on these criteria, the 58 countries in Tier Two are the following, alphabetically:

Afghanistan, Albania, Algeria, Armenia, Azerbaijan, Bahamas, Bangladesh, Bosnia and Herzegovina, Brunei Darussalam, Chile, Colombia, Costa Rica, Cyprus, Dominican Republic, Ecuador, Egypt, Ethiopia, Georgia, Ghana, Indonesia, Iraq, Jamaica, Jordan, Kuwait, Kyrgyzstan,

Lao People's Democratic Republic, Lebanon, Libya, Malawi, Malaysia, Malta, Moldova (Rep of the), Mongolia, Morocco, Namibia, Nicaragua, Niger, Nigeria, Oman, Panama, Paraguay, Peru, Philippines, Qatar, Saudi Arabia, Singapore, Sri Lanka, Syrian Arab Republic, Tajikistan, Thailand, Tunisia, Uganda, United Arab Emirates, Uzbekistan, Vanuatu, Venezuela (Bolivarian Republic of), Viet Nam, and Zambia.

Syria's placement continues to be subject to extensive discussion and comments but remained in Tier Two in this version, despite its WMD capabilities, including the use of chemical weapons against its own people. As the civil war persists and the situation in Syria continues to change, its placement will be reassessed in future editions of the PPI.

TIER THREE COUNTRIES:

This tier encapsulates all the remaining countries that are not included in Tiers One or Two.

The 86 countries in Tier Three are the following:

Andorra, Angola, Antigua and Barbuda, Bahrain, Barbados, Belize, Benin, Bhutan, Bolivia, Botswana, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo (Dem Rep of the), Congo (Rep of the), Cook Islands, Côte d'Ivoire, Cuba, Djibouti, Dominica, El Salvador, Equatorial Guinea, Eritrea, Fiji, Gabon, Gambia, Grenada, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Holy See, Honduras, Kenya, Kiribati, Kosovo, Lesotho, Liberia, Macedonia, Madagascar, Maldives, Mali, Marshall Islands, Mauritania, Mauritius, Micronesia (Federation of), Montenegro, Mozambique, Myanmar, Nauru, Nepal, Niue, Palau, Palestine (State of), Papua New Guinea, Rwanda, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Samoa, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Solomon Islands, Somalia, South Sudan, Sudan, Suriname, Swaziland (Eswatini), Tanzania (United Republic of), Timor-Leste, Togo, Tonga, Trinidad and Tobago, Turkmenistan, Tuvalu, Uruguay, Yemen, and Zimbabwe.

In 2021, Madagascar and Tanzania were moved from Tier Two to Tier Three, as it was determined that the existing graphite production methods do not match the standard and quality needed to produce nuclear-grade graphite. The Institute continues to monitor uranium mine

developments, including developments in Tanzania. In 2018, Swaziland changed its name to “Eswatini.” To maintain the previous alphabetical order, the name change is reflected in parentheses whenever Swaziland is listed.

DISTRIBUTION OF TIERS’ AVERAGE AND MEDIAN SCORES

The results for each tier are discussed in the next three chapters. Here, it is useful to summarize the tiers’ average and median scores (Figure 8.1).

The average for Tier One is 855 points out of 1,300 points. Tiers Two and Three have averages of 593 and 389 points, below half of the maximum points possible.

The Tier One average is over 260 points higher than the Tier Two average. This difference reflects the participation of Tier One countries in the major trade control arrangements, such as the Nuclear Suppliers Group, as well as their adherence to the major international nonproliferation treaties, conventions, and other relevant instruments. The NSG demonstrates the value of such groups of suppliers advancing shared values and creating, improving, and promoting effective strategic trade controls. Non-NSG member countries in Tier One that adhere or seek to adhere to regime guidelines help contribute to the advancement of these values and to the effective systems of control that normally accompany them.

Figure 8.1 showcases an underlying problem in the global effort to combat strategic commodity trafficking. For developed countries, controlling trade is a matter of national security to which they accordingly dedicate resources; for many other countries, however, trade is mainly regulated for economic reasons. Compared to Tier One countries, Tier Two and Three countries moreover have fewer available financial and technical resources. Items crossing borders are controlled mainly to collect tariffs. For example, in many developing economies, import controls are in place, while export controls are minimized in order to increase income and decrease trade deficits.

To an extent, lower scores in Tiers Two and Three result from those countries’ lack of perceived need for substantial trade control systems and claims of having fewer resources available to adopt and implement such controls. However, this perception is challenged by UN Security

Council resolution 1540. As a result, all countries in Tiers Two and Three should create or improve viable, albeit minimal in some cases, strategic trade control systems by adopting the legislation necessary to control the export, transit, transshipment, and re-export of strategic goods, and by putting in place the appropriate control lists.

No country received more than 83 percent of the total points, and two countries received negative scores. The former indicates that even those states with above-average strategic trade controls can improve the effectiveness of their controls. For those countries that received less than 10 percent of the points (in order of higher to lower scores)— Libya, Haiti, Afghanistan, Syrian Arab Republic, Yemen, Somalia, Iran (Islamic Republic of), South Sudan, and North Korea, responsible suppliers and transshipment countries should exercise extreme caution when trading with them.

2023 PPI Average and Median Scores

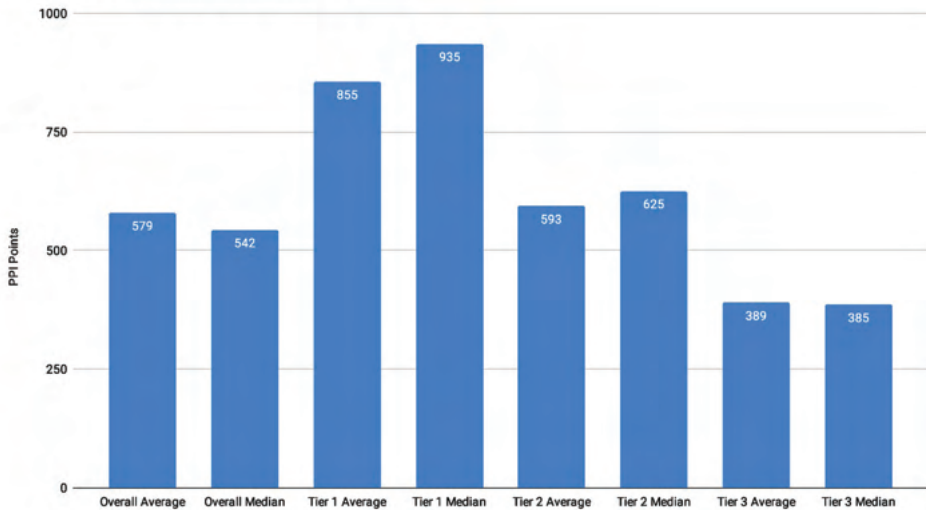


Figure 8.1. Average and median scores in the overall PPI and the three tiers. The overall average is 579 points, and the overall median is 542 points.

NOTES

1. See: United Nations Security Council, *Security Council Resolution 2325 (2016)*, S/RES/2325, December 15, 2016, [https://undocs.org/S/RES/2325\(2016\)](https://undocs.org/S/RES/2325(2016)).
2. The major land and air transshipment locations were measured in terms of freight in metric tonnes, and the top sea locations were measured in terms of twenty-foot equivalent units (TEU). The major financial hubs were determined in 2017 by picking the countries with the largest amount of illicit money outflows. Uranium producing countries were ranked based on the operational status of uranium deposit mines. The major graphite producing countries were ranked based on production capacity in terms of metric tonnes and grade of graphite. The top twenty to thirty entries were selected from each list. “Railway Statistics,” International Union of Railways, 2019, <https://uic.org/support-activities/statistics/#Statistics-Group>; “Top 50 World Container Ports,” World Shipping Council, 2019, <http://www.worldshipping.org/about-the-industry/global-trade/top-50-world-container-ports>; “International Freight Traffic Monthly Ranking,” Airports Council International, 2016, <http://www.aci.aero/Data-Centre/Monthly-Traffic-Data/International-Freight-Traffic/Monthly>; “Industrial Development Report 2020-Industrializing in the digital age,” *United Nations Industrial Development Organization*, 2020, <https://www.unido.org/resources-publications-flagship-publications-industrial-development-report-series/idr2020>; “Illicit Financial Flows to and from 148 Developing Countries: 2006-2015,” Global Financial Integrity, 2019, <https://gfintegrity.org/report/2019-iff-update/>; “Numbers of Uranium Deposits: by Country and Status,” International Atomic Energy Association, 2020, <https://infcis.iaea.org/UDEPO/Statistics/bycountryandstatus>; and “Mineral Commodity Summaries 2020,” *U.S. Department of the Interior and United States Geological Survey*, 2020, <https://minerals.usgs.gov/minerals/pubs/mcs/2015/mcs2015.pdf>.

CHAPTER 9

TIER ONE RANKING

Tier One is composed of 56 countries capable of supplying countries with goods needed to create the wherewithal to build nuclear weapons:

Argentina, Australia, Austria, Belarus, Belgium, Brazil, Bulgaria, Canada, China, Croatia, Czech Republic, Denmark, DPRK, Estonia, Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, India, Iran, Ireland, Israel, Italy, Japan, Kazakhstan, Latvia, Liechtenstein, Lithuania, Luxembourg, Mexico, Monaco*, Netherlands, New Zealand, Norway, Pakistan, Poland, Portugal, Republic of Korea, Romania, Russia, San Marino*, Serbia, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Taiwan*, Turkey, Ukraine, the United Kingdom, and the United States.* [An asterisk indicates these entities are difficult to rank because of their dependence on other countries or their non-state status.]

Figure 9.1 (and Table 9.1 at the end of the chapter) show the rankings of the countries in Tier One. The average score in Tier One is 855 points (up from 827 in 2021, 769 in 2019, and 710 in 2017) out of a possible 1,300 points. The median is 935, also up from 2021, 2019, and 2017, where it was 929, 857, and 822, respectively. The difference between the average and median scores reflects the large range of points achieved by members of the tier.

The reader is cautioned not to assign too much precision to close rankings between countries in the table. Countries ranked close to one another do not differ substantially in the effectiveness of their trade control systems.

Large differences in total points matter in the Tier One ranking. A country that achieved at least two-thirds of the total points, or about 870 points out of the total 1,300 possible points, is viewed as having a high-scoring trade control system (36 countries, up from 32 in 2021), although improvements are always necessary. A score below 50 percent of the total points means that these countries need to do significant work to improve their trade control systems (eight countries, the same as in the 2021 PPI). Those in between need to take some steps to improve their controls (12 countries). Figure 9.2 shows the number of countries in each of these percentage ranges.

Out of a total possible score of 1,300 points, the highest scorer in Tier One (and also in the full ranking of all 200 countries) was France with 1,083 points, replacing the United States which was the highest scorer in 2021, 2019, and 2017. France received 83 percent of the total possible points. Other top scorers were mostly Western countries.

TIER ONE IN THE OVERALL RANKING

Forty-one of the 56 countries in Tier One rank in the top 25 percent of the overall PPI ranking, up from 40 in 2021. The full ranking of all 200 countries is included in Annex I of this report. This result shows that Tier One countries have, in general, the most developed trade controls of the 200 countries, territories, or entities, but Tier Two countries are slowly catching up. Of the remaining countries, 10 countries ranked between 51 and 100 in the PPI overall, and five ranked below 100 in the total ranking.

Tier One countries that ranked in the bottom half of the overall ranking included, from higher to lower ranking: Belarus, Monaco*, Russian Federation, Iran (Islamic Republic of), and North Korea.

North Korea is the only Tier One country to receive a negative score. The score reflects its trade control system not meeting international standards and wide-scale illicit procurements for its WMD and delivery system.

2023 Tier One Rank

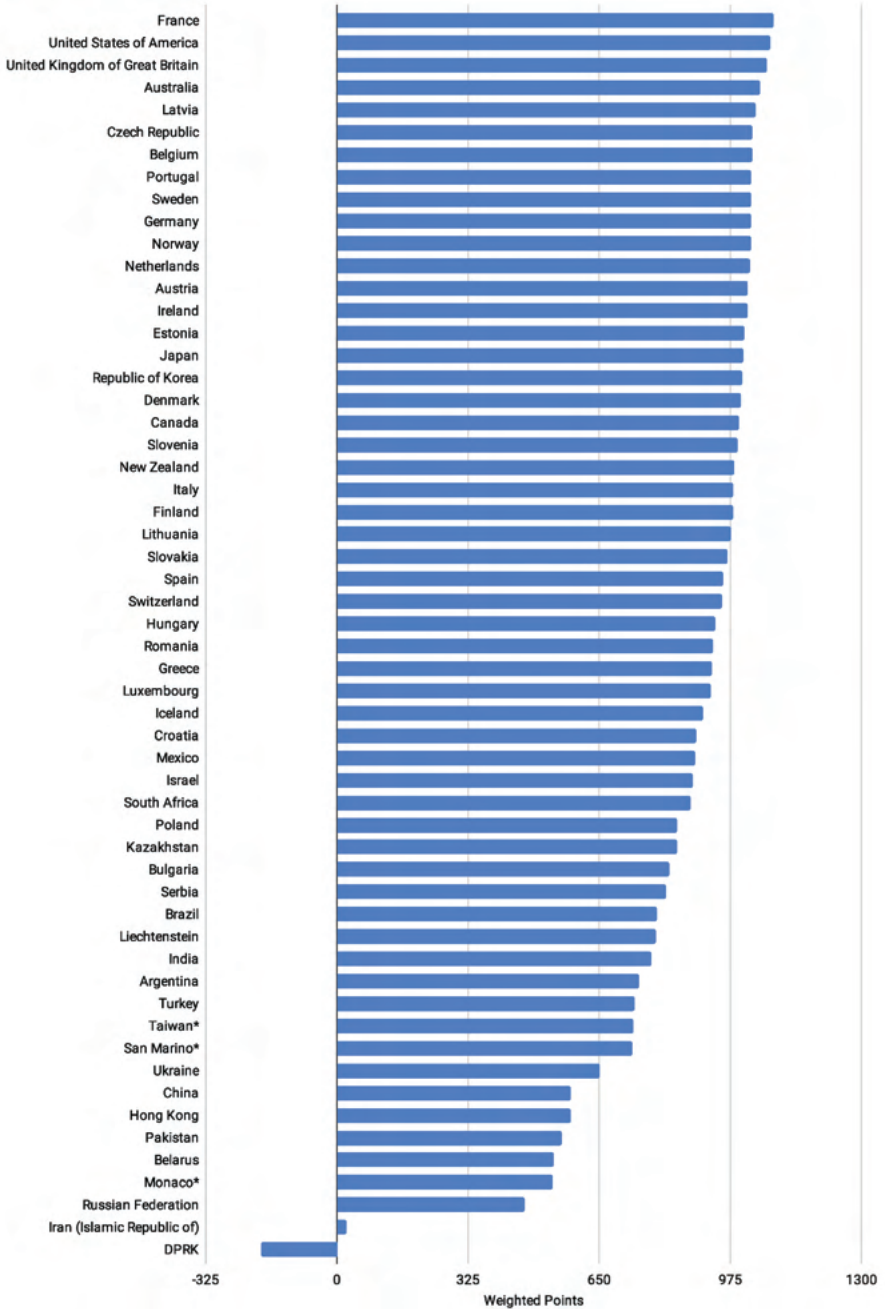


Figure 9.1. Total points received by each country in relation to the total possible points (1,300). The vertical line at 650 represents the 50 percent marker.

2023 Scores of Tier One Countries

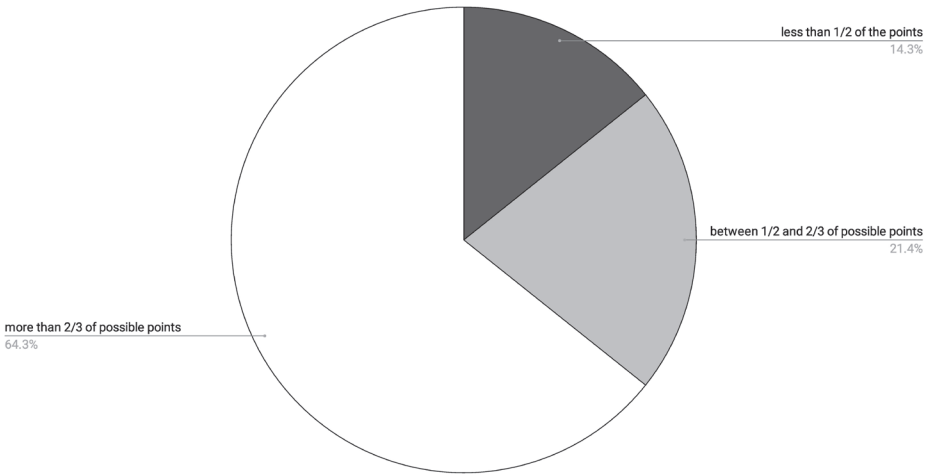


Figure 9.2. Distribution of scores. Thirty-six, more than half of the Tier One countries, received more than two-thirds of the points. Just over a fifth of Tier One countries received between one half and two-thirds of the total points, and about one-eighth of these countries received less than half of the points.

SCORE AND PERFORMANCE BY SUPER CRITERIA

The Tier One countries varied in their scores under each super criterion. Collectively, Tier One performed best in the *Legislation* super criterion, achieving 94 percent of the total possible points. *International Commitment* had the next best performance, falling at 78 percent. Under *Ability to Monitor and Detect Strategic Trade*, and *Adequacy of Enforcement*, Tier One collectively reached more than half of the possible points (72 percent and 63 percent, respectively.) Tier One performed worst in its *Ability to Prevent Proliferation Financing*, with only 48 percent of the possible points achieved. Figure 9.3 is a bar diagram visualizing the performance of Tier One as a group in the five super criteria.

TIER ONE PERFORMANCE FRACTIONS - HOW COUNTRIES CAN IMPROVE

Although a country's total score is the fundamental measure of the effectiveness of its trade control system, it is difficult to use it to prescribe a way

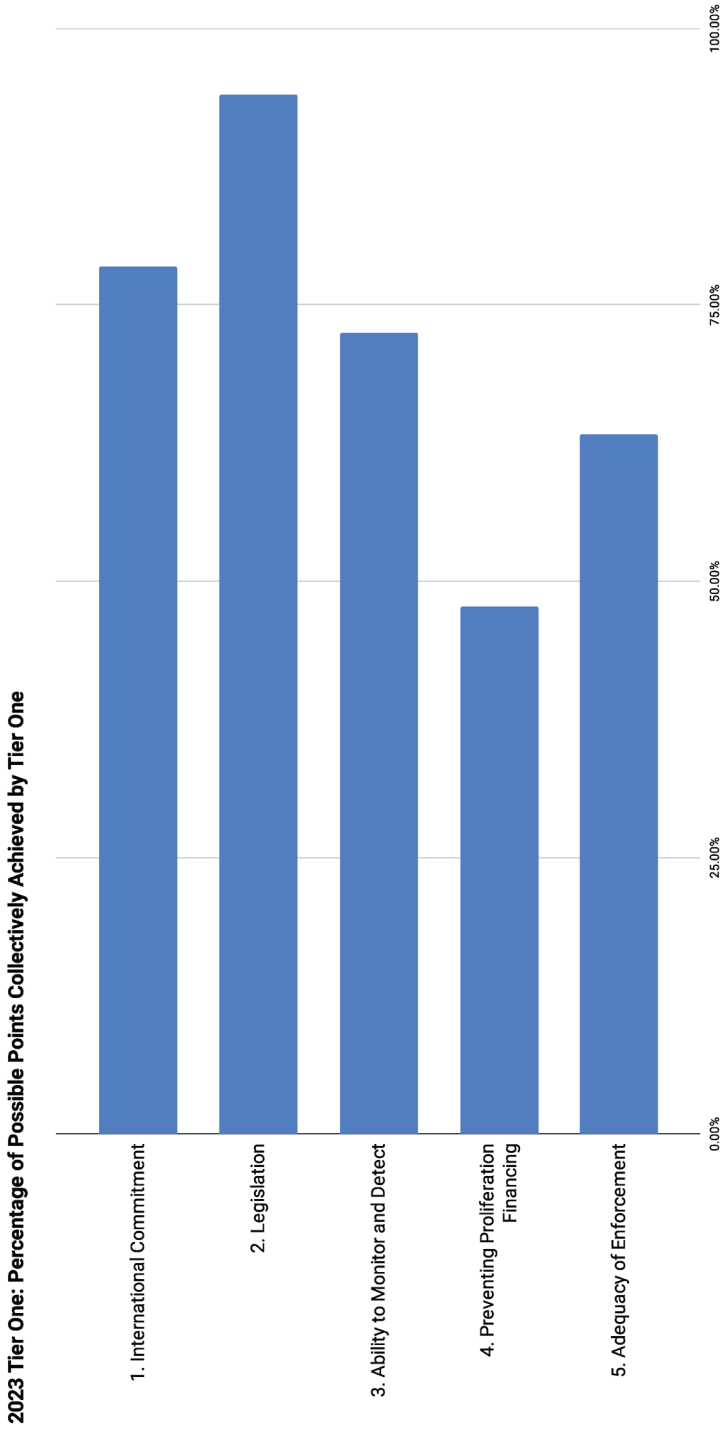


Figure 9.3. Extent to which the super criteria were fulfilled by Tier One as a group.

for countries to improve. As a result, the performance fraction charts the extent to which countries have fulfilled the sub-criteria. For example, if the PPI assigned zero, five, or ten points for a country's adherence to the Additional Protocol (zero would entail no signature or ratification, five would signify signature but not ratification, and ten would signify points for full ratification), the performance fractions would assess the fraction of possible points achieved, regardless of the sub-criterion having low, medium, or high impact.

In 2023, negative criteria are included in the performance fraction graphs to acknowledge their importance and the great impact deficiencies can have on a country's final score and rank. Please refer to Chapter 7: Total Weighted Score and Rank for a longer discussion of performance fractions.

The performance fraction can also be tabulated for the entire tier. Given that two out of the 56 countries in Tier One are countries under international sanctions for proliferation-related activities (the DPRK and Iran), one hundred percent performance by the countries in this tier is not possible. These two countries account for 0.04 in the performance fraction, meaning in Figures 9.3-9.8, Tier One countries can maximally achieve a performance percentage of 96 percent, or performance fraction of 0.96. Nevertheless, as seen in Figure 9.3, near-perfect performance is not achieved, in any case, by Tier One under any super criterion.

INTERNATIONAL COMMITMENT

Tier One countries, in general, are committed to international conventions, bodies, and regimes relating to non-proliferation. Forty-four of the 56 countries achieved two-thirds or higher of the possible points under this super criterion.¹ Six countries received less than two-thirds but more than half of the possible points. Six countries received less than half of the possible points; notably amongst those six were Pakistan, Iran, and the DPRK.

The performance fractions show that under the *International Commitment* super criterion, strong performance (90 percent) is achieved under eight sub-criteria (see Figure 9.4). Based on sub-criteria that are less than 75 percent fulfilled, Tier One, as a group, would benefit from more states becoming party to the OECD Convention on Bribery and

the Conventions of the Suppression of Unlawful Acts Relating to International Civil Aviation and Maritime Navigation.

LEGISLATION

Overall, countries in Tier One did well in their enactment of trade control-relevant legislation, with 50 of the 56 countries receiving 90 percent or more of the possible points in this super criterion. Looking at the quality of export control legislation, all except two countries have legislation that placed them in the most developed category, namely Dark Green (see Chapter 3, Table 3.2, for a discussion of how quality of legislation is characterized.) The notable exceptions are Iran and the DPRK, which lack robust export control legislation and are categorized as Red. As expected, Figure 9.5 shows that the performance fraction exceeds 0.75 or 75 percent under all but one sub-criterion: Intellectual Property Protection. Additionally, the extra credit opportunity is limited to only two countries: Taiwan and the United Arab Emirates are the only countries with a “Gold Standard” 123 Agreement with the United States.

ABILITY TO MONITOR AND DETECT STRATEGIC TRADE

Tier One did not perform as well under this super criterion as compared to super criteria *International Commitment* and *Legislation*. Here, the top country, Canada, received 87 percent of the possible points. However, 47 of the 56 countries achieved at least two-thirds of the possible points under this super criterion. The next four countries in the ranking garnered at least half of the possible points but did not reach the two-thirds threshold. The remaining five countries scored less than half of the possible points under this super criterion. This suggests that while most Tier One countries generally have the legislative basis for trade controls, some lack the ability to effectively monitor and detect illicit trade.

In terms of performance fractions, Figure 9.6 shows that half of all sub-criteria (12 out of 19) reached or exceeded a fraction of 75 percent. Examples of sub-criteria that need improvement across the tier are related to multiple physical inspections of cargo; ability to track and trace consignments; overall efficiency of customs clearance processes; and adoption of single window trade systems.

ABILITY TO PREVENT PROLIFERATION FINANCING

Countries scored the worst in their *Ability to Prevent Proliferation Financing*, although much improvement was seen over the 2021 edition of the PPI. The top country, Portugal, received only 76 percent of the possible points in this criterion, with the second country, the United Kingdom, achieving 75 percent of the possible points. The top 34 countries received more than half of the possible points. Eighteen countries received less than half of possible points, but more than a quarter possible points. Two countries scored less than 25 percent of the possible points, but more than zero. The bottom two countries had negative scores: the DPRK, and Iran. Similar to Super Criterion *Ability to Monitor and Detect Strategic Trade*, while countries appear to have the legislative basis to prevent illicit trade, many lack the ability to prevent the flow of money that finances it.

Figure 9.7A shows that Tier One countries fulfilled only two of the sub-criteria to 75 percent, namely Egmont Group membership and fulfilling FATF Recommendation 30: Law Enforcement Responsibilities. A general observation is that Tier One countries need to work more closely with the FATF and its regional bodies on proliferation financing, and improve compliance with the remaining proliferation financing-relevant FATF recommendations. The performance fractions of the negative criteria further show that over 75 percent of Tier One countries have entities sanctioned by OFAC (see Figure 9.7B). Performance in two extra credit criteria falls well below 50 percent, while only one, FATF Immediate Outcome 1, reached a 50 percent threshold (see Figure 9.7C).

ADEQUACY OF ENFORCEMENT

Generally, the data show that Tier One countries have the capacity and the willingness to enforce trade control regimes. Thirty-six of the 56 countries garnered at least two-thirds of the possible points under this super criterion, with the top nine countries achieving 85 percent or higher (up from five countries in the 2021 PPI). Eight countries received at least half, but not two-thirds, of the points under this super criterion. Iran, Russia, Belarus, and the DPRK remain the lowest scoring countries and received negative scores in the *Enforcement* super criterion in Tier One. Many of the poorly performing countries appear to lack either the will or capacity

to enforce their trade control regimes, which is particularly concerning given their potential for proliferating nuclear-related goods.

The performance fraction for the *Adequacy of Enforcement* super criterion shows that more than half of the sub-criteria are fulfilled to more than 0.75 (see Figure 9.8A). Areas where countries can continue to improve are: putting in place better voluntary disclosure procedures for trade control violations, allowing customs checks in Free Trade Zones through the revised Kyoto Convention, adopting their own national sanctions list (separate from UN or EU lists), incentivizing internal compliance programs for exporters of strategic goods, engaging national nuclear industry associations in nonproliferation, and developing better abilities to conduct investigations. The negative performance fractions show that prevalence of North Korea sanctions violations exists also in this otherwise high-performing Tier. Fifteen out of the 56 Tier One countries had points subtracted under this sub-criterion, with most points being subtracted for China, Russia, and Hong Kong, for being large-scale and repeat offenders, and Iran for repeated involvement in military-related sanctions violations. Roughly half of those countries only had a small number of points subtracted for being involved in one or two cases. No country received point deductions for conducting prisoner swaps with Iran (the United States conducted one with Iran in August and September 2023, outside the data collection period for this edition of the PPI). Prevalence of corruption is relatively low compared to the other two Tiers (see Figure 9.8B).

2023 Tier One: International Commitment Performance Fractions

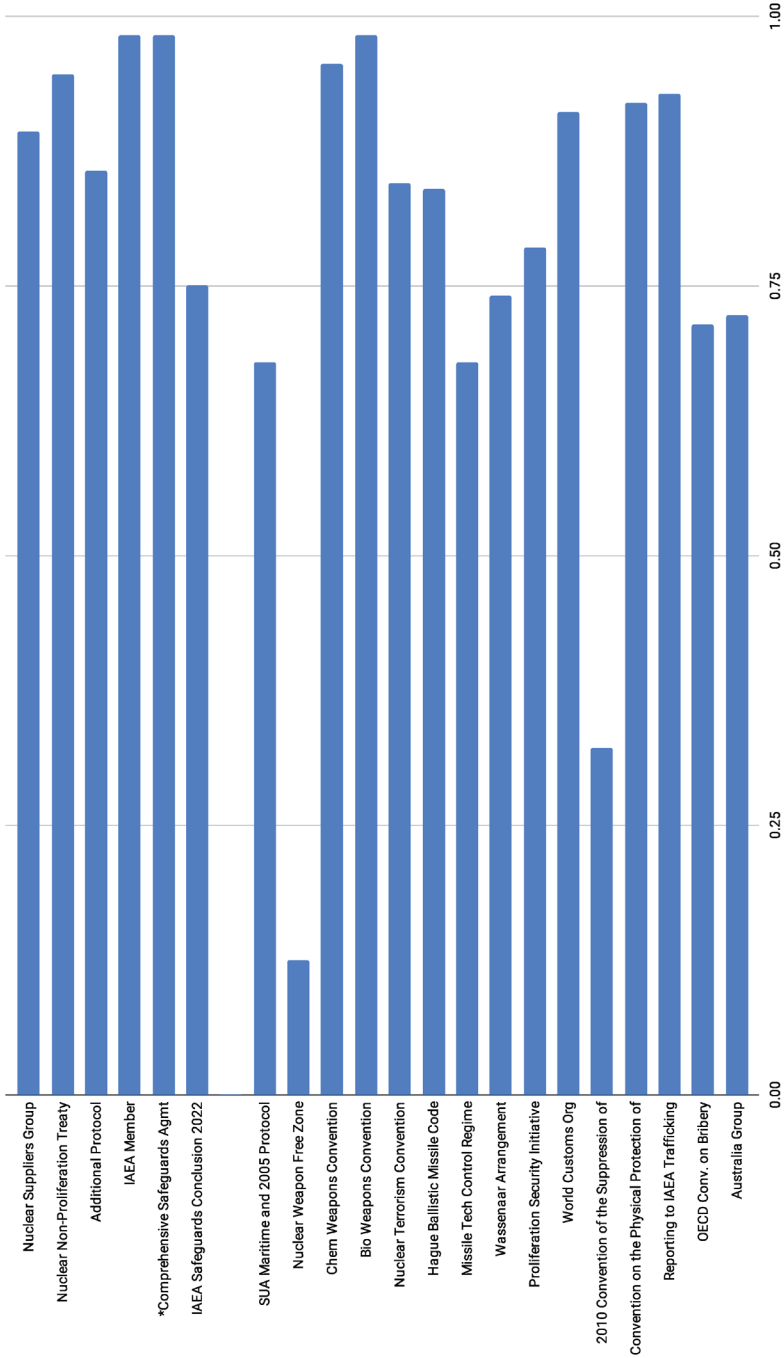


Figure 9.4. Extent to which sub-criteria making up the *International Commitment* super criterion were fulfilled by Tier One as a group. An asterisk next to the sub-criterion indicates that a change occurred in the source data or in the way points were assigned for 2023.

2023 Tier One: Legislation Performance Fractions

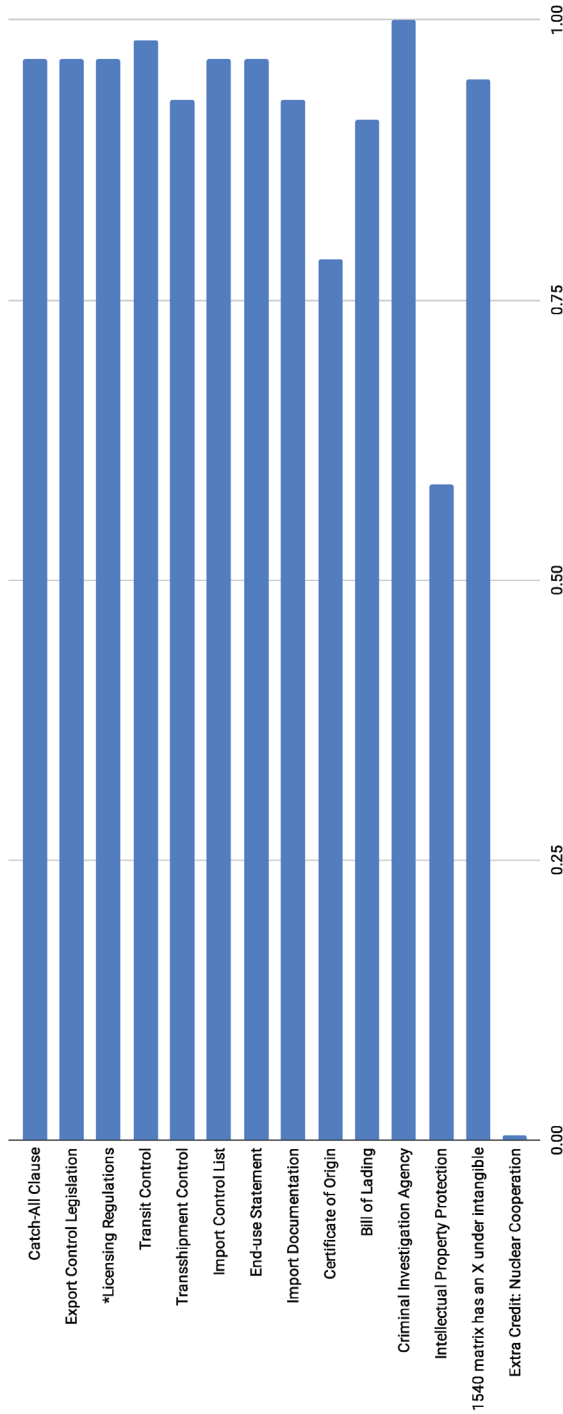


Figure 9.5. Extent to which sub-criteria making up the *Legislation* super criterion were fulfilled by Tier One as a group.

2023 Tier One: Ability to Monitor and Detect Strategic Goods Performance Fractions

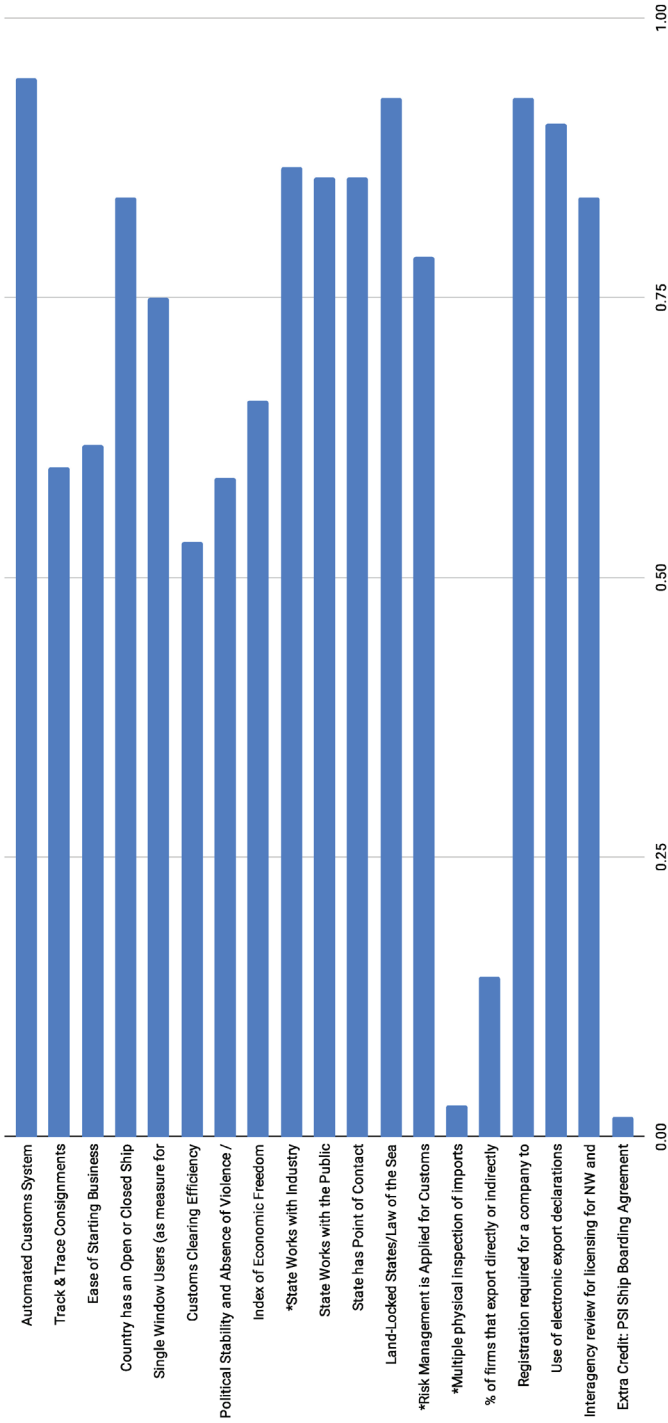


Figure 9.6. Extent to which sub-criteria making up the *Ability to Monitor and Detect Strategic Trade* super criterion were fulfilled by Tier One as a group.

2023 Tier One: Ability to Prevent Proliferation Financing Performance Fractions

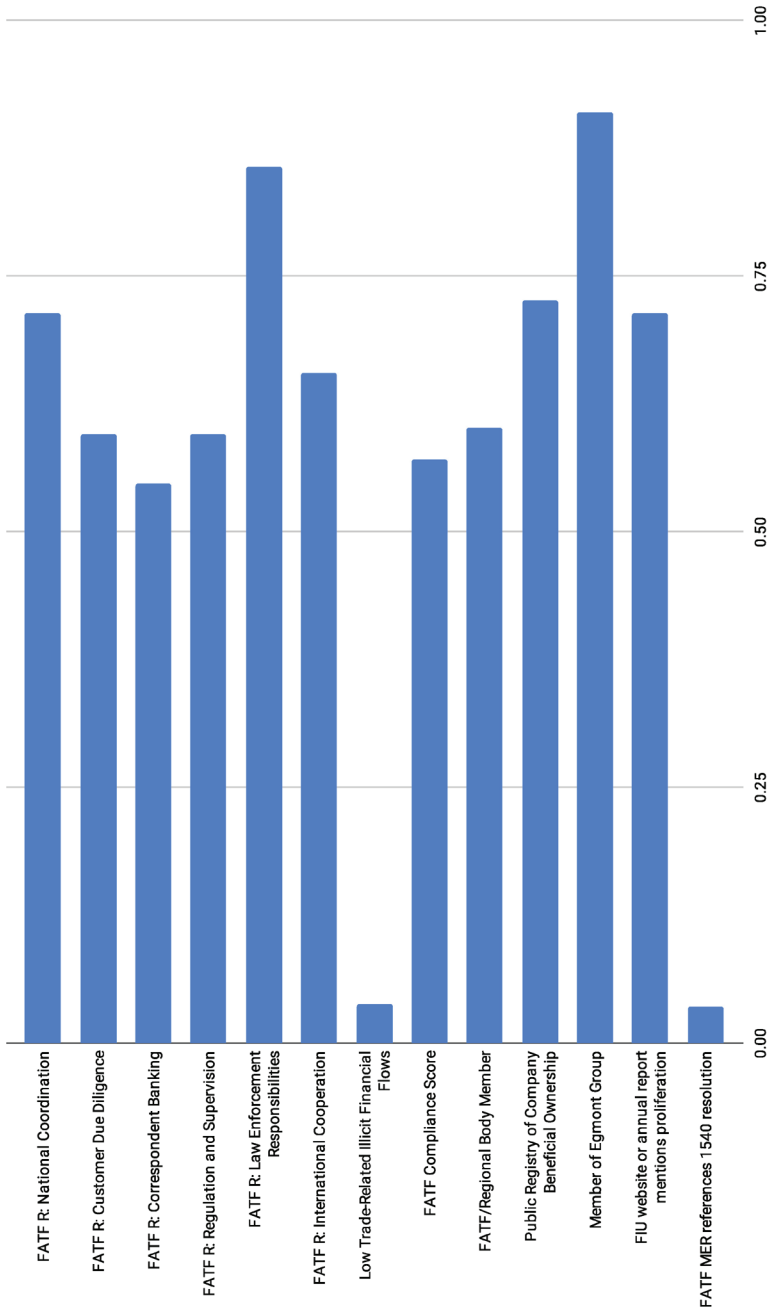


Figure 9.7.A. Extent to which positive sub-criteria under *Ability to Prevent Proliferation Financing* super criterion were fulfilled by Tier One as a group.

