Performance of ASEAN Cities in the 2022 Digital Cities Index

The Digital Cities Index (DCI) looks into the extent of digitalization in and application of various digital technologies to help better serve residents and businesses of select 30 cities worldwide. The Index was developed by policy research firm Economist Impact and supported by the Japanese telecommunications and software company NEC Corporation.

The DCI 2022 marks the inaugural ranking of these global capitals, assessed in four main categories: connectivity, services, culture, and sustainability. It covers 10 cities from Europe, four from North America, three from Latin America, one from the Middle East, and 12 from Asia-Pacific (five of which are from ASEAN member-states (AMS), or a total of 30 cities.

OVERALL RANKING. European cities Copenhagen and Amsterdam dominated the 2022 DCI garnering 81.5 and 74.6 points, respectively, out of the optimal score of 100 *(Table 1)*. Beijing is ranked third, and is the best digital city in the Asia Pacific region with a score of 73.7 pts. Cities which scored 75.1 pts. and above are considered very high performers, while those which scored between 50.1 and 75 pts. are high performers.

Table 1. Digital Cities Index Ranking, 2022

City	Region	Rank	Score
Copenhagen	Europe	1	81.5
Amsterdam	Europe	2	74.6
Beijing	Asia Pacific	3	73.7
London	Europe	=4	73.6
Seoul	Asia Pacific	=4	73.6
New York	No. America	6	73.3
Sydney	Asia Pacific	7	72.6
Singapore	*Asia Pacific*	*8*	*71.4*
Washington DC	No. America	9	71.2
Paris	Europe	10	70.2
Kuala Lumpur	*Asia Pacific*	*23*	*58.2*
Bangkok	*Asia Pacific*	*25*	*49.1*
Jakarta	*Asia Pacific*	*27*	*43.5*
Manila	*Asia Pacific*	*30*	*39.1*

Source: DCI

Manila ranked 30th, the lowest among surveyed cities worldwide with a score of 39.1, described as medium performance. The ranking of other AMS capitals included in the Index are as follows: Singapore at 8th (71.4pts), Kuala Lumpur at 23rd (58.2pts), Bangkok at 25th (49.1pts), and Jakarta at 27th (43.5pts).

THEMATIC PILLARS AND SUB-INDICATORS

Connectivity. This pillar evaluates the infrastructure necessary to digitally connect a city. It also bears the biggest weight (30%) among the four thematic pillars. It is comprised of three sub-indicators: digital infrastructure—both fixed and mobile connection; quality i.e., upload/download speed and latency; and affordability or the cost of availing broadband access. In simple terms, any resident of a digital city can "afford and reasonably connect to the Internet" *(Table 2)*.

Table 2. Connectivity Pillar Indicators: AMS Cities Index Scores, 2022

	Digital infra	Quality	Affordability
Bangkok	59	50.9	53.4
Jakarta	57	33.8	45.8
Kuala Lumpur	67.2	32.9	65.1
Manila	53.4	34.7	37.1
Singapore	78.7	77.6	92.5
Ave.	**74.5**	**43.5**	**69.3**

Note: Ave. refers to average score of all 30 cities. Source: DCI

Singapore is the most digitally connected city among the included AMS cities. Manila lagged behind with a score of 53.4 — the second lowest among all 30 cities. Meanwhile, residents of both Bangkok and Singapore enjoy faster internet speeds compared to those residing in other AMS capitals. In terms of broadband packages, Manila has the least affordable rates in the region.

Services. The second pillar refers to the efficiency and convenience experienced by the citizens, derived from digital services. It also considers the openness and interoperability between and among digital service providers. It has six indicators: e-government services for residents and businesses (Gov); digital finance (Fin);

transportation (Transpo); healthcare (Health); education (Educ); and retail and hospitality (Ret & hosp) *(Table 3)*. This pillar comprised 28% of the overall index.

