DATA CENTRE RISK INDEX

Informing global investment decisions

2012

hurleypalmerflatt *building sustainability*

CUSHMAN & WAKEFIELD

ANTICIPATING RISKS

The Data Centre Risk Index ranks countries according to a number of risk factors that would affect a typical data centre operation.

The Index is designed to assist companies in making strategic investment and operational decisions about where to locate their data, whether it be server rack deployments or the creation of brand new facilities. Each country has its own risk profile which should be reviewed against the commercial opportunity, business requirement and the company's preference for risk aversion.

Data centre downtime can potentially cost millions in lost revenue and compensation; it can even threaten the livelihood of a business by causing irreparable damage to its reputation. The Data Centre Risk Index assesses various macro level risks – physical, economic and social, that could cause a threat to service continuity and uptime.

Last year, 2011, the world endured a series of devastating natural disaters which have caused record economic losses. We have seen the earthquake and tsunami in Japan, severe flooding in Thailand, typhoons in the Philippines and storms wreaking havoc in the US. It was also the year of the Arab Spring, the repercussions of which are still echoing through the Middle East. The ongoing global economic crisis and the fragile state of some of the economies burdened with debt is causing political instability.

These clearly have significant effects on business. Other factors however such as high energy costs, poor international internet bandwidth and protectionist legislation are also risks that need to be taken into account.

Although the Data Centre Risk Index demonstrates that some countries provide a better overall environment for data centres, commercial considerations are typically a key driver, the need to be in a particular territory will often take precedence over the risks highlighted by the Index. By definition, the Data Centre Risk Index allows business decision makers to anticipate the risks and put in place appropriate measures to mitigate and manage accordingly.

The Index is a unique tool, bringing together all the risks and weighting them to create a balanced and comprehensive risk assessment methodology. All of the information used is sourced from reputable third party sources.

CHANGES FOR THE 2012 DATA CENTRE RISK INDEX

In this second release of the Index, hurleypalmerflatt and Cushman & Wakefield have selected a further ten countries and an additional two risks. These changes reflect the ever-changing technological and political landscape as well as the growth of the data centre market, feedback and experience from our clients, the various trends evident in the last 12 months and the continued expansion into new territories.

NEW COUNTRIES FOR 2012.

EMEA	APAC	AMERICAS
Norway	South Korea	Mexico
Finland	Indonesia	
Iceland	Malaysia	
Switzerland	Thailand	
Czech Republic		

TWO NEW RISK FACTORS:

• Energy security. The cost of energy is one of the most important factors to many operators but security of the energy is also a key concern. To address this a new risk factor has been added which ranks countries in order of the most vulnerable to disruptions to energy supplies and price fluctuations in the international market. It assesses risks to the availability, affordability and continuity of energy supplies by evaluating energy imports, diversity of supplies, import security and energy costs. The source of the information is Maplecroft's Energy Security (Short Term) Index.

• Population education. Percentage of the population having completed tertiary education. This is a measure of education level which would be attributable to the skills necessary for typical engineers and data centre professionals. The source of this information is the Barro-Lee Education Attainment dataset.

WHAT THE INDEX COMPRISES

THE RISKS. The Data Centre Risk Index identifies the top risks likely to affect the successful operation of a data centre, and applies an individual weighting to those risks to create a balanced view and ranking of the thirty selected countries.

