



The Arcadis Data Center Location Index 2021 **Philippines Spotlight**

Introduction

Asia-Pacific is very well represented in the Data Center Location Index. 13 Asian markets made the list and nine of them are in the top half, with strong performances by Singapore, Japan, Taiwan, and Hong Kong. Asia-Pacific is amongst the fastest growing regions of the global economy but there are large differences between markets in terms of GDP per capita and energy security. Historically a destination for major IT outsourcing projects, Asia has increasingly become a leader across many cutting-edge industries. A significant share of the largest technology companies is now based in China, not surprising given the size of the market and its highly skilled workforce. In addition to domestic providers, Asia-Pacific is undergoing significant data center growth driven by large-scale international cloud providers, as they expand aggressively across the major hubs in the region.

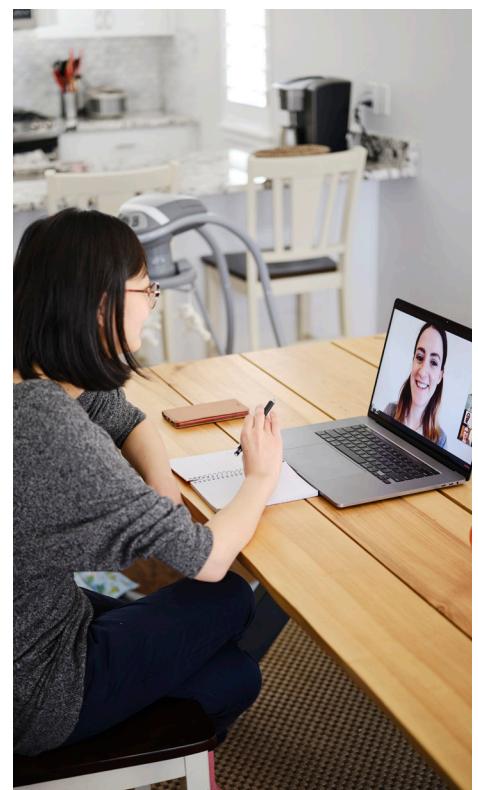
Philippines on the Precipice of Growth

The Philippines is one of the targeted Data Center growth locations by several investors and major cloud service providers in 2021 and beyond. The demand for data storage and computing in the country has been driven mostly by the BPO and online gaming industries, among others. And more recently, it has been accelerated by remote working, distance learning, online streaming, e-commerce, and a surge in digital payments due to the extensive COVID-19 lockdown periods in the country.

Ranking 49 on the index, the Philippine data center market has yet to realize its full potential compared to its neighboring countries.

Power supply capacity and availability, and price of electricity, as well as telco and network limitations remain to be the main challenges faced by this sector. Several initiatives are being undertaken by the government such as driving infrastructure improvement and welcoming foreign investments that could change the data center market in the Philippines. A new government department was created in 2016, called Department of Information and Communications Technology (DICT) to be the enabler, innovator, and leader in pushing the country's development and transition towards a world-class digital economy. Local telecommunication companies are also constructing new undersea cables and landing stations and boosting the internet and data services that it provides to its customers to support the increasing shift to digital services.

To help realize the country's growth potential in this area, it is also important to promote green energy electrical generating plant, drive further investment and ensure



flexible electricity rates. Providing data center-related training to mid-skill workers could also help the Philippines become an attractive market for investors looking to build data centers. In addition, edge Data Centers at local and remote areas can also be utilized to strengthen the networks and latency improvement.



