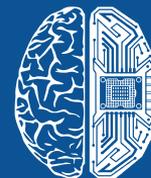


Future is Asian: ***DeepTech & AI / Financial Institutions*** ***Socio-Economic Development*** ***Analytical Assessment and Overview 2020***

Inspired by The Future is Asian
of Parag Khanna

January 2021



DEEP
KNOWLEDGE
ANALYTICS

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Financial Institutions in Asia 2020 Landscape Overview

Western Banks

Western Insurance Companies

Asian Insurance Companies

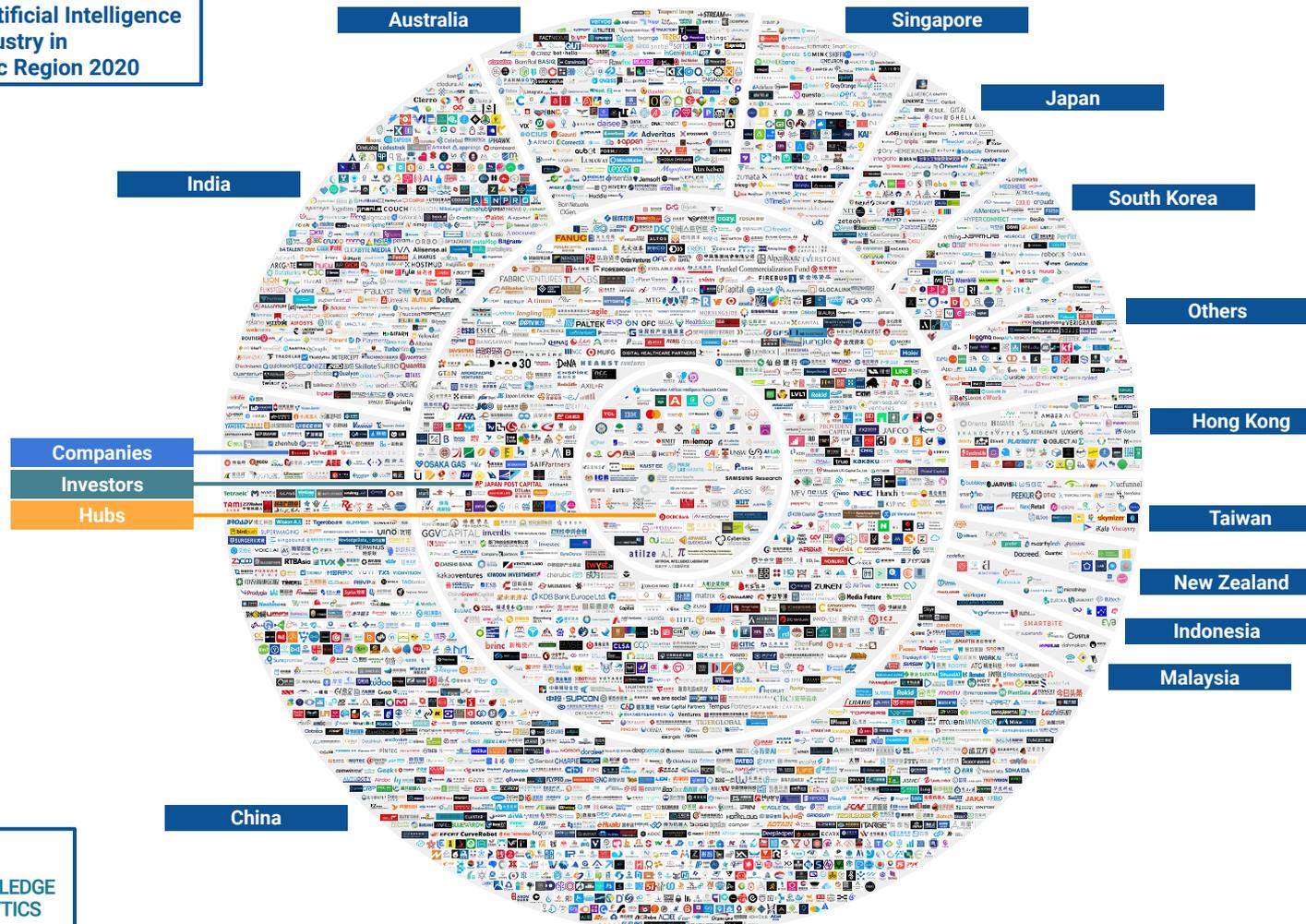
Asian Banks - 120
Asian Insurance Companies - 34
Western Banks - 160
Western Insurance Companies - 111

Asian Banks



DeepTech & Artificial Intelligence
Industry in
Asia Pacific Region 2020

Companies - 2400
Investors - 1300
Hubs - 90



Companies
Investors
Hubs



Presented assessment is inspired by the book “The Future is Asian” by Dr. Parag Khanna. The book is a reflection on current world tendencies. The author supports the idea that there is no turning back from today's multipolar, multicivilizational order. The globalized world is too mixed to become national and closed again. Nevertheless, the outstandingly rapid development of the Asian region might challenge the current state, becoming a new centre of gravity.

Historically, Asia has grown stupendously from American and European outsourcing, and now the United States and Europe are being buttressed by infusions of Asian investment and talent. The author argues that we are only in the early phases of global Asianization; therefore we must continue to explore how the coming decades will transpire in order to be prepared for drastic changes in both the geopolitical and economic situations across the world.

For that purpose, the report includes the following parts: Technological, containing regional comparisons by such criteria as digitalization and AI development, Economic and Socio Demographic, presenting socio-economical growth analysis, export and investment ratio, and presents a list of tables and graphics, being the visual representation of the current regions cooperation and interconnections.

The economic zone of Asia - one that goes from Russia in the north to Australia in the south, and from the Arabian Peninsula and Turkey in the west to Japan and New Zealand in the east - currently represents half of global GDP and two-thirds of global economic growth. Only \$1 trillion out of assessed between 2015 and 2030 estimated \$30 trillion in middle-class consumption growth is expected to originate from the present Western economies. Most of the rest will come from Asia.

Asia is nowadays a leading region, creating, exporting, importing and consuming more goods than any other, and the Asian nations mainly exchange and invest with each other, more than they do with the rest of the world. The continent has several of the world's strongest economies, most of the global foreign trade reserves, a large number of the biggest financial institutions, modern and innovative organizations, and some of the world's biggest and well equipped armies. Asia also represents more than 60 percent of the world's population, having almost ten times as many people as Europe and nearly twelve times more than North America. As the total population moves toward a level of around 10 billion people, Asia will everlastingly be home to more people than all other parts of the globe combined. All the above-mentioned factors in combination are creating the necessary conditions for the region to dominate the world scene in the decades to come.

“Future is Asian: DeepTech & AI in Asia Financial Institutions Overview in Asia” is produced by Deep Knowledge Analytics and provides insights into more than 2400 companies, 1300 investors, 90 hubs and 425 financial institutions. It features macro analysis based on a combination of the most significant parameters, that provides the ability to address the needs of a country-level market research and thorough forecasting. The main dashboard contains overviews of domains like socio-economic and entrepreneurial development, innovation and R&D, DeepTech & Artificial Intelligence investments and financial sector expansion. We will briefly describe them in the following paragraphs.

Socio-Economic Development section is focused on all the major changes and perspectives occurring in the region and describes the distribution of benefits, especially, in terms of export-import incentives, potentially available to the vast population. The Industrial and Energetic Development part of the section reveals Asian leading positions in manufacturing thanks to the largest share of global production and highest exploitation of vehicles and DeepTech tools, but also underlines both challenges and unrealized potential for transformation of the energy sector.

Global Entrepreneurship Development, a chapter that gives a general comparison between the global centers of entrepreneurship and the rising Asian startup ecosystems. It also shows the great potential hidden behind those growing in importance Eastern “silicon valleys”

Innovation and R&D, As the Asian economies mature they will put more and more resources into R&D and this overview allows the readers of the report to grasp the scope of Asian dominance in those fields.

DeepTech and AI in Asia, could be considered as the core of the current report because we maintain that the development of the DeepTech and Artificial intelligence (AI technologies (along with several other disruptive domains of research) will be the main impetus behind the growth of the major Asian economies. AI solutions are rapidly being integrated across industries and sectors. Companies have begun to experiment with a suite of AI solutions across numerous use case - from manufacturing to energy, from healthcare to government.

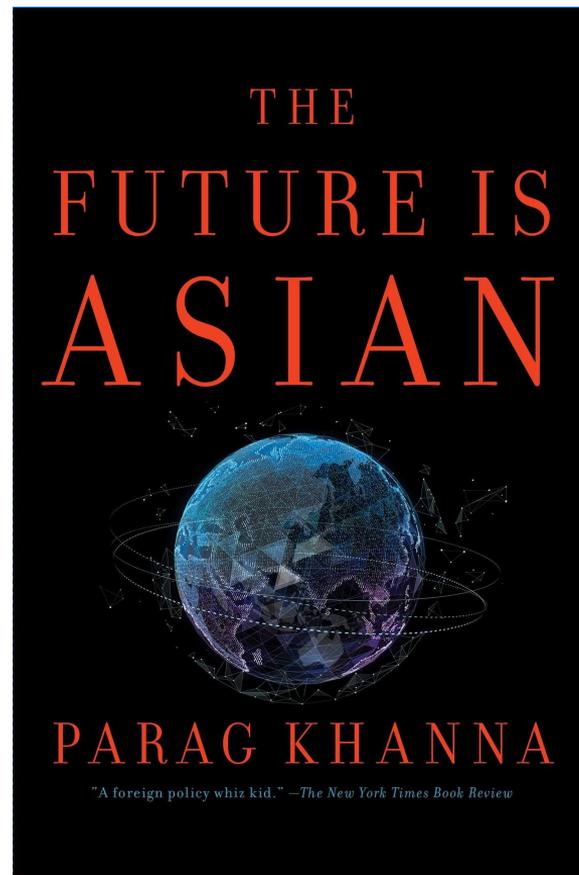
Financial institutions chapter describes the current financial landscape on the largest continent and its growth prospects. As the share of the Asian GDP in the world economy increases so does the interest of international financial institutions in the rapidly expanding (although already huge) Eastern markets. Essentially, we can say that the region is developing very fast and it has a great amount of potential customers - both business and private.

In the 19th century, the world was Europeanized. In the 20th century, it was Americanized. Now, in the 21st century, the world is being Asianized.

The “Asian Century” is even bigger than you think. Far greater than just China, the new Asian system taking shape is a multi-civilizational order spanning Saudi Arabia to Japan, Russia to Australia, Turkey to Indonesia—linking five billion people through trade, finance, infrastructure, and diplomatic networks.

There is no more important region of the world for us to better understand than Asia – and thus we cannot afford to keep getting Asia so wrong. Asia’s complexity has led to common misdiagnoses: The region is experiencing a confident new wave of growth led by younger societies from India to the Philippines, nationalist leaders have put aside territorial disputes in favor of integration, and today’s infrastructure investments are the platform for the next generation of digital innovation.

From investment portfolios and trade wars to Hollywood movies and university admission, no aspect of life is immune from Asianization. With America’s tech sector dependent on Asian talent, politicians praising Asia’s glittering cities and efficient governments. This will be the Asian century. Now we have an accurate picture of what it will look like.



Source: [The Future is Asian](#)

About Parag Khanna

Parag Khanna is a leading global strategy advisor, world traveler, and best-selling author. He is Founder & Managing Partner of FutureMap, a data and scenario based strategic advisory firm. Parag's newest book is "The Future is Asian: Commerce, Conflict & Culture in the 21st Century" (2019).

He is author of a trilogy of books on the future of world order beginning with "The Second World: Empires and Influence in the New Global Order" (2008), followed by "How to Run the World: Charting a Course to the Next Renaissance" (2011), and concluding with "Connectography: Mapping the Future of Global Civilization" (2016). He is also author of "Technocracy in America: Rise of the Info-State" (2017) and co-author of "Hybrid Reality: Thriving in the Emerging Human-Technology Civilization" (2012). His books have been translated into more than twenty languages and have been largely recognized as the most progressive writings of their time.

Parag himself has been an adviser to the US National Intelligence Council's Global Trends 2030 program. From 2013 to 2018 he was a Senior Research Fellow in the Centre on Asia and Globalisation at the Lee Kuan Yew School of Public Policy at the National University of Singapore. From 2006 to 2015 he was a Senior Research Fellow at the New America Foundation. During 2007 he served in Iraq and Afghanistan as a senior geopolitical adviser to United States Special Operations Forces.



Source: [Parag Khanna](#)

DeepTech & Artificial Intelligence Industry in Asia Pacific Region 2020

January 2021



Introduction to DeepTech & Artificial Intelligence Industry in Asia Pacific Region 2020 Landscape Overview

While most Asian countries lag behind the industrialized world in AI adoption, the trend is toward acceleration. The growing vast and emerging talent pool, rising adoption of cloud computing, a freedom from legacy assets, and the various government initiatives favouring AI are mainly driving such sectors as financial services, healthcare market, transportation, and media. The aim of this report is to provide a broad analysis of the past state, present state and near-future trajectory of the DeepTech and AI Industry in Asia and Pacific in 2020, and the strategic management and government plans for artificial intelligence. It also describes the latest technological and media trends in Asia and gives an overview of underlying economic data. This new report aims to outline the current status of the DeepTech and AI industry in all Asia Pacific countries that are related to AI, profiling 2400 DeepTech and AI companies, 1300 investors, 90 Hubs and 125 DeepTech and AI Influencers.

The report is structured so as to make plain the development of DeepTech and AI in Asia, including following countries, relative newcomers to the industrialized world scene like India, Indonesia, Malaysia and already developed societies like Japan, Australia, Singapore, Hong Kong, South Korea and Taiwan.

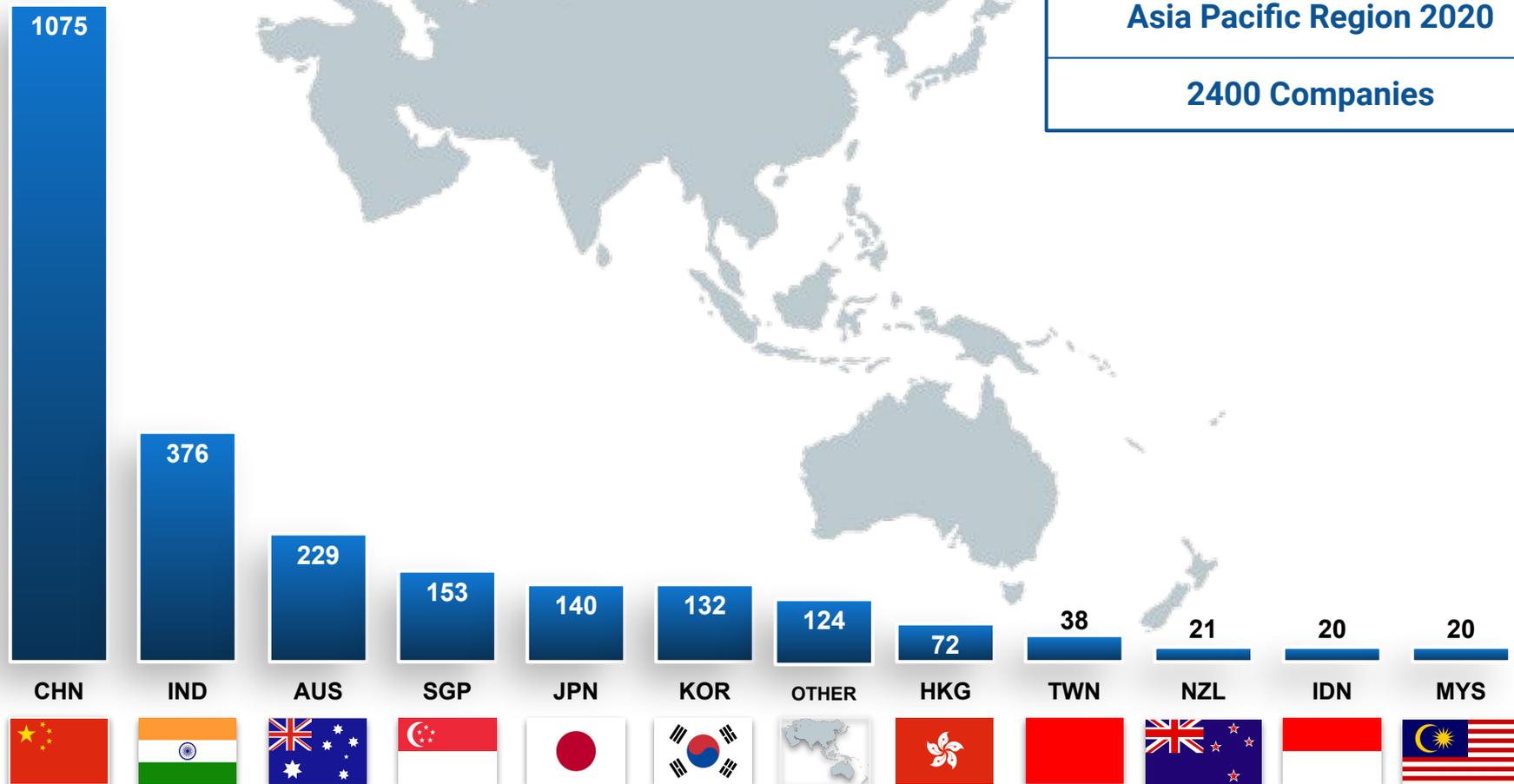
“DeepTech & Artificial Intelligence Industry in Asia Pacific Region 2020”: provides a broad analysis of the current Asia and Pacific-based Artificial Intelligence landscape, considering the private sector with specific focus on the current state of the industry and also provide the readers with forecasts and predictions based on the insights gathered from that analysis. Each trend is carefully reviewed and extrapolated with the necessary precautions.

The main player on the continent - China, now leads the world in annual R&D spending with nearly \$275 billion (just above 2% of GDP), but other Asian countries are also above the 2% mark, including Japan (\$176 billion), South Korea (\$70 billion) and Singapore (\$13 billion). For comparison, U.S. federal R&D spending is roughly \$131 billion. While these figures capture a wide range of sectors from biotech to materials to computer science, all are driven by AI.

As a main insight we can say that all major Asian economies are investing heavily in the creation of new opportunities centered on AI in order to increase their competitive advantage over the rest of the world. An advantage that the West soon won't be able to catch up with.

DeepTech & Artificial Intelligence Industry in Asia Pacific Region 2020

2400 Companies



CHINA

1075 COMPANIES

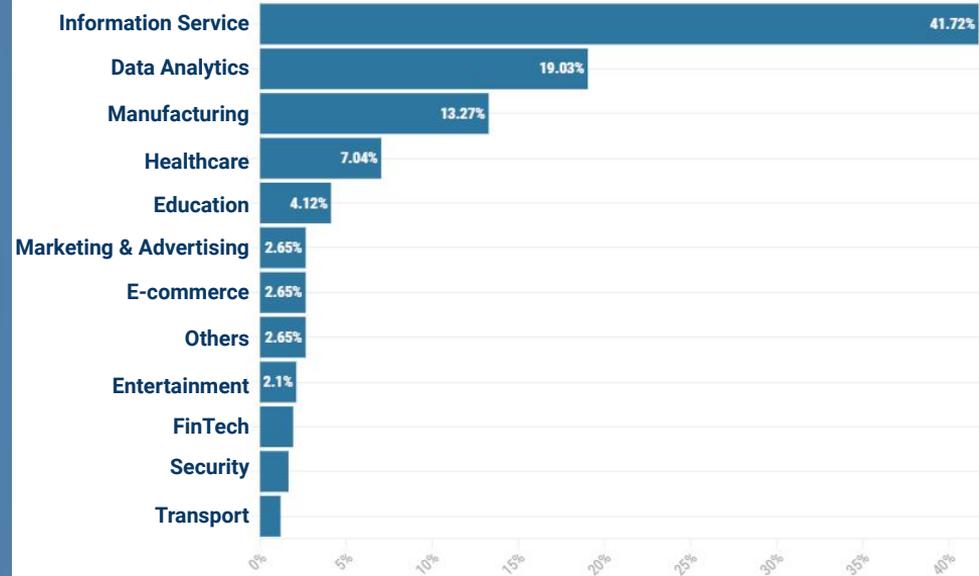


China is the undoubted leader in DeepTech and the AI industry in the Asia Pacific region and aims to become the global leader in the sphere as the State Council of the People's Republic of China has announced its goal to become a \$150 billion AI global leader by the year 2030.

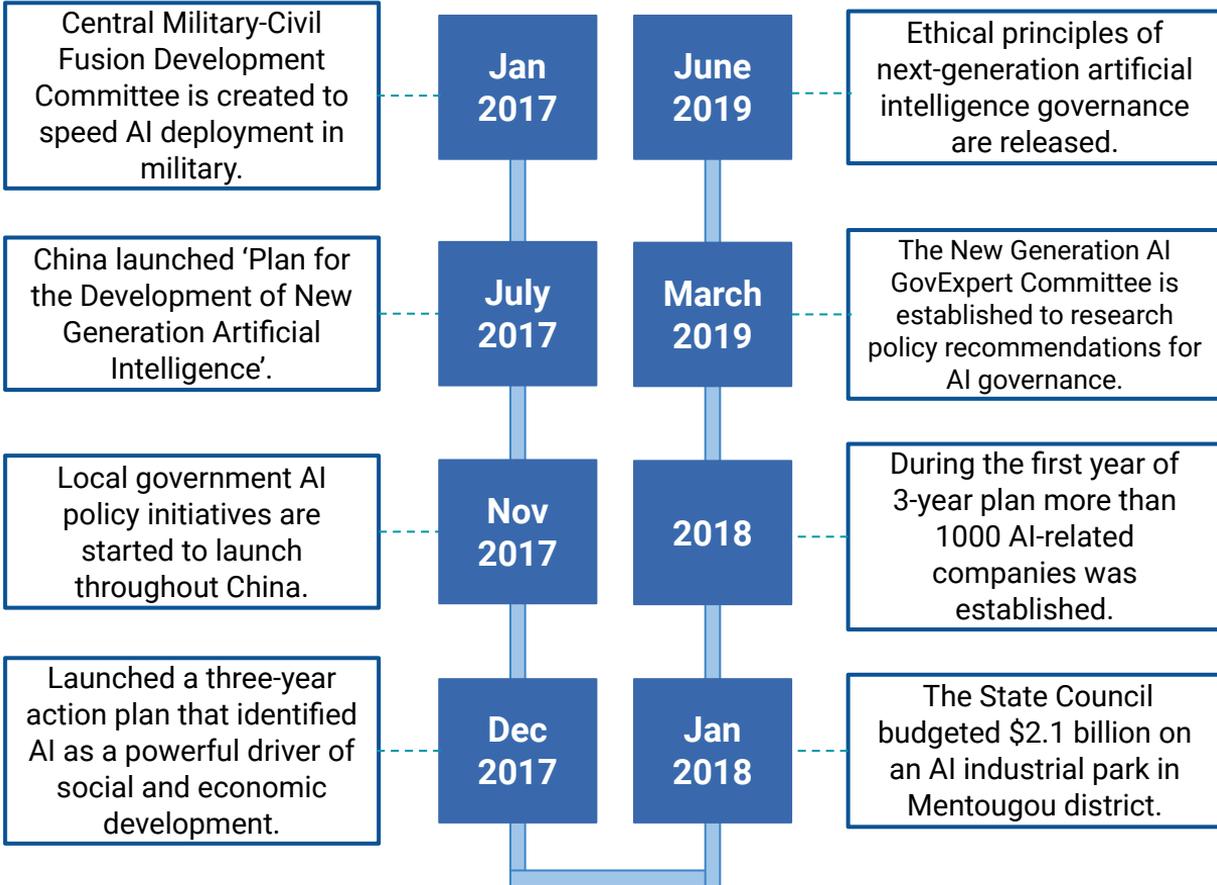
China is already a global leader in AI research and the biggest driver of deep technology investment growth in the world.

Sources: *Analytics Insight, China Daily*

Number of companies featured in the Landscape Overview



AI National Strategy of China



Maintain competitiveness with other major powers and develop national AI environment.

2020

To achieve a major breakthrough in AI theory and to become world-leading in certain areas.

By 2025

To become the global leader in Artificial Intelligence by 2030.

By 2030

INDIA

376 COMPANIES



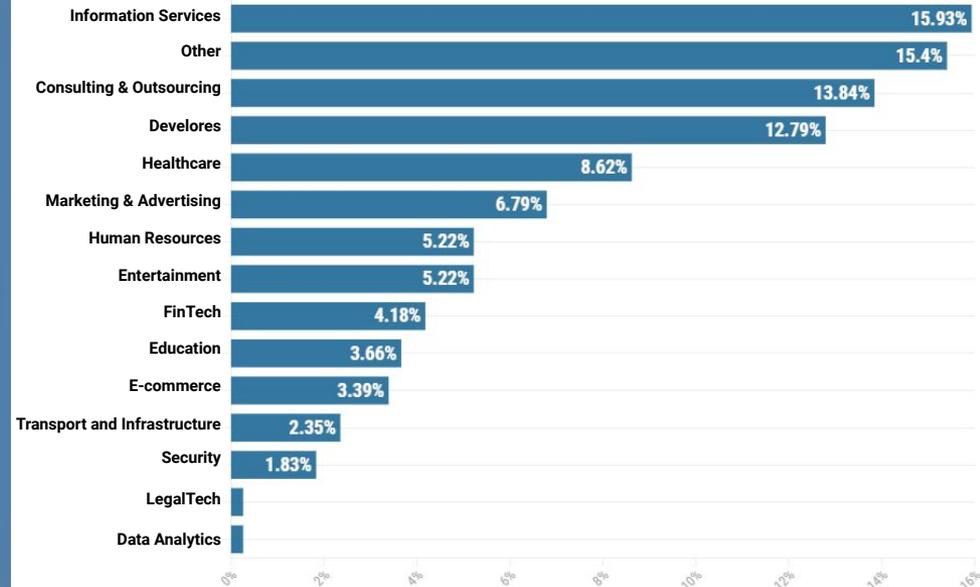
India is the second-largest DeepTech and AI industry in Asia. Since the 90s informational technologies have been crucial for the Indian economy developing to account for 7.7% of India's GDP in 2016.

Recently, the Indian government took steps to support the trend by launching initiatives as the National Institution for Transforming India (NITI) and the Policy Commission leading a national program on AI concentrating on research.

However, one of the main problems of DeepTech and AI in India is the lack of a developed market and systematic investment.

Sources: [Analytics Insight](#), [Forbes India](#)

Number of companies featured in the Landscape Overview





Smart cities:

- Meeting the needs of rapidly urbanising population;
- Traffic control and crowd management.

Transportation and mobility:

- Autonomous fleets for ride sharing;
- Autonomous trucking and delivery;
- Predictive engine monitoring and maintenance.

Healthcare:

- AI driven diagnostics;
- Personalised treatment;
- Early identification of potential pandemics;
- Imaging diagnostics.

Agriculture:

- Driving food revolution;
- Prediction of crop prices to inform sowing practices;
- Advanced detection of pest attacks.

Education:

- Augmenting and enhancing the learning experience through personalised learning;
- Automating and expediting administrative tasks;
- Predicting the needs of students.

AUSTRALIA

229 COMPANIES



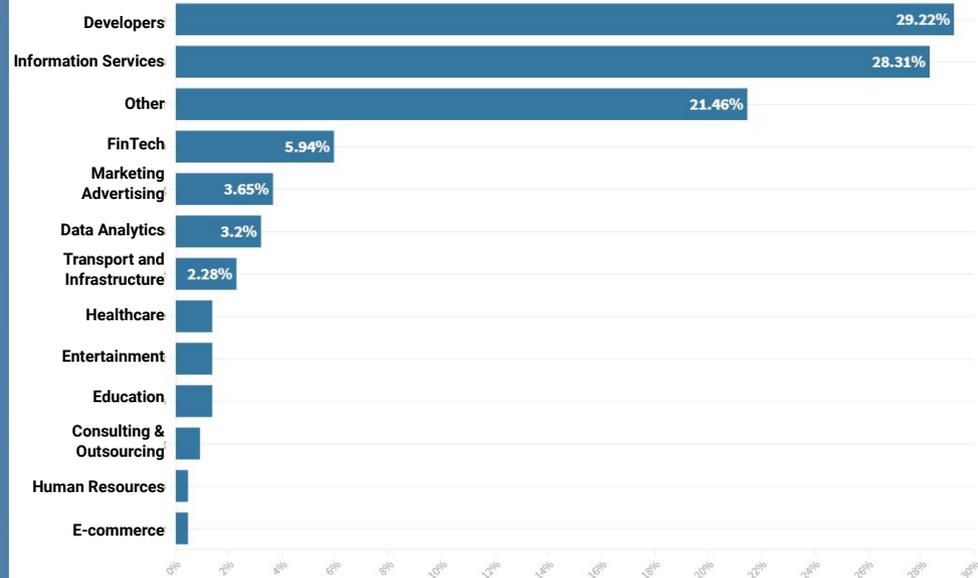
Australia has a competitive advantage as the leader in technical and scientific publications, however, only 12 Australian firms were represented in the world's top 2500 R&D leaders.

The most successful Australian Deep Tech startups are centered in the fields of farming, drone delivery systems, cancer treatment, and rechargeable batteries.

The most important challenges for Australian DeepTech is the investment for the long term, creation of the shared vision, and nurturing DeepTech Culture.

Source: [Startup Daily](#)

Number of companies featured in the Landscape Overview



Key Stages on the Road:

Skills and capability development

Productivity and quality-of-life gains

Experimentation and strategy development

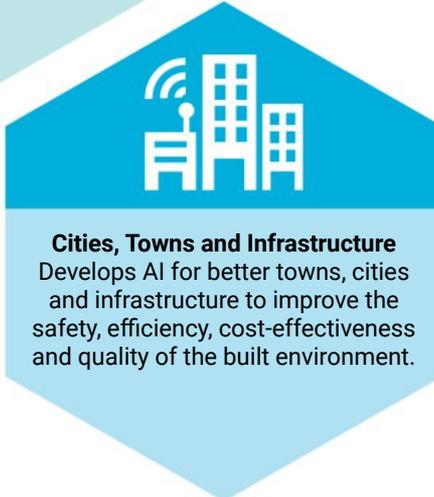
New industries, new growth and a new workforce



Natural Resources and Environment
Develops AI for enhanced natural resource management to reduce the costs and improve the productivity of agriculture, mining, fisheries, forestry, environmental management.