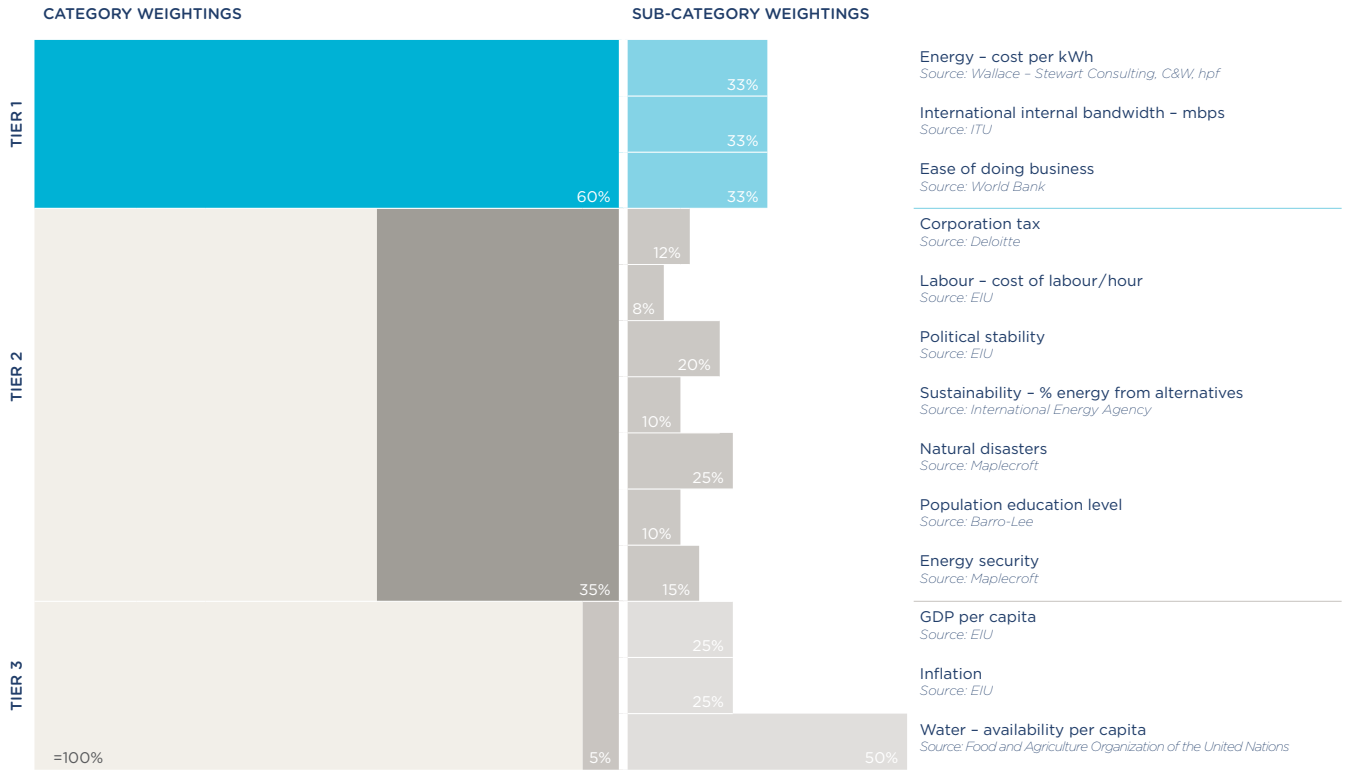
Since not all risks carry the same level of threat, hurleypalmerflatt and Cushman & Wakefield have produced a three tier weighting system to reflect the relative importance of these risks. These weightings are illustrated opposite.

THE WEIGHTINGS. If your priorities and approach to risk require a different weighting, the flexibility of the Data Centre Risk Index allows for different weightings to be applied.

METHODOLOGY AND CONSIDERATIONS. The Data Centre Risk Index identifies risk at a macro/country level. Countries scoring poorly on the Index might be able to offer the ideal environment for a data centre at a micro/local level and should not be discounted. hurleypalmerflatt and Cushman & Wakefield can provide an in-depth country assessment where required.

It should also be noted that many risks can be mitigated or managed with the introduction of relevant safeguards. In certain circumstances, the cost of these measures will be outweighed by the commercial need to be in a particular territory.

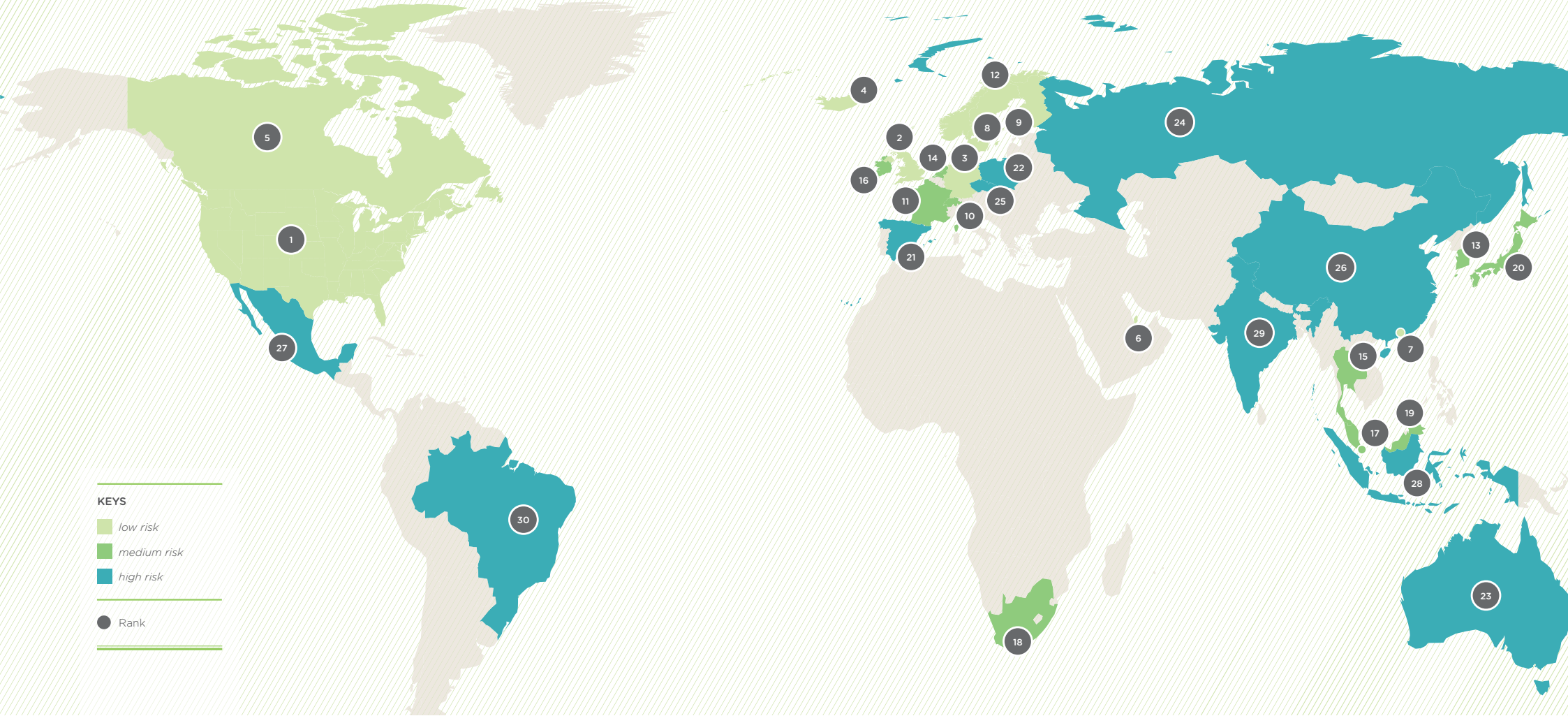
The analysis has been carried out by a joint hurleypalmerflatt and Cushman & Wakefield research group comprising leading international data centre experts and advisors. The Index has also been informed by interviews with leading data centre owners, providers and occupiers.



