

# Global Biopharma Resilience Index 2023

Mini report : APAC excl. China



# APAC is a hotspot for biopharma growth

The APAC biopharma market has grown exponentially over the past decade, thanks in part to enhanced infrastructure, an influx of funding from both private investors and governments, and an improving regulatory environment.

In 2021, the APAC pharma market was the world's second largest after North America, generating \$316 billion in revenues. And it is forecast to grow to \$490 billion by 2025.<sup>1</sup>

US- and UK-based companies are responding by building their presence in the region. In January 2023, Moderna acquired Japanese mRNA company OriCiro Genomics in order to access its cell-free DNA synthesis and amplification technologies. Two months later, UK-headquartered advisory firm PharmaVentures established a new office in Seoul as part of its continued strategic expansion into South Korea.<sup>2</sup>

Singapore is considered by many to be the biotech center of Asia,<sup>3</sup> and it is also attracting the attention of global pharma companies. In 2022, Moderna announced plans to establish a new subsidiary in the country, as well as three other new subsidiaries in Malaysia, Taiwan, and Hong Kong. A year before, Sanofi announced an investment of more than S\$630 million over five years to build a vaccine production center in Singapore.<sup>4</sup>



1 Barton C. Asia-Pacific: is the time ripe for investment? The Pharma Letter. <https://www.thepharmaletter.com/article/asia-pacific-is-the-time-ripe-for-investment>. April 7, 2023.

2 PharmaVentures establishes an office in Seoul to enhance access for South Korean biotechs. PRNewswire. <https://finance.yahoo.com/news/pharmaventures-establishes-office-seoul-enhance-084200900.html>. March 29, 2023.

3 Awang N. COVID-19 vaccine maker Moderna to set up subsidiary in Singapore as it boosts regional presence. Today Online. <https://www.todayonline.com/singapore/COVID-19-vaccine-maker-moderna-set-up-subsidiary-singapore-it-boosts-regional-presence-1818451>. February 16, 2022.

4 Speech by Minister Chan Chun Sing at the Biopharma Industry Day 2021. Ministry of Trade and Industry Singapore. <https://www.mti.gov.sg/Newsroom/Speeches/2021/05/Speech-by-Minister-Chan-Chun-Sing-at-the-Biopharma-Industry-Day-2021>. May 14, 2021.

**For the purposes of this report, the APAC region includes the following countries: Australia, India, Japan, Singapore, and South Korea.**

**We have excluded China due to the size and highly specific nature of the country's biopharma industry.**

### Singapore is on the rise

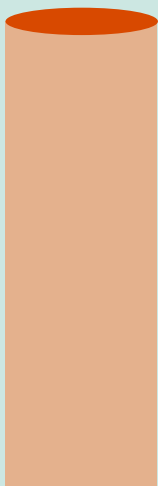
In our new biopharma resilience research, APAC ranks third out of six regions for its overall resilience. We added new countries to our research this year, so changes in rankings are not especially revealing. But the biggest movers are:

Thailand, in 20th place, is the weakest performer in APAC. It has slipped down by one place — possibly due in part to new additions to our 2023 index.

#### Singapore

↑ which has climbed seven places to fifth in the overall list of countries — the highest-ranking country in APAC

