2019 RESILIENCE INDEX **ANNUAL REPORT**

pentland ANALYTICS

FM Global

INTRODUCTION

As 2019 marches on, many business leaders face uncertainty over the prospects of a worldwide economic slowdown—and what that could mean for their organizations. This uncertainty has been exacerbated by concerns over global trade rules in the year ahead and weakening economies. Combined with political uncertainty in Europe, Brexit worries and U.S.-China trade tensions, major manufacturers are adjusting corporate profit forecasts, dividends and bonuses in anticipation of potential weakening growth prospects.

Meanwhile, threats of tariffs and counter-tariffs are creating unease in supply chains and concern in countries like **Malaysia, Thailand, Vietnam** and **the Philippines**. As companies consider where they may need to shift their global footprint, their choices are complicated by the impact of weather and climate in exposed countries, and how that can lead to business disruption, as was seen in 2018.

The past year was another active period for natural disasters globally with a typhoon and earthquake affecting Japan's economy, severe flooding affecting parts of **India, Italy** and **Austria**, droughts in countries like **China** and **Argentina**, not to mention the wildfires in **Australia** and **California**, and landfalling hurricanes in the **U.S.** Those events, and many more, made 2018 the costliest consecutive year for resulting economic losses due to catastrophic risk.

Major data breaches and sophisticated malicious hacks in the past 12 months continued to serve as a reminder that expanding one's vendors and service providers around the world brings with it broader business perils. Those vulnerabilities include the potential for cyber risk inherent to the countries themselves, and increased risk to internet-connected equipment and machinery.

So, what do these threats mean for executives seeking to thrive in such an uncertain business environment? Simply answered, the resilience of a country's business environment matters when planning where to do business. The 2019 FM Global Resilience Index is the only resource currently available that gives senior leaders the ability to compare risk in nearly 130 countries, to evaluate their company's global exposure and make more informed strategic choices when it comes to their enterprise resilience. The index is validated by independent analytics and advisory firm, Pentland Analytics.

This annual report highlights a handful of key findings with many more insights available using the interactive online Resilience Index tool (www.fmglobal.com/resilienceindex).

May you find the 2019 FM Global Resilience Index of value in driving risk out of your operations.

For additional information, please contact us at resilienceindex@fmglobal.com.

2019 KEY RESULTS

Norway leads the rankings of the 2019 FM Global Resilience Index. Driven by top 10 ratings in economic productivity, political stability, control of corruption and corporate governance, Norway boasts low natural hazard exposure and has decreased its economic reliance on oil.

Corporate Governance represents a new driver for the 2019 Resilience Index. As a more targeted replacement for Local Supplier Quality, corporate governance better targets the enabling environment for business resilience and focuses on an effective framework for local business practices. The new driver includes the strength of auditing and accounting standards, conflict of interest regulation and shareholder governance. The top three countries for corporate governance are **Singapore** (ranked 21), **New Zealand** (ranked 12) and **Canada** (ranked 13). Singapore is ranked in the top 10 for a strong economy, low political risk, excellent infrastructure, low corruption and natural hazard risk, making it an attractive choice for companies interested in creating a stronger Asian presence.

I. INDEX	THE FM GLOBAL RESILIENCE INDEX		
II. FACTORS	ECONOMIC	RISK QUALITY	SUPPLY CHAIN
III. DRIVERS	Productivity	Exposure to Natural Hazard	Control of Corruption
	Political Risk	Natural Hazard Risk Quality	Quality of Infrastructure
	Oil Intensity	Fire Risk Quality	Corporate Governance
	Urbanization Rate	Inherent Cyber Risk	Supply Chain Visibility

Indicates newly added drivers for 2019
Indicates enriched data for 2019

Denmark takes second place in the 2019 FM Global Resilience Index, rising from seventh in 2018, and propelled by an impressive improvement in supply chain visibility. Guided by a strong government with low corruption, Denmark ranks in the top 10 for having low natural hazard exposure and high natural hazard risk quality. **Switzerland** remains in the top three countries due to the quality of its infrastructure and corporate governance, its stable political situation, low corruption level and its economic productivity.