DATA CENTRE RISK MAP

THE COUNTRIES. hurleypalmerflatt and Cushman & Wakefield have selected thirty countries for the Data Centre Risk Index, representing established data centre locations, emerging markets and a mix of key regional centres.

The Index is based on a flexible risk assessment methodology and it can be applied to any country in the world.

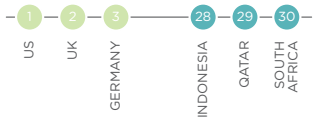


THE INDEX RANKING BY COUNTRY

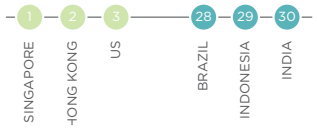
The Data Centre Risk Index shows country ranking according to the risks likely to affect successful data centre operations.

Two tier 1 risks are highlighted below, showing the three lowest risk and three highest risk countries for each category.

RANKING BY INTERNATIONAL BANDWIDTH



RANKING BY EASE OF DOING BUSINESS



KEYS

- *lowest risk*
- *medium risk*
- *high risk*

			TIER 1			TIER 2							TIER 3		
RANK	INDEX SCORE 1ST = 100	COUNTRY	ENERGY COST	INT'L BANDWIDTH	EASE OF DOING BUSINESS	CORPO-RATION TAX	COST OF LABOUR	POLITICAL STABILITY	SUSTAIN-ABILITY	NATURAL DISASTER	EDUCATION	ENERGY SECURITY	GDP PER CAPITA	INFLATION	WATER AVAILABILTY
1	100	US	8	1	3	29	19	20	20	29	1	17	11	15	11
2	91	UK	18	2	5	17	18	15	26	12	13	23	15	22	21
3	83	GERMANY	16	3	15	24	24	8	15	9	16	20	13	5	24
4	81	ICELAND	7	27	7	8	14	20	1	18	7	8	16	24	1
5	80	CANADA	6	11	10	19	23	2	10	23	2	1	9	11	2
6	80	QATAR	1	29	21	2	14	12	30	2	19	7	1	6	30
7	80	HONG KONG	23	4	2	4	8	10	28	16	23	29	17	26	22
8	79	SWEDEN	15	7	11	18	27	3	4	3	9	15	5	4	9
9	78	FINLAND	10	19	9	11	25	3	7	1	15	30	10	12	8
10	75	SWITZERLAND	11	13	17	1	29	5	9	13	18	11	3	1	13
11	75	FRANCE	12	5	18	27	21	20	17	10	20	18	14	13	18
12	75	NORWAY	19	19	4	19	30	1	3	15	12	6	2	3	3
13	74	SOUTH KOREA	5	22	6	11	13	19	12	20	8	26	19	21	19
14	73	NETHERLANDS	14	6	19	13	26	10	23	5	10	16	8	9	15
15	70	THAILAND	4	26	13	10	2	29	8	22	22	14	28	17	14
16	65	IRELAND	26	24	8	3	22	15	24	14	6	21	6	10	10
17	64	SINGAPORE	28	17	1	5	11	17	29	4	17	22	7	25	29
18	63	SOUTH AFRICA	3	30	20	26	14	29	13	8	30	10	26	28	28
19	62	MALAYSIA	13	25	14	13	7	26	22	19	26	3	25	14	7
20	60	JAPAN	27	10	16	30	20	8	25	30	3	27	12	2	17
21	59	SPAIN	24	9	22	21	17	24	14	11	10	25	18	7	20
22	58	POLAND	20	15	24	6	10	13	18	7	21	24	21	23	25
23	56	AUSTRALIA	29	16	12	21	28	6	21	21	5	2	4	16	6
24	55	RUSSIA	2	8	27	8	6	26	27	24	4	5	22	27	5
25	54	CZECH REP.	25	19	25	6	12	7	19	6	24	12	20	8	27
26	51	CHINA	9	12	26	13	5	18	11	25	27	13	27	20	22
27	49	MEXICO	21	23	23	21	3	25	16	27	14	9	24	18	16
28	31	INDONESIA	17	28	29	13	1	28	5	26	29	4	29	19	12
29	31	INDIA	21	18	30	28	4	13	6	28	28	28	30	29	26
30	26	BRAZIL	30	13	28	25	9	23	2	17	25	19	23	30	4

COUNTRY HIGHLIGHTS: EMEA

With the majority of data centre applications being for storage with reduced latency demands, the argument is that, subject to regulatory controls, the data centre can technically go anywhere.