5th



#### Japan

↓ which is down three places to

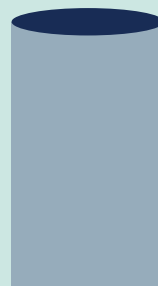
11th



#### South Korea

↓ which is down five places to

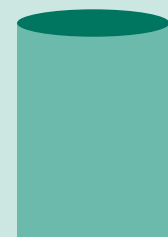
12th



#### Australia

↓ which is also down three places to

13th

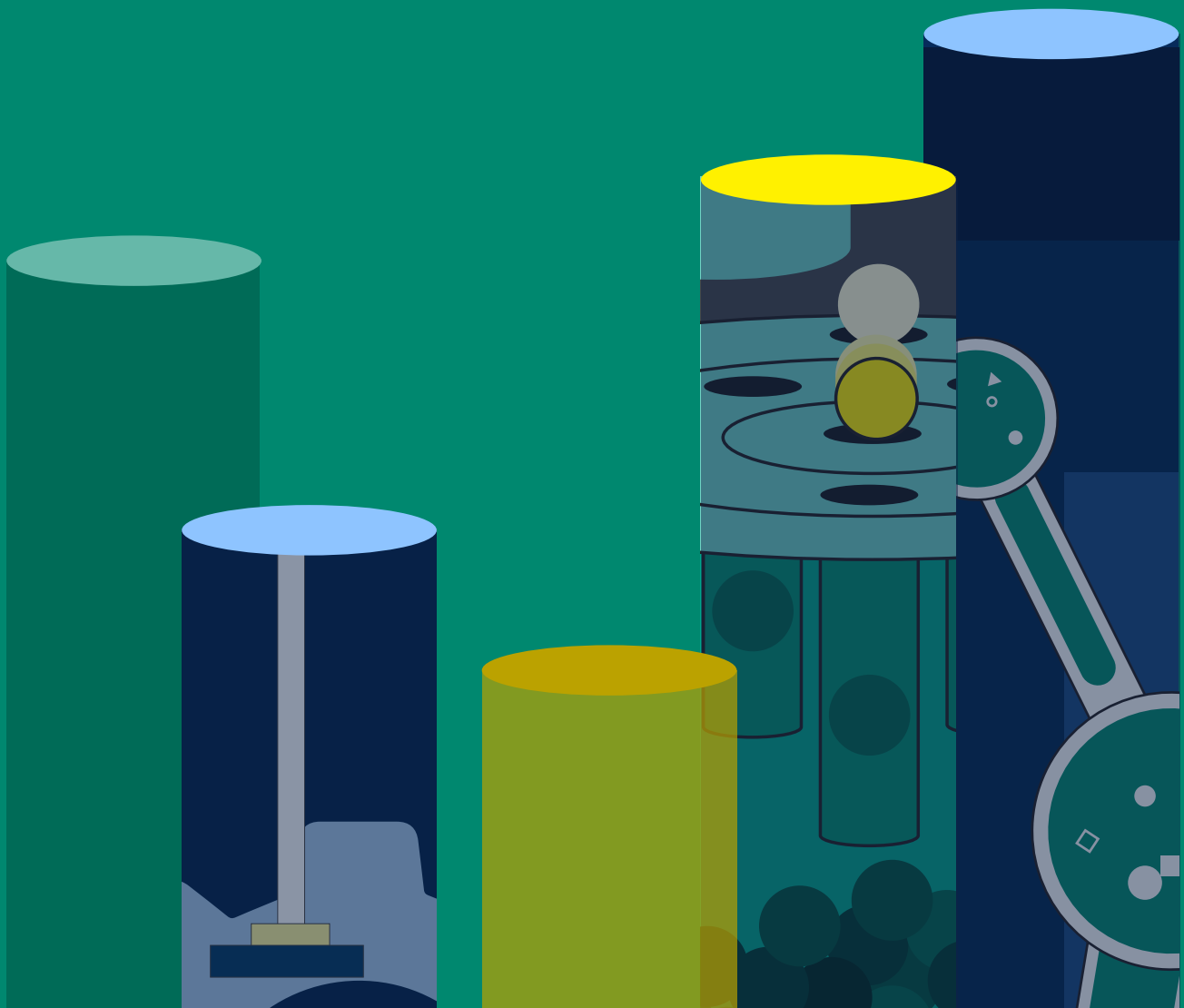




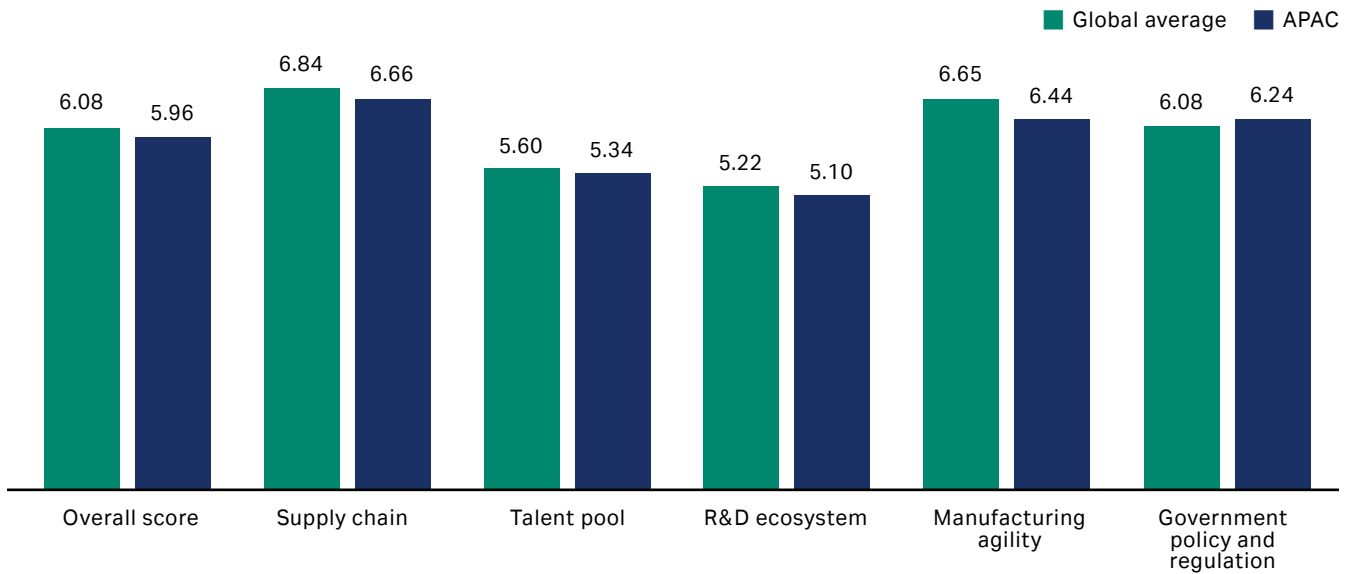
To build Cytiva's Global Biopharma Resilience Index, we surveyed 1250 pharma and biopharma executives across 22 countries.