Haiti (ranked 130) remains the lowest-ranked country in the index, below **Venezuela** (ranked 129) and **Ethiopia** (ranked 128). Haiti, still recovering from Hurricane Matthew, has been grappling with a fuel supply shortage and remains among the poorest countries in the world. **Venezuela** suffers from its exposure to natural hazards, high level of corruption and an economic dependency on oil. Hyperinflation remains a

problem in Venezuela. Although **Ethiopia's** government has placed emphasis on political liberalization and reached a peace agreement with neighboring country, Eritrea, it remains in the bottom three for 2019.

Cybersecurity remains on the forefront of daily news highlights worldwide with 2018 uncovering several notable breaches, including one of the largest known-to-date. Spanning a period of four years, the theft of sensitive customer information from Marriott International's Starwood guest database remained undetected, affecting as many as 500 million people. One of Asia's top airlines, Cathay Pacific Airways is facing a compliance investigation by the Hong Kong privacy commissioner after failing to report stolen passenger information until seven months after the breach occurred. These prominent data hacks underline the necessity of ensuring corporate diligence regarding the prioritization of cyber risk mitigation efforts. One such effort is emerging through advancements in Intelligent Automation that is becoming a powerful and effective tool in combating cyber risk.

The biggest riser in the 2019 index is **Rwanda** (ranked 77), which rose 35 places. Largely due to a decrease in urbanization rate and an impressive improvement in corporate governance, Rwanda shows increased resilience, coupled with steady economic growth and reductions in poverty. Rising 16 spots in the index this year is **Thailand** (ranked 73). Thailand, an Asian supply chain hub, showed significant improvement in supply chain visibility and corporate governance. However, Thailand remains heavily exposed to extreme weather and would see an additional rise in the index ranking by improving the quality of its natural hazard risk management.

The Republic of North Macedonia (ranked 100) was the biggest faller in the index, dropping 22 places. The deterioration in resilience is due primarily to lower economic productivity, an increase in reliance on oil and an increase in urbanization rate. Having recently resolved a long-standing country-naming dispute with Greece, the country, formerly known as the Republic of Macedonia, is seeking membership of both the European Union (EU) and NATO.

CONCLUSION

Every country is unique, with its own interdependencies and vulnerabilities. The 2019 FM Global Resilience Index is a comprehensive single tool that combines the core drivers of enterprise resilience, highlighting weaknesses, and offering resources for companies to evaluate and mitigate risk. To ensure that business remains resilient, it is important that managers understand and measure their companies' capacity to endure and respond to disruption. Cyber, hurricane and earthquake events dominated the headlines in 2018. The incidence of extreme weather events also grew in the form of coastal flooding, and wildfires that ravaged parts of the United States, Canada and Australia. The tariff war between China and the United States continues to make headlines, while in Europe, the political debate around the European Union and Brexit has yet to settle. The FM Global Resilience Index is a resource designed to help senior executives conduct vulnerability assessments and build their companies' resilience around the world.

SECTION 2

THE INDEX STRUCTURE

Described in this section are the structure and construction of the FM Global Resilience Index. There are three levels to the index, as referenced in Table 1:

Table 1: The index structure

I. INDEX	THE FM GLOBAL RESILIENCE INDEX		
II. FACTORS	ECONOMIC	RISK QUALITY	SUPPLY CHAIN
III. DRIVERS	Productivity	Exposure to Natural Hazards	Control of Corruption
	Political Risk	Natural Hazard Risk Quality	Quality of Infrastructure
	Oil Intensity	Fire Risk Quality	Corporate Governance
	Urbanization Rate	Inherent Cyber Risk	Supply Chain Visibility

The index combines equally the 12 core drivers of resilience and provides ranked scores for 130 countries and territories around the world. Selected for inclusion are the largest countries (by gross domestic product) with the most complete set of data across the most recent five years.

The structure of the index enables business executives to identify the sources of strength and vulnerability in a country's resilience, both broadly across factors (economic, risk quality or supply chain), and more precisely across the 12 drivers. Such analysis offers opportunities to managers seeking to improve their company's resilience to disruptive events.

