



CHOISEUL ENERGY INDEX

An annual study of the Institut Choiseul,
in partnership with KPMG



Ranking **2014**

SUMMARY

Pascal LOROT

President of the Choiseul Institute



Energy is central to the lives of all men and women worldwide. Without it, there would be no transport, heat or lighting. It is also essential for the economy. Energy is scarce, often non-renewable often unevenly distributed across the globe and must be used wisely to prevent depletion. Governments are responsible for setting policies to save energy and for ensuring that it is shared and used appropriately.

The *Choiseul Energy Index* has been established independently by the Choiseul Institute. It is the only study of its kind that provides a neutral, objective assessment of countries' energy competitiveness, with a global view of the energy policies implemented in 146 countries on all continents.

In addition to providing input for governmental decision-making (ministries, regulatory authorities), this Index is aimed at the energy industry, NGOs, international organizations, and other economic players such as industry professionals, banks, consulting firms and specialist law firms.

With this 2014 edition, the *Choiseul Energy Index* has come of age. Each continent is presented separately, alongside the global overview. Year-on-year changes illustrate how countries have improved their ranking over competing countries, stagnated, or have fallen behind in terms of energy performance.

Jacques-François LETHU

KPMG Partner and Head of Audit - Energy and Natural Resources Services



Among the major issues facing economic players, competitive, secure access to energy is a priority both for existing activities and for future investment, as current events illustrate daily. For all nations, access to energy is crucial to social and economic development.

KPMG as a audit and consulting firm constantly implicated in key economic and financial issues, KPMG works hand in hand with energy industry players and is proud to be involved in the *Choiseul Energy Index*, for the second year running.

Using official data, the purpose of the Index is to present an independent view and compare various countries' energy competitiveness. It also provides an assessment of their energy mix, access and choices in terms of the environment, by measuring each country's environmental footprint.

The results highlighted in the index generally reflect government choices made years if not several decades ago. Time is a crucial factor for energy policy. Future government choices will therefore need to take into account past policies in order to preserve their benefits. They will also need to consider new forms of fossil energy and renewable energy, as well as new technologies such as smart grids, in order to maintain the competitive prices required due to international competition.



INTRODUCTION

Choiseul Energy Index

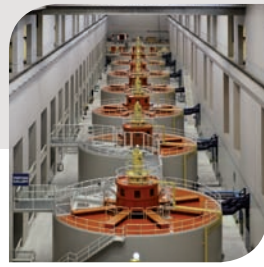
The *Choiseul Energy Index* measures the competitiveness and performance of governments' energy policies. The global study ranks 146 countries, classifying them in five categories, from top performers to underperformers.

In addition to grouping the countries reviewed by continent, the *Choiseul Energy Index* ranks them in terms of the quality of their energy mix, electricity access and availability, and the compatibility of their energy policies with environmental issues.

The Index has been prepared using official data derived from the major international statistics databases (World Bank, International Energy Agency, OECD and BP Statistical Outlook, etc.). Some fifteen series of statistics were selected, assessed and weighted to establish the global classification. Each country is given a score from 0 to 100. The highest scores are given to the countries with the best performance in terms of energy.

The *Choiseul Energy Index* is updated yearly to highlight improvements, stagnation or losses in terms of energy competitiveness and performance.

The *Choiseul Energy Index* is produced completely independently of corporations, governments, countries and energy industry players.



DEFINING energy competitiveness ?

Ideally, an energy-competitive country is one in which :

- There is a low energy deficit and limited energy wastage; renewable energies account for a significant or increasing part of the energy mix; and oil dependency is relatively low;
- Most of the population has access to electricity; losses due to power transmission and distribution are low in relation to total electricity generation; and nuclear facilities help safeguard the energy supply;
- The share of primary resources used to generate one unit of output is low, as are carbon emissions per capita;
- There is a favourable investment and business climate;
- Due to government choices and energy policies, there is a balanced energy mix and available, accessible electricity, and energy sources have a limited impact on the environment.