2023 Tier One: Ability to Prevent Proliferation Financing Performance Fractions - Negative Criteria

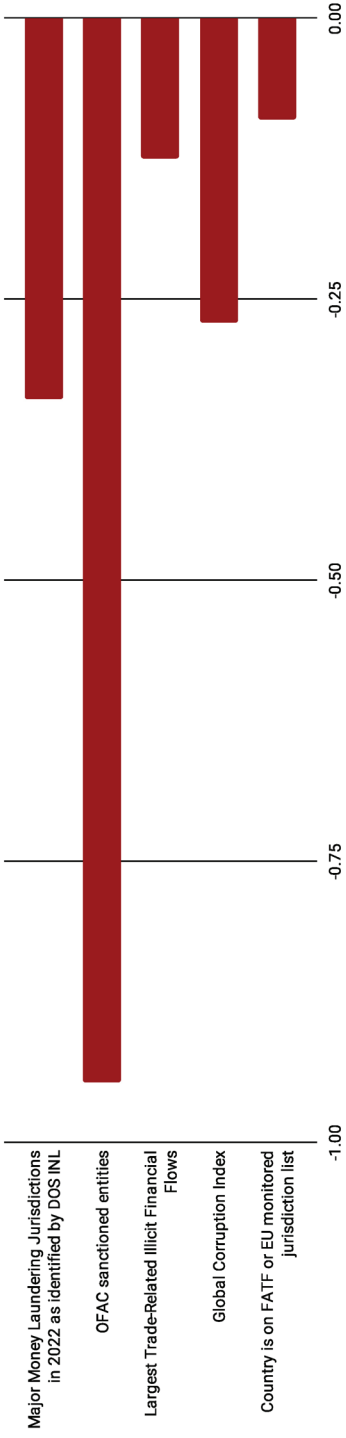


Figure 9.7B. Extent to which negative sub-criteria under *Ability to Prevent Proliferation Financing* super criterion affected Tier One as a group.

2023 Tier One: Ability to Prevent Proliferation Financing Performance Fractions - Extra Credit

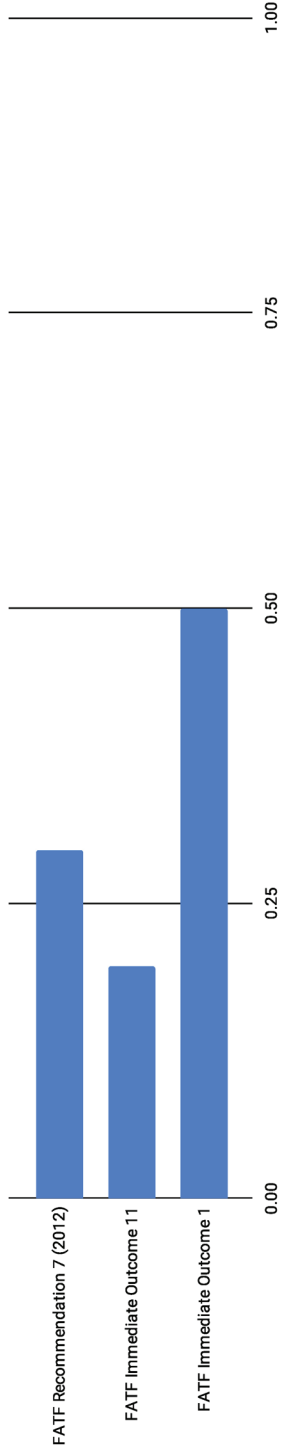


Figure 9.7C. Extent to which extra credit sub-criteria under *Ability to Prevent Proliferation Financing* super criterion were fulfilled by Tier One as a group.

2023 Tier One: Enforcement Performance Fractions

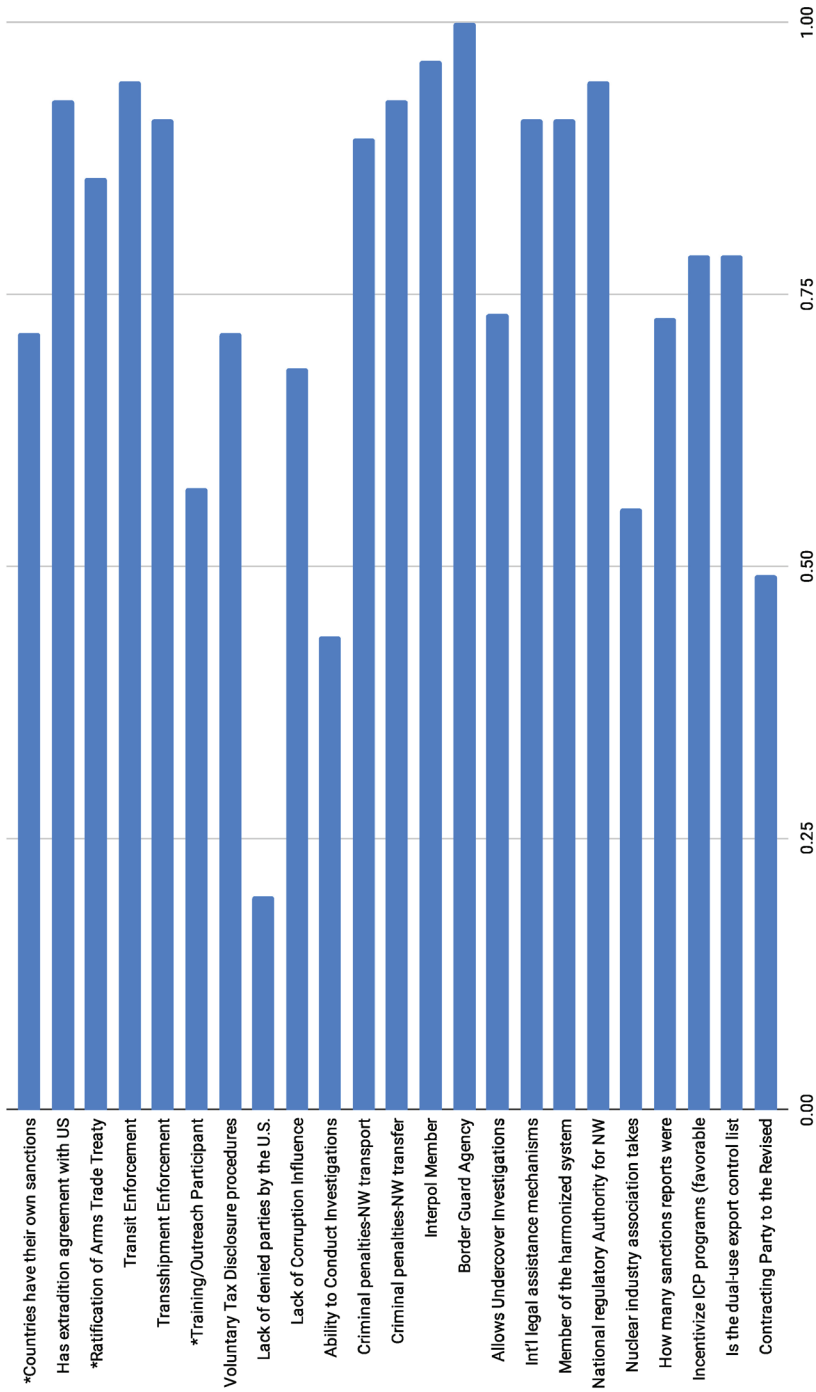


Figure 9.8A. Extent to which positive sub-criteria under *Adequacy of Enforcement* super criterion were fulfilled by Tier One as a group.

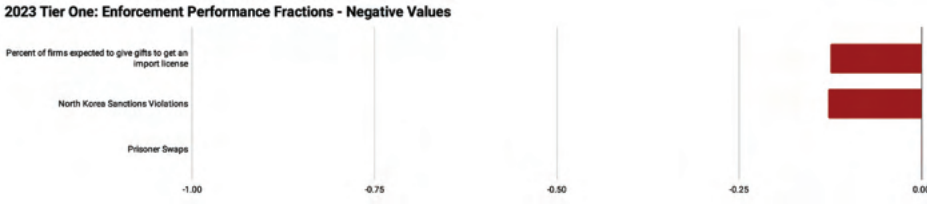


Figure 9.8B. Extent to which Tier One was affected by negative sub-criteria under *Adequacy of Enforcement*.

Tier Rank	Country	Total Points
1	France	1083
2	United States of America	1075
3	United Kingdom of Great Britain and Northern Ireland	1064
4	Australia	1049
5	Latvia	1037
6	Czech Republic	1029
7	Belgium	1029
8	Portugal	1027
9	Sweden	1027
10	Germany	1026
11	Norway	1025
12	Netherlands	1024
13	Austria	1018
14	Ireland	1017
15	Estonia	1010
16	Japan	1008
17	Republic of Korea	1004
18	Denmark	1002
19	Canada	996
20	Slovenia	994
21	New Zealand	985
22	Italy	983
23	Finland	980
24	Lithuania	976
25	Slovakia	968
26	Spain	958
27	Switzerland	953

Tier Rank	Country	Total Points
28	Hungary	937
29	Romania	933
30	Greece	929
31	Luxembourg	927
32	Iceland	907
33	Croatia	890
34	Mexico	886
35	Israel	883
36	South Africa	878
37	Poland	842
38	Kazakhstan	842
39	Bulgaria	824
40	Serbia	816
41	Brazil	793
42	Liechtenstein	789
43	India	780
44	Argentina	749
45	Turkey	738
46	Taiwan*	734
47	San Marino*	731
48	Ukraine	652
49	China	578
50	Hong Kong*	578
51	Pakistan	557
52	Belarus	539
53	Monaco	534
54	Russian Federation	464
55	Iran (Islamic Republic of)	24
56	DPRK	-188

Table 9.1. 2023 Rank of Tier One countries, including total points received. Scores are rounded to the nearest whole number.

ENDNOTES

1. As noted above, in general, it may not be feasible for an entity or country to achieve 100 percent of available points under this super criterion. For example, membership in export control arrangements such as the Nuclear Suppliers Group is by invitation.

CHAPTER 10

TIER TWO RANKING

Tier Two is composed of 58 countries that pose a risk of illicit or unauthorized trade facilitation, transshipment, or transfer of sensitive commodities and have limited supply potential:

Afghanistan, Albania, Algeria, Armenia, Azerbaijan, Bahamas, Bangladesh, Bosnia and Herzegovina, Brunei Darussalam, Chile, Colombia, Costa Rica, Cyprus, Dominican Republic, Ecuador, Egypt, Ethiopia, Georgia, Ghana, Indonesia, Iraq, Jamaica, Jordan, Kuwait, Kyrgyzstan, Lao People's Democratic Republic, Lebanon, Libya, Malawi, Malaysia, Malta, Moldova (Rep of the), Mongolia, Morocco, Namibia, Nicaragua, Niger, Nigeria, Oman, Panama, Paraguay, Peru, Philippines, Qatar, Saudi Arabia, Singapore, Sri Lanka, Syrian Arab Republic, Tajikistan, Thailand, Tunisia, Uganda, United Arab Emirates, Uzbekistan, Vanuatu, Venezuela (Bolivarian Republic of), Viet Nam, and Zambia.

For the 2023 PPI, Hong Kong was moved to Tier One.

Figure 10.1 (and Table 10.1) show the rankings of the countries in Tier Two. The average score in Tier Two is 593 points. The median is 625. The smaller difference in average and median indicates that the scores are more clustered than in Tier One (see Chapter 8).

As with Tier One countries, the reader is cautioned not to assign too much precision to close rankings between countries in Table 10.1. It is the large differences in total points between Tier Two countries that matter, not a country's particular numerical rank.

Tier Two countries by their nature have not developed trade control systems as extensive as countries in Tier One. This is reflected in the overall scores. However, Tier Two countries cannot be expected to develop trade controls as robust as those of Tier One countries. As a result, in this tier, a cutoff is established for countries that achieved a score of at least half of the total points (650 points out of a total possible 1,300 points). This accounts for twenty-five countries; up from seventeen in 2021. It should be noted that having surpassed this cutoff does not mean that improvements are not needed. A score below one-third of the total possible points, which includes eleven countries, indicates that countries need to do considerable work to improve their trade control systems. Those between one-third and half of the total possible points need to improve their systems somewhat (22 countries). This is shown by the pie chart in Figure 10.2.

TIER TWO IN THE OVERALL RANKING

Tier Two countries did not do as well as Tier One countries in the overall PPI ranking. Nine countries ranked among the top 50 countries. Half of the remaining countries ranked between 50 and 100, and the other half ranked below 100. The highest-ranked Tier Two country was Singapore, which ranked 5th overall and achieved 80 percent of the possible points. The second-highest rank in Tier Two, Malta, which placed 17th in the overall rank, achieved 78 percent of the possible points.

SCORE AND PERFORMANCE BY SUPER CRITERIA

Collectively, Tier Two performed best in the *Legislation* super criterion, achieving 62 percent of the total possible points. Performance in *International Commitment* and *Ability to Monitor and Detect Strategic Trade* was similar at just above 50 percent (56 percent and 56 percent, respectively). Under *Adequacy of Enforcement*, Tier Two collectively reached less than half, but more than one-quarter of the possible points (45 percent); the average score under *Ability to Prevent Proliferation Financing* is the lowest at 31 percent of possible points. Figure 10.3 is a bar chart visualizing the performance of Tier Two as a group in the five super criteria. The average scores confirm that collective Tier Two performance has considerable room for improvement (Figure 10.3). As described below, in the

2023 Tier Two Rank

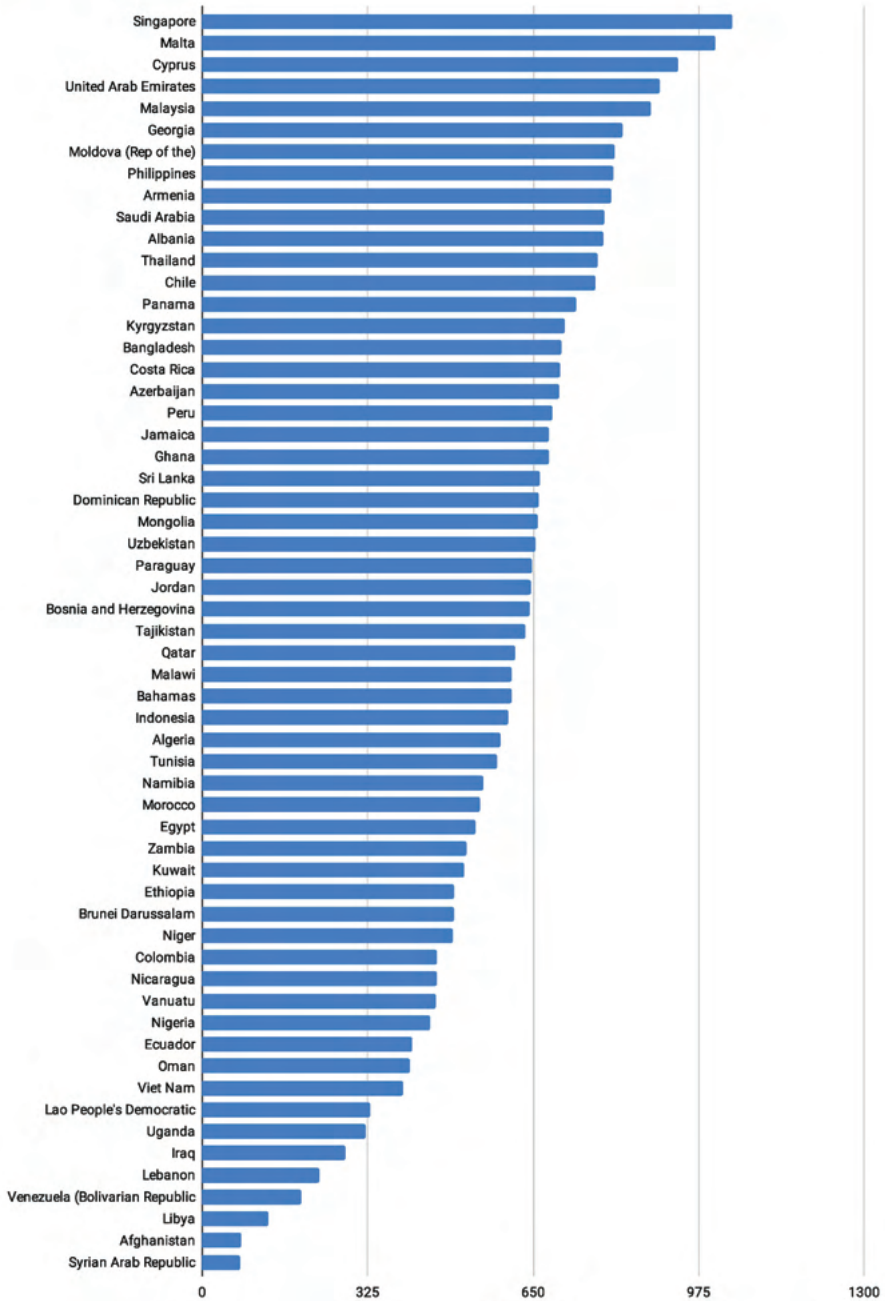


Figure 10.1. Total points received by each country in relation to the total possible points. The points result in the rank.

breakdown by sub-criteria, there are many steps that Tier Two countries can take. The top five performing countries, Singapore, Malta, Cyprus, the United Arab Emirates, and Malaysia, could serve as role-models and share their experience with their peers in this tier.

2023 Scores of Tier Two Countries

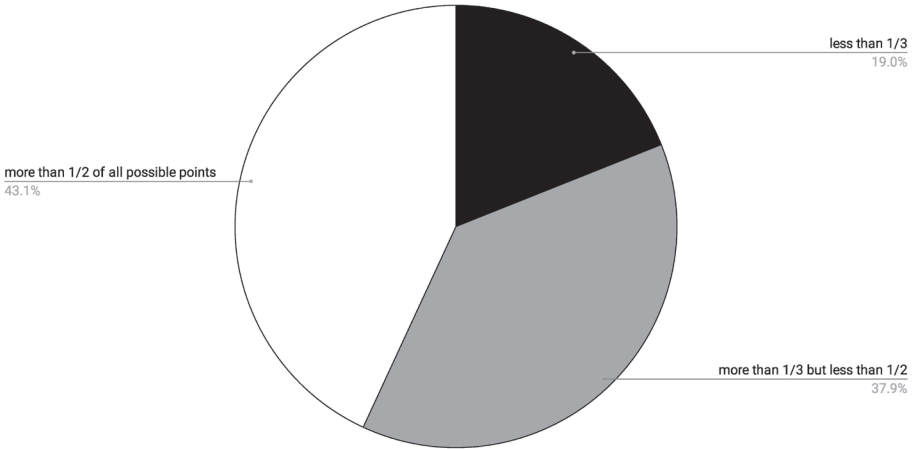


Figure 10.2. One third of all Tier Two countries need significant work on their trade controls (less than one-third of the possible points) and almost half need some work (less than half of the possible points).

2023 Tier Two: Percentage of Possible Points Collectively Achieved by Tier Two

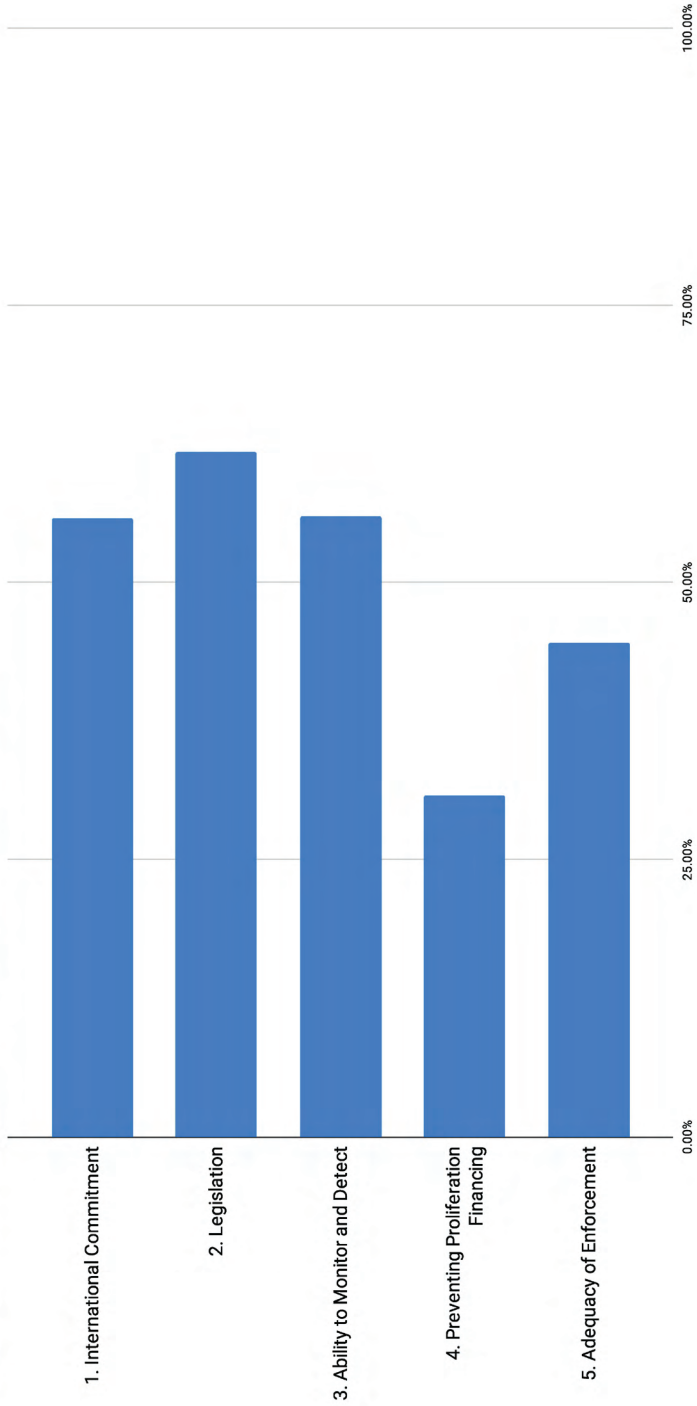


Figure 10.3. The extent to which the super criteria were fulfilled by Tier Two as a group.

TIER TWO PERFORMANCE FRACTIONS - HOW COUNTRIES CAN IMPROVE

Although a country's total score is the fundamental measure of the effectiveness of its trade control system, as discussed before, it is difficult to use it to prescribe a way for countries to improve. As a result, the performance fraction charts the extent to which countries have met each sub-criterion. For example, if the PPI assigned zero, five, or 15 points for a country's adherence to the Additional Protocol (zero would entail no signature or ratification, five would signify signature but not ratification, and fifteen would be points for full ratification), the performance fractions would assess those base points awarded to each country before weighting as low-, medium-, or high-impact. Negative criteria are also included in the performance fraction graphs to acknowledge their importance and the great impact deficiencies can have on a country's final score and rank. Please refer back to Chapter 7: Total Weighted Score and Rank for a longer discussion of performance fractions.

INTERNATIONAL COMMITMENT

Seven of the 58 countries received two-thirds of the total possible points in this super criterion. Thirty-six countries received more than half, but less than two-thirds, of the points. The bottom 15 countries, which received less than 50 percent of the possible points are, listed from higher to lower ranking: Saudi Arabia, Uganda, Bahamas, Namibia, Brunei Darussalam, Ethiopia, Lebanon, Malaysia, Oman, Sri Lanka, Zambia, Lao People's Democratic Republic, Venezuela (Bolivarian Republic of), Syrian Arab Republic, and Egypt.

The performance fractions show that satisfactory performance (at least 75 percent of the total points) was achieved under nine sub-criteria (Figure 10.4). Tier Two countries had a perfect performance in three of those eight sub-criteria: being a party to the Treaty on the Non-proliferation of Nuclear Weapons (NPT), being an IAEA member, and being a member of the World Customs Organization.

However, stronger commitment can be shown by joining initiatives such as the Proliferation Security Initiative, and by adhering to the standards of global export control groups such as the NSG and the Wassenaar Arrangement. The Convention for the Suppression of Unlawful

Acts Against the Safety of Maritime Navigation (SUA) and its 2005 protocol remain an important commitment for Tier Two countries, containing language that makes the use of ships to transport explosive or biological, chemical, or nuclear material unlawful and allows prosecution of the illicit transfer of related materials. The corresponding convention on Aviation safety should also receive more support among Tier Two countries. Many of the Tier Two countries offer trade benefits to major global economies, including inexpensive and fast transshipment opportunities. Therefore, Tier Two countries should not hesitate to take advantage of international conventions, organizations and assistance mechanisms. Lastly, signed treaties should be implemented, and ratifications should be adopted in a timely manner.

LEGISLATION

Overall, Tier Two countries were nearly equal in distribution among those “doing well,” “less than adequate,” and “poorly” at having in place trade control-relevant legislation, where score expectations are higher than overall PPI score expectations due to legislation being a fundamental building block for taking national action against WMD proliferation and strategic commodity trafficking. Twenty-two countries received more than two-thirds of the points, and 18 received more than half but less than two-thirds of the points. The remaining 18 countries received less than half of the possible points. Looking at the evaluation of the quality of export control legislation, Tier Two countries were mixed in their performance as well (see Chapter 3 for a discussion of how quality of legislation is characterized). Seventeen countries were Dark Green, which denotes comprehensive export control legislation, four are Light Green, 15 are Yellow, 13 are Orange, and nine are Red.

The following lists countries by the quality of their export control legislation, alphabetically:

Dark Green (17): *Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Cyprus, Georgia, Iraq, Jordan, Kyrgyzstan, Malaysia, Malta, Moldova (Rep of the), Panama, Philippines, Singapore, Thailand, and the United Arab Emirates.*

Light Green (4): *Morocco¹, Tajikistan, Uzbekistan, and Viet Nam.*

Yellow (15): *Algeria, Bangladesh, Chile, Ghana, Indonesia, Jamaica, Malawi, Namibia, Nicaragua, Nigeria, Peru, Qatar, Saudi Arabia, Sri Lanka, and Uganda.*

Orange (13): *Brunei Darussalam, Costa Rica, Dominican Republic, Ecuador, Ethiopia, Lao People's Democratic Republic, Lebanon, Libya, Mongolia, Niger, Syrian Arab Republic, Vanuatu, and Venezuela (Bolivarian Republic of).*

Red (9): *Afghanistan, Bahamas, Colombia, Egypt, Kuwait, Oman, Paraguay, Tunisia, and Zambia.*

Non-Green categorized countries in this tier should improve their legal basis for export controls and thereby enable more effective implementation and enforcement. Sixty-four percent of Tier Two countries (including Yellow countries) lack relevant and adequate dual-use and nuclear-related export controls, which is related to their poor performance in the remaining super criteria.

The performance fractions show that these countries need to significantly strengthen their trade control laws and lists (Figure 10.5). Only fourteen countries include a catch-all clause in their export control legislation. Moreover, legislative controls on transit and transshipment of nuclear weapons and related goods were only found for roughly 71 and 50 percent of Tier Two countries, respectively. Additionally, Tier Two countries with nuclear infrastructure in place especially should protect intellectual property better to ensure that nuclear-related knowledge and information are not proliferated. Only 26 percent of Tier Two countries currently have legislation in place addressing intangible technology controls.

ABILITY TO MONITOR AND DETECT STRATEGIC TRADE

The highest-scoring country in super criterion *Ability to Monitor and Detect Strategic Trade* is Singapore, which achieved 83 percent of the available points. Forty-one countries scored more than 50 percent (up from 37 in 2021); the scores for the remaining 17 countries fell below the half mark of possible points.

The performance fractions show that five sub-criteria were fulfilled to 75 percent: using an automated customs system; being a party to the

UN Convention on the Law of the Sea; operating a single window system for trade facilitation; use of electronic export declarations; and having a closed ship registry (see Figure 10.6). The first two measures are supported and promoted by the United Nations. For example, the United Nations ran a global campaign to implement the ASYCUDA automated customs software, showing that international organizations can help individual countries to increase their ability to monitor and control trade. The growth in implementation of single window systems and use of electronic export declarations are a welcomed improvement. Countries that operate these systems enhance the efficiency and transparency of their trade systems and facilitate interagency cooperation on trade control-related matters. Four sub-criteria were fulfilled to less than 75 but to 50 or more percent: the ranking by the World Bank of the ease of starting a business; the state has a Point of Contact for 1540 implementation; use of risk management in customs inspections; and registration is required for a company to export or to apply for an export license for controlled goods. The remaining nine sub-criteria are not fulfilled to even 50 percent. While it may take a long time to move up in a World Bank ranking, countries can start working with the public and affected industry, which likely include trading companies and logistics providers in these countries, to increase awareness of WMD proliferation, export controls, sanctions, and often-used illicit trade schemes. Due to the high trade volume, Tier Two countries should prioritize adopting measures to conduct customs inspections based on risk factors, such as association with a sanctioned entity, rather than conducting primarily random searches. Harmonized System (HS code) trade designations and product descriptions can also factor into the identification process of higher risk shipments. Additionally, countries should make it a requirement for companies applying for an export license to register in a company database. This way, a country's government can more easily keep track of companies involved in sensitive trade.

ABILITY TO PREVENT PROLIFERATION FINANCING

Like Tier One countries, Tier Two countries performed the worst in their *Ability to Prevent Proliferation Financing*, but progress over time is visible in this super criterion. Because Tier Two countries include important financial hubs, improvements are highly relevant.

The top-ranking country, Singapore, received 66 percent of the possible points. No country passed the two-thirds mark. Singapore, Malta, Costa Rica, Armenia, Chile, Saudi Arabia, Bangladesh, Cyprus, and Egypt (in order of highest to lowest scores) are the only Tier Two countries to score more than 50 percent but less than two-thirds of possible points under this super criterion (up from five countries in 2021). Twenty countries received at least one-third of possible points, but less than 50 percent (up from 16 in 2021), followed by 24 countries (33 in 2021) that scored under 33 percent but more than zero points. The remaining five countries, an increase from four in 2021, received negative points and included the following, listed from higher to lower ranking: Iraq, Venezuela (Bolivarian Republic of), Afghanistan, Libya, and Lao People's Democratic Republic.

Considering that many of these countries ranked toward the bottom of the 2022 Global Corruption Index, it is particularly concerning that as transshipment states, they also lack the ability to prevent proliferation financing. Since the availability or ease of illicit financing facilitates strategic commodity trafficking, it is significant that a majority of Tier Two countries perform so poorly, in general, under Super Criterion *Ability to Prevent Proliferation Financing*, coupled with poor performance under Super Criterion *Ability to Monitor and Detect Strategic Trade*. Deficient proliferation finance controls, especially in countries known to be transshipment hubs, enable proliferators and illicit actors to establish businesses, move funds, and ultimately take advantage of those countries.

The performance fractions reveal why Tier Two countries performed worst at preventing proliferation financing. Only a single sub-criterion reached performance of 75 percent or more: being a member of the Egmont Group. Seven of the remaining 12 sub-criteria passed the 50 percent mark to varying degrees (see Figure 10.7A). A positive development is represented by FATF Recommendation 30: Law Enforcement Responsibilities, where Tier Two countries reached 73 percent fulfillment. Overall, Tier Two countries are more affected by the negative criteria than countries in Tier One (see Figure 10.7B). FATF compliance overall and compliance with the selected recommendations and outcomes remains deficient, especially with respect to countries' abilities to implement financial sanctions (see Figure 10.7C, Immediate Outcome 11).

Financial crime in general continues to be a significant issue in many Tier Two countries, in some cases the reason a country was categorized as Tier Two rather than Tier Three, when the Tiers were first established in 2017. More than half the countries (30 countries) are on the U.S. State Department List of Countries of Money-Laundering Concern, while 17 are on a FATF or EU monitored jurisdiction list.

All Tier Two countries need to work more closely with the FATF and its regional bodies to implement the FATF recommendations, especially the six recommendations judged as most relevant to preventing proliferation financing. Countries also need to work on financial transparency by maintaining a public registry of company beneficial ownership, and, if none exists, they should establish a financial intelligence unit which could join the Egmont Group and take on an active role in preventing proliferation financing.

ADEQUACY OF ENFORCEMENT

Nine countries (up from seven in 2021) achieved at least two-thirds of the total possible points, while the next eighteen (up from fourteen in 2021) countries scored above 50 percent but failed to reach the two-thirds mark. The highest performing country is Singapore with 87 percent of possible points. The next 21 countries achieved between 25 and 50 percent of the total points. The remaining 10 countries received less than 25 percent of the total points. Of these, three countries (Afghanistan, Lebanon, and Syria) received negative scores. Such frequent, poor performance among transshipment countries, their apparent lack of capacity or willingness to enforce trade controls, and their poor ranking in the Corruption Perceptions Index, need to be seen as collectively hindering their non-proliferation efforts.

The performance fractions show that satisfactory performance of 75 percent across the entire tier was achieved under five sub-criteria: being a member of Interpol; having a border guard agency; being a member of the harmonized system; having criminal penalties for the transport of nuclear weapons; and having a national regulatory authority for nuclear weapons and related items (see Figure 10.8A). Notably, all but one of these sub-criteria are judged as having low impact, with the remaining one being of medium impact (see Chapter 6 for detailed descriptions of

sub-criteria and their impacts.) Six further sub-criteria were fulfilled to 50 percent, including three that are very important for this tier: making use of training and outreach, having transit enforcement capabilities, and making use of international legal assistance mechanisms.

Nevertheless, having means of transshipment enforcement, and allowing customs checks in Free Trade Zones under the Kyoto Convention—arguably the most important mechanisms in terms of sub-criteria for Tier Two countries—are not fulfilled to 50 percent. Figure 10.8B further reveals that Tier Two is again more affected by the negative sub-criteria than Tier One. Twenty countries (compared to fifteen in Tier One) had points subtracted for involvement in violations of UN sanctions on North Korea, to varying degrees of severity, resulting in a performance fraction of -0.17, or -17 percent. Four of the countries were identified as involved in military-related violations in the reporting period covering 2023: Ethiopia, Niger, Nigeria, and the Philippines. Thirteen countries were involved repeatedly in non-military-related violations in the recent years, warranting a lower point subtraction than military-related violations, but a higher subtraction than involvement in 2021 alone. Three countries were involved in only a single instance or two in the reporting period covering 2021, resulting in the lowest point subtraction equivalent of a low impact criterion (minus five points). Related to this inability of many countries to prevent sanctions violations on their soil or by their nationals is that only a few countries in this tier submit North Korea sanctions implementation reports on a regular basis.

2023 Tier Two: International Commitment Performance Fractions

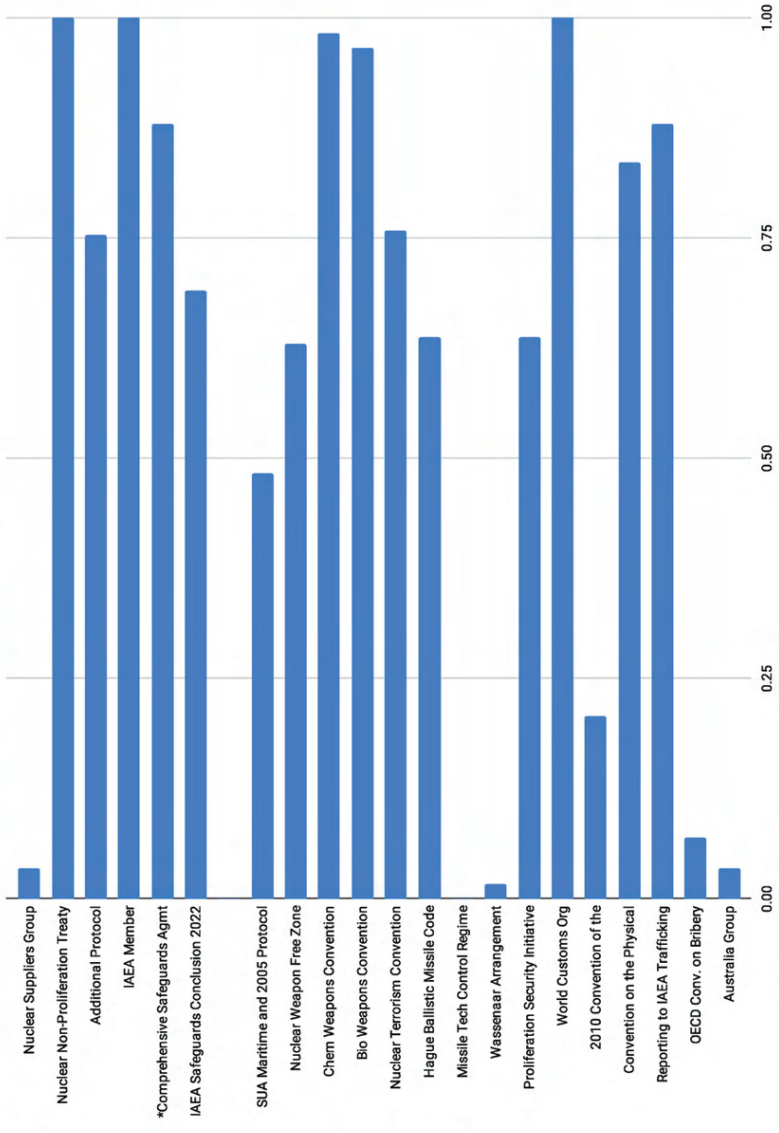


Figure 10.4. The extent to which sub-criteria making up the *International Commitment* super criterion were fulfilled by Tier Two as a group. An asterisk next to the sub-criterion indicates that a methodological change occurred in 2023.

2023 Tier Two: Legislation Performance Fractions

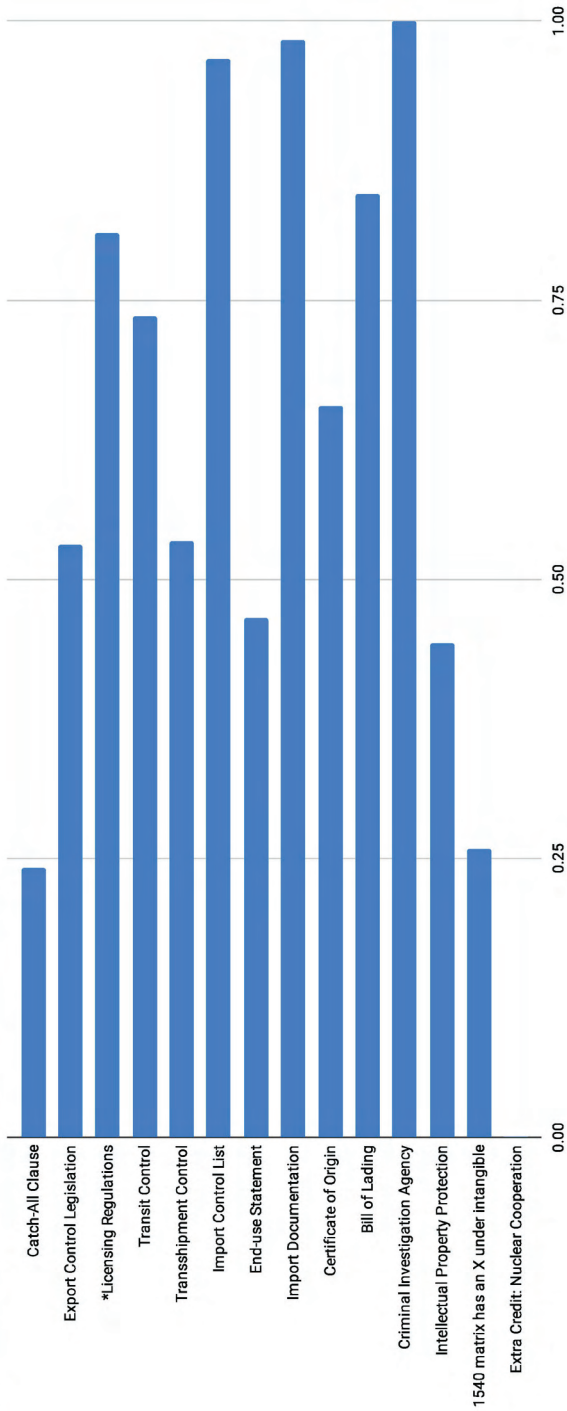


Figure 10.5. The extent to which sub-criteria making up the *Legislation* super criterion were fulfilled by Tier Two as a group.