Levels to the Index

1. **Level I** provides a country ranking of enterprise resilience to disruptive events. Level I is an equally weighted composite measure of the three factors in Level II.
2. **Level II** comprises three factors, the core elements of resilience: economic, risk quality and supply chain. Each factor in Level II is an equally weighted composite of its respective drivers in Level III.
3. **Level III** includes a set of 12 drivers that determine the enterprise resilience to disruptive events for a country. Each driver measures a different aspect of resilience.

INDEX CONSTRUCTION

Described below are the key procedures applied to construct the FM Global Resilience Index from the underpinning data.

1. Annual data, for the most recent five years, are collected for the maximum number of countries and territories for each of the 12 drivers.

2. A common set of countries and territories with complete data availability across the 12 drivers is identified and aligned into a consistent data set.

3. Each data series is standardized through the calculation of z-scores to enable comparison and combination of drivers with different units. Where necessary, z-scores are inverted for consistency across variables.

4. The z-scores are converted into scores on a scale of 0-100 for presentation purposes.

5. The scores of the 12 drivers then are combined with equal weighting to form the index.

The index comprises the rankings for the top 130 countries and territories for which data are available. China and the United States are each subdivided into three ranked regions because their geographical spread includes disparate exposures to natural hazards such as wind, flood and earthquake.

Based on data availability, new entrants to and exits from the index may emerge. In order to maintain consistency in the interpretation of results, the index is restricted to the top 130 countries and territories in any given year.

Many simulations were carried out to determine the most appropriate weighting scheme. Ultimately, very little difference emerged in rankings from the adoption of various weighting schemes so, rather than impose a subjective system of aggregation without good reason to do so, it is appropriate to remain with equal weights across the 12 core drivers of resilience.

The overall composite index is, by design, a simplified, summary measure of resilience. The FM Global Resilience Index provides an indication of countries' relative enterprise resilience to disruptive events. In combination with additional information, this provides business executives with a source of guidance on enterprise risk when making decisions about risk improvement priorities, sourcing suppliers or the destination of physical investments.

SECTION 3

SOURCES AND DEFINITIONS

Provided in this section is the technical definition of each index driver and its data source.

Table 2: Definitions and data sources

ECONOMIC		
PRODUCTIVITY	Gross domestic product (GDP) based on purchasing power parity, divided by total population	International Monetary Fund (IMF)
POLITICAL RISK	The perceived likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism	World Bank
OIL INTENSITY	Vulnerability to an oil shock (shortage, disruption, price hike); oil consumption divided by GDP; measures dependency on oil for productivity	U.S. Energy Information Administration
URBANIZATION RATE	The average annual rate of change in the extent to which a country's population is living in an urban area	United Nations (UN)
RISK QUALITY		
EXPOSURE TO NATURAL HAZARDS	The percentage of a country's area devoted to economic activities that is exposed to at least one natural hazard: wind, flood or earthquake	FM Global
NATURAL HAZARD RISK QUALITY	The quality and enforcement of a country's building code with respect to natural hazard-resistant design (80%), combined with the level of natural hazard risk improvement achieved, given the inherent natural hazard risks in a country (20%)	FM Global
FIRE RISK QUALITY	The quality and enforcement of a country's building code with respect to fire-based design (80%), combined with the level of fire risk improvement achieved, given the inherent fire risks in a country (20%)	FM Global
INHERENT CYBER RISK	Vulnerability to a cyber attack combined equally with the country's ability to recover; captured by internet penetration (the percentage of individuals in a country who have access to the internet) and civil liberties	UN and Freedom House, respectively
SUPPLY CHAIN		
CONTROL OF CORRUPTION	The perceived extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as capture of the state by elites and private interests	World Bank
QUALITY OF INFRASTRUCTURE	The quality and extension of transport infrastructure (road, rail, water and air) and utility infrastructure.	World Economic Forum (WEF)
CORPORATE GOVERNANCE	The strength of auditing and accounting standards, conflict of interest regulation and shareholder governance.	WEF
SUPPLY CHAIN VISIBILITY	The ability to track and trace consignments across a country's supply chain	World Bank

Data on political risk (political stability and absence of violence or terrorism) and control of corruption are obtained from the Worldwide Governance Indicators (WGI) data set from the World Bank. The WGI comprise information from 31 existing data sources that report the views and experiences of citizens, entrepreneurs and experts in the public, private and non-governmental organization (NGO) sectors from around the world, on the quality of various aspects of governance. Data on supply chain visibility also are sourced from the World Bank, specifically from its Logistics Performance Index (LPI). The data are obtained by a survey of global freight forwarders and express carriers who provide feedback on the logistics attractiveness of the countries in which they operate, and with which they trade.

