

## HIGHLIGHTS

This third edition of the International Index of Energy Security Risk (International Index) provides an updated look at energy security risks across different countries for the years 1980 through 2013. The risk index scores calculated for the United States and 24 other countries that make up the Index's large energy user group: Australia, Brazil, Canada, China, Denmark, France, Germany, India, Indonesia, Italy, Japan, Mexico, Netherlands, Norway, Poland, Russian Federation, South Africa, South Korea, Spain, Thailand, Turkey, Ukraine, and the United Kingdom. The scores for these countries are reported in relation to an average reference index measuring risks for the Organization for Economic Co-operation and Development (OECD) member countries. The OECD average risk index is calibrated to a 1980 base year figure of 1,000. Keep in mind that a higher score means higher risk, a lower score means lower risk.

### 2013 Energy Security Rankings

Table H-1 ranks the energy security scores of 25 large energy-consuming countries in 2013, the most recent year data is available. This is a risk index, so keep in mind that the highest (best) rank has the lowest numerical risk score and the lowest (worst) rank the highest numerical risk score.

**Norway remains the most energy secure country in the large energy user group in 2013 and, except for three years when it was ranked second, (2003, 2004, and 2008), has been ranked in the top spot since 2001.** Its total risk score of 774 is 15% below the OECD average score of 912 and the gap between it and the OECD has widened somewhat in recent years. Mexico—which earned a number one ranking from 1980 to 1995—was the second ranked country with a score of 802. Since 1980, Mexico's risk scores have tended to rise in relation to the OECD baseline

average. If this trend persists, it may be reflected in poorer rankings in future years. For the entire period from 1980 to 2013, only three countries have occupied the top spot—Mexico, Norway, and the United Kingdom. At numbers three, four, and five, respectively, Denmark, New Zealand, and the United Kingdom round out the top five spots in the ranking list for 2013.

**The United States remained just outside the top five, coming in at number six in the large energy user group, the same as in 2012.** The shale revolution continues to drive total U.S. energy risks downward, both absolutely and measured against the OECD average. Moreover, greater oil and natural gas production in the United States (and sixth-ranked Canada also) was instrumental keeping crude oil price volatility in check, which contributed to lower risks for all countries.

**Ukraine continued to be the least energy secure country in the large energy user group in 2013. With a 2013 score of 2,009, its overall risk was 120% above the OECD average.** Ukraine has not moved out of the 25th spot since 1992, the first year data for the country became available. Nevertheless, it is one of the few countries that has seen its energy security risk score decline since the mid- to late-1990s, both absolutely and relative to the OECD baseline average (from 229% above the OECD average in 1996 to 120% above in 2013). Despite this improvement, the country's scores are still extraordinarily high—about one-quarter higher than 24th-ranked Thailand—that much greater progress will be needed for the Ukraine to break out of the bottom position. Political turmoil in the country, however, could frustrate policies aimed at improving its energy situation. Thailand, Brazil, South Korea, and South Africa make up the rest of the bottom five.



**Table H-1. Energy Security Risk Scores and Rankings for 25 Large Energy Using Countries: 2013**

Country	Risk Score	Large Energy User Group Rank
 Norway	774	1
 Mexico	802	2
 Denmark	819	3
 New Zealand	855	4
 United Kingdom	866	5
 United States	885	6
 Canada	893	7
OECD Average	912	
 France	942	8
 Germany	944	9
 Australia	962	10
 Poland	987	11
 Spain	1,037	12
 Italy	1,043	13
 Turkey	1,087	14
 Japan	1,088	15
 Netherlands	1,106	16
 Russia	1,115	17
 India	1,164	18 (tie)
 Indonesia	1,164	18 (tie)
 China	1,172	20
 South Africa	1,175	21
 South Korea	1,306	22
 Brazil	1,307	23
 Thailand	1,616	24
 Ukraine	2,009	25

## Key Developments

**Energy security risks for all countries in the large energy user group and for the OECD average fell in 2013, primarily because of much lower crude oil price volatility. This is the third consecutive year of declining volatility.** In 2013, crude oil price volatility, measured as the three-year rolling average of annual change in price, was just \$13.69 (in real 2013 dollars), its lowest level since 2010, when it peaked. As a result, from 2012 to 2013 the index for this measure dropped a whopping 993 points to a score of 963. No other metric moved nearly as much in 2013. Because crude oil is priced in a global market, price volatility is a “shared” risk that applies equally to all countries. That means the 51% decline measured for this risk in 2013 lowered the overall energy security risk scores for all countries but had no real impact the rankings, which are more dependent on differences in country-specific risks. This marks the third year of declining price volatility from its record-high level of \$40.46 in 2010. Price volatility can have profound effects on economies. Some amount of price volatility is inevitable, but large price swings over a short period of time create uncertainty about expectations of future prices. Highly volatile prices not only can jolt economies, they can lead to sudden and large shifts in international trade flows.