2023 Tier Two: Ability to Monitor and Detect Strategic Goods Performance Fractions

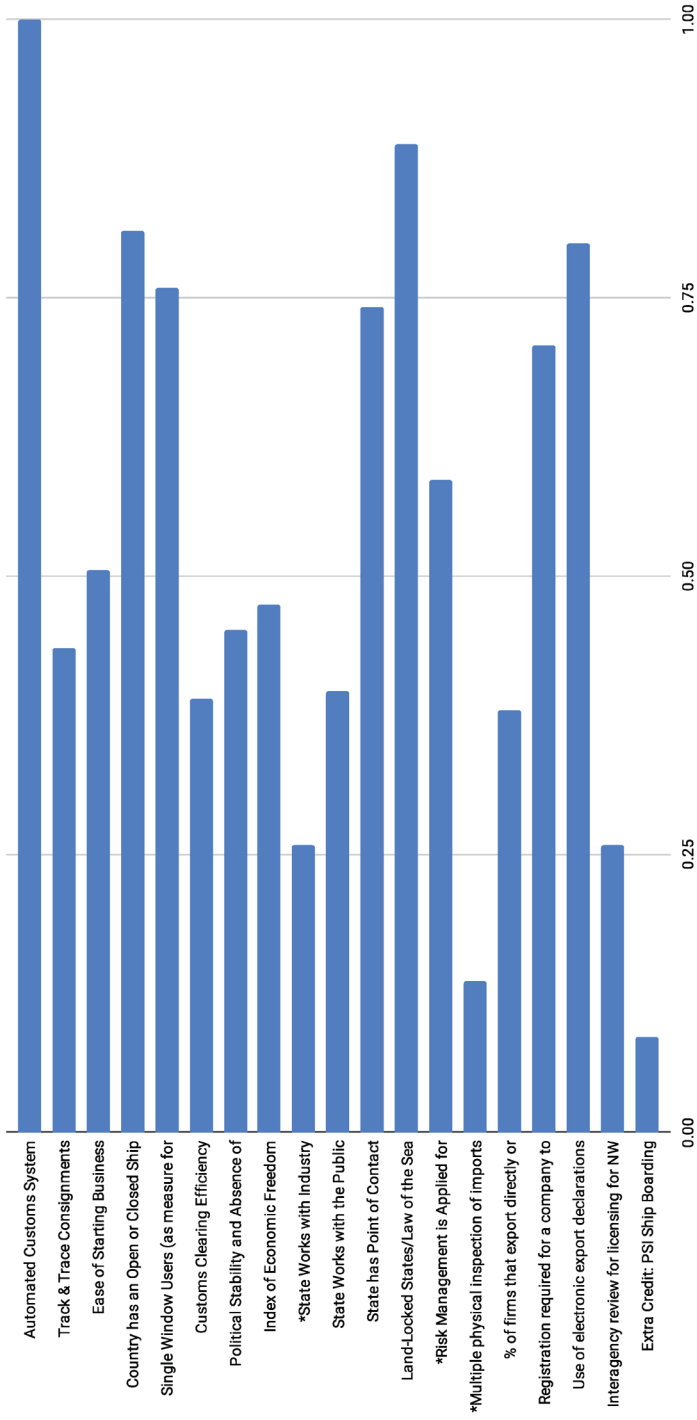


Figure 10.6. The extent to which sub-criteria making up the *Ability to Monitor and Detect Strategic Trade* super criterion were fulfilled by Tier Two as a group.

2023 Tier Two: Ability to Prevent Proliferation Financing Performance Fractions

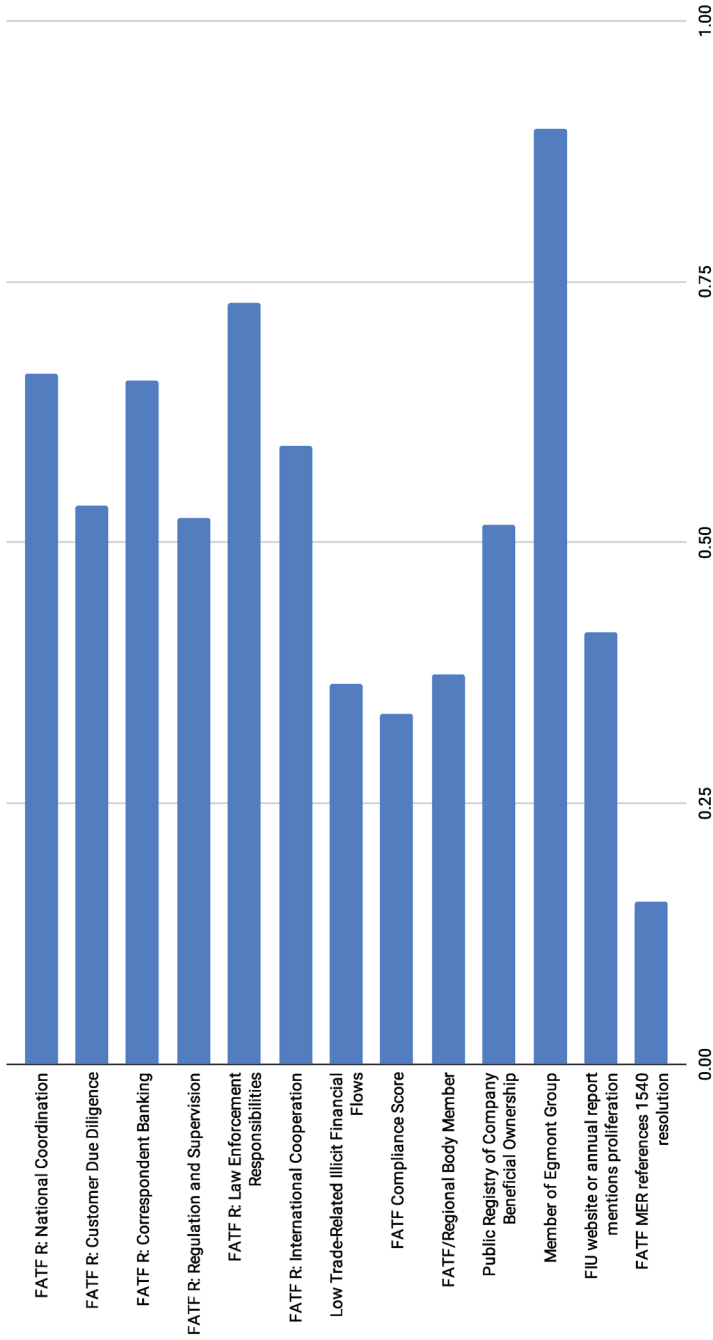


Figure 10.7A. Extent to which positive sub-criteria under *Ability to Prevent Proliferation Financing* super criterion were fulfilled by Tier Two as a group.

2023 Tier Two: Ability to Prevent Proliferation Financing Performance Fractions - Negative Criteria

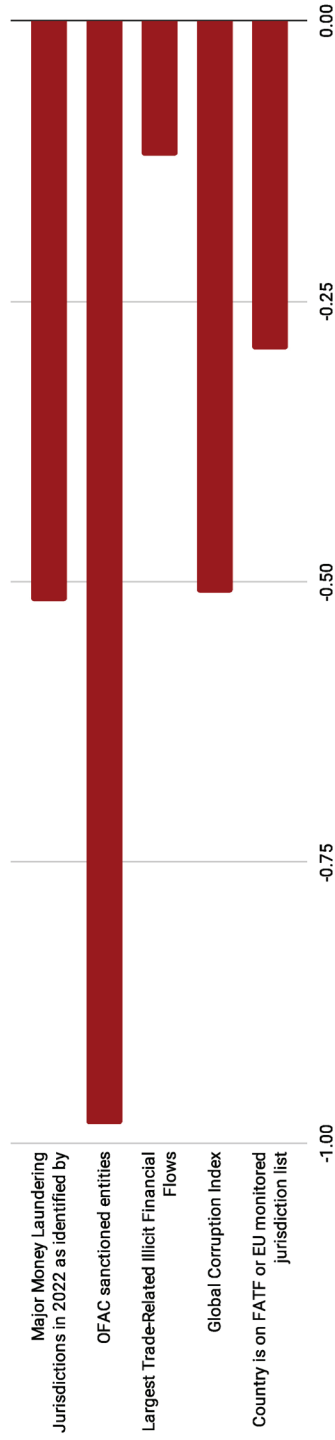


Figure 10.7B. Extent to which negative sub-criteria under *Ability to Prevent Proliferation Financing* super criterion affected Tier Two as a group.

2023 Tier Three: Ability to Prevent Proliferation Financing Performance Fractions - Extra Credit



Figure 10.7C. Extent to which extra credit sub-criteria under Ability to Prevent Proliferation Financing super criterion were fulfilled by Tier Two as a group.

2023 Tier Two: Enforcement Performance Fractions

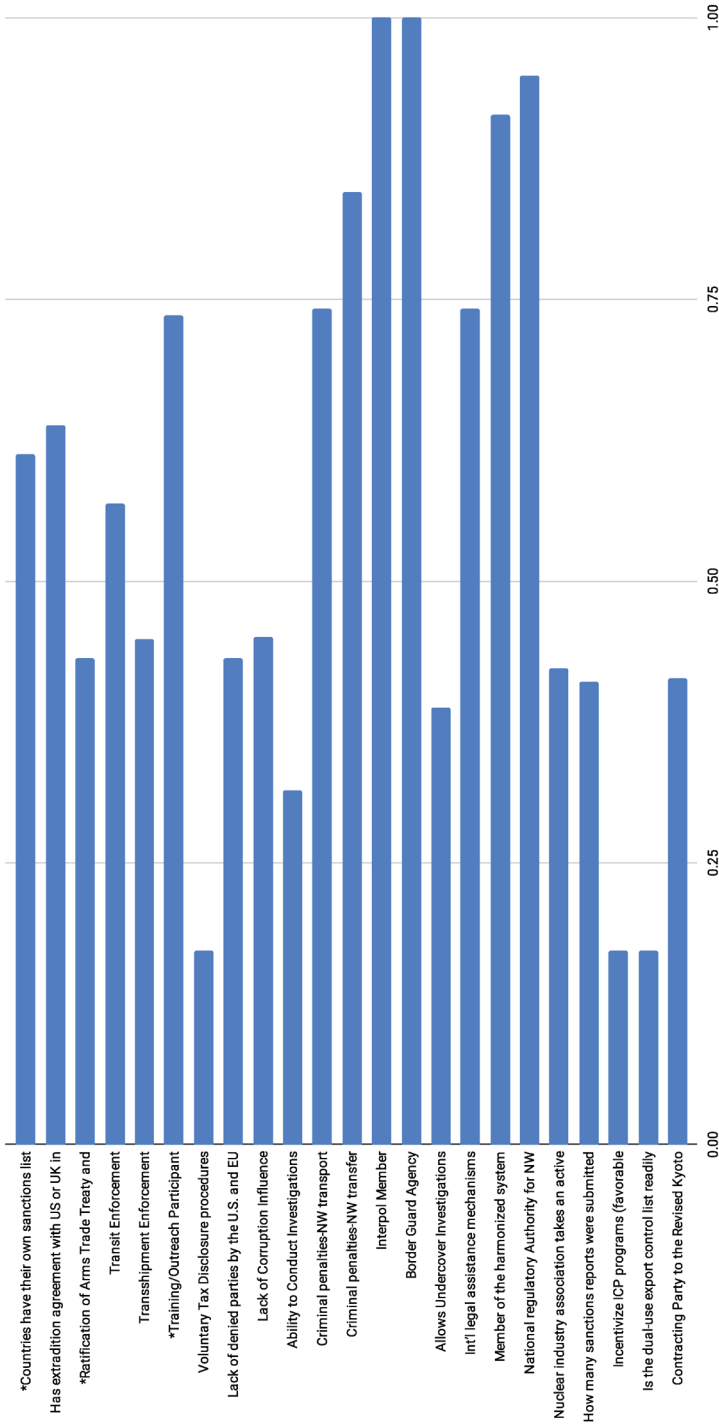


Figure 10.8.A. The extent to which positive sub-criteria under the *Enforcement* super criterion were fulfilled by Tier Two as a group.

2023 Tier Two: Enforcement Performance Fractions - Negative Criteria

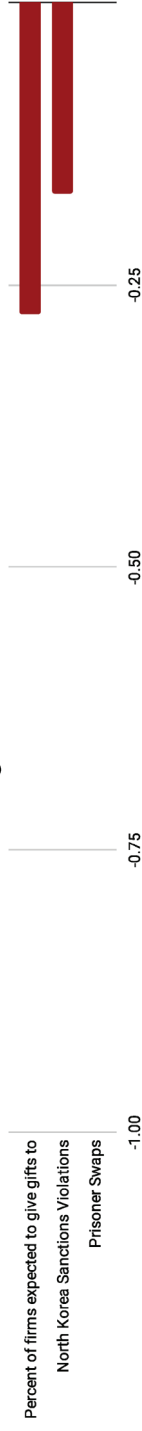


Figure 10.8B. Extent to which Tier Two was affected by negative sub-criteria under *Adequacy of Enforcement*.

Tier Rank	Country	Total Points	Tier Rank	Country	Total Points
1	Singapore	1041	31	Malawi	609
2	Malta	1008	32	Bahamas	607
3	Cyprus	934	33	Indonesia	600
4	United Arab Emirates	898	34	Algeria	586
5	Malaysia	881	35	Tunisia	579
6	Georgia	826	36	Namibia	552
7	Moldova (Rep of the)	810	37	Morocco	546
8	Philippines	807	38	Egypt	537
9	Armenia	804	39	Zambia	518
10	Saudi Arabia	791	40	Kuwait	513
11	Albania	787	41	Ethiopia	494
12	Thailand	776	42	Brunei Darussalam	494
13	Chile	773	43	Niger	492
14	Panama	735	44	Colombia	462
15	Kyrgyzstan	712	45	Nicaragua	462
16	Bangladesh	706	46	Vanuatu	458
17	Costa Rica	703	47	Nigeria	448
18	Azerbaijan	701	48	Ecuador	412
19	Peru	687	49	Oman	408
20	Jamaica	681	50	Viet Nam	394
21	Ghana	680	51	Lao People's Democratic Republic	329
22	Sri Lanka	664	52	Uganda	320
23	Dominican Republic	662	53	Iraq	282
24	Mongolia	659	54	Lebanon	231
25	Uzbekistan	654	55	Venezuela (Bolivarian Republic of)	195
26	Paraguay	648	56	Libya	130
27	Jordan	646	57	Afghanistan	76
28	Bosnia and Herzegovina	643	58	Syrian Arab Republic	74
29	Tajikistan	635			
30	Qatar	614			

Table 10.1. 2023 Rank of Tier Two countries, including total points received.

NOTES

1. Morocco will be considered as dark-green in the next PPI edition.

CHAPTER 11

TIER THREE RANKING

Tier Three is composed of the remaining 86 countries that are not in Tiers One and Two:

Andorra, Angola, Antigua and Barbuda, Bahrain, Barbados, Belize, Benin, Bhutan, Bolivia, Botswana, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo (Dem Rep of the), Congo (Rep of the), Cook Islands, Côte d'Ivoire, Cuba, Djibouti, Dominica, El Salvador, Equatorial Guinea, Eritrea, Fiji, Gabon, Gambia, Grenada, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Holy See, Honduras, Kenya, Kiribati, Kosovo*, Lesotho, Liberia, Macedonia, Madagascar, Maldives, Mali, Marshall Islands, Mauritania, Mauritius, Micronesia (Federation of), Montenegro, Mozambique, Myanmar, Nauru, Nepal, Niue, Palau, Palestine (State of)*, Papua New Guinea, Rwanda, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Samoa, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Solomon Islands, Somalia, South Sudan, Sudan, Suriname, Swaziland (Eswatini), Tanzania (United Republic of), Timor-Leste, Togo, Tonga, Trinidad and Tobago, Turkmenistan, Tuvalu, Uruguay, Yemen, and Zimbabwe. [An asterisk indicates these entities are difficult to rank because of their dependence on other countries or their non-state status.]*

Compared to Tier One and Two countries, Tier Three countries did not perform as well on fulfillment of sub-criteria and overall. No Tier

Three countries ranked in the top 50 of all 200 countries. Twelve Tier Three countries ranked between 50 and 100; the remaining 74 countries ranked in the bottom half of all 200 countries.

Many of the countries in Tier Three are not known to have been used as transshipment countries by proliferant states in the process of illegally procuring goods or moving funds, but they do at times factor into sanctions-evading schemes of other countries. In general, these countries appear to pose a generally lower risk of being caught up in illicit trading schemes. However, this could change as countries develop or as illicit trading networks look to exploit additional states with weak controls.

Table 11.1 (and Figure 11.1) show the rankings of the countries in Tier Three. The average score in 2023 for Tier Three is 389 points. The median is 385. The median and range are closer together than they are for Tier One and Tier Two, indicating that the scores cluster more closely together. Both are up from 2021, where the average points were 368 and the median was 376.

While the strategic trade control requirements or expectations for non-supplier and non-transshipment countries may not be as high, Tier Three still performed poorly overall. The results suggest that for these countries, which comprise 43 percent of all countries, trade controls are a low priority. In general, Tier Three countries lack a basic commitment to international conventions and legislation from which to establish and enact trade controls.

Moreover, they lack capacity, resources, and possibly the will to combat proliferation and enforce trade controls. Prevalence of corruption in these countries, and the related ease with which illicit funds can be used, support trafficking in strategic commodities. Tier Three countries could potentially be used by unscrupulous “middlemen” or facilitators to finance and procure commodities from supplier countries. As a result, the same cutoff is used for Tier Three as for Tier Two, namely half the total points (650 points). Unfortunately, only six countries in Tier Three achieved these points. A score below one-third of the total possible points means that countries need to do considerable work to improve their trade control systems (51 countries). Those in between need to improve their systems somewhat (29 countries). This is visualized in the pie chart in Figure 11.2.

2023 Tier Three Rank

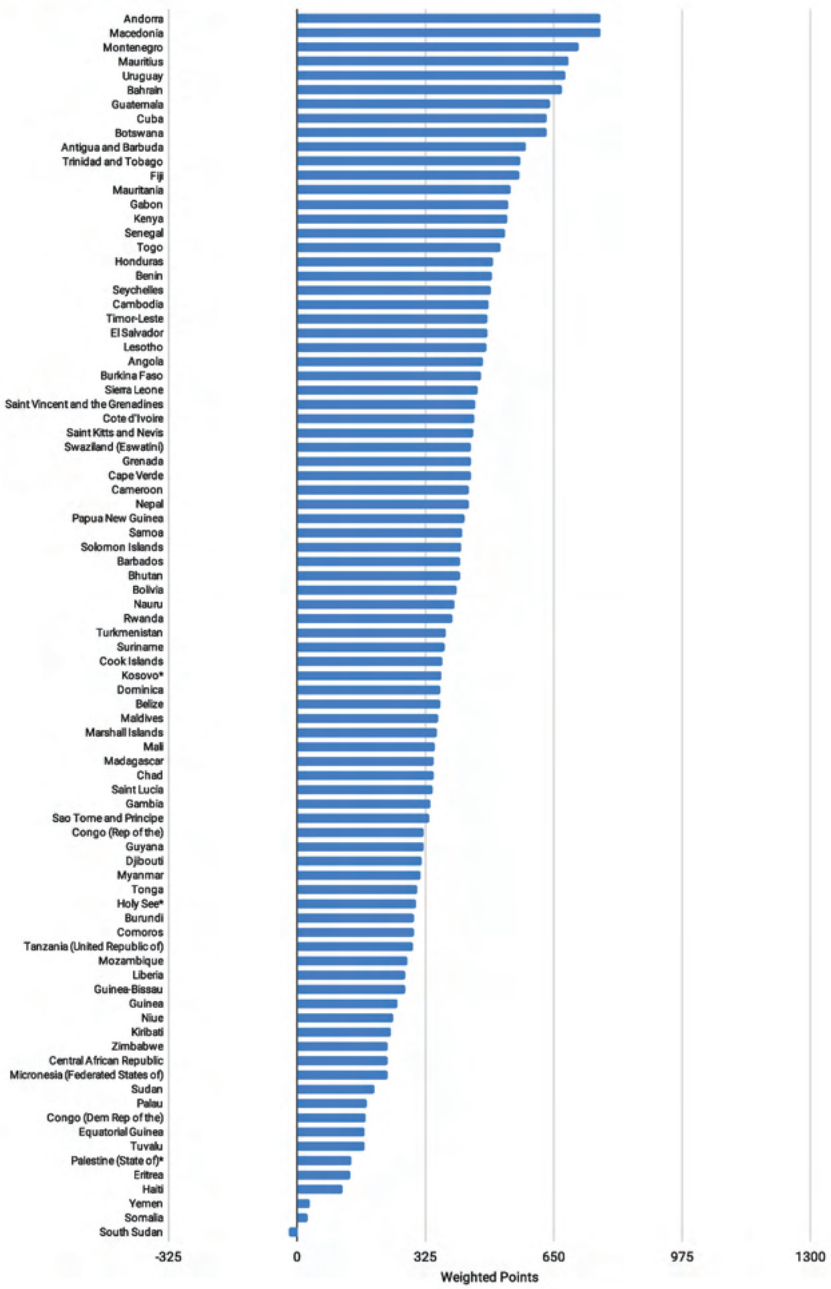


Figure 11.1. Visualization of the total points received by each country in relation to the total possible points (1,300). The scores lead to the rank. The vertical line at 650 represents the 50 percent marker, and the vertical line at 325 is the 25 percent marker.

2023 Scores of Tier Three Countries

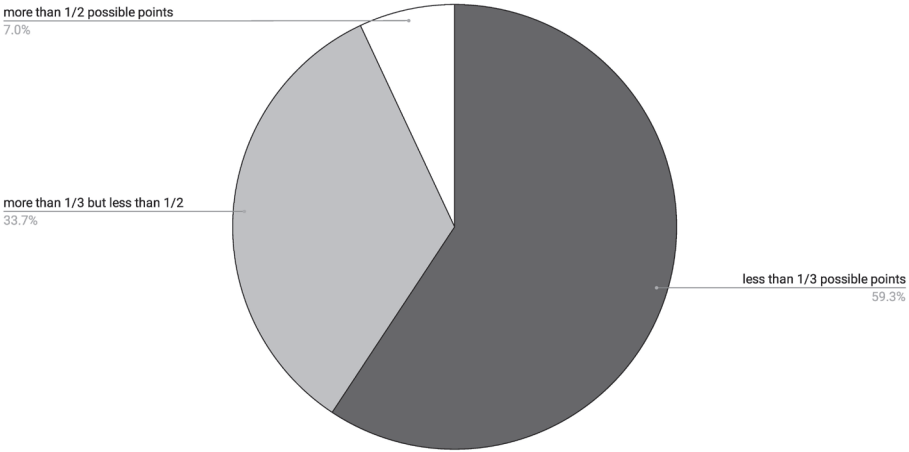


Figure 11.2. The pie chart indicates a situation that is dire. Although many countries have improved since the 2023 PPI, the data highlight the need for all countries to continue to work and improve their strategic trade controls. Almost 60 percent of Tier Three countries receive less than one third of the total possible points in the 2023 PPI.

A model strategic trade control system with minimal resource requirements for a Tier Three country is discussed in Chapter 15.

SCORE AND PERFORMANCE BY SUPER CRITERIA

The average score by Tier Three achieved in each super criterion shows that their low scores stem from insufficient action taken to meet the criteria. Not a single super criterion was fulfilled to even 50 percent. Collectively, Tier Three performed best in the *International Commitment* and the *Legislation* super criteria, which are at 45 percent and 43 percent, respectively. Under *Ability to Monitor and Detect Strategic Trade*, and *Adequacy of Enforcement*, Tier Three collectively reached also less than half, but more than one quarter of the possible points (40 percent and 27 percent, respectively). Tier Three performed worst in its *Ability to Prevent Proliferation Financing*, with only 17 percent of the possible points achieved. Figure 11.3 is a bar diagram visualizing the performance of Tier Three as a group in the five super criteria.

2023 Tier Three: Percentage of Possible Points Collectively Achieved by Tier Three

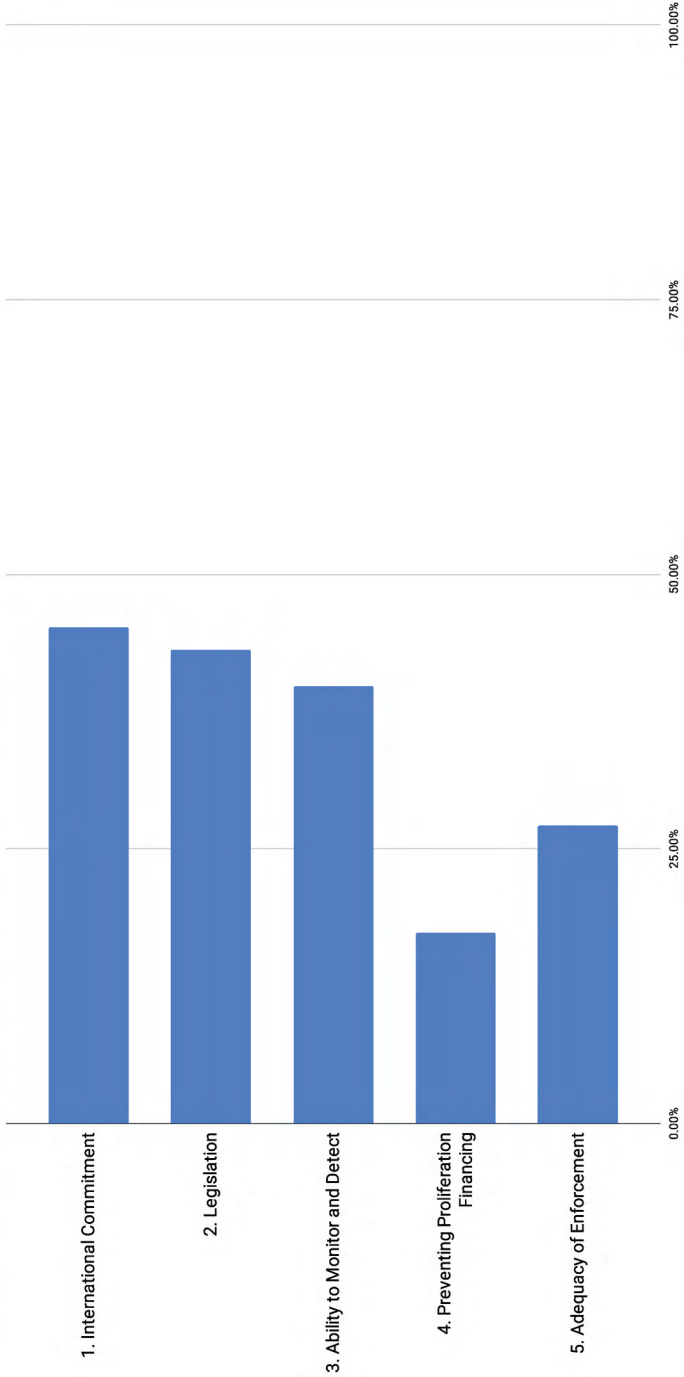


Figure 11.3. The extent to which the super criteria were fulfilled by Tier Three as a group.

TIER THREE PERFORMANCE FRACTIONS – HOW COUNTRIES CAN IMPROVE

As discussed earlier, the performance fraction charts the extent to which countries have met the sub-criteria. Please refer back to Chapter 7 for a longer discussion of performance fractions.

INTERNATIONAL COMMITMENT

No Tier Three country achieved two-thirds of the total possible points under this super criterion; the highest scorer received 65 percent of possible points. Forty countries, however, did receive at least half of the possible points. Thirty-eight countries received between 25 and 50 percent of possible points, while the remaining eight countries received less than 25 percent.

The performance fractions under this super criterion suggest a lack of commitment to adopting international agreements and conventions (see Figure 11.4). While the majority of Tier Three countries are parties to the three major WMD Treaties (NPT, CWC, and BWC), memberships in other important conventions such as the Convention for the Suppression of Acts of Nuclear Terrorism, and the Proliferation Security Initiative, continue to fall short of 50 percent. There is room for improvement regarding IAEA cooperation. In the 2023 PPI update, adherence to the Convention on the Physical Protection of Nuclear Materials rose to 61 percent, an improvement, but still short of what is desired.

Of all the tiers, Tier Three countries have the highest rate of participation in regional Nuclear Weapon Free Zone treaties, implying an important commitment to preventing the spread of nuclear weapons in their regions. However, this should not be taken as an indication that countries in Tiers One and Two lack commitment to non-proliferation or nuclear disarmament. It more likely reflects the fact that, for many countries in Tiers One and Two, NWFZ treaties have not been established in their regions, for example, in Europe and the Middle East.

LEGISLATION

Six countries received more than two-thirds of the possible points under this super criterion, with the highest, Montenegro, achieving 98 percent

of possible points. The next 16 countries, up from 14 in 2021, received at least half, but less than two-thirds, of the points. Fifty-six countries received more than one-quarter but less than one-half of the points, while the remaining eight received less than one-quarter of the points (in order of higher to lower): Cook Islands, Guinea-Bissau, Equatorial Guinea, Somalia, Eritrea, Yemen, Comoros, and the Holy See*.

Looking at export control legislation specifically reveals that the quality of existing legislation in this tier is poor (see Chapter 3, Table 3.2, for a discussion of how quality of legislation is characterized). Only seven countries were in the Dark or Light Green category of export control legislation, and the overwhelming majority, or 80 percent, have legislation in the Orange or Red categories. Kenya continues to be a leader in the region and in its Tier in terms of adopting STC legislation.

The following lists countries alphabetically by the quality of their export control legislation:

Dark Green (5): *Andorra, Kenya, Kosovo, Macedonia (North), and Montenegro.*

Light Green (2): *Cambodia and Myanmar.*

Yellow (13): *Botswana, Cameroon, Cape Verde, Cuba, Guatemala, Mauritania, Mozambique, Niue, Rwanda, Sierra Leone, Tanzania (United Republic of), Tuvalu, and Uruguay.*

Orange (22): *Benin, Bhutan, Bolivia, Burkina Faso, Cote d'Ivoire, Eritrea, Fiji, Gabon, Gambia, Grenada, Lesotho, Nauru, Palau, Saint Kitts and Nevis, Samoa, Senegal, Seychelles, Solomon Islands, Timor-Leste, Togo, Trinidad and Tobago, and Turkmenistan.*

Red (44): *Angola, Antigua and Barbuda, Bahrain, Barbados, Belize, Burundi, Central African Republic, Chad, Comoros, Congo (Dem Rep of the), Congo (Rep of the), Cook Islands, Djibouti, Dominica, El Salvador, Equatorial Guinea, Guinea, Guinea-Bissau, Guyana, Haiti, Holy See, Honduras, Kiribati, Liberia, Madagascar, Maldives, Mali, Marshall Islands, Mauritius, Micronesia (Federated States of), Nepal, Palestine (State of), Papua New Guinea, Saint Lucia, Saint Vincent and the Grenadines, Sao Tome and Principe, Somalia, South Sudan, Sudan, Suriname, Swaziland (Eswatini), Tonga, Yemen, and Zimbabwe.*

The performance fractions show that some trade control legislation exists that could support potential future nuclear commodity trade control laws (see Figure 11.5). As of 2023, relevant nuclear direct and dual-use control lists and catch-all clauses are missing in all but a handful of Tier Three countries. Several sub-criteria, such as having licensing regulations for other types of controlled goods, an investigative authority, an import control list, and requiring a certain set of documents for imports and exports, are fulfilled to more than 75 percent, but since relevant control lists are missing, these laws and authorities do not apply to many nuclear and other dual-use items. For the other six sub-criteria, countries fall far short of 50 percent, with three of the sub-criteria not reaching 25 percent.

ABILITY TO MONITOR AND DETECT STRATEGIC TRADE

Tier Three countries do not perform well overall in their *Ability to Monitor and Detect Strategic Trade*. The highest-ranking country received 72 percent of the possible points; sixteen countries (up from fifteen in 2021) achieved more than 50 percent of the possible points. The next 61 countries, while scoring below half of the total possible points, received at least a quarter of possible points, while the remaining 9 (down from 14 in 2021) countries did not achieve 25 percent.

Performance fractions show that only three sub-criteria were fulfilled to more than 75 percent (see Figure 11.6): using automated customs systems, being a party to the UN Convention on the Law of the Sea or on Transit of Land-locked States, and having a closed ship registry. As such, the shape of the performance fraction profile of Tier Three looks relatively similar to that of Tier Two, with the bars generally shorter in length. Two sub-criteria are fulfilled to 50 percent: the state has a UNSCR 1540 Committee point of contact, and files export declarations electronically.

ABILITY TO PREVENT PROLIFERATION FINANCING

Tier Three countries performed the worst in preventing the financing of proliferation, with the highest-ranking country in this super criterion, Andorra, receiving 75 percent of the possible points. A total of seven countries achieved more than half of the total points (up from five in 2021). The next 20 countries achieved a score between half and 25 percent of the possible points, while the following 44 countries received between

zero and 25 percent of the possible points. The remaining 15 countries (up from 14 in 2021) received negative scores and include the following, listed from higher to lower ranking: Kenya, Tuvalu, Micronesia (Federated States of), Guinea, Somalia, Equatorial Guinea, Yemen, Kosovo, Tanzania (United Republic of), Liberia, Mozambique, Eritrea, South Sudan, Haiti, and Congo (Dem Rep of the). Many Tier Three countries had a new FATF mutual evaluation report since the 2021 index, and thus were able to receive additional points. Yet, in Tier Three, the compliance levels achieved in the new FATF reports seem to be too low to have a noticeable, positive impact on the tier's performance fractions or overall average score in this super criterion. The performance fractions show that significant improvement must be made in preventing proliferation financing in Tier Three. Only two of the sub-criteria exceed the 50 percent fulfillment marker (being a member of the Egmont Group and FATF R. 30 Law Enforcement Responsibilities; see Figure 11.7A).

Figure 11.7B shows that Tier Three countries are less of a concern for money laundering risks than Tier Two countries and are less affected by OFAC sanctions than countries in Tier One and Tier Two. This tracks well with the judgment that these countries pose a generally lower risk of being caught up in illicit trading schemes. Nonetheless, Tier Three countries should not see this as a reason to fall behind in international standards set by FATF (see Figures 11.7A and 11.7C).

It should be noted that for many countries in Tier Three, the sub-criterion's *overall FATF compliance score* was not available from a data source used in the PPI ranking. If data were available, the performance fraction for this specific sub-criterion would likely be higher, but would still fit the trend set by the other sub-criteria. Six of the positive sub-criteria, and nine in total if including extra credit, are based on specific FATF recommendations, and would be part of the overall FATF compliance score. Performance in these sub-criteria is generally low, with the highest (Recommendation on Law Enforcement Responsibilities, notably also the one where Tier Two performed the best) being 53 percent fulfilled (see Figures 11.7A and 11.7C). Given these low scores, the overall FATF compliance score would be expected to be comparable to these scores, or at least not significantly greater than those sub-criteria scores.

ADEQUACY OF ENFORCEMENT

Tier Three countries, in general, lack the capacity to enforce trade controls. Only five countries achieved a score greater than 50 percent of the possible points. The top performing country is Bahrain, which received 57 percent of possible points. The next 45 (down from 55 in 2021) countries received less than 50 percent, but more than 25 percent, of the points, and 30 countries received less than 25 percent, but no less than zero points. Six countries or entities received negative scores under this super criterion.

Once again, the *Enforcement* performance fraction profile for Tier Three looks relatively similar in shape, albeit shorter in length, to the one for Tier Two. Satisfactory performance (75 percent fulfillment) was achieved in three sub-criteria: not having entities on select U.S. and EU sanctions or screening lists, being a member of Interpol, and having a border guard agency (see Figure 11.8A). Four additional sub-criteria were fulfilled to at least 50 percent: country has an extradition agreement with the U.S. or UK in force, the state has criminal penalties for the transfer, as well as, transport of nuclear weapons enshrined in its laws, and is a member of the harmonized system. Tier Two countries perform significantly better in participating in training and outreach and international legal assistance mechanisms, which Tier Three countries would greatly benefit from as well.

Tier Three countries do perform best under the sub-criterion *Lack of parties on select United States and European Union screening lists*. The great majority, 77 percent of the countries, do not have a single sanctioned entity on select U.S. or EU sanctions and screening lists. This suggests that these countries have, so far, not been involved with known illicit WMD trading networks. Furthermore, it could also reflect that Tier Three countries do not participate as much in global trade, or to the level that Tier One and Two countries do.

Regardless, Figure 11.8B shows that Tier Three countries are by no means excluded from UN sanctions violations and evasion. Twenty-three countries were involved in violating UN Security Council sanctions on North Korea and had points subtracted depending on the frequency and gravity of their involvement (see Chapter 6 on how points are subtracted). Of those, five Tier Three countries were involved in military-related sanctions violations in recent years: Myanmar, Mozambique, Tanzania (United Republic of), Congo (Rep of the), and Fiji. Roughly twelve countries were

involved in up to six non-military-related sanctions violations in the reporting period covering 2023. While some countries actively engage in sanctions-evading business, likely because it is a source of much-needed income, or services offered by a sanctioned party come at a cheaper price, others are vulnerable to individuals and entities on their territories engaging in sanctions evasion schemes due to their lack of oversight and regulations.