Health, Ageing and Disability
Develops AI for health, ageing and disability support to reduce costs, improve wellbeing and make quality care accessible for all Australians.



Cities, Towns and Infrastructure
Develops AI for better towns, cities and infrastructure to improve the safety, efficiency, cost-effectiveness and quality of the built environment.

Source: [Artificial Intelligence Roadmap](#)

SINGAPORE

153 COMPANIES

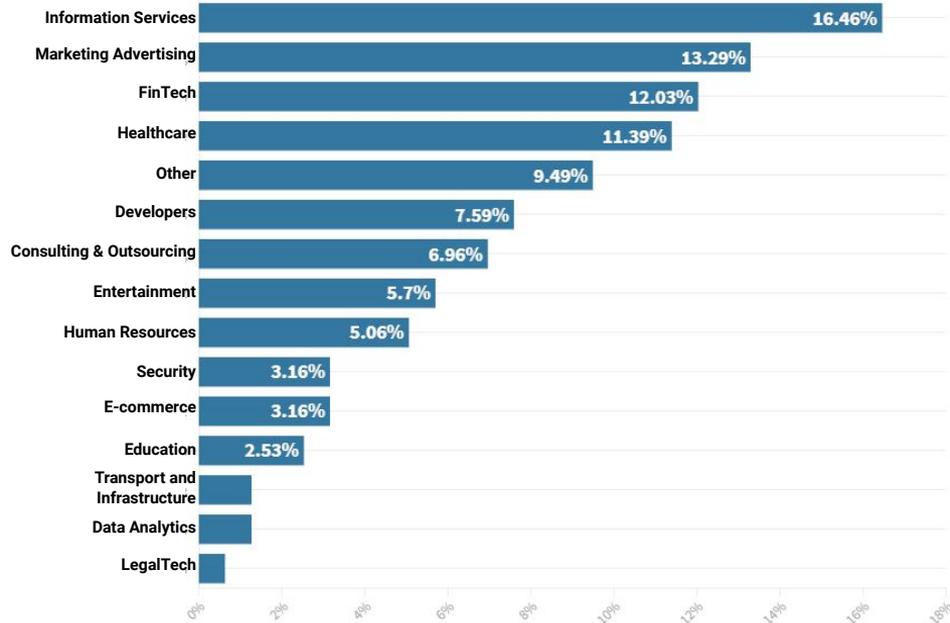


Deep Tech and AI sphere in Singapore is considered to be a role model in terms of how government, private institutions, and educational institutions can cooperate.

The consistent government support for Deep Tech, strong IP (Intellectual property) regime, proximity to outstanding educational institutions which have the programs encouraging their alumni to create startups and offices of tech giants in Singapore create the fertile environment for the creation of Deep Tech.

Sources: [E27](#), [Startup SG](#)

Number of companies featured in the Landscape Overview



Vision:
“By 2030, Singapore will be a leader in developing and deploying scalable, impactful AI solutions, in key sectors of high value and relevance to our citizens and businesses”

National AI Projects:



Ecosystem Enablers:



Source: [National Artificial Intelligence Strategy](#)

JAPAN

140 COMPANIES

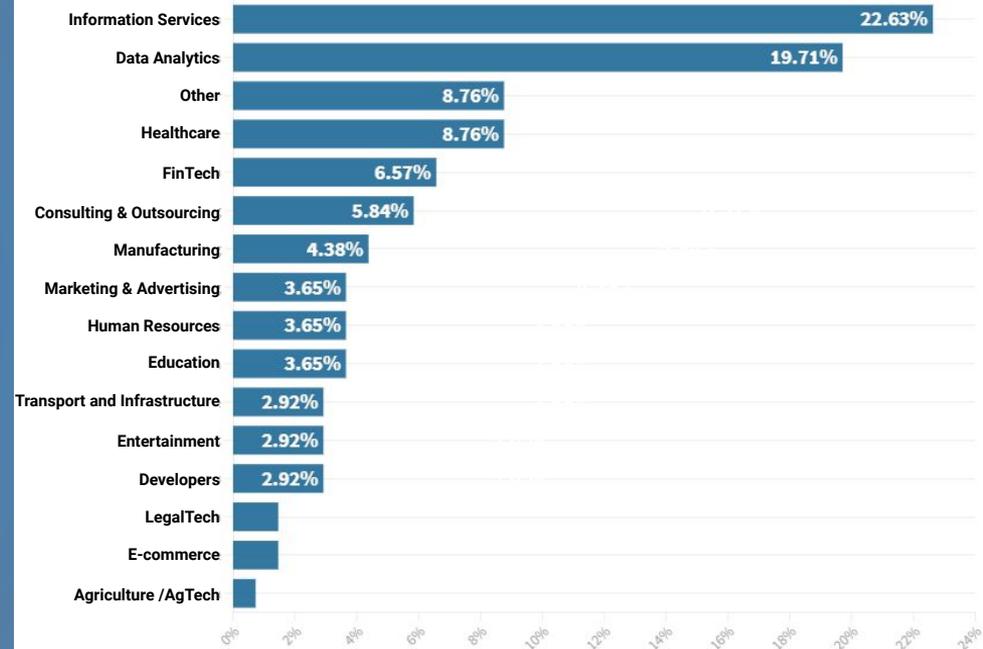


Japanese deep tech startups have rapidly gained power for the last couple of years, through a constant capital injection from and co-development with large corporations. At the same time, European Multinational corporations such as Airbus and Deutsche Bahn have also reached and invested in some Japanese deep tech startups.

The interest of Tech giants in supporting the DeepTech sphere, a big pool of talent from STEM spheres, and well-established links with markets and capital in other countries provide favorable conditions for the development of AI and Deep Tech in Japan.

Source: [Tech EU](#)

Number of companies featured in the Landscape Overview



Phase 1: Utilization and application of data-driven AI developed in various domains

Approx. 2020

- Creation of new services and products with AI
- AI-based prediction/matching of supply and demand
- Cooperative production by humans and robots
- Smart factory using IoT and AI
- Real-time assessment of operational status

Phase 2: Public use of AI and data developed across various domains

Approx. 2025~2030

- Creation of diversified services and products across industrial fields
- Services to deliver value based on prediction in multiple areas
- Realization of hyper customization
- House and home appliances powered by AI
- Automatic maintenance of machinery and equipment

Phase 3: Ecosystem is built by connecting multiplying domains

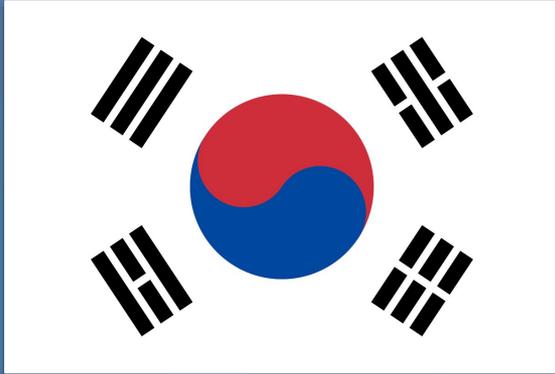
Society 5.0:
A society where innovative services and products are continuously developed.

- ❑ Prevalence of creative products and services;
- ❑ Realization of subconscious desires;
- ❑ High value-added items become familiar;
- ❑ Careful delivery.

Source: [Artificial Intelligence Technology Strategy](#)

SOUTH KOREA

132 COMPANIES



South Korea has earned a reputation as a leading global information and communication technology center and is ranked second in Bloomberg Index of Most Innovative Nations 2020.

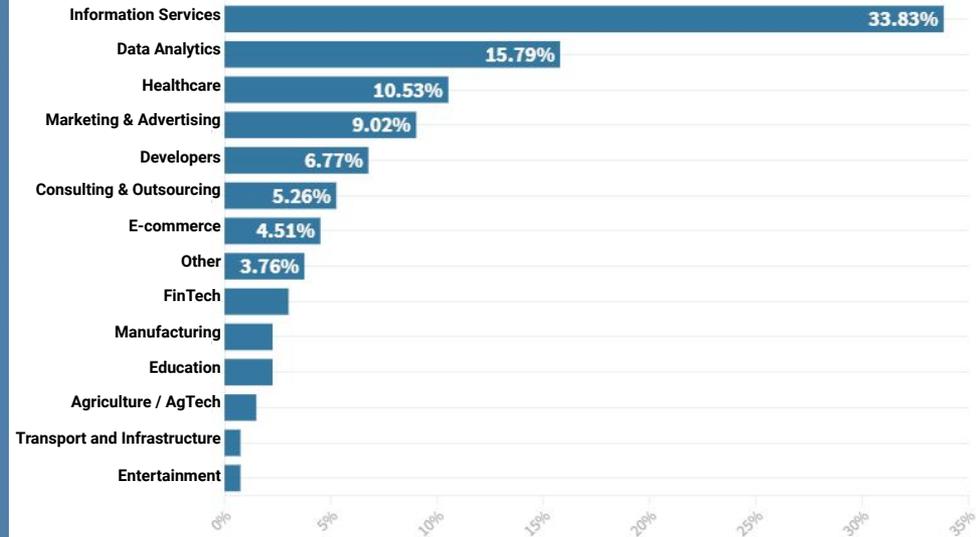
With its cutting-edge ICT infrastructure boasting the world's fastest internet speeds, the country is home to global leading electronics and IT companies.

As the first country in the world to roll out commercial 5G, South Korea can lead in adopting and optimizing AI by virtue of the nation's compact size, wide broadband coverage and smartphone penetration.

By 2030 it aims to own 20% of the global AI chip market.

Sources: [ITA](#), [Bloomberg](#), [TechCrunch](#)

Number of companies featured in the Landscape Overview



Artificial Intelligence Areas of Development:

Build AI

- ❑ **Expand Infrastructure** - Promote data to be made public and to be distributed.
- ❑ **Secure Competitiveness** - Develop a new-concept AI semiconductor, and invest in R&D for next-generation AI, etc.
- ❑ **Improve Regulations** - Establish a legal system/framework, which include basic concepts, principles, and policies to prevent adverse effects in the AI era.
- ❑ **Nurture Start-Ups** - Create AI investment funds, and promote exchanges of and cooperation with AI specialists, etc.

Make Use of AI

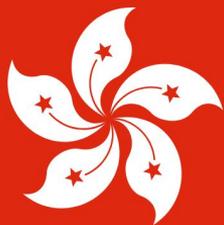
- ❑ **Nurture talent** - Newly establish and/or expand fields of study or programs related to AI (majors) at universities, expand and develop various programs related to AI, etc.
- ❑ **Push for all-out use of AI across all industries** - Push for and support projects that make use of large-scale data held by public institutions, and those that make use of AI across all industries.
- ❑ **Embrace digital transformation for a modern, digital government** - Introduce AI to public services, provide customized services to citizens, etc.

Harmonize with AI

- ❑ **Establish a job safety net - bridge the skills gap in the future workforce.** Prepare tomorrow's workforce by increasing the percentage of job training in the areas of new technologies (e.g., programming for AI initiatives or data analytics and other related skills).
- ❑ **Prevent adverse effects** - Respond to new types of adverse effects from AI-based technologies (e.g., AI-based cyber infringement, DeepFake AI).

HONG KONG

72 COMPANIES



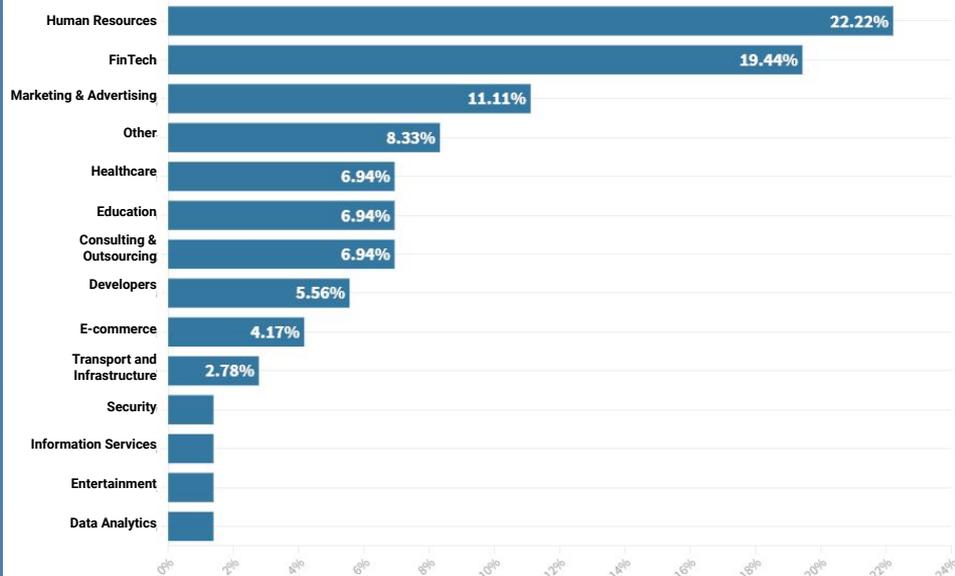
AI is being adopted in almost every industry. Besides finance and banking, the use of AI is spreading expansively in healthcare and education.

The AI Readiness Index among residents and businesses in 2020 is 50 and 56 out of 100 points respectively.

Despite all these promising developments and the growing use of AI, the speed of technology adoption in Hong Kong remains slow compared to Mainland China. The same is observed in the development of technology and AI-specific regulations.

Source: [GLI](#), [KMPG](#)

Number of companies featured in the Landscape Overview



Developing Citizen/Customer-Centric Designs:

Payments and digital identity

City Management

Ageing Population

Climate Change

Hong Kong Science Park



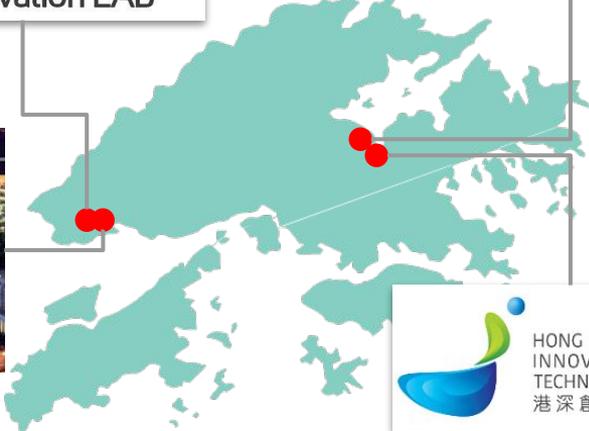
AI Government Initiatives:

- Improving Governmental Services Related to AI;
- HK\$100 billion fund for key I&T areas, R&D in Universities, enterprises and startups;
- APPLIES-system for Immigration Department;
- The growth of Chatbots usage;
- Improving human lives with AI

Smart Government Innovation LAB



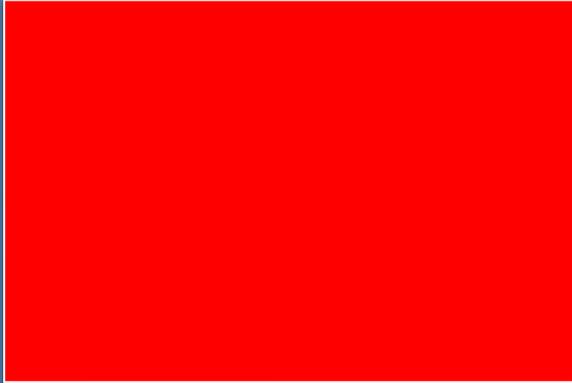
Cyberport



HONG KONG-SHENZHEN INNOVATION AND TECHNOLOGY PARK
港深創新及科技園

TAIWAN

38 COMPANIES



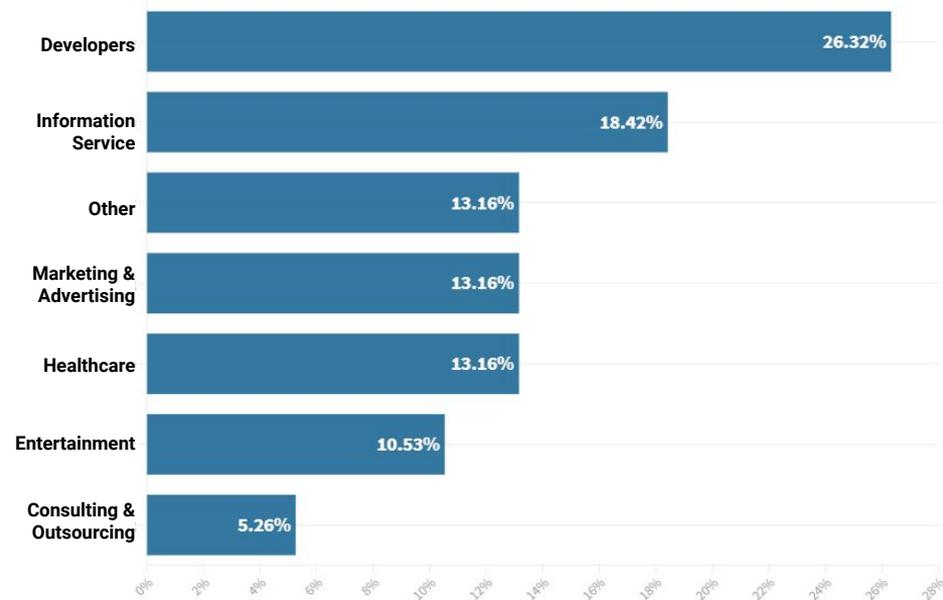
Taiwan is a world-leader in the area of semiconductors, information and communication technology and manufacturing.

Taiwan is successful in preserving home-grown and attracting foreign AI talent, with annually more than 10.000 computer science graduates.

Taiwan is the world leading chip manufacturer with 25-30% of integrated circuits globally being manufactured in Taiwan. It produces 75% of personal computers, 50% of LCD screens, 25% of semiconductors, and 20% of smartphones worldwide.

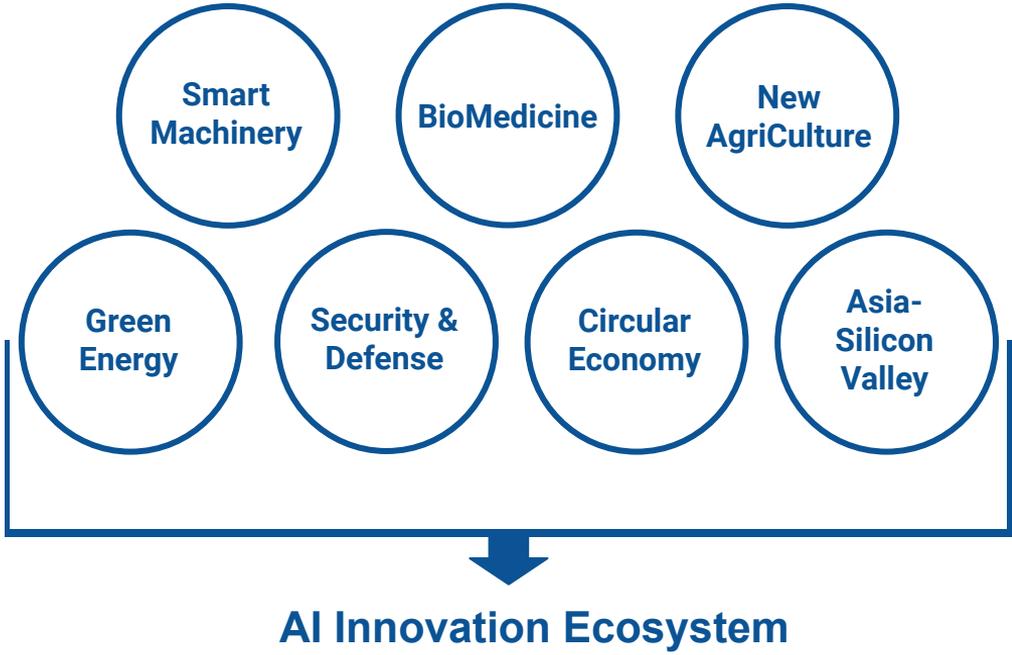
Source: [*Artificial Intelligence: an overview of policies and developments in Taiwan*](#)

Number of companies featured in the Landscape Overview



AI for industrial innovation	Connect industrial innovation with AI (5+2 industries) and enable AI-driven innovation in SMEs
AI International Innovation Hub	Foster 100 AI startups and develop international AI innovation clusters
AI Pilot Projects	Launch research projects (like DARPA in US and SIP in Japan)
AI Talent Program	1.000 advanced AI researchers and 10.000 AI professionals + recruit AI talents
Test field and Regulatory Co-Creation	Open fields and data for testing

5+2 Innovative Industries with AI potential:



Source: [AI Development in Taiwan](#)

NEW ZEALAND 21 COMPANIES

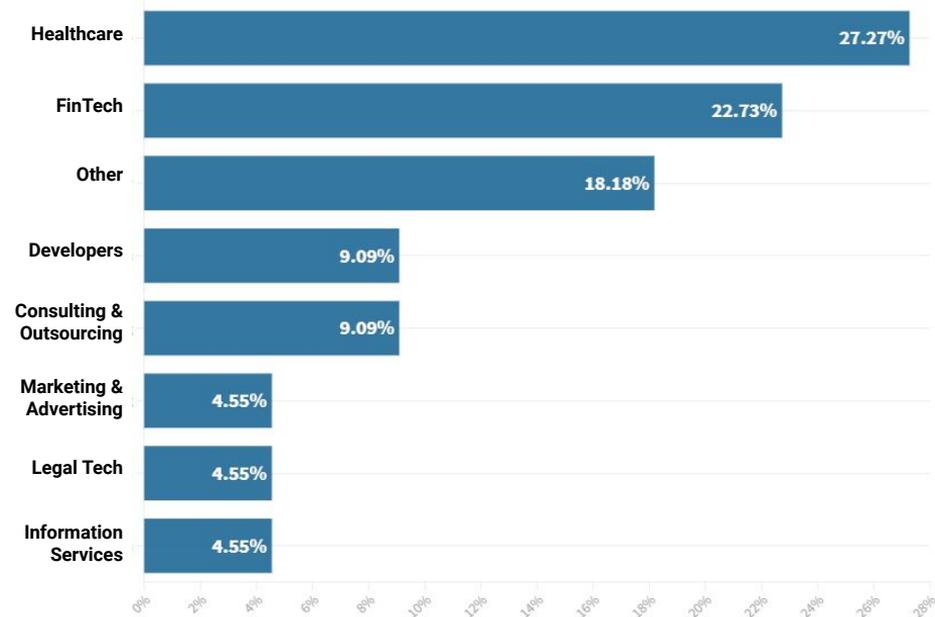


DeepTech and AI sector in New Zealand is relatively small, but the concentration of investment, and startups around tech incubators allowed to creation of several successful initiatives in the DeepTech sphere.

Unlike the trends in other countries, DeepTech and AI sphere in New Zealand is dominated by the companies working in Healthcare and FinTech spheres.

Source: [Angel Association NZ](#)

Number of companies featured in the Landscape Overview



New Zealand does not have a national strategy for AI for now, but the government is actively exploring New Zealand AI landscape for smart technology deployment as well as AI potential impacts on the economy and society.

Top 5 Drivers of AI Uptake in New Zealand

- ❑ Make sense of vast amounts of data
- ❑ Automate tedious or dangerous work
- ❑ Support decision making with speed and accuracy
- ❑ Reduce business costs by automation
- ❑ Optimise business processes

By 2035, AI has the potential to increase New Zealand GDP by up to \$54 billion

Tech Sector

High growth areas within this industry are cloud, network and systems security

Primary Sector

AI is an essential enabler of the precision agriculture required to produce higher quality product sustainably

Manufacturing Sector

Internet of Things (IoT) is going to be a powerful catalyst for AI use in manufacturing

Education Sector

AI will drive a significant change in the process of education by 2035.

Financial Sector

The greatest gains will come from automating and reducing errors in mundane.

Tourism Sector

The ability to intelligently analyse growing tourism activity datasets will provide opportunities to design more personalised visitor experiences

INDONESIA

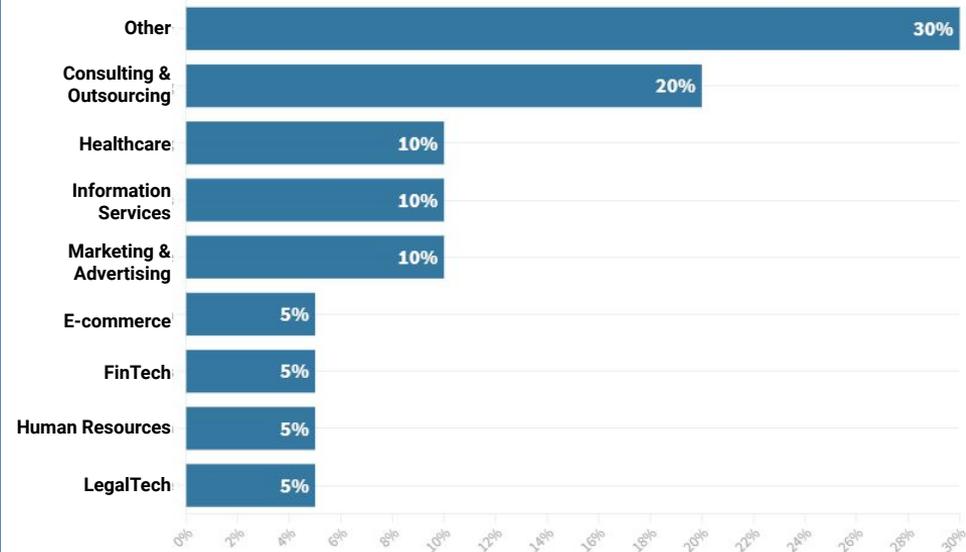
20 COMPANIES



The country leads Southeast Asia in AI adoption, with 24.6% of organizations using the technology in their operations. Indonesian companies had the highest rates of AI integration in Southeast Asia; a number of state projects employ AI, to anticipate state fires for example; and some government agencies are promoting AI development and technology-based tools at schools and other learning institutions. The AI development is one of five sectors in particular focus, apart from the development of the internet of things, advanced robotics, augmented reality and 3D printing.

Source: [Tech in Asia](#), [Global government forum](#), [The Jakarta Post](#)

Number of companies featured in the Landscape Overview





In 2020, Indonesia announced the plan of National AI Strategy for the next 25 years with five priorities, where the government believes AI could have the biggest impact on national progress and outcomes - health service, bureaucratic reform, education and research, food security, mobility and smart cities.

MALAYSIA

20 COMPANIES

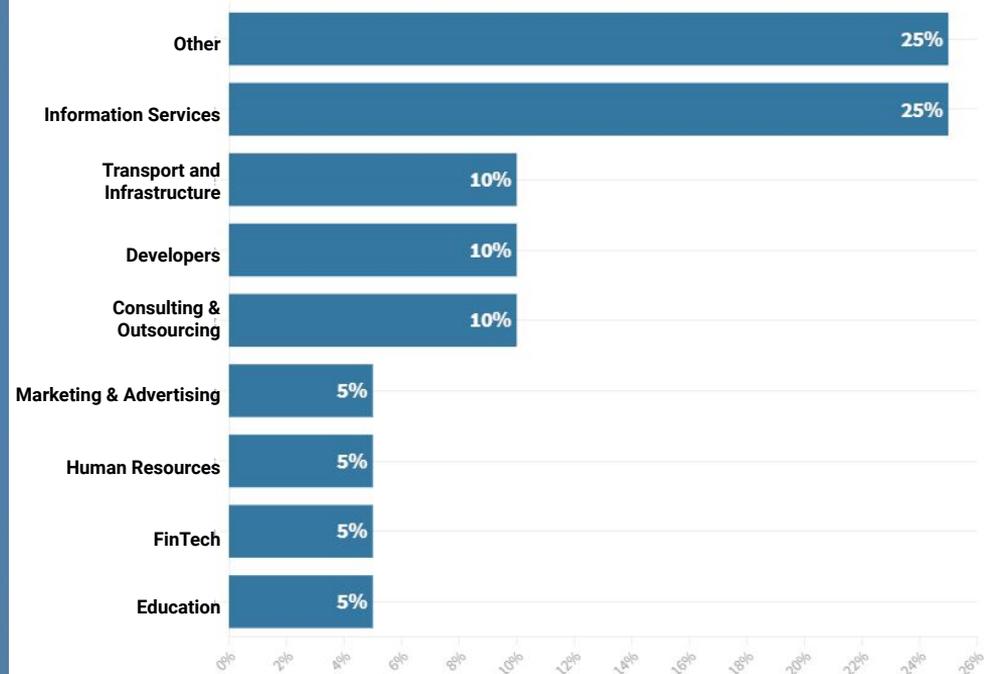


Malaysia's deep tech and startup industry has experienced a massive transformation allowing the startup community to attract investments to the tune of \$1.45 billion in 2016.

There are several successful tech startups from Malaysia working in the fields of AI, 3D face recognition, sentiment robot, etc.

Source: [Analytics India Magazine](#)

Number of companies featured in the Landscape Overview

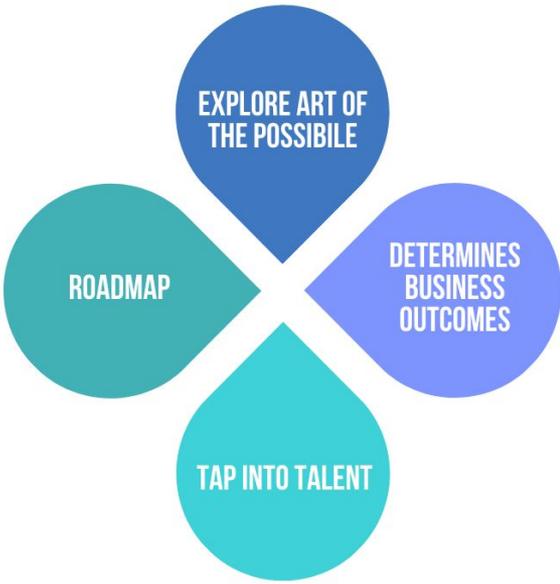


AI Roadmap of Malaysia

The Malaysian government is in the process of National AI Framework development as a part of National Big Data Analytics Framework. The government is going to establish Digital Transformation Acceleration Programme for businesses and Labs to assist in the creation of new digital products and services.