**Greater North American crude oil output of 1.1 million barrels per day (945,000 barrels per day from the United States and 190,000 barrels per day from Canada), largely from “unconventional” sources, was a major factor in keeping price volatility in check in 2013.** The increase from North America was more than enough to offset the declining oil output from Libya (450,000 barrels per day), Iran (275,000 barrels per day), whose oil production is under international export sanctions, and Nigeria (155,000 barrels per day). The “price smoothing” role that increasing output from North America can play will become an even more important factor moderating risks as North Sea oil output from the United Kingdom and Norway continues to slow.

**The benefits of greater unconventional oil and natural gas production from shale oil and gas formations also continue to confer benefits on the**

**United States that cut across a broad range of risk metrics.** Increasing oil and gas production—most notably from the Bakken and Three Forks formations in the Williston Basin in North Dakota and the Eagle Ford and Permian Basins in Texas, the Marcellus Shale in Pennsylvania and surrounding states—were primarily responsible for the observed jump in U.S. output for these products. Lower oil and gas import supply and expenditure risks have contributed to lower overall risk scores for the United States. From 2000 to 2013, the U.S. index scores for oil import risks moved from a large energy user group ranking of 10th to seventh and for natural gas from 15th to a tie for first. Largely as a result of these changes, the overall energy security risk score for the United States over the same period climbed from 12th to sixth.

**Although global natural gas supply risks rose in 2013 because of greater production from countries with high risk profiles, such as Russia, Iran, Qatar, Algeria, and others, the increase was much less than it would have been because of the modifying effect of expanded production from U.S. shale formations.** As a result, natural gas import risks remain very high for many countries, especially in Europe and in Japan and South Korea. It is now expected that by 2020, the United States will be a net exporter of natural gas. Large gas-producers in the large energy user group like Australia, Canada, Russia, the United States, and a few others have a tremendous advantage over countries that rely on imports of this fuel. Once forecast to be a large natural gas importer, the U.S. is now poised shortly to become a net natural gas exporter, and shipments once destined for the United States are being diverted to European and other markets. Japan, too, is looking at U.S. natural gas as a reliable source of energy as it considers the future of its nuclear plants (well more than half of which are almost sure to resume operation). Of the volumes of liquefied natural gas (LNG) approved for export by the U.S. Department of Energy (DOE), almost all will be headed to Japan. The world has plenty of natural gas, and as we have seen in 2013, other countries also are expanding natural gas production, so it is important that DOE quickly approve applications to export LNG if the U.S. is to establish a presence in global natural gas markets. Russia’s use of natural gas as a geopolitical weapon, which has European countries



clamoring for greater access to U.S. gas, is yet another reason to approve new licenses in a timely manner.

**There continues to be a wide divergence in retail electricity prices, with those countries showing the highest risk being found largely in Western Europe, a trend that has increased the relevance of economic competitiveness in discussions of energy policy (Table H-3).** Seven of the bottom 10 countries for this metric in the large energy user group are located in Western Europe, while only one European country—Norway, which relies heavily on hydropower—is in the top 10. Electricity prices in much of Western Europe and Japan have increased sharply in recent years and are now among the highest in the world, creating competitive pressures on industry. The use of affordable coal for power production in North America, Australia, and Asia, plus cheap natural gas in the North America, has kept electricity prices comparatively low in these regions. Large-scale hydropower, especially in Canada and Norway, also has contributed to lower electricity prices. Figures H-1 and H-2 show the large divergence in energy prices reported by the International Energy Agency (IEA) for selected OECD countries that are in the large energy user group.