2023 Tier Three: International Commitment Performance Fractions

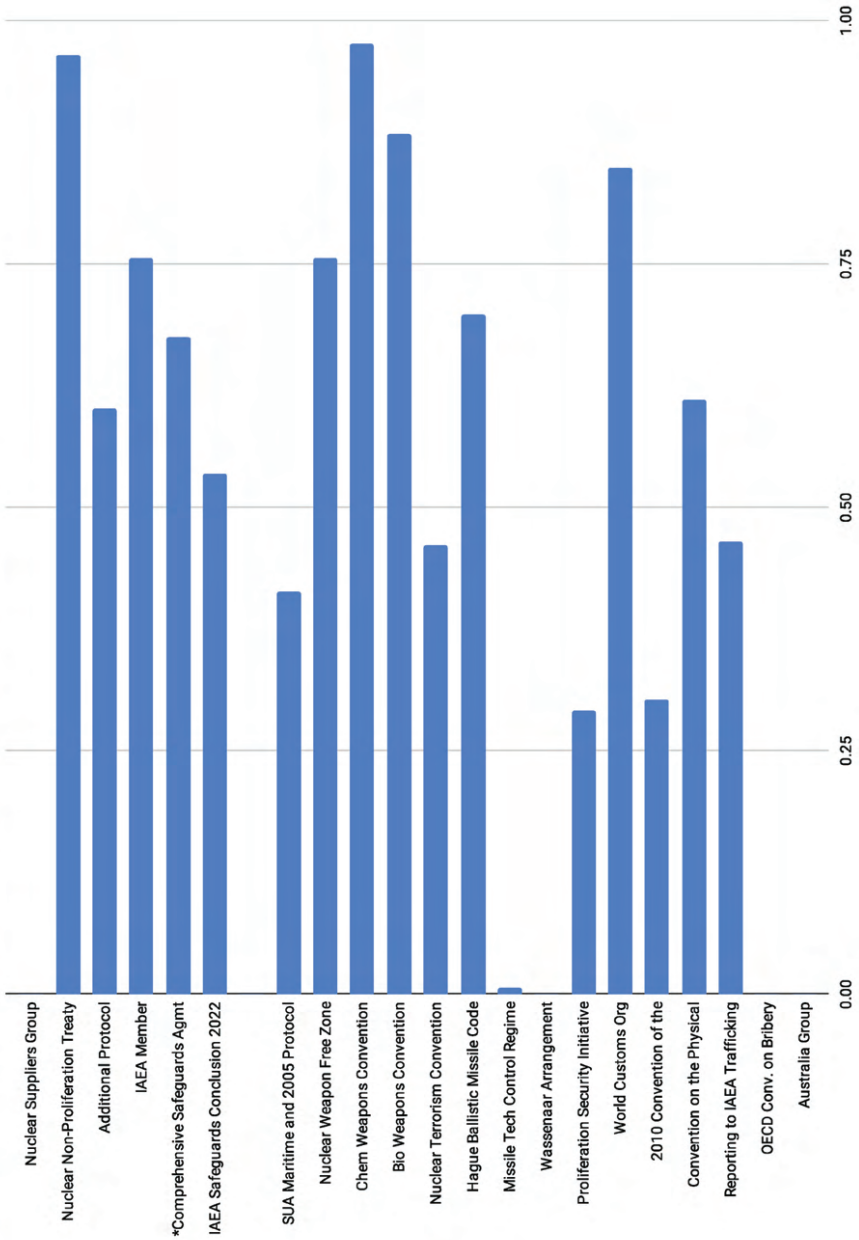


Figure 11.4. The extent to which sub-criteria making up the *International Commitment* super criterion were fulfilled by Tier Three as a group.

2023 Tier Three: Legislation Performance Fractions

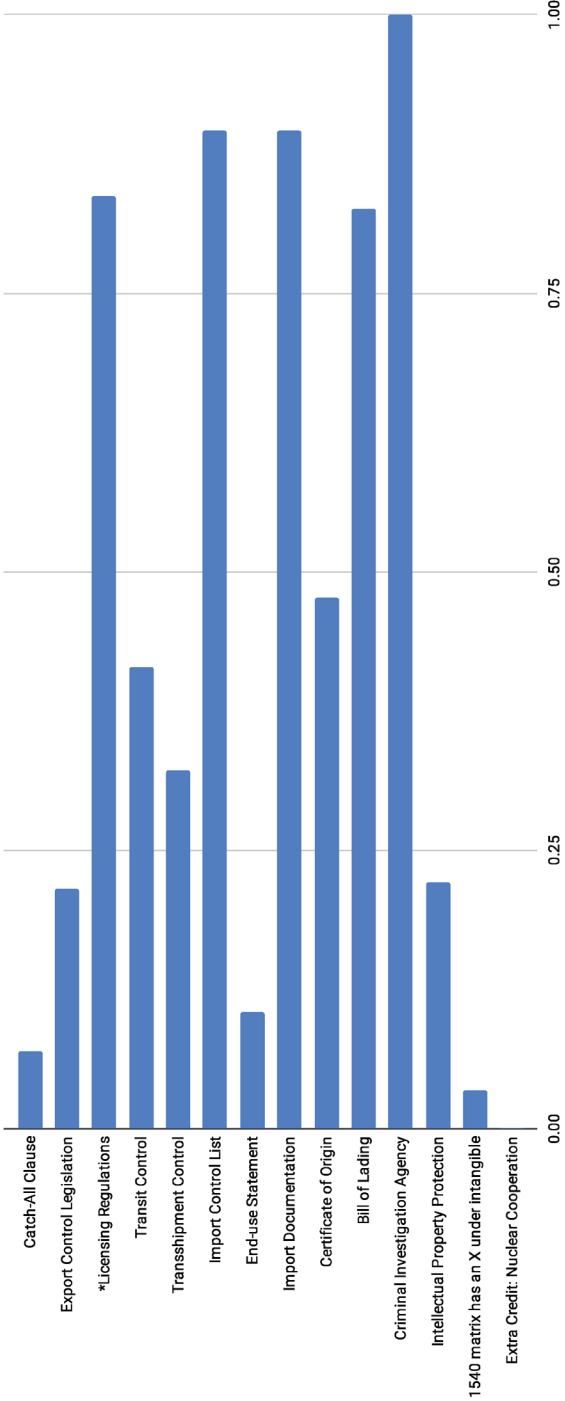


Figure 11.5. The extent to which sub-criteria making up the *Legislation* super criterion were fulfilled by Tier Three as a group. An asterisk next to the sub-criterion indicates that a methodological change occurred in 2023.

2023 Tier Three: Ability to Monitor and Detect Strategic Goods Performance Fractions

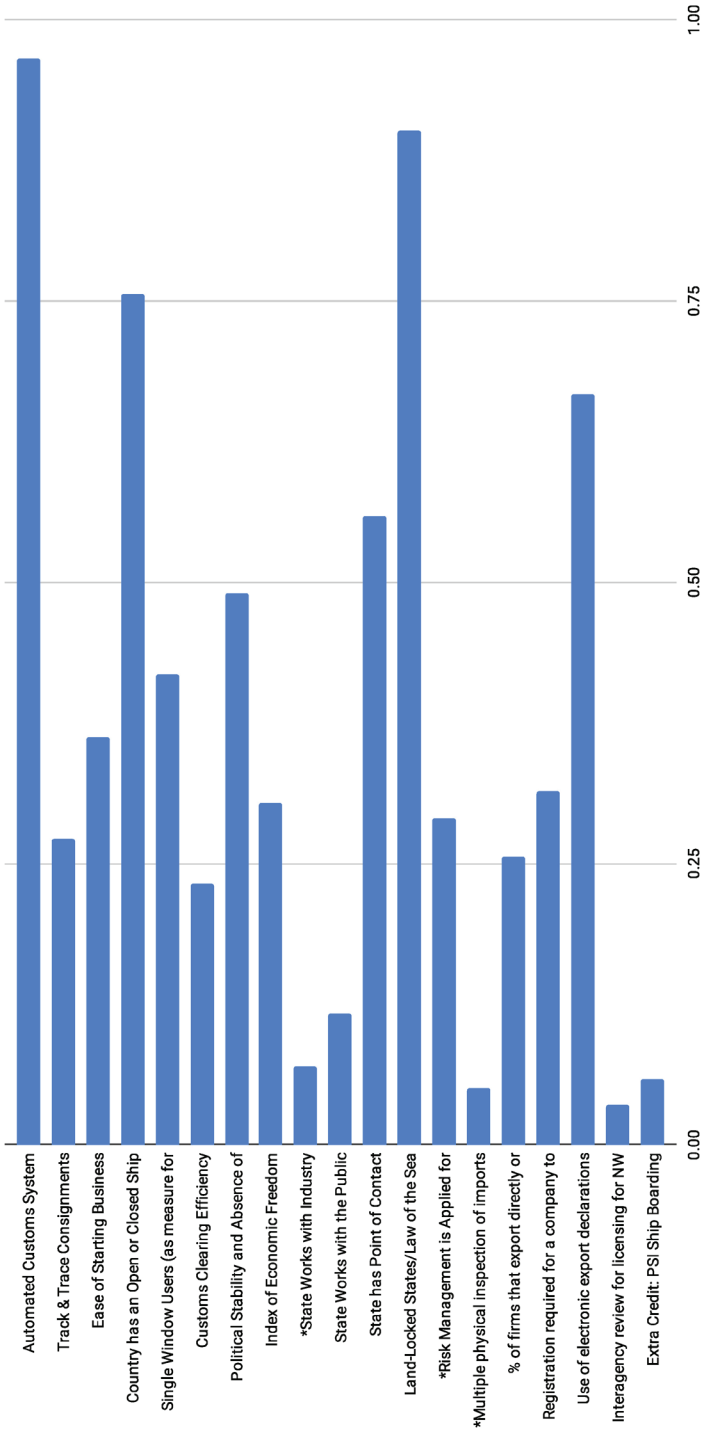


Figure 11.6. The extent to which sub-criteria making up the *Ability to Monitor and Detect Strategic Trade* super criterion were fulfilled by Tier Three as a group.

2023 Tier Three: Ability to Prevent Proliferation Financing Performance Fractions

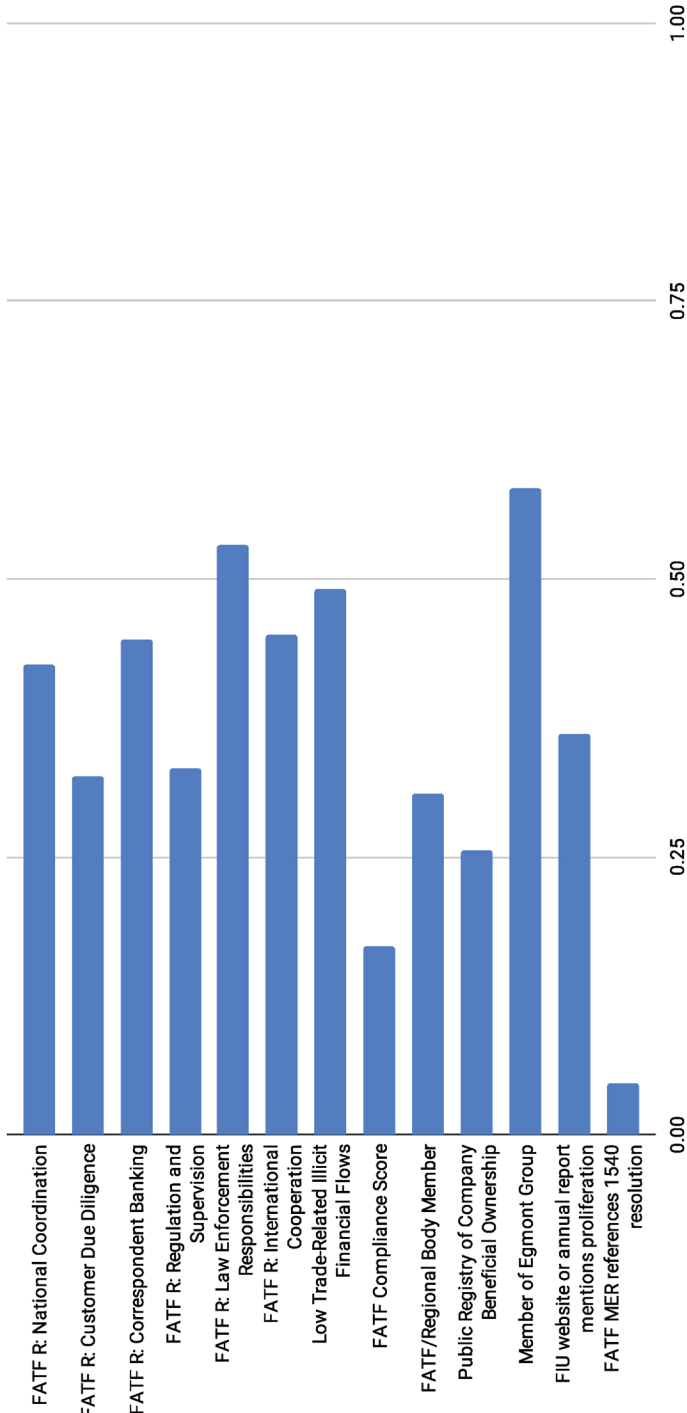


Figure 11.7A. The extent to which positive sub-criteria under the *Ability to Prevent Proliferation Financing* super criterion were fulfilled by Tier Three as a group.

2023 Tier Three: Ability to Prevent Proliferation Financing Performance Fractions - Negative Criteria

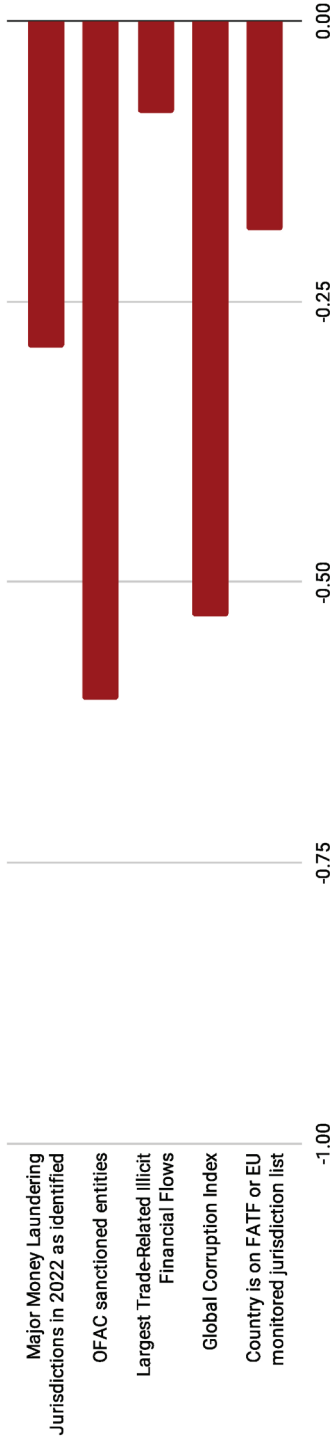


Figure 11.7B. Extent to which negative sub-criteria under *Ability to Prevent Proliferation Financing* super criterion affected Tier Three as a group.

2023 Tier Three: Ability to Prevent Proliferation Financing Performance Fractions - Extra Credit



Figure 11.7C. Extent to which extra credit sub-criteria under *Ability to Prevent Proliferation Financing* super criterion were fulfilled by Tier Three as a group.

2023 Tier Three: Enforcement Performance Fractions

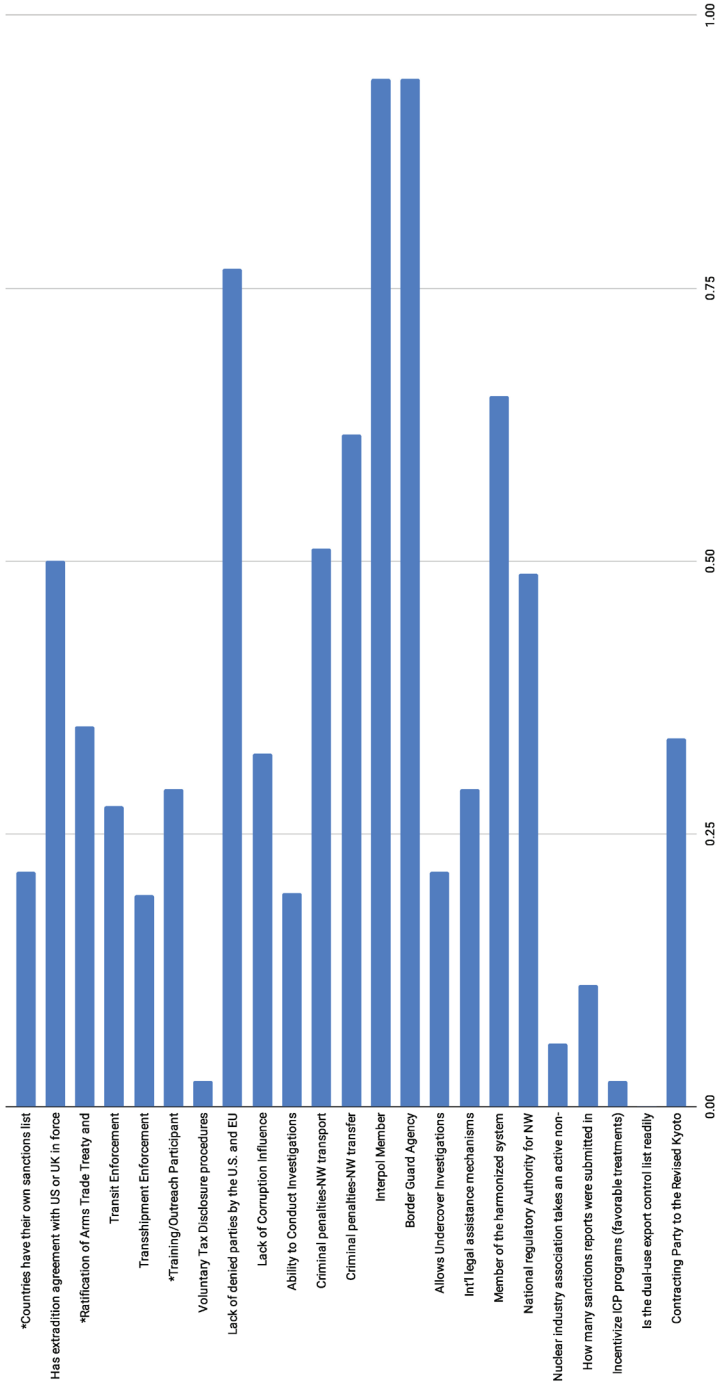


Figure 11.8A. The extent to which positive sub-criteria under Adequacy of Enforcement were fulfilled by Tier Three as a group.



Figure 11.8B. The extent to which negative sub-criteria under *Adequacy of Enforcement* affected Tier Three as a group.

Tier Rank	Country	Total Points
1	Andorra	768
2	Macedonia	768
3	Montenegro	712
4	Mauritius	689
5	Uruguay	678
6	Bahrain	670
7	Guatemala	640
8	Cuba	632
9	Botswana	632
10	Antigua and Barbuda	579
11	Trinidad and Tobago	565
12	Fiji	563
13	Mauritania	539
14	Gabon	536
15	Kenya	533
16	Senegal	526
17	Togo	516
18	Honduras	495
19	Benin	494
20	Seychelles	489
21	Cambodia	484
22	Timor-Leste	483
23	El Salvador	481
24	Lesotho	478
25	Angola	471
26	Burkina Faso	466
27	Sierra Leone	456
28	Saint Vincent and the Grenadines	452
29	Cote d'Ivoire	449
30	Saint Kitts and Nevis	446

Tier Rank	Country	Total Points
31	Swaziland (Eswatini)	441
32	Grenada	441
33	Cape Verde	440
34	Cameroon	435
35	Nepal	435
36	Papua New Guinea	424
37	Samoa	418
38	Solomon Islands	416
39	Barbados	414
40	Bhutan	413
41	Bolivia	404
42	Nauru	399
43	Rwanda	392
44	Turkmenistan	378
45	Suriname	375
46	Cook Islands	367
47	Kosovo*	364
48	Dominica	362
49	Belize	361
50	Maldives	356
51	Marshall Islands	355
52	Mali	349
53	Madagascar	346
54	Chad	345
55	Saint Lucia	344
56	Gambia	338
57	Sao Tome and Principe	336
58	Congo (Rep of the)	321
59	Guyana	321

Tier Rank	Country	Total Points	Tier Rank	Country	Total Points
60	Djibouti	314	75	Micronesia (Federated States of)	229
61	Myanmar	312	76	Sudan	197
62	Tonga	304	77	Palau	176
63	Holy See*	300	78	Congo (Dem Rep of the)	175
64	Burundi	296	79	Equatorial Guinea	171
65	Comoros	296	80	Tuvalu	170
66	Tanzania (United Republic of)	294	81	Palestine (State of)*	138
67	Mozambique	278	82	Eritrea	135
68	Liberia	273	83	Haiti	115
69	Guinea-Bissau	273	84	Yemen	33
70	Guinea	255	85	Somalia	27
71	Niue	244	86	South Sudan	-20
72	Kiribati	238			
73	Zimbabwe	229			
74	Central African Republic	229			

Table 11.1. 2023 Rank of Tier Three countries, including total points received.

**SECTION III:
FURTHER PPI APPLICATIONS**

CHAPTER 12

COUNTRIES WITH THEIR FIRST NUCLEAR POWER REACTOR

The 2023 PPI team evaluated countries that have publicly proposed, planned, or started the construction of their first nuclear power plant. Worldwide civil nuclear development is expected to increase over the next decade as countries work to meet climate policy goals. The following countries were evaluated: Algeria, Bangladesh, Belarus, Egypt, Ghana, Indonesia, Kenya, Laos PDR, Nigeria, Poland, Rwanda, Saudi Arabia, Sudan, Turkey, Uganda, Uzbekistan and Zambia.

Planning, constructing, and operating a nuclear power plant is a laborious process that requires extensive preparation. Countries pursuing civil nuclear power should be compelled to establish a regulatory regime to ensure the safe and secure operation and handling of nuclear facilities, materials, and waste. The procedures for the physical protection of nuclear material and equipment should be enshrined in national laws in order to thwart any attempt at nuclear terrorism. Further, the state needs to update its safeguards agreements with the IAEA early to show its good faith and apply IAEA safeguards to the nuclear facility, material, and activities to assure the international community of *exclusively* peaceful purposes.

Often overlooked is the need for robust export controls to protect newly gained nuclear expertise, designs, other technology, and materials from unauthorized transfers or exports. Export control systems are even

more important in countries that desire to first import nuclear power reactors and related equipment as a prelude to becoming an international nuclear supplier, or incorporating the reactors into a domestic nuclear fuel cycle, such as Saudi Arabia.¹ All countries that intend to import nuclear power reactors should fulfill a higher standard in creating robust export controls with catch-all and end-use verification. Any country that also intends to establish itself as a nuclear supplier should become an adherent to the NSG guidelines.

Countries with a First Nuclear Power Plant Proposed, Planned, or Under Construction	
Tier One	
Belarus, Poland, Turkey	
Tier Two	
Algeria, Bangladesh, Egypt, Ghana, Indonesia, Laos PDR, Nigeria, Saudi Arabia, Uganda, Uzbekistan, Zambia	
Tier Three	
Kenya, Rwanda, Sudan	

Table 12.1. The Tier assignment for all identified countries.

FINDINGS AND ANALYSIS

The country rankings appear in Figure 12.1. From highest to lowest, the ranks are held by Poland, Saudi Arabia, Turkey, Bangladesh, Ghana, Uzbekistan, Indonesia, Algeria, Belarus, Egypt, Kenya, Zambia, Nigeria, Rwanda, Laos PDR, Uganda and Sudan.

Overall, the countries planning to acquire nuclear power reactors did not perform better than the average country in the overall PPI. The average of 553 is lower than the overall average of 579. Out of the seventeen countries, six received more than half of available points, nine received less than 50 but more than 25 percent of all PPI points, and two countries received less than 25 percent (see Figure 12.1). Four of the countries lack any relevant export control legislation, meaning their existing legislation was categorized as Orange or Red; an additional eight countries have some nuclear safety and security laws but lack comprehensive dual-use export control legislation (categorized as Yellow). The collectively achieved percentage of possible points for this grouping revealed that performance in

two super criteria fell below 40 percent: *Ability to Prevent Proliferation Financing*, and *Adequacy of Enforcement* (see Figure 12.2).

Collectively, the countries scored poorly in a number of relevant sub-criteria (see Figures 12.3 – 12.8). For example, the countries scored poorly on transparency measures, such as: Being a Party to the OECD Convention on Bribery, Having a Public Registry of Company Beneficial Ownership, Placement in the Corruptions Perceptions Index, and Percent of Firms Expected to Give Gifts to Get an Import License (see Figures 12.3 and 12.6). They also scored low in sub-criteria directly applicable to the control of nuclear-related materials and equipment, such as Interagency Review for Licensing for NW and Related Items, Intangible Technology Control and Brokering Controls (see Figures 12.4 and 12.8). Additionally, seven of the seventeen countries were involved in recent or repeated violations of UNSC sanctions on North Korea. It is further notable that while some countries in this grouping have a dual-use control list, only one, Belarus, has the list readily available or easily accessible on a government website. On a positive note, the countries in this grouping received a perfect score in the sub-criterion “National Regulatory Authority for NW.”

Egypt is the only country in this group to have not yet signed or ratified the Convention on the Physical Protection of Nuclear Material. Other countries, such as Belarus, Sudan, Uganda, and Zambia are parties to the originally adopted convention in 1980; however, these countries have yet to adopt the 2005 Amendment. Bolivia, Egypt, Saudi Arabia and Sudan are countries in this group that have not yet signed or ratified the Additional Protocol. A number of additional countries have signed the Additional Protocol, but the legal document has not entered into force; those countries are Algeria, Belarus, Laos PDR, and Zambia. This leaves Bolivia, Laos PDR, Saudi Arabia, and Zambia currently with only the “old” Small Quantities Protocol in force. The following states in this group that have not signed or ratified the Convention for the Suppression of Acts of Nuclear Terrorism include Laos PDR, Sudan and Uganda. Three countries: Egypt, Ghana and Rwanda have only signed the convention.

SUPPLIERS' ROLE

More often than not, countries pursuing nuclear power have no indigenous capability to construct and operate a nuclear facility, and instead, those countries pursue relationships with international suppliers to

secure the necessary components, materials, knowledge, and expertise. In return, the supplier state is provided with a unique opportunity to add safety and security requirements and conditional terms to the memorandum of understanding and any following contracts. In the United States, a comprehensive agreement prior to any large transfers of nuclear material or equipment to ensure the recipients “adhere to a set of strong nonproliferation requirements” is required by law under Section 123 of the U.S. Atomic Energy Act.² Unfortunately, this unique opportunity to strengthen the global nonproliferation regime is largely underused by two countries, Russia and China, that have emerged as the main suppliers of nuclear reactors and technology.

Russia. The Russian Federation’s state atomic energy corporation, Rosatom, continues to be the largest international supplier of nuclear equipment and knowledge and maintains agreements and contracts with many countries around the world.³ Rosatom attracts potential customers through lavish financing plans and inexpensive reactor designs and has been particularly active in Africa, entering into negotiations and agreements with many states. Rosatom has signed nuclear cooperation agreements with the following African nations: Algeria, Angola, the Democratic Republic of the Congo, Egypt, Ethiopia, Ghana, Morocco, Nigeria, Rwanda, Sudan, Tunisia, Uganda, South Africa and Zambia. However, multiple recent developments call into question Rosatom’s commitment to upholding global nuclear safety and security standards, including poor safety records of the Russian re-designed Bushehr reactor in Iran, inadequate safety requirements Russia placed on the host country, Iran, the seeking of nuclear cooperation agreements with states experiencing significant corruption and internal instability, and, within the context of Russia’s invasion of Ukraine, Rosatom’s involvement in the subsequent occupation of the Zaporizhzhia power plant.⁴

China. China is dedicated to expanding its fleet of nuclear power plants and is currently in the process of designing, developing, and constructing at least 14 new commercial reactors.⁵ China has ambitious plans for its nuclear industry and aims to establish itself as the premier supplier of nuclear facilities, equipment, and expertise. In order to achieve these goals, China will need to surpass the large market share (60 percent of new nuclear construction sales) enjoyed by Rosatom.⁶ China has exported and sought

to export its nuclear technology to countries including Argentina, Egypt, Kenya, Pakistan, Saudi Arabia, Sudan, South Africa and Turkey. Yet, there are concerns over the ability of China to prevent bad actors from obtaining sensitive materials and equipment. A positive development is that in December 2020, China instituted a new export control law to enhance and streamline its various export control laws in one system with mechanisms such as end user/ end-use verification, comprehensive dual-use control lists, catch-all controls, and penalties for violating the law.

RECOMMENDATIONS

The states in this grouping should not delay the adoption of comprehensive export control legislation covering dual-use materials and equipment, including criminal penalties for the unauthorized transit and transfer of strategic materials. Countries seeking nuclear power, and especially those exploring a semi-indigenous fuel cycle or becoming a supplier of reactor technology should also enact legislation that controls intangible technological exports in order to prevent the spread of sensitive information. All codified controls, including control lists and relevant legislation, should be made readily available and accessible on government websites.

The states in this group should all ratify and adopt into national legislation the key conventions listed above, such as those on physical protection – CPPNM, the 2005 Amendment and the Additional Protocol – prior to receiving major components for their first nuclear power reactors.

Nuclear suppliers should consider not providing nuclear power reactors, related equipment and materials to states that received only 25 percent or less of the available points in the total PPI score without a contractual condition, or until such time as they significantly improve their export control and regulatory systems. These countries include Laos PDR, Uganda and Sudan (see Figure 12.1).

Given Russia's inadequate commitment to nuclear safety, security, and export controls, nuclear power newcomers should consider seeking out agreements with suppliers who have demonstrated a commitment to the latest and most reliable safety designs. Moreover, newcomers should seek those suppliers who will also work with them and international entities, before and while the reactor is being built to ensure adequate supporting infrastructure and emergency response capabilities.

2023 Total PPI Scores of Countries with Their First Nuclear Power Reactor Proposed, Planned, or Under Construction

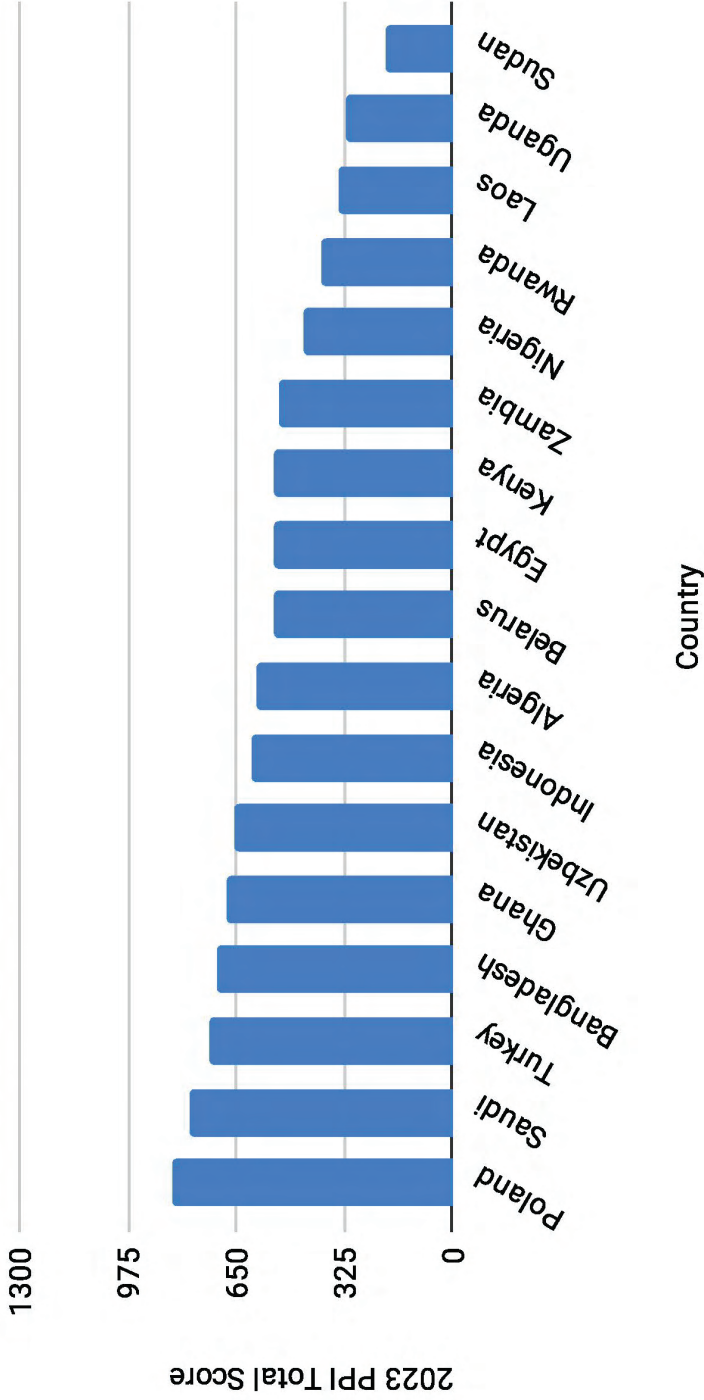


Figure 12.1. Total PPI scores of countries with their first nuclear power reactor proposed, planned, or under construction.

2023 PPI Percentage of Possible Points Collectively Achieved by This Group of Countries with Their Nuclear Power Reactors Proposed, Planned, or Under

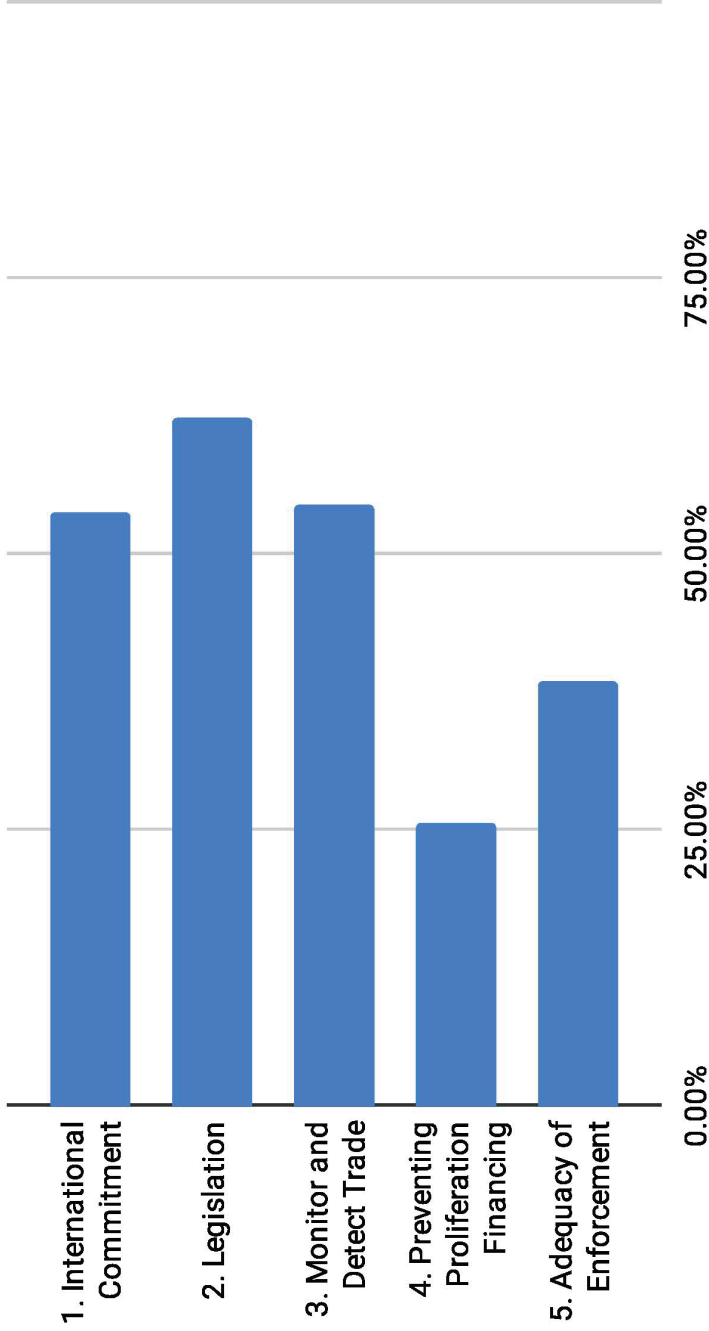


Figure 12.2. The extent to which the super criteria were fulfilled by this group of countries with their first nuclear power reactors proposed, planned, or under construction.

2023 Nuclear Power Newcomer Countries International Commitment Performance Fractions

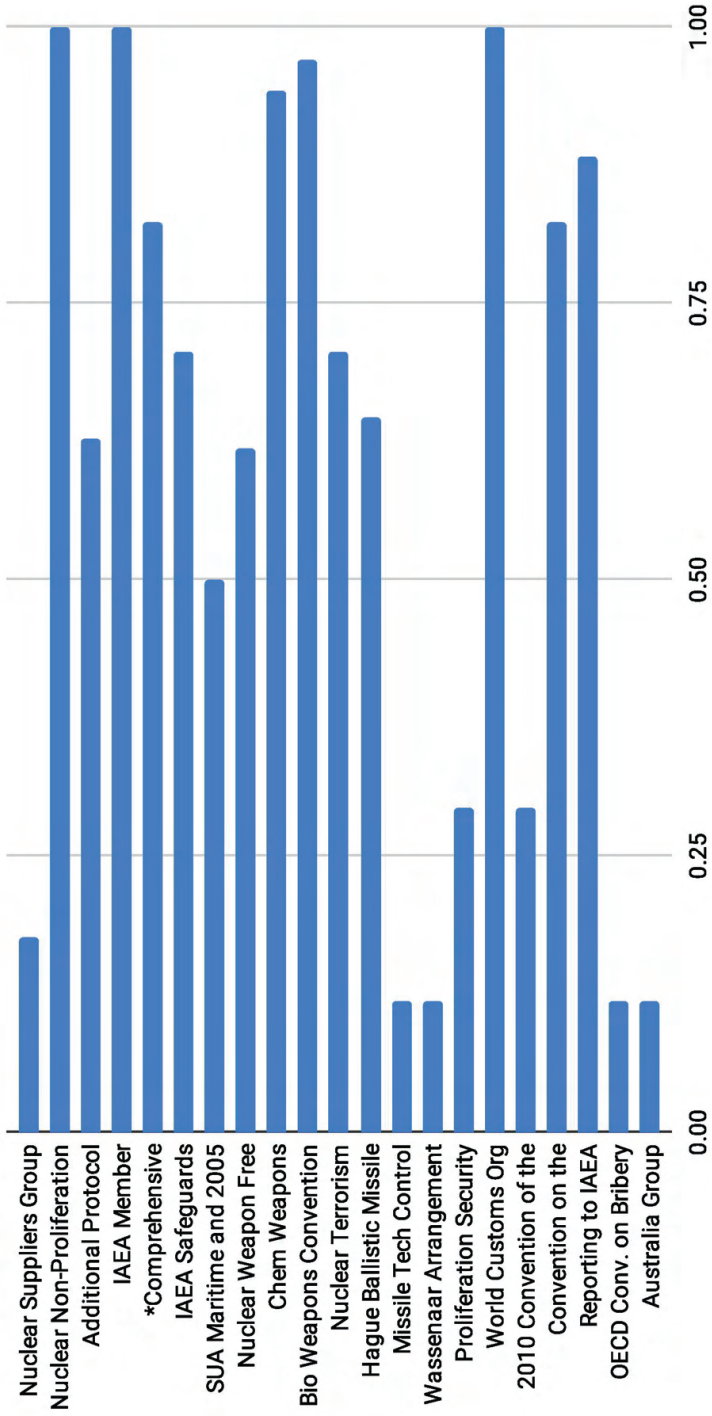


Figure 12.3. The extent to which the sub-criteria under the *International Commitment* super criterion were fulfilled by this group of countries.