Indicators tracked

Energy mix quality:

- Energy independence;
- Oil independence;
- Energy from oil (% of total);
- Electricity production from renewable sources (% of total);
- Shale gas reserves.

Environmental footprint:

- Intensité énergétique;
- Émissions de CO₂ par habitant;
- Part des énergies renouvelables hors hydraulique dans la génération électrique.

Electricity quality, availability and access:

- Access to electricity (% of population);
- Electric power consumption per capita;
- Percentage losses in electrical generation;
- Electricity production from nuclear sources (% of total).

Other:

- Blackouts per month;
- Delay in obtaining electrical connection (days);
- Business climate.

Main findings

Europe is by far the continent with the best energy performance, with six European countries in the world Top 10 and eleven in the Top 20. The strong lead of the Nordic countries is particularly striking: Norway (again number one as in last ranking), Sweden and Denmark take the top three places, while Iceland ties in fourth place and Finland ranks ninth. It is also noteworthy that Europe's three leading economies (France, Germany and the United Kingdom) are all in the Top 20.

Three countries from the Americas rank in the world Top 10, with Canada and the United States together in fourth place alongside Iceland. The United States have improved considerably since last year when they ranked 11th, mainly due to the impact of intensive shale gas operations. Once again, Colombia leads the South American nations, despite dropping a few places overall (tied 10th in 2014 compared to 5th place last year).

In Asia, New Zealand (7th), Australia (10th) and South Korea (19th, 21st last year) all performed well, with positions in the Top 20. There was no change for China, which remained in 50th position, while Japan dropped several places, from 25th to 33rd, most likely due to the Fukushima incident.

As last year, Africa lagged behind, with nine of the sixteen underperforming countries from the African continent. However, Algeria progressed to 49th position (tying with China), thus overtaking Angola (58th, against 40th in the last ranking), which was the leading African country last year.