**In Japan, deteriorating risks for fuel imports and electric power sector connected to the sharp decline in electric power generation from its nuclear facilities that begin in 2012 after the Fukushima Daiichi nuclear incident in March 2011 were more than offset by greatly declining crude oil volatility. As a result, its overall energy security risk improved in 2013.**

By March 2012, all but two of the country's 54 nuclear reactors had been shut down under public pressure and electricity production from nuclear power was about 35% of the level generated in 2011. During 2013, nuclear generation was at about 5% of the 2011 level. As a result, Japan continues to face growing energy import and expenditure, electricity capacity diversity, non-carbon generation, and overall price volatility risks. As a result of the knock-on effects of the Fukushima accident, the country's total risk ranking fell from 12 in 2010 to 17 in 2012 before inching back up two places to 15 in 2013.

**The energy intensity in emerging economies and economies in transition continues to improve as energy efficiency and economic changes take hold, moderating if not a reducing overall energy security risks.** Energy intensity measures the amount of energy needed to produce a unit of GDP and can be improved both through greater energy efficiency and relative shifts in economic activity from more to less energy intensive activities (e.g., from industrial to service activities). Large year-over-year drops of at least 100 points were recorded in the energy intensity risk measures for China, India, Indonesia, and Ukraine in 2013, helping these countries reduce their total energy security risk scores. Nevertheless, all of these countries are ranked in the bottom 10 for the energy intensity metric, meaning they still have plenty of opportunities for further gains. Not surprisingly, highly efficient developed countries that show the least amount of nominal improvement, have achieved already very high levels of energy efficiency and

Figure H-1.  
Natural Gas Prices for Industry: 2013

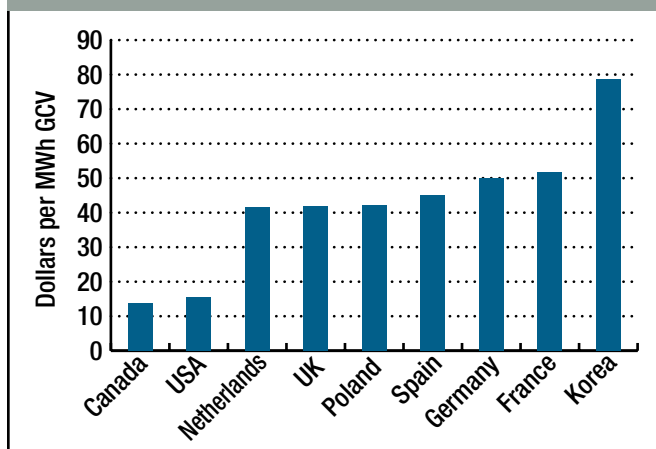
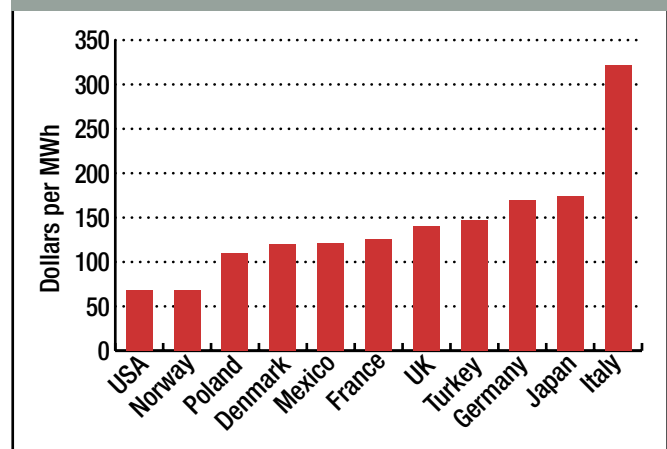


Figure H-2.  
Electricity Prices for Industry: 2013



greater contribution of the service sector to economic growth. With much of the low hanging fruit already being picked, we should expect to see emerging economies continue to outperform developed economies in this area.