Human-Centered AI Strategy

How can we use new tech to find value?



+ AI Capabilities

Data	Data Supply Chain
Models and Knowledge	Process Models Prebuilt Calculations Analytic Engine (Algorithms)
Technology	Automation Machine Learning Intelligent APIs Design for Purpose Third-Party APIs
Talent	Experience Design and Development Integration



Overview of AI Current Status and Strategies

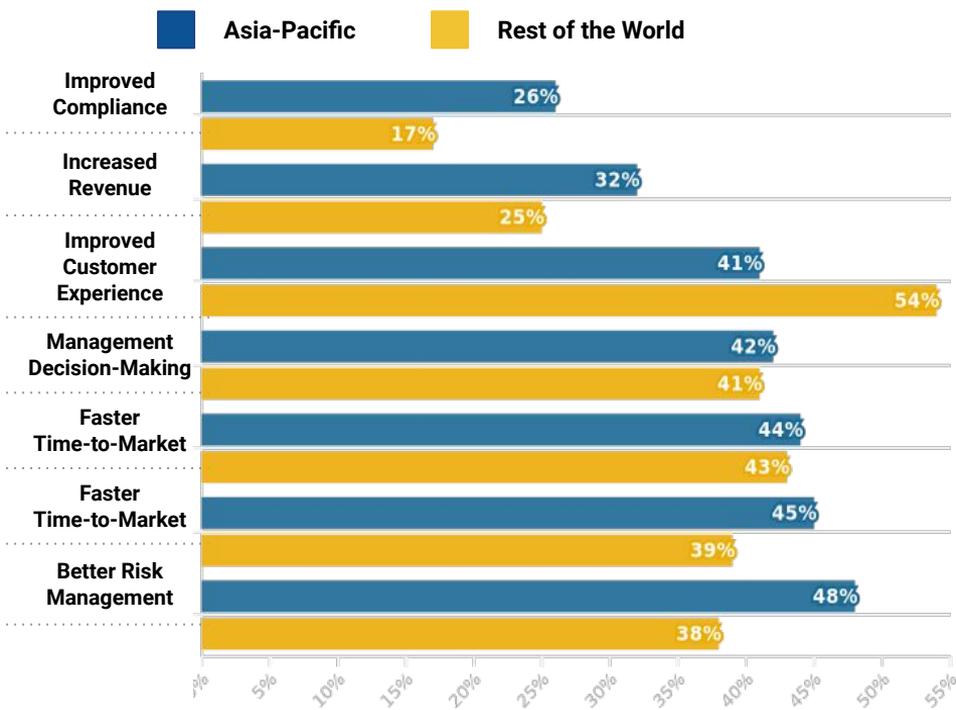
Artificial intelligence technologies are rapidly being integrated across industries and sectors. Companies have begun to experiment with a suite of AI solutions across numerous use cases - from manufacturing to energy, from healthcare to government. Most of the AI adoption is still happening in the pilot phase, but the potential of AI is already showing tangible benefits for its users and even exceeding expectations.

While some of the countries have just started to develop AI strategies, Asian countries, such as China, Japan, India, Singapore have already developed national-level plans for how AI can be used to enhance domestic and regional competitiveness, which include public and private sector collaboration.

Collaboration between government, the private sector and academia using vast datasets is a notable feature of AI development in Asia, often in specific industry subsectors such as transportation, healthcare, utilities and community security.

In Asia, technology investments and innovative AI approaches are growing faster than anywhere else. Its emerging ecosystem allows entrepreneurs, businesses, and governments to develop endless opportunities empowered by AI.

What have been the tangible benefits of company's AI investments?



Source: [MIT Technology Review Insights survey, 2020](#)

Overview of AI Current Status and Strategies

Asia has been home to tech pioneers for decades. Leading tech companies in Japan and South Korea, for example, have some of the highest number of AI patent filings, according to the World Intellectual Property Organization. The success of these and other East Asian conglomerates is also a testament to the quality of their talent and ability to commercialize research. Asians are placing emphasis on scaling applications in industrial and home robotics, self-driving cars and smart city projects such as one large automotive manufacturer's planned development in the foothills of Mount Fuji.

China now leads the world in annual R&D spending with nearly \$275 billion (just above 2% of GDP), but other Asian nations are also above the 2% mark, including Japan (roughly \$176 billion), South Korea (\$70 billion) and Singapore (\$13 billion). For comparison, U.S. federal R&D spending is roughly \$131 billion. While these figures capture a wide range of sectors from biotech to materials to computer science, all are driven by AI.

Japan's large-scale push into IoT sensor deployment across Asia should be understood as part of its AI strategy given the data it will generate. As the first country with widespread 5G deployment, South Korea has an edge in gathering data that will deepen its AI prowess in areas such as smart manufacturing, immersive gaming and autonomous vehicles.

Country	R&D spending in PPP\$	R&D spending as % of GDP	Number of researchers per million inhabitants
China	\$372,326.1M	2%	1,089
South Korea	\$73,099.8M	4.30%	6,826
Japan	\$169,554.1M	3.40%	5,328
India	\$51,654.8M	0.70%	156
Australia	\$23,129.7M	2.20%	4,532

Source: [Forbes](#), [East Spring Investments](#), [AI Business](#), [Techinasia](#), [WIPO](#), [SCMP](#), [Nippon](#), [Business Korea](#), [Business Times](#), [Congressional Research Service](#)

US vs China in the AI Race

The STEM workforce in China has also rapidly expanded. The total number of Chinese universities grew from 1,792 to 2,560 between 2005 and 2015. 8 million Chinese students graduated from college in 2017, compared to approximately 1.9 million graduating with bachelor's degrees and 1 million with associate's degrees in the United States. The number of science and engineering bachelor's degrees conferred in China increased from 359,000 in 2000 to 1.65 million in 2014.

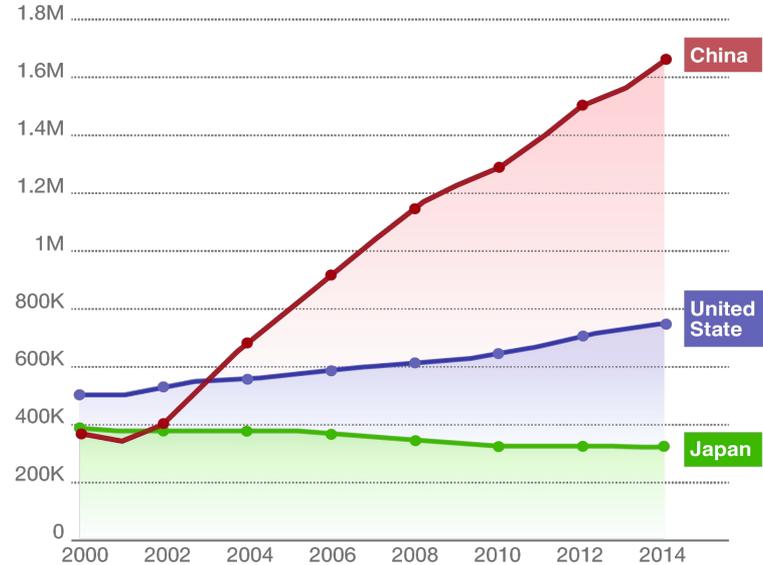
China surpassed the United States as the world's largest producer of natural sciences and engineering doctorates in 2007.

In addition, with ambitious science projects, generous salaries, and high levels of lab funding, China has made a concerted effort to recruit top foreign talent. The Thousand Talents Program offers scientists a one-million-yuan (\$151,000) starting bonus. Foreign scientists receive additional incentives, such as subsidies for accommodation, visits home, and education.

The Department of Energy recently warned that talent programs were offering scientists at U.S. national labs hundreds of thousands, and in some cases millions, of dollars to conduct research in China.

US and Chinese STEM Graduates

First university degrees in STEM in selected countries



Source: [Council on Foreign Relations](#)

US vs China in the AI Race

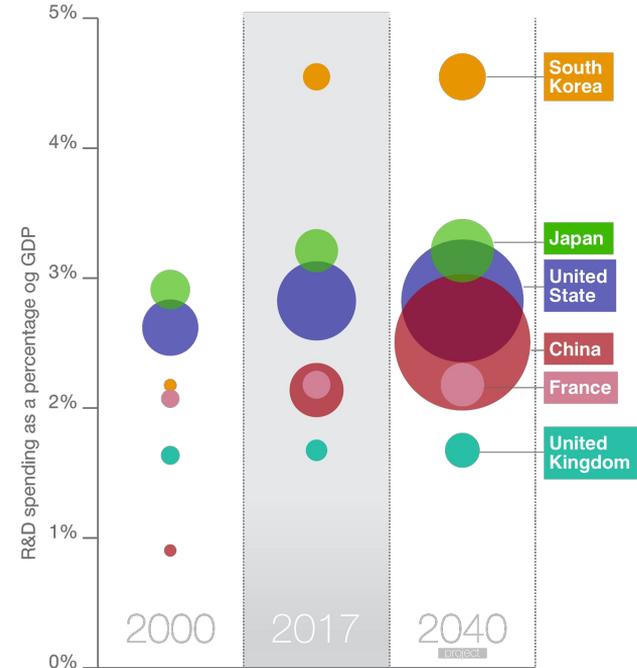
According to the report Innovation and National Security published by Council on Foreign Relations the United States leadership in science and technology is at risk.

China is investing significant resources in developing new technologies, and after 2030 it will likely be the world's largest spender on research and development. Although Beijing's efforts to become a scientific power could help drive global growth and prosperity, and both the United States and China have benefited from bilateral investment and trade, Chinese theft of intellectual property and its market-manipulating industrial policies threaten the United States economic competitiveness and national security.

China in particular has ambitious plans to become a world leader in science, technology, and medicine. Between 1991 and 2015, China increased its R&D expenditures thirtyfold, averaging an 18 percent increase annually since 2000.

R&D expenditures rose to \$254 billion in 2017, approximately 45 percent of U.S. R&D spending for that year. China's GDP is growing and China is dedicating a greater portion of its economic resources to R&D, planning to eventually reach a spending target of 2.5 percent of GDP. It will likely equal or exceed the United States in overall R&D expenditures after 2030.

Countries' R&D Spending



Source: [Council on Foreign Relations](#)

US vs China in the AI Race

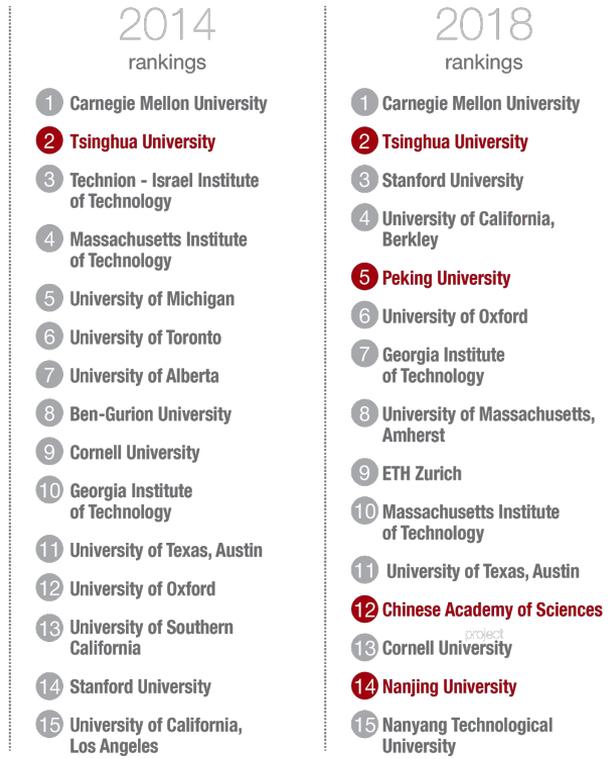
China overtook the United States in the production of scientific papers in 2016. According to a study by scientific publisher Elsevier and business news outlet Nikkei, China published more high-impact research papers than the United States did in twenty-three out of thirty research fields with clear technological applications.

China's current five-year plan prescribes that the biotechnology sector should exceed 4 percent of GDP by 2020, and state, provincial, and local governments have invested more than \$100 billion in the life sciences sector. For example, BGI (The Beijing Genomic Institute) is by some measures the largest genome-sequencing center in the world.

On AI, Beijing hopes to leverage massive amounts of data, permissive regulations, entrepreneurial firms, and government support to build an industry worth \$150 billion by 2030. In 2017, China's AI industry received nearly \$26 billion in investment and financing. China surpassed the United States in volume of AI research in 2014, including in AI-related patent registration and articles on deep learning. China is also training a large number of specialists. 23% of the accepted papers for the 2017 Association for the Advancement of Artificial Intelligence conference were from China, and AI authors in China were cited 44 % more in 2016 than they were in 2000.

Chinese University Rising in Artificial Intelligence Field

Universities ranked by publication in top Ai conferences Chinese universities are in red



General Conclusions

As the Asian economies mature, their respective demographics will rapidly age.

China, India and Indonesia will experience the same demographic transformation as Japan, South Korea, Singapore and Hong Kong did during late 20th and early 21st centuries. This will push them to invest heavily into automatization in its all forms - AI technologies and robotization of its workforce.

With more than 1 million robots and AI and Deep Tech systems in use in Asia, there are multiple economic risks and growth opportunities for the regional economy.

For Asia to fully utilize this digital opportunity, as the world's growth driver, its nations need to reform their education systems and invest in innovation to support a workforce for humans and autonomous systems alike. This will allow the already accumulating economic prowess to flourish and will help stabilize the already burdened public social services.

Trends and Predictions:

61% of the world's population is concentrated in Asia, so **a rapid AI deployment is expected**, taking into account its early stage of development.

Together with 5G and a technological development online learning will be seriously enhanced. **China's online education is expected to reach RMB 696 bn in 2023**, up by more than two-fold from RMB 294 bn in 2020.

Cloud computing provides fast connection speeds and doesn't need maintaining computing infrastructure, so it is **expected to grow 15% over the next two years**.

With a 10.8% market share, China's cloud infrastructure services market is the second largest in the world. The successful listing of Kingsoft Cloud during the pandemic in the US raised more than USD 510 mn. So no doubt **cloud market will grow**.

Robots will become easier to programme and install as machine learning tools make them smarter.

5G technology is expected to contribute more than USD 13 trn to global output by 2035, representing 5% of global real output and generating 22.3 million jobs.

Financial Institutions in Asia

January 2021



The rise of Asia as a financial powerhouse and the rapidly growing middle-class of the continent makes it extremely attractive to foreign financial institutions. The stability of the regional ecosystem proved that the populous market is worth serving and this resulted in large-scale expansions of multiple international financial organizations. Among them are famous names like Julius Baer Group, Bank of America, Wells Fargo, HSBC and others.

As the Asian continent accumulates more and more assets in the form of savings, its wealth management industry is growing even quicker. This reflects the sharp increase in the number of high-net-worth individuals benefiting from the region's extraordinarily resilient economic growth.

In addition, rapid urbanization and the growth of the middle class in the region requires improved urban infrastructure, including amenities, utilities, and links between production locations and centers of domestic consumption. In this respect, countries in the region face huge needs for infrastructure development. However, although the region has an abundance of domestic savings that can be used to finance these infrastructure needs, it is ironic that it is excessively dependent on volatile capital streams for its development.

The problems mentioned in the previous paragraph leave plenty of space for international players to move on to the market and utilize the potential behind the underserved sections of the population. Up until recently the financial services were mostly concentrated around short term lending but as the Asian nations continue to develop and mature their level of consumption of various financial products also will change. In the past the short duration of banks' liabilities limited their capacity to finance long-term investments such as home loans and infrastructure investments, but this is no longer the case.

All the above-mentioned gaps and the large size of the Asian market gained the attention of numerous operating on the financial market and with this chapter we aim to give a broad overview of their efforts to take part into the burgeoning "tiger" economies of China, India, Pakistan, Indonesia and the rest of the region.

The mindmap created by Deep Knowledge Analytics features more than 425 financial institutions already operating on the continent or planning to get a foothold on it. The main reason for the implementation of the project is to provide key insights to decision makers in order for them to build a strong base on which they could construct their expansion strategy.

Asian Financial Sector

As the share of Asia in world GDP and global capital is growing rapidly, western financial institutions are planning to increasing their involvement in eastern region. Moreover, Asian-based banks see local opportunities too, and follow the trend of regional rather than global expansion. "Asia is now one third of global GDP with a growth rate of 6%. Why would I allocate capital to the other two thirds growing at 1.5%?" - says Piyush Gupta, chief executive of DBS in Singapore, one of the fastest expanding Asian banks.

The Asian population has grown rapidly over time, and the Asian Development Bank predicts that the number of Asians needing banking services will increase by three billion by 2050. In addition, by that time, per capita income in purchasing power parity is expected to increase sixfold, by which time the continent will account for 52% of global GDP.

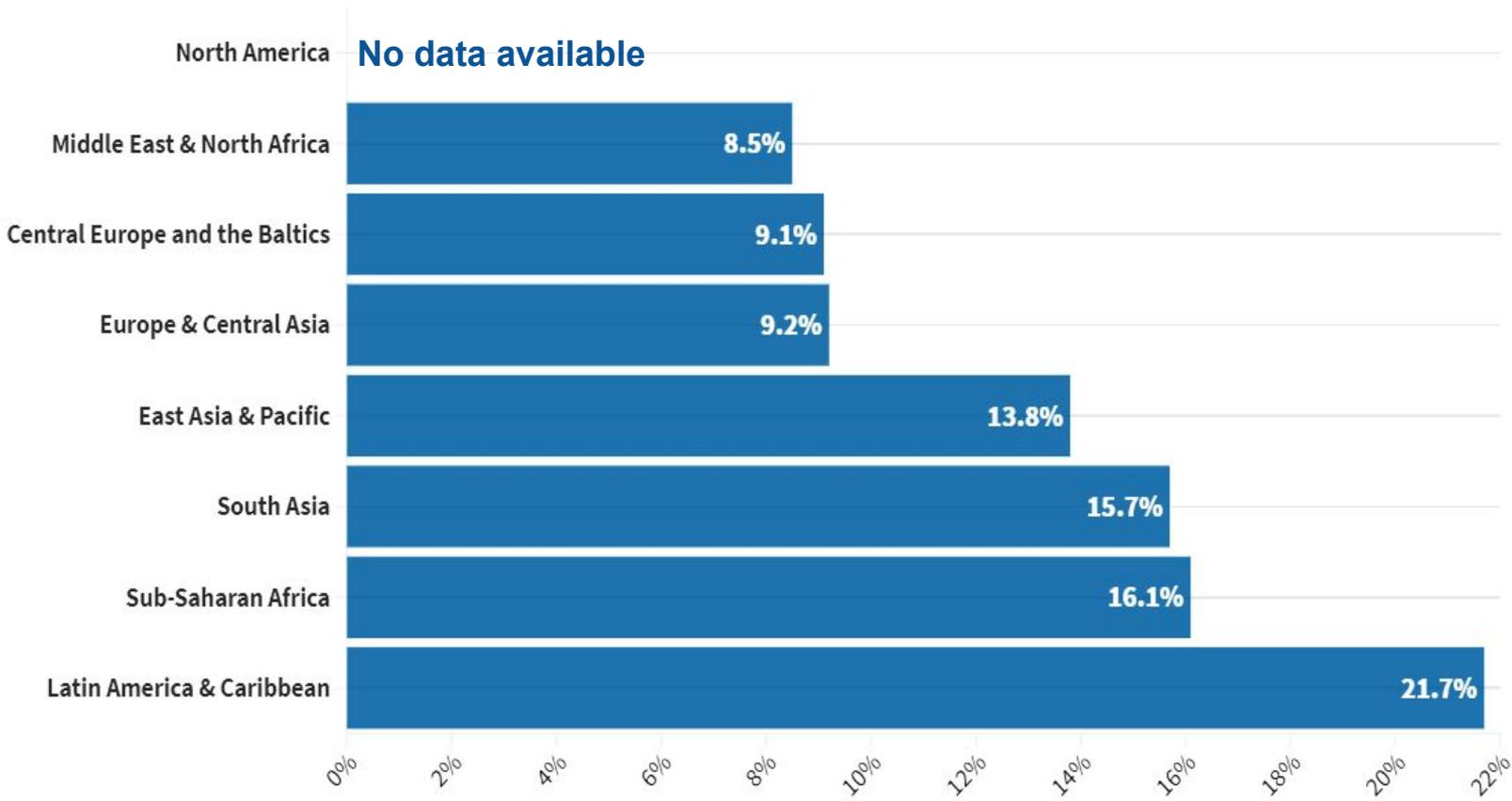
The government institutions play much bigger role in the banking sectors of many Asian emerging Asian markets (such as China and India) compared to the rest of the world. In China, for example, the five largest banks are government-controlled, and in India, state-owned banks account for about three-quarters of the system's assets. This also applies to non-bank financial institutions: in India, one of the world's largest life insurance companies, the Indian Life Insurance Corporation, is controlled by the country's government.

There is also a huge inequality across the region - state-owned banks in countries such as the Philippines and Thailand account for a much smaller share of total banking sector assets, and private institutional investors play a significant role in Malaysia.



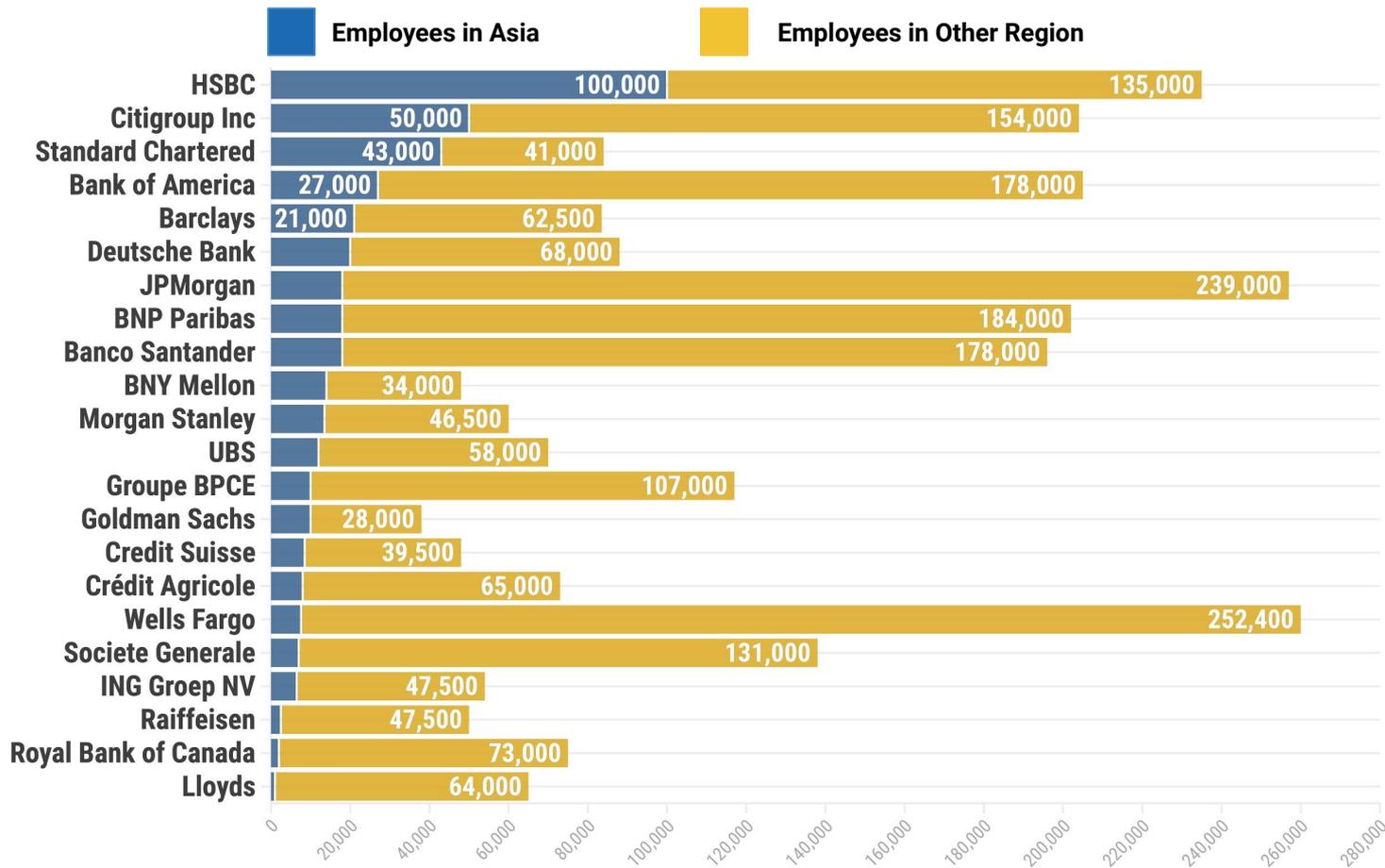
Source: [Asia Finance 2020](#), [Fung Global Institute](#)

Firms Using Banks to Finance Investment (% of Firms)



Source: [The World Bank](#)

Banks Employee Ratio



Julius Baer Group

Country	Founded	Headcount	Headquarter	Asian headquarter
Switzerland	1890	6729	Zurich, CH	Singapore

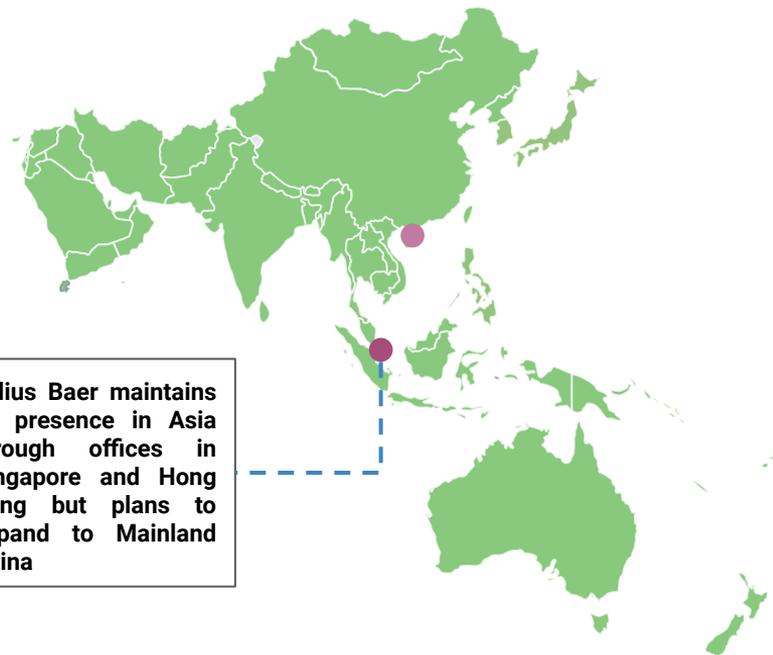
In contrast to much of the rest of the world, the wealth management industry is growing quickly in Asia even now, reflecting the increase in the number of high-net-worth individuals benefiting from the region's extraordinarily resilient economic growth.

Dubbed Julius Baer's «second home market», Asia continues to fuel the group's growth across key indicators including new money, profits and AUMs (assets under management) – the region accounts for 26 percent of assets by client domicile, surpassing the second-ranked Western Europe's 25 percent.

Plans: Julius Baer aims to establish a majority-owned joint venture to tap the rapidly growing wealth in the world's second-largest economy of China and has started looking for a partner

Sources: [DKA](#), [finews.asia](#)

Julius Bär



Julius Baer maintains its presence in Asia through offices in Singapore and Hong Kong but plans to expand to Mainland China



Bank of America

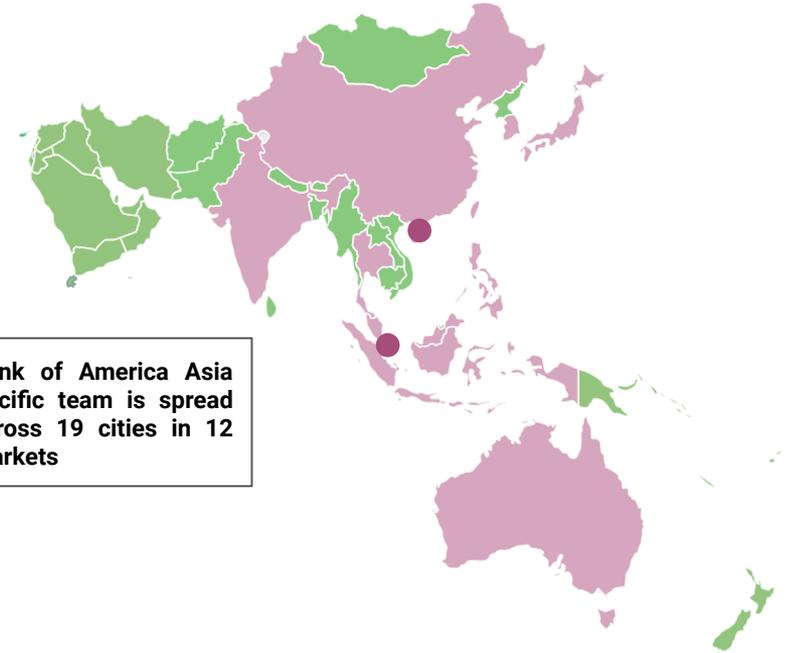
Country	Founded	Headcount	Headquarter	Asian headquarter
USA	1956	204489	Charlotte, US	Hong Kong

Bank of America operates in Asia for a long time since it opened its first Asian office in Tokyo

BofA expanded its investment banking headcount in Asia last year by hiring about a dozen senior bankers, making it one of the most aggressive recruiters among other global banks in the region and plans to hire 50 bankers for Asia deal making team in 2020

Plans: With the renewed focus on investment banking, BofA is aiming to break into the top four of Asian investment banking advisory league tables in the next few years

Sources: [DKA](#), [Reuters](#), [Bank Of America](#)



Bank of America Asia Pacific team is spread across 19 cities in 12 markets

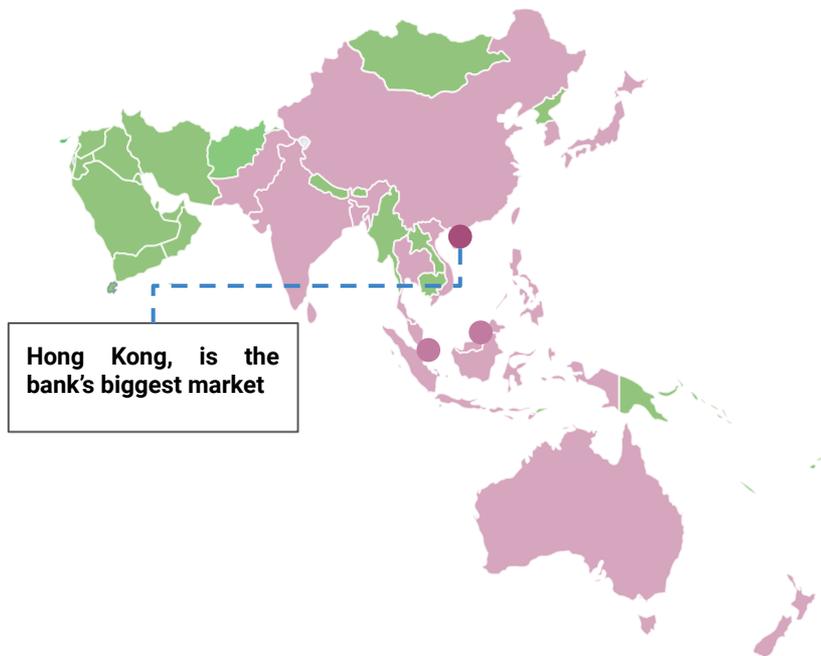


Country	Founded	Headcount	Headquarter	Asian headquarter
United Kingdom	1865	235000	London, UK	Hong Kong

In terms of profit generation of the bank, Asia is massively dominant. It delivered 84 percent of profits in 2019, against 10 per cent from the Americas and just 6 per cent from Europe, the Middle East and Africa.