Data on infrastructure and corporate governance are obtained from the Global Competitiveness Report produced annually by the WEF. The data are sourced from the WEF's annual Executive Opinion Survey which is based on over 12,000 responses.

The data for three of the risk quality drivers are provided by FM Global, one of the world's largest commercial and industrial property insurers. Further detail on their compilation is provided below.

1. **Exposure to natural hazard** – FM Global property risk engineers determine whether any natural hazard exposures are present at the locations they visit. The determination is based on wind, flood and earthquake maps, populated areas defined by satellite-based night lights, and additional information acquired by engineers. The percentage of the country's area devoted to economic activities that is exposed to at least one natural hazard peril (earthquake, wind, or coastal or riverine flood) is summarized for each country.

   Exposed areas are determined based on potential losses from 100-year wind gusts greater than 100 mph (161 kph), water flowing from rivers in 100-year flood zones, or more frequent than 500-year earthquake motions that can cause damage to weak systems.

   China and the United States are each divided into three regions to accommodate for a significantly different dominant natural hazard exposure within these countries. Regions in the United States are based on states, and regions in China are based on provinces, municipalities and autonomous regions. The composition of each region is provided in Section 5.

2. **Natural hazard risk quality** – To capture the quality of a country's management of natural hazard risks, two components are combined. Dominant (and weighted 80 percent) is a measure of the quality and enforcement of a country's building code with respect to natural hazard-resistant design. A full exposition of the building code rating methodology is provided in Section 4. The remaining component (weighted 20 percent) reflects the risk quality of actual facilities and is obtained from FM Global's proprietary Risk*Mark*® database available to FM Global clients.

   Risk*Mark* is a benchmarking algorithm that calculates the risk quality of FM Global's insured locations. It uses a 100-point scale (100 representing the best-managed, highest-quality risk), and the scale comprises the following four components:

i. Fire Hazards and Equipment Hazards: 36 points
ii. Natural Hazards: 30 points
iii. Human Element and Other Factors: 19 points
iv. Inherent Occupancy Hazards: 15 points

The Risk*Mark* score of a location includes a measure of both inherent risks and risks where there are recommendations for improvement. The potential Risk*Mark* score represents the highest possible score achievable by that location, given those inherent risks. The percentage potential Risk*Mark* score provides a way to measure risk improvement opportunities given the inherent risks. It is calculated by dividing the Risk*Mark* score by the potential Risk*Mark* score.

For the risk quality driver, natural hazard risk quality, the weighted average (by total insured value) percentage potential Risk*Mark* score for the natural hazard component is provided for each country or region where there is a statistically sufficient number of locations. Those countries with few locations are rated solely by the quality and enforcement of the country's building code with respect to natural hazard-resistant design.

3. **Fire risk quality** – For this risk quality driver, fire risk quality, the same logic as natural hazard applies. The quality of a country's management of fire risk combines two components: a measure of the quality and enforcement of a country's building code with respect to fire-based design (weighted 80 percent), and a measure of the fire risk quality of actual facilities visited by FM Global property risk engineers.

   For this metric, the weighted average (by total insured value) percentage potential Risk*Mark* score for the fire subcomponent of the fire and equipment hazards component is provided for each country or region where there is a statistically sufficient number of locations. Again, those countries with few locations are rated solely by the quality and enforcement of the country's building code with respect to fire-based design.

The fourth risk quality driver, inherent cyber risk, combines equally a country's vulnerability to cyber attack with the country's ability to recover from such an attack. The former is captured by a measure of internet penetration, using data sourced from the International Telecommunications Union (ITU), a division of the UN. To reflect a country's ability to help businesses heal and recover from a cyber attack, a measure of civil liberties is used, combining freedoms of expression, assembly, association, education and religion, and an established and fair legal system that ensures the rule of law, allows free economic activity, and strives for equal opportunities for all. The data are sourced from Freedom House, a nonprofit watchdog organization.