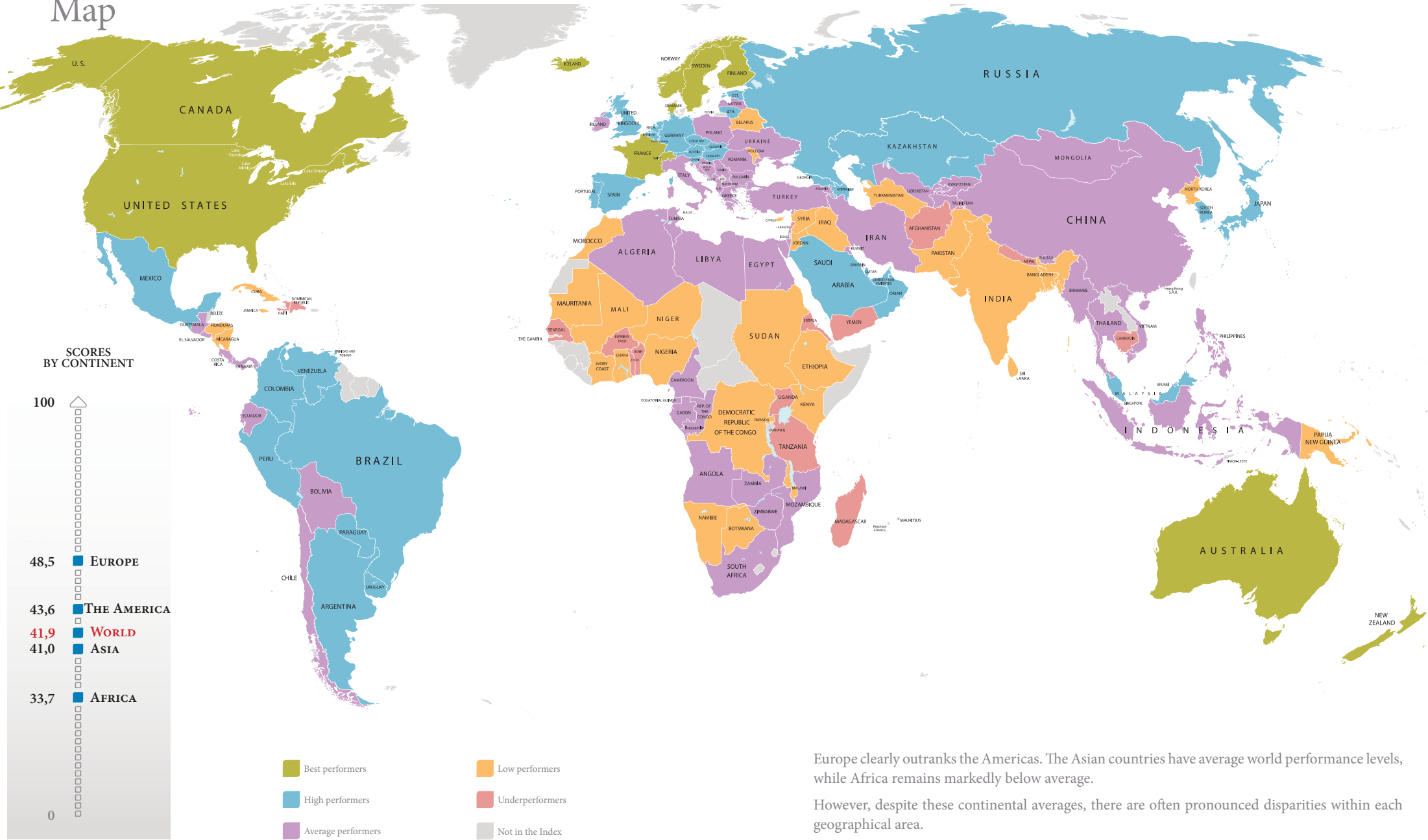
Global ranking: five major classifications

CLASSIFICATION	SCORE	NUMBER OF COUNTRIES	COUNTRIES (in order of ranking)
Best performers	> 57,5	12	Norway, Sweden, Denmark, Canada, Iceland, United States, New Zealand, Switzerland, Finland, Australia, Colombia, France
High performers	> 47,5 - ≤ 57,5	33	Germany, United Arab Emirates, Austria, United Kingdom, Qatar, South Korea, Brunei, Georgia, Paraguay, Slovakia, Slovenia, Russia, Spain, Brazil, Lithuania, Netherlands, Argentina, Azerbaijan, Malaysia, Mexico, Czech Republic, Japan, Belgium, Peru, Portugal, Saudi Arabia, Venezuela, Estonia, Hungary, Kazakhstan, Oman, Trinidad and Tobago, Uruguay
Average performers	> 37,5 - ≤ 47,5	53	Thailand, Bahrain, Montenegro, Algeria, China, Romania, Chile, Costa Rica, Ireland, Bulgaria, Ecuador, Kuwait, Angola, South