## Historical Trends in International Energy Security Risks: 1980-2013

**Energy security risk scores for the large energy user group countries show a variety of trends over the years. On average, however, the rise in total energy security risk scores for this group of countries since about the early 2000s stabilized in the late 2000s and declined sharply after 2010.**

From the beginning of our database in 1980, the average country in the large energy user group saw its total risks decline through the 1980s, level out in the 1990s, rise in the 2000s, and decline in the 2010s (Figure H-3). It is perhaps too early to tell whether the drop in the average total energy security risks since 2011 marks the beginning of a significant downward trend of the type seen in the 1980s or if this is merely a temporary respite from a longer-term upward trend driven by short-lived circumstances that cannot be sustained for any length of time. The U.S. shale revolution, however, has been one of the main factors in driving down risk, both directly (as in the case of lower U.S. crude oil and natural gas imports, for example) and indirectly (as in the case of lower-than-expected volatility in the global price of crude oil because of higher U.S. and Canadian oil output offsetting cuts elsewhere). Long-term and ongoing improvements in energy use metrics, such as energy intensity and petroleum intensity, will continue to undergird further gains by putting continual downward pressure on risks. If these and other trends can be maintained, and in the case of the shale revolution replicated in other countries, the steep drop in overall risk measured over the last couple of years could continue well into the future.

**From a score of 1,000 in 1980, average OECD energy security risks fell steadily throughout the 1980s and most of the 1990s, settling at 750 in 1998, after which risk scores rose steadily, reaching their highest level of 1,057 in 2011 before retreating to 912 in 2013.** The declining risk from 1980 to the late 1990s reflected lower risk scores in

20 of the 29 individual risk metrics. Rising risk scores from 1998 to 2011 were almost as broad-based, with 16 metrics getting worse and only 12 showing improvement (with one being neutral). Risks associated with import exposure, the reliability and diversity of fossil energy supplies worldwide, and energy prices, volatility, and expenditures all contributed to rising risks over this period. Metrics measuring energy intensity, petroleum intensity, GDP per capita, and transport energy intensity risks improved consistently throughout the entire 34-year period.

**The retreat in overall energy security risk in 2013 was the second consecutive year of declining risks for most countries in the large energy user group.**

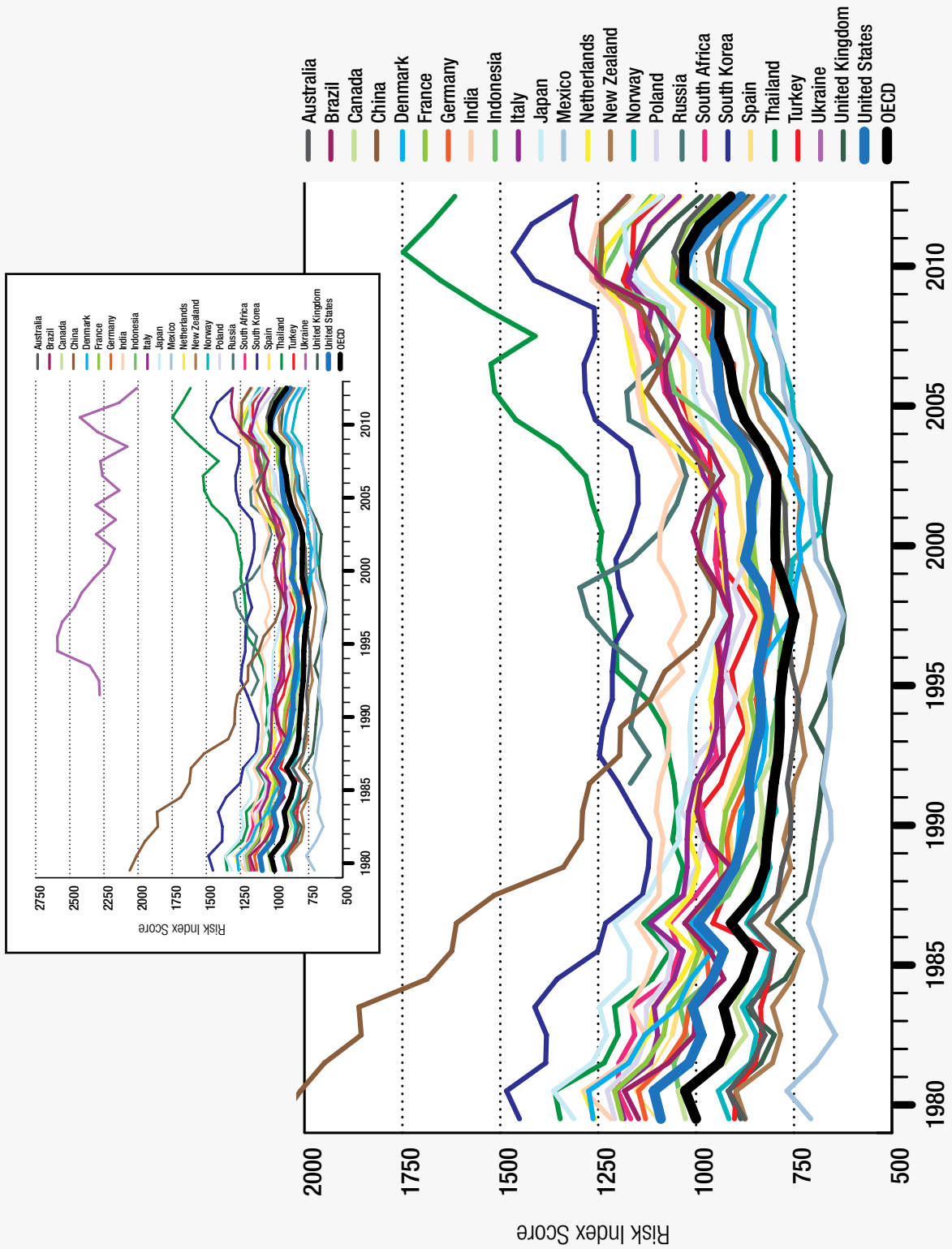
Of the 23 countries in the large energy user group in existence since 1980, 16 (including the United States) have lower total energy security risks in 2013 than they did in 1980, a year of extraordinarily high risk.<sup>5</sup> Of the seven countries with higher risks in 2013 than in 1980, all but one (Australia) are emerging economies.