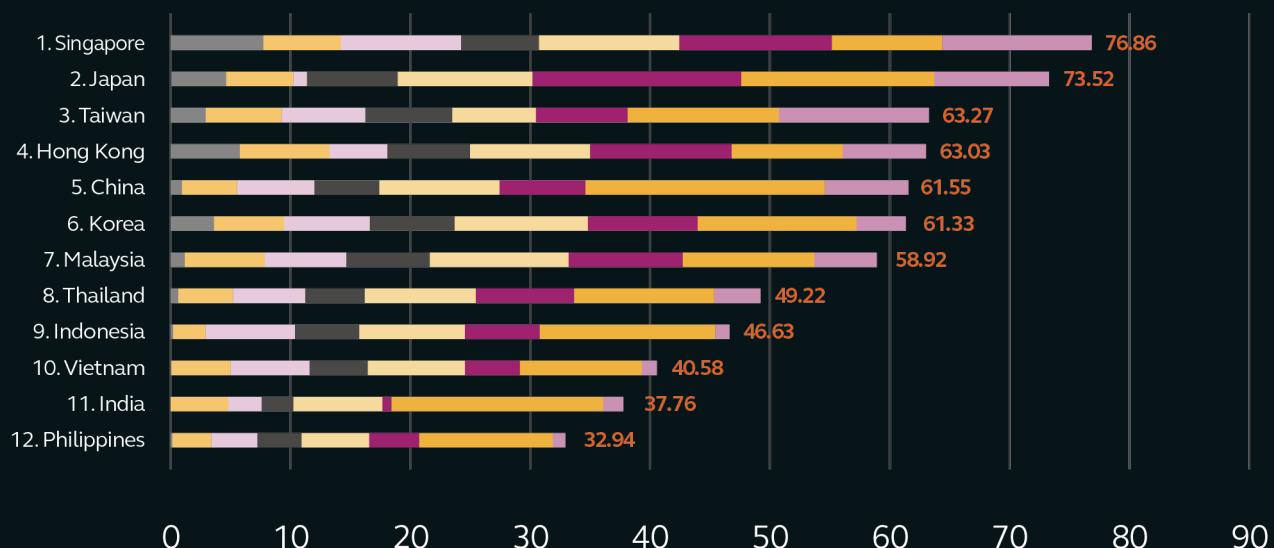
Looking Forward

Artificial intelligence, cloud computing, and 5G is deemed as the building blocks of the Philippines post-pandemic economic recovery, and data centers play an integral role in the facilitation of these areas.

Coupled with the country's growing digital economy resulting from the pandemic, the need to connect, transfer, protect and store data has never been much greater. In this dynamic sector, timing is always critical. Whether it is providing best practices or driving cost and energy-efficient data centers, Arcadis can come in and help clients make the best decisions in real-time.



Asia Data Center Location Index 2021



*Weighting

Supply

- GDP per Capita (Normalized) *0.2
- Dealing with construction permits (Normalized) *0.15
- Price of electricity (Normalized and inverted) *0.2
- Energy Security (Normalized) *0.2
- Global Cybersecurity (Normalized) *0.25

Demand

- Mobile-broadband subscriptions per 100 pop (Normalized) *0.35
- Domestic Market Size (Normalized) *0.4
- Mean download speed (Normalized) *0.25

(For the Index full version, please refer to the Global Report - The Arcadis Data Center Location Index 2021)

At Arcadis, we leverage our global capabilities and deep knowledge of local markets to help our clients optimize location decisions against operating costs, resilience, environmental impact, government incentives or any of the wide range of issues that a client might choose. We support data center operators with the extensive stakeholder engagement efforts associated with gaining the community buy-in that is often needed to build a large structure of any type, especially ones that use so much energy.

The Arcadis Data Center Location Index provides an indicative ranking of suitability for data center investment, based on the aggregation of eight data sets for 50 markets across the Americas, Asia Pacific, Europe, and the Middle East. These markets are ranked based on their performance across five supply-side and three demand-side criteria.

Supply-side indicators



GDP per Capita



Dealing with construction permits



Price of electricity



Energy security



Global cybersecurity

Demand-side indicators



Mobile-broadband subscriptions



Domestic market size



Mean download speed

Factors Influencing City Rankings

Finding the best location for a new data center is a critical part of how companies can maximize the performance of their investment in a new facility.