2023 Nuclear Power Newcomer Countries Legislation Performance Fractions

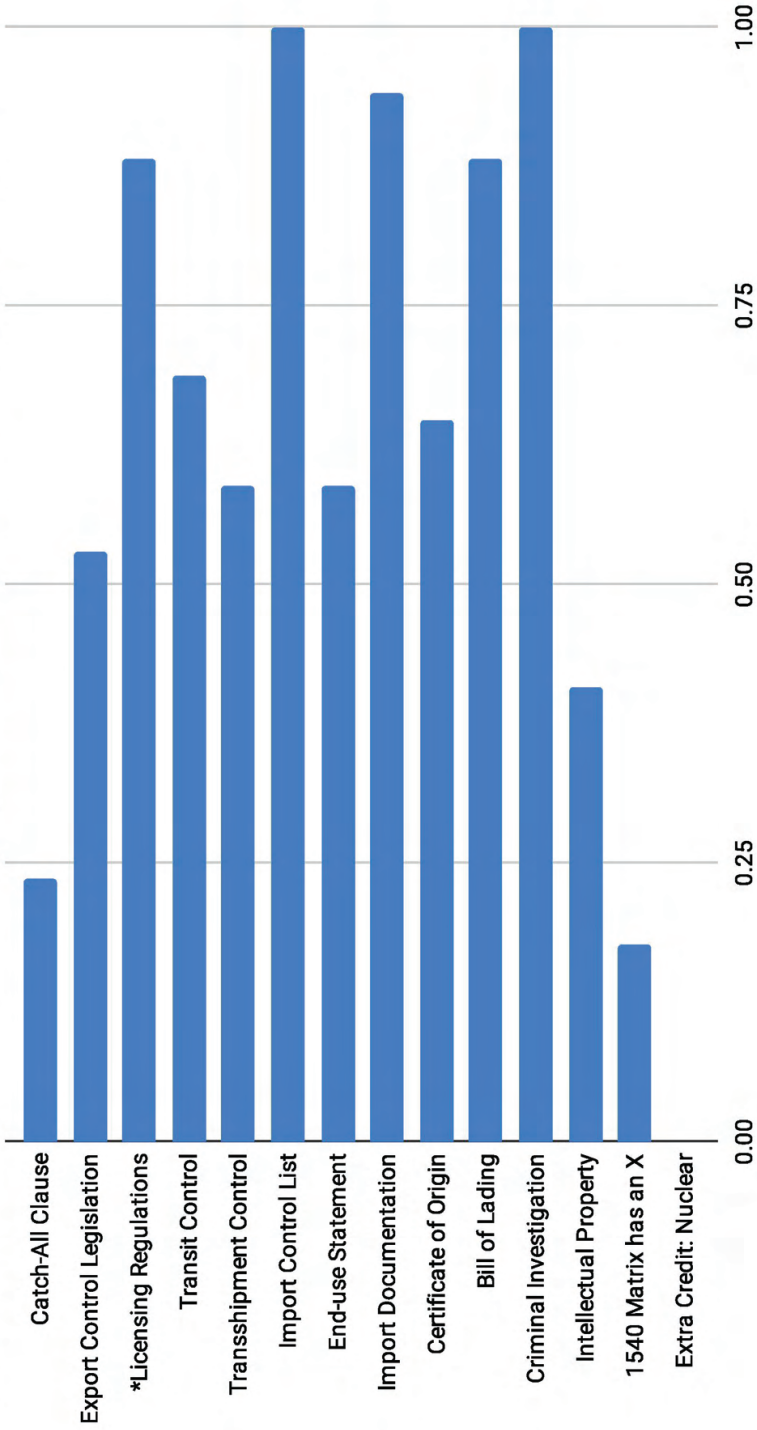


Figure 12.4. The extent to which the sub-criteria under the *Legislation* super criterion were fulfilled by this group of countries.

2023 Nuclear Power Newcomer Countries Ability to Monitor and Detect Performance Fractions

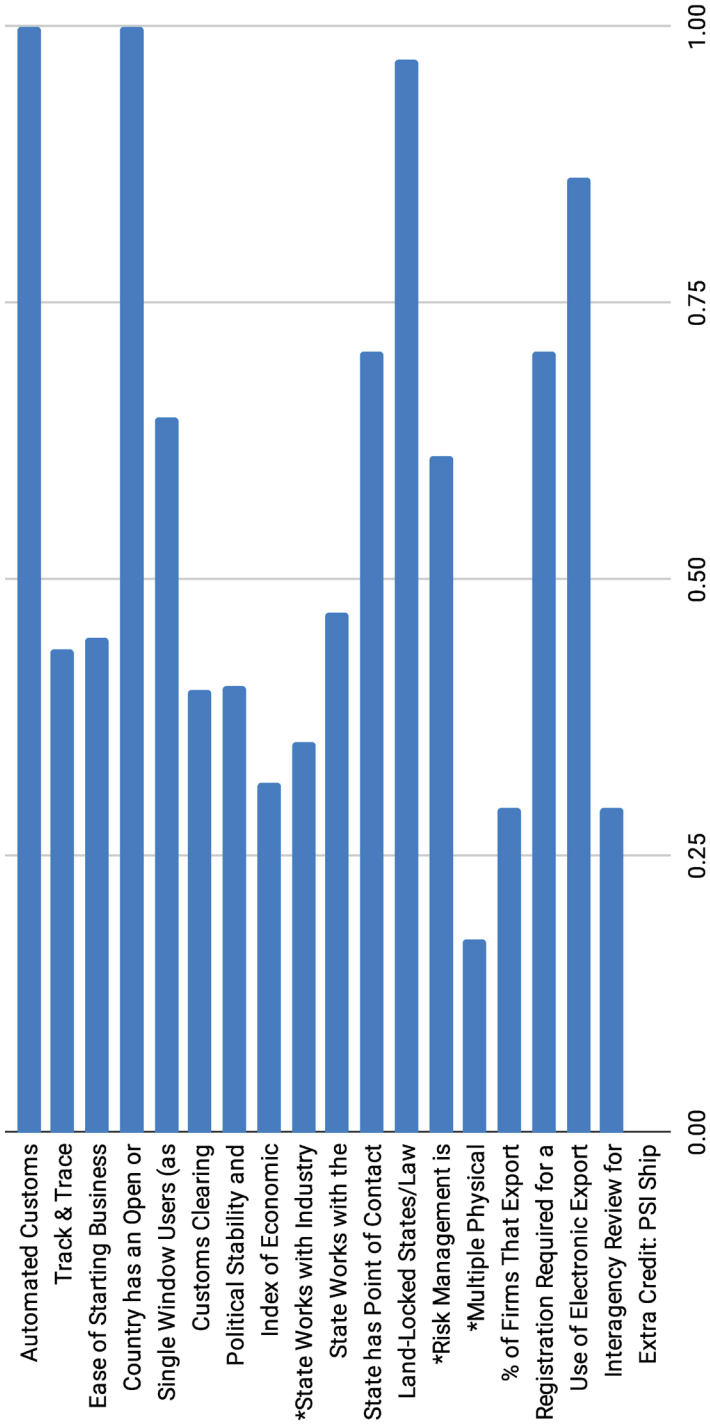


Figure 12.5. The extent to which the sub-criteria under the Ability to Monitor and Detect super criterion were fulfilled by this group of countries.

2023 Nuclear Power Newcomer Countries Ability to Prevent Proliferation Financing Performance Fractions

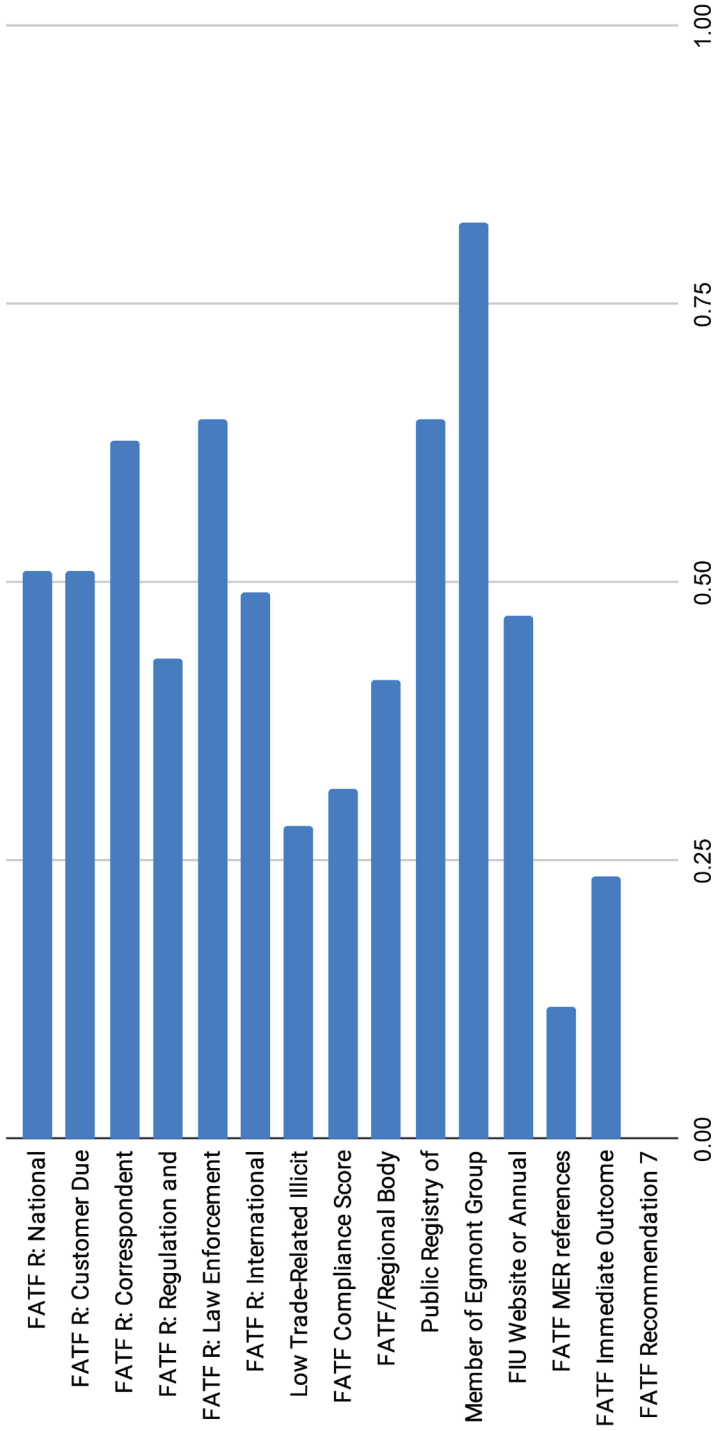


Figure 12.6. The extent to which the positive sub-criteria under the *Ability to Prevent Proliferation Financing* super criterion were fulfilled by this group of countries.

2023 Nuclear Power Newcomer Countries Ability to Prevent Proliferation Financing Performance Fractions - Negative Criteria

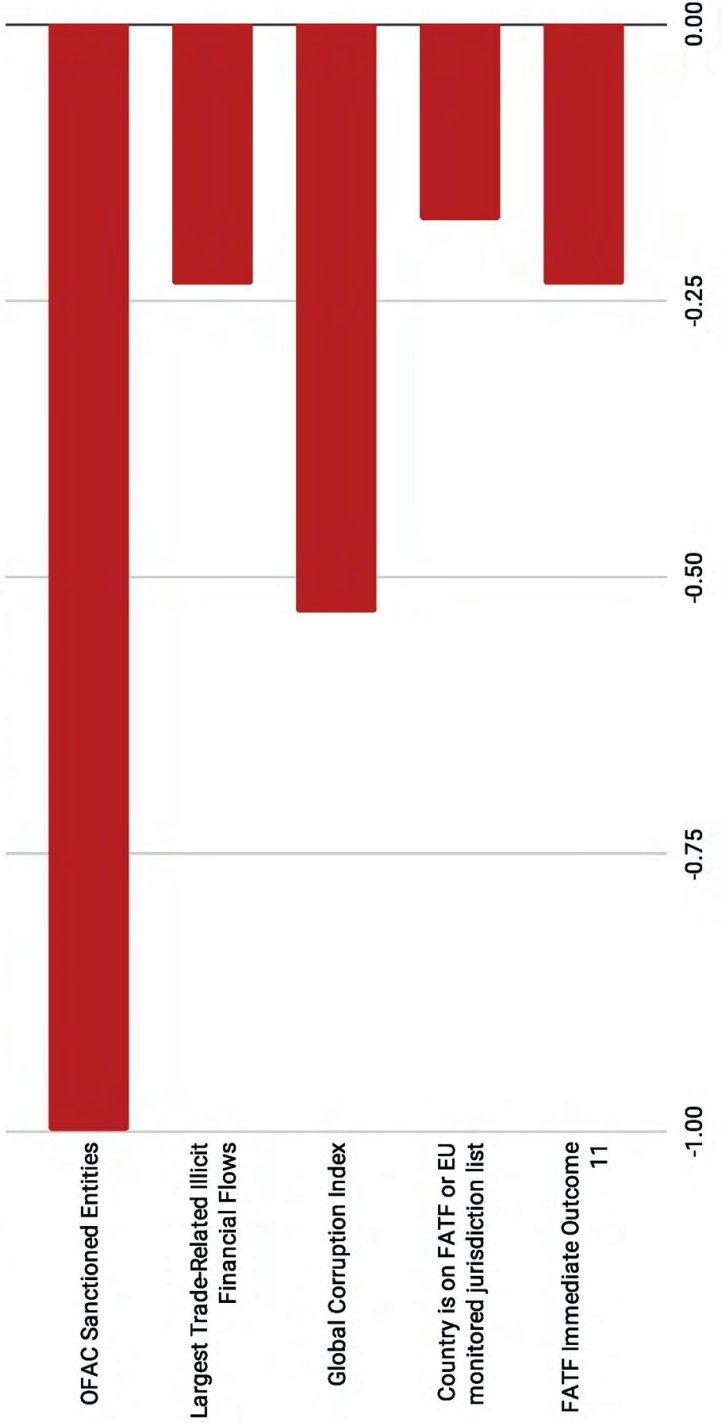


Figure 12.7. The extent to which the negative sub-criteria under the *Ability to Prevent Proliferation Financing* super criterion were fulfilled by this group of countries.

2023 Nuclear Power Newcomer Countries Enforcement Performance Fractions

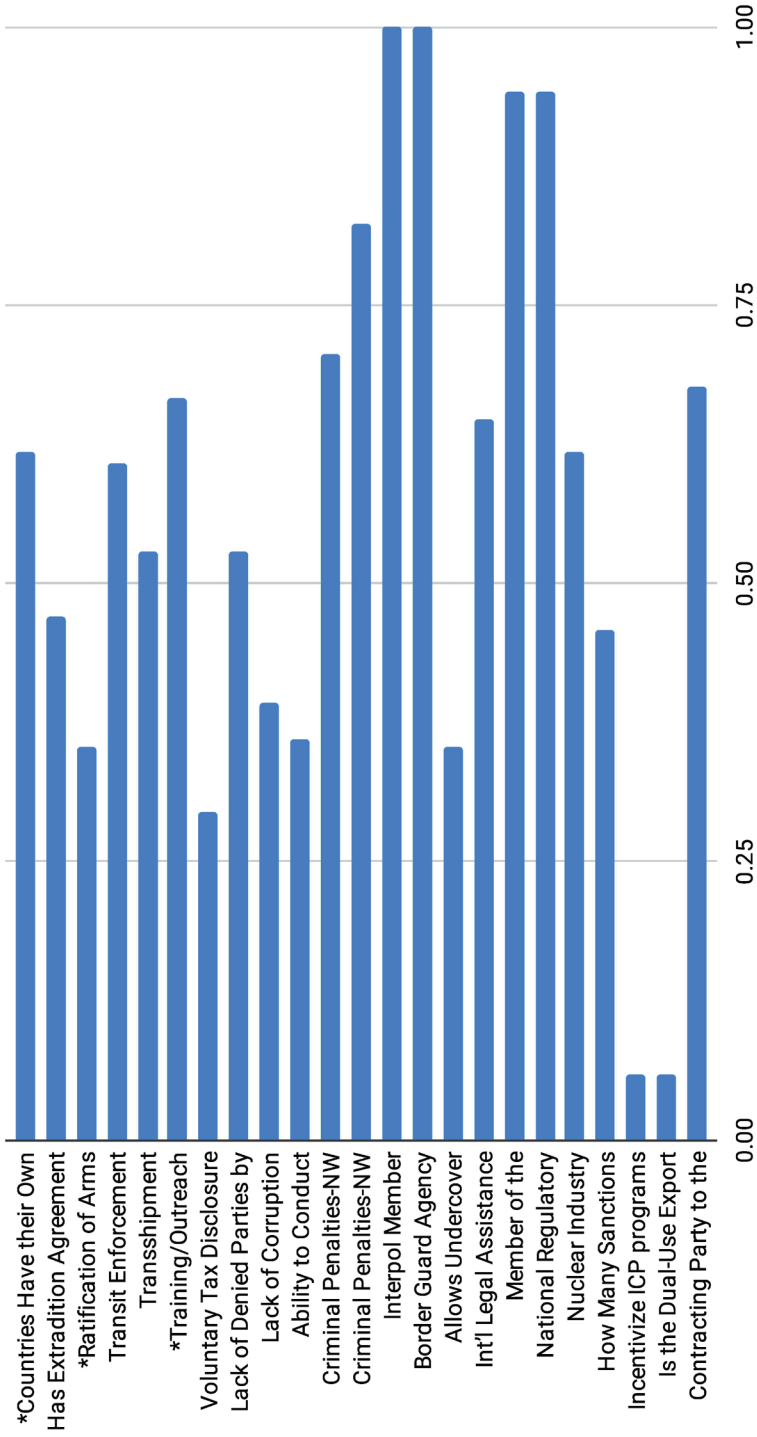


Figure 12.8. The extent to which the sub-criteria under the *Enforcement* super criterion were fulfilled by this group of countries.

ENDNOTES

1. Sarah Burkhard, Erica Wenig, David Albright, and Andrea Stricker, “Saudi Arabia’s Nuclear Ambitions and Proliferation Risks,” *Institute for Science and International Security*, March 30, 2017, https://isis-online.org/uploads/isis-reports/documents/SaudiArabiaProliferationRisks_30Mar2017_Final.pdf.
2. “123 Agreements for Peaceful Cooperation,” *U.S. Department of State, National Nuclear Security Administration*, <https://www.energy.gov/nnsa/123-agreements-peaceful-cooperation>. Accessed April 20, 2021.
3. “About Us,” ROSATOM, 2021, <https://www.rosatom.ru/en/about-us/>.
4. David Albright, “Going Nuclear on ROSATOM: Ending Global Dependence on Putin’s Nuclear Energy Sector,” Testimony before the House Committee on Foreign Affairs, Subcommittee on Europe, March 12, 2024.
5. “Nuclear Power in China,” World Nuclear Association, 2021, <https://www.world-nuclear.org/information-library/country-profiles/countries-a-f/china-nuclear-power.aspx>.
6. David Yellen, “The Trade War We Want China To Win: China’s Nuclear Exports Can Challenge Russian Dominance,” Atlantic Council, February 26, 2020, <https://www.atlanticcouncil.org/blogs/energysource/the-trade-war-we-want-china-to-win-chinas-nuclear-exports-can-challenge-russian-dominance/>.

CHAPTER 13

ANALYSIS OF COUNTRIES' RESTRICTED RUSSIA TRADE

Russia poses a complex challenge to national and multilateral systems of trade controls and sanctions. Russia has traditionally been viewed as a compliant member of the Nuclear Supplier Group and other multilateral control regimes, and a leader in efforts to stop the proliferation of nuclear weapons. Post-Soviet Russia was welcomed into global supply chains, becoming an important trade partner of many European and Asian countries. That status has been disrupted by its invasion of Eastern Ukraine and annexation of Crimea in 2014 and much more so by its second invasion of Ukraine in 2022, starting a war of aggression that has been ongoing since February of 2022.

National trade control systems and sanctions enforcement across the globe have been particularly challenged by the perceived suddenness of Russia's 2022 invasion of Ukraine, the unexpected types and numbers of goods to control, the need for rapid control of those items, and Russia's determination to thwart others' trade controls. Countries have been called upon to respond to the changing trade environment with Russia, following decades of trade and investment, as Russia has accelerated its import and export of restricted items through deceptive and illicit pathways. Overall, that response has so far been subpar, even among those nations most committed and able to stop illicit trade in dangerous goods.

Many countries have been identified as being involved in or facilitating Russia's efforts to import and export dual-use and restricted items. Some countries have even provided weapons and other munitions to Russia for use in its war in Ukraine. This chapter assesses 32 countries considering their scores and rankings in the 2023/2024 PPI.

PPI SCORING VS. RUSSIAN TRADE OF STRATEGIC COMMODITIES

A total of 32 countries have been identified for analysis, selected by their respective roles in the aftermath of Russia's invasion of Ukraine. Some of these countries are involved in the transshipment of restricted goods; others are listed for their supply of dual-use goods used by the Russian military. Iran and a few others are listed for their direct supply of weapons and ammunition to Russia. This group of 32 countries is composed of four related sub-groups:

1. The United States Bureau of Industry and Security (BIS) identified 18 countries as "common transshipment points through which restricted or controlled exports have been known to pass before reaching destinations in Russia or Belarus."¹

Armenia, Brazil, China, Georgia, India, Israel, Kazakhstan, Kyrgyzstan, Mexico, Nicaragua, Serbia, Singapore, South Africa, Taiwan,² Tajikistan, Turkey, United Arab Emirates (UAE), Uzbekistan

2. Additional transshipment countries identified by the Institute, and not mentioned above or below, as involved in providing restricted commodities to Russia.³

Estonia, Finland, and Latvia

3. Additional countries, not included in the first two sub-groups, were added, since they were assessed by the Institute to have supplied dual-use goods found to be used in Russia's military programs, including its WMD and missile programs or in military

drones deployed against Ukraine. Note: China and Taiwan are omitted in this group because they are already in Group 1.

Austria, Canada, Germany, Japan, Sweden, Switzerland, and United States

There are additional supplier countries that reportedly exported dual-use goods to Russia, but it is unclear if these goods were used in Russia's military programs or are restricted. These countries are thus excluded from this analysis, pending additional information. They include Bahrain, Malaysia, Pakistan, South Korea, and Spain.

The Institute also did not add countries reportedly involved in financial sanctions evasion (such as Cyprus), offshore shipping transfers of Russian oil (including Cyprus, Greece, and Malta) or illegal shipments of grain stolen by Russia in Ukraine to third countries (including Libya and Lebanon.)

4. At least four countries have supplied Russia with munitions and military equipment for use in its war in Ukraine.

Belarus, Iran, North Korea, Syria

There are other countries that are alleged to have supplied military goods to Russia. In particular, South Africa is reported to have supplied military goods to Russia, where the media attributes the information to U.S. intelligence. A South African investigation reported that no arms were loaded onto a Russian vessel under American sanctions docked at Cape Town.⁴ Egypt was not included in this chapter because a suspected missile deal was canceled, and the weapons were never supplied. North Korea and Iran are particularly notable for their supply of millions of artillery rounds and other weapons. Iran not only supplied hundreds of UAVs to the Russian military, it has also been assisting Russia in establishing a Shahed-136 drone production facility at the Alabuga Special Economic Zone in Yelabuga, Russia, to provide the Russian military with thousands of additional Shahed-136 drones.⁵

AVERAGE PPI SCORES OF ALL COUNTRIES IN THE FOUR GROUPS

Table 1 shows the entire list of these 32 countries, organized by PPI score and tier. When assessing the group of 32 countries in Table 1, it becomes clear that, on average, they had a higher global overall score in the PPI and outperformed the global PPI average in every super criterion (see Figure 13.1 and Figure 13.2).

Twenty-five of the 32 countries received more than 50 percent of the total points out of 1300, with Iran receiving less than 100 points and only North Korea receiving a negative score. The relatively high scores among these twenty-five countries reflect their overall high level of strategic trade controls, although the scores also show that all their systems can be improved.

Twenty-three of the 32 countries are in Tier 1, meaning they have a greater supply potential for nuclear and dual-use materials. Eighteen of the 23 Tier 1 countries are Nuclear Suppliers Group (NSG) members; the remaining five countries of this subgroup also have significant supply potential. Nine are in Tier 2, meaning they have great transshipment potential. None of these 32 countries is in Tier 3.

Country	Tier	2023 PPI Total Score
United States†	1	1075
Singapore	1	1041
Latvia†	1	1037
Sweden†	1	1027
Germany†	1	1026
Austria†	1	1018
Estonia†	2	1010
Japan†	1	1008
Canada†	1	996
Finland†	1	980
Switzerland†	1	953
United Arab Emirates	1	898
Mexico†	2	886
Israel	1	883
South Africa†	1	878
Kazakhstan†	2	842
Georgia	1	826
Serbia†	1	816
Armenia	2	804
Brazil†	1	793
India	1	780
Turkey†	1	738
Taiwan*	2	734
Kyrgyzstan	1	712
Uzbekistan	1	654
Tajikistan	2	635
China†	1	578
Belarus†	2	539
Nicaragua	2	462
Syria	2	74
Iran	1	24
North Korea	1	-188

Table 13.1. Tier and PPI Score of Countries Identified with a Role in Supplying Russia¹⁰

2023 Weighted Average Total PPI Score for Countries Involved in Restricted Russian Trade

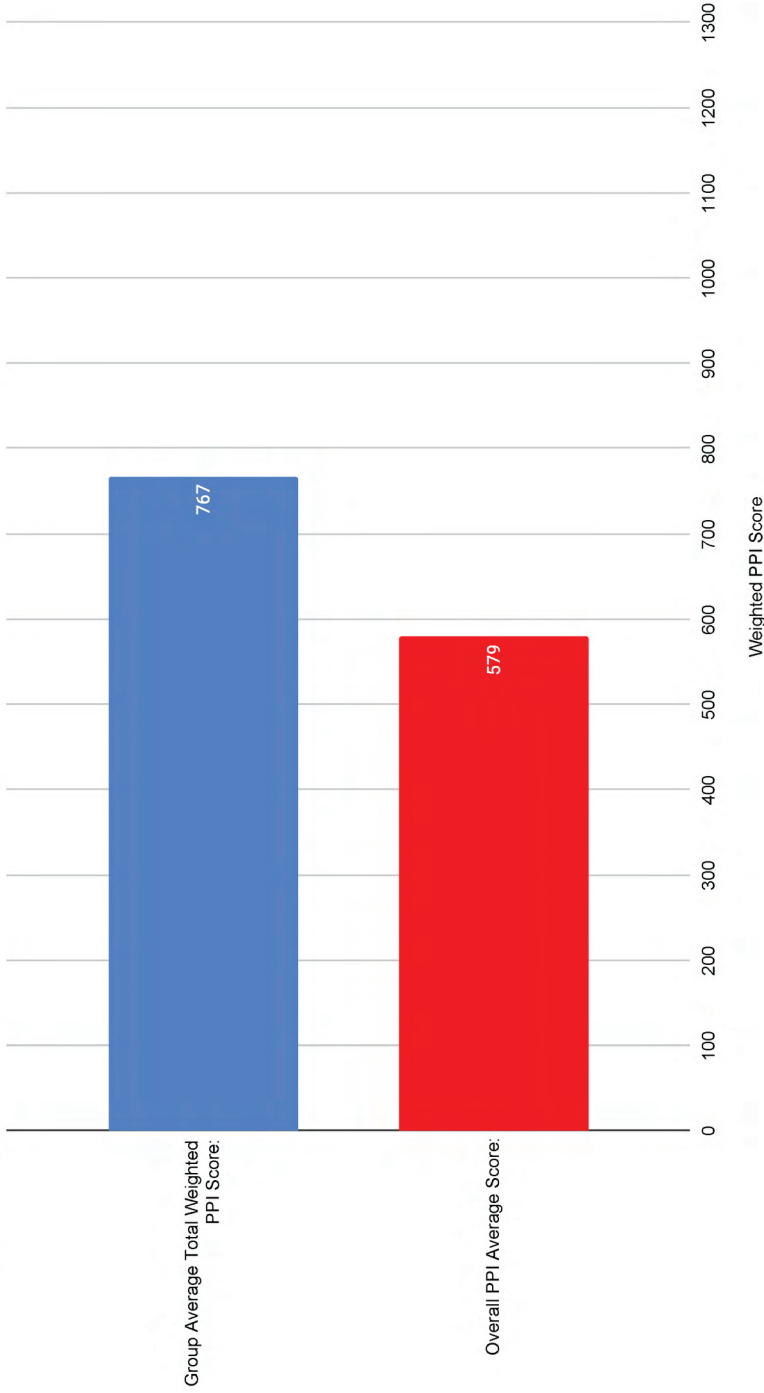


Figure 13.1. The group of 32 countries' average PPI score, aka weighted average score, vs. the global average PPI score.

2023 Weighted Average PPI Scores for Countries Involved in Restricted Russian Trade

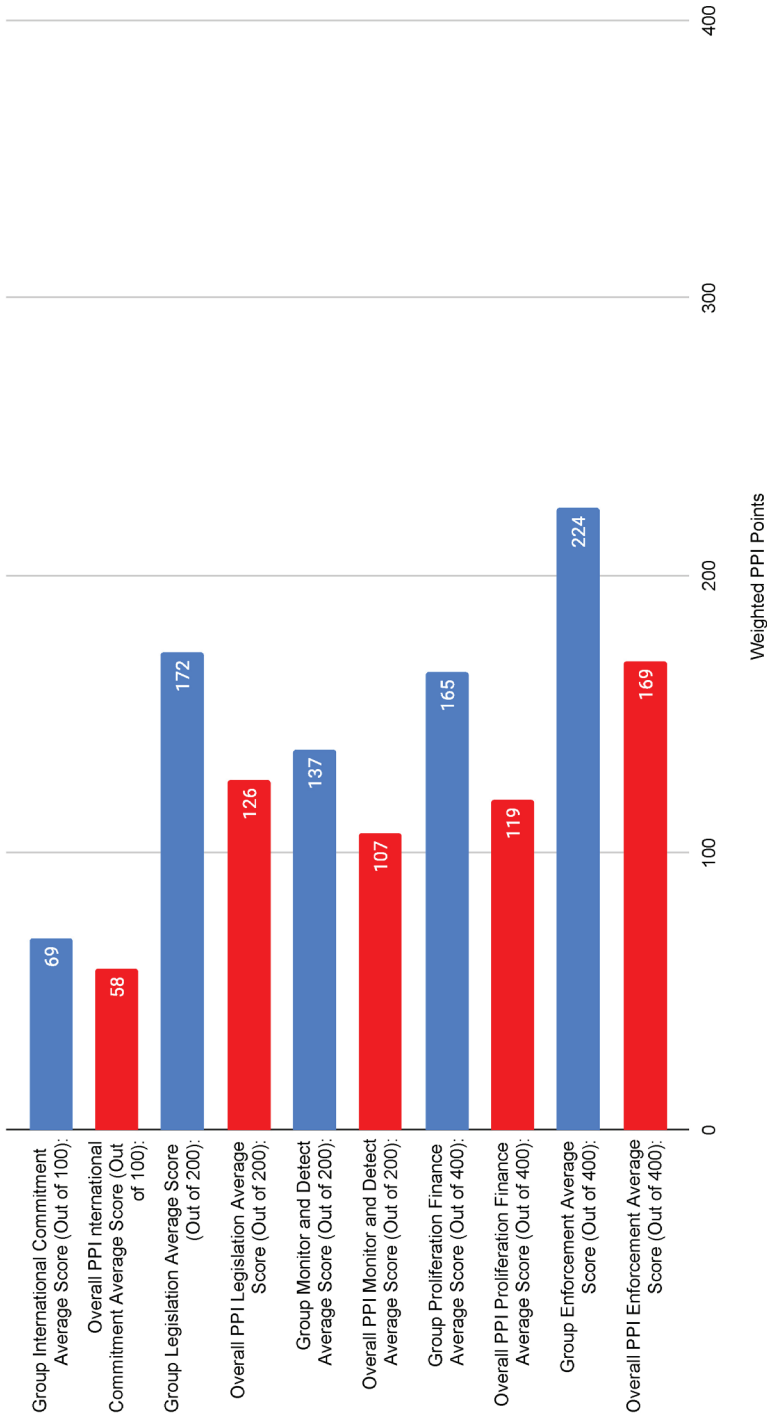


Figure 13.2. The overall scores in each respective super criterion for the group of 32 countries compared to the global PPI scores in each super criterion.

RESPONSIBLE TIER 1 SUBGROUP

It is worth delving deeper into the scores of the subgroup of Tier 1 countries and comparing them to the average scores of all Tier 1 countries. But before doing that, it is useful to remove from the averaging process three problematic Tier 1 countries—Iran, North Korea, and Belarus. These three countries have low scores and often flaunt international standards of acceptable behavior. They are also linked to providing military equipment to Russia. Eliminating these three countries allows for a focus on the more responsible countries concerned about supply to Russia.

With these problematic countries removed, Figures 13.3 and 13.4 show this subgroup of twenty Tier 1 countries outscore on average the Tier 1 group. They not only overperform the overall Tier 1 average scores but also outperform in every super criterion.

2023 Responsible Tier 1 Countries Average PPI Score Compared to Global Tier 1 Countries Average PPI Score

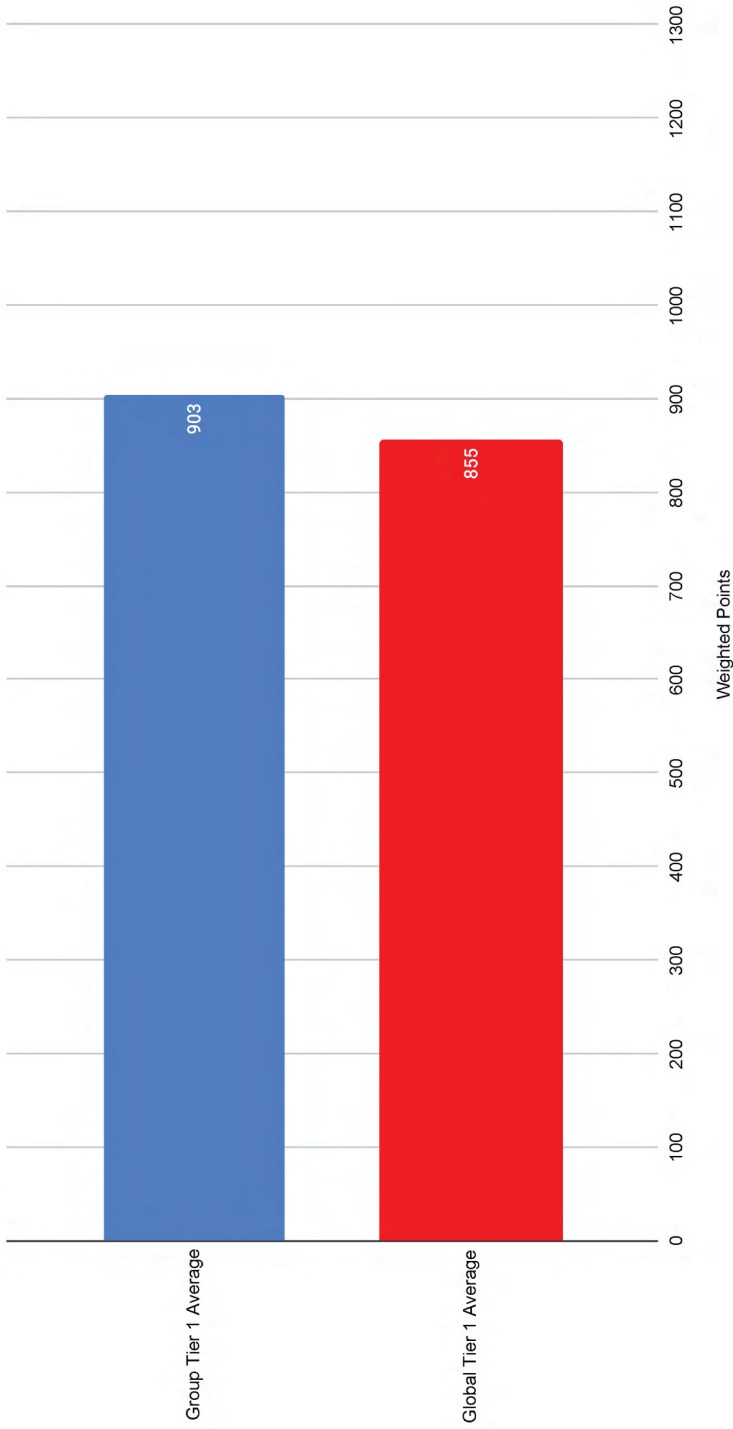


Figure 13.3. The average PPI score for the subgroup of responsible Tier 1 countries compared to the global Tier 1 countries PPI average score, where the subgroup contains all the Tier 1 countries identified in this chapter, excluding Iran, North Korea, and Belarus.

2023 Responsible Tier 1 Countries Compared to Global Tier 1 Countries

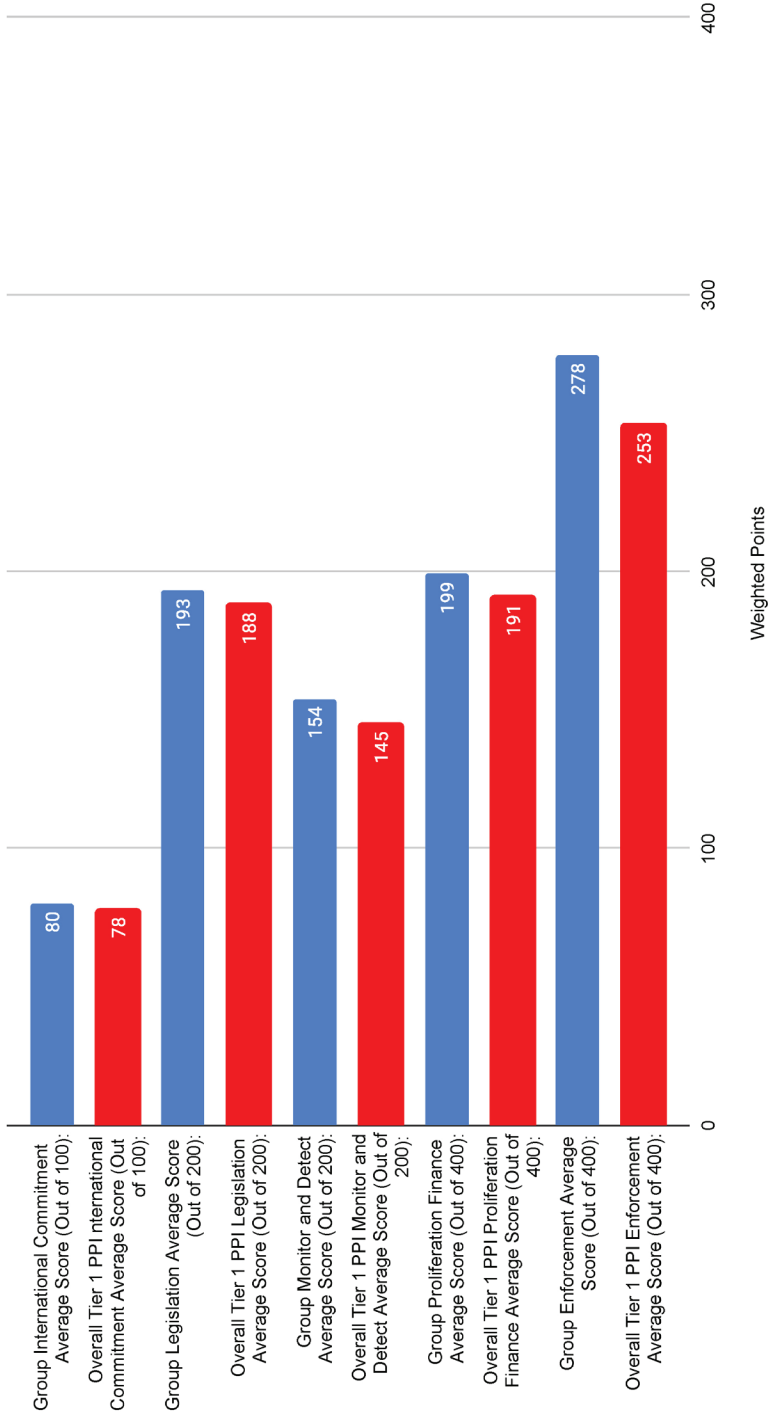


Figure 13.4. The subgroup of responsible Tier 1 countries compared to the overall average scores for all global Tier 1 countries for each super criterion area.