ECONOMY. There is no doubt that with the continuing economic crisis, Europe has failed to see the recovery in business investment and sentiment that we initially aspired to post the 2008 crash. The current problems in the Eurozone are not going to be resolved overnight. GDP growth will remain subdued and capital for investment constrained. Measures to create stability will be long running and the effect on businesses is difficult to predict.

MARKET OVERVIEW. Indications are that the data centre community is returning collectively to a positive place, evidenced by the continued investment by established data centre providers in key economic centres, the rise of new players seeking to take local market share and the quiet return of real occupier demand.

The bottom line is that companies will still need to continue to invest in IT to enhance internal systems and remain competitive in their market place. New technology, the exponential increase in data and device adoption rates mean only one thing – we need more data centres and the EMEA region remains well positioned to take advantage of that.

CUSTOMER EXPECTATIONS. What remains clear is that companies seeking to establish larger data centre operations in EMEA need to plan in advance, understand their deployment methodology and exercise patience and due diligence. With capital constraints affecting business, off-the-shelf data centres will remain in limited supply for the foreseeable future. Wholesale operations can take a minimum of 18 months to get fully operational. This is sometimes in direct conflict with customer demand, driven primarily from the US, setting out with the expectations that they will be operational in shorter time frames.

DEPOLARISATION. A key trend that is developing momentum is the de-polarisation of the data centre market within the wider region. The traditional base of data centres has been the key economic centres such as London and Amsterdam, but with the majority of data centre applications being for storage with reduced latency demands, the argument is that, subject to regulatory controls, the data centre can technically go anywhere. As a consequence, in the wholesale market, we are seeing a steady but sustained growth in data centre developments and success stories in what were once considered emerging markets, such as the Nordics and Eastern Europe. These aspiring locations can bring different advantages to the table, however at this juncture they are merely going to dilute the market share because from a latency argument perspective, they are not going to compete in the near to medium term against the established centres.

SUSTAINABILITY. Sustainability and the green agenda continue to grow in importance amongst corporate and financial institutions which means that data centres must, and are, reacting. A number of colocation providers have announced they are purchasing 100% renewable energy and carbon neutrality. Yet the availability of renewable energy at an affordable cost will become more of a challenge - as a result the Scandinavian countries have become an increasingly attractive prospect. The colder climate allows improved free cooling or at worst reduced mechanical cooling and with access to almost limitless supplies of hydro power or alternative renewable energy at comparatively inexpensive rates, the Nordics have become an increasingly attractive prospect. Two of the biggest internet giants, Facebook and Google, have led the way after having decided to construct substantial new data centres in Sweden and Finland respectively.

REDUCING OPERATIONAL COSTS. The sustainability argument in turn marries well with the priority for businesses to reduce operational costs, the largest variable exposure being to power pricing, which continues to follow an upward trend. By definition, customers are focussed on ensuring their equipment is operating at the optimum level as opposed to just taking more space and power on an ad hoc basis as demand increases. This promotes the debate between high density versus low-density solutions and in turn, what is then the most appropriate data centre to deploy operations based on platforms employed and predicted future need. Not an easy challenge.

CONCLUSION. There is no doubting that with the continued development of IT products, cloud computing, corporate outsourcing and the sheer exponential creation of data, that the demand for data centres and their services will continue to grow in the EMEA region. The site opportunities, expertise and enthusiasm exist in the region to create the data centres of the future. What is patently clear is that the traditional core markets are no longer the one stop shop they used to be and EMEA data centre operators and landlords are competing within the European continent to secure the occupier and their increasingly aggressive demands around pricing, operational specifications and sustainability.

For the foreseeable future we are therefore of the opinion that the retail colocation market will continue to see phased and targeted investment by the main players in the traditional markets, controlling the supply of fully-fitted data centres and, to a certain extent, pricing. Conversely the wholesale market will continue to be customer-driven, aggressively competed for and relying, in part, on pre-let deals to secure the capital necessary to build sites. Speculative builds will remain the exception, but those well-capitalised developers/ operators that do so will remain ahead of the competition and be better prepared to protect, and secure a greater portion of, the market share.

CZECH REPUBLIC (Ranked 25th)

The country is politically stable, has low levels of taxation and is at little risk of natural disasters. However in terms of the three tier 1 risk factors - power pricing, international bandwidth and ease of doing business, the Czech Republic scores less well, resulting in a low table position.