Africa, Tajikistan, Libya, Poland, Croatia, Latvia, Vietnam, Bhutan, Egypt, Guatemala, Italy, Singapore, Tunisia, Macedonia, Armenia, Bolivia, Congo, Equatorial Guinea, Bosnia and Herzegovina, Gabon, Indonesia, Israel, Turkey, Ukraine, Cameroon, Greece, Philippines, Serbia, Mozambique, Myanmar, Zimbabwe, El Salvador, Albania, Kyrgyzstan, Mauritius, Mongolia, Panama, Uzbekistan, Iran, Zambia
Low performers	≥ 27,5 - ≤ 37,5	32	Ghana, Cyprus, Ivory Coast, India, Malawi, Morocco, Bangladesh, Democratic Republic of the Congo, Turkmenistan, Belarus, Namibia, Papua New Guinea, Nigeria, North Korea, Mali, Sri Lanka, Jordan, Kenya, Sudan, Pakistan, Moldavia, Honduras, Ethiopia, Nicaragua, Cuba, Rwanda, Iraq, Syria, Botswana, Niger, Mauritania, Jamaica
Underperformers	< 27,5	16	Afghanistan, Eritrea, Yemen, Cambodia, Dominican Republic, Lebanon, Nepal, Tanzania, Uganda, Madagascar, Malta, Togo, Senegal, Burkina Faso, Haiti, Benin