In 2020 HSBC shares have been more heavily traded in Hong Kong than in London for the first time since the late 1990s.

Plans: HSBC Holdings PLC HSBA.L expects to achieve double-digit asset growth in its newly combined wealth business in Asia Pacific in the next three years, as it looks to grab a bigger share of the growing rich population.



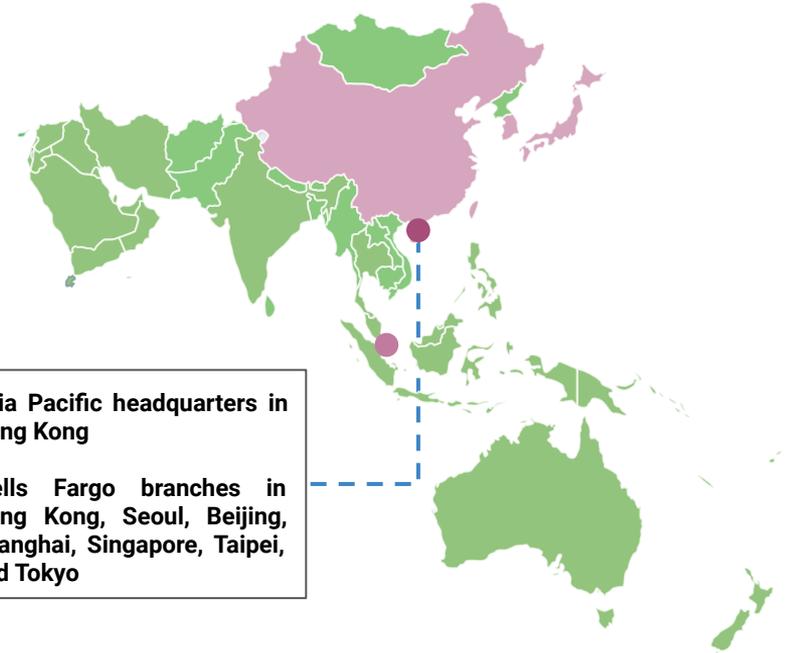
Wells Fargo

Country	Founded	Headcount	Headquarter	Asian headquarter
USA	1852	259800	San Francisco, US	Hong Kong

There has been continued interest in US dollar assets, which is an important part of bank's distribution and capabilities in Asia. Wells Fargo have continued to see a strong growth in Asia, particularly as Asian investors continue to be very long in terms of US assets.

Despite trade tensions, between US and China, which has an impact on other markets across Asia, Wells Fargo still experienced continued strong growth in the region.

WELLS FARGO



Asia Pacific headquarters in Hong Kong

Wells Fargo branches in Hong Kong, Seoul, Beijing, Shanghai, Singapore, Taipei, and Tokyo

JPMorgan Chase & Co.

Country	Founded	Headcount	Headquarter	Asian headquarter
USA	2000	256981	New York, US	Hong Kong

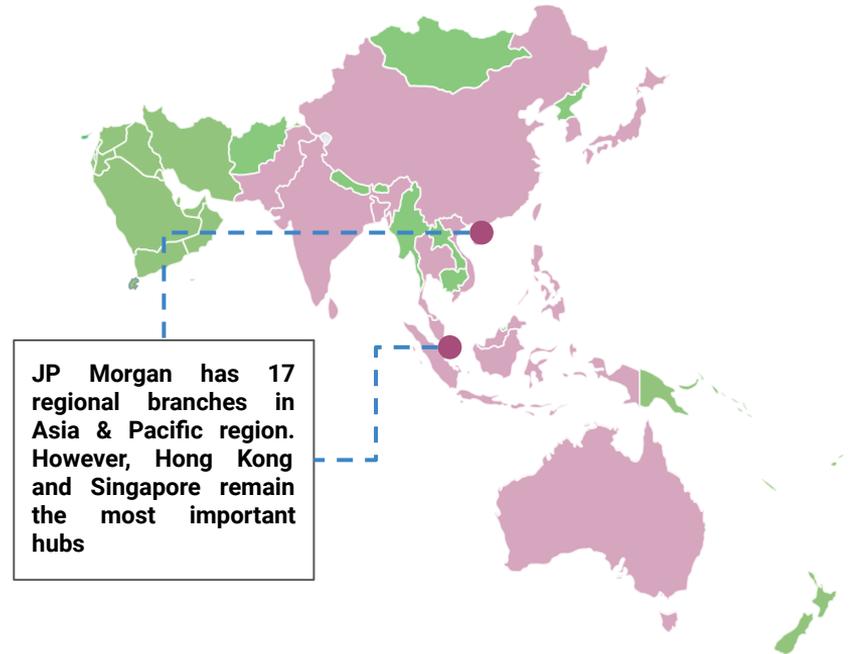
J.P. Morgan Chase & Co. plans to double the number of private bankers serving Chinese clients from Singapore over the next two years, signaling its ambition to tap growth from Asia's second-largest wealth market. "With rapid wealth creation in China, there is a need for insightful advice around how to manage the new-found wealth".

In 2020 J.P. Morgan has expanded its Asia Pacific trade finance team, hiring more than 20 trade finance specialists coming in key markets, including China, Hong Kong, India, Korea and Singapore, among others, bolstering the firm's capabilities and enhancing its client service offering.

The new executives will be responsible for a range of functions, including high level advisory services, product solutions, client services, sales and implementation.

Sources: [DKA](#), [The Business Times](#), [J.P. Morgan](#)

J.P.Morgan



Citigroup

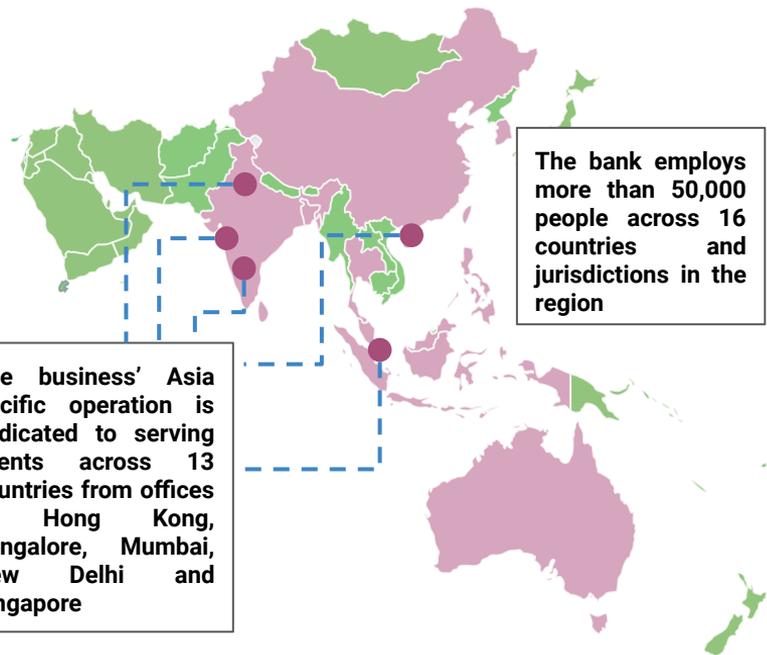
Country	Founded	Headcount	Headquarter	Asian headquarter
USA	1998	204000	New York, US	Singapore

The bank in Asia supports 17 million direct consumer clients and several thousand institutional clients. Asia Pacific generates around a quarter of Citi's earnings and is the bank's largest regional contributor outside of North America.

Citi supports Asia Pacific's leading corporates across 50 markets with over 20 Asia desks worldwide and has the largest network along the Belt and Road Initiative (BRI), with the ability to do business in 60 out of 70 BRI markets.

Asia has led the way for various innovations globally and in Asia. In 2018, Citi's chatbot on Facebook Messenger was launched in Singapore, a first for Citi worldwide.

citibank



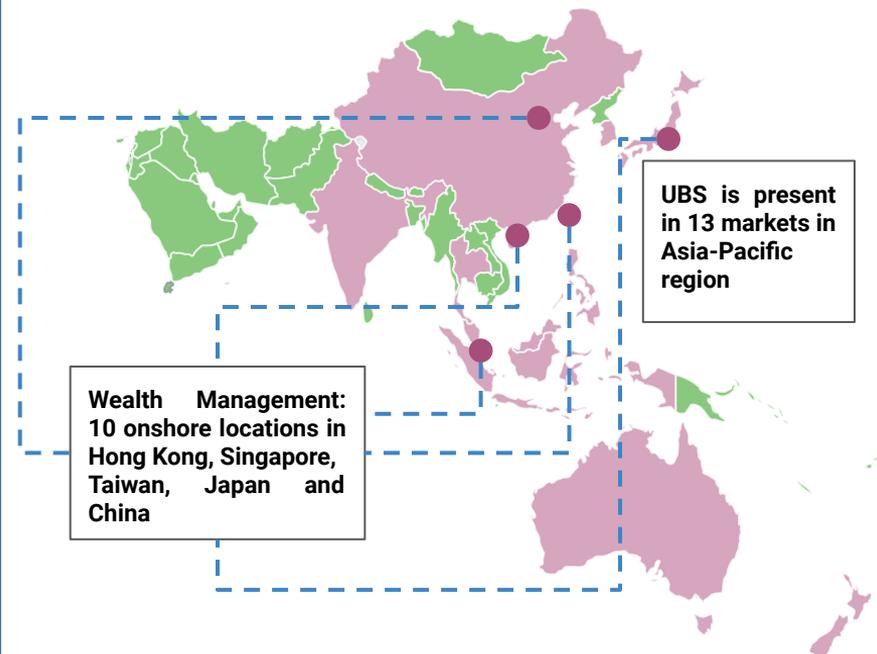
Country	Founded	Headcount	Headquarter	Asian headquarter
Switzerland	1862	69966	Zurich, CH	Hong Kong

UBS manages invested assets of CHF 160 billion for clients in the region, representing 19.7% of the Global figure (as of Q2 2018) and achieved 23% increase in 2017 year-over-year invested assets, the highest percentage of all UBS regions.

UBS Wealth Management is the largest and fastest-growing wealth manager both globally and in Asia Pacific.

28% increase in invested assets year-over-year in 2017 for Wealth Management APAC.

UBS have launched the Evolve lab in Singapore, which focuses on creating new innovative and user-centric solutions for their clients; and the Digital Hub in Hong Kong, which provides an engagement, networking and knowledge-sharing platform for the clients.



Credit Suisse

Country	Founded	Headcount	Headquarter	Asian headquarter
Switzerland	1856	47860	Zurich, CH	Hong Kong

Asia's largest economy has the most millionaires after the US and its financial opening this year has presented global banks and asset managers with an unmatched opportunity for expansion. Credit Suisse wants Asia to make up 25 percent of group revenue in a couple of years, from 17.5 per cent now.

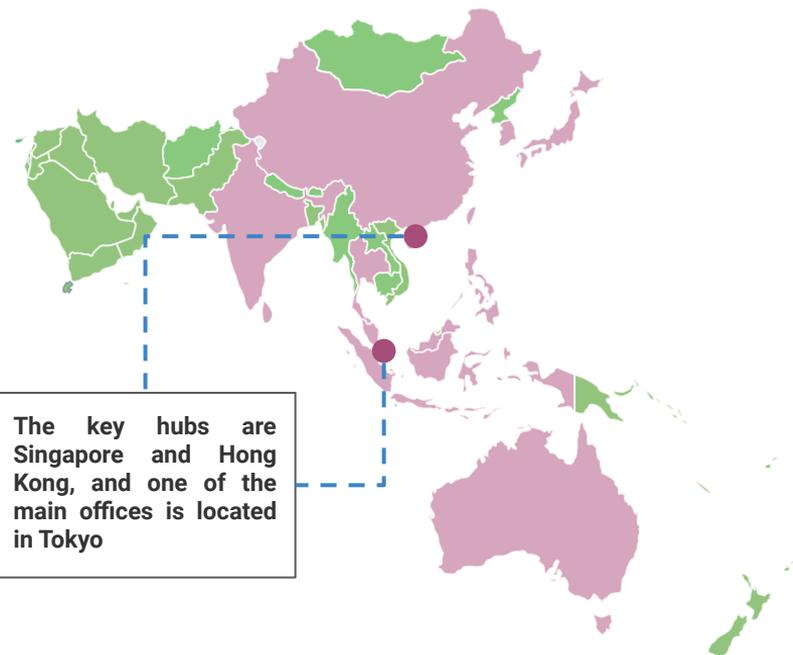
Plans: to double its headcount in China over five years as the firm accelerates its pursuit of the nation's wealthy. It will add to its China workforce as it targets a 100 per cent increase in revenue there.

Much of the firm's build-out will focus on expanding advisory and investment banking services for the ballooning ranks of China's rich.

Credit Suisse Group will continue to invest across its platforms in China and closely integrate its onshore operations with its businesses in Hong Kong and across the region.

Sources: [DKA](#), [The Business Times](#), [Credit Susie](#)

CREDIT SUISSE



BNP Paribas

Country	Founded	Headcount	Headquarter	Asian headquarter
France	1848	202000	Paris, FR	Hong Kong

BNP Paribas has achieved an average yearly increase of +18% in assets under custody over the last six years in Asia Pacific.

In the past, the big global banks served their wealthy clients in Asia mostly from the big offshore centres of Singapore and Hong Kong, offering a wide range of international investment products. More recently, they have been establishing onshore operations as well to tap into the growing pool of assets held in those countries.

Plans: to expand its corporate lending book by more than 50 percent in Asia.

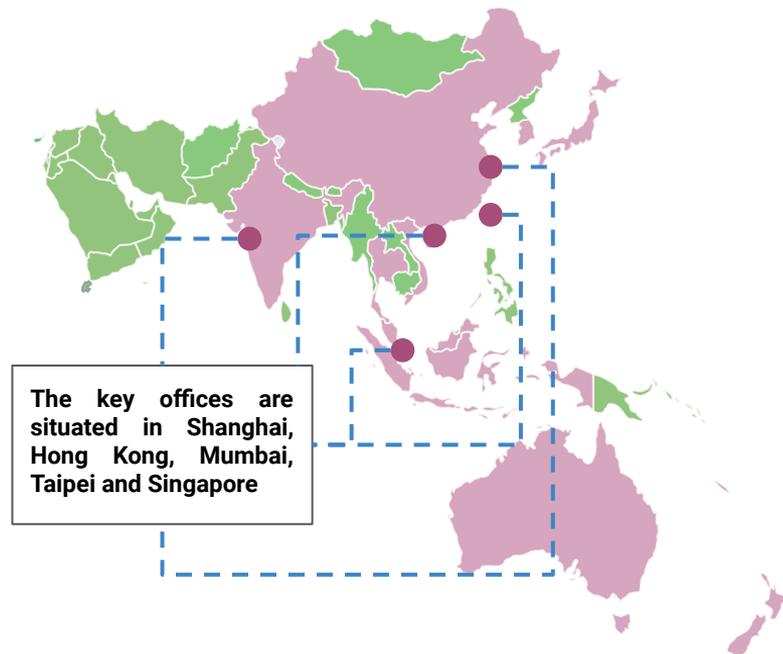
The bank plans less big corporate lending against its own balance sheet and more indirect financing and advisory work.

BNP Paribas plans to boost assets under management in Asia to US\$120 billion by 2020, from about US\$100 billion at present.

Sources: [DKA](#), [GlobalCapital](#), [The Asset](#)



BNP PARIBAS



Santander

Country	Founded	Headcount	Headquarter	Asian headquarter
Spain	1857	196419	Boadilla del Monte, ES	Singapore

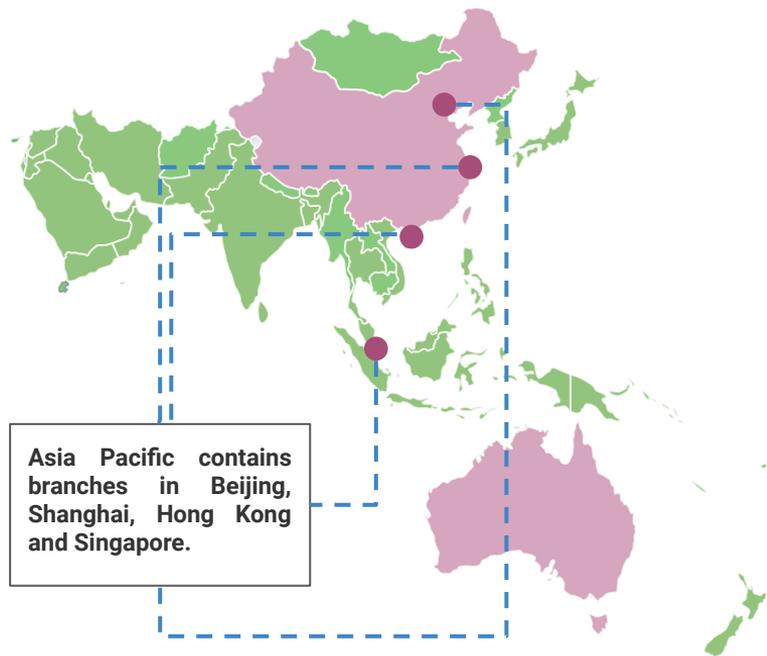
Banco Santander pushes its business with China to capitalize on the growing trade and investment flows between Latin America and Asia.

Plans: to open more offices in Asia, be a top three bank for a select set of regional clients, and finalise a rural bank joint-venture with China Construction Bank over setting up a rural bank-venture (JV).

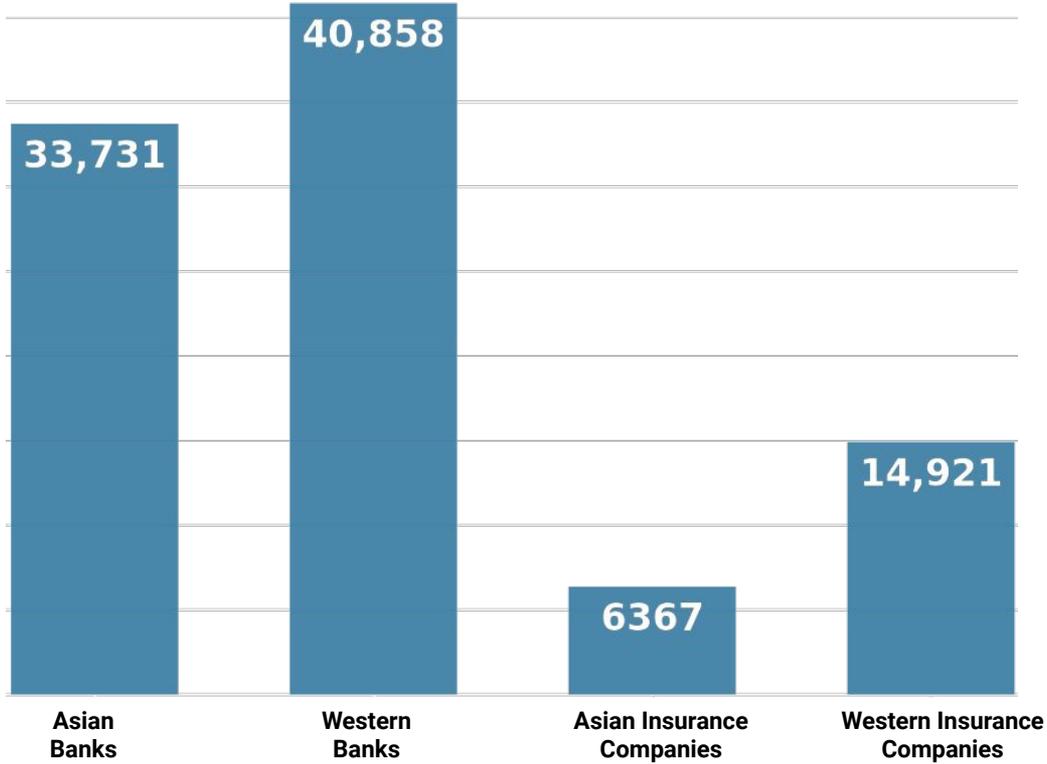
It is predicted that income from the region would grow at double the rate of other parts of the world, gradually increasing the market share of Asia in Santander's overall balance sheet.

The plan is for the JV, in which Santander will be a minority shareholder, to establish a network of 100 rural banks across the country to reach people based in smaller cities and towns. Even when established the JV is likely to take several years until it begins to make money, so for the coming few years Santander will focus more on building revenues from trade finance, foreign exchange, and corporate and investment banking activities between Asia and Latin America or Europe.

Sources: [DKA](#), [GlobalCapital](#), [The Asset](#)



Total Assets of Western and Asian Banks and Insurance Companies (in EUR bn)



Even though the total assets of the Asian banks and insurance companies are comparable to the Western ones, at the current stage they are still smaller.

At the same time, there is a growing trend of the expansion of foreign financial institutions towards the East. Asian markets became 'the second home' for several banks from Europe and North America.

Asia can benefit from both of those trends as they both can fuel the growing economy of the region.

General Conclusions:

Asia has experienced continuous growth for several decades attracting various global financial institutions. The **US-China Trade Wars** and **COVID-19** had been the major disruptors for the Asian economic growth slowing it but not reversing. China was one of the few countries that managed to recover from the crisis rather quickly.

The country reported third-quarter GDP growth up 4.9 percent from a year ago, bringing growth for the first three quarters of the year to 0.7 percent year-on-year, according to data released on October, 2020 by the National Bureau of Statistics.

China's imports and exports have grown quickly in September, with imports increasing by 13.2 percent and exports rising 9.9 percent from a year earlier. Hong Kong and Singapore also marked fast recovery and managed to retain their functions as the main hubs for banks and other types of financial institutions.

For several of the analyzed banks Asia became the most important region generating larger profits than their home regions. As a result many of the brought their decision making process closer to Asia by opening more branches, offices and even hiring senior personal. Expansion of Western banks to Asia also stimulated the use and development of mobile banking, integration to specific platforms as WeChat.

Trends and Predictions:

There were more new billionaires created in Asia last year than in any other region. Western banks aim to address their needs in wealth management.

COVID-19 had and still has a devastating impact on the World and Asian economy.

Nevertheless, **Asian countries seem to recover sooner than Europe and North America** leading the way for financial recovery in 2021.

Western banks have for years operated successfully in Hong Kong, Singapore and Taiwan. Expansion of these banks to Mainland China is a challenge to monitor in the coming years. Chinese growing market suggests opportunities for financial institutions but less liberal environment threatens this process.

Developing and newly industrialized countries of Asia still have the unrealized potential in growth and modernization. That modernization also requires investment creating opportunities for western financial institutions.

Socio-Economic Development

January 2021



Socio-Economic Development Introduction

Asia is now home to the greater part of the world's population. Of the world's 30 largest cities, 21 are in Asia, according to UN data. In 2020, an estimated 2 billion Asians were members of the middle class and that number is set to increase to 3.5 billion by 2030. In comparison, middle class membership in the Americas is expected to hit 647 million in 2020 and 689 million in 2030. In 2030, two in three members of the middle class will be Asian. Since 2007, Asians have been purchasing a greater number of autos and trucks than people in any other region – by around 2030 they will purchase the same number of vehicles as the rest of the world together.

“Now the continent finds itself at the centre of global economic activity,”- Narendra Modi, Prime Minister of India, said during the last annual meeting of the Asian Infrastructure Investment Bank. “In fact, we are now living through what many have termed the Asian Century,” he said. As the “Center of gravity” shifts in geopolitics, Asia is believed to be the new driving force for the world economy.

Ian Goldin, an Oxford University professor, has mentioned that China, alongside developing countries in Asia, is at the bleeding edge of the economic growth. He has also said that he expects expansion in the world's second largest economy to stay “robust” at 6% for the following decade, while surrounding emerging markets will intently mirror that. “I think we're seeing a rebalancing, a historical rebalancing,” said Goldin. “The center of gravity is clearly moving to Asia. This is a good thing. We'll have more global growth where it's needed, in developing countries.”

Source: [Financial Times](#), [CNBC](#), [Brookings](#)



Socio-Economic Development Introduction

Based on the presented charts, the report shows the socio-economic world trends, which in turn clearly represent global economic epicenter shift from West to East.

One of the most notable charts in this chapter is the one indicating the Gross Domestic Product (GDP) (**Purchasing Power Parity, 2016**), which perfectly describes Asia's sheer dominating economic value creation. Two other major charts here are the "**Export between the regions (based on the thirty countries analyzed in the report)**" and "**Export between regions charts**" - showing that trading within the continent is much larger in size than with other regions.

Sector composition is another important chart Its purpose is to show the economic structure of all the states included in the current report.

Other infographic tries to explain why from the top 20 companies (according to Forbes), seven are coming from Asia, and the majority of them are tied with Chinese financial institutions.

Number of billionaires by regions chart showcases something that should be already obvious - that Asia has the biggest amount of billionaires in the world and their wealth will keep growing.

We decided also to include various geopolitical graphs in order to better describe the international relations there.

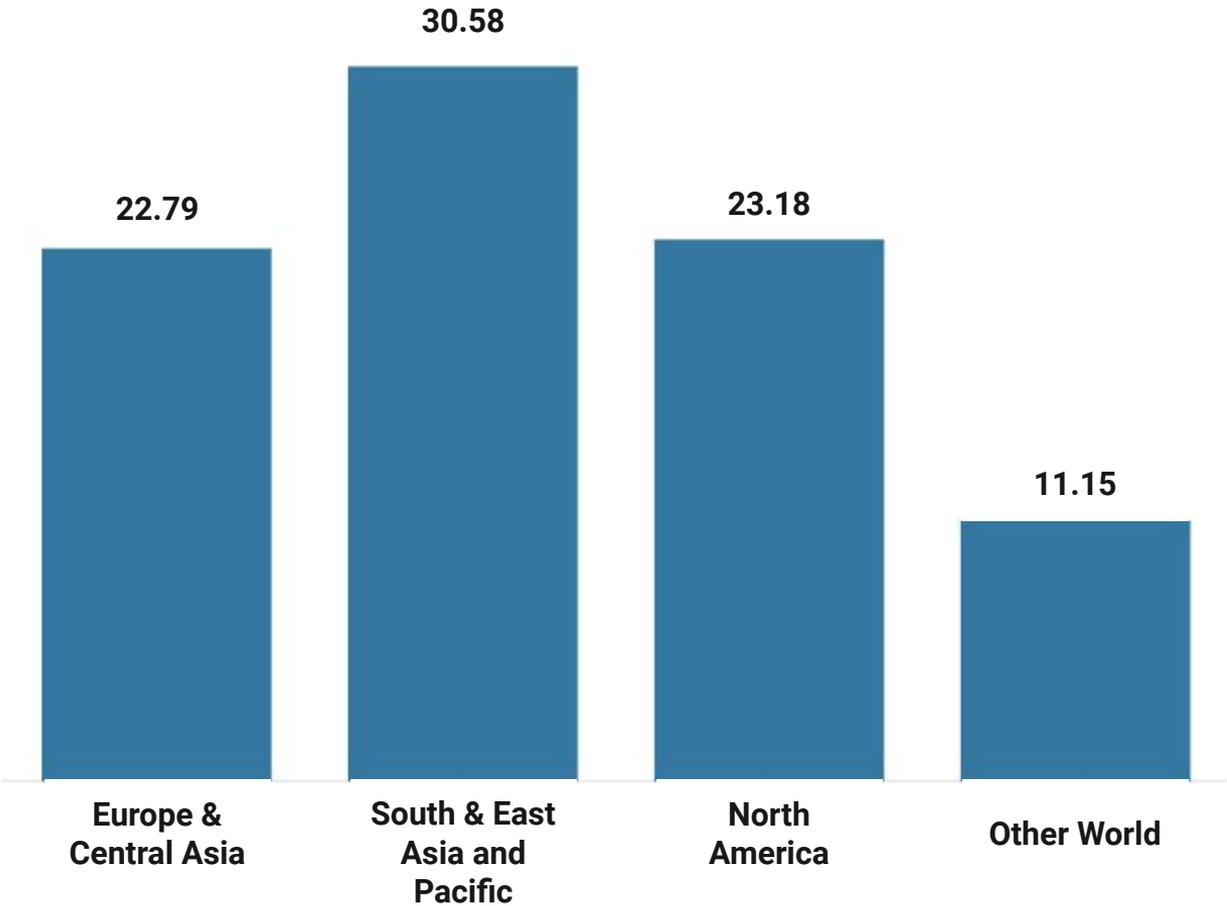
As it can be seen from them, Asian countries are now taking the largest share of members in **G20** (which compared to G7, represents the world's powers more inclusively).