SECTION 4

Described in this section is the method by which FM Global property risk engineers estimated the quality of building codes around the world with respect to natural hazard and fire risks. Evaluation of the outcome of building codes and regulations entails a method that is based not only on the requirements of the code but also on the level of its enforcement. The approach adopted combines an understanding of the requirements with actual observations by FM Global property risk engineers in the field.

BUILDING CODE RATING METHODOLOGY

1. National building codes and their implementation were reviewed first in order to define the key questions for a survey that would yield the most, and most relevant, responses.

2. Based on this review, and following a pilot study, the following filter questions were established to address natural hazard and fire risk, respectively:
    a. Is there a regularly used and updated building code that includes mandatory requirements for natural hazard-resistant designs published in the country?
    b. Is there a regularly used and updated building code that includes mandatory requirements for fire-based design published in the country?

3. To ensure that requirements are fully understood, they need to be adopted fully and within the mainstream of building practice in a country. A revised code or draft code would not meet these criteria. A code quality score of 2 was assigned for observed full code covering natural hazard/fire elements, 1 for limited code covering these elements, and 0 where these elements are absent.
    a. In the case of natural hazards, matching design requirements for seismic, wind, snow, etc., were considered.
    b. In the case of fire risk, requirements covering fire-rated compartmentation, fire protection, combustibility requirements for materials, etc., were considered.

4. As noted, the presence of strong enforcement will ensure that the outcome of a code is delivered. Therefore, for each natural hazard and fire risk, the following contingency question was asked: Are these requirements regularly enforced?

5. The focus is placed on what is observed in a country rather than what is intended, and responses to the question of enforcement concentrate on the skill, education and training available to implement the requirements regularly. A code enforcement score of 2 was assigned for observed strong and consistent enforcement, 1 for limited enforcement, and 0 for negligible or poor enforcement. The code enforcement score is applied as a multiplier to the code quality score, reflecting the practical power of effective code enforcement.

6. A final modifier was added to the resultant score (quality x enforcement) to introduce the observed availability of flood maps into the natural hazard elements and the requirements for automatic sprinkler protection into the fire elements.

a. There are limited elements within building codes with respect to flood hazard. Usually, it is considered in the wider elements of building laws relating to development and land use that determine where a building can be sited. However, this requires a scheme of flood maps to assess the risk. A score of 1 is added if nationally recognized flood maps are present and available in the country.
b. FM Global's experience shows that a key driver in minimizing fire damage is the presence of automatic sprinkler protection. In the industrial arena, the typical target occupancies are offices, warehouses and factories, in particular, buildings of moderate size at 5,000 square meters. Such buildings represent a reasonable scale of investment where fire protection makes economic sense based on value alone in most territories. A score of 1 is added if there is a requirement for the installation of automatic sprinklers within this size of building in any of the specified occupancies.

Table 3: Survey structure

NATURAL HAZARD ELEMENTS	SCORE
Is there a regularly used and updated building code that includes mandatory requirements for natural hazard-resistant designs published?	0, 1, 2
Are these requirements regularly enforced?	0, 1, 2
Are there current, nationally recognized flood maps available?	0, 1
FIRE ELEMENTS	**SCORE**
Is there a regularly used and updated building code that includes mandatory requirements for fire-based design published in the country?	0, 1, 2
Are these requirements regularly enforced?	0, 1, 2
Based on a 5,000-m^2 building, would the code require automatic sprinklers to be installed in any office/warehouse/factory buildings?	0, 1

7. The questions were distributed to FM Global property risk engineers who were surveyed and interviewed for their expert assessment of building code quality and enforcement, based on their actual observations in the field.

8. For those countries where limited observations were available, secondary research in the form of a literature review of the available code was used to supplement the primary field research.

9. Finally, the ratings were reviewed iteratively by the engineering and standards community to ensure consistency in grading, and to reach consensus on the relative ratings.

The FM Global engineering team operates across the world, visiting industrial and commercial clients to undertake property risk evaluations. The engineers apply their training and assess the current conditions to the applicable FM Global standards in order to determine if there are opportunities to enhance the protection of a facility against natural hazard and fire risks. Through this work, FM Global engineers enjoy unique access to observe the practice and application of building codes and regulations across different countries.