A global ranking with three groups comprising a similar numbers of countries :

- ▶ best and high performers, the majority of western countries ;
- ▶ some fifty countries with average performance ;
- ▶ the last third made up of countries ranked as low performers, if not underperformers.

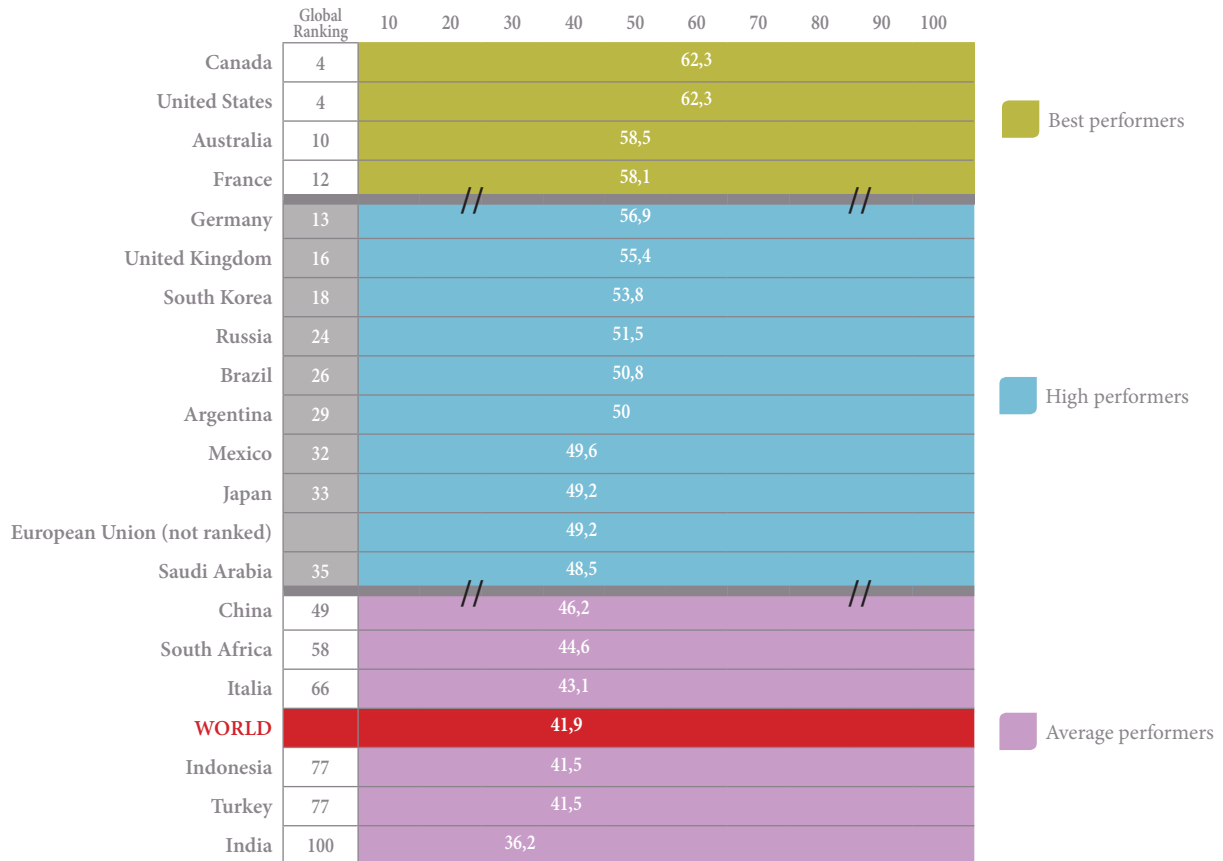
World Map



Europe clearly outranks the Americas. The Asian countries have average world performance levels, while Africa remains markedly below average.