Most powerful passports graph (number of destinations that can be access without a prior visa) shows that although the most powerful international ID documents belongs to Asian nations, Europe still has the highest number of them.

As the Asian economy goes into a more mature phase, there is also a large increase in the size of its middle class, a rather healthy trend, since provides many opportunities for development of many different social projects. China's rise to geopolitical powerhouse has been startling in its speed and magnitude and the country now wants strategic space in East Asia, and is no longer willing to play second fiddle to America. The second biggest economy of Asia - India had its own issues to solve. The country's focus for the last fifty years has been Pakistan, which it violently broke with during the Partition. Struggles over Kashmir, and with China, over territorial disputes in some of the highest places in the world.

The purpose of our Socio-Economic Dashboard is to present in depth all those major changes occurring in this full of potential region. The deep analytics in the platform will allow both private and public institutions to get valuable insights regarding major political and economic subjects on the continent.

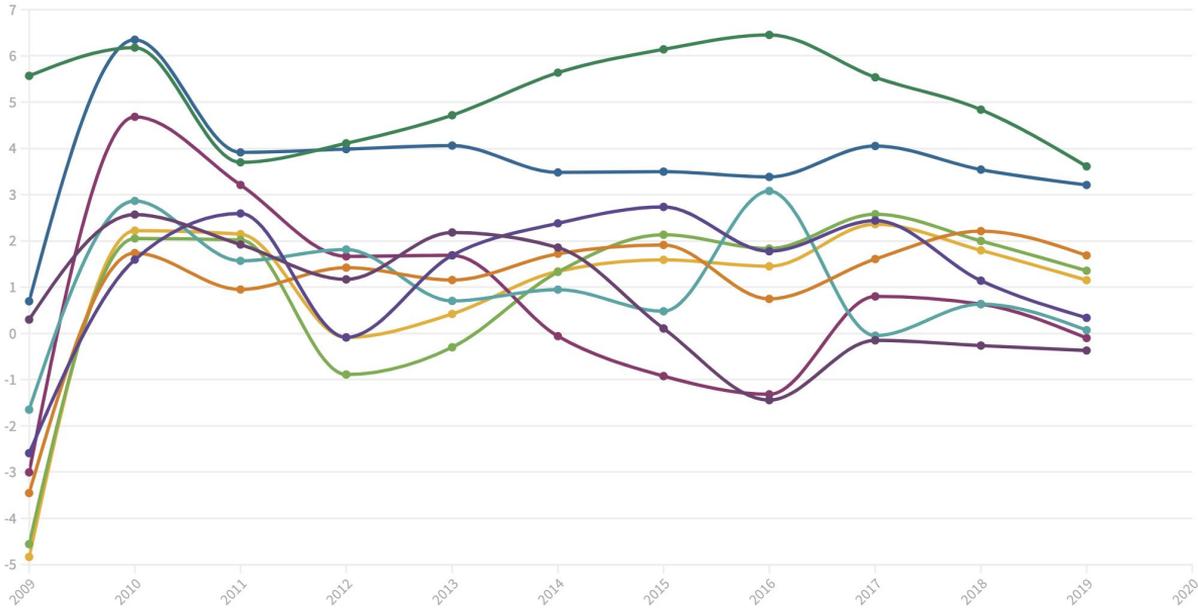
Share of World's GDP by Leading Regions



GDP per Capita Growth

Asia was the continent that recovered the fastest since the global financial crisis of 2007-2008. The average growth rate of the Asian economies exceeded 6% in 2010 (which was more than double that of their Western counterparts).

According to the data for 2019, Oriental countries are still leading the world in terms of economic development with a growth rate of more than 3%. Although, it seems that Eastern ascendance has slowed down for the moment, it is only because of the maturing of the Chinese economy while other big players like India and Indonesia are still catching up and will surely raise that number.



- Sub-Saharan Africa (IDA & IBRD)**
- East Asia & Pacific**
- European Union**
- Middle East & North Africa**
- Pacific Island**
- Europe & Central Asia**
- Latin America & Caribbean**
- North America**
- South Asia (IDA & IBRD)**

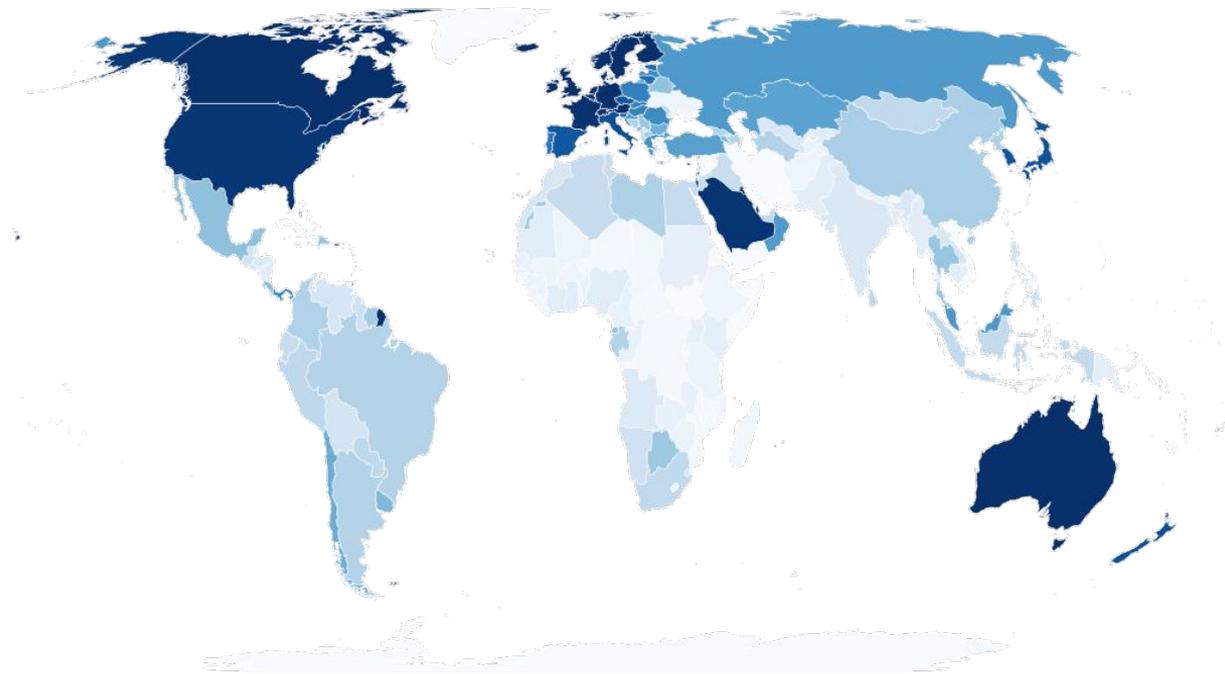
Even though Asia lags behind the West in terms of GDP per capita, its huge growth rate is about to change that. There are comparatively fewer countries in Asia compared to the West that could be considered developed (according to the United Nations) and some of those are the four Asian Tigers plus the industrial giant of Japan.

The gap between the richest and poorest countries in Asia is staggering. The continent holds the state with one of the highest GDPs per capita in the world - Qatar and also one of the world's poorest and most closed societies - North Korea.

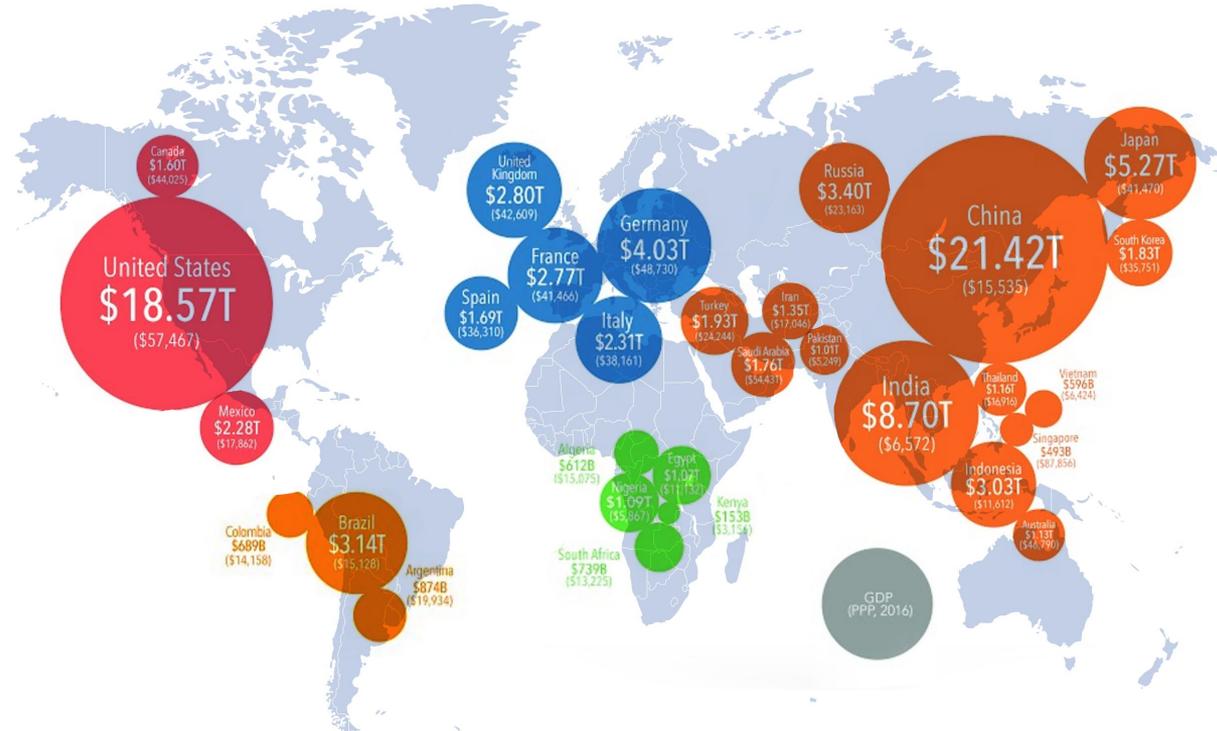
That shows that Asia is the land of extremes, but unlike Africa it possesses many of the most technologically progressive countries like South Korea, Japan and Taiwan. More so, the dazzling growth of the Chinese economy is set to transform global politics in the 21st century.

GDP per Capita Worldwide, 2019

0 130,000

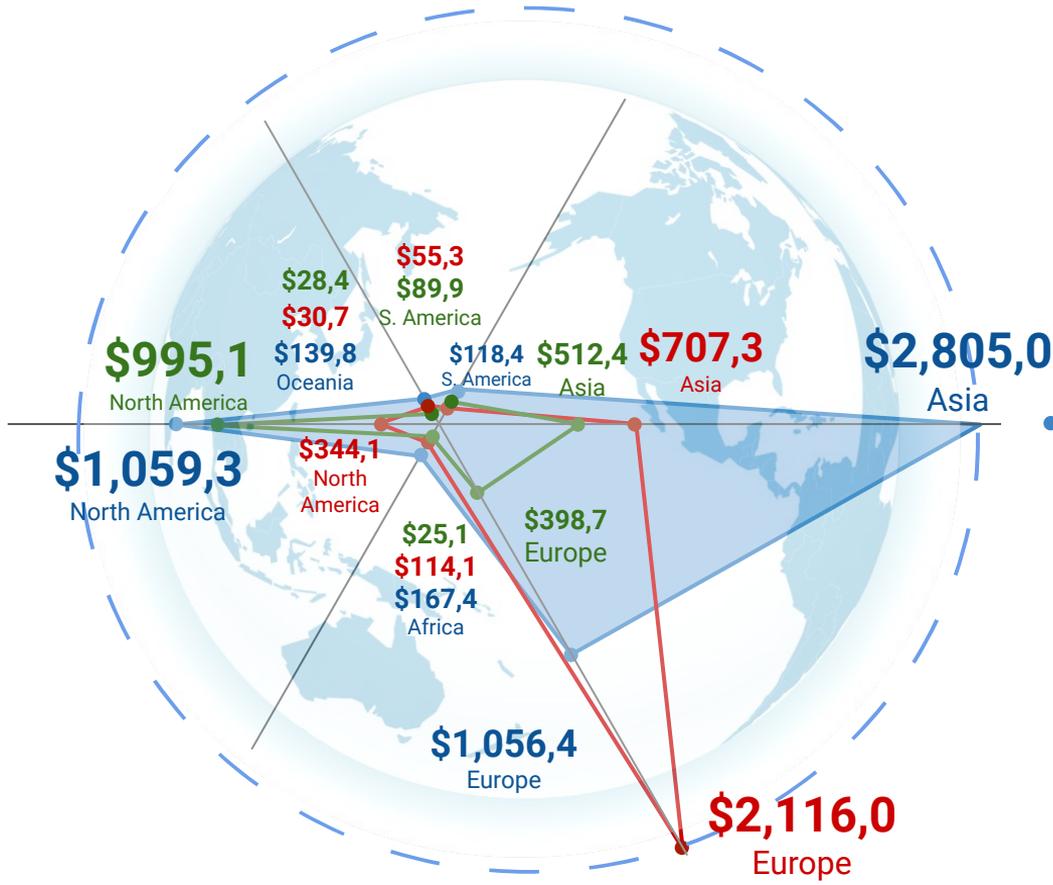


GDP (Purchasing Power Parity, 2016)



“Measured in PPP terms, China has already surpassed the United States as the world’s largest economy, while Asia as a whole represents about half of global GDP. The more Asian economies trade with one another, the better able they are to maintain low prices for goods.”

Export between the Regions, in Billions of USD



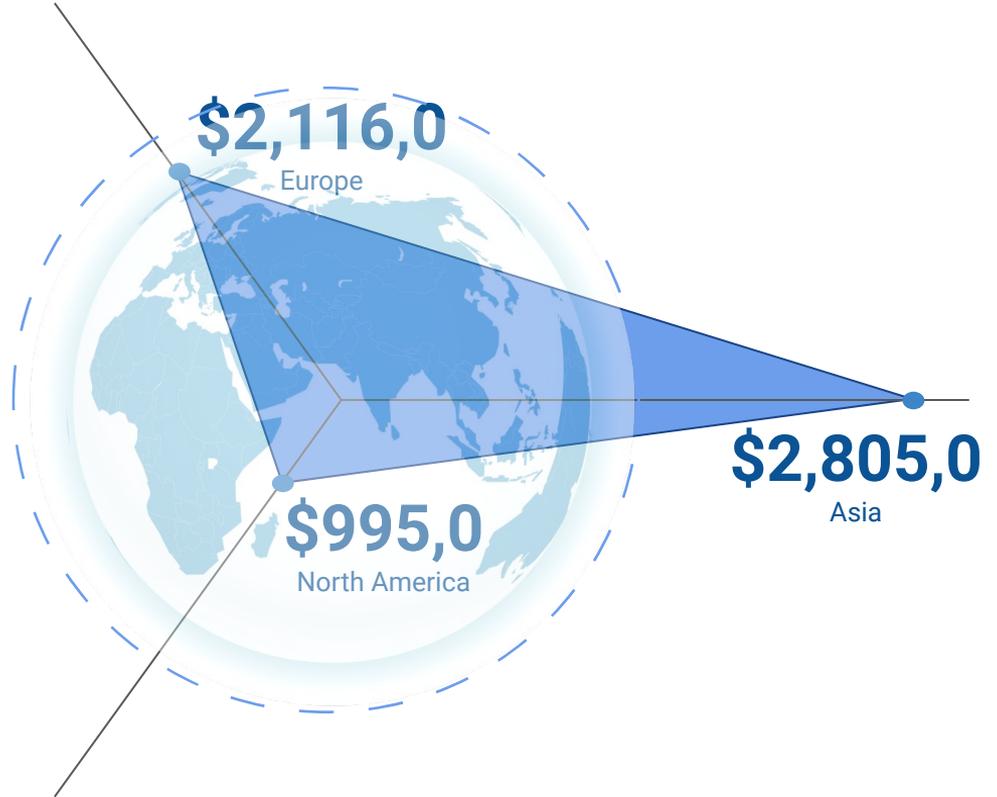
Sources: [MBS](#), [DKA](#)

Export within the Regions, in Billions of USD

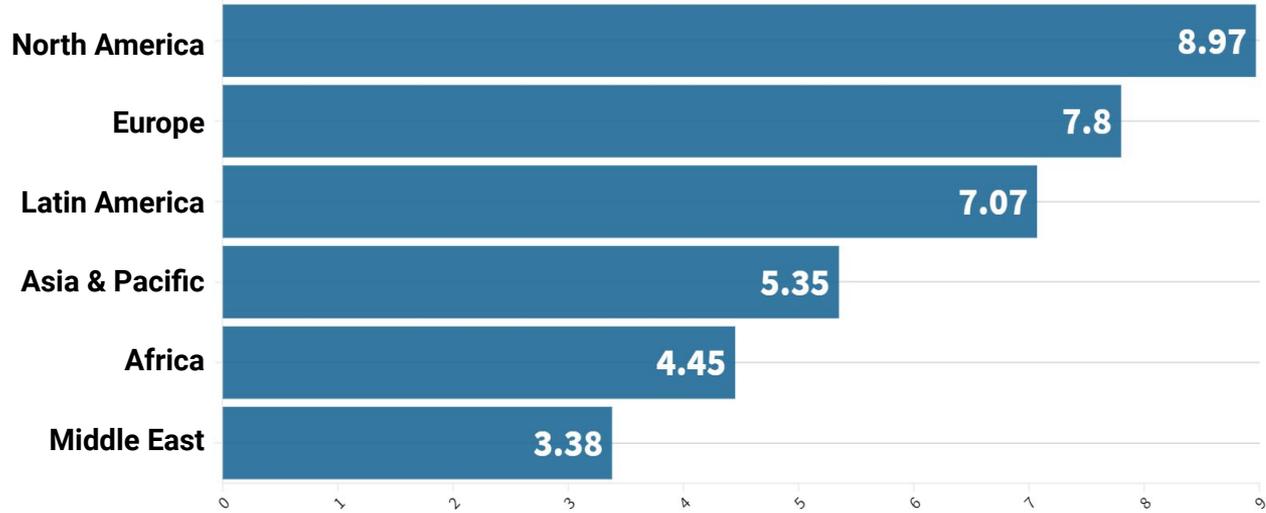
This graph shows the export within Asia is bigger than in the other regions. Despite political tensions in the region, the level of economic interconnections is very high.

Growing trade and investment linkages on the continent will also help improve the region's economic resilience to uncertainties in the global economic and trade environment.

Asia is leading in terms of recovery on the world trade scene. That is helping the region to maintain strong growth momentum amidst global economic turmoil and its continued integration and cooperation will underpin regional economic growth and financial resilience.

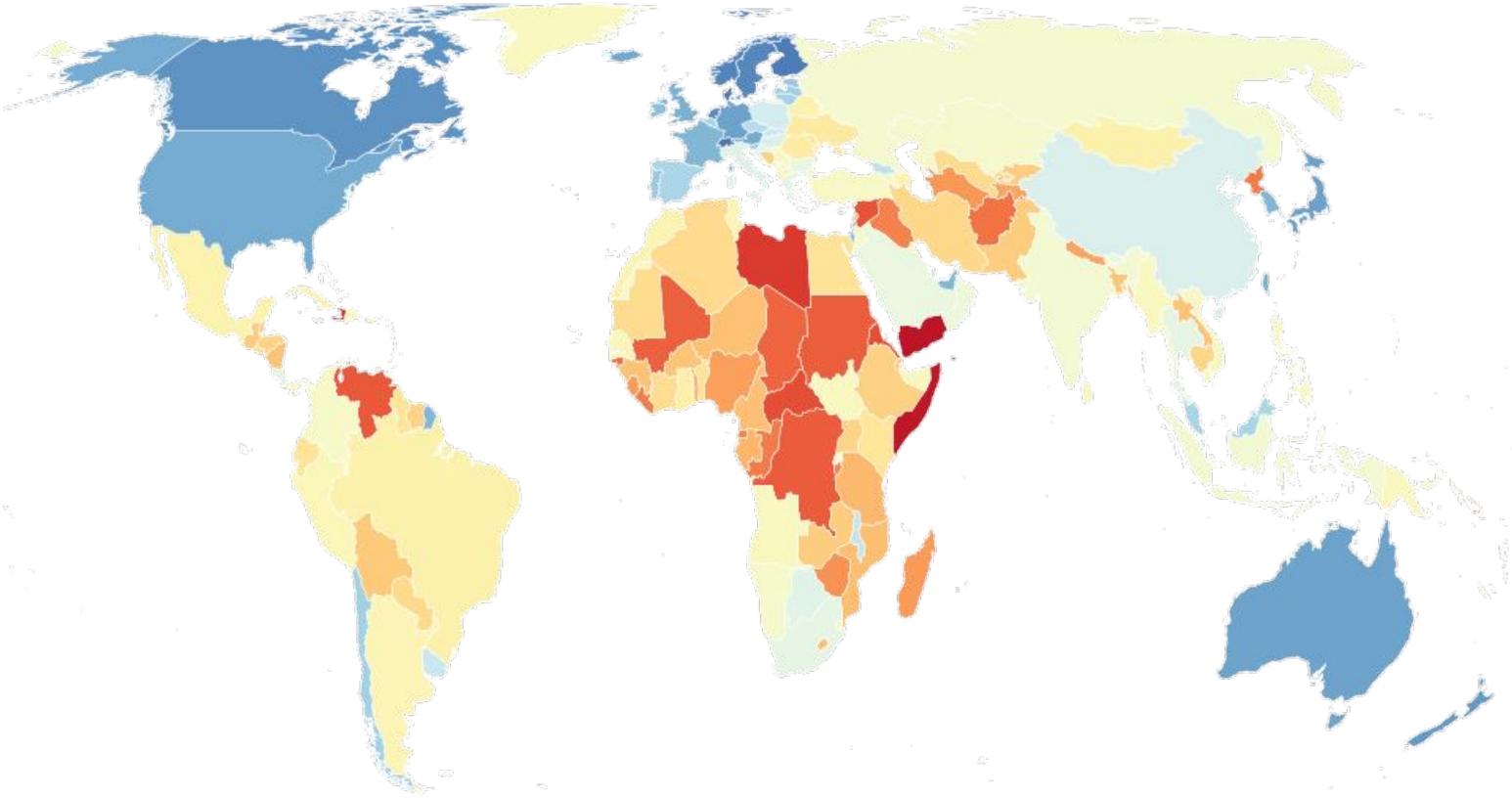


Civil Liberties Index



Civil Liberties Index characterizes the civic space where people can organise, participate and communicate with each other freely. Asian countries show low performance on the path to democracy. Out of 25 countries, four – China, Vietnam, Laos and North Korea – are rated “closed”, nine “repressed” and nine “obstructed” with Malaysia being one of them. Within the region, only Australia and New Zealand classified as full democracies last year.

Regional Corruption Map

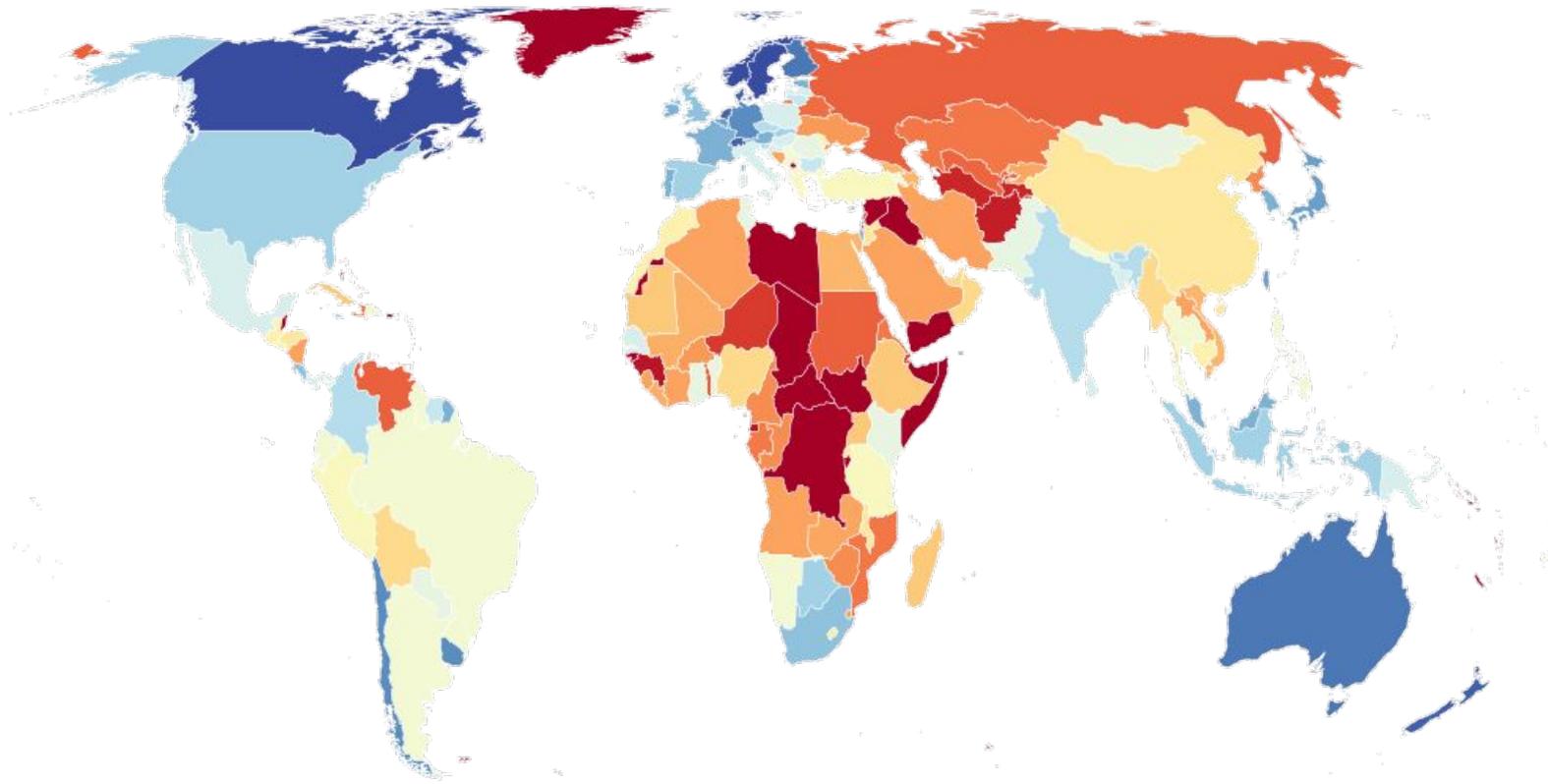


Regional Corruption Index

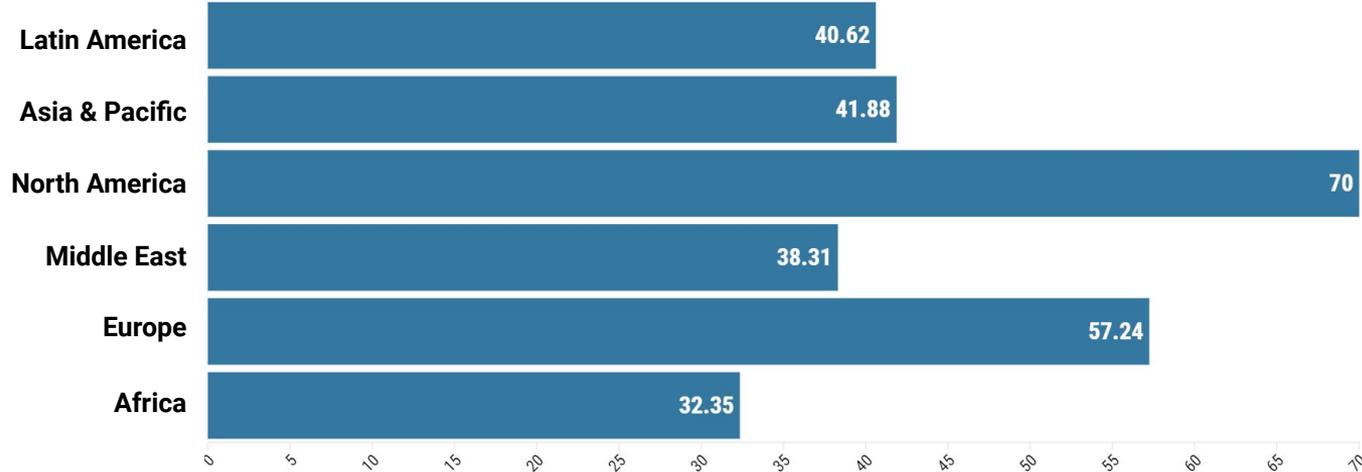


The regional average of the Corruption Perceptions Index (CPI) indicates a general stagnation in the Asia-Pacific region. Despite the presence of leaders such as Australia, New Zealand, Singapore, Hong Kong and Japan, it has seen little progress in terms of anti-corruption efforts and their anticipated results. In addition, underperforming nations such as Afghanistan, North Korea and Cambodia continue to highlight the region's serious problems with poverty and underdevelopment.