FINLAND (Ranked 9th)

Finland performs well, it is at lowest risk of natural disasters and considered politically stable. However it does have the lowest score for energy security given its high reliance on energy imports from Russia. Labour costs are high and bandwidth capacity like Norway is relatively low.

FRANCE (Ranked 11th)

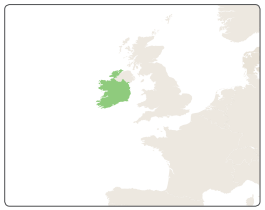
Although an established data centre location with high connectivity France ranks outside of the top ten because of its low score for ease of doing business, high taxation and labour costs and high levels of industrial action and political instability.

GERMANY (Ranked 3rd)

A major world economy and a major data centre hub. Taxation and labour costs are high but the third place ranking stems from its high internet bandwidth capacity, low rate of inflation and a stable political system. However its ease of doing business ranking has fallen in the last 12 months according to the World Bank.

ICELAND (Ranked 4th)

The highest ranked Nordic country receives the highest scores for sustainability and water availability. Natural disasters, political instability and a lack of bandwidth capacity are the only high risk factors. Connectivity should be greatly improved when the new 100 Gbps undersea cable connecting the US, Canada, UK and Iceland is completed.



IRELAND (Ranked 16th)

Home to a number of data centres and benefiting from low corporation tax, ease of doing business, high GDP per capita and high levels of education. Cost of labour and energy is relatively high and connectivity capacity is low compared to the rest of the table. Additionally Ireland falls into the bottom half of the table for energy security and sustainability.

NETHERLANDS (Ranked 14th)

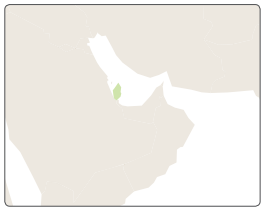
Considered the connectivity gateway to mainland Europe. It is low risk from a natural disaster point of view and is politically stable but appears low in the ranking due to high labour costs and has a low ease of doing business score relative to the countries in the Index.

NORWAY (Ranked 12th)

Considered to be the most politically stable of all the countries reviewed, Norway has high availability of natural resources and high amount of energy produced from renewable sources. Its mid table placing is a result of having the highest cost of labour in the Index and relatively low connectivity.

POLAND (Ranked 22nd)

Despite the low level of corporation taxation, cost of labour and the low risk of natural disaster the country performs relatively poorly in the Index due to high cost of energy and the low ranking for ease of doing business.

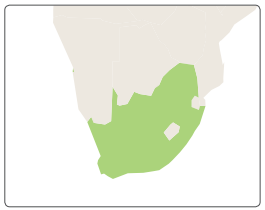


QATAR (Ranked 6th)

The high ranking is predominantly due to the very low cost of power, the lowest of all the countries in the Index. It also ranked number one for GDP per capita and is at low risk of natural disasters, energy security and has a low corporation tax. These advantages are somewhat offset by the poor international bandwidth and sustainability scores.

RUSSIA (Ranked 24th)

Given its abundance of water and energy reserves, energy security and power pricing are deemed to be low risk. In respect of ease of doing business it scores very low, coupled with the risk of political instability and the high rate of inflation Russia remains towards the bottom of the table.



SOUTH AFRICA (Ranked 18th)

Having low cost power is entirely offset by having the lowest capacity for internet bandwidth of all its peers. It also has poor levels of water resources, high corporate taxation and a high rate of inflation. Accordingly South Africa sits within the mid to bottom half of the table.

SPAIN (Ranked 21st)

Although an established data centre location with good international internet bandwidth, the poor state of the economy, high political instability and high energy costs have meant that Spain falls within the bottom section of the Index.

SWEDEN (Ranked 8th)

Sweden performs relatively well in all categories with the exception of labour costs and taxation. It performs particularly well in sustainability owing to the high percentage of energy coming from renewable resources. It is also considered to be at very low risk of natural disasters and political instability.

SWITZERLAND (Ranked 10th)

With the lowest rates of inflation and corporation tax, Switzerland ranks in 10th place in the Index. Labour costs are high but for all other risk factors including the tier 1 risks, the results are mid table.

UK (Ranked 2nd)

The position of the UK in the Index is predominantly due to the high international internet bandwidth capacity and the good score for ease of doing business. It performs relatively poorly in terms of sustainability and energy security given the very low percentage of energy from renewable resources and the heavy reliance on imported fossil fuels.

COUNTRY HIGHLIGHTS: APAC

Although Japan's economy is recovering from the earthquake and tsunami disasters from 2011, sizable data centre demand in Japan has been redirected to Singapore and Hong Kong.

ECONOMY. While the western economies have suffered, Asia as a region has remained dynamic. Of course individual economies remain exposed to the international arena and have their own unique pressures but on the flip side, domestic growth and investment by local governments overall remains fundamentally strong - this is good news for the technology world, and by definition the provision of data centres and its associated products and services. The outlook is one of continued sound fundamentals for the foreseeable future.

MARKET OVERVIEW. With Asia the engine of global growth, naturally we have seen attention turn to the region, with western companies seeking to invest and take a share of the opportunity. The established players have had a good run but they are seeing the competition become more aggressive.