**The decade of the 1990s was the best for energy security risks.** Of the 23 countries in the large energy user group in existence in 1980, 17 had their best risk score somewhere between 1990 and 1999. For the United States, it was 1998,<sup>6</sup> as it was for the OECD average.

**A large energy resource base does not guarantee a high energy security ranking, and a small resource base does not guarantee a low ranking.** Table H-2 ranks energy security risks from the most secure to the least secure—that is, from best to worst—revealing a broad range of energy security risks among the countries in the large energy user group. Although large annual movements, either up or down, in the ranking list are uncommon, the interplay among many different factors, such as technology developments, political crises, natural disasters, policy changes, or combinations of these, can result in unusually large changes annual in rank among the large energy user group. Some countries, such as Ukraine, Mexico, South Korea, New Zealand, Canada, France, and the United States have shown the least variation in total risk ranking for the entire period since 1980. Other countries, such as Denmark, Brazil, Norway, Indonesia, and Turkey, have shown a great deal of variation in ranking over the years, in some cases moving



Figure H-3. Energy Security Risk Index Scores for Large Energy User Group: 1980-2013



sharply up the table (e.g., Denmark in 1984), up and then down the table (e.g., Brazil in 2003 and 2011), and down (South Africa in 1982). While the overall variability in the total ranking for the United States since 1980 has been in a relatively narrow range (eight to 12), since 2005, it has jumped four places up the table to number six.

**No country scores well in every energy risk category or scores poorly in every category. Countries that score very well in the Index also can face sometimes significant energy security challenges.** Of the 29 metrics used in the International Index, nine are “universal” metrics that apply equally to every country (e.g., the price of crude oil) and 20 are

Table H-2. Energy Security Rankings for Large Energy User Group: 1980-2013

	1980	1985	1990	1995	2000	2005	2010	2011	2012	2013
Australia	3	5	3	3	6	8	7	10	10	10
Brazil	12	8	15	15	18	17	16	22	22	23
Canada	8	7	7	5	7	7	6	6	7	7
China	23	23	23	21	20	19	20	18	20	20
Denmark	19	13	9	8	3	4	3	3	3	3
France	15	14	12	11	9	9	10	9	9	8
Germany	11	11	11	10	8	6	9	8	8	9
India	17	20	21	20	21	21	22	21	21	18(tied)
Indonesia	7	9	6	6	10	12	17	19	18	18(tied)
Italy	14	16	18	16	14	18	14	13	13	13
Japan	20	21	19	19	19	13	12	15	17	15
Mexico	1	1	1	1	2	3	2	2	2	2
Netherlands	18	15	17	18	15	20	18	17	16	16
New Zealand	2	2	4	4	4	5	5	5	4	4
Norway	6	6	5	7	5	1	1	1	1	1
Poland	16	18	16	13	11	11	13	11	11	11
Russia	–	–	–	23	22	22	19	16	15	17
South Africa	13	17	14	17	17	16	21	20	19	21
South Korea	22	22	22	24	23	23	23	23	23	22
Spain	10	12	10	12	13	14	11	12	12	12
Thailand	21	19	20	22	24	24	24	24	24	24
Turkey	5	4	13	14	16	15	15	14	14	14
Ukraine	–	–	–	25	25	25	25	25	25	25
United Kingdom	4	3	2	2	1	2	4	4	5	5
United States	9	10	8	9	12	10	8	7	6	6