There are multiple factors to analyze when deciding where to place a new data center. Companies should consider both the supply and demand-side forces at play in the relevant markets. At a high level, this means that in each market under consideration, the company must develop a comprehensive understanding of the support in place for building and operating data centers, as well as the demand for services underpinned by data. This is no simple task.

We developed the Arcadis Data Center Location Index for companies that are considering where in the world they should build their next data center. The Index can serve to validate or call into question initial discussions about the optimal location for a new facility. We examined 50 national markets, a mix of established and emerging economies, and ranked them based on their performance across eight key criteria, that include both supply and demand-side factors.



The Arcadis Data Center Construction Roadmap

At a macro level, data center operators travel through five steps on the road, from deciding to build a new data center to reaping the benefits of that investment.

At each step, Arcadis offers services and solutions for clients that maximize the performance of their investment. We partner with clients throughout the entire journey and help them avoid the pitfalls of hidden costs, delays in acquiring permits or construction, and by designing and delivering sustainability and resilience features that will protect their investment over the longer-term.



STEP 1

Location

The first step is deciding where to place the proposed new data center. This is where companies need to understand countries' markets as well as regional differences within countries in terms of the availability and reliability of electricity, the status and availability of fiber optic networks, the regulatory and permitting regime, and many other factors. Ultimately, this includes the consideration of individual sites, where the data center can be constructed.

Savvy due diligence conducted at this stage is essential in terms of making informed decisions that can maximize return on investment across the entire journey.



STEP 2

Planning

Once a data center operator has decided where to place the new facility, they enter the planning phase. At this point they must decide how, and on what time schedule, they will design the new facility, secure all of the necessary permits and permissions, engage with a multitude of suppliers and service providers, have the facility built and outfitted and begin operating the data center. During this stage, companies will have to decide on the basic parameters of the new data center: roughly how large it should be, based on the desired use and other business objectives. It is important to note that this stage is also critical in terms of designing the long-term sustainability and resilience of the new data center. This is where companies can make decisions that can reduce the embodied carbon of the new building and outfit the asset with sustainability features that can greatly reduce the amount of embedded carbon as well as energy that will be used over the life of the facility.

It is critically important data center operators maintain highly competent due diligence efforts throughout this phase to help avoid unforeseen costs or delays in the ensuing steps. This is also the stage at which project, cost management and long-lead item procurement efforts work together in unison.



STEP 3

Permitting

Every jurisdiction in the world has its own unique regulatory regime, which dictates myriad aspects of the design, construction, and operation of any type of building, including data centers.

During the permitting phase, data center operators settle on the detailed design of the proposed, new facility. Based on that design, companies then have to secure all of the necessary permits and other permissions needed to actually build the data center and switch it on.

Sustainable and resilient design of the building(s) can significantly enhance the value of the asset(s) and greatly reduce negative impacts on the environment and the communities near a site. Good design, project management and cost management expertise can help companies better navigate their way through this phase.



STEP 4

Construction and delivery

The construction and delivery of the new facilities is undoubtedly the most critical step of this process. Deficiencies in due diligence or the earlier stages of project and cost management, all too often, become evident during the build. Add to that the fact that construction cost overruns and delays in delivery are not just frequent, in some places, they are the norm. Whether it's 1 or 2% more expensive than planned or 10 to 20%, every unexpected cost or delay in this stage decreases return on investment in the facility. In other words, the difference between a successful project to build a new data center and a really successful one, is how well the operator can pull off the build and get things up and running as quickly and smoothly as possible, through clarity, strong management, and cooperation throughout the supply chain.

This is where data center operators can reap the full benefits of skillful project and cost management services.



STEP 5

Operations

After the facilities have been built, the networking and storage equipment is installed, it's connected to the fiber optic network, and the new data center is brought online. Operators will need to ensure energy supply and maintain back-up generators as a last resort. They will also run and service the cooling systems and arrange for the upkeep and maintenance of the building.

Sustainability and resilience features (designed into the plan earlier on and delivered during the build phase) can generate tremendous savings over the long-term. They allow data center operators to reduce or supplement energy consumption from the grid or harden the building against shocks like storms and flooding.