Functioning of Government

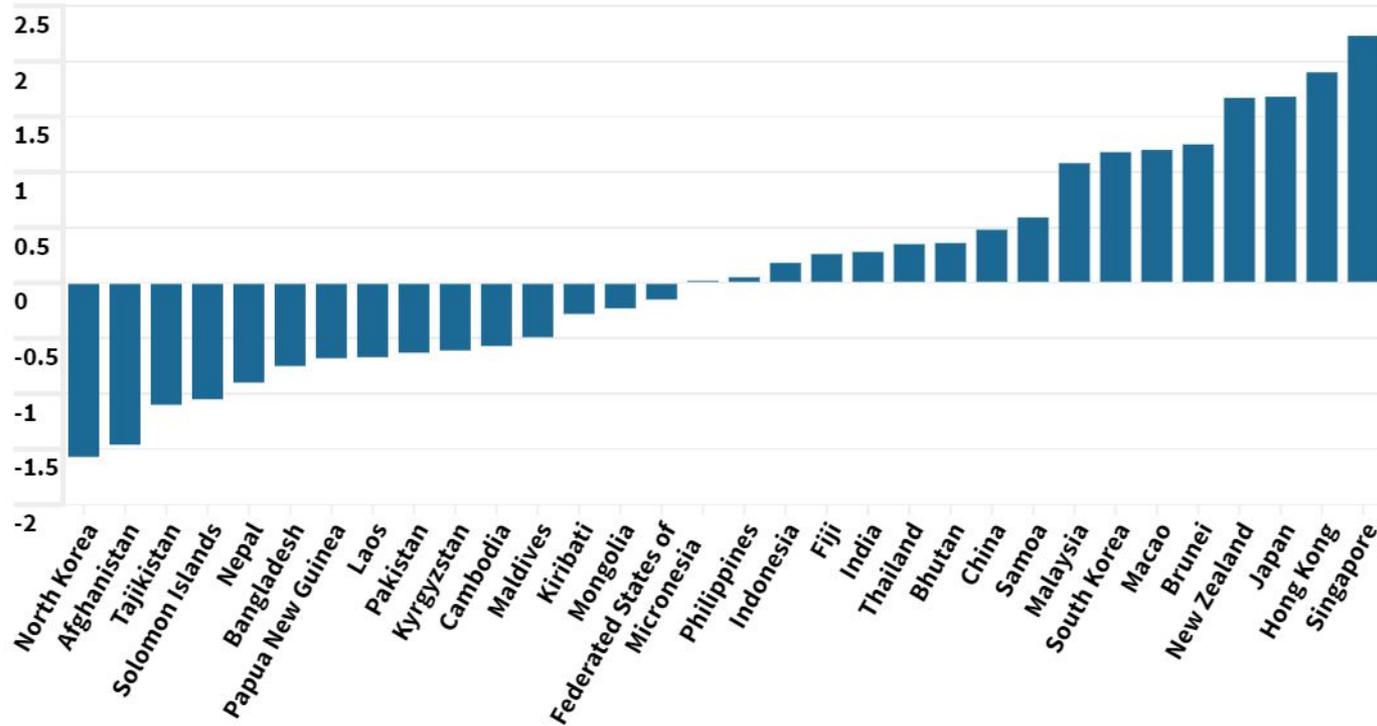


Functioning of Government Index



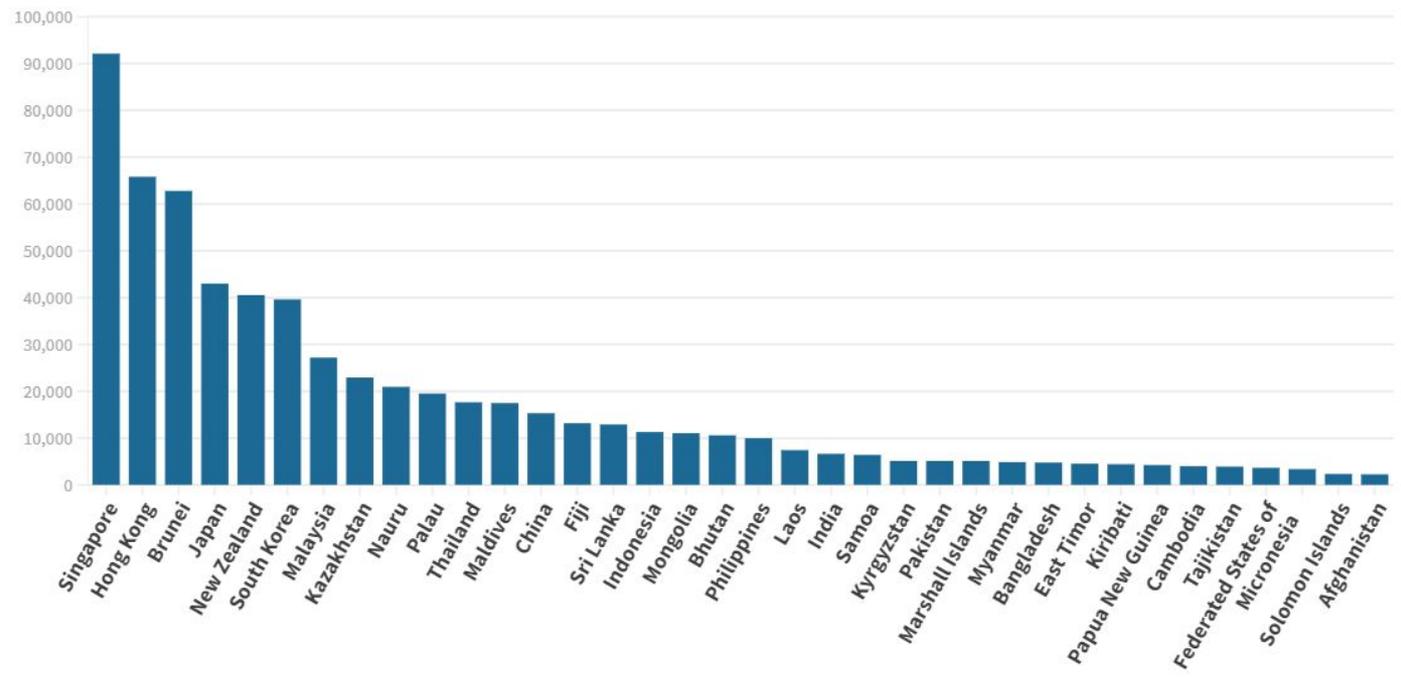
From 2000 up to 2016 the Asian continent has made rapid progress in improving its standing on our global rankings. However, from that point on the average score of the region decreased in 2017 and till now remains stagnant. Overall, Asia is highly diverse in score - it includes top-performing in the global ranking countries like New Zealand, and countries from the very bottom (out of 167 analyzed entities), as North Korea. At present only Australia and New Zealand are classified as 'full democracies' while Japan and South Korea are very close to attaining this status. As a result of the turbulent 20th century the region has managed to give birth to two "full democracies", twelve "flawed democracies", five "hybrid regimes" and seven "authoritarian regimes".

Government Effectiveness and Economic Growth



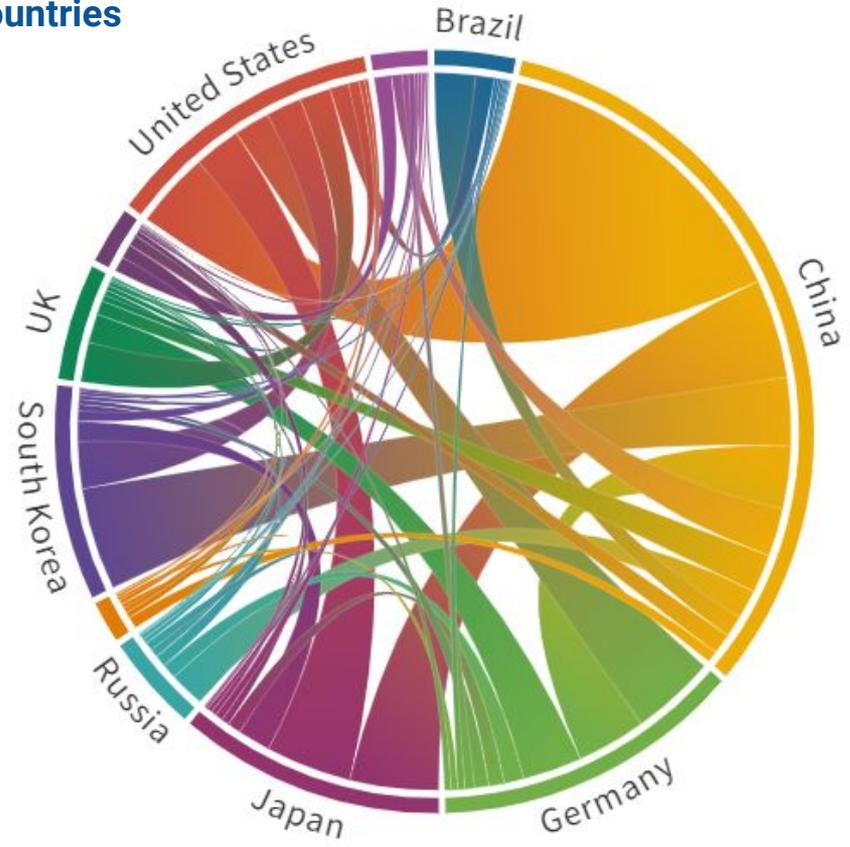
Effort to improve the business environment is a major factor for attracting a greater number of national and international investors to the regional economy which has the potential result in a rapid economic growth. While in poorly governed countries the high level of corruption leads to tax evasion and lack of the necessary funds to finance productive public investment and social spending for the poor. In essence, a government that is socially accountable in delivering services and responsive to the needs of its citizens will ultimately create a democratic environment leading to inclusive growth and human development.

Gross National Income



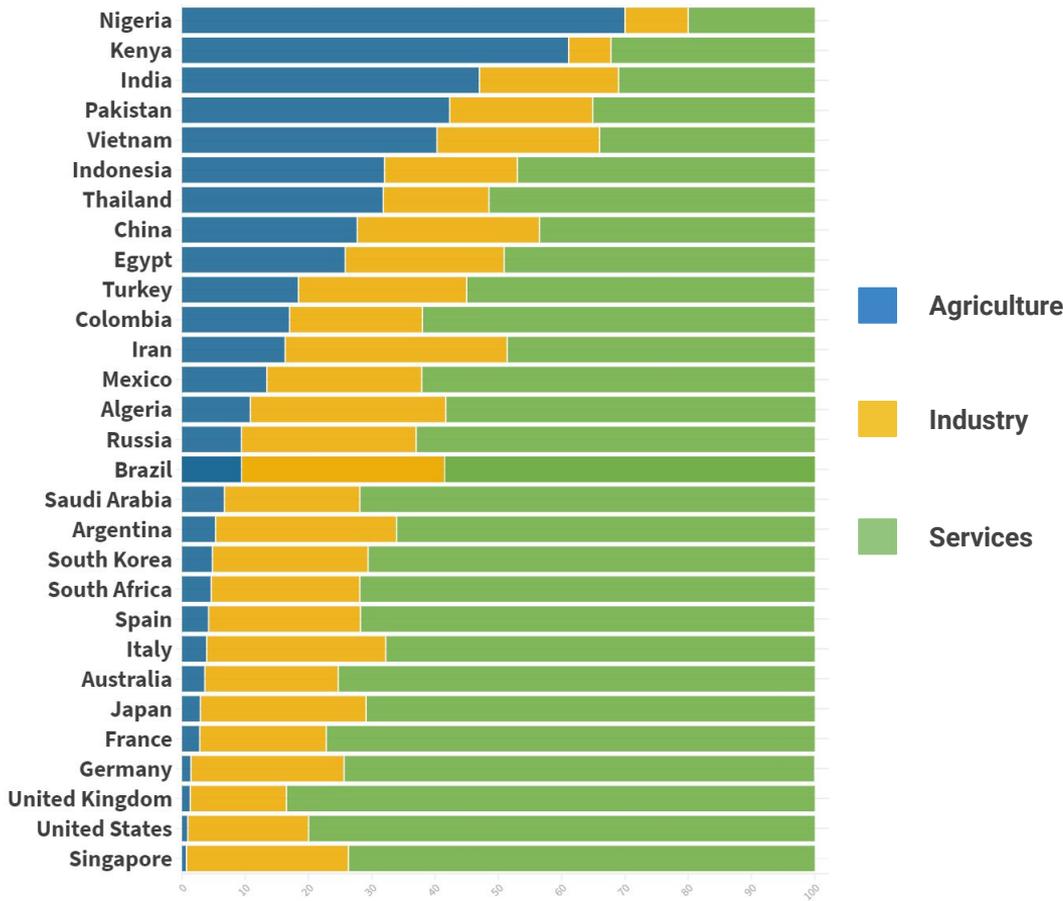
Gross National Income (GNI) is the total amount of funds earned by a nation's individuals and businesses. It is used to measure and track a nation's wealth from year to year. The number includes the nation's gross domestic product plus the income it receives from overseas sources. On the chart here, the income inequality and the weakness of national economies across the region could be clearly seen. Economic growth and performance are directly related to political environment, civil liberties and general level of corruption (plus the efforts to combat it).

Export by Countries As for 2018



The graph shows that export within Asia is much larger than with the other global regions and despite political tensions, the level of economic interconnectivity remains very high. The strengthening of the trade and investment links on the continent is improving the region's resilience to uncertainties in the global trade environment. Asia's fast recovery rate is helping it to maintain strong growth momentum amidst the ongoing crisis and its continued integration and cooperation will underpin regional industrial and financial strength.

Economic Power Distribution



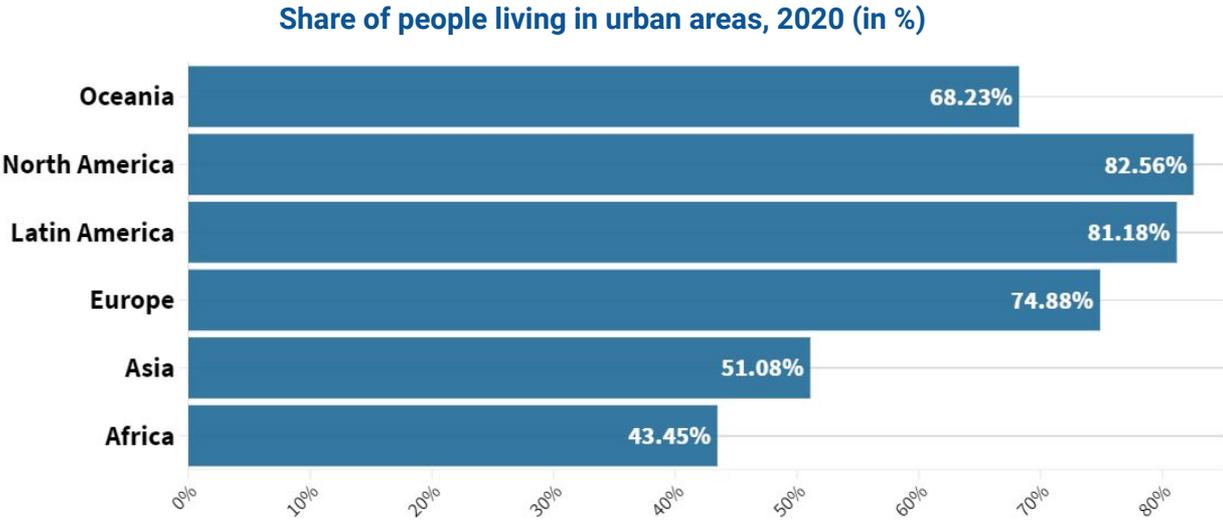
The Nominal Gross Domestic Product (nominal GDP) sector composition is a very demonstrative data graph.

In developed countries, the tertiary economic sector of services contribute the most to GDP. Those nations invest heavily in information technology (IT) systems in order to improve the way businesses in the service sector operate.

In the developing economies (which are constituted from most of the entities on the African continent and also many of the Asian ones), the first economic sector (agriculture and mining), is dominated by the emphasis on the basic food-supplying activities.

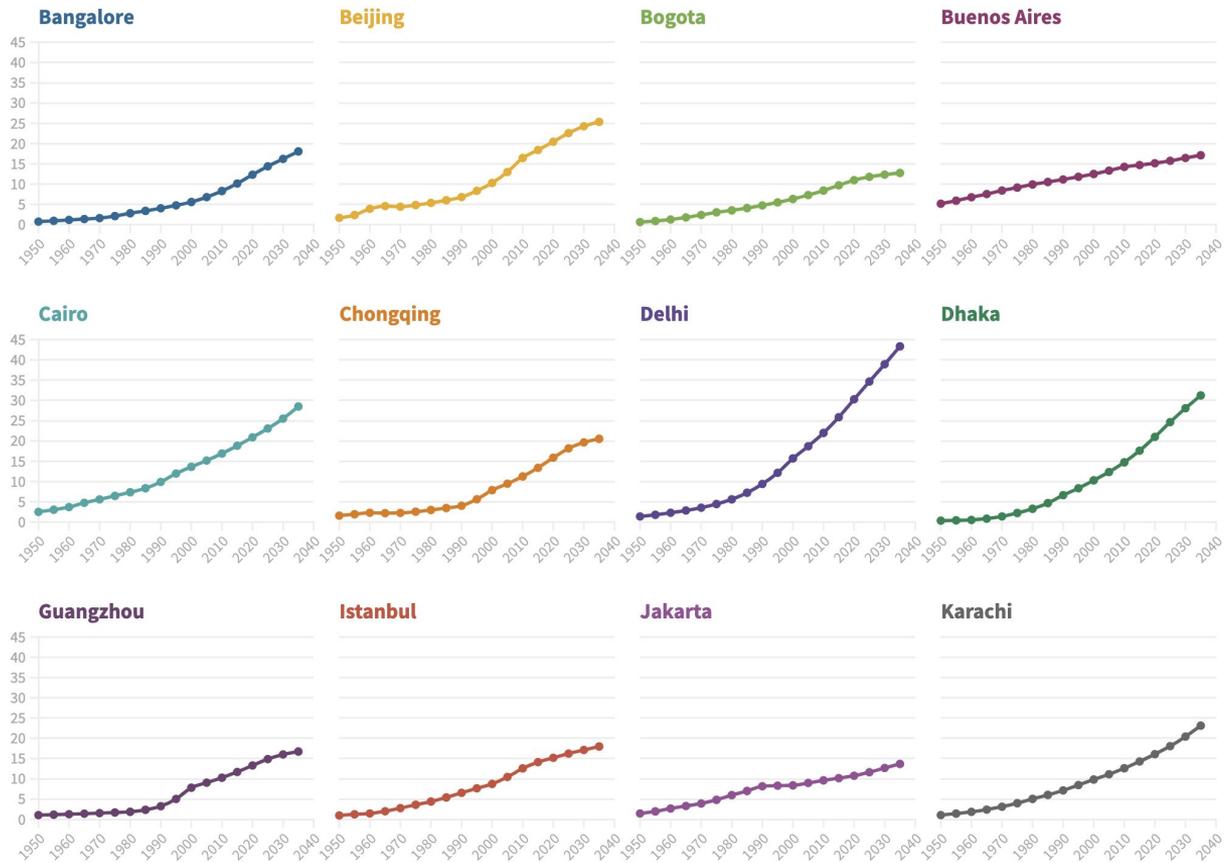
Demographic Trends by Regions

The rapid industrialization that occurred during the second half of the twentieth century led to a massive internal migration and urbanization of many of the East Asian countries. As a result, seven, out of the top ten largest cities in the world, are located on Asian soil with Tokyo (Japan) being in the first place and Delhi (India) trailing on the second. As the twenty-first century progresses we are likely to witness a much higher ranking for many of the regional urban areas.



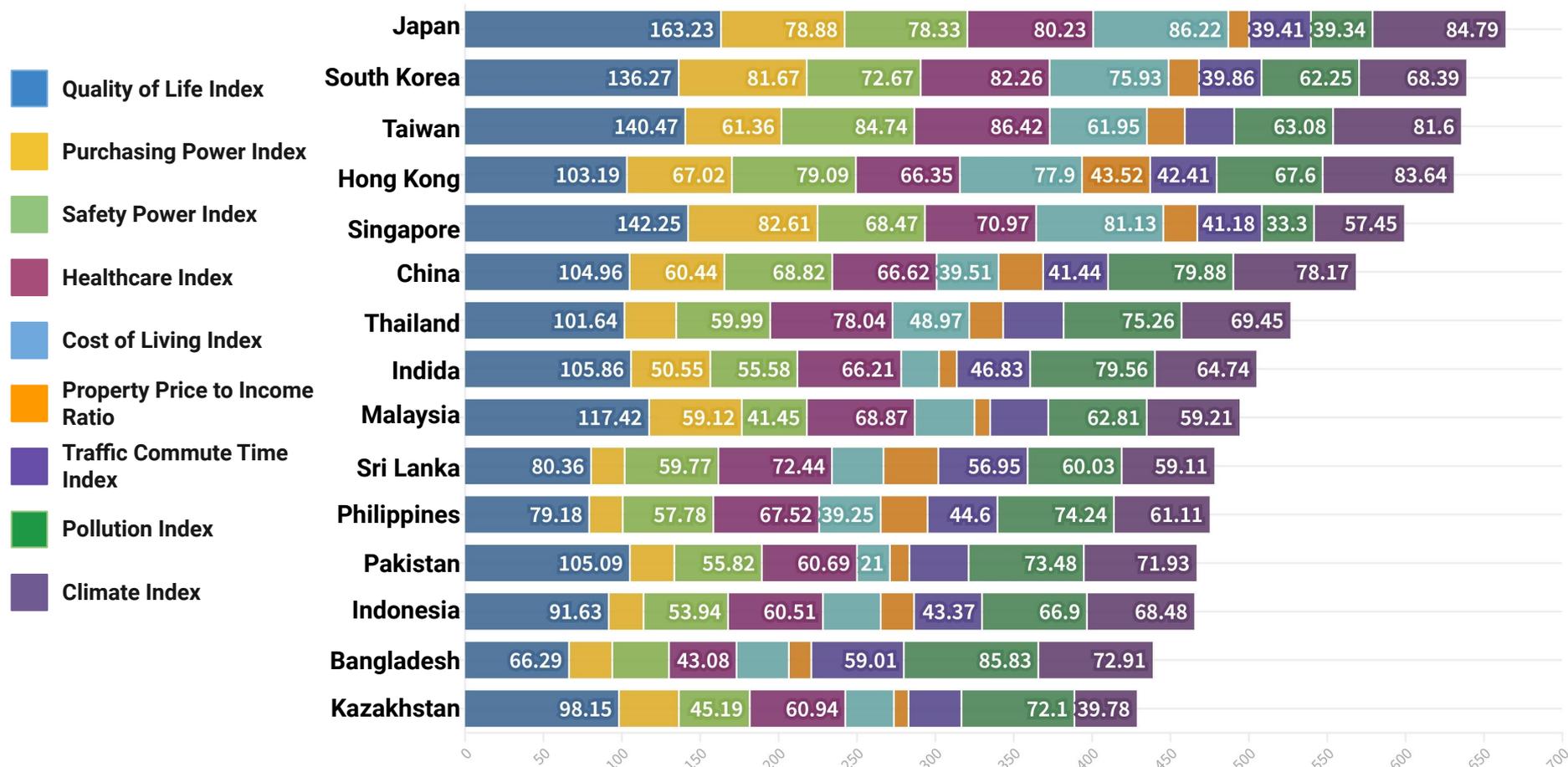
Share of the population living in urban areas as estimated by the European Commission. The European Commission combines satellite imagery with national census data to derive urban and rural populations based on its own standardized definitions. Note that this result differs from UN figures which are based on nationally-defined urban definitions.

Demographic Trends: City Population, 1950 to 2035



Asia-Pacific region's urban population totals more than 750 million, that can be compared with combined population of Europe and the United States, and almost half (45,5%) of it lives in urban areas. Seven of the ten most populous cities are located in Asia: Tokyo, Delhi, Shanghai, Mumbai, Beijing, Dhaka and Kolkata. Megacities (>10 million people) and metropolitan areas (1-10 million) are the driving force behind the regional and global economies, and they are home more than 11% and 29% of Asia's urban population, respectively. From an economic standpoint, urbanization enhances productivity and increases Gross Domestic Product per capita and thus, the regional cities have turned into a major engines for wealth creation.

Quality of Life Indices by Country In Asia



Global Entrepreneurship

January 2021



The first chart in this section shows **cross-border Merger & Acquisition activity**, which is a tactic used to rapidly expand to new markets on a global scale. During 2018, the United States was the leading acquiring country for cross-border M&A activity with over 4717 deals, accounting for almost 50 percent of the total cross-border deals made during 2018. The United Kingdom (UK) and France were the next largest acquiring nations with 775 and 448 deals respectively.

By definition, **Foreign Direct Investment** includes "mergers and acquisitions, building new facilities, reinvesting profits earned from overseas operations, and intra company loans. So, therefore, M&A activity is a detailed part of FDI, including only special types of contracts, when the whole FDI includes more aspects.

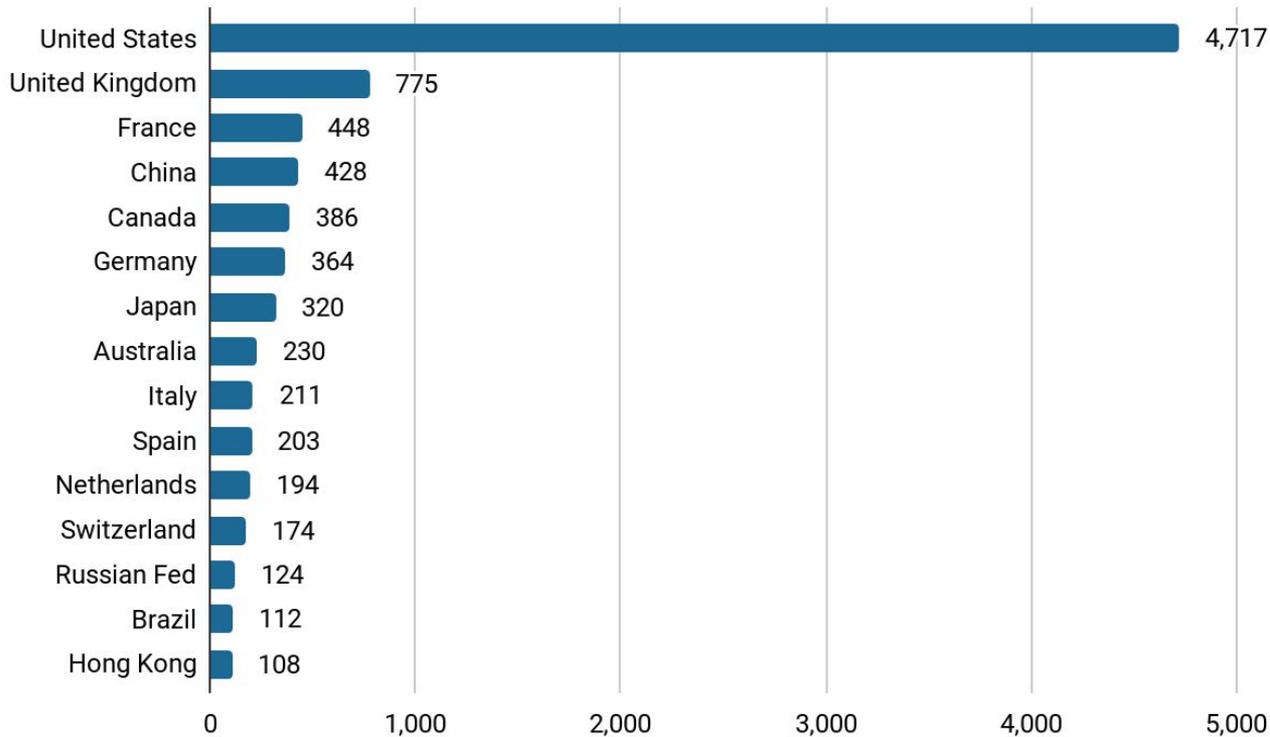
The graph that follows demonstrates the Foreign Direct Investment (FDI) outflows which are the investments made by a firms or individuals in one country into business interests located in another country. The chart demonstrates that the first two places belong to Asian countries: Japan and China.

FDI can help stimulate economic growth, both for the recipient country and for the country making the investment. For example, a developing country might benefit from incoming FDI as a way of financing the construction of new infrastructure or solving the employment issues. On the other hand, multinational companies can benefit from FDI as a way to expand their footprint into international markets.

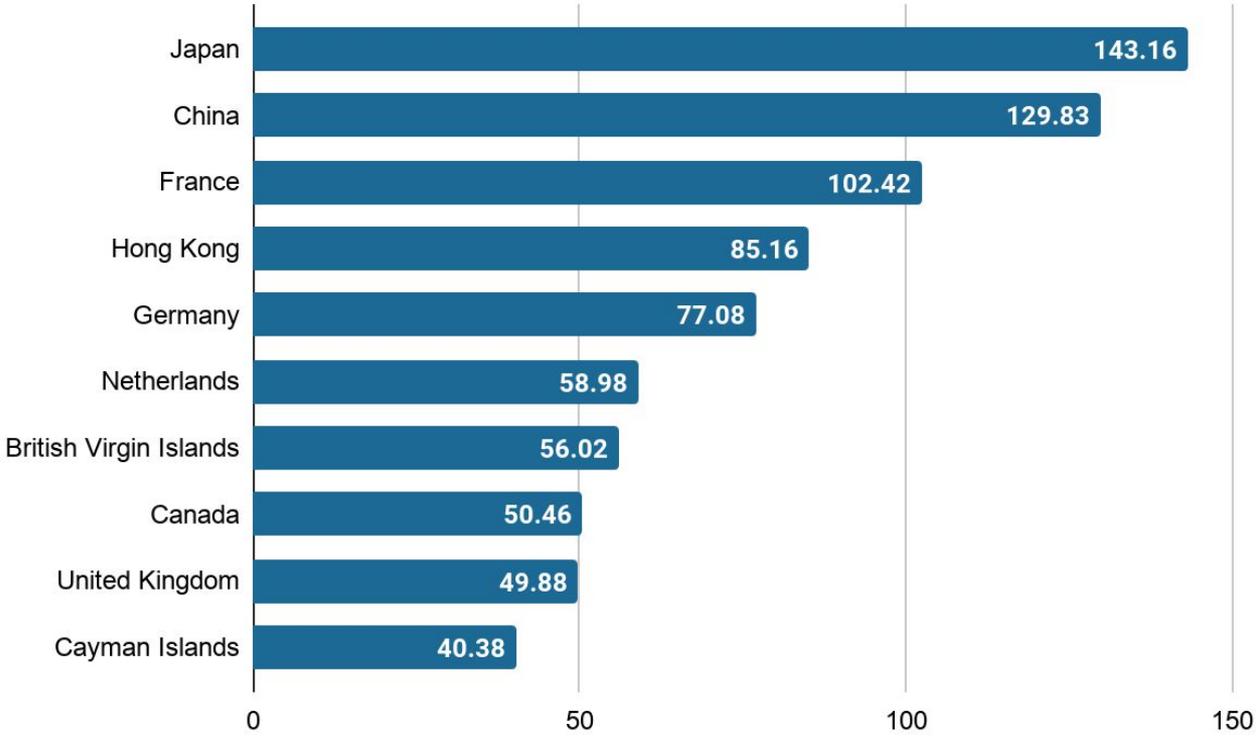
The following pages of the chapter study the growing amounts of billionaires in Asia and the power of passports of Asian countries giving wealthy Asians competitive advantages in mobility.