“country-specific.” Scores for these 20 country-specific metrics for 2013 were ranked (Table H-3). The table shows that even the top-ranked country, Norway, with 11 of 20 metric scores ranked in the top five, also has four metric scores ranked in the bottom five, and three categories in which it ranked dead last—energy intensity, energy consumption per capita and electricity capacity diversity. On average, the five top ranked countries in 2013 for overall energy security have 7.4 individual metrics scores ranked in the top five and 1.6 metrics scores ranked in the bottom five. (Sixth-ranked United States had six metric scores ranked in the top five and four scores ranked in the bottom five.) At the other end of the table, the five countries with the worst overall scores in 2013 had an average of only 1.6 metric scores ranked in the top five and 6.2 metric scores ranked in the bottom five. For many countries that score well, reversing or offsetting negative trends while maintaining positive trends is common.

**Countries, even those with a large and varied amount of energy resources, tend to lose ground if the investment environment is poor.**

Mexico and Indonesia, for example, are both countries with large reserves of energy that have seen their position relative to the OECD average deteriorate over time. In 1980, Mexico’s risk score was 29% better than the comparable OECD score; in 2013, it was just 12% better, still good enough for a second place ranking but a warning sign nonetheless. In the mid-1990s, Indonesia’s total risk score was on par with the OECD average, while in 2013 it was 28% higher. These shifts occurred in no small part because they have not been attractive countries in which to invest, and as a result, their domestic energy industries are unable to keep up with growing domestic demand. Both countries have recognized this and recently have instituted reforms—in the case of Mexico, a constitutional change allowing for the first time in decades foreign investment in its energy sector—to attract increasing investment.

**Rapid moves up or down the large energy group ranking are uncommon, but when a number of factors are aligned within a country, rapid movements do occur and can be sustained over a long period.**

Trends in country rankings tend to be driven by four types of factors: (1) global factors that affect all countries and which are largely immune to

policy responses; (2) country-specific factors such as resource base, stage of economic development, population density, climate, and others; (3) technology innovation and adoption; and (4) energy policies. Policies shutting out or permitting certain energy extraction or production technologies, primarily hydraulic fracturing, nuclear power, and coal, could have a big impact on energy security risks going forward. Although the International Index does not have a forecast component, the recent jockeying of positions within the rankings suggests that either adopting or foregoing certain technologies can have a big impact. We have seen both with the widespread application of hydraulic fracturing in the United States and the shutdown of nuclear reactors in Japan after the Fukushima nuclear incident—which may just be temporary but nonetheless led to a large jump in energy imports—leading these countries to move rapidly up (the United States) and down (Japan) the large energy user group rankings.



**Table H-3. Energy Security Metric Rankings for Large Energy User Group: 2013**

Fuel Import Metrics			
Petroleum Import Exposure	Natural Gas Import Exposure	Coal Import Exposure	Total Energy Import Exposure
1. Canada (tied)	1. Australia (tied)	1. Australia (tied)	1. Canada (tied)
1. Denmark (tied)	1. Canada (tied)	1. Canada (tied)	1. Russia (tied)
1. Mexico (tied)	1. Denmark (tied)	1.Indonesia (tied)	3. Norway (tied)
1. Norway (tied)	1. Indonesia (tied)	1. New Zealand (tied)	4. Mexico
1. Russia (tied)	1. Netherlands (tied)	1. Poland (tied)	5. Denmark
6. Brazil	1. New Zealand (tied)	1. Russia (tied)	6. China
7. United States	1. Norway (tied)	1. South Africa (tied)	7. South Africa
8. Indonesia	1. Russia (tied)	1. United States (tied)	8. Australia
9. Thailand	1. United States (tied)	9. Norway	9. United States
10. China	10. Thailand	10. China	10. Indonesia
11. Australia	11. India	11. Ukraine	11. Brazil
12. South Africa	12. China	12. India	12. New Zealand
13. India	13. Mexico	13. Mexico	13. India
14. New Zealand	14. United Kingdom	14. Germany	14. Poland
15. Ukraine	15. Brazil	15. Turkey	15. Ukraine
16. Italy	16. Poland	16. Thailand	16. United Kingdom
17. Turkey	17. Ukraine	17. United Kingdom	17. Thailand
18. Poland	18. South Africa	18. Spain	18. France
19. Germany	19. Germany	19. Brazil	19. Netherlands
20. United Kingdom	20. Italy	20. South Korea	20. Germany
21. Netherlands	21. Japan	21. Italy	21. Spain
22. France	22. South Korea	22. Denmark (tied)	22. Italy
23. Japan	23. Turkey	22. France (tied)	23. Turkey
24. Spain	24. France	22. Japan (tied)	24. South Korea
25. South Korea	25. Spain	22. Netherlands (tied)	25. Japan