SECTION 5

COUNTRY REGIONS BY DOMINANT NATURAL HAZARD

CHINA 1	CHINA 2	CHINA 3	UNITED STATES 1	UNITED STATES 2	UNITED STATES 3
Wind	**Earthquake**	**Miscellaneous**	**Wind**	**Earthquake**	**Miscellaneous**
Fujian	Hebei	Anhui	Alabama	Alaska	Arizona
Guangdong	Jiangsu	Beijing	Connecticut	California	Arkansas
Hainan	Neimenggu	Chongqing	Delaware	Hawaii	Colorado
Jilin	Ningxia	Gansu	Florida	Nevada	District of Columbia
Liaoning	Sichuan	Guangxi	Georgia	Oregon	Idaho
Shandong	Tianjin	Guizhou	Louisiana	Puerto Rico	Illinois
Shanghai	Yunnan	Heilongjiang	Maine	Utah	Indiana
Zhejiang		Henan	Maryland	Washington	Iowa
		Hubei	Massachusetts		Kansas
		Hunan	Mississippi		Kentucky
		Jiangxi	New Hampshire		Michigan
		Qinghai	New Jersey		Minnesota
		Shaanxi (Shanxi)	New York		Missouri
		Xinjiang	North Carolina		Montana
			Rhode Island		Nebraska
			South Carolina		New Mexico
			Texas		North Dakota
			Virgin Islands		Ohio
			Virginia		Oklahoma
					Pennsylvania
					South Dakota
					Tennessee
					Vermont
					West Virginia
					Wisconsin
					Wyoming

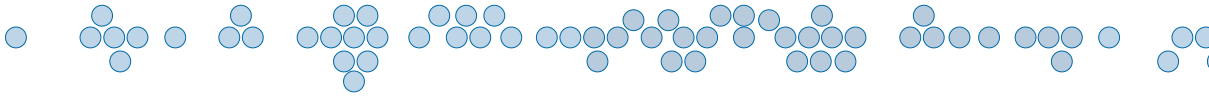
SECTION 6

COUNTRY AND FACTOR SCORES

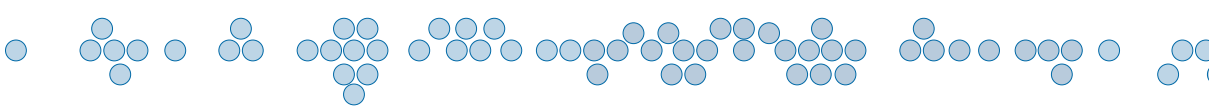
COUNTRY/REGION	FACTORS				
	Country Rank	Country Score	Economic Score	Risk Quality Score	Supply Chain Score
ALBANIA	95	30.7	29.5	9.1	46.3
ALGERIA	104	25.3	28.0	28.5	29.1
ARGENTINA	58	48.9	49.5	36.0	51.1
ARMENIA	85	37.1	49.9	12.9	42.1
AUSTRALIA	17	88.2	67.1	89.6	80.1
AUSTRIA	8	93.6	72.4	83.2	88.7
AZERBAIJAN	86	36.6	36.5	22.9	45.2
BAHRAIN	53	52.9	47.8	44.5	54.9
BANGLADESH	108	23.6	12.2	31.0	35.4
BELGIUM	19	86.8	54.9	93.9	83.7
BENIN	109	23.5	13.7	47.6	26.5
BOLIVIA	119	19.6	28.5	10.3	27.8
BOSNIA	70	41.5	32.0	54.1	41.5
BOTSWANA	44	60.0	50.0	78.0	49.5
BRAZIL	60	47.1	36.3	49.0	50.6
BRUNEI DARUSSALAM	49	57.8	87.5	3.1	57.0
BULGARIA	45	59.8	52.0	60.2	56.4
CAMBODIA	114	21.7	21.1	29.9	26.9
CAMEROON	115	21.3	23.4	38.3	20.9
CANADA	13	90.2	59.5	88.1	89.0
CHAD	127	13.2	30.7	20.1	11.1
CHILE	50	56.6	55.3	21.4	67.1
CHINA ZONE 1	74	40.6	21.9	31.0	57.6
CHINA ZONE 2	76	38.9	21.9	24.9	57.6
CHINA ZONE 3	68	42.2	21.9	36.4	57.6
COLOMBIA	66	43.4	39.3	23.3	54.5
COSTA RICA	61	46.6	42.8	36.0	51.5
CÔTE D'IVOIRE	94	31.6	24.6	41.7	35.7
CROATIA	37	63.2	55.6	62.6	58.6
CYPRUS	48	57.9	46.4	47.5	62.8