However, despite these continental averages, there are often pronounced disparities within each geographical area.

Leading economies : the G20 generally perform well



The vast majority of G20 countries rank as high or best performers. With the notable exception of Italy, the G20 nations ranking as “average” are mainly highly populated countries. Only three G20 countries rank below the global average: while Indonesia and Turkey are not far behind, India, with its significant energy challenges, ranks well below the global average.

A global ranking concealing diverse situations

At a first glance, the global ranking appears to illustrate the clear dominance of northern hemisphere countries. However, the reality is not so clear cut.

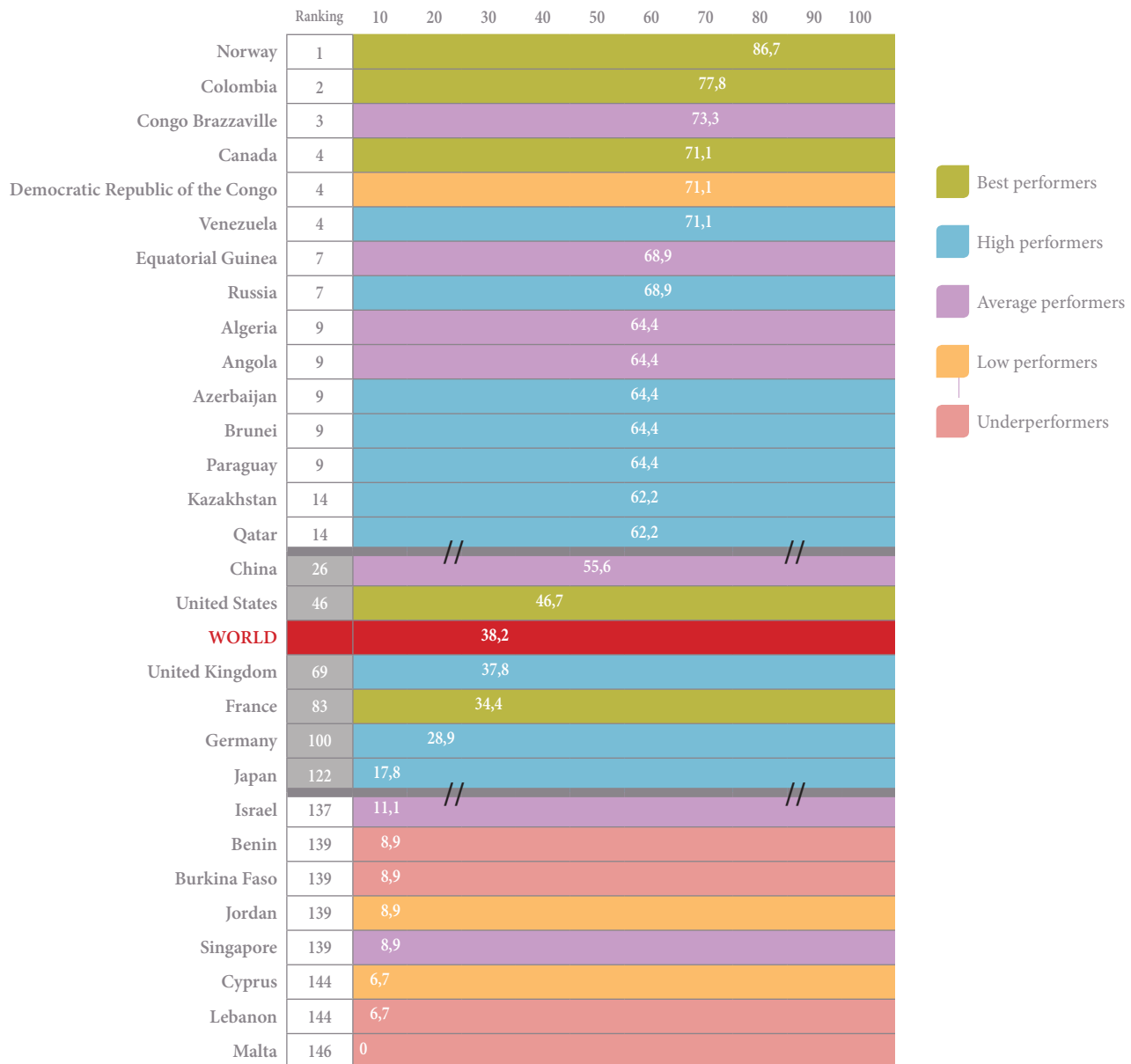
Several countries from South America (Colombia, Venezuela, Paraguay) and Central Africa (Congo, Democratic Republic of the Congo, Equatorial Guinea, Angola, Gabon) stand out due to the local availability of hydrocarbons and plentiful hydraulic resources.