The great dichotomy is access to markets. Australia has seen a significant increase in data centre projects and new entrants, fuelled in part by government investment; Singapore has a hub status and while it takes significant time to secure and make operational a site, evidence suggests it takes less time to fill it. Conversely, India and China remain a challenge on a number of fronts, some of which we address further. If these can be surmounted by data centre providers and owner occupiers then the future should be bright.

RECENT TRENDS. THE TOP MARKETS. The most established markets in Asia include Australia, Hong Kong, Japan and Singapore. Unsurprisingly each of these markets are among the top ten financial centres in the world. Tokyo is currently the largest data centre market in Asia because of its large domestic market. Although Japan's economy is recovering from the earthquake and tsunami disasters from 2011, sizable data centre demand in Japan has been redirected to Singapore and Hong Kong. Both are considered connectivity gateways. Demand in Singapore is mostly from network providers, cloud and IT providers, but financial and enterprise businesses are growing sectors. Hong Kong demand is driven by telecom, content and financial and a growing sector includes increasing demand from China content providers and disaster recovery from Japan. Longer term, China could be attractive for mega data centres because of the ambient cooling in North China but also has limited choices as a result of strict regulations and other barriers to investment.

QUALITY ISSUES. The mature markets, such as Hong Kong, Singapore, Sydney and Tokyo, continue to provide the seamless service international and sophisticated occupiers expect, the data centres being specified and managed to the highest standards. On the other hand, we see clients being consistently concerned in the emerging markets over infrastructure designs, technical ability and management expertise.

This observation, at face value, may seem unfair because we know that these markets are striving to achieve the very best standards, but there remains some way to go. On a positive note, this represents one of the single biggest opportunities to data centre developers and operators in less developed markets. To bridge this gap, we see real potential for more partnerships between local and international parties promoting the cross-pollination of local challenges and best in class practice to allow international players access to new, cheaper power supplies and market demand.

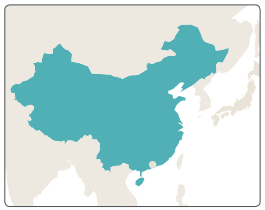
UNTAPPED MARKETS. IT adoption rates continue to rise and with Asia holding the largest populations on our planet, the region, for some, is a potential holy grail. China is seeking to connect hundreds of million of people to the internet under its latest five year plan. The potential numbers having access to the modern ways of working and social networking will create an increase in demand for data centre products and services. The barriers to entry remain the challenge for international companies but we anticipate that over time, these will be eased or managed through determined and collective partnerships and pressure from the populace.

CONCLUSION. It is no surprise that sentiments are in some ways similar to EMEA – the demand is there driven by factors such as data creation and IT adoption rates. However, the major difference is that Asia is currently, and will remain in the immediate future, the global growth engine and presents substantial opportunities for local and international investors and providers alike.

There is also no doubt that over time the emerging markets will be able to support this growth – the question is speed and whether it can keep up with the projected demand and grasping the opportunity to support the international markets with financially efficient products. That ability to move with pace will, we believe, be founded on the willingness for local and international parties to embrace partnerships of mutual benefit; partnerships that will understand and mitigate risks to operations, respect culture and raise the bar in operational excellence - by definition this will encourage further inward investment to satisfy the growth patterns. Conversely, patience will also need to be exercised, but the rewards may well be worth waiting for.

AUSTRALIA (Ranked 23rd)

The cost of electricity in some parts of Australia has increased by four times the rate of inflation over the last five years. The government is also planning a carbon tax in June 2012 that will have the effect of increasing the costs further still. In addition to power costs, labour costs are also high and the country suffers from a lack of international bandwidth.

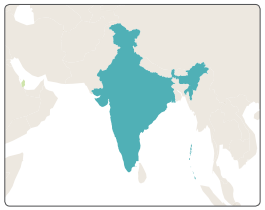


CHINA (Ranked 26th)

The government is investing heavily in the country's infrastructure which will dramatically increase bandwidth capacity. Obtaining licences to operate is difficult and most seek to partner with local businesses; this barrier to entry is reflected in its poor ease of doing business score. It remains a rising location and is set to grow exponentially in the next few years.

HONG KONG (Ranked 7th)

The telecommunication infrastructure is one of the worlds most sophisticated. It remains a generally low risk location but has poor sustainability and energy security scores given the country's heavy reliance on fossil fuel imports. It is the highest ranked Asian country in the index.



INDIA (Ranked 29th)

The data centre market is due to rapidly grow over the next 5 years. However power security remains a significant risk stemming from the lack of diversity of energy imports and increasing reliance on imported oil. Barriers to entry such as foreign ownership restrictions mean that India has the lowest ease of doing business score and is the highest risk country in the APAC region.

INDONESIA (Ranked 28th)

The cost of labour in Indonesia is the lowest of all the countries in the Index, and whilst the energy supply is secure and the costs relatively competitive on the international scale, ease of doing business, connectivity and the rate of inflation are considered high risk which had a detrimental effect on its ranking.