COUNTRY/REGION	FACTORS				
	Country Rank	Country Score	Economic Score	Risk Quality Score	Supply Chain Score
CZECHIA	20	86.7	70.2	98.8	71.2
DENMARK	2	97.2	74.8	87.4	91.3
DOMINICAN REPUBLIC	71	41.0	52.9	19.5	43.6
ECUADOR	101	28.9	29.4	2.2	46.7
EGYPT	83	37.5	33.3	28.8	46.0
EL SALVADOR	117	20.5	22.1	11.3	33.2
EMIRATES	33	70.6	60.6	28.5	83.8
ESTONIA	30	72.5	61.4	70.3	66.8
ETHIOPIA	128	5.5	1.2	17.4	18.6
FINLAND	5	94.3	68.7	86.7	90.7
FRANCE	14	90.1	61.2	93.4	85.4
GEORGIA	75	40.0	31.9	18.1	56.0
GERMANY	4	96.6	72.2	96.4	87.6
GHANA	92	34.0	31.0	41.0	35.8
GREECE	56	50.6	40.6	44.9	55.5
GUATEMALA	116	20.8	30.7	6.4	30.3
GUINEA	105	25.1	24.8	40.3	25.3
HAITI	130	0.0	22.5	8.2	0.0
HONDURAS	121	18.3	11.7	7.4	38.0
HONG KONG	18	88.0	74.3	51.5	93.2
HUNGARY	35	67.1	62.0	61.8	61.3
ICELAND	25	81.1	70.2	67.3	76.8
INDIA	59	48.9	24.6	46.8	62.2
INDONESIA	77	38.9	30.1	18.2	55.3
IRAN	120	18.4	21.8	6.7	32.0
IRELAND	16	88.2	86.0	66.2	79.0
ISRAEL	32	70.7	46.4	61.2	77.7
ITALY	31	72.2	59.1	69.9	67.8
JAMAICA	103	25.6	19.7	7.6	44.9
JAPAN	27	78.7	67.7	44.2	85.3
JORDAN	91	34.0	25.3	28.7	45.4
KAZAKHSTAN	57	49.3	52.9	29.9	52.6
KENYA	99	29.2	8.2	43.2	41.5
KUWAIT	69	41.5	57.6	11.0	45.3

COUNTRY/REGION	FACTORS				
	Country Rank	Country Score	Economic Score	Risk Quality Score	Supply Chain Score
KYRGYZ REPUBLIC	125	14.3	9.6	2.8	34.9
LAOS	106	24.9	32.3	19.9	29.8
LATVIA	39	62.1	56.5	59.6	57.5
LEBANON	124	15.1	8.2	10.6	33.3
LITHUANIA	34	69.1	63.3	65.3	62.1
LUXEMBOURG	7	94.0	91.3	79.9	78.7
MALAWI	107	24.8	31.4	21.6	29.4
MALAYSIA	40	61.6	45.2	50.3	68.4
MALI	123	15.7	0.0	34.3	28.5
MALTA	41	60.9	37.8	74.8	60.4
MAURITIUS	52	53.5	59.8	23.1	58.4
MEXICO	67	42.9	37.1	35.0	49.6
MOLDOVA	87	36.1	40.5	28.8	39.1
MONGOLIA	65	43.9	61.2	35.9	35.3
MONTENEGRO	82	37.6	45.6	14.9	44.8
MOROCCO	78	38.8	25.3	37.7	49.1
MOZAMBIQUE	126	13.2	3.5	34.4	22.0
NEPAL	122	16.5	11.1	9.9	34.2
NETHERLANDS	15	89.1	62.1	81.5	88.8
NEW ZEALAND	12	90.4	71.8	68.6	90.7
NICARAGUA	112	22.1	31.6	15.6	27.6
NIGERIA	113	21.9	7.3	33.3	34.5
NORWAY	1	100.0	82.1	94.3	87.9
OMAN	51	56.1	63.4	30.9	56.6
PAKISTAN	118	20.1	14.7	8.2	38.6
PANAMA	64	45.8	34.6	43.3	52.2
PARAGUAY	84	37.2	46.6	39.3	31.9
PERU	79	38.8	46.1	20.5	43.7
PHILIPPINES	93	33.8	31.7	27.5	41.4
POLAND	24	81.6	66.0	94.4	67.5
PORTUGAL	28	76.6	53.6	87.5	70.4
QATAR	26	79.1	100.0	57.4	58.8
REPUBLIC OF NORTH MACEDONIA	100	28.9	15.0	14.6	50.1