Countries are scored on a scale of 1-10 across five pillars of resilience: supply chain, talent pool, R&D ecosystem and manufacturing agility.

The overall index score for each country (the average of its pillar scores) indicates the strength of its biopharma industry.



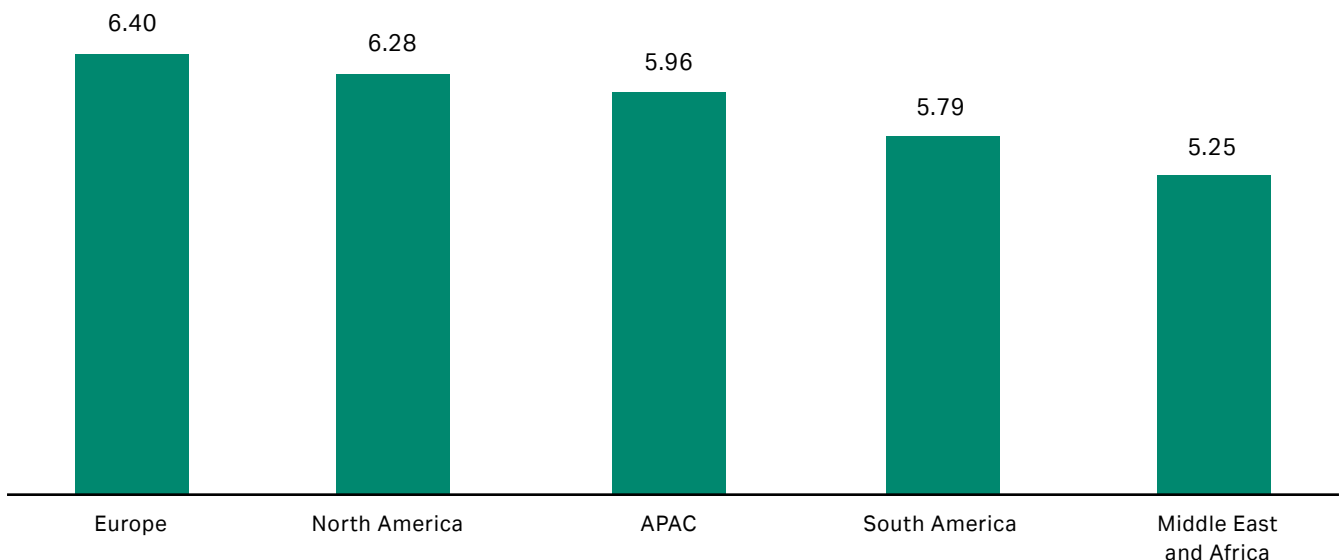
## Global Biopharma Resilience: APAC vs global sample