JAPAN (Ranked 20th)

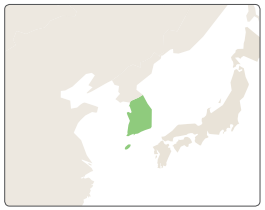
The data centre market is in direct competition with Hong Kong and Singapore. The international bandwidth of the country is good and it also scores highly in tertiary education. Natural disasters, high taxation and poor energy security negatively affect its position in the table.

MALAYSIA (Ranked 19th)

The key metrics that negatively impact the country's ranking relate to the high risk associated with political instability, the relatively poor international internet bandwidth and the low percentage of the population having completed tertiary education. However the country has good energy security and low cost of power compared to other APAC countries in the Index.

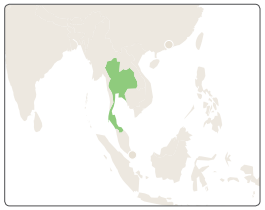
SINGAPORE (Ranked 17th)

Despite being ranked in first place for ease of business, being considered low risk from natural disaster and with low corporation tax rates, the high rate of inflation and cost of energy, and the poor scores in sustainability and water availability reduce Singapore to a mid-table position. However, the ranking should not distract from the fact that it remains a key hub location for APAC.



SOUTH KOREA (Ranked 13th)

Energy costs are low but the country is deemed to be at high risk from natural disasters such as floods and typhoons, political instability and energy security. South Korea has been on a drive to make its economy knowledge based, and is potentially a growth market for data centres.



THAILAND (Ranked 15th)

The cost of power is the lowest in the APAC region, however internet bandwidth is relatively poor and there is a high risk of political instability which has the effect of lowering the positioning of Thailand to a middle placing in the Index.

COUNTRY HIGHLIGHTS: AMERICAS

Cloud services are growing rapidly and this eventually will lead to Cloud becoming a more widely-trusted option. It took ten years for data outsourcing to become acceptable to the masses and by comparison the cloud is still in its infancy.

ECONOMY. The US economy is showing signs of steady improvement and appears poised for moderate acceleration in the second half of 2012. While not as severe as the fiscal issues in Europe, the US still faces significant government debt challenges that will contribute to lingering uncertainty and constrain growth. Canada has remained resilient throughout the global economic turmoil as evidenced by its stable banking, strong customer spending and solid economic outlook making it a sought after location for foreign investors seeking safety and growth. Further south, regional growth will be led by Brazil and Mexico, where favourable monetary and fiscal policies being put in place will stimulate stronger demand in the second half of 2012.

MARKET OVERVIEW. The third party providers (wholesale, colocation, managed services and cloud) were very active in the US data centre market during 2010 and 2011 which could create an oversupply of space in the tier 1 data centre locations namely: NYC Metro, Boston, Northern Virginia, Atlanta, Chicago, Dallas, Phoenix, Los Angeles, San Francisco and Seattle. This will continue to put pressure on prices and in efforts to increase profit margins and capture more business the providers will be looking to encroach on each other's markets by expanding their service offerings. The established Tier 1 locations in the US have a very high concentration of operators and facilities and as a result, some of the larger providers are opening new locations or acquiring smaller providers to grow their platform in cities such as Portland, San Diego, Denver, Houston, and Miami.

The tier I markets in Canada are considered to be the Greater Toronto Area (GTA), which makes up the majority of the Canadian market, followed by Montreal, Calgary and Vancouver. Demand has been strong in these major markets for some time and has continued to outstrip supply. Many of the key data centres do have expansion capacity to provide future white space and there are a number of projects in the planning stage, however, the market as a whole remains undersupplied.

The market in Brazil is growing on the back of the demand from IT outsourcing which is increasingly common place. Demand for software and hardware platforms to support the growing economy and the significant injection of capital into network infrastructure from third party providers in the last few years has had a transforming effect on the data centre market.

OUTSOURCING & THE CLOUD. The growth of third party data centres over the past two years has put the topic of outsourcing for corporate entities at the top of the list for CFO's and CEO's to consider. Outsourcing a corporate data centre is now a trusted solution and is becoming an official paradigm shift. Corporations are also beginning to utilise data centres in a different way by splitting the different applications and software between various third party data centres, this can potentially offer users better security, redundancy and scalable power and cooling.

Cloud services are beginning to pick up speed and is acceptable in some industries over others. It will continue to expand its applications and security to broaden its use which will increase its popularity and over time, the trust for its service. Cloud services are growing rapidly and this eventually will lead to Cloud becoming a more widely-trusted option. It took ten years for data outsourcing to become acceptable to the masses and by comparison the cloud is still in its infancy.

OPTIMISATION. There will be a renewed emphasis on reducing operational costs in the face of increasing demand and sharply rising energy prices. Most corporations are focusing efforts on lowering existing data centre overheads, consolidating space, improving efficiencies and replacing antiquated equipment. Emerging sustainability practices focus on reducing electricity consumption and on technologies that utilise less mechanical cooling, such as free cooling; improved architectural design and new innovative cooling solutions. Along with these technologies, efficiency enhancing software solutions such as server virtualisation and hardware solutions such as flexible high and low density designs have the potential to optimize power and cooling capacities in existing facilities to accommodate future demand.