M&A: Largest Acquiring Countries Worldwide Number of Deals for Selected Countries in 2018



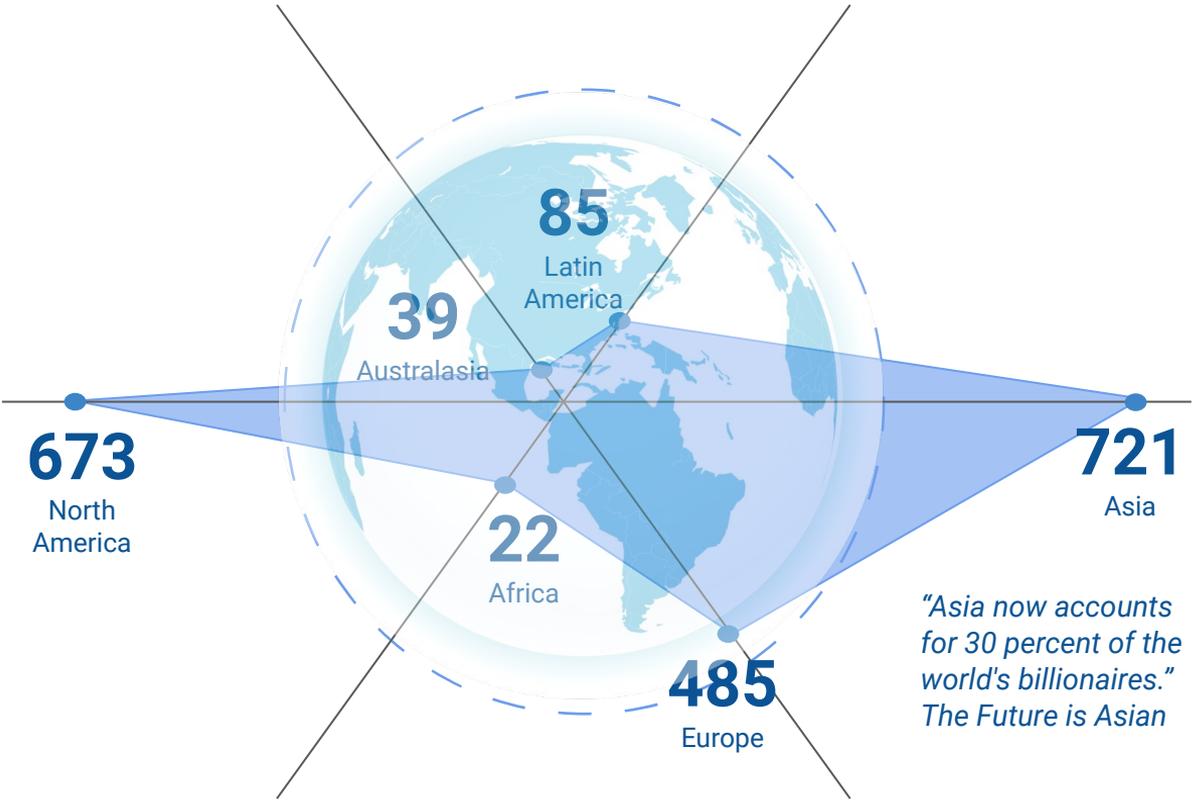
Foreign Direct Investment (Outflows in Billion USD for Selected Countries in 2018)



Number of Billionaires by Regions

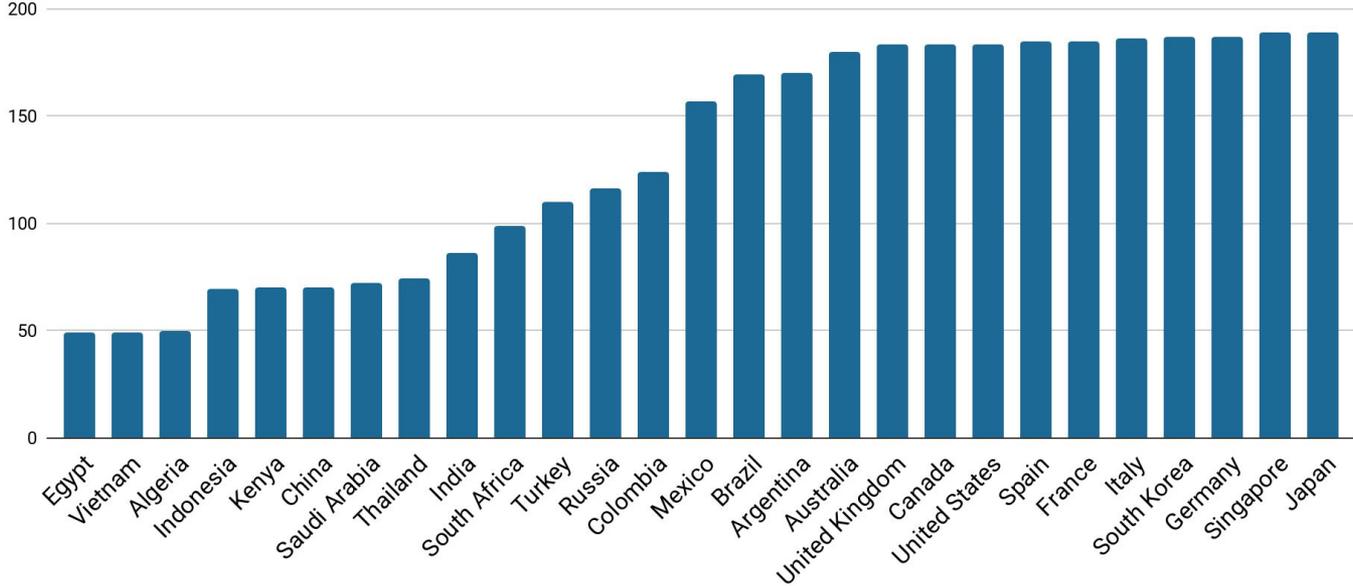
Being the most rapidly growing economic region, Asia has become a place of residence to a large number of billionaires, such as Masayoshi Son, Mukesh Ambani, Jack Ma, Ma Huateng and others.

According to Knight Frank's Wealth Report this region is the largest club for wealthy men, with their number there is set to increase above 1,000 by 2023, accounting for more than a third of the global billionaire population of 2,696. Due to the latest data, India leads in terms of forecast UHNWI (Ultra-high net-worth individuals). It is expected to achieve a rise of 39% growth, followed by the Philippines (38%) and China (35%). Of the 59 countries and territories included in the wealth forecasts, eight top-ten states are from Asia.



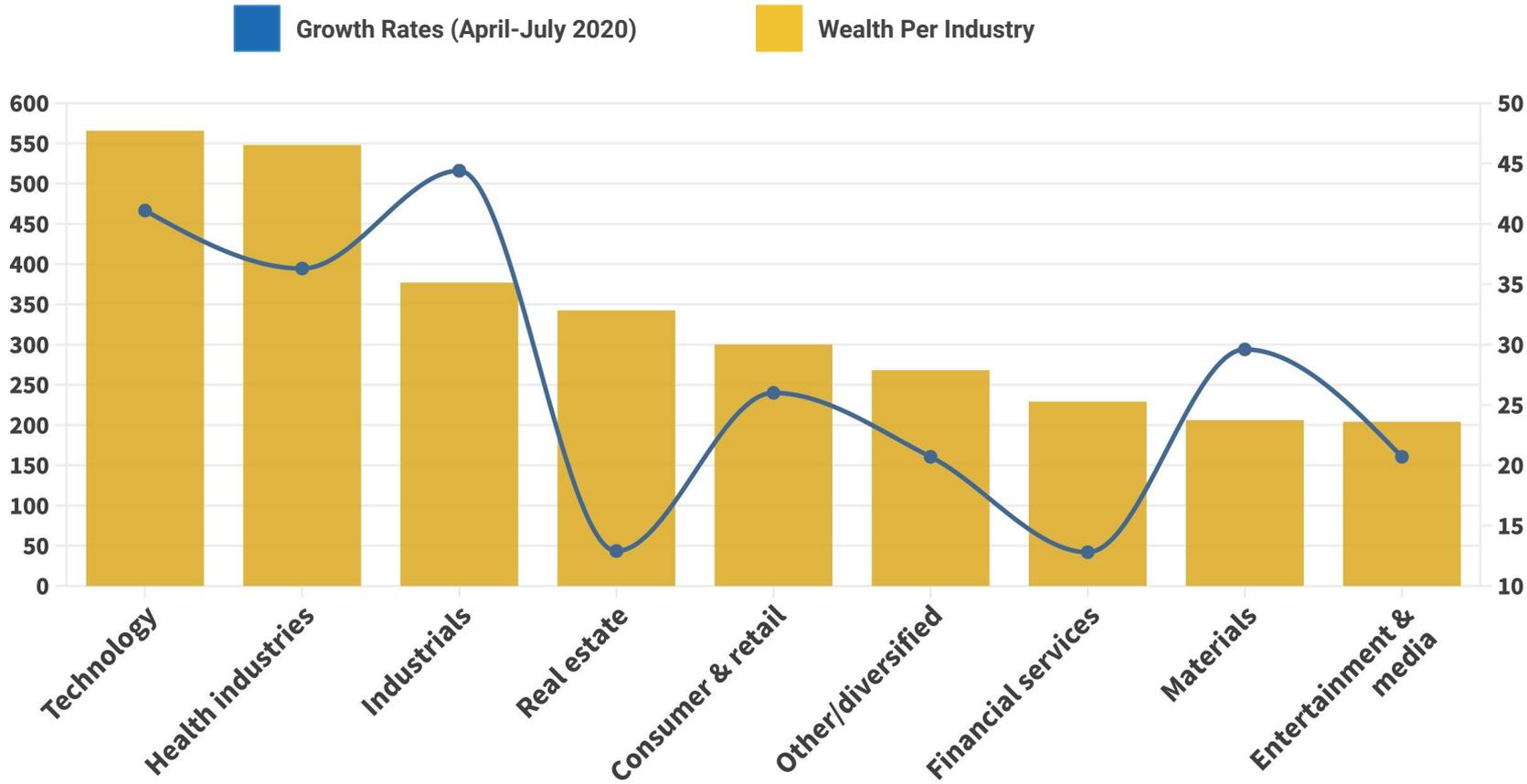
"Asia now accounts for 30 percent of the world's billionaires." The Future is Asian

Most Powerful Passports (Number of Destinations that Can Be Access without a Prior Visa)



“Asian businesspeople strut around the world as their passports gain more visa-free privileges. Singapore and Japan have overtaken Germany in Henley & Partners' "most powerful passports" index, South Korea also ranks ahead of most European nations, and Malaysia has nudged ahead of many European passports as well.”

Which Industry Boasts the Most Billionaire Wealth?



Innovations and R&D Overview

January 2021



R&D Spendings

Research and Development (R&D) refers to innovative activities undertaken by corporations or governments in developing new services or products or improving existing services or products. Research and development constitutes the first stage in the production process of potential new services.

R&D expenses are essentially the amounts of money that a company spends to develop new products and services or improve already existing ones each year.

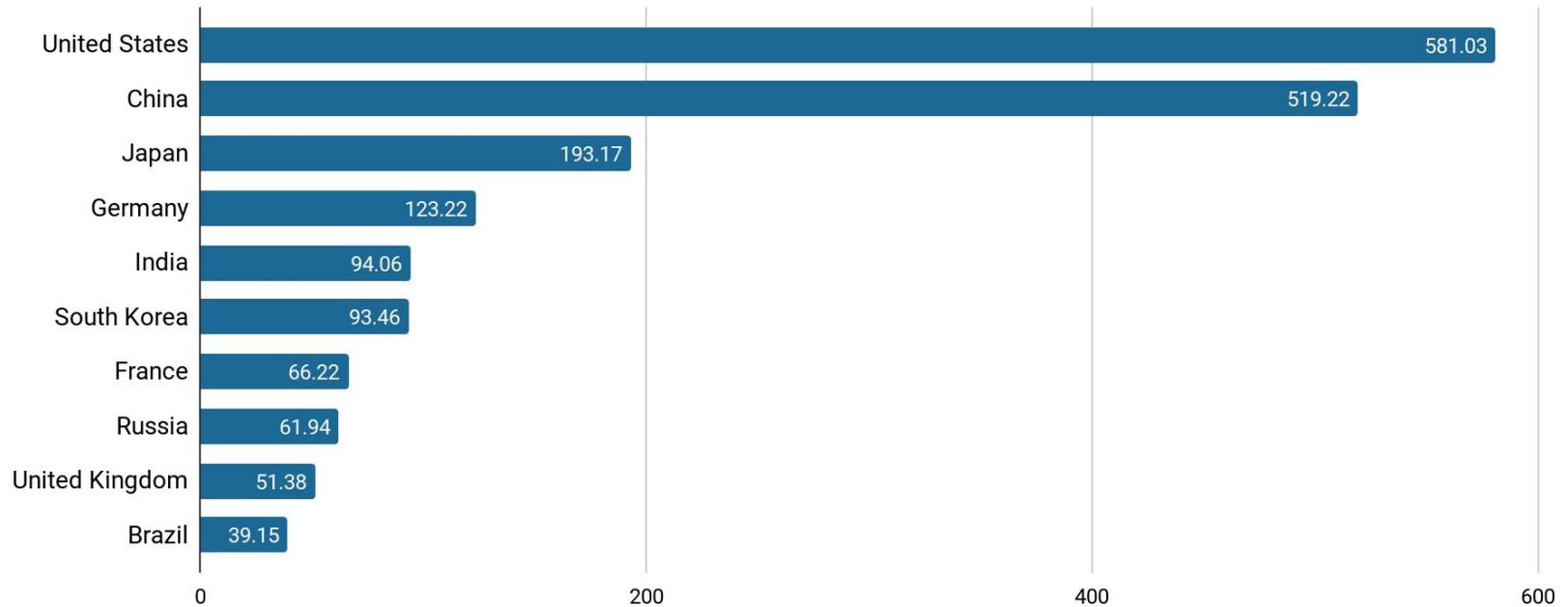
R&D spendings are important as they contribute to the sustainability of a business. The needs of customers change over time so the companies not investing in R&D are not likely even to keep their current positions. Many companies do not understand the importance of R&D until it is too late. R&D also allows companies to have cutting edge technologies and products to keep up with competitors.

The fact that China, Japan, India, and South Korea are represented among the top 10 countries spending on R&D demonstrates that the Asian region is one of the global leaders in R&D. If we compare companies instead of countries we can notice that Asian electronics and motor giants as Huawei, Samsung, Toyota, Honda are also among the top R&D spenders in the world.

Analyzing R&D spendings allows us to understand not only the current stage of economic development but also to get a grasp of how the industry is going to look in a couple of years.

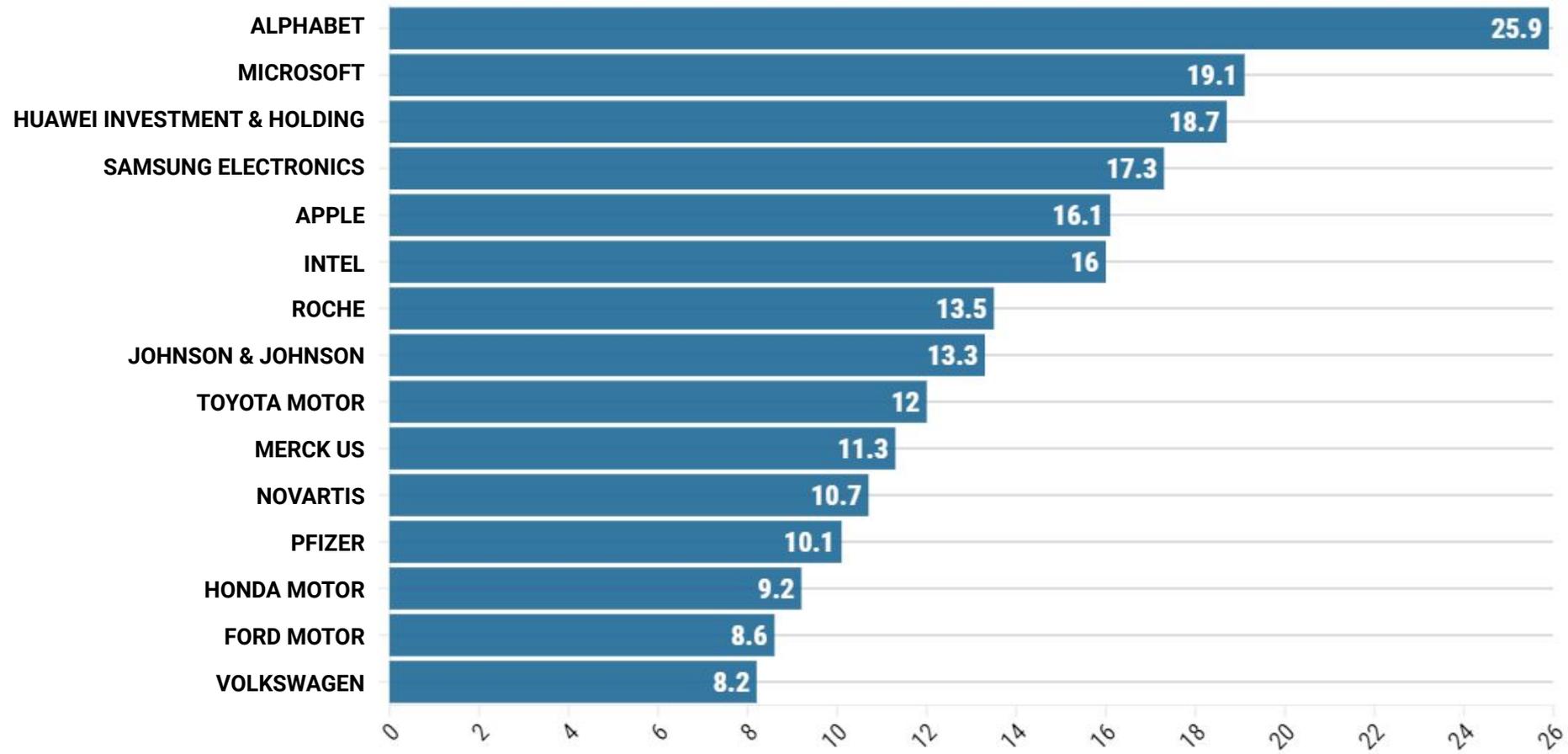


Leading Countries by Gross R&D Expenditure Worldwide in 2018, in Billions USD



“According to the World Intellectual Property Organization’s Global Innovation Index, Singapore and South Korea are two of the most competitive economies in the world, owing considerably to their deployment of technology in the workplace and their upskilling programs. In 2017, Samsung overtook Intel as the world’s largest semiconductor supplier and edged out IBM for the most patents filed. In 2021, South Korea will open the International Science Business Belt in Daejeon, a complex encompassing eighteen universities, science parks, research centers, and a heavy ion accelerator.”

Top R&D Spenders, in Billions of USD



Source: [European Commission](#)

R&D Spendings

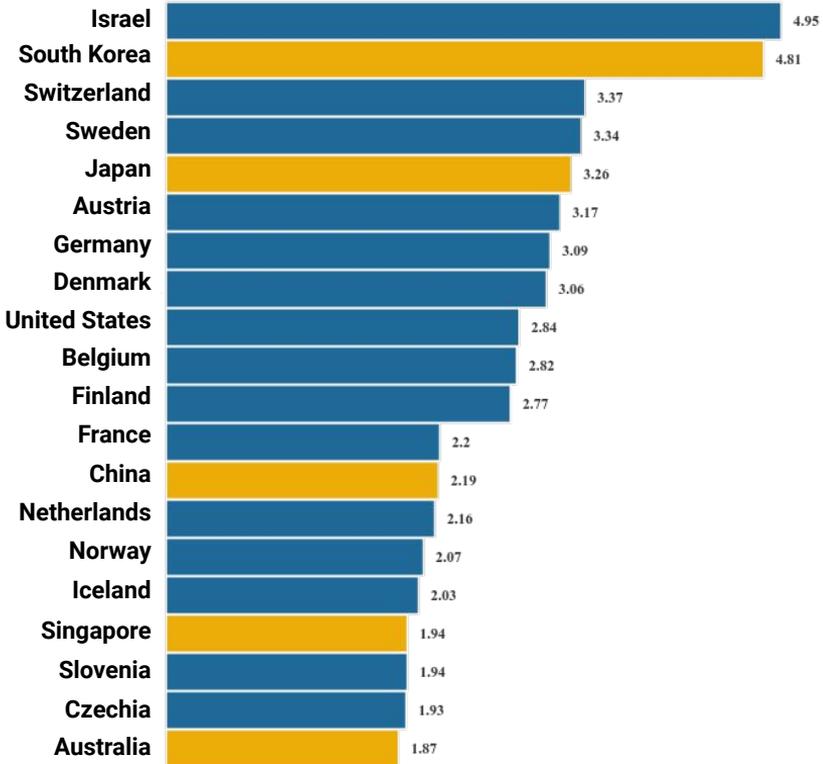
The second decade of the 21st century was marked by a high growth in the Indian economy. India's real GDP growth was at its peak in March, 2010, when it reached 13.3%. The nominal GDP growth at that point was over 16.1%. The bad news was that in September 2019, this number was at 6.3%, its lowest in the decade. This decrease could be attributed to the sliding share of the industrial output. What is strange here is that this is only typical for post-industrial economies while India is yet to be fully industrialized. However, the Indian government has already set the ball rolling by announcing one of the largest and ambitious infrastructure projects earlier this year. It is also undertaking many projects planned earlier and reviving a few stalled ones. If the planning is successful, India may renew its ascendance.

In 2020 China, outstripped the U.S. in putting out research papers in the natural sciences as the country's spending on R&D hit a record high at 2.23 percent of its GDP in 2019, up by 0.09 percentage points from the previous year (National Bureau of Statistics (NBS)). This perfectly aligns with the long term Chinese plans to become a leading force in science and innovation as the first half of the century passes. This strategy was outlined in "Made in China 2025".

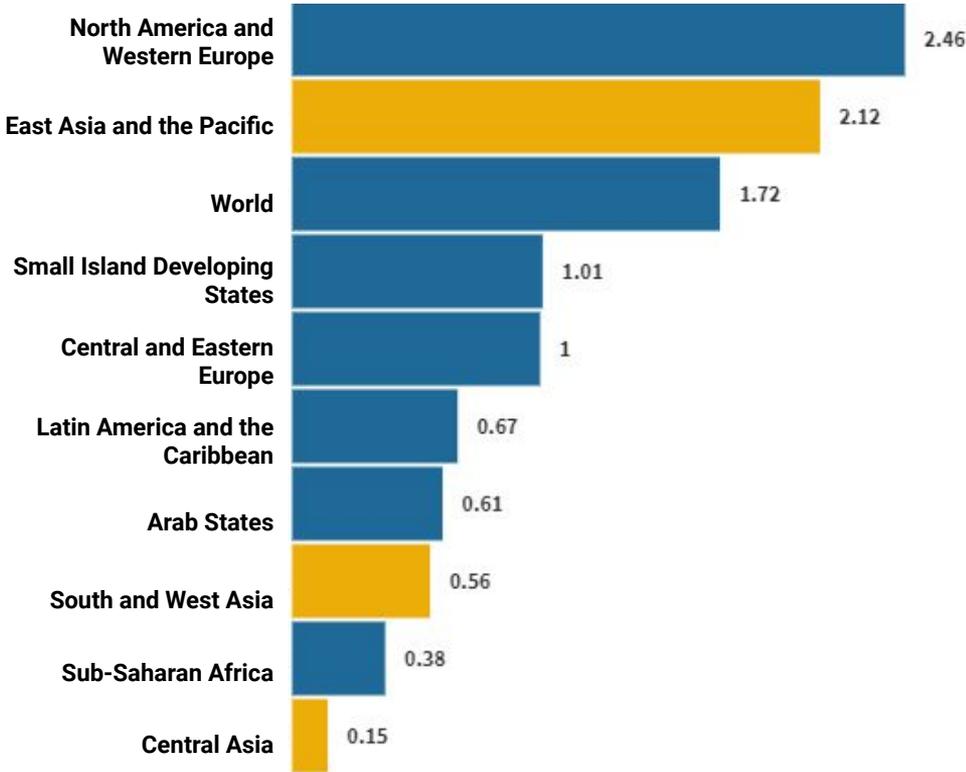
With the rise of the local economies, the spending on scientific research on the Asian continent also increased with a huge percentage. This provides a major opportunity for multinational companies willing to outsource their R&D centers to such innovation powerhouses like India or China. The aim of the Dashboard is to delve deep into the spending on research and development and to share insights about important changes into the science and engineering landscape of the major Asian economies.



Top 20 Countries by R&D Spendings

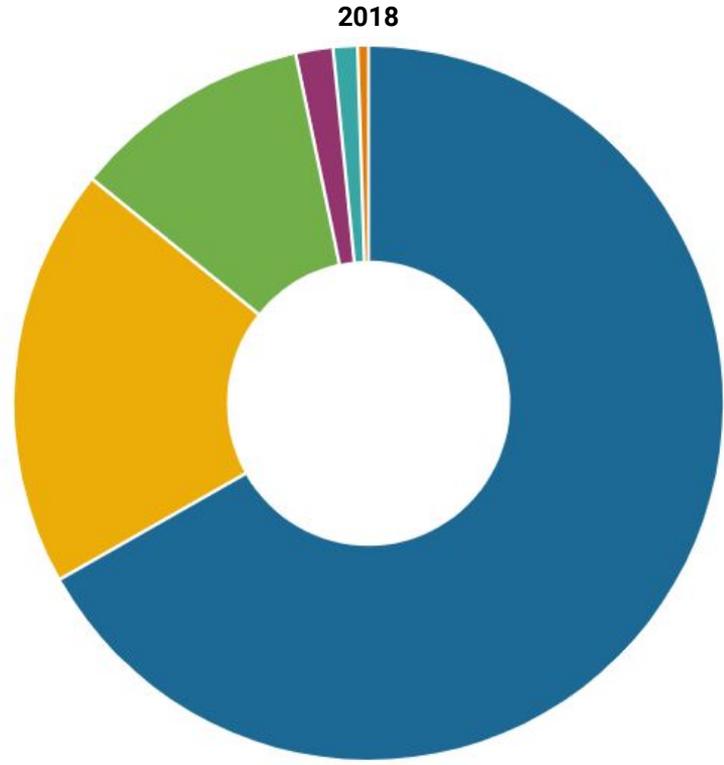
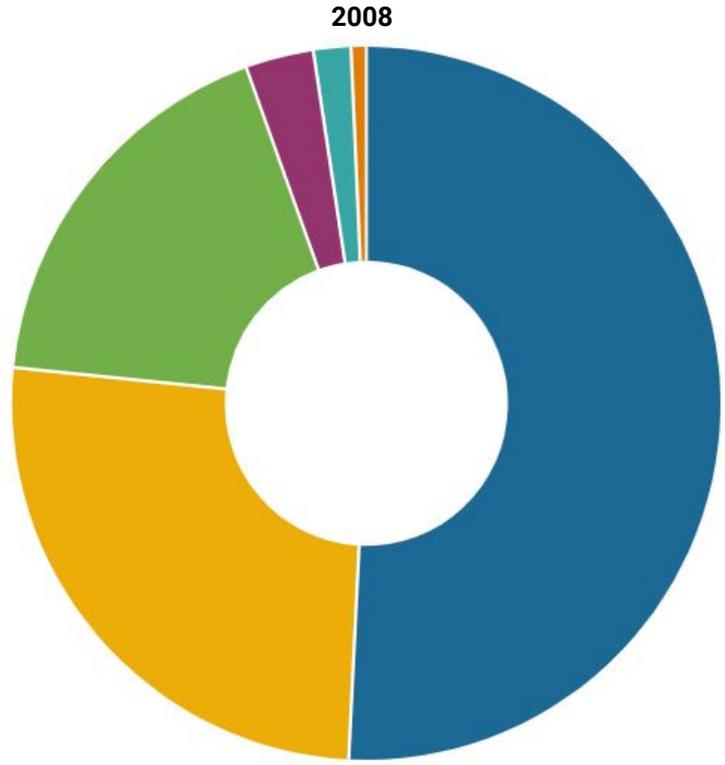


R&D Spendings by Regions

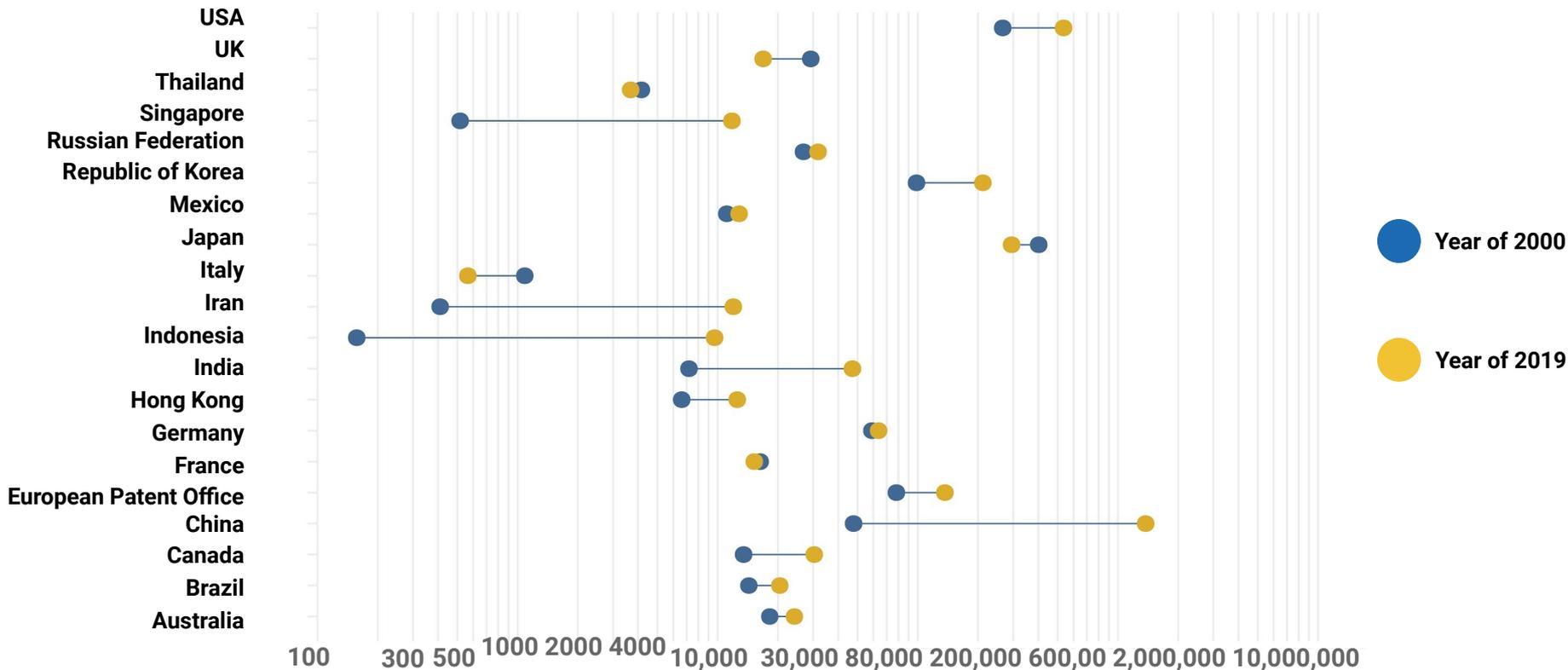


Top Patent Applicants Worldwide, 2008–2018

- Asia
- North America
- Europe
- Latin America and the Caribbean
- Oceania
- Africa



Patent Applications for the Top 20 Offices, 2019



Top Patent Applicants Worldwide, 2019

Rank	Applicant	Country	2018	2019
1	Huawei	China	5,405	4,411
2	Mitsubishi Electric	Japan	2,812	2,661
3	Samsung Electronics	South Korea	1,997	2,334
4	Qualcomm	United States	2,404	2,127
5	Oppo	China	1,042	1,927
6	Boe Technology	China	1,813	1,864
7	Ericsson	Sweden	1,645	1,698
8	Ping An Technology	China	336	1,691
9	Robert Bosch GmbH	Germany	1,525	1,687
10	LG Electronics	South Korea	1,697	1,646

Patents give inventors the right to exclude others from recreating, using, or selling an invention. That allows inventors to profit from their products by commercializing them.