PPI SCORING VS RUSSIAN TRANSSHIPMENT COUNTRIES IDENTIFIED BY BIS

Another important subgroup includes the 18 countries identified by the BIS as common transshipment points for goods destined for Russia or Belarus. These eighteen countries outperformed the global averages in all five super criteria, including the overall PPI average (see Figures 13.5 and 13.6). Ten countries in this group are considered Tier 1, while the rest are Tier 2.

The ten Tier 1 countries in this BIS-subgroup have an average score of 793, and all belong to the subgroup of 20 countries identified above as responsible Tier 1 countries. However, the average of these ten countries is 110 points lower than the average of all 20 countries. This means that they all fall in the bottom half of distribution of scores of this larger group of 20 countries.

The eight Tier 2 countries in the BIS list have an average score of 754, below the average of all 32 countries listed in Table 1 (767). Those countries scoring above 754 are Singapore, United Arab Emirates, Armenia, and Georgia.

China, Taiwan, and Turkey all received less than half the maximum points in Super Criterion *Adequacy of Enforcement*, and South Africa, Kazakhstan, Serbia, Brazil, India, Tajikistan, Turkey, and China also received less than half the maximum points in Super Criterion *Ability to Prevent Proliferation Finance*, compared to their relatively high average score in Super Criterion *Legislation*, reflecting a discrepancy between the ability to pass laws and the ability or desire to enforce them.

2023 Overall Transshipment Countries Average PPI Score Compared to Global PPI Average Score

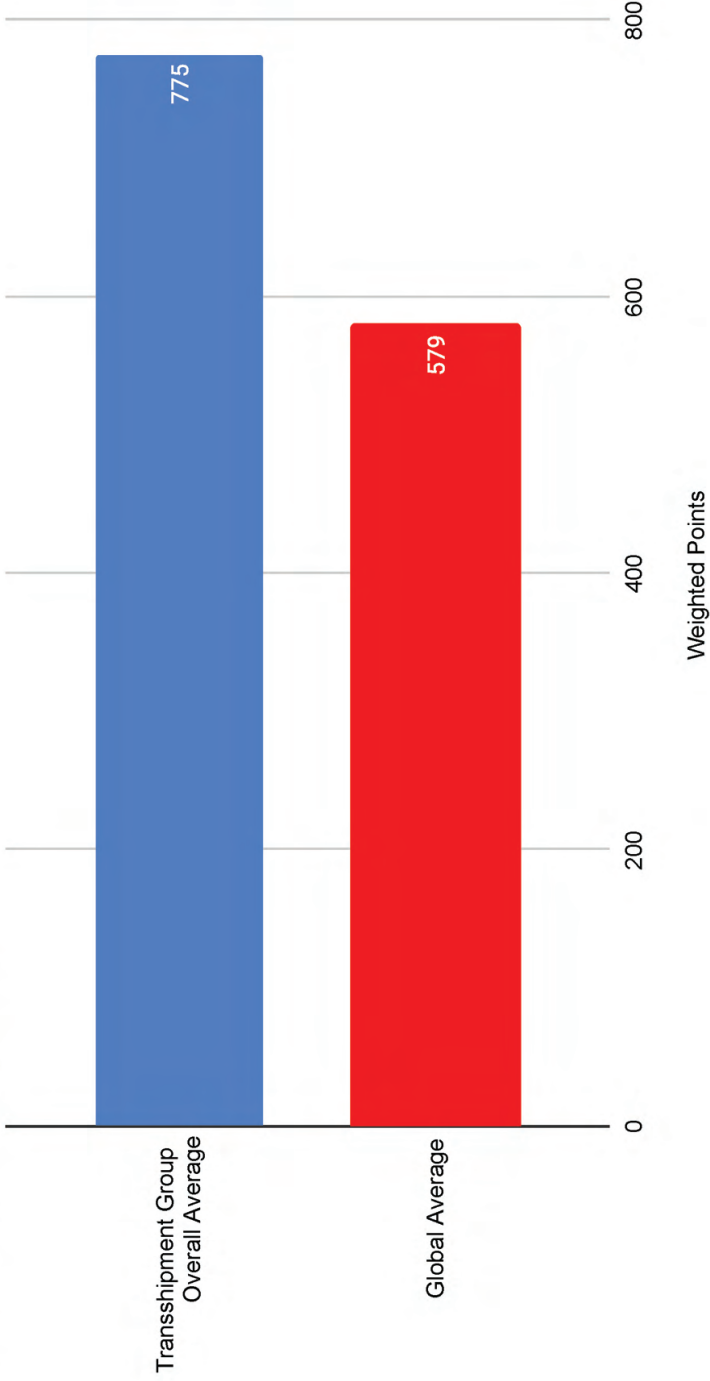


Figure 13.5. Overall transshipment countries group PPI 2023 average compared to the overall global average of the PPI.

2023 Overall Transshipment Countries Average PPI Super Criterion Score Compared to Global PPI

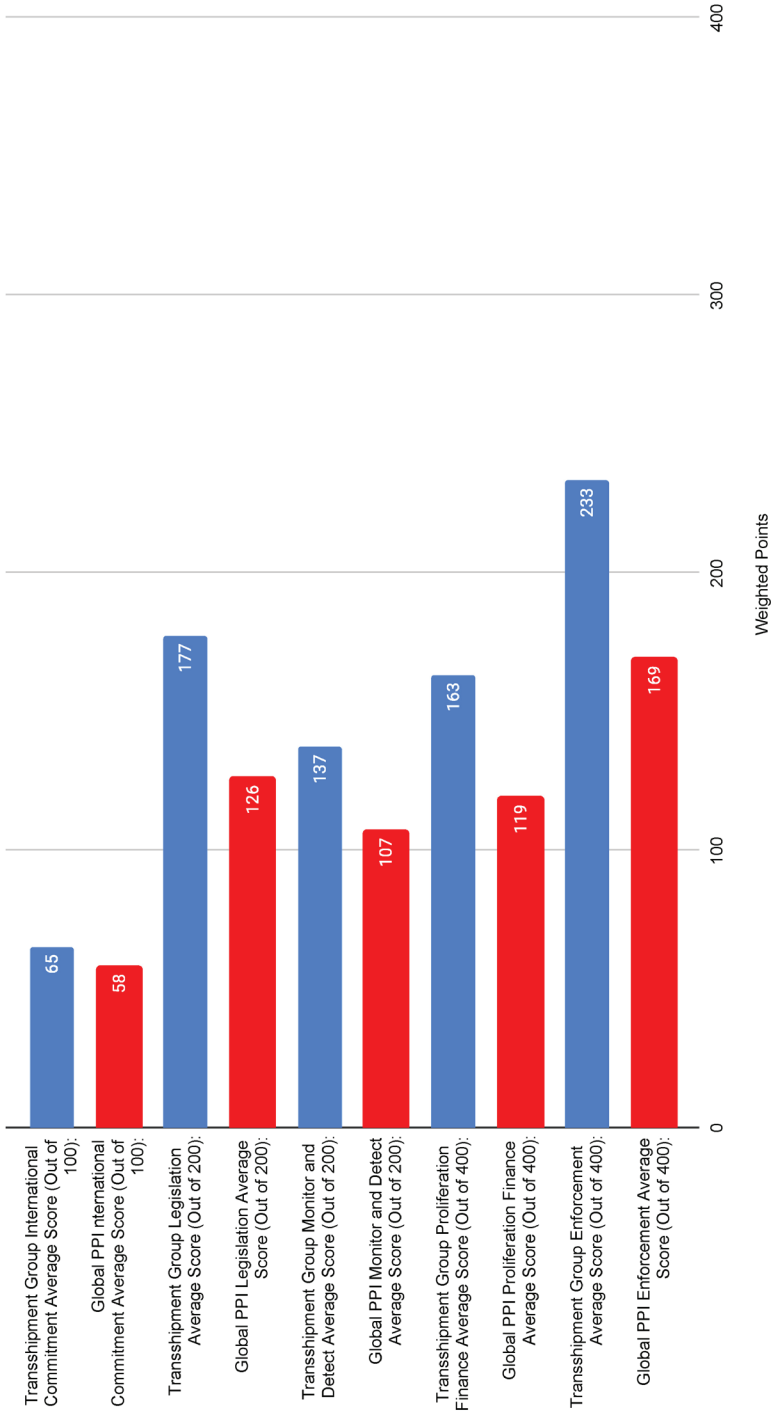


Figure 13.6. The average PPI score for each super criterion for BIS transshipment countries compared to the global PPI average score.

PPI SCORING VS COUNTRIES SUPPLYING MUNITIONS AND COMBAT EQUIPMENT

As expected, group 4, composed of four countries that have supplied Russia with munitions and military equipment for use in its war in Ukraine, performed poorly in the PPI. As seen in Figures 13.7 and 13.8, these countries have appalling performance in the PPI, and even received an average negative group score for Super Criterion *Enforcement* of -85 out of 400 points. No country received a positive score for enforcement, with Syria and North Korea performing the worst. The negative scores reflect the unwillingness of these states to enforce international sanctions and their willingness to allow illicit and restricted items to originate or flow through their territory.

2023 Military Supplier Countries Average Overall PPI Score Compared to Global Overall PPI Score

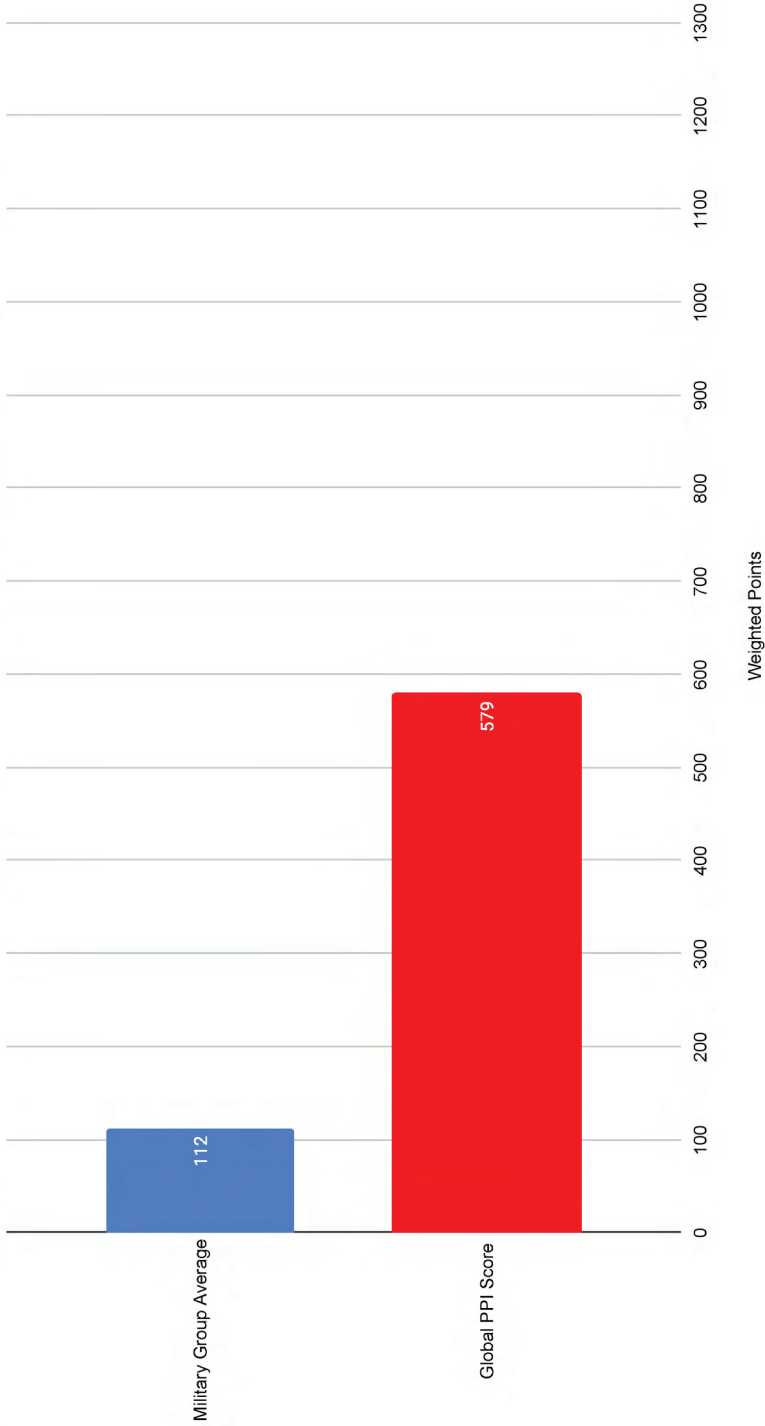


Figure 13.7. The average PPI score for the group of countries that supplied military equipment to Russia compared to the global PPI average score.

2023 Military Supplier Countries Average PPI Scores Compared to Global Average PPI Scores

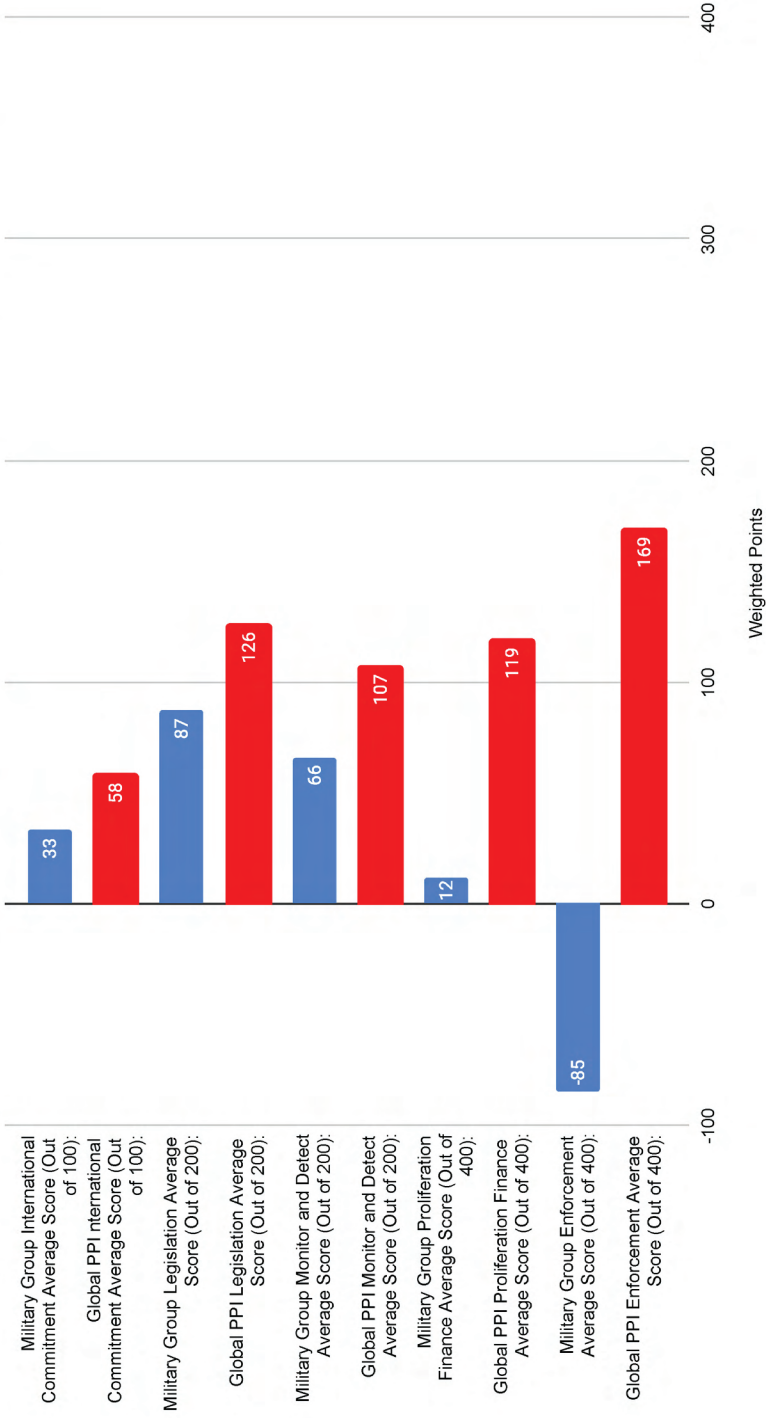


Figure 13.8. The average PPI scores for the group of countries that provided military equipment to Russia, compared to the global average PPI scores for each super criterion area.

FINDINGS AND RECOMMENDATIONS

The patterns in the scores of the 32 countries assessed here lead to several findings and recommendations to better counter Russia's and its allies' efforts to procure goods illegally.

ROLE OF HIGH-SCORING COUNTRIES

The situation with Russia demonstrates that even countries with strong strategic trade control systems have vulnerabilities when new threats arise. At the same time, Russia's widespread dependency on many of the supplier countries' products was unexpected and creates additional urgency and opportunity for the West and its allies to act. The relatively high PPI scores in the 32 countries, and particularly among responsible Tier 1 countries, signify that reforms in most of these countries will be easier to implement and can spread more easily to other high scoring countries not considered here. Collectively, these countries are well positioned to counter Russia's efforts to violate export control laws, regulations, and norms. Their general regulatory environment concerning strategic commodities is strong, and the countries are strongly committed to export controls. As such, many of these countries can be expected to continue working diligently to recalibrate their approach to Russian trade in terms of more listed strategic goods, expanded enforcement and enforcement and prosecutorial operations with partner countries, better end user and end-use checks, more scrutiny and enforcement of illegal financial arrangements used by Russia, its oligarchs, and its agents, enhanced international cooperation, and intelligence sharing about illicit networks and goods. But the situation demands more.

A key strategy to build international coalitions has been focusing on multilateral institutions able to create pressure and binding international sanctions. However, building coalitions today is complicated by the fact that Russia, as a veto-wielding power on the United Nations (UN) Security Council and a member of the consensus-ruled Nuclear Suppliers Group and other multilateral control regimes, is obstructing actions that could be taken by these bodies. It has prevented the imposition of UN sanctions for the invasion of Ukraine and can block the additions of items or procedures in the control regimes. The competing interests between Russia's desire to prolong and win its war in Ukraine and the efforts to

limit Russia and other states' capabilities complicates finding a multilateral solution. Nonetheless, countries can take unilateral and collective action to implement and enforce their own sanctions outside of the purview of the UN. Efforts like these can and have proven effective and enable countries to target Russia and its smuggling networks. In building coalitions to thwart Russia, states should look for allies among responsible members of multinational export control regimes. In addition, like-minded and capable states can be drawn from the collection of all countries with an average PPI score close to or above the Tier 1 average. These groupings of like-minded states control much of the world's advanced manufacturing capabilities, while having the world's best export control systems.

Many goods important to Russia's military programs have not been on national control lists and thus only require export licenses based on the restricted end-use and end user, which is often unknown or hidden by resales and third parties, as well as by the tactics used by Russian procurement networks. Although new items have been added to national lists and additional items are being reviewed for addition, more countries need to do so. Additional entities associated with Russia's military-industrial complex importing strategic commodities should be systematically identified and face sanctions for their supply of goods critical to Russia's defense producers. Entities and individuals in the supply chain supporting Russia's procurement process should be identified and face sanctions to deter entities in other countries friendly to Russia from continuing support. Such actions should be accompanied by enhanced end-use and end user checks. The United States has been spearheading its own effort to expand its national control list of dual-use items with additional dual-use items and technologies banned or controlled for Russia or use in Russia. So have the European Union (EU) and other U.S. allies.

As of today, a substantial group of countries have aligned with these additional export controls and sanctions on Russia. Countries that have so far committed to implementing "substantially similar export controls on Russia and Belarus, under their domestic laws" as the U.S. has, are: Australia, Austria, Belgium, Bulgaria, Canada, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, South Korea, Spain, Sweden, Switzerland,

Taiwan, and United Kingdom.⁶ The U.S. and its like-minded partners should continue this effort to get additional countries on board and update the lists of restricted items swiftly as more information on items sought and used by Russia comes to light.

This list of countries aligning with the United States does not include any BIS-listed transshipment countries except Taiwan (Group 1 above) or any of the four countries directly supplying arms to Russia (Group 4).

Aside from state enforcement, industry action is also critical. Many of the producers of critical components found in Russian weapon systems in Western countries have extensive supply chain networks that depend on third-party sellers and distributors in countries around the world, some friendly to Russia. Often, these third-party sellers and distributors lack the same stringent controls that producers implement themselves, making them vulnerable to exploitation by strategic commodity procurement actors. Western producers should simplify their supply chains and reduce their reliance on third-party sellers and distributors for key items known to be used in Russian weapons.

Strong government/industry cooperation has been critical to strategic trade controls strategies for over two decades. The current situation with Russia, with far more goods needed by its militaries, demands that far more industries participate in this cooperation and many more countries join. A priority for governments is identifying and recruiting companies with significant supply capabilities of dual-use items banned for Russia and Belarus, or other dual-use items that are not listed but could make a significant contribution to Russia's military capabilities. At the same time, more assistance from governments is needed, as many of the new companies lack internal compliance programs (ICPs) or the resources to establish due diligence capabilities about the risks posed by their goods. A useful model for improving the capabilities of companies to spot suspicious inquiries is that charted by Germany and Britain, both of which routinely provide their domestic companies with detailed information about which companies and entities to avoid due to export control concerns and which goods traffickers could be pursuing. More countries should share detailed, current information with their companies and entities. Countries should more broadly use so-called "grey lists" of suspect companies and entities as part of advising supplier companies on suspect

diversion points. High-scoring countries should aid in building these capabilities and resources in other states.

MORE PROBLEMATIC COUNTRIES

Several countries' relationship to Russia (or resistance to U.S. initiatives) may be coloring their enforcement of their own trade control systems. Several of these countries, such as Turkey and China, score more than a hundred points below the Tier 1 average, and Brazil and India score at least sixty points below the Tier 1 average, compounding the problem these countries pose to disrupting Russia's efforts to outfit its military. Outreach to these countries should continue and pressure strategies evaluated and developed, such as temporarily suspending the implementation of bilateral or regional customs and trade facilitation measures or discussions on such. Trade in high priority battlefield items should be heavily monitored to prevent any unauthorized export to Russia.

Several other countries, including Iran, North Korea, Syria, and Belarus, are actively and willingly providing weapons and material support for Russia's war in Ukraine. These countries are serial violators of international treaties and sanctions regimes. They deserve to have additional sanctions imposed on them for their activities with Russia.

Vigilance is required to prevent this list of arms suppliers from growing. It is important to prevent other states from supplying arms to Russia, where indicators could include voting in favor of Russia at the UNSC, ranking low in the PPI, and being widely sanctioned or under military embargo, such as Cuba or Venezuela.

The vast majority of countries have a vested interest in halting the flow of strategic commodities to Russia critical to its aggressive and illegal war effort. There is much work to do to thwart Russia, but the mature trade control systems in many like-minded states provide a sound basis to create tools to act effectively against this new Russian threat to the system of international trade and security. At the same time, these like-minded countries can press countries with inadequate strategic export controls systems to both improve them and participate more actively in thwarting Russia's illicit trade.

GREATER ENFORCEMENT

Efforts to combat the flow of illicit goods to Russia need to be supplemented by stronger enforcement actions from a range of supplier states. The European Union, among others, should devote greater resources and commitment to prosecute those bad actors that take advantage of the currently weaker prosecutorial environment in many EU countries and elsewhere. For example, Germany has advocated for better EU harmonization of criminal penalties applied for the falsification of end user statements. Germany is also one country where media reports indicate that arrests, raids, and investigations related to sanctions on Russia have increased in the last year, indicating that it is not only stepping up the enforcement but also the public messaging about it.⁷

EXTRATERRITORIAL ENFORCEMENT

The United States should expand its use of extraterritorial enforcement actions, where it seeks the extradition of traffickers in other countries or seizes their financial assets even when held in non-U.S. banks. Allies should be encouraged to modify their laws as necessary and start their own extraterritorial enforcement actions. Several countries, including the United Kingdom and South Korea actively seek extraditions from other countries and the formation of bilateral extradition agreements, but more should do so, and more countries should enter the bilateral agreements sought by these states. Currently, about two-thirds of all countries have a bilateral extradition agreement with either the U.S. or the U.K. in place.⁸ For those countries unwilling to enter into a bilateral agreement, they should ensure that their national legislation would allow for extradition. Thus, at a minimum, countries should be encouraged to cooperate with the United States in specific instances so that suspects illegally aiding Russia can be arrested when traveling to sympathetic countries, and the U.S. can successfully extradite them to face charges.

TRANSSHIPMENT COUNTRIES

Perhaps the most immediate challenge posed by Russia's illicit trade activities involves transshipment. Many important goods are not being shipped directly to Russia but through intermediaries, as demonstrated

by the BIS identification of 18 countries. Several approaches are being developed in this area, but more will likely be necessary. A few European examples illustrate their thrust and limitations.

For countries of transshipment concern continuing to allow or tolerate diversions of sensitive goods to Russia, major supplier governments should promptly issue draft regulations when to designate those countries as “destinations of diversion concern.” Such a designation would trigger far greater scrutiny of a wide range of exports, not just sensitive ones, to that country, providing an incentive for the country to rapidly improve its ability to provide assurance that transshipment of items prohibited for Russia will not occur. The logic is simple—if the transshipment country will not act, then the supplier country must.

Such an approach was previously used successfully by the U.S. Commerce Department in the 2000s against transshipment countries or “hubs” used by the A.Q Khan network that lacked strategic export control laws, and the regulation did not even need to be formalized because the targeted countries created strategic trade control systems.⁹ Countries should apply a similar approach against those not willing to stop transshipments of sensitive goods to Russia.

A country’s draft regulation should be supplemented with diplomatic outreach, offers of strengthened bilateral and multilateral cooperation, and expanded export control technical assistance to the potential country of diversion concern. However, it should quickly become apparent which countries are willing to take the necessary steps to ensure transshipment through them is being curtailed and the companies punished.

The originally published Commerce Department draft criteria, slightly modified, are still applicable today in helping make a determination of a country’s status as a destination of diversion concern:

- Transit and transshipment volume;
- Inadequate export/reexport controls (the PPI can be useful here);
- Demonstrated inability or unwillingness to control diversion activities to Russia;
- Government not directly involved in diversion activities; and
- Government unwilling or unable to cooperate with the exporting government on enforcement or interdiction efforts.

Once a supplier country determines a country is of diversion concern, that country would face a series of additional requirements to ensure transshipments do not occur, such as significantly more goods, beyond just sensitive ones, becoming subject to a license, more scrutiny of license applications, fewer licensing exemptions, more conditions on licenses, and more thorough end-use and end user checks.

Fear of being designated a country of diversion concern should encourage several resistant or laggard transshipment countries to develop credible methods of detecting and preventing banned retransfers of goods to Russia and encourage the importer to show due diligence and ensure compliance with regulations such as Germany's proposed end user statement requirement. Otherwise, the country may face severe delays in importing a wide range of goods, including many not previously subject to export licensing or scrutiny.

GUIDANCE TO INDIVIDUAL SUPPLIERS

Individual suppliers need to exercise caution in selling goods today for fear of them ending up in Russia, given Russia's extensive use of illicit trade networks and its exploitation of a wide variety of transshipment hubs. Table 2 lists the 32 countries considered in this chapter, color-coded as to their actions to thwart Russia obtaining sensitive goods, their risk of transshipment, or their complicity in providing military goods to Russia. The first group (color coded green) constitutes those high-scoring countries that are known publicly to be working together to counter Russia's illicit trade. The second group (blue) has demonstrated that they pose a transshipment risk. Suppliers should exercise caution when selling goods to these countries and seek greater assurance that their goods are not transshipped to Russia. The third group (yellow) constitutes countries that have lax enforcement records and pose a greater transshipment risk than the blue-colored group. Suppliers should exercise greater caution with these countries. The fourth group (red) are countries that are actively helping Russia's military; suppliers should exercise extreme caution and ban sales to these countries. These color codes are also described in a legend after Table 1.

One implication of the color coding, not discussed in the above sections, is that it should be a priority for countries in the green category to take steps, collectively and individually, to convince countries in the blue category to move into the green one. More pressure should be applied to those countries in the yellow group to desist allowing transshipments to Russia as well as their direct supply of Russia with restricted goods.

For a country not considered in this chapter, its PPI score can provide a first indication of how to evaluate its risk with regards to Russia.

Color Legend	Combined Risk and Action Level
Green	Actively taking actions to counter Russia trade, with like-minded states
Blue	Transshipment risk, suppliers should exercise caution when selling goods
Yellow	Greater transshipment risk, suppliers should exercise greater caution
Red	Avoid--suppliers should exercise extreme caution and ban sales

Country	Final PPI Score	Risk, Actions
United States	1075	
Singapore	1041	
Latvia	1037	
Sweden	1027	
Germany	1026	
Austria	1018	
Estonia	1010	
Japan	1008	
Canada	996	
Finland	980	
Switzerland	953	
United Arab Emirates	898	
Mexico	886	
Israel	883	
South Africa	878	
Kazakhstan	842	
Georgia	826	
Serbia	816	
Armenia	804	
Brazil	793	
India	780	
Turkey	738	
Taiwan*	734	
Kyrgyzstan	712	
Uzbekistan	654	
Tajikistan	635	
China	578	
Belarus	539	
Nicaragua	462	
Syria	74	
Iran	24	
North Korea	-188	

Table 13.2. PPI Score of 32 Countries with Risk, Actions

ENDNOTES

1. “FIN-2022-Alert003: FinCEN and the U.S. Department of Commerce’s Bureau of Industry and Security Urge Increased Vigilance for Potential Russian and Belarusian Export Control Evasion Attempts,” United States Bureau of Industry and Security, June 28, 2022, <https://www.fincen.gov/sites/default/files/2022-06/FinCEN%20and%20Bis%20Joint%20Alert%20FINAL.pdf>.
2. After it was listed by BIS, Taiwan took action to align their lists of items restricted for Russia and Belarus with the U.S. lists, see footnote 7.
3. Hong Kong is also noted as a transshipment country by some sources, but for export controls Hong Kong can no longer be treated differently than China.
4. John Eligon and Lynsey Chutel, “South African Inquiry Rebutts U.S. Charge on Russian Arms,” *The New York Times*, September 3, 2023, <https://www.nytimes.com/2023/09/03/world/africa/south-african-inquiry-russia-ship.html#:~:text=An%20investigation%20by%20the%20South,President%20Cyril%20Ramaphosa%20said%20on.>
5. David Albright, Sarah Burkhard, and Victoria Cheng, “Satellite Imagery Update on Alabuga Shahed-136 Drone Factory - No snow day for Russia’s drone production!,” *Institute for Science and International Security*, December 20, 2023, <https://isis-online.org/isis-reports/detail/satellite-imagery-update-on-alabuga-shahed-136-drone-factory.>
6. U.S. Code of Federal Regulations, “Supplement No. 3 to Part 746—Countries Excluded from Certain License Requirements of §§ 746.6, 746.7, and 746.8,” <https://www.ecfr.gov/current/title-15/subtitle-B/chapter-VII/subchapter-C/part-746/appendix-Supplement%20No.%203%20to%20Part%20746.>
7. “Germany takes a tougher stance against bypassing Russia Sanctions via third countries,” JD Supra, February 28, 2023, <https://www.jdsupra.com/legalnews/germany-takes-a-tougher-stance-against-5586959/>.
8. *Peddling Peril Index for 2023/2024*.
9. “Country Group C; Destination of Diversion Concern,” Draft Regulation, Bureau of Industry and Security, Department of Commerce, *Federal Register*, Vol. 72. No. 37, February 26, 2007.
10. Financial sanctions evasion hubs, for example, Cyprus, are not included. An asterisk indicates that an entity is difficult to rank in the PPI because of its dependence on other countries or its non-state status. An “†” Indicates an NSG member.

**SECTION IV:
REDUCING THE PERIL**

CHAPTER 14

HOW TO IMPROVE PPI SCORES

The PPI provides a way for states to reflect on their own strategic trade control systems and compare their performance to other countries. Intrinsic to the PPI is the premise that all countries need to improve their scores. The scoring stands as a reminder against complacency by all, including trade control officials, national decision makers and budgetary authorities.

A TOOL FOR ASSISTANCE PROVIDERS

The PPI identifies strengths and weaknesses in a country's system, which can be used to determine which countries need assistance and what type of assistance would be most beneficial. Importantly, the PPI not only looks at the existence and enforcement of strategic trade controls, but also at the general environment in which controls are implemented. Therefore, among countries that do not yet have strategic trade control legislation in place, the PPI score, rank, and country-profile offer an evaluation of the foundation upon which strategic trade controls can be built.

The PPI can also serve as a supplement to an assessment by assistance-offering countries of a recipient country. The evolution of a country's score and rank through updates of the PPI can be used by assistance providers as an objective way to monitor progress and measure success.

The PPI can be integrated into maturity models developed by assistance providers to plan and track progress. The idea of maturity models to assess a country's strategic trade control level stems from the WCO and has been subsequently adopted by other assistance providers.¹ It facilitates the identification of steps and prerequisites before a country can move on to the next level and allows for measuring and acknowledging step-by-step improvements. Maturity models prevent countries from prematurely enacting strategic trade control laws without sufficient ability to implement or enforce them. The PPI, through its Tier system, Tier-specific recommendations and cluster analysis support the idea of improving systems within a maturity-level framework.

HOW TO IMPROVE A PPI SCORE

A natural question is how a country can improve its score. This entails fulfilling many of the sub-criteria or indicators that the project has determined to be of importance. If a country is interested, the PPI team is happy to provide its points profile and information that led to it and consult with relevant representatives for a follow-up report. We encourage interested countries to contact us. We also welcome comments and reactions to the rankings.

With 87 positive, point-earning criteria and 1,300 possible points, a single criterion cannot “make or break” a country. Rather, the final PPI scores indicate that creating an effective strategic trade control system relies on many actions, large and small, in several areas. Nonetheless, focusing on improvement or implementation of 24 “high-impact” indicators defined in the previous chapters, some from each super criterion, lays out a strategy for improving a country's strategic trade control performance.

Moreover, despite overall low performance in the super criterion *Ability to Prevent Proliferation Financing*, this area offers great rank improvement opportunities for individual countries as well as a path to improved trade control implementation. Together with *Adequacy of Enforcement*, it is one of the two most heavily weighted super criteria in the PPI. A path to better performance is closely tied to working with the Financial Action Task Force (FATF). From 2021 to 2023, 15 countries increased their score under the Proliferation Financing super criterion through improved compliance with FATF standards. There are many

other international organizations, such as the World Customs Organization, that countries should cooperate with more closely on trade control implementation. Implementing the trade control provisions of UNSCR 1540 (2004) and submitting detailed national implementation reports would also boost a country's score.

Overall, the PPI balances high standards for strategic trade control systems with reasonable expectations for the implementing country. Some features of control systems that are applicable mostly to supplier states and control regime members are recommendations rather than sub-criteria. Countries that are leading examples of implementing additional features are highlighted throughout the priority recommendations made in Chapter 16. Additionally, through its ranking, the PPI identifies countries that are regional leaders; other countries can turn towards them for guidance.

DRAWING LESSONS FROM THE TOP TEN COUNTRIES IN 2023

What sets the top 10 performing countries apart is a well-implemented strategic trade control system bolstered by counterproliferation financing capabilities. They perform well in high-impact sub-criteria across all five super criteria. They earned more than 50 percent of the points available in super criterion *Ability to Prevent Proliferation Financing*, while roughly 75 percent of all other states earned less than 50 percent in this super criterion where the average and median scores lie at 119 out of 400 possible points. The top ten countries are, listed alphabetically: Australia, Belgium, Czech Republic, France, Latvia, Portugal, Singapore, Sweden, United Kingdom, and United States of America.

While these countries can be looked at as role models for a well-rounded performance, there are additional countries that score highly in individual super criteria. The table below lists the top 10 performing countries by super criterion (listed alphabetically). There are caveats to be kept in mind when examining the countries listed below, including that the super criteria were not designed to create sub-rankings, as there are indicators that affect multiple super criteria but are only measured in one of them to avoid double counting in the final score. Thus, these groups of countries that can serve as role models are not exclusive.

Super Criterion: International Commitment
Australia, Czech Republic, Finland, Germany, Netherlands, New Zealand, Portugal, Sweden, Switzerland, and Turkey.
Super Criterion: Legislation
Australia, Austria, Belgium, Denmark, France, Luxembourg, Netherlands, New Zealand, Taiwan*, and United Arab Emirates.
Super Criterion: Ability to Monitor and Detect Strategic Trade
Austria, Belgium, Canada, Estonia, Finland, Norway, Republic of Korea, Singapore, Switzerland, and United Arab Emirates.
Super Criterion: Ability to Prevent Proliferation Financing
Andorra, France, Ireland, Israel, Norway, Portugal, Singapore, Sweden, United Kingdom of Great Britain and Northern Ireland, and United States of America.
Super Criterion: Adequacy of Enforcement
Australia, Belgium, Canada, France, Japan, Latvia, Lithuania, Singapore, Slovakia, and United States of America.

Table 14.1. The top 10 ranked countries within each super criterion, listed alphabetically. An asterisk indicates that an entity is difficult to rank because of its dependence on other countries or its non-state status.

FOCUSING ON HIGH-IMPACT CRITERIA

Out of the 1300 total points available in the PPI, roughly one third come from a list of 24 high-impact sub-criteria. The importance of these high-impact sub-criteria is visible by taking a closer look at the top performing countries in 2021 compared to 2023.

The importance of high-impact criteria also affects the top 10 countries. It can be seen by evaluating countries’ performances in high-impact sub-criteria across the five super criteria.

In the 2023 PPI, Czech Republic ranked 7th overall. In a ranking considering high-impact sub-criteria only, Czech Republic dropped to rank 28. Alternatively, the United Kingdom, which ranked 3rd in the 2023 PPI, remained the same in the high-impact rank. A deeper look shows that Czech Republic only earned 320 of 447 possible weighted high-impact points, or 72 percent, while the United Kingdom achieved 80 percent of the 447 possible high-impact points.

A notable improvement in high-impact ranking can be seen with Germany. In the 2021 PPI, Germany was ranked in 43rd place when only considering high-impact sub-criteria; Germany is now ranked in fourth

place. For the overall PPI, Germany is now also ranked in 11th place with 1026 total, weighted points. While Germany only changed its rank by one place in the overall PPI, the publication of its new FATF report provided a much-needed boost to its high-impact criteria score. However, due to not achieving the highest possible grades in FATF Recommendation 7, Immediate Outcome 1, and Immediate Outcome 11, it is missing out on valuable extra credit points under *Ability to Prevent Proliferation Financing*.

There is a whole set of countries that performed worse in the ranking based on high-impact criteria than in the final PPI ranking. These countries are assessed to have some of the greatest potential for significant improvement. For those countries that do not yet have a strategic trade control law in place, for example, their relative robust performance in medium and low- impact criteria could indicate that these countries have a good trade environment to serve as a basis for strategic trade control legislation in the near future. Figure 14.1 graphs the 2023 PPI rank versus the high-impact only rank. The countries of interest appear far below the trendline; they have a ranking closer to 200 on the x-axis (high-impact criteria only rank), but closer to 1 on the y-axis (overall PPI rank). Highlighted here (and listed alphabetically) are 12 countries that rank 30 or more ranks better in the final PPI ranking than in a ranking based on high-impact criteria only: Angola, Armenia, Cote d'Ivoire, Kuwait, Lesotho, Liechtenstein, Norway, Trinidad and Tobago, Tunisia, Uruguay, Uzbekistan, and Zambia. From this list of countries, Barbados, Belize, and Samoa were removed as they rank in the bottom third of the final PPI ranking. Further, San Marino was removed as it is identified as a country difficult to rank independently from Italy. It appears to make sense to add Namibia, Saudi Arabia, Switzerland and Qatar to this list of countries with potential for improvement based on the high-impact ranking analysis, as these countries rank 25 or more ranks better in the final PPI ranking than in a ranking based on high-impact criteria, and all countries score in the top half in the final PPI ranking.