**Table H-3. Energy Security Metric Rankings for Large Energy User Group: 2013**

Fuel Import Metrics	Energy Expenditure Metrics		
Fossil Fuel Import Expenditures per GDP	Energy Expenditure Intensity	Energy Expenditures Per Capita	Retail Electricity Prices
1. Canada (tied)	1. United Kingdom	1. India	1. Indonesia
1. Russia (tied)	2. France	2. Indonesia	2. India
3. Norway	3. United States	3. China	3. China
4. Denmark	4. Norway	4. Mexico	4. South Africa
5. Mexico	5. Germany	5. South Africa	5. United States
6. United Kingdom	6. Denmark	6. Ukraine	6. Canada
7. United States	7. Mexico	7. Poland	7. South Korea
8. New Zealand	8. Italy	8. Turkey	8. Mexico
9. Australia	9. Spain	9. Thailand	9. Thailand
10. France	10. Japan	10. Russia	10. Norway
11. Germany	11. New Zealand	11. Spain	11. Australia
12. Italy	12. Poland	12. Brazil	12. New Zealand
13. Brazil	13. Australia	13. France	13. Russia (tied)
14. Japan	14. Canada	14. Italy	13. Ukraine (tied)
15. Spain	15. Netherlands	15. United Kingdom	15. Poland
16. Poland	16. Turkey	16. New Zealand	16. France
17. China	17. India	17. Germany	17. Turkey
18. Netherlands	18. South Africa	18. United States	18. United Kingdom
19. Turkey	19. China	19. Japan	19. Netherlands
20. Indonesia	20. South Korea	20. Denmark	20. Brazil
21. South Africa	21. Russia	21. Australia	21. Japan
22. India	22. Indonesia	22. Canada	22. Spain
23. South Korea	23. Brazil	23. Norway	23. Denmark
24. Thailand	24. Thailand	24. South Korea	24. Germany
25. Ukraine	25. Ukraine	25. Netherlands	25. Italy

**Table H-3. Energy Security Metric Rankings for Large Energy User Group: 2013**

Price & Market Volatility Metrics		Energy Use Intensity Metrics	
Energy Expenditure Volatility	GDP Per Capita	Energy Consumption Per Capita	Energy Intensity
1. Norway	1. Norway	1. India	1. India
2. Germany	2. Denmark	2. Indonesia	2. Indonesia
3. United Kingdom	3. United States	3. Brazil	3. Brazil
4. Mexico	4. Netherlands	4. Mexico	4. Mexico
5. United States	5. Germany	5. Turkey	5. Turkey
6. Denmark	6. United Kingdom	6. Thailand	6. Thailand
7. New Zealand	7. Canada	7. China	7. China
8. France	8. Australia	8. Poland	8. Poland
9. Netherlands	9. Japan	9. South Africa	9. South Africa
10. Turkey	10. France	10. Ukraine	10. Ukraine
11. Italy	11. New Zealand	11. Italy	11. Italy
12. South Korea	12. Italy	12. Spain	12. Spain
13. Spain	13. Spain	13. United Kingdom	13. United Kingdom
14. Canada	14. South Korea	14. Denmark	14. Denmark
15. Australia	15. Poland	15. Japan	15. Japan
16. Japan	16. Turkey	16. France	16. France
17. Poland	17. Mexico	17. Germany	17. Germany
18. India	18. Russia	18. New Zealand	18. New Zealand
19. Russia	19. South Africa	19. Russia	19. Russia
20. China	20. Brazil	20. South Korea	20. South Korea
21. South Africa	21. China	21. Netherlands	21. Netherlands
22. Indonesia	22. Thailand	22. Australia	22. Australia
23. Thailand	23. Ukraine	23. United States	23. United States
24. Brazil	24. Indonesia	24. Canada	24. Canada
25. Ukraine	25. India	25. Norway	25. Norway