A high number of patent applicants inform about the innovativeness and competitiveness of the economy. Innovative economies are more flexible to adapt to changes and turbulences, and can channel their scientific power into economic development.

The graphs on the previous pages show that the majority of the patent applications worldwide come from Asia and that Asian companies are the largest patent applicants, with seven Asian companies in the Top 10. In 2019 for the, China first time surpassed the USA as the top source of international patent applications.

Industrial and Energetic Development

The driver of the economy is its industrial development. Two indicators were chosen to represent the volume of industrial and energetic resource development.

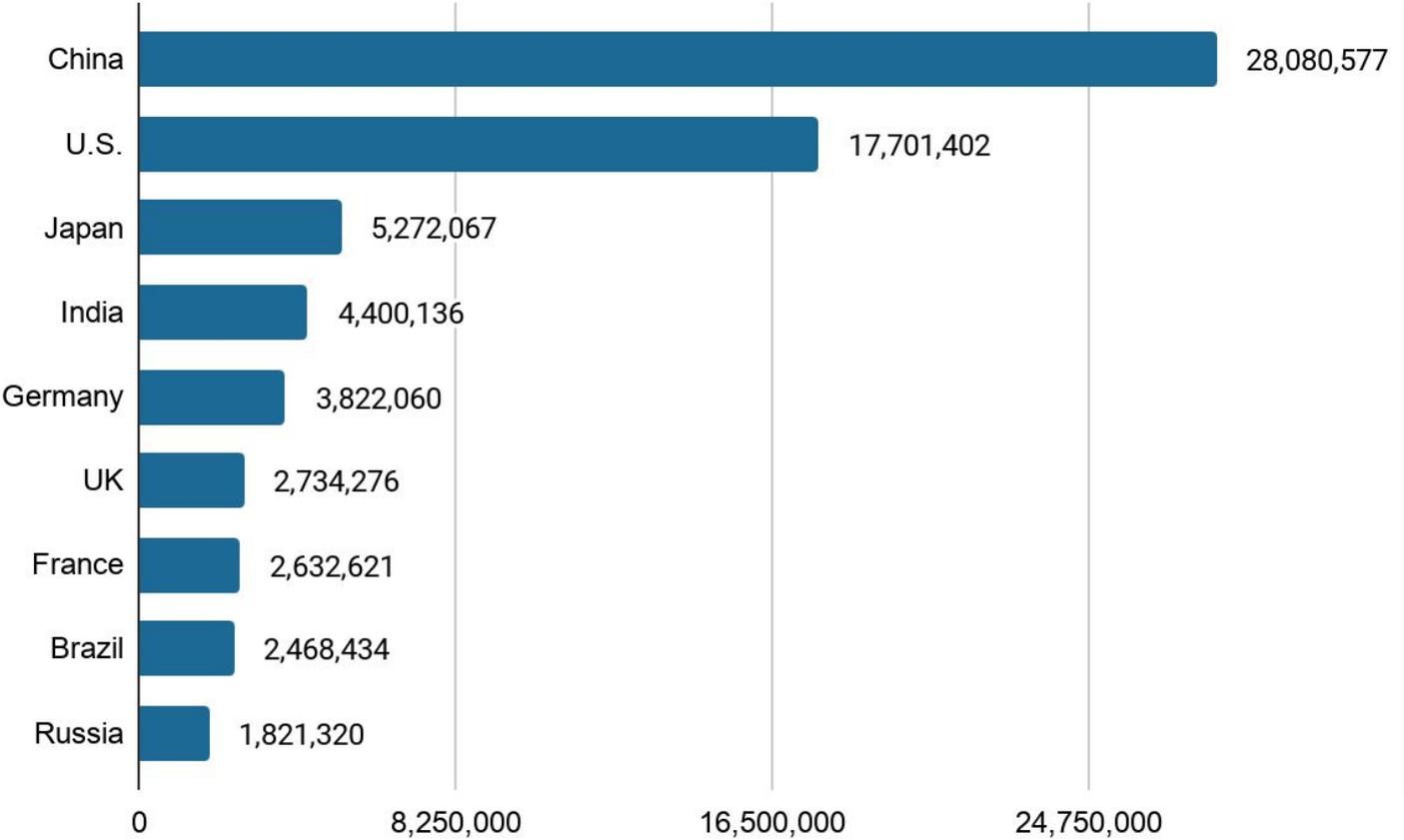
The first graph represents **Vehicle Sales in Selected Countries in 2018** (in units). Globally, China accounted for the largest number of light vehicle sales in 2018 with over 28 million units sold. Based on this estimation, China has been the world's largest automobile market based on new car registrations. The United States accounted for the second largest number of light vehicle sales in that year with approximately 17.2 million units sold. There have been many alterations in the vehicle-manufacturing sector in recent years and the rapidly developing markets and technologies have greatly influenced the sales.

The second graph **Energy Consumption Share From Renewable Sources in 2018, by Country** shows the vast stretches of progress for Asia, but despite the technological advances, most of the Asian nations (with the exceptions of India, New Zealand, Australia, Japan and Malaysia) predominantly rely on traditional sources of energy (petroleum, natural gases and so on).

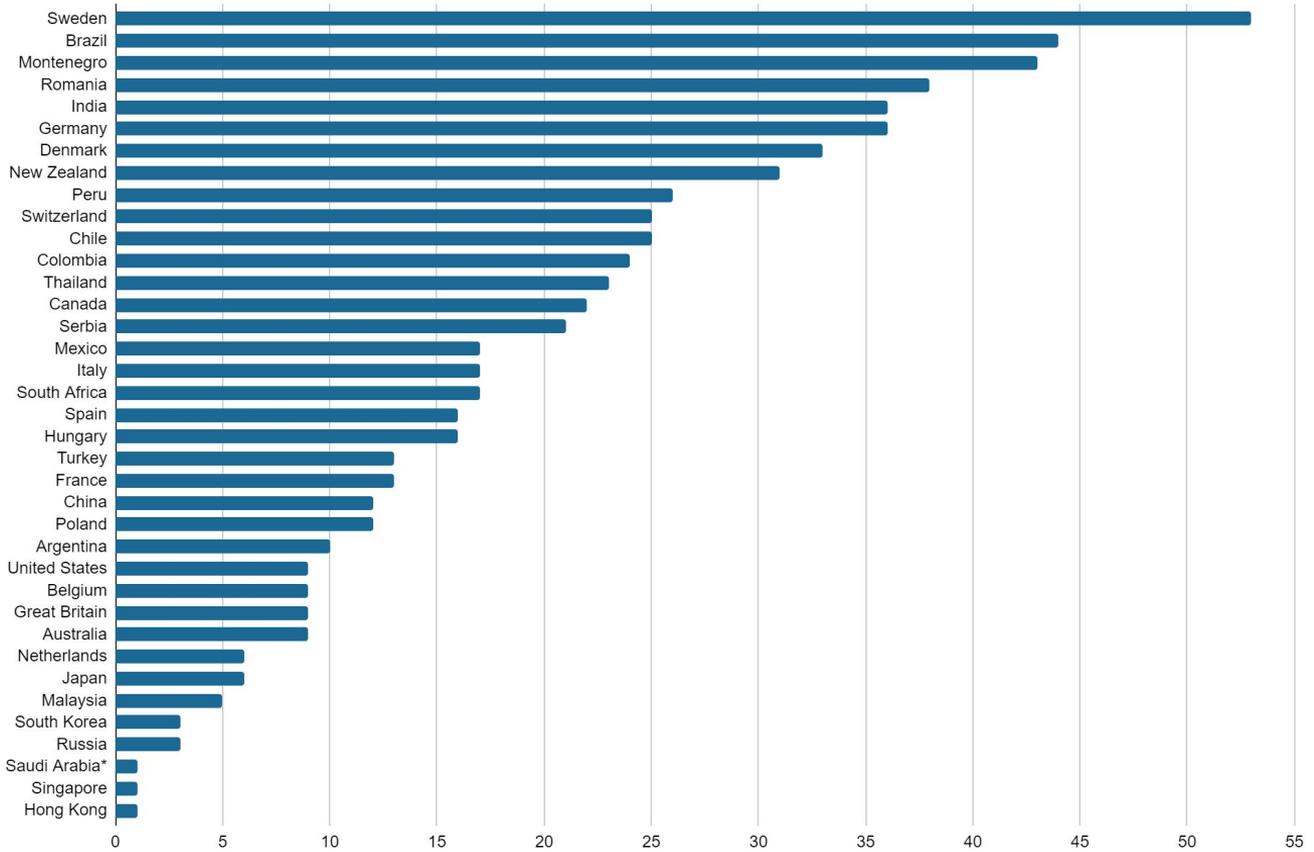
As a rule, wealthier and more developed countries tend to have higher proportions of renewable energy sources while developing nations still rely on traditional energy sources. However, **the case of India** notably breaks the rule. The newly industrialized country with the second largest population in the world rapidly moving towards becoming one of the largest green energy producers in the world.



Vehicle Sales, units in selected countries in 2018



Energy Consumption, % from renewable sources in 2018



“Data is the new oil”

Clive Humby

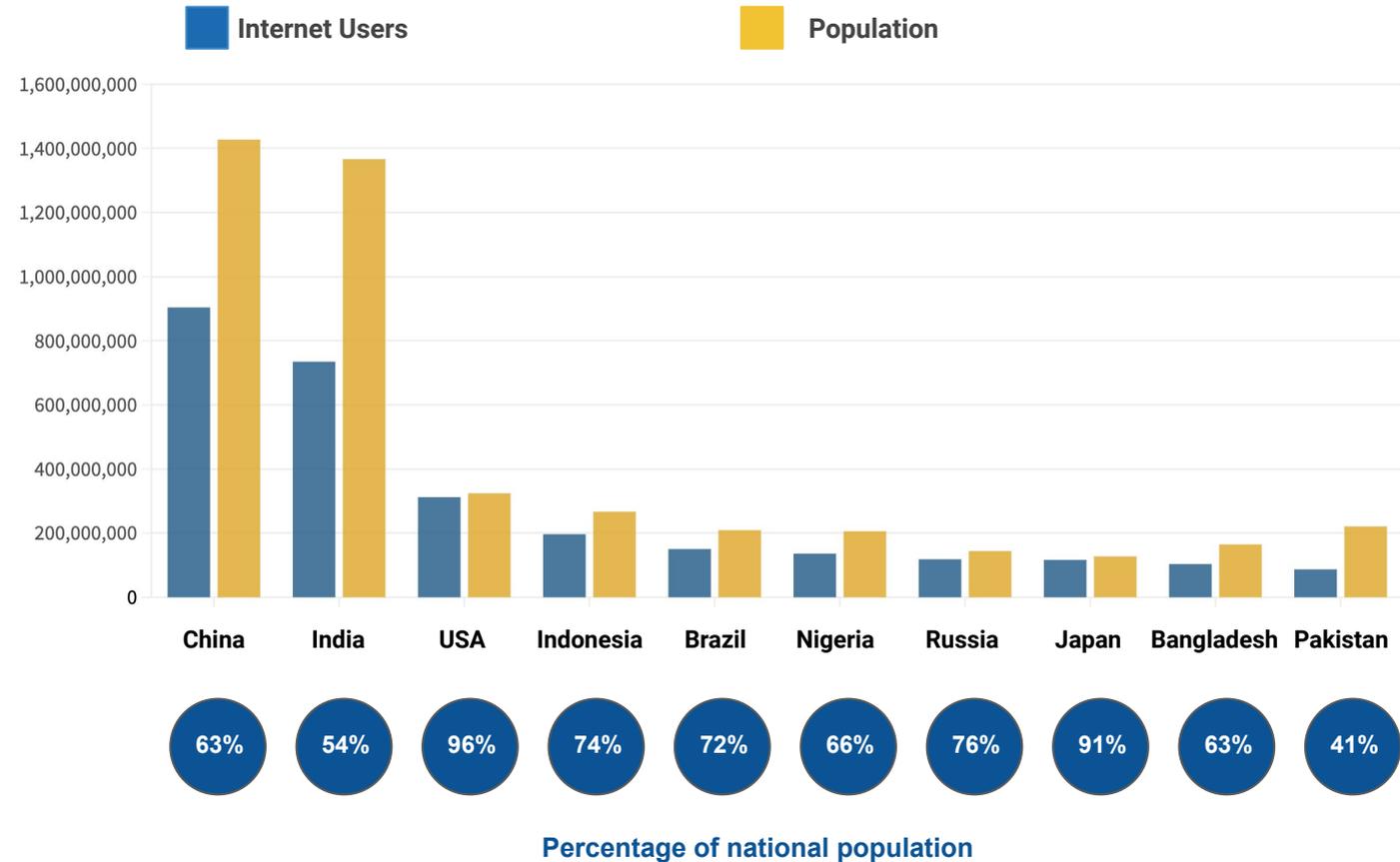
Three indicators were included in this section:

First, **Internet users in %**, one of the main exponents for the understanding of digital development. The percentage of internet users in the United States (US) and European Union (EU) is much higher, however speaking about the number of internet users in China, the number of people is larger than in the entire population of the US and EU combined. Moreover, if in those two markets the Internet coverage is already upon the whole population, the Asian market has a huge reserve for growth.

The second, **Number of mobile cellular telephone subscriptions** is important because there is a clear tendency of increase of services digitalization.

Finally, **E-government Development Index (2018)** shows the governmental desire to introduce GovTech instruments in their communication between citizens (G2C), business (G2B) and between governmental bodies (G2G).

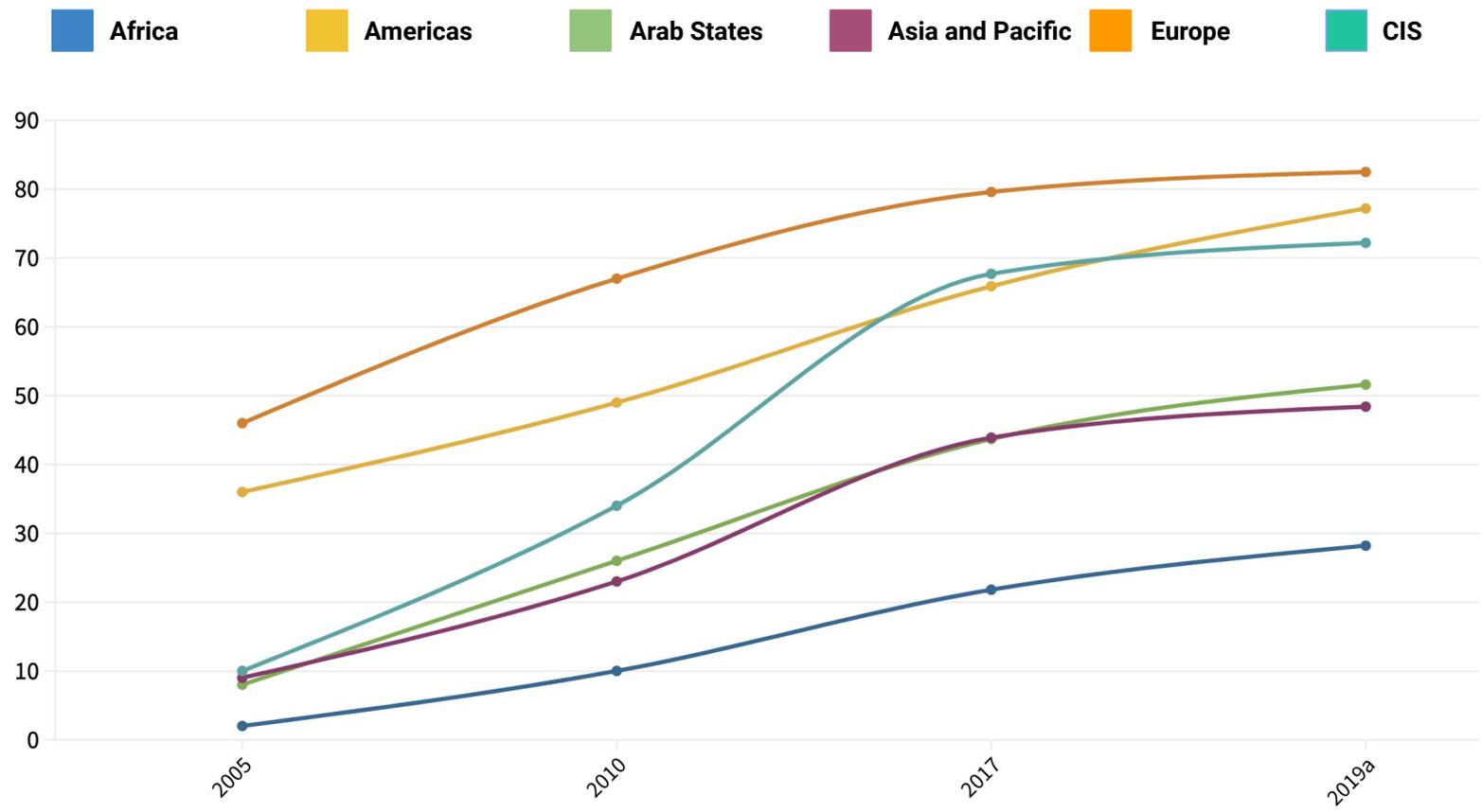
Internet Users and their Share in Total Population, % (2018)



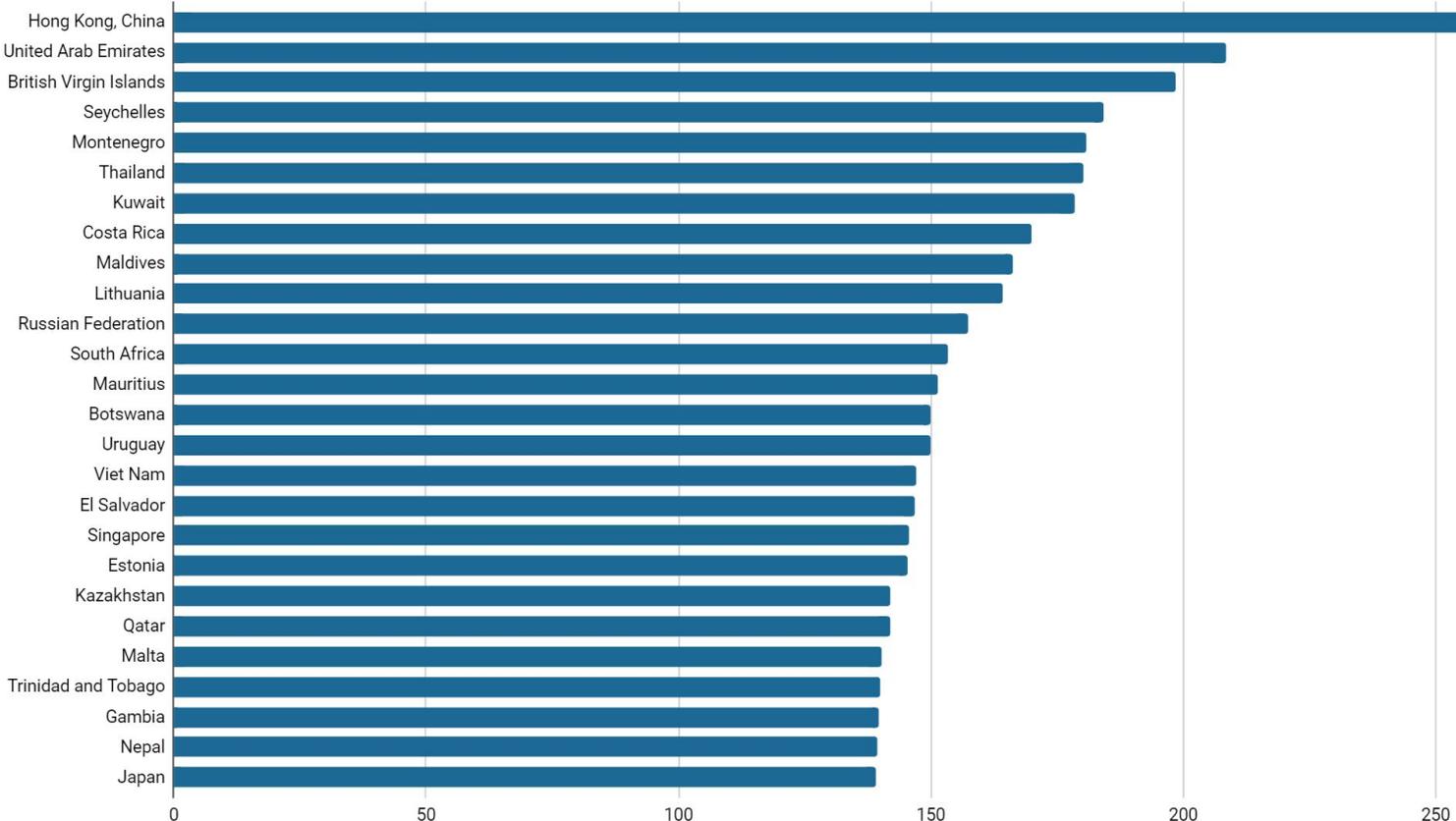
The graph on the left reveals the share of internet users in the world's most populated countries.

The largest Asian nations, some of them both by population size and landmass) - China, India, Indonesia, Bangladesh, Pakistan, Japan, have huge absolute numbers of Internet users. Even though this may sound impressive, almost all of those societies (except for Japan) have comparatively low share of world wide web users and there is a large untapped market and potential for rapid growth.

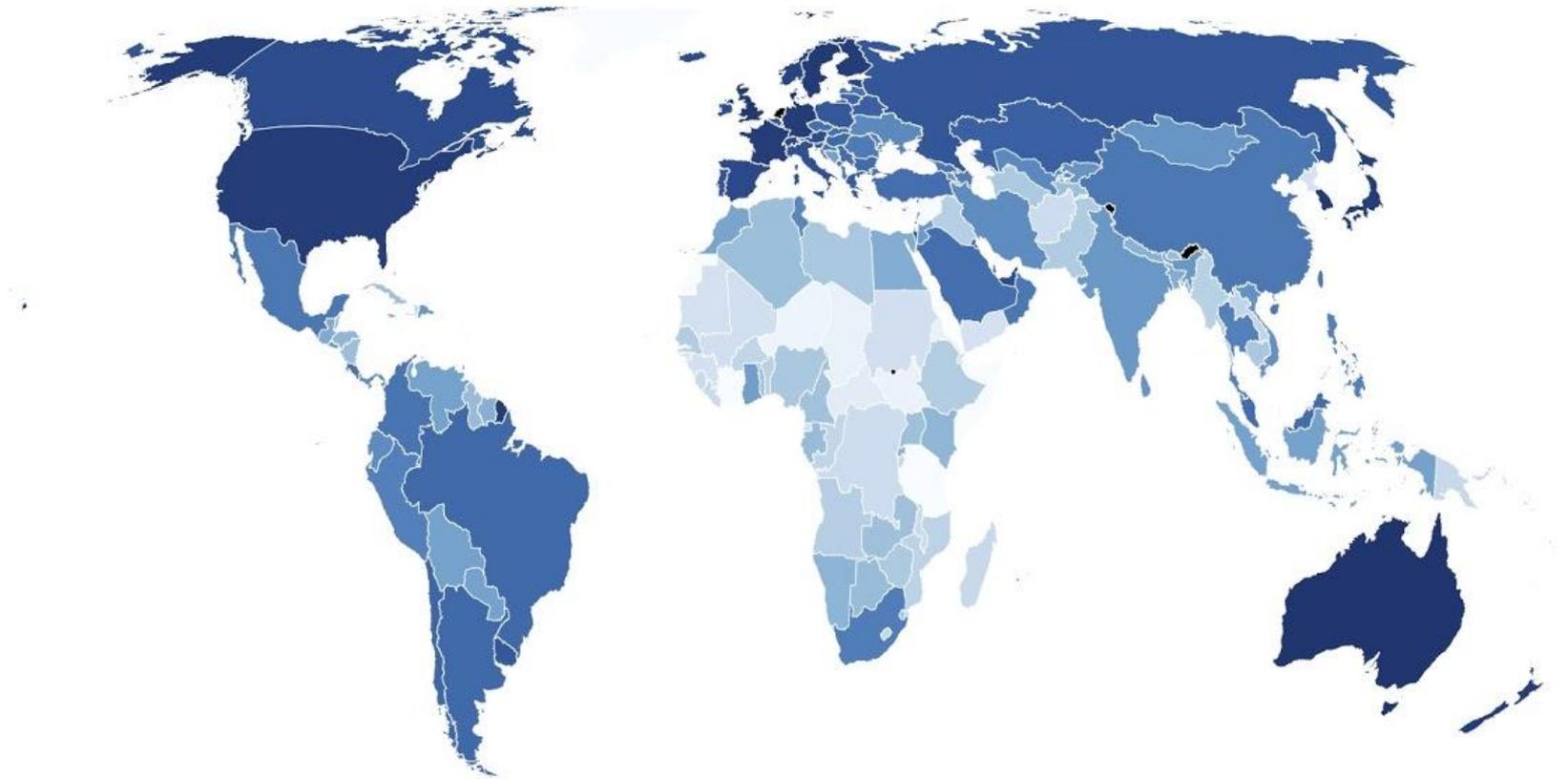
Internet Users, % (2018)



Number of Mobile Cellular Telephone (Subscriptions per 100 Inhabitants in 2018)



E-Government Development Index, 2018



Conclusions

January 2021



Conclusions

The report chapters **Socio-Economic Development, Industrial and Energetic Development** and **Digital Development** include analysis of vast amounts of data which together yield one overwhelming conclusion: Asia deserves recognition as the most prospective region in the world.

Our Socio-Economic Development chapter included statistics such as population size, international trading figures and internal economy statistics, and based on these gathered insights, we can confidently state that the regional socio-political and economic indicators are among the most well performing in the world. The rapidly improving import export figures and the large population base will set Asia on its way to global dominance.

The continent is also leading in terms of industrial development. It has the largest share of the global production of goods, and also exploits a vast number of vehicles and tools. Logically, China, as the leading regional force, holds the global first place in many economic and political lists (including number of vehicles per capita).

In terms of energetic development, the Asian nations seem to be more conservative - most of the market still relies on traditional energy resources like petroleum, coal, natural gases and others. In the digital sphere, Asian advances are also quite impressive. Numerous investments in research and development allow for vast progress in branches of artificial intelligence and basic scientific research. According to current forecasts, in the next decade, the continent will be leading the world in terms of technological development. As such this is a region to follow and to catch up with, and the region that will surely be significantly influencing global economic and political matters in the near future.



Trends:

The first two decades of the 21st century only marked the beginning of Asian domination, with the maturing of the Chinese economy, and as we move further toward its middle part, we are likely to witness the rise of other important regional (and potentially global) players like India, Indonesia, Pakistan and Bangladesh. The strengths of those nations do not lie only in their numerous populations, but also in their resilience in the face of social and economic upheavals. Some of the most brutal wars and armed conflicts were fought over Asian resources and only recently a large-scale peace was made possible. This finally brought the long needed stability to the continent and unleashed its potential.

2021 will only solidify the Asian political and economic positions (in the post-covid-19 world) and will shorten the technological gaps between Eastern and Western powers. More and more organizations will move their R&D centers to China, India and South-Eastern Asia and this will give strong competitive push to the local scientific institutions and research entities. As a result, the innovation capabilities of the region will grow and Asian nations will claim positions previously held by Western nations.

Predictions:

Almost all Asia and Pacific nations felt the effect of the coronavirus-induced crisis and 2021 will mark the recovery for the vast majority of them - China, for example, the world's second-biggest economy, saw growth of 4.9% between July and September, 2020, compared to the same quarter, 2019. This growth is expected to continue in 2021.

Rapid adoption of Artificial intelligence in the Asian Healthcare sector pushed by the growing share of 65+ persons and the pandemic.

Increased investments in Biotechnology and Healthcare-related technological R&D.

The Covid-19 crisis gave to Asia important lessons regarding health care and preventive medicine. This will play a major role in the future the healthcare systems of almost all major Asian nations.

DISCLAIMER



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