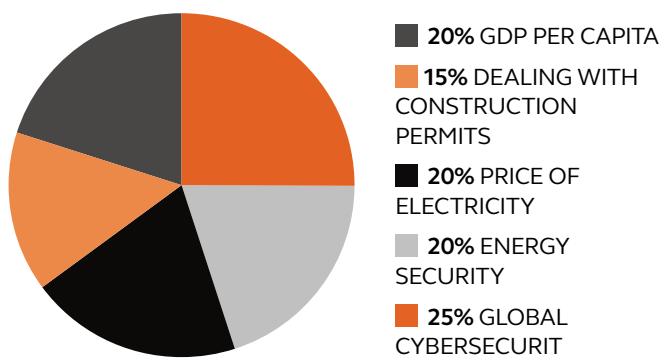
Smart analytics solutions can help operators optimize their maintenance schedules to prevent breakdowns and diminished asset performance from delays in discovering faulty equipment or infrastructure.

Methodology

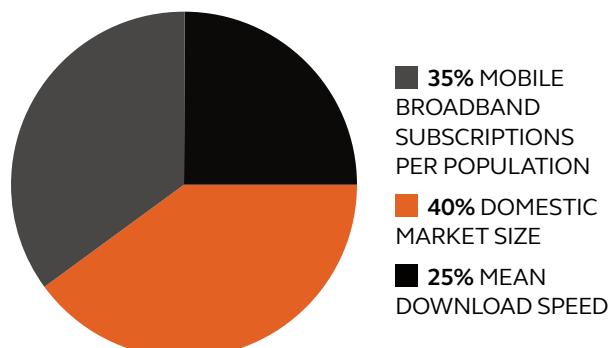
The index ranks 50 of the world's key established and emerging markets based on their performance across eight criteria: GDP per capita, dealing with construction permits, price of electricity, energy security, cybersecurity, domestic market size, the number of mobile broadband subscriptions and mean download speed. The final index value is a sum of weighted scores which have been collated from publicly available sources. Scores for each of the eight metrics are normalized on a scale of 0 to 100 using World Bank methodology. This ensures that the very large differences in scale and performance highlighted by our data are reflected in the overall assessment. All markets are ranked on a scale of 0 to 100 in a way that ensures that distance between two markets in the underlying data is scaled proportionally and remains consistent across all 50 markets.

Using the above-mentioned criteria, we have created one ranking for the supply criteria and one for the demand criteria and then combined those with equal weighting (50/50).

Within the supply side, we have used the following weighting:



Within the demand side, we have used the following weighting:



Criteria description and source of data

GDP per capita

Indicator used to analyze the prosperity of a country and its economic growth. It is a useful unit to make cross-country comparisons of average living standards and economic wellbeing.

Source: *World Bank*

Cybersecurity

Measures the commitment of countries to cybersecurity at a global level.

Source: *The International Telecommunication Union*

Domestic market size

Sum of gross domestic product plus value of imports of goods and services, minus value of exports of goods and services.

Source: *The World Economic Forum Global Competitive Index*

Mobile-broadband subscriptions

Number of active mobile-broadband subscriptions per 100 population in leading online markets.

Source: *The World Economic Forum Global Competitiveness Report*

Price of electricity

The average price of electricity for warehouse use in each country is measured in US cents per kilowatt-hour.