**Table H-3. Energy Security Metric Rankings for Large Energy User Group: 2013**

Energy Use Intensity Metrics	Electric Power Sector Metrics		Transportation Sector Metrics
Petroleum Intensity	Electricity Capacity Diversity	Non Carbon Generation	Transport Energy Per Capita
1. Denmark	1. Spain	1. Norway	1. India
2. United Kingdom	2. Germany	2. France	2. Indonesia
3. Norway	3. Italy	3. Brazil	3. China
4. Italy	4. New Zealand	4. Canada	4. Ukraine
5. France	5. Japan	5. New Zealand	5. Turkey
6. Germany	6. Canada	6. Ukraine	6. Thailand
7. Japan	7. United Kingdom	7. Spain	7. South Africa
8. Spain	8. Turkey	8. Denmark	8. Brazil
9. Turkey	9. United States	9. Germany	9. Russia
10. New Zealand	10. South Korea	10. United Kingdom	10. Mexico
11. Poland	11. Ukraine	11. United States	11. Poland
12. United States	12. France	12. Italy	12. South Korea
13. Australia	13. Russia	13. Russia	13. Japan
14. Netherlands	14. Denmark	14. South Korea	14. France
15. Canada	15. Mexico	15. Mexico	15. Germany
16. South Korea	16. India	16. Turkey	16. United Kingdom
17. South Africa	17. Indonesia	17. Australia	17. Italy
18. Mexico	18. Netherlands	18. India	18. Spain
19. China	19. Australia	19. Netherlands	19. Denmark
20. India	20. China	20. Thailand	20. Norway
21. Brazil	21. Brazil	21. Poland	21. Netherlands
22. Ukraine	22. Thailand	22. Japan	22. Australia
23. Russia	23. Poland	23. South Africa	23. New Zealand
24. Indonesia	24. South Africa	24. China	24. Canada
25. Thailand	25. Norway	25. Indonesia	25. United States

**Table H-3. Energy Security Metric Rankings for Large Energy User Group: 2013**

Transportation Sector Metrics	Environmental Metrics		
	CO2 Emissions	CO2 Per Capita	CO2 GDP Intensity
Transport Energy Intensity			
1. Norway	1. Germany	1. India	1. Norway
2. Germany	2. Poland	2. Indonesia	2. France
3. Japan	3. Denmark	3. Brazil	3. Denmark
4. United Kingdom	4. France	4. Mexico	4. United Kingdom
5. France	5. United Kingdom	5. Turkey	5. Italy
6. Denmark	6. Italy	6. Thailand	6. Germany
7. Turkey	7. United States	7. France	7. Japan
8. Italy	8. Russia	8. China	8. Spain
9. Netherlands	8. Ukraine	9. Ukraine	9. New Zealand
10. South Korea	10. Canada	10. Italy	10. Netherlands
11. India	11. Japan	11. Spain	11. United States
12. Australia	12. Netherlands	12. United Kingdom	12. Brazil
13. Spain	13. Norway	13. Poland	13. Canada
14. China	14. Spain	14. Denmark	14. Mexico
15. New Zealand	15. New Zealand	15. New Zealand	15. Australia
16. United States	16. Mexico	16. South Africa	16. Turkey
17. Poland	17. South Africa	17. Norway	17. South Korea
18. Canada	18. Australia	18. Japan	18. Poland
19. Indonesia	19. Brazil	19. Germany	19. Indonesia
20. South Africa	20. Turkey	20. South Korea	20. Thailand
21. Mexico	21. South Korea	21. Russia	21. India
22. Russia	22. Indonesia	22. Netherlands	22. South Africa
23. Brazil	23. India	23. Canada	23. China
24. Thailand	24. China	24. Australia	24. Russia
25. Ukraine	25. Thailand	25. United States	25. Ukraine