Due to the weighting applied to the Enforcement and Proliferation Financing super criteria, some sub-criteria that are assigned a medium impact attribute more points to a country's final score than a high-impact criterion in super criterion *International Commitment*, for example. The final score contribution reflects a proportional relationship between effort

and return, as improvements in *Adequacy of Enforcement* and *Ability to Prevent Proliferation Financing* are generally more difficult, but countries are encouraged to work on all high-impact criteria. In *International Commitment* for example, adherence with export control regime guidelines is also rewarded in the PPI, and not only membership.

2023 PPI Rank Plotted Against a Rank Based on High-Impact Sub-Criteria Only

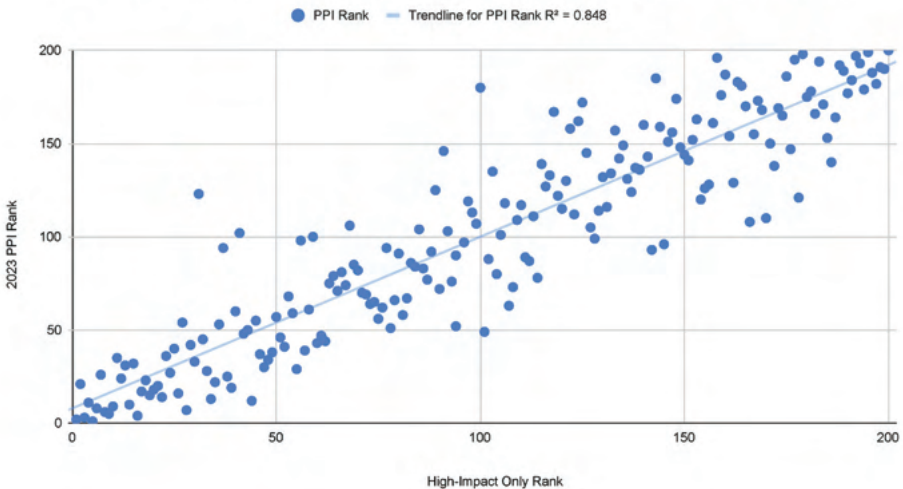


Figure 14.1. Rank correlation between high-impact sub-criteria only and the 2023 PPI. The r^2 value of 0.85 confirms a strong positive correlation.

EXPORT CONTROL LEGISLATION AND CONTROL LISTS

A strong national legal framework to control the export of weapons of mass destruction and related materials and equipment, including dual-use goods and technology, is fundamental to build a culture of action and commitment to nonproliferation. The top 50 ranks in the PPI are consistently held by countries with comprehensive export control legislation and control lists.

Figure 14.2 is a map that is color-coded by the comprehensiveness of each country's export control legislation, where dark green is the most comprehensive and red is the least comprehensive. The full definition of each category can be found in Chapter 3, Legislation, as well as a table that lists all countries by their assigned color category. The vast majority of the dark green control legislation is located in the Northern

Hemisphere. Notably, the largest economies in the world tend to have dark green legislation. As can be seen, orange and red color categorizations are concentrated in the Southern Hemisphere, and primarily in developing countries.

Comparing the 2023 map to the 2021 map displays slow progress in the Southern Hemisphere. Very few countries in this round improved their legislative commitments; however, a few notable changes are occurring or are in the process. Morocco is one country that adopted new, comprehensive dual-use export control legislation. Countries that are being monitored closely for progress include Tunisia, Chile, and Laos, which are in the process of adopting their draft export controls legislation and control lists. Kazakhstan is one country that adopted new strategic trade control legislation and gained additional points for it across the 2023 PPI. Regardless, for the purpose of this sub-criterion, Kazakhstan's previous legislation was sufficient for the dark-green color category.

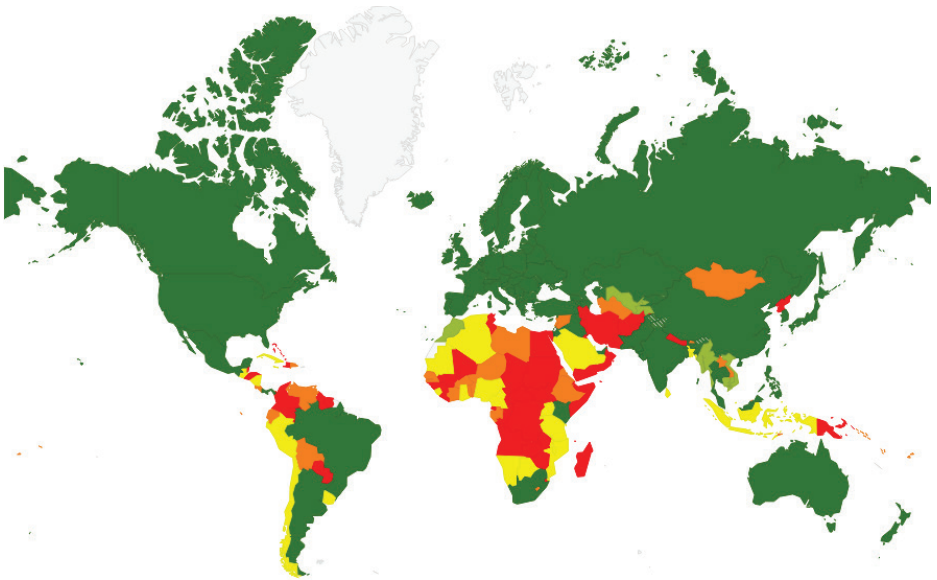


Figure 14.2. Color coding of the comprehensiveness of export control legislation, where comprehensiveness is measured from most comprehensive to least in dark green, light green, yellow, orange, and red, respectively.

THE GOOD NEWS: AREAS OF GREATEST IMPROVEMENT

Countries That Improved the Most. Many countries in the 2023 PPI improved their score. Figure 14.3 maps the point difference from 2021 to 2023 by country, where countries that improved most are shaded in a darker green, and countries that improved less in lighter green or white. Countries that experienced a decrease in total points are shaded in red. The country that improved the most from 2021 to 2023 was Mauritania: in 2023 it scored 539 points, an increase of 261 points compared to its 2021 score of 278. In 2021, Mauritania ranked 173 overall. In the 2023 PPI, Mauritania ranked 101, an increase of 72 ranks. This change was primarily driven by super criterion *Legislation* and a very large increase in

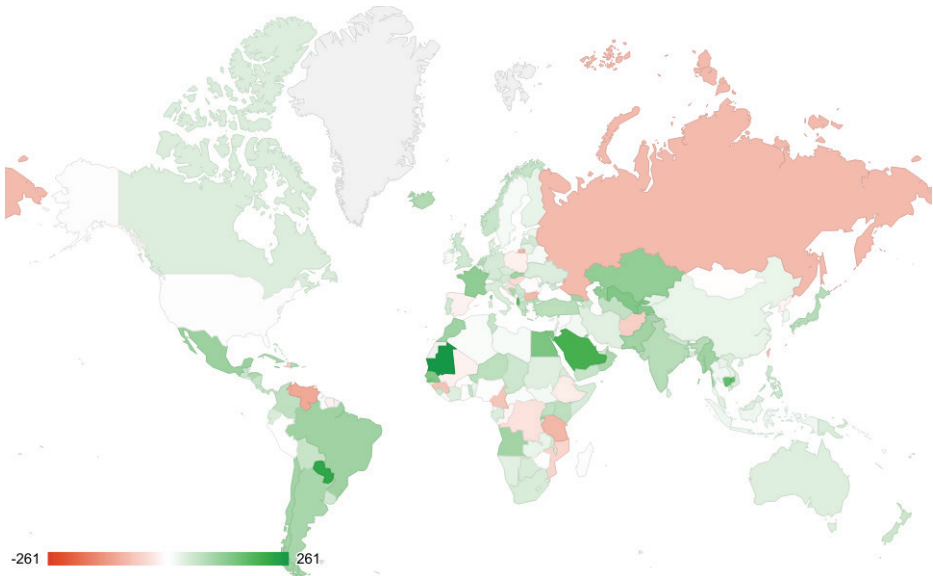


Figure 14.3. Point changes in the final, weighted PPI score by country from 2021 to 2023, where countries with a point increase are shaded in green and those with a point decrease are shaded in red. Of note, the minimum of -261 was set manually to create a midpoint at zero. The actual minimum was -114.

Ability to Prevent Proliferation Finance, where Mauritania earned a positive 38 points and 199 points over its 2021 score, respectively. In *Ability to Prevent Proliferation Financing*, Mauritania benefited from implementing and complying with Financial Action Task Force (FATF) recommendations and reporting its progress and updated FATF ratings through a

follow-up report. The next greatest improvement was Paraguay, which increased its score by 222 points to a final total of 648, also largely driven by improvements in *Ability to Prevent Proliferation Financing*.

Globally, the improvement is less impressive, but an increase, nonetheless. Overall, the average score for the 2023 PPI is 579, an increase of 32 points from the 2021 PPI average of 547 points, representing a 6 percent increase in the average score, or alternatively, the average score is two percent closer to reaching the maximum number of points, 1300.

With respect to the Tiers, Tier Two improved its average score the most by 51 points, from 542 to 593. Comparatively, Tier One improved by 28 points, and Tier Three by 21 points. With regard to the four clusters, Cluster 2's improvement was the greatest. Its average score rose by 89 points.

Super and Sub-criteria That Improved Most. Globally, the most improvement was seen within super criteria *Ability to Prevent Proliferation Financing* and *Adequacy of Enforcement*. The *Ability to Prevent Proliferation Finance* super criterion experienced the largest increase in average score compared to 2021, a welcome improvement.

In *Ability to Prevent Proliferation Financing*, all but one of the 13 sub-criteria experienced an increase in globally achieved points. One criterion that improved especially involves countries adopting or committing to adopt a beneficial ownership registry, with some implementing a public registry. Beneficial ownership registries are an important tool to prevent the establishment of front companies and dissuade foreign illicit actors from taking advantage of a domestic market. Another welcome development is that many countries' financial intelligence units have published references to counter-proliferation finance efforts in their annual reports, indicating that this issue is receiving greater attention. The one sub-criterion in *Ability to Prevent Proliferation Financing* that experienced a decrease in globally achieved points was "Having OFAC sanctioned entities." The decrease may be attributed to an increase in enforcement activities by OFAC in the wake of Russia's full-scale invasion of Ukraine in February 2022.

Figure 14.4. maps improvements in *Ability to Prevent Proliferation Financing* by country.

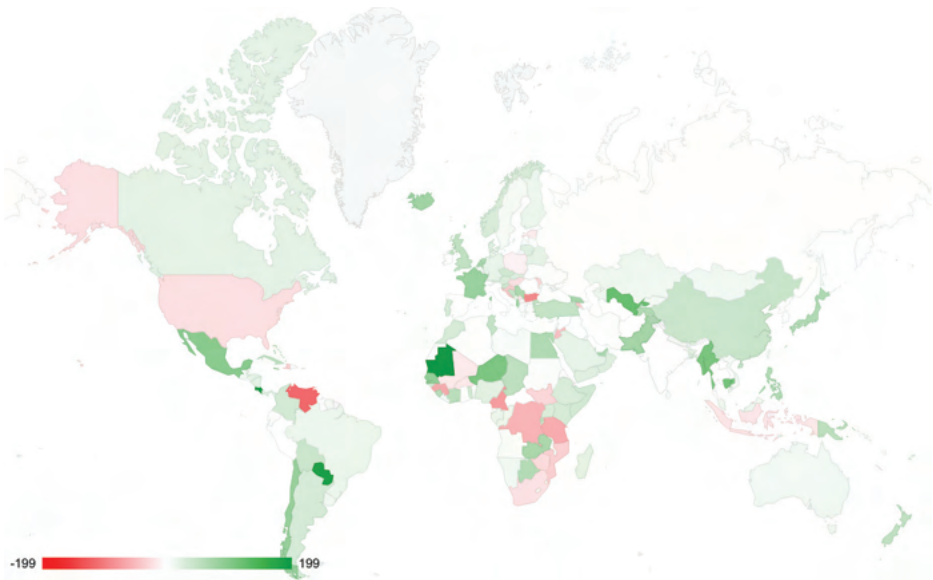


Figure 14.4. Point changes in the weighted score by country from 2021 to 2023 under Super Criterion *Ability to Prevent Proliferation Financing*, where countries with a point increase are shaded in green and those with a point decrease are shaded in red. Of note, the minimum of -199 was set manually to create a midpoint at zero. The actual minimum was -114.

The increase in overall score in *Adequacy of Enforcement* occurred because of improvements in sub-criteria across the board. For example, improvements were seen in the following sub-criteria: Has Own Sanctions list, Registration Required for a Company to Export, and Electronic Declaration of Export Data. These are indicative of an overall increased effort by governments to collect export control-relevant data. Globally, more attention is paid to national sanctions lists, a likely response to the increased use of national sanctions as a tool against Russia's aggression in Ukraine. However, many countries still rely on lists agreed upon by the United Nations Security Council, leaving room for national improvement.

THE BAD NEWS: AREAS AND CRITERIA FALLING SHORT

Countries That Decreased the Most. While many countries in the 2023 PPI improved their scores, many countries' scores declined. The reasons for the loss of points vary from country to country. A total of 46 countries across all three tiers lost points in this edition of the PPI (see Table 14.2.).

The highest-ranking country to lose the most points was Hungary, which had a final score of 983 and rank of 11 in 2021 and a final score of 937 and rank of 30 in 2023, and therefore lost 46 points. Hungary lost points in super criteria *Ability to Monitor and Detect Strategic Trade* (lost eight points), *Ability to Prevent Proliferation Financing* (lost 24 points), and *Adequacy of Enforcement* (lost 18 points), while gaining only about four points in *International Commitment*. The point difference resulted in Hungary falling 19 ranks.

The country score that decreased the most overall was Venezuela; its score fell from 309 to 195 points, a loss of 114 points. Venezuela lost points in *Ability to Monitor and Detect Strategic Trade*, *Ability to Prevent Proliferation Finance*, and *Adequacy of Enforcement*, where Presence of Sanctioned Entities, Being a Major Money Laundering Jurisdiction as identified by DOS INL, and Experiencing High Levels of Corruption and Instability weighed heavily on its score.

Countries with a Score Decrease from 2021 to 2023
Tier One
Bulgaria, Croatia, DPRK, Hungary, Monaco*, Poland, Romania, Russian Federation, Spain, Taiwan, and United States of America.
Tier Two
Afghanistan, Brunei Darussalam, Ethiopia, Ghana, Nigeria, Peru, Syrian Arab Republic, and Venezuela (Bolivarian Republic of).
Tier Three
Bhutan, Burkina Faso, Cameroon, Comoros, Congo (Dem Rep of the), Congo (Rep of the), Cook Islands, Djibouti, Dominica, Fiji, Guinea, Haiti, Kiribati, Madagascar, Maldives, Mali, Mozambique, Nauru, Palau, Saint Lucia, Samoa, Seychelles, Suriname, Tanzania (United Republic of), Tonga, Trinidad and Tobago, and Zimbabwe.

Table 14.2. Countries that lost points in the 2023 PPI, listed alphabetically and by tier. An asterisk indicates that an entity is difficult to rank because of its dependence on other countries or its non-state status.

Ability to Prevent Proliferation Financing. Despite improvement, this super criterion remains the one where the least points are achieved globally, and where even the high-ranking countries receive scores below 77 percent of the possible points. Figure 14.5 charts the point distribution across this super criterion, demonstrating that the countries cluster between one fourth and one half of the available points. Figure 14.6 is a

2023 PPI: Distribution of Scores under Ability to Prevent Proliferation Financing

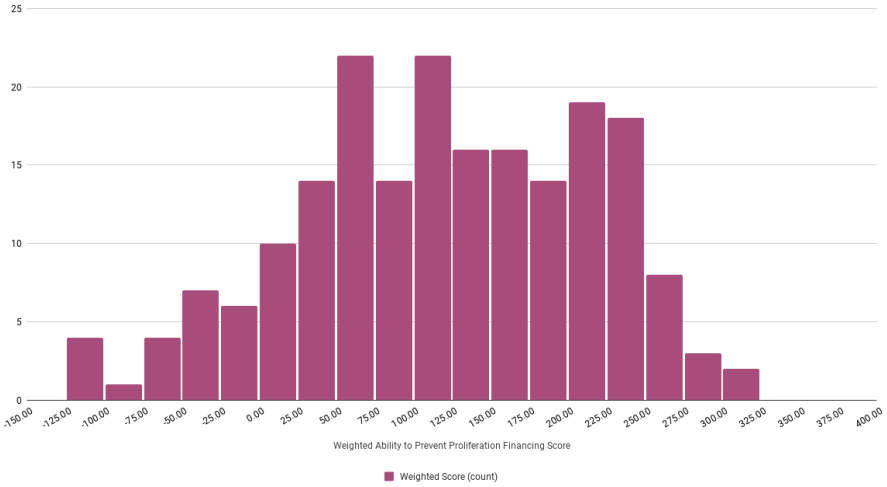


Figure 14.5. The distribution of weighted scores under Super Criterion *Ability to Prevent Proliferation Financing*.

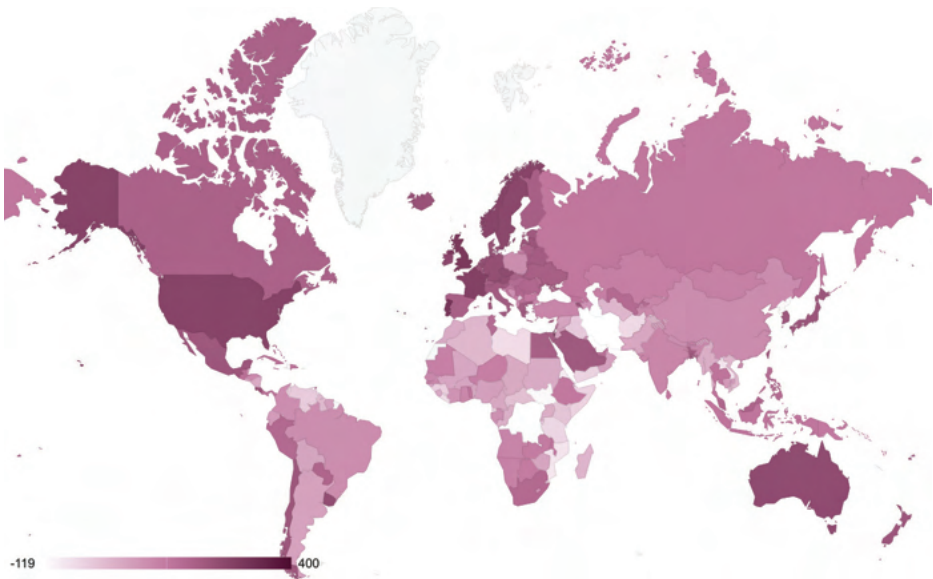


Figure 14.6. World map of weighted scores received under super criterion *Ability to Prevent Proliferation Financing*. The actual maximum achieved score was 306.

world map visualizing how a country performed in this super criterion relative to other countries. Higher scores are in darker color, and lower scores in lighter color, where the range of achieved scores is minus 119 to 306 points, out of 400 possible points. The maximum was set manually to the possible 400 points, rather than the actual achieved maximum, to better show the lighter colors dominating the map and reflecting the low overall average and median in this super criterion, which both lie at 119 points.

Countries Involved in Violating Sanctions on North Korea. In 2023, the PPI is using data on sanctions violations made available by the UN Panel of Experts on North Korea in its annual reports. These reports are analyzed by the Institute on a regular basis as soon as they are published by the UN. Chapter 6 explains how points were subtracted from those countries that were involved, and how the subtractions were based on the severity of the activity, such as involvement in military-related sanctions violations or repeated involvement over several years. Figure 14.7 shows the relative severity of the deductions on a world map.

Overall, the number of countries alleged to be involved in violations has increased since the first Institute analysis was conducted in 2017. In that study, the Institute counted 49 countries cited in the Panel of Experts report, 62 in 2020, and by 2023, the number of countries involved in violations had decreased only slightly to 58. There may be a number of factors contributing to this effect: newly added sectoral and targeted sanctions that countries had to adjust to; increased reporting by Member States and investigating capabilities by the Panel; and increased global trade overall, but it another factor is that some countries have become laxer in their controls. The Institute has continued to monitor and categorize cases to identify patterns and areas that require the most improvement as well as to identify countries that are especially negligent or vulnerable to certain types of sanctions evasion schemes. For example, the Institute's 2023 analysis revealed that twelve countries were allegedly involved in military-related cooperation with the DPRK, including the training and procurement of military-related supplies, and aiding the DPRK in establishing supply chains for ballistic missile development.² Unsurprisingly, the majority of those twelve countries scored in the bottom half of the PPI. Disappointingly, the Philippines, highlighted as one of the countries with the most improvement in the 2021 PPI and scoring in the top 50 of

all countries, is also in this group. Collectively, the countries scored an average of 427 points, barely 33 percent of the total possible points.

The 2021 PPI included a new sub-criterion, Country has a Positive Record of Submitting Sanction Implementation Reports, which demonstrates the degree to which countries are willing to pay attention and dedicate resources to implementing international sanctions on North Korea. The 2023 PPI found that ninety-five countries have never submitted any of the sanctions reports considered by the 2023 PPI. That leaves 105 countries that have submitted at least one of five sanctions implementation reports required by UNSCR 2397 (2017) and its follow up reports. At the same time, only 30 countries (15 percent) had a positive record of submitting all sanctions implementation reports required under the five most recent United Nations Security Council Resolutions.

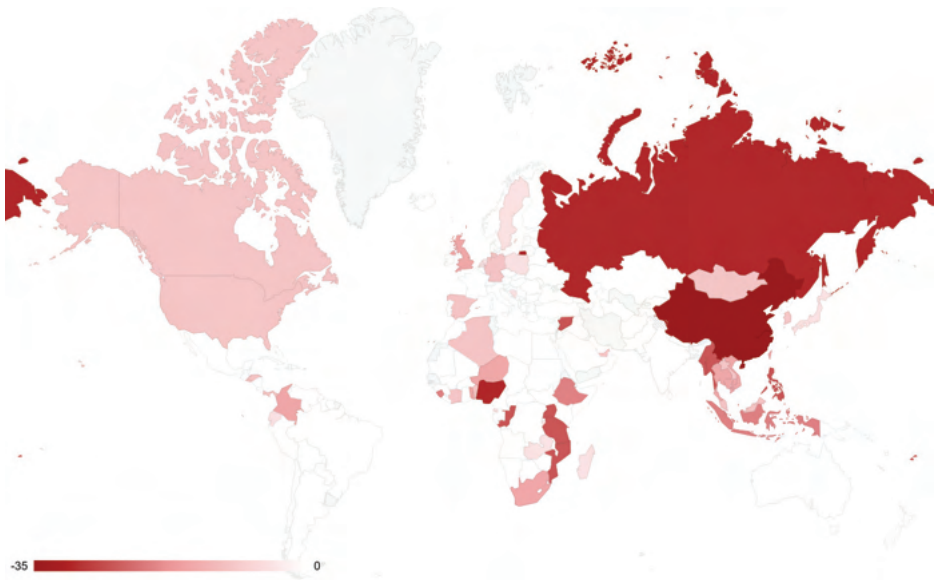


Figure 14.7. North Korea sanctions violations subtractions (raw points), where darker red implies a greater subtraction.

Government Unwillingness or Inability to Enforce. The PPI takes into consideration the economic and political stability in a country when judging a government's ability to enforce trade control measures. Countries suffering from high levels of corruption, internal destabilizing conflicts, evidence of government interference with trade control investigations, and other deficiencies face significant challenges to effectively implement strategic trade control laws. Of the 50 countries ranked in the bottom quarter of the overall 2023 PPI, 21 countries are affected by point deductions due to this unwillingness or inability to act. For example, Syria suffered point deductions due to its ongoing civil war, its status as a failed state and a state sponsor of terrorism, and bribery and corruption amongst customs officials and law enforcement.

Corruption. Corruption amongst government officials remains a pressing issue. In about a quarter of all countries, there is documented evidence of 10 percent or more of all businesses being expected to provide “gifts” in exchange for an import license. Surpassing this 10 percent threshold resulted in a point deduction for that country.

NOTES

1. World Customs Organization, “Strategic Trade Control Enforcement: Implementation Guide,” Updated 2023, http://www.wcoomd.org/-/media/wco/public/global/pdf/topics/enforcement-and-compliance/tools-and-instruments/stce-implementation-guide/stce-implementation-guide_en.pdf?db=web; Todd Perry, “Reducing Proliferation Risk Through Export Control Outreach: Assistance Providers’ Use of Maturity Model-Based Approaches,” *Strategic Trade Review*, 2019, Vol 5, Issue 7, pp. 5-24, <https://strategictraderesearch.org/wp-content/uploads/2019/01/Strategic-Trade-Review-Winter-2019.pdf>.
2. Russian Federation, Congo (Republic of the), Fiji, China, Ethiopia, Myanmar, Niger, Philippines, Mozambique, Nigeria, Syria, and Tanzania.

CHAPTER 15

PRIORITY RECOMMENDATIONS

We end this section by highlighting recommendations with a focus on actions countries and capacity builders can take. For a more complete discussion, which includes more general recommendations and specific recommendations to international organizations, we recommend the reader also read Chapter 16 of the PPI for 2021, and Chapter 12 of the PPI for 2017. Making recommendations to support the improvement of strategic trade controls (STCs) lies at the heart of the PPI. The PPI team started with general recommendations in the 2017 edition and progressed over the years to focus on more targeted and timely recommendations. Nevertheless, the earlier recommendations remain important, and everyone is encouraged to look at the previous editions.

BUILDING A GLOBAL, SOLID FOUNDATION FOR STRATEGIC TRADE CONTROLS

Improving PPI Scores Systematically. A central recommendation remains that countries should work to improve their PPI score. Chapter 15, How to Improve PPI Scores, offers additional guidance on a multitude of ways that countries can vastly improve their scores, but a good starting point is to focus on the 24 high-impact criteria.

A key area where many countries can dramatically improve their scores is the implementation of comprehensive export control legislation.

Assistance providers should expand their work and cooperate with countries that don't meet the PPI's minimum requirements. Having any strategic trade control system is better than none, and at a bare minimum provides a foundation to build upon and to establish a culture of trade control enforcement in the country.

Providing Guidance for STC Implementation via an International Standard. A key recommendation remains that strategic commodity trafficking should not have any safe havens. All countries should have, at a minimum, the legal authority necessary to control the export, re-export, transit, and transshipment of proliferation-sensitive items or transfer of those items to proliferation-linked end-users. These controls should include catch-all mechanisms and stringent end-user requirements. It must be recognized that not all states have the resources to implement the same level of controls. Nonetheless, all countries and territories should have at least basic strategic trade controls.

With that recognition, the PPI has developed a set of minimal controls for states in Tier Three (see Sidebar: A Minimal STC System). These controls include the full panoply of controls in the national law, including the legal authority necessary to control the export, re-export, transit and transshipment, and associated services, such as brokering and financing, of proliferation-sensitive items or to proliferation-sensitive end users. They involve minimal resources to implement, in terms of funds and personnel. Moreover, if relevant information comes to a government's attention, it should be able to act upon it, stopping, for example, an illicit transit of sensitive goods, or moving to arrest and prosecute or extradite those who carry out, aid, or abet such trafficking. All countries should also have the capability to implement sanctions placed on entities or trading sectors by UN Security Council resolutions.

These basic requirements should be recorded in an International Standard on Strategic Trade Controls to serve as official guidance and measuring stick for countries that are new to strategic trade controls or those that need to improve their current systems. The idea for an International Standard for minimal STC controls emerged in 2019 from the G7 Global Partnership CBRN [chemical, biological, radiological, and nuclear] working group, chaired at the time by the United Kingdom. It was discussed as a descriptive, nonprescriptive standard, and not to be based

on one regime's guidelines or modeled on one country's system, so as to better apply to non-regime members. The standard would be established under the International Standards Organization (ISO), which is a majority-ruled international organization that takes draft standards submitted by member nations and converts them into standards. This effort deserves support by assistance providing governments, both in finalizing a draft document conveying ideas of a minimal standard, composed of best practices and a subset of required practices or principles, and socializing the draft among nations and other stakeholders.

Providing Guidance on Border Controls. Border security and management remains a critical area of vulnerability for many countries. The UNSC 1540 (2004) resolution partially addresses the requirement for all countries to have adequate border controls, but it does not provide guidance on how to achieve effective controls. To date, no one document spells out what needs countries may have, what risks a country may face, and how to address this effectively. Countries should therefore work together to create such guidance on assessing and addressing risks.

A starting point includes the Border Security Initiative (BSI), through the United Nations Counter-Terrorism Centre (UNCCT) and the Global Counterterrorism Forum (GCTF), that provides guidance for border security in terms of countering terrorist groups and transnational criminal organizations efforts to illegally traffic small arm and light weapons (SALW), explosives, illicit goods, and other restricted forms of trade.¹ In parallel with the BSI, an initiative that focuses on developing best practices and procedures for the counterproliferation of strategic commodities used in advanced conventional weapons and weapons of mass destruction should be implemented to assist in expanding state's border management capabilities.

Examples of best practices may include that customs officials coordinate with border police and guards to ensure that policies and procedures reflect the challenges border police encounter on the ground to control proliferation sensitive commodities. Border police and guards should have clearly defined responsibilities that empower them to monitor and inspect shipments suspected of containing restricted strategic commodities not only at specific points of entry but along the border in general.

Countries should have enough staff available to monitor points of entry and adequately police the entire length of a country's border.

Technological enhancements, involving optics and sensors, can be employed to fill gaps in remote areas and allow a smaller staff of border police and guards to perform the work of a larger force. Streamlining border points of entry to fewer sites at joint border crossings, rather than many sites along a large border, can help reduce the accessible routes that proliferators can take and enable border control to be more effectively coordinated across border police, guards, and customs officials. Border police, guards, and customs officials should work near one another at joint border crossings to ensure the synchronization of control activities and to avoid overlap and double checks of shipments. Countries that are not adept in border security management, or that do not have adequate resources to fulfill their border requirements, especially those that pose a major transit or transshipment concern, should seek assistance from regional partners that know the region well or from other foreign assistance providers.

Addressing National Transshipment Risks. Transshipment countries need to allocate additional resources to reduce the risk of unauthorized transshipments of strategic commodities. Russia's efforts to circumvent export controls and sanctions placed on a variety of strategic commodities following its 2022 invasion of Ukraine have shown that geopolitical events can turn countries into new transshipment hubs due to their geographical location or trade relationships. Thus, all countries need to stay vigilant as they establish new trading routes and enter new markets, and new goods and destinations become subject to sanctions and export controls.

One worthwhile investment is the employment of modern electronic systems. E-systems, such as a single window system, make it easier to share and coordinate data among various government agencies involved in implementing and enforcing STC laws, and internationally between governments. Data collection and record keeping on licenses and customs declarations can create a better way to thwart illicit transshipments of these goods, for example by identifying patterns and potential red flags for associated actors and shipping routes. These records are also crucial to identify and investigate unauthorized shipments. Importantly, data

A MINIMAL STC SYSTEM

A minimal system should include:

Trade control legislation that includes lists of materials, equipment, and technology covered by multilateral treaties and arrangements, which could be used for the design, development, production, or use of nuclear (including radiological), chemical, and biological weapons, and explosives, and their means of delivery. Examples are the Parts 1 and 2 lists created by the NSG in the nuclear area. In practice, the EU list of dual-use items covers all of these.

- An industry outreach effort to sectors or companies that could be affected by trade control laws. The government should develop a basic knowledge of the country's supply and transshipment potential and which goods and sectors are affected by sanctions.
- The assignment of a few officials (or for very small nations, a single individual) to conduct this industry outreach, issue licenses, and serve as a point of contact for other countries and international organizations. The staff should widely disseminate contact information and work to create a simple website with trade control law information, licensing information, and points of contact for assistance.
- A denied parties list in case a license is requested along with knowledge of sanctioned countries.
- A minimal capability to stop strategic goods in transit, including a point of contact to receive information from other countries. The country should have legal authority to act upon this information, including to expeditiously seize goods, and have a mechanism (such as drawing on foreign expertise, if necessary) for evaluating seized goods.
- Penal codes to include appropriate penalties for trafficking of nuclear and other strategic commodities.
- The ability to enforce trade control laws, including having the ability to prosecute violators or allow for their extradition if they are being sought for prosecution by other countries.
- Work with the 1540 Committee to identify and address gaps and weaknesses in the country's trade control system.
- Anti-corruption measures, for those countries scoring low on the Corruption Perceptions Index.

collection efforts and legal authorities granted for STC implementation must also apply in Free Trade Zones.

Another tool transshipment countries should consider is the establishment of bilateral agreements with supplier countries on certifying end-user declarations for dual-use items, where the licensing agency in the supplier country shares the end-user declaration with the licensing authority in the recipient country for end-user verification before granting an export license. For example, the UAE's licensing agency reviews end-user declarations for nuclear-related exports to a declared UAE end-user in export applications received by Germany's licensing agency. This is an efficient way for countries facing increased transshipment risk to prevent illicit transshipments, especially if these agreements exist with a multitude of supplier countries and apply to most or all controlled goods.

EQUIPPING STC SYSTEMS TO RESPOND TO EMERGING THREATS

Since the release of the 2021 PPI, the global trade environment has changed in several important ways. Russia's second invasion of Ukraine in February 2022, and its reliance on Western components for its combat systems have led to the emergence of new illicit procurement routes and revealed gaps in current trade control regimes. No longer are only the countries with poor strategic trade control systems vulnerable to exploitation, but also those with well-developed systems. The emergence of unmanned aerial vehicles (UAVs), particularly those designed and produced by Iran and China, are testing trade control regimes to their limit. Many of the crucial components are designed and produced by a limited number of Western firms, but produced *en masse* for a large variety of end uses, sold and stocked in large batches, and widely available through distributors, online retailers, and other third-party sellers. Thus, countries with a solid foundation for strategic trade controls need to be better equipped to address new and growing challenges stemming from the evolution of modern warfare, globalized trade routes, and adversaries with increased access to sensitive technology and improved production capabilities.

In turn, industry action is also critical. Many of the Western producers of critical components found in Russian weapon systems, such as microcontroller, servo motors, antennas, and FPGAs, have extensive

supply chain networks that depend on third-party sellers and distributors in countries around the world, some friendly to Russia. Often, these third-party sellers and distributors lack the same stringent controls that producers implement themselves, making them vulnerable to exploitation by strategic commodity procurement actors. Western producers should simplify their supply chains and reduce their reliance on third-party sellers and distributors for key items known to be used in Russian weapons.

Minimize Diversion Risk as a Supplier Country. There are specific tools supplier countries need to employ in these circumstances, which can be summarized as aiding individual suppliers in due diligence efforts and providing incentives for transshipment countries to increase their controls.

Individual suppliers need to exercise increased caution and due diligence when vetting new customers and distributors. Individual suppliers may also want to simplify their supply chains or reduce reliance on distributors in countries with less ability to prevent the diversion of goods, such as China. Here, governments can provide suppliers with additional information on high-risk goods, high-risk trading routes, and especially high-risk entities in third countries, via advisories, company visits, grey lists of entities, and sanctions lists.

In parallel, governments should increase corporate due diligence requirements. For example, the EU has adopted new guidance for firms involved in sensitive commodity exports to develop adequate internal due-diligence tools to ensure the strictest compliance with EU sanctions.² The guidance requests that businesses dealing in sensitive commodities implement contractual clauses with third-country business partners prohibiting re-exports to Russia or Belarus.

For countries of transshipment concern, major supplier governments should promptly issue draft regulations for these countries to be designated officially as “destinations of diversion concern” if they do not take quick and decisive action. Such a designation would trigger far greater scrutiny of a wide range of exports, not just sensitive ones, to that country, providing an incentive for the country to rapidly improve its ability to provide assurance that transshipment of items prohibited for Russia will not occur.

Such an approach was previously used successfully by the U.S. Commerce Department in the 2000s against transshipment countries or “hubs” used by the A.Q. Khan network that lacked strategic export control laws. Ultimately, the regulation did not even need to be formalized because the targeted countries created strategic trade control systems.³ Countries should apply a similar approach against those not willing to stop transshipments of sensitive goods to Russia.

A country’s draft regulation should be supplemented with diplomatic outreach, offers of strengthened bilateral and multilateral cooperation, and expanded export control technical assistance to the potential country of diversion concern.

However, it should quickly become apparent which countries are willing to take the necessary steps to ensure that illicit transshipments are being curtailed and the companies involved are being punished. Once a supplier country determines a country is of diversion concern, that country would face a series of additional requirements to ensure transshipments do not occur, such as significantly more goods, beyond just sensitive ones, becoming subject to a license, more scrutiny of license applications, fewer licensing exemptions, more conditions on licenses, and more thorough end-use and end user checks.

The originally published Commerce Department draft criteria, slightly modified, are still applicable today in helping decide a country’s status as a destination of diversion concern:

- Transit and transshipment volume;
- Inadequate export/reexport controls (the PPI results can be useful here);
- Demonstrated inability or unwillingness to control diversion activities to Russia;
- Government not directly involved in diversion activities; and
- Government unwilling or unable to cooperate with the exporting government on enforcement or interdiction efforts.

The mature export control systems in many states provide a sound basis to create more effective tools to act against Russia’s and other countries threats to the system of international trade and security. At the same time, these countries can press nations with inadequate transshipment

controls to both improve them and participate more actively in thwarting Russia's illicit trade.

Enforce Catch-All Clauses. Many countries with comprehensive STC legislation have a catch-all clause incorporated that allows a government to place licensing requirements on non-listed goods based on their end-use. However, many countries have little experience in using it. As such, developing mechanisms on how to invoke a licensing requirement based on the catch-all clause should be a priority in outreach activities, tabletop exercises, and other national trainings.

Having the catch-all requirement as a tool to fill gaps in lists, whether sanctions lists or control lists of commodities, has become increasingly important given Russia's reliance on consumer-grade products and other rising trends of undermining control lists via "good enough" items or the procurement of non-listed sub-components. The latter technique has been employed by Iran, for example, in the case of pressure transducers, vacuum valves, and other items, as it attempts to further indigenize its nuclear equipment production over time.⁴

Countries able to supply high quality industrial items should remain vigilant and aim to better prevent the illicit procurement of subcomponents by illicit trade networks and proliferant states. Governments should enlist pertinent federal departments, and national nuclear laboratories and other research entities, to work closely together to identify possible reverse-engineering of key equipment and new illicit procurement needs of countries. Critical, identified subcomponents should become subject to licensing and be added to control lists.

The United States can play a key role in working to improve understanding internationally among governments and companies about the seeking of unlisted subcomponents by proliferant states. It should assist partner countries' access to technical expertise or "reachback" when suspect goods are detected or seized and their officials require timely analysis as to the goods' purpose and potential misuse.

Russia's collaboration with Iran to mass-produce weaponized Shahed drones is just one example of why it is crucial for well-developed STC systems to have an ability to not only enforce catch-all controls based on WMD end-use but also newly emerging catch-all requirements such as arms embargos on former trading partners, and new end-uses,

such as advanced conventional weapons programs. Another new area of controlled end-use is included in the latest version of the EU's dual-use regulations, Regulation (EU) 2021/821, which includes end-use controls for non-listed cyber-surveillance items that can be used in connection with violations of human rights or internal repression.

Prevent Unwanted Technology Transfers. As sensitive technology spreads to more countries, many of those outside of control regimes, it raises the question—will they be able to contain such technology? To be proactive about this issue, regime countries should consider outreach to these countries to provide guidance and incentives to improve their technology controls. Regime countries should engage their own industry and enact laws and controls to prevent unwanted technology transfers.