In terms of energy policies aimed at preserving the environment, Central and South America performed well due to their positive energy mix and lower level of industrialisation, which limit negative effects on the environment. El Salvador, Guatemala, Costa Rica and Nicaragua top the list. Brazil ranks 9th, on a par with Colombia, with a highly diversified and balanced energy base in terms of sustainable and non-sustainable renewable energies.

However, the Asian countries (China, India and Japan), appear to pay less attention to environmental issues, with the exception of the Philippines (tying 3rd in the global ranking).

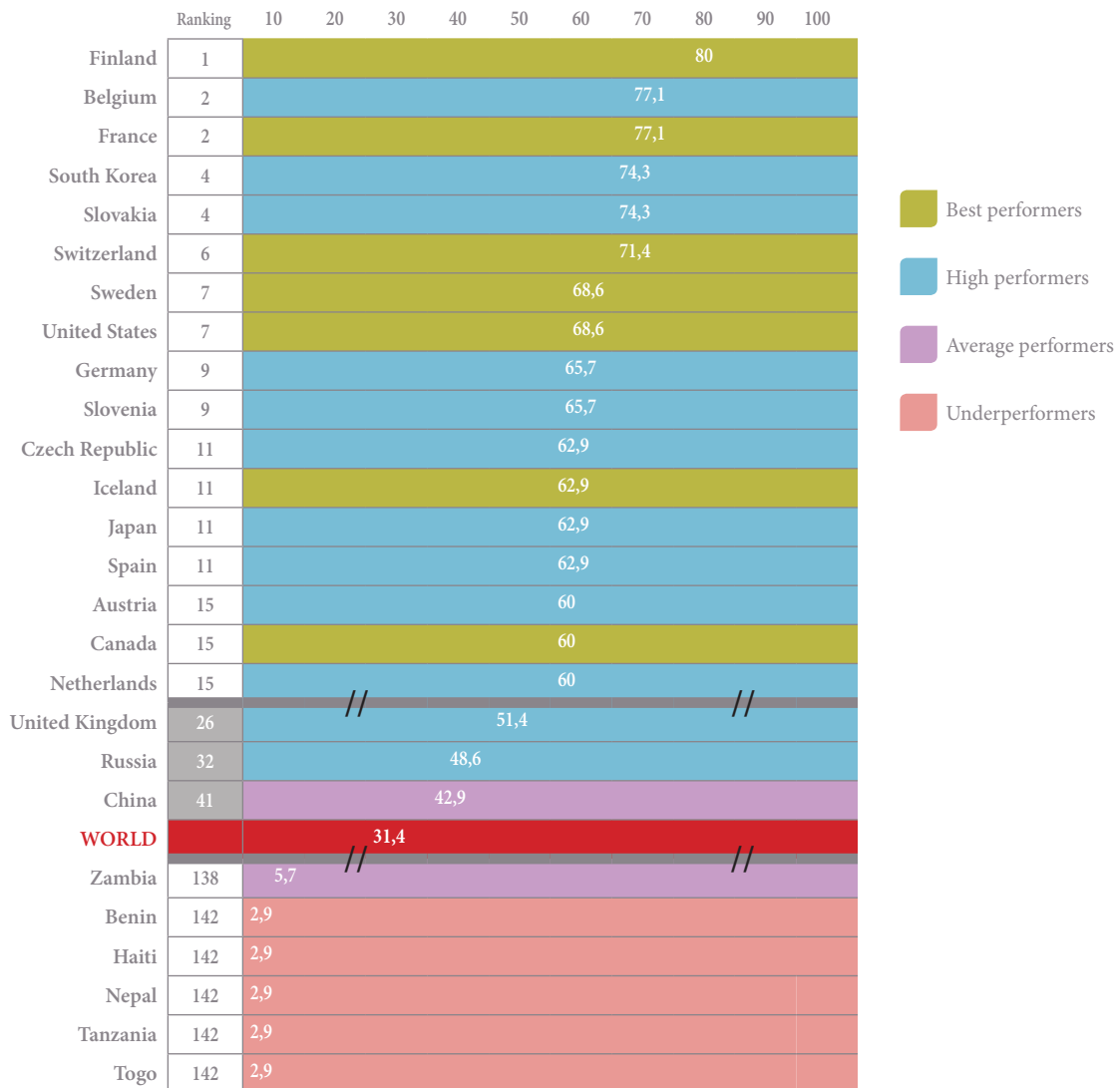
As regards electricity quality and access – key factors for sustainable, balanced development – the European countries unsurprisingly rank highest. Asian countries are average, although South Korea and Japan, at 4th and 11th place, respectively, stand out in this category. Most African countries lag behind, which partly explains the continent's delayed economic development and industrialization.