COUNTRY/REGION	FACTORS				
	Country Rank	Country Score	Economic Score	Risk Quality Score	Supply Chain Score
ROMANIA	36	65.6	59.4	68.4	57.4
RUSSIA	54	52.0	40.3	72.7	45.0
RWANDA	72	40.9	47.5	9.2	51.8
SAUDI ARABIA	55	51.2	28.1	39.7	67.1
SENEGAL	98	29.2	27.2	44.5	28.6
SERBIA	63	45.9	47.6	36.3	47.3
SINGAPORE	21	85.7	58.9	50.0	100.0
SLOVAKIA	29	74.3	73.0	79.0	58.1
SLOVENIA	42	60.6	60.4	27.9	67.4
SOUTH AFRICA	47	58.5	31.8	72.6	61.4
SOUTH KOREA	38	62.2	49.0	27.3	77.8
SPAIN	23	84.8	57.5	95.4	77.9
SRI LANKA	81	38.0	46.5	7.0	48.6
SWEDEN	6	94.1	72.0	87.1	88.1
SWITZERLAND	3	97.0	87.6	77.5	87.3
TAIWAN	43	60.3	41.5	30.7	77.9
TAJIKISTAN	111	22.5	29.1	2.6	36.1
TANZANIA	102	28.4	12.8	50.6	33.7
THAILAND	73	40.9	13.4	35.7	61.3
TRINIDAD AND TOBAGO	89	35.1	46.0	18.0	38.9
TUNISIA	90	34.1	30.5	27.1	43.0
TURKEY	62	46.0	30.7	35.1	58.9
UGANDA	110	22.6	10.0	51.4	25.4
UKRAINE	80	38.7	25.4	44.7	45.6
UNITED KINGDOM	10	91.0	63.3	78.4	92.6
UNITED STATES CENTRAL	11	91.0	60.9	95.0	86.3
UNITED STATES EAST	22	85.3	60.9	74.7	86.3
UNITED STATES WEST	9	92.4	60.9	100.0	86.3
URUGUAY	46	59.7	63.6	46.6	55.0
VENEZUELA	129	1.4	7.3	0.0	16.0
VIETNAM	88	36.0	20.6	37.1	47.8
ZAMBIA	96	30.0	36.5	37.3	27.3
ZIMBABWE	97	29.9	37.8	38.8	25.6



ABOUT **FM GLOBAL**

Established nearly two centuries ago, FM Global is a mutual insurance company whose capital, scientific research capability and engineering expertise are solely dedicated to property risk management and the resilience of its client-owners. These owners, who share the belief that the majority of property loss is preventable, represent many of the world's largest organizations, including one of every three Fortune 500 companies. They work with FM Global to better understand the hazards that can impact their business continuity in order to make cost-effective risk management decisions, combining property loss prevention with insurance protection.

fmglobal.com

ABOUT **PENTLAND ANALYTICS**

Pentland Analytics is an advanced analytics firm, providing fresh insights and strategic counsel to the executive management of the world's leading companies. Core services include measuring and benchmarking the impact on shareholder value of different events or strategies, establishing thought leadership on strategic topics of commercial interest, devising innovative models to analyze large and complex data sets, and providing highly customized evidence-based counsel.

pentlandanalytics.com