One example is the control of “deemed exports,” which typically refers to the transfer of data or knowledge to a foreign national, where it must be assumed that the foreign national may eventually return to their country of origin. Governments should provide guidelines on how to properly share potentially sensitive data among foreign nationals collaborating in professional environments, and what would constitute an illegal transfer, or an illegal “deemed export.” This is becoming increasingly relevant for the academic sector, including proliferation-relevant research conducted by foreign students or professors, and for access to proliferation-relevant databases, software, and equipment during a collaboration. While the term “deemed exports” is a U.S.-origin term, the concept is increasingly adopted by other countries with well-developed STC systems, for example, relevant provisions were implemented and strengthened in South Korea and Japan in recent years.

Relatedly, outreach to the academic sector should be a priority in countries with well-developed STC systems. It is widely reported that foreign countries take advantage of the academic capabilities of other countries to advance their own malign interests.⁵ Academic exchanges in certain key sectors should be regulated to prevent the flow of sensitive information. Academic institutions should be keenly aware of the civilian and military applications of their research and exchanges with foreign institutions. Verification can come in terms of background checks on foreign researchers and institutions, contractual agreements outlining strict information use terms, and internal compliance measures ensuring

against the provision of sensitive information requiring a license or otherwise prohibited. Presentations and files that contain sensitive information on strategic commodities should be quarantined on domestic servers and should have limited access, such as only in person at a domestic facility or through a secure online portal once an export license is granted by a state authority. These measures can prevent unauthorized access and the distribution of information by foreign researchers, foreign entities, or their agents.

To provide guidance, countries should point their academic and research institutions to a comprehensive export control implementation manual developed by Germany's BAFA. In the manual, BAFA explains regulations and requirements, presents case studies, and lists best practices for universities and research institutions on how to set up an effective Internal Compliance System.⁶ Further guidance can be provided by associations such as the European Export Control Association Research Organisation (EECARO) or the Association of University Export Control Officers (AUECO) in the United States. In parallel, countries should consider publishing their own reference material and supporting the foundation of a similar association in their country. Another example is controlling foreign direct investments (FDIs) in companies dealing with potentially sensitive technology. FDI, while an essential lifeline for many industries in economies all around the world, can be exploited by proliferators to acquire access to their sensitive technology. Several known cases where FDI has led to the transfer, knowingly or unknowingly, of sensitive technology have enabled proliferating states to advance their capabilities.⁷ It is important for supplier nation governments to have the capability of screening foreign investments to prevent the uncontrolled transfer of technology, focusing not only on potential takeovers of companies involved in the making of military and dual-use goods, but also screening minority share investments with the potential of resulting in uncontrolled transfers of designs, data, software, knowledge and the like. Several countries in the EU, such as France, Italy, and Germany, have authorities and mechanisms in place, a number that has been increasing since the EU established a framework for screening foreign direct investment through Regulation (EU) 2019/452. In the United States, the relevant authority is the Committee on Foreign Investment in the United States (CFIUS). More countries should follow suit and

establish their own screening mechanisms to be able to block FDIs when needed. Here, guidance and supporting statements from states with more advanced FDI control systems could be helpful.

A related, added layer of transparency is a public registry of beneficial ownership. Public registries enable stakeholders to better identify who may benefit from an acquisition, merger, or other investment.

Apply National Sanctions. A key strategy to building international coalitions has focused on multilateral institutions able to create pressure and enact binding international sanctions. However, building coalitions today is complicated by the fact that Russia, as a veto-wielding power on the United Nations (UN) Security Council and a member of the consensus-ruled Nuclear Suppliers Group and other multilateral control regimes, is obstructing actions that could be taken by these bodies. It has prevented the imposition of UN sanctions for the invasion of Ukraine and can block the addition of items or procedures in the control regimes. The competing interests between Russia's desire to prolong and win its war in Ukraine and the efforts to limit Russia and other states' capabilities complicates finding a multilateral solution. Nonetheless, countries can take unilateral and collective action to implement and enforce their own sanctions outside of the purview of the UN. Thus, countries need to put laws and mechanisms in place that allow them to sanction entities independently.

Countries should also invest in national sanctions capabilities that enable them to apply appropriate restrictions to product categories. A licensing requirement for the exportation of even non-controlled goods known to be misused in military systems by an adversary should be paramount. Countries with established design and manufacturing bases as well as distribution centers, should establish high-risk commodity lists based on their supply capabilities and risk of diversion, such as the BIS/EU List of Common High Priority Items.

Too often, countries are dependent on other countries' sanctions lists. While this is better than no sanctions list whatsoever, countries should know their territory best and be better positioned to identify national supply and transshipment risk. The license requirements, restrictions, and consequences of violation should be firm and well communicated to

the relevant economic operators through online databases, company visits, advisories, and press releases.

Greater Enforcement with Regards to Russia. Efforts to combat the flow of illicit goods to Russia need to be supplemented by stronger enforcement actions from a range of supplier states. The European Union, among others, should devote greater resources and commitment to prosecute those bad actors that take advantage of the currently weaker prosecutorial environment in many EU countries and elsewhere. For example, Germany has advocated for better EU harmonization of criminal penalties applied for the falsification of end user statements. Germany is also one country where media reports indicate that arrests, raids, and investigations related to sanctions on Russia have increased in the last year, indicating that it is not only stepping up the enforcement but also the public messaging about it.⁸

Extraterritorial Enforcement. The United States should expand its use of extraterritorial enforcement actions, where it seeks the extradition of traffickers in other countries or seizes their financial assets even when held in non-U.S. banks. Allies should be encouraged to modify their laws as necessary and start their own extraterritorial enforcement actions. Several countries, including the United Kingdom and South Korea actively seek extraditions from other countries and the formation of bilateral extradition agreements, but more should do so, and more countries should enter the bilateral agreements sought by these states. Currently, about two-thirds of all countries have a bilateral extradition agreement with either the U.S. or the U.K. in place.⁹ For those countries unwilling to enter into a bilateral agreement, they should ensure that their national legislation would allow for extradition. Thus, at a minimum, countries should be encouraged to cooperate with the United States in specific instances so that suspects illegally aiding Russia can be arrested when traveling to sympathetic countries, and the U.S. can successfully extradite them to face charges.

NOTES

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2. European Commission, “Guidance of EU Operators: Implementing enhanced due diligence to shield against Russia sanctions circumvention,” September 7, 2023, https://finance.ec.europa.eu/system/files/2023-09/230905-guidance-eu-operators-russia-sanctions-circumvention_en.pdf.
3. U.S. Department of Commerce, Bureau of Industry and Security, “Country Group C; Destination of Diversion Concern,” Draft Regulation, *Federal Register*, Vol. 72. No. 37, February 26, 2007.
4. David Albright, Sarah Burkhard, Frank Pabian, and Jack Toole, “Conversion of Fordow: Another Unfulfilled Hope of the Iran Nuclear Deal,” *Institute for Science and International Security*, July 10, 2019, <https://isis-online.org/isis-reports/detail/conversion-of-fordow-another-unfulfilled-hope-of-the-iran-nuclear-deal/8>.
5. Charlie Parker, “Iran using research partnerships with UK ‘to develop weapons,’” *The Times*, July 30, 2023, <https://www.thetimes.co.uk/article/iran-using-research-partnerships-with-uk-to-develop-weapons-9b7rqs76>; Zamone Perez, “School researching hypersonic weapons closes China-linked institute,” *Federal Times*, June 16, 2023, <https://www.federaltimes.com/news/your-military/2023/06/16/school-researching-hypersonic-weapons-closes-china-linked-institute/>; Zack Machuga, “U.S. universities retain ties to Chinese universities that support Beijing’s military buildup, new report says,” George Mason University Office of Research Integrity and Assurance, December 14, 2021, <https://oria.gmu.edu/us-universities-retain-chinese-ties/>.
6. See: Federal Office for Economic Affairs and Export Control (BAFA), *Manual Export Control and Academia* (Frankfurt: Federal Office for Economic Affairs and Export Control (BAFA), 2023), https://www.bafa.de/SharedDocs/Downloads/EN/Foreign_Trade/ec_manual_export_control_and_academia.html.
7. For examples of FDI that led, or likely led, to the transfer of sensitive technology to proliferating countries, see: “Matrix Churchill Group,” *Institute for Science and International Security*, Accessed April 9, 2024, <https://exportcontrols.info/matrixchurchill.html>; and more recently: Meia Nouwens and Helena Legarda, “China’s pursuit of advanced dual-use technologies,” *International Institute for Strategic Studies*, December 18, 2018, <https://www.iiss.org/en/research-paper/2018/12/emerging-technology-dominance/#:~:text=and%20defence%20innovation-,China’s%20pursuit%20of%20advanced%20dual%2Duse%20technologies,to%20protect%20its%20own%20innovations.>

8. “Germany takes a tougher stance against bypassing Russia Sanctions via third countries,” JD Supra, February 28, 2023, <https://www.jdsupra.com/legalnews/germany-takes-a-tougher-stance-against-5586959/>.

9. *Peddling Peril Index for 2023/2024*.

**ANNEX I:
FULL RANKING AND SUPER CRITERIA SCORES**

Table A.1. Total PPI Rank and Total Points

PPI Rank	Country	Total Points (1300 points possible; negative scores also possible)	PPI Rank	Country	Total Points (1300 points possible; negative scores also possible)
1	France	1083	24	Italy	983
2	United States of America	1075	25	Finland	980
3	United Kingdom of Great Britain and Northern Ireland	1064	26	Lithuania	976
4	Australia	1049	27	Slovakia	968
5	Singapore	1041	28	Spain	958
6	Latvia	1037	29	Switzerland	953
7	Czech Re- public	1029	30	Hungary	937
8	Belgium	1029	31	Cyprus	934
9	Portugal	1027	32	Romania	933
10	Sweden	1027	33	Greece	929
11	Germany	1026	34	Luxembourg	927
12	Norway	1025	35	Iceland	907
13	Netherlands	1024	36	United Arab Emirates	898
14	Austria	1018	37	Croatia	890
15	Ireland	1017	38	Mexico	886
16	Estonia	1010	39	Israel	883
17	Malta	1008	40	Malaysia	881
18	Japan	1008	41	South Africa	878
19	Republic of Korea	1004	42	Poland	842
20	Denmark	1002	43	Kazakhstan	842
21	Canada	996	44	Georgia	826
22	Slovenia	994	45	Bulgaria	824
23	New Zealand	985	46	Serbia	816
			47	Moldova (Rep of the)	810
			48	Philippines	807
			49	Armenia	804
			50	Brazil	793

FULL RANKING AND SUPER CRITERIA SCORES

PPI Rank	Country	Total Points (1300 points possible; negative scores also possible)
51	Saudi Arabia	791
52	Liechtenstein	789
53	Albania	787
54	India	780
55	Thailand	776
56	Chile	773
57	Andorra	768
58	Macedonia	768
59	Argentina	749
60	Turkey	738
61	Panama	735
62	Taiwan*	734
63	San Marino*	731
64	Montenegro	712
65	Kyrgyzstan	712
66	Bangladesh	706
67	Costa Rica	703
68	Azerbaijan	701
69	Mauritius	689
70	Peru	687
71	Jamaica	681
72	Ghana	680
73	Uruguay	678
74	Bahrain	670
75	Sri Lanka	664
76	Dominican Republic	662
77	Mongolia	659
78	Uzbekistan	654
79	Ukraine	652

PPI Rank	Country	Total Points (1300 points possible; negative scores also possible)
80	Paraguay	648
81	Jordan	646
82	Bosnia and Herzegovina	643
83	Guatemala	640
84	Tajikistan	635
85	Cuba	632
86	Botswana	632
87	Qatar	614
88	Malawi	609
89	Bahamas	607
90	Indonesia	600
91	Algeria	586
92	Antigua and Barbuda	579
93	Tunisia	579
94	China	578
95	Hong Kong*	578
96	Trinidad and Tobago	565
97	Fiji	563
98	Pakistan	557
99	Namibia	552
100	Morocco	546
101	Mauritania	539
102	Belarus	539
103	Egypt	537
104	Gabon	536
105	Monaco*	534

ANNEX I:

PPI Rank	Country	Total Points (1300 points possible; negative scores also possible)
106	Kenya	533
107	Senegal	526
108	Zambia	518
109	Togo	516
110	Kuwait	513
111	Honduras	495
112	Ethiopia	494
113	Benin	494
114	Brunei Darus-salam	494
115	Niger	492
116	Seychelles	489
117	Cambodia	484
118	Timor-Leste	483
119	El Salvador	481
120	Lesotho	478
121	Angola	471
122	Burkina Faso	466
123	Russian Federation	464
124	Colombia	462
125	Nicaragua	462
126	Vanuatu	458
127	Sierra Leone	456
128	Saint Vincent and the Grenadines	452
129	Cote d'Ivoire	449
130	Nigeria	448
131	Saint Kitts and Nevis	446

PPI Rank	Country	Total Points (1300 points possible; negative scores also possible)
132	Swaziland (Eswatini)	441
133	Grenada	441
134	Cape Verde	440
135	Cameroon	435
136	Nepal	435
137	Papua New Guinea	424
138	Samoa	418
139	Solomon Islands	416
140	Barbados	414
141	Bhutan	413
142	Ecuador	412
143	Oman	408
144	Bolivia	404
145	Nauru	399
146	Viet Nam	394
147	Rwanda	392
148	Turkmenistan	378
149	Suriname	375
150	Cook Islands	367
151	Kosovo*	364
152	Dominica	362
153	Belize	361
154	Maldives	356
155	Marshall Islands	355
156	Mali	349

FULL RANKING AND SUPER CRITERIA SCORES

PPI Rank	Country	Total Points (1300 points possible; negative scores also possible)
157	Madagascar	346
158	Chad	345
159	Saint Lucia	344
160	Gambia	338
161	Sao Tome and Principe	336
162	Lao People's Democratic Republic	329
163	Congo (Rep of the)	321
164	Guyana	321
165	Uganda	320
166	Djibouti	314
167	Myanmar	312
168	Tonga	304
169	Holy See*	300
170	Burundi	296
171	Comoros	296
172	Tanzania (United Republic of)	294
173	Iraq	282
174	Mozambique	278
175	Liberia	273
176	Guinea-Bissau	273
177	Guinea	255
178	Niue	244
179	Kiribati	238

PPI Rank	Country	Total Points (1300 points possible; negative scores also possible)
180	Lebanon	231
181	Zimbabwe	229
182	Central African Republic	229
183	Micronesia (Federated States of)	229
184	Sudan	197
185	Venezuela (Bolivarian Republic of)	195
186	Palau	176
187	Congo (Dem Rep of the)	175
188	Equatorial Guinea	171
189	Tuvalu	170
190	Palestine (State of)*	138
191	Eritrea	135
192	Libya	130
193	Haiti	115
194	Afghanistan	76
195	Syrian Arab Republic	74
196	Yemen	33
197	Somalia	27
198	Iran (Islamic Republic of)	24
199	South Sudan	-20
200	DPRK	-188

* These countries and entities are difficult to rank because of their dependence on other countries or their non-state status.

TIER ONE RANKS AND SCORES

Table A.2. Tier One Ranks and Scaled, Weighted Super Criteria Scores

Tier One Rank	Country	PPI Rank	Total Points (1300 Max)	Int'l Commitment (100 Max)	Legislation (200 Max)	Ability to Monitor and Detect Strategic Trade (200 Max)	Ability to Prevent Proliferation Financing (400 Max)	Adequacy of Enforcement (400 Max)
1	France	1	1083	91	198	158	277	359
2	United States of America	2	1075	89	198	157	269	360
3	United Kingdom of Great Britain and Northern Ireland	3	1064	87	198	148	298	333
4	Australia	4	1049	96	198	162	253	341
5	Latvia	6	1037	88	197	158	230	364
6	Czech Republic	7	1029	93	197	160	254	325
7	Belgium	8	1029	91	199	169	230	340
8	Portugal	9	1027	96	198	127	306	302
9	Sweden	10	1027	96	197	161	262	311
10	Germany	11	1026	96	198	156	244	332
11	Norway	12	1025	91	198	171	268	296
12	Netherlands	13	1024	96	199	162	236	331
13	Austria	14	1018	91	199	166	248	314

Tier One Rank	Country	PPI Rank	Total Points (1300 Max)	Int'l Commitment (100 Max)	Legislation (200 Max)	Ability to Monitor and Detect Strategic Trade (200 Max)	Ability to Prevent Proliferation Financing (400 Max)	Adequacy of Enforcement (400 Max)
14	Ireland	15	1017	85	198	159	260	315
15	Estonia	16	1010	84	198	169	219	339
16	Japan	18	1008	89	191	151	225	352
17	Republic of Korea	19	1004	91	197	170	226	320
18	Denmark	20	1002	91	198	162	235	316
19	Canada	21	996	89	190	174	198	343
20	Slovenia	22	994	83	197	165	216	334
21	New Zealand	23	985	96	198	162	224	305
22	Italy	24	983	89	197	164	217	316
23	Finland	25	980	96	192	173	206	314
24	Lithuania	26	976	83	189	158	201	347
25	Slovakia	27	968	86	197	152	193	341
26	Spain	28	958	93	197	166	202	299
27	Switzerland	29	953	96	191	171	208	288
28	Hungary	30	937	87	196	151	176	328
29	Romania	32	933	86	197	151	185	314
30	Greece	33	929	87	196	137	215	294
31	Luxembourg	34	927	93	199	135	199	301

TIER ONE RANKS AND SCORES

Tier One Rank	Country	PPI Rank	Total Points (1300 Max)	Int'l Commitment (100 Max)	Legislation (200 Max)	Ability to Monitor and Detect Strategic Trade (200 Max)	Ability to Prevent Proliferation Financing (400 Max)	Adequacy of Enforcement (400 Max)
32	Iceland	35	907	78	198	136	235	259
33	Croatia	37	890	78	196	149	150	317
34	Mexico	38	886	78	196	160	226	225
35	Israel	39	883	50	175	154	278	226
36	South Africa	41	878	83	189	144	179	282
37	Poland	42	842	89	196	157	102	298
38	Kazakhstan	43	842	84	196	116	129	317
39	Bulgaria	45	824	87	180	150	141	266
40	Serbia	46	816	65	196	127	187	240
41	Brazil	50	793	67	188	159	102	276
42	Liechtenstein	52	789	57	185	74	232	242
43	India	54	780	66	189	159	116	250
44	Argentina	59	749	85	188	147	65	264
45	Turkey	60	738	96	188	150	117	188
46	Taiwan*	62	734	33	199	104	223	174
47	San Marino*	63	731	46	192	81	244	169
48	Ukraine	79	652	83	165	136	204	64
49	China	94	578	57	197	162	105	58

Tier One Rank	Country	PPI Rank	Total Points (1300 Max)	Int'l Commitment (100 Max)	Legislation (200 Max)	Ability to Monitor and Detect Strategic Trade (200 Max)	Ability to Prevent Proliferation Financing (400 Max)	Adequacy of Enforcement (400 Max)
50	Hong Kong*	94	578	57	197	162	105	58
51	Pakistan	98	557	34	196	148	53	126
52	Belarus	102	539	57	177	139	213	-47
53	Monaco*	105	534	41	154	45	167	127
54	Russian Federation	123	464	78	188	155	148	-105
55	Iran (Islamic Republic of)	198	24	33	94	70	-119	-54
56	DPRK	200	-188	9	15	10	-103	-120

TIER TWO RANKS AND SCORES

Table A.3. Tier Two Ranks and Scaled, Weighted Super Criteria Scores

Tier Two Rank	Country	PPI Rank	Total Points (1300 Max)	Int'l Commitment (100 Max)	Legislation (200 Max)	Ability to Monitor and Detect Strategic Trade (200 Max)	Ability to Prevent Proliferation Financing (400 Max)	Adequacy of Enforcement (400 Max)
1	Singapore	5	1041	70	192	166	265	348
2	Malta	17	1008	83	197	151	253	325
3	Cyprus	31	934	74	197	156	207	299
4	United Arab Emirates	36	898	59	200	166	163	312
5	Malaysia	40	881	43	198	145	190	305
6	Georgia	44	826	59	188	135	154	291
7	Moldova (Rep of the)	47	810	59	188	123	170	270
8	Philippines	48	807	61	189	136	173	247
9	Armenia	49	804	61	150	141	236	215
10	Saudi Arabia	51	791	48	148	137	219	239
11	Albania	53	787	57	195	137	94	305
12	Thailand	55	776	59	180	153	152	233
13	Chile	56	773	70	109	143	223	228
14	Panama	61	735	70	151	134	161	220
15	Kyrgyzstan	65	712	54	172	105	120	261

Tier Two Rank	Country	PPI Rank	Total Points (1300 Max)	Int'l Commitment (100 Max)	Legislation (200 Max)	Ability to Monitor and Detect Strategic Trade (200 Max)	Ability to Prevent Proliferation Financing (400 Max)	Adequacy of Enforcement (400 Max)
16	Bangladesh	66	706	52	130	92	213	219
17	Costa Rica	67	703	63	118	118	238	165
18	Azerbaijan	68	701	59	167	113	90	272
19	Peru	70	687	63	130	121	180	193
20	Jamaica	71	681	59	139	131	125	228
21	Ghana	72	680	61	138	122	113	245
22	Sri Lanka	75	664	43	131	120	144	225
23	Dominican Republic	76	662	70	102	121	158	210
24	Mongolia	77	659	57	116	109	126	250
25	Uzbekistan	78	654	65	110	103	176	200
26	Paraguay	80	648	70	80	119	186	193
27	Jordan	81	646	61	143	137	63	242
28	Bosnia and Herzegovina	82	643	59	195	106	95	189
29	Tajikistan	84	635	61	145	114	110	207
30	Qatar	87	614	52	94	137	111	219
31	Malawi	88	609	57	122	95	150	184
32	Bahamas	89	607	46	69	136	177	178

TIER TWO RANKS AND SCORES

Tier Two Rank	Country	PPI Rank	Total Points (1300 Max)	Int'l Commitment (100 Max)	Legislation (200 Max)	Ability to Monitor and Detect Strategic Trade (200 Max)	Ability to Prevent Proliferation Financing (400 Max)	Adequacy of Enforcement (400 Max)
33	Indonesia	90	600	57	93	135	149	166
34	Algeria	91	586	52	146	124	22	241
35	Tunisia	93	579	57	73	98	175	176
36	Namibia	99	552	46	109	121	124	154
37	Morocco	100	546	61	145	118	43	178
38	Egypt	103	537	28	119	99	205	85
39	Zambia	108	518	41	80	93	135	168
40	Kuwait	110	513	63	66	84	104	196
41	Ethiopia	112	494	43	108	76	142	124
42	Brunei Darus-salam	114	494	43	102	100	78	171
43	Niger	115	492	59	83	106	128	116
44	Colombia	124	462	61	73	113	100	115
45	Nicaragua	125	462	59	122	104	46	131
46	Vanuatu	126	458	52	67	68	147	124
47	Nigeria	130	448	61	106	113	67	100
48	Ecuador	142	412	54	71	118	76	93

FULL RANKING AND SUPER CRITERIA SCORES

Tier Two Rank	Country	PPI Rank	Total Points (1300 Max)	Int'l Commitment (100 Max)	Legislation (200 Max)	Ability to Monitor and Detect Strategic Trade (200 Max)	Ability to Prevent Proliferation Financing (400 Max)	Adequacy of Enforcement (400 Max)
49	Oman	143	408	43	67	100	67	130
50	Viet Nam	146	394	63	90	110	23	109
51	Lao People's Democratic Republic	162	329	37	110	66	-64	180
52	Uganda	165	320	48	84	91	38	59
53	Iraq	173	282	54	108	95	-11	36
54	Lebanon	180	231	43	101	56	148	-117
55	Venezuela (Bolivarian Republic of)	185	195	37	99	50	-13	22
56	Libya	192	130	65	52	39	-45	20
57	Afghanistan	194	76	54	46	52	-42	-35
58	Syrian Arab Republic	195	74	35	60	46	55	-121

TIER THREE RANKS AND SCORES

Table A.4. Tier Three Ranks and Scaled, Weighted Super Criteria Scores

Tier Three Rank	Country	PPI Rank	Total Points (1300 Max)	Int'l Commitment (100 Max)	Legislation (200 Max)	Ability to Monitor and Detect Strategic Trade (200 Max)	Ability to Prevent Proliferation Financing (400 Max)	Adequacy of Enforcement (400 Max)
1	Andorra	57	768	52	169	87	301	158
2	Macedonia	58	768	64	172	143	160	228
3	Montenegro	64	712	61	196	97	136	222
4	Mauritius	69	689	48	97	109	206	229
5	Uruguay	73	678	65	78	112	246	177
6	Bahrain	74	670	61	98	117	165	229
7	Guatemala	83	640	54	130	124	159	172
8	Cuba	85	632	63	104	113	163	189
9	Botswana	86	632	61	131	108	138	194
10	Antigua and Barbuda	92	579	65	62	99	229	124
11	Trinidad and Tobago	96	565	39	78	97	200	150
12	Fiji	97	563	59	83	98	227	97
13	Mauritania	101	539	59	146	95	125	114
14	Gabon	104	536	59	124	97	94	162
15	Kenya	106	533	57	158	120	-3	202

Tier Three Rank	Country	PPI Rank	Total Points (1300 Max)	Int'l Commitment (100 Max)	Legislation (200 Max)	Ability to Monitor and Detect Strategic Trade (200 Max)	Ability to Prevent Proliferation Financing (400 Max)	Adequacy of Enforcement (400 Max)
16	Senegal	107	526	54	72	112	109	179
17	Togo	109	516	50	75	85	147	159
18	Honduras	111	495	59	111	96	109	120
19	Benin	113	494	61	110	83	60	180
20	Seychelles	116	489	57	87	67	114	165
21	Cambodia	117	484	57	90	108	81	148
22	Timor-Leste	118	483	24	113	89	115	141
23	El Salvador	119	481	65	118	93	57	148
24	Lesotho	120	478	57	78	113	92	139
25	Angola	121	471	54	71	91	118	135
26	Burkina Faso	122	466	59	133	110	59	106
27	Sierra Leone	127	456	39	119	102	45	150
28	Saint Vincent and the Grenadines	128	452	41	69	106	102	133
29	Cote d'Ivoire	129	449	61	79	84	87	139
30	Saint Kitts and Nevis	131	446	46	113	61	74	152
31	Swaziland (Eswatini)	132	441	54	99	84	40	163

TIER THREE RANKS AND SCORES

Tier Three Rank	Country	PPI Rank	Total Points (1300 Max)	Int'l Commitment (100 Max)	Legislation (200 Max)	Ability to Monitor and Detect Strategic Trade (200 Max)	Ability to Prevent Proliferation Financing (400 Max)	Adequacy of Enforcement (400 Max)
32	Grenada	133	441	28	75	56	152	130
33	Cape Verde	134	440	48	84	86	95	127
34	Cameroon	135	435	50	85	98	50	152
35	Nepal	136	435	28	72	91	99	145
36	Papua New Guinea	137	424	43	62	80	140	98
37	Samoa	138	418	37	98	85	95	102
38	Solomon Islands	139	416	33	121	63	68	132
39	Barbados	140	414	33	73	55	166	86
40	Bhutan	141	413	22	90	74	128	100
41	Bolivia	144	404	37	123	69	58	117
42	Nauru	145	399	35	98	40	96	130
43	Rwanda	147	392	54	78	100	38	123
44	Turkmenistan	148	378	65	98	37	27	150
45	Suriname	149	375	28	62	83	68	134
46	Cook Islands	150	367	17	46	30	246	28
47	Kosovo*	151	364	7	177	72	-31	140

Tier Three Rank	Country	PPI Rank	Total Points (1300 Max)	Int'l Commitment (100 Max)	Legislation (200 Max)	Ability to Monitor and Detect Strategic Trade (200 Max)	Ability to Prevent Proliferation Financing (400 Max)	Adequacy of Enforcement (400 Max)
48	Dominica	152	362	37	85	60	41	140
49	Belize	153	361	39	62	89	78	93
50	Maldives	154	356	30	62	79	35	149
51	Marshall Islands	155	355	46	72	62	73	102
52	Mali	156	349	63	95	88	54	48
53	Madagascar	157	346	61	57	107	22	101
54	Chad	158	345	46	110	57	47	85
55	Saint Lucia	159	344	59	92	50	44	98
56	Gambia	160	338	46	56	64	51	121
57	Sao Tome and Principe	161	336	37	62	72	69	96
58	Congo (Rep of the)	163	321	50	69	93	36	73
59	Guyana	164	321	41	62	70	17	131
60	Djibouti	166	314	54	85	76	1	98
61	Myanmar	167	312	41	87	106	40	39
62	Tonga	168	304	39	62	72	57	74

TIER THREE RANKS AND SCORES

Tier Three Rank	Country	PPI Rank	Total Points (1300 Max)	Int'l Commitment (100 Max)	Legislation (200 Max)	Ability to Monitor and Detect Strategic Trade (200 Max)	Ability to Prevent Proliferation Financing (400 Max)	Adequacy of Enforcement (400 Max)
63	Holy See*	169	300	39	15	22	178	47
64	Burundi	170	296	48	88	82	2	75
65	Comoros	171	296	52	38	69	51	85
66	Tanzania (United Republic of)	172	294	52	85	99	-39	97
67	Mozambique	174	278	57	106	71	-66	110
68	Liberia	175	273	46	54	91	-51	133
69	Guinea-Bissau	176	273	50	46	81	56	39
70	Guinea	177	255	33	74	85	-21	84
71	Niue	178	244	26	58	52	109	0
72	Kiribati	179	238	26	62	51	16	84
73	Zimbabwe	181	229	43	72	97	56	-39
74	Central African Republic	182	229	50	69	55	6	50
75	Micronesia (Federated States of)	183	229	24	85	39	-11	93
76	Sudan	184	197	39	69	61	46	-18
77	Palau	186	176	50	52	32	4	37

Tier Three Rank	Country	PPI Rank	Total Points (1300 Max)	Int'l Commitment (100 Max)	Legislation (200 Max)	Ability to Monitor and Detect Strategic Trade (200 Max)	Ability to Prevent Proliferation Financing (400 Max)	Adequacy of Enforcement (400 Max)
78	Congo (Dem Rep of the)	187	175	52	110	92	-115	36
79	Equatorial Guinea	188	171	33	46	57	-29	64
80	Tuvalu	189	170	17	58	30	-9	74
81	Palestine (State of)*	190	138	37	54	52	5	-9
82	Eritrea	191	135	39	44	39	-69	82
83	Haiti	193	115	43	71	72	-107	36
84	Yemen	196	33	43	40	53	-29	-74
85	Somalia	197	27	22	46	43	-29	-56
86	South Sudan	199	-20	7	54	56	-99	-37

MAPS SUMMARIZING PPI SCORES AND LEGISLATION CATEGORIES

The following two global maps illustrate the PPI country scores overall and the categories for export control legislation. The first map represents the country scores for all 200 countries, territories, and entities by blue shading, where a darker shade represents a higher score (see table A.1). The second map shows the legislative color categories defined in Chapter 3, where in brief: Dark Green—legislation is comprehensive; Light Green – legislation is somewhat comprehensive; Yellow – legislation is deficient; Orange – legislation has serious deficiencies; and Red – legislation is non-existent or severely deficient.

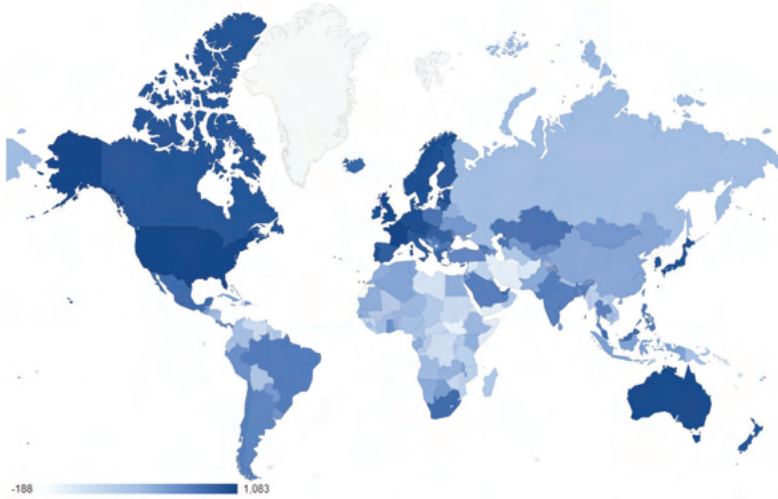


Figure A.1. The PPI scores are represented by country, where darker blue indicates a higher score.

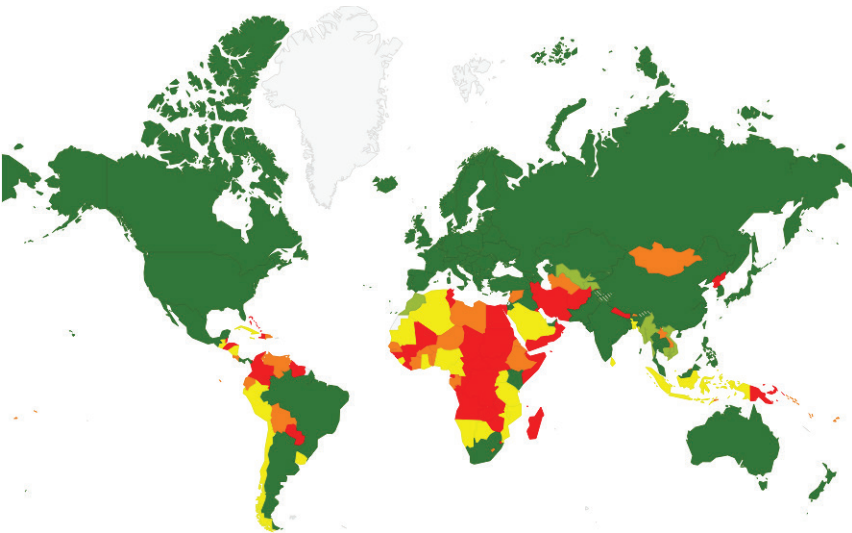


Figure A.2. World map indicating export control legislation color categories. The legislation color key described qualitatively and in brief is: Dark Green – legislation is comprehensive; Light Green – legislation is somewhat comprehensive; Yellow – legislation is deficient; Orange – legislation has serious deficiencies; and Red – legislation is non-existent or severely deficient. See Chapter 3 for more on these legislative categories.

ANNEX II
RANKING BY CLUSTER ANALYSIS

CLUSTER ONE

Rank	Country	Points
1	France	1083
2	United States of America	1075
3	United Kingdom of Great Britain and Northern Ireland	1064
4	Australia	1049
5	Singapore	1041
6	Latvia	1037
7	Czech Republic	1029
8	Belgium	1029
9	Portugal	1027
10	Sweden	1027
11	Germany	1026
12	Norway	1025
13	Netherlands	1024
14	Austria	1018
15	Ireland	1017
16	Estonia	1010
17	Malta	1008
18	Japan	1008
19	Republic of Korea	1004

Rank	Country	Points
20	Denmark	1002
21	Canada	996
22	Slovenia	994
23	New Zealand	985
24	Italy	983
25	Finland	980
26	Lithuania	976
27	Slovakia	968
28	Spain	958
29	Switzerland	953
30	Hungary	937
31	Cyprus	934
32	Romania	933
33	Greece	929
34	Luxembourg	927
35	Iceland	907
36	United Arab Emirates	898
37	Croatia	890
38	Mexico	886
39	Israel	883
40	Malaysia	881
41	South Africa	878

CLUSTER TWO

Rank	Country	Points	Rank	Country	Points
42	Poland	842	69	Mauritius	689
43	Kazakhstan	842	70	Peru	687
44	Georgia	826	71	Jamaica	681
45	Bulgaria	824	72	Ghana	680
46	Serbia	816	73	Uruguay	678
47	Moldova (Rep of the)	810	74	Bahrain	670
48	Philippines	807	75	Sri Lanka	664
49	Armenia	804	76	Dominican Republic	662
50	Brazil	793	77	Mongolia	659
51	Saudi Arabia	791	78	Uzbekistan	654
52	Liechtenstein	789	79	Ukraine	652
53	Albania	787	80	Paraguay	648
54	India	780	81	Jordan	646
55	Thailand	776	82	Bosnia and Herzegovina	643
56	Chile	773	83	Guatemala	640
57	Andorra	768	84	Tajikistan	635
58	Macedonia	768	85	Cuba	632
59	Argentina	749	86	Botswana	632
60	Turkey	738	87	Qatar	614
61	Panama	735	88	Malawi	609
62	Taiwan*	734	89	Bahamas	607
63	San Marino*	731	90	Indonesia	600
64	Montenegro	712	91	Algeria	586
65	Kyrgyzstan	712			
66	Bangladesh	706			
67	Costa Rica	703			
68	Azerbaijan	701			

CLUSTER THREE

Rank	Country	Points
92	Antigua and Barbuda	579
93	Tunisia	579
94	China	578
94	Hong Kong*	578
96	Trinidad and Tobago	565
97	Fiji	563
98	Pakistan	557
99	Namibia	552
100	Morocco	546
101	Mauritania	539
102	Belarus	539
103	Egypt	537
104	Gabon	536
105	Monaco*	534
106	Kenya	533
107	Senegal	526
108	Zambia	518
109	Togo	516
110	Kuwait	513
111	Honduras	495
112	Ethiopia	494
113	Benin	494
114	Brunei Darussalam	494
115	Niger	492
116	Seychelles	489
117	Cambodia	484
118	Timor-Leste	483
119	El Salvador	481
120	Lesotho	478
121	Angola	471

Rank	Country	Points
122	Burkina Faso	466
123	Russian Federation	464
124	Colombia	462
125	Nicaragua	462
126	Vanuatu	458
127	Sierra Leone	456
128	Saint Vincent and the Grenadines	452
129	Cote d'Ivoire	449
130	Nigeria	448
131	Saint Kitts and Nevis	446
132	Swaziland (Eswatini)	441
133	Grenada	441
134	Cape Verde	440
135	Cameroon	435
136	Nepal	435
137	Papua New Guinea	424
138	Samoa	418
139	Solomon Islands	416
140	Barbados	414
141	Bhutan	413
142	Ecuador	412
143	Oman	408
144	Bolivia	404
145	Nauru	399
146	Viet Nam	394
147	Rwanda	392
148	Turkmenistan	378
149	Suriname	375
150	Cook Islands	367

Rank	Country	Points
151	Kosovo*	364
152	Dominica	362
153	Belize	361
154	Maldives	356
155	Marshall Islands	355
156	Mali	349
157	Madagascar	346

Rank	Country	Points
158	Chad	345
159	Saint Lucia	344
160	Gambia	338
161	Sao Tome and Principe	336
162	Lao People's Democratic Republic	329

CLUSTER FOUR

Rank	Country	Points
163	Congo (Rep of the)	321
164	Guyana	321
165	Uganda	320
166	Djibouti	314
167	Myanmar	312
168	Tonga	304
169	Holy See*	300
170	Burundi	296
171	Comoros	296
172	Tanzania (United Republic of)	294
173	Iraq	282
174	Mozambique	278
175	Liberia	273
176	Guinea-Bissau	273
177	Guinea	255
178	Niue	244
179	Kiribati	238
180	Lebanon	231
181	Zimbabwe	229
182	Central African Republic	229

Rank	Country	Points
183	Micronesia (Federated States of)	229
184	Sudan	197
185	Venezuela (Bolivarian Republic of)	195
186	Palau	176
187	Congo (Dem Rep of the)	175
188	Equatorial Guinea	171
189	Tuvalu	170
190	Palestine (State of)*	138
191	Eritrea	135
192	Libya	130
193	Haiti	115
194	Afghanistan	76
195	Syrian Arab Republic	74
196	Yemen	33
197	Somalia	27
198	Iran (Islamic Republic of)	24
199	South Sudan	-20
200	DPRK	-188

* These countries and entities are difficult to rank because of their dependence on other countries or their non-state status.