CONCLUSION. In the US the fundamentals are strong for data centre markets over the next three to five years. Tier 1 markets although highly concentrated have a healthy amount of vacant space and the competition amongst third party providers will create a dynamic market making outsourcing an even more compelling case as the operators look to grow their business by offering new services and expanding into new locations.

In Canada the future of the data centre market also looks promising as the country offers a solid foundation to investors and users from both financial and physical perspectives. Canada's position will be further strengthened as additional development responds to demand and the supply of facilities is increased. It is expected that the data centre real estate market in Canada will accelerate as more investment and development is attracted from the United States and Europe. The data centre market in Central South America, particularly Brazil is likely to continue to enjoy growth in line with the rapid expansion of their economies and will create pockets of increasingly important data centre locations.

BRAZIL (Ranked 30th)

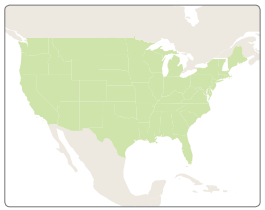
The poor performance in the Index is explained by the high price of electricity and poor score for ease of doing business. There is also a high rate of inflation and taxation. However Brazil does perform very well in the sustainability category with over 85% of domestically produced energy coming from renewable sources and the high availability of water.

CANADA (Ranked 5th)

Last year's second ranked country, is now classified as at greater risk of storm surges and floods. Costs of labour and taxation are also high but Canada performs well in all other risk categories. However given that it is a well established data centre location it only has the 10th highest bandwidth capacity in the Index.

MEXICO (Ranked 27th)

Newly added to the 2012 Index, Mexico performs poorly in the three most heavily weighted risk factors – cost of power, connectivity and ease of doing business. It is also considered a risky location in terms of political instability and risk of natural disaster.



US (Ranked 1st)

It is unsurprising that the most mature data centre market is also the lowest risk location maintaining its position from last year. It has the highest internet bandwidth capacity of all the countries included in the Index, a relatively low average cost of electricity and of the countries included is the third easiest place to conduct business. The most significant risk to data centres is from natural disasters.

CONTACTS: hurleypalmerflatt

For 40 years hurleypalmerflatt has successfully delivered mechanical and electrical engineering consultancy and associated services that bring buildings to life. We provide a multi-disciplinary engineering consultancy service. We have become trusted advisors to many global organisations, given our expertise in data centre engineering and energy and sustainability.

Our clients receive totally integrated engineering solutions from over 350 specialists in building services engineering, energy and sustainability, building structures and surveying and IT consultancy.

Headquartered in London we have offices in New York, Singapore, Bangalore, Sydney, UAE as well as Leeds and Glasgow in the UK. From this global position we are able to deliver excellence in data centre environments wherever our clients choose to locate.

A pursuit of excellence is at the heart of everything we do. We continuously train our staff to enable them to attain the technical, management and creative expertise at the leading edge of engineering.

Our vision is to deliver world class sustainable solutions for the built environment.

Our mission at hurleypalmerflatt is to be clear leaders in the mission critical engineering market for global corporate organisations, be thought leaders in both energy and sustainability and be recognised to deliver the highest standards in engineering design.

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Cushman & Wakefield is the world's largest privately-held commercial real estate services firm. Founded in 1917, it has 235 offices in 60 countries and more than 14,000 employees. The firm represents a diverse customer base ranging from small businesses to Fortune 500 companies.

THE DATA CENTRE ADVISORY GROUP. The Cushman & Wakefield Data Centre Advisory Group (DCAG) provides strategic advice and real estate services for technical space and data centres to occupiers, landlords, investors and operators.

The multi disciplined team advises clients of all sizes and industries, providing services such as:

• Strategic Advice: to align clients' business goals with their technical real estate assets

• Acquisitions & Site Selection: supporting clients' requirements for acquiring colocation or wholesale space, existing facilities or developing new.

• Lease Negotiations & Tenant Representation: providing services for renewals, regears, relocations and subleasing

• Valuation: undertaking valuations and due diligence reporting for loan security, portfolios, going concerns and M&A

• Project Management: the C&W team has a proven track record of reducing costs and improving efficiencies

• Facilities management:C&W manages more than twenty million square feet of technology space and nine million square feet of raised-floor data centres

• Ancillary Services: The DCAG works in partnership with various complimentary consultants to provide a co-ordinated, holistic and seamless approach to any project allowing the team to incorporate services such as:

i. M&E Design and Engineering
ii. Architects
iii. Cost Consulting
iv. Power and Connectivity
v. Security
vi. Legal Services

EXPERIENCE AND RESOURCES. DCAG has a strong track record of working with data centre occupiers, owners and investors globally. Harnessing the C&W network of offices the DCAG teams work alongside our experienced in-country local teams. Using our collective knowledge, and relationships to leverage and optimise negotiations, we deliver a true value adding service. The DCAG teams in EMEA, Americas and Asia are fully integrated enabling us to provide our clients with multinational requirements, true global coverage.

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