Quality of the energy mix



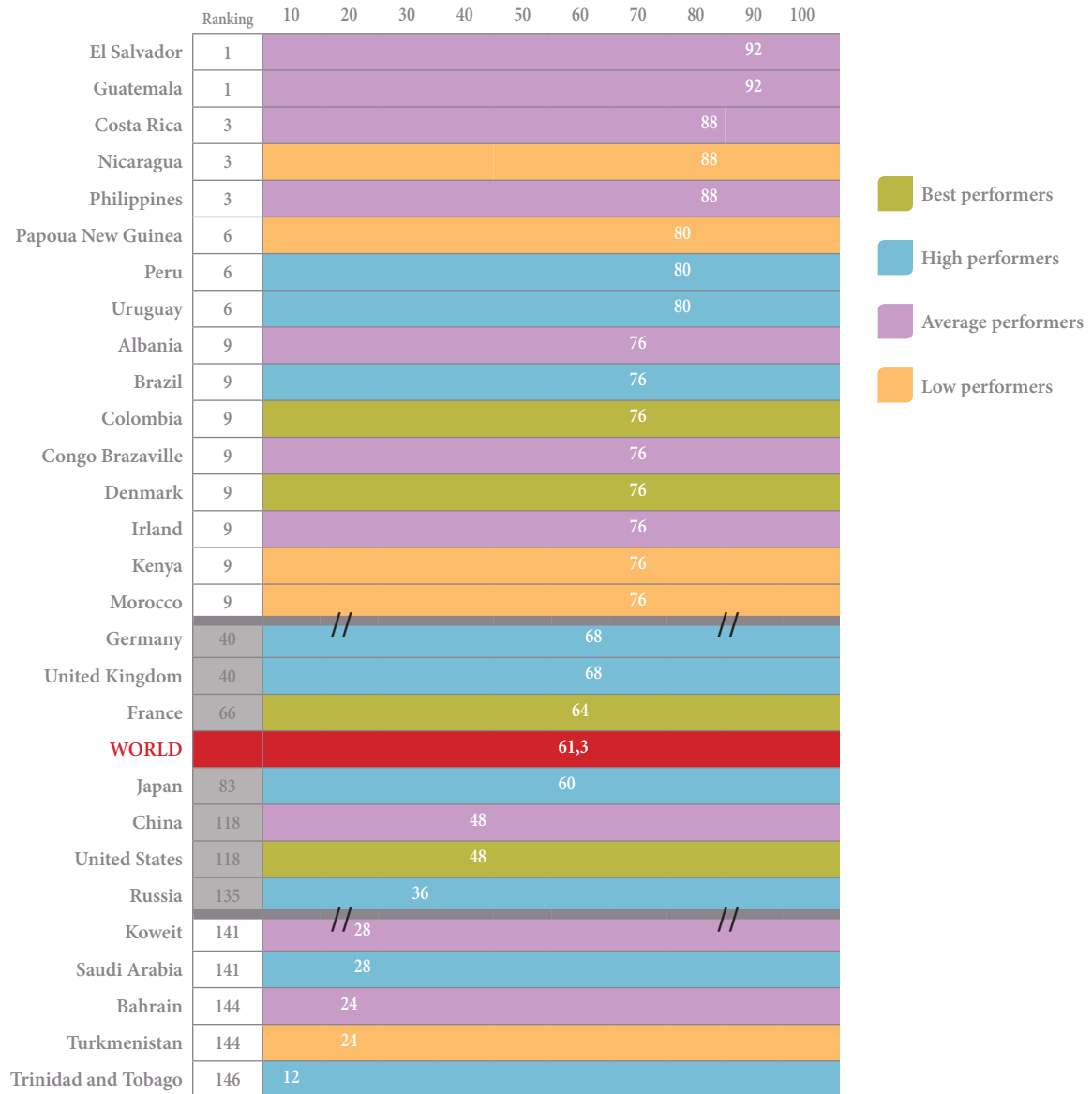
The top three positions remained unchanged from the previous year. With its balanced energy mix (large percentage of hydraulic resources, low oil dependence, and domestic resources), Norway still commandeers the leading position in our 2014 ranking, followed by Colombia, several African countries (Republic of the Congo, Central African Republic, Equatorial Guinea, Angola), and South American countries (Venezuela, Paraguay). Canada notably jumped from 9th position last year to 4th in 2014, becoming the only western country in the Top 20.

Electricity quality, availability and access



Industrialized countries, particularly in Europe, naturally top this ranking. Indeed, electricity has been the basis of their industrial power. With the exception of South Korea, Japan and Australia, whose economic models resemble those of their European counterparts, Asia, like South America, mostly ranks “average”, with the exception of the Philippines (95th) and India (106th), lagging considerably behind. Africa (mainly the sub-Saharan region) is by far the lowest performing continent. The low availability of electricity in Africa is undoubtedly a major obstacle to genuine economic development. The continent is currently almost exclusively dependent on cyclical variations in natural resources, which fortunately are so abundant there.

Environmental footprint



The Central American nations, along with South America's two heavyweights Brazil and Colombia, are clearly at the forefront in terms of their environmental footprint and the compatibility of their energy policies with preserving the environment. Africa also deserves a mention, surpassing the global average (62.7 versus 61.3) mainly due to its low carbon emissions and lower energy intensity, particularly in comparison with Europe and Asia. With the exception of the Philippines, Asian countries scored very poorly given their high-pace, energy-intensive development models with little consideration for environmental factors.

The complete report
(including global rankings and analyses for each continent),
CHOISEUL ENERGY INDEX,
is available upon request from

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