TABLE 3. SERVICES PILLAR INDICATORS:
AMS CITIES INDEX SCORES, 2022

	Gov	Fin	Trans-po	Health	Educ	Ret. & hosp
Bangkok	60.4	51.1	23.1	59.5	50.0	76.7
Jakarta	56.4	51.6	76.9	42.6	0.0	15.5
Kuala Lumpur	62.5	25.1	82.1	79.4	50.0	7.0
Manila	58.2	26.0	23.1	59.5	50.0	0.0
Singapore	98.6	60.3	82.1	75.9	100	10.3
Ave.	**68.2**	**50.8**	**67.6**	**71.6**	**73.3**	**33.9**

Note: Ave. refers to average score of all 30 cities. Source: DCI

The city-state of Singapore not only topped the region but also the world, as the leader in e-government services with its mobile digital national ID card, and Singapore Personal Access (SingPass) portal used by its residents for government services. In terms of digital finance, both Kuala Lumpur and Manila fell below global average in employing digital platforms in banking and investment transactions. Notably, Jakarta achieved high performance in transportation despite its low to low-middle income status, through its adoption of journey planning and ticketing within a single app. Kuala Lumpur surpassed the rest of the AMS cities in adopting digitally-based strategies for healthcare e.g., telehealth and telemedicine, electronic health records, and pandemic-related applications. On the other hand, Jakarta is yet to take full advantage of digital technologies in teaching and learning. Lastly, Bangkok serves as a model tourism-city of the region with the implementation of TAGTHAi Pass, a digital tourism pass for both tourists and tourist-related businesses.

TABLE 4. CULTURE PILLAR INDICATORS:
AMS CITIES INDEX SCORES, 2022

	Inclusion	Gov. supp.	Eco-system	Pub. engage-ment
Bangkok	77.8	38.6	19.0	57.8
Jakarta	75.9	44.1	14.5	78.2
Kuala Lumpur	73.8	69.1	31.7	61.6
Manila	73.6	67.6	10.3	46.3
Singapore	60.8	74.3	74.0	31.5
Ave.	**69.5**	**71.7**	**49.1**	**44.9**

Note: Ave. refers to average score of all 30 cities. Source: DCI

Culture. This pillar assesses how much technology has been intertwined with the residents' lives. It also looks into the openness of the ecosystem in allowing new technologies to proliferate, as well as, safeguards in-place to protect data and privacy of the people.

Citizens of all five capitals in the region exhibit above average participation in the digital arena. Meanwhile, Bangkok lagged in setting up legal and institutional support from its government. The DCI found that innovation ecosystem, specifically artificial intelligence (AI) readiness, is closely related with the city's income level, as exhibited by Singapore. However, Singapore scored lowest among the select AMS in terms of its residents' level of comfort in sharing information online, despite its consistent high performance in most DCI indicators.

Sustainability. The fourth pillar measures how technologies are utilized for pursuing environmentally sustainable growth of the city. It has four components: efficient resource management; emissions reduction; pollution management; and adoption of circular economy *(Table 5)*.

TABLE 5. SUSTAINABILITY PILLAR INDICATORS:
AMS CITIES INDEX SCORES, 2022

	Resource mgmt	Emissions reduc	Pollu-tion	Eco-nomy
Bangkok	62.5	46.2	50.0	0.0
Jakarta	41.5	70.0	16.7	0.0
Kuala Lumpur	41.5	76.2	50.0	100.0
Manila	46.1	14.9	50.0	0.0
Singapore	75.0	60.0	66.7	38.1
Ave.	**76**	**78**	**57.8**	**48**

Note: Ave. refers to average score of all 30 cities. Source: DCI

The DCI observed that while emerging market cities like Bangkok, Jakarta, and Manila face the highest vulnerability brought about by climate change, these are the same cities which also trailed in performance for this pillar. Among the five AMS capitals, Singapore practices the most efficient management of water, electricity and waste through Internet of Things (IoT) and AI technologies. Manila ranked last in reducing emissions given its underdeveloped technologies for smart traffic management. Meanwhile, Jakarta is one of the two cities which indicated the most severe level of air pollution. Lastly, only Kuala Lumpur demonstrated a specific policy framework on a circular or sharing economy among the surveyed AMS capitals. Circular or sharing economy is defined as "an economic model in which goods and resources are shared by individuals and groups, usually through an online platform" promoting optimal use of existing resources and reducing the need to produce/reproduce new goods.