**Fig 1.** APAC scores lower than the global average on overall biopharma resilience, and across all pillars except government policy and regulation

Country	Overall biopharma resilience score	Supply chain	Talent pool	R&D ecosystem	Manufacturing agility	Government policy and regulation
Global average	<b>6.08</b>	6.84	5.60	5.22	6.65	6.08
APAC average	<b>5.96</b>	6.66	5.34	5.10	6.44	6.24
Singapore	<b>6.41</b>	7.52	6.31	5.72	6.44	6.07
Japan	<b>6.06</b>	6.71	5.31	5.34	6.42	6.51
South Korea	<b>6.05</b>	6.75	5.13	5.25	6.51	6.61
Australia	<b>6.02</b>	5.96	5.85	5.34	6.58	6.36
India	<b>5.95</b>	7.30	5.03	4.85	6.40	6.15
Thailand	<b>5.36</b>	5.80	4.60	4.21	6.30	5.87

## Biopharma resilience scores by region



**Fig 2.** APAC is the third highest scoring region in the Biopharma Resilience Index – behind Europe and North America



# Biopharma in APAC:

## What the research tells us

### Finding 1:

The supply chain is APAC's most resilient pillar, but it varies from country to country

Although supply chain is the region's strongest scoring pillar, it lags behind the global average (6.66 compared with 6.84). APAC's countries vary significantly on this measure.

Dubbed the "pharmacy of the world" and supplying 20% of the world's generic medicines and over half of its vaccines,<sup>5</sup> **India** performs particularly strongly on supply chain resilience.

In contrast, there is another country where supply chains are under particular strain. **South Korea** has suffered intense drug shortages in recent years, and its executives are least likely — alongside those in the UAE — to say they "never" experience drug shortages. Its national COVID-19 vaccine rollout, for example, came to a standstill in 2021

after a record number of new cases of the virus exhausted the country's supplies.<sup>6</sup>

Now, South Korea is making significant investment in the sector to strengthen technical capacity and infrastructure and become 80% self-sufficient in vaccine production.<sup>7</sup> Its initiatives include pilot plants, new mechanisms to fund getting research out of the laboratory and into human clinical trials, approximately \$300 million in grants to bring innovative vaccine platforms and new vaccines to Korea, and training to develop PhDs and technicians who can work in bio manufacturing.

**Japan** is also facing significant supply chain challenges because of its dependency on imports. In 2021, temporary shutdowns of pharma companies in Japan created a shortage of more than 3,000 drugs, which prompted the health ministry to instruct the industry to replenish the supply chain.<sup>8</sup>

Its executives are most likely to say that a substantial portion of the supplies that go into their products originates from countries with higher risk profiles than their own: 56% of executives in Japan say this, compared with 41% of executives across all the countries we surveyed.

5 Biopharmaceutical Innovation: China, India, and Supply Chain Security, Interview with Linda M. Distlerath. The National Bureau of Asian Research. <https://www.nbr.org/publication/biopharmaceutical-innovation-china-india-and-supply-chain-security/>. March 8, 2021.

6 Cha S, Shin H. S.Korea COVID-19 vaccine rollout grinds to halt as new cases hit record high. Reuters. <https://www.reuters.com/world/asia-pacific/skorea-reports-new-coronavirus-cases-top-1000-7th-straight-day-2021-07-13/>. July 13, 2021.