Source: *World Bank*

Energy security

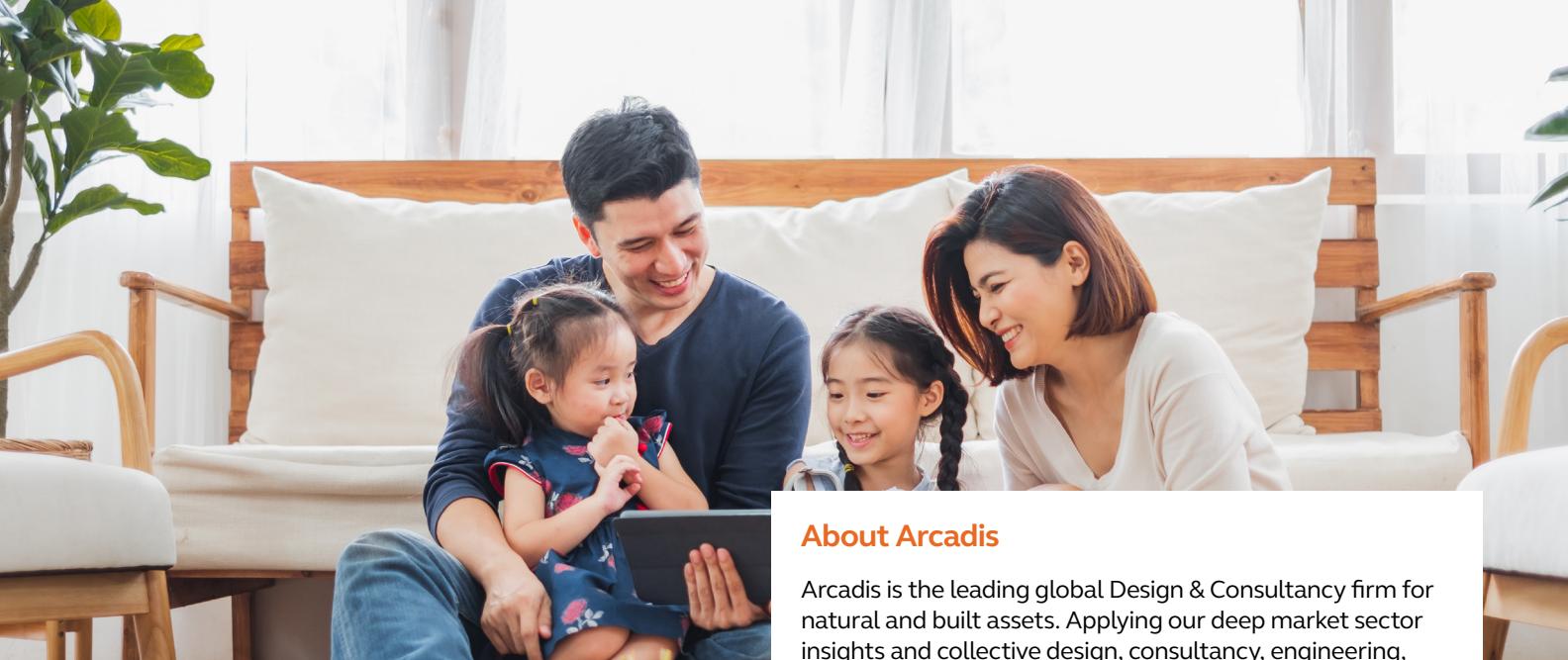
The energy trilemma score scores countries on their ability to provide sustainable energy through three dimensions: energy security, energy equity (accessibility and affordability), environmental sustainability.

Source: *World Energy Council*

Mean download speed

Mean download speed is based on the download speed of at least 50% of customers at peak time.

Source: *cable.co.uk*



Disclaimer

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Arcadis is the leading global Design & Consultancy firm for natural and built assets. Applying our deep market sector insights and collective design, consultancy, engineering, project and management services we work in partnership with our clients to deliver exceptional and sustainable outcomes throughout the lifecycle of their natural and built assets. We are 27,000 people, active in over 70 countries that generate €3.3 billion in revenues. We support UN-Habitat with knowledge and expertise to improve the quality of life in rapidly growing cities around the world.

www.arcadis.com/asia

Meet our Experts



Min Thura Aung

Associate Director & Head of Mission Critical & Energy
Arcadis Asia
E minthura.aung@arcadis.com



Darneil Perez

Executive Director & Market Head Philippines
E darneil.perez@arcadis.com

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凯谛思Arcadis



Arcadis-Asia



@ArcadisAS



ArcadisAsia