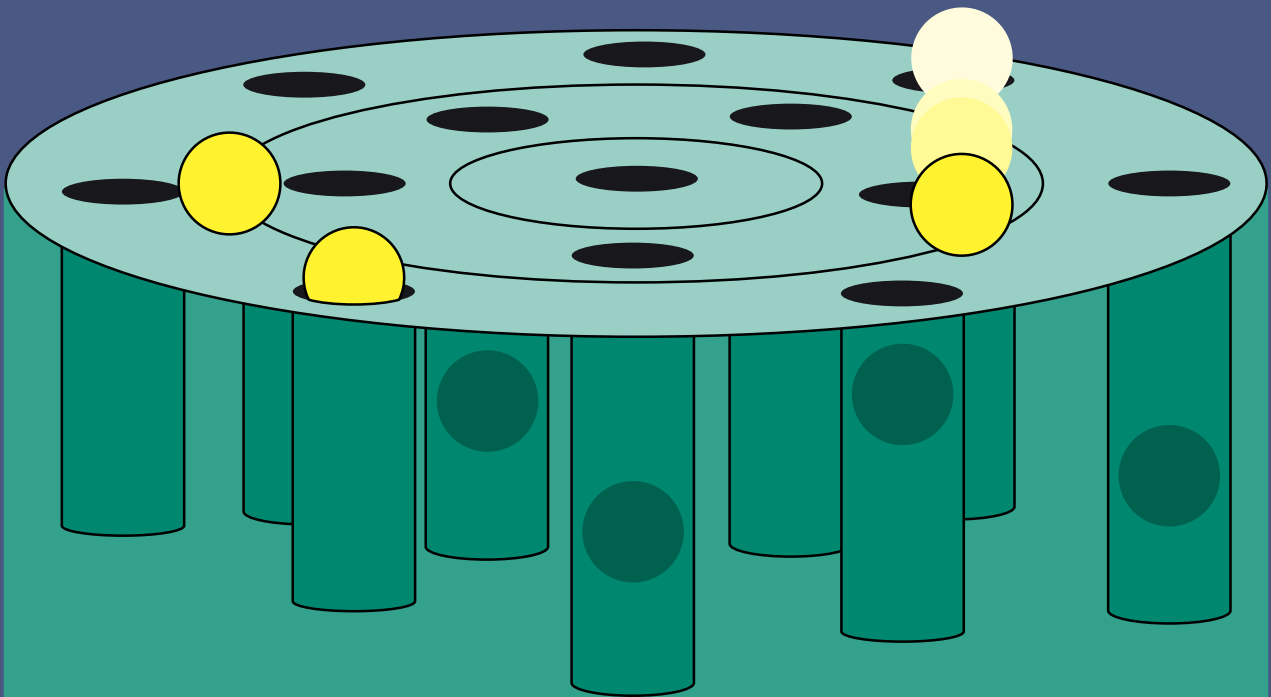
7 Well placed for a meeting of minds. Nature. <https://www.nature.com/articles/d42473-022-00028-x>. 2023.

8 Drug shortages hit Japan and Europe. Generics and Biosimilars Initiative. <https://www.gabionline.net/generics/general/drug-shortages-hit-japan-and-europe>. February 4, 2022.

Supply chain issues are also a problem in **Australia**, according to Leszek Lisowski, an associate professor specializing in developing and optimizing viral vector technologies at the University of Sydney. Given the

relatively small size of the market compared with the likes of the US and Europe, it can be difficult to import some high-demand components, such as plasticware and single-use reagents.

“We always face the problem of deliveries and longer timelines,” says Lisowski. “If you want to support one facility and buy everything in advance of our programs for the whole year, you need a massive warehouse where you can store at different temperatures, under different conditions, and with different humidity. It is a logistical nightmare.”



## Finding 2:

The R&D ecosystem is APAC's weakest-scoring pillar, as it is across the index overall

R&D is a difficult area for APAC, as it is for all of the regions in this year's index. With a score of 5.10, the region is just above China (5.07) on performance on this pillar, but lags behind Europe and North America and is below the global average (5.22).

Our research shows that executives in emerging economies are more likely than those in developed economies to say that it's a challenge to find many types of partners to work with them on R&D.

According to biotech expert Linda M. Distlerath, who advises the National Bureau of Asian Research, a fundamental challenge for India is "the exceptionally low level of government investment in the healthcare sector," which "translates to underdeveloped infrastructure, inadequate numbers of trained workers, and provision of only the most basic level of healthcare."<sup>9</sup>

Meanwhile, developed economies are increasing their R&D investment. In March 2022, for instance, Japan created a \$2 billion vaccine-research initiative called SCARDA to ensure that the country is ready to respond promptly and effectively to future pandemics. SCARDA will provide \$1.1 billion in grants to investigator-proposed research projects, and nearly \$400 million will be channeled into new vaccine R&D centers at several universities.<sup>10,11</sup>

Another focus is new vaccine modality development and focused infectious disease vaccine development, and a Drug Discovery Venture Ecosystem Enhancement Project aims to strengthen Japan's innovation ecosystem by providing greater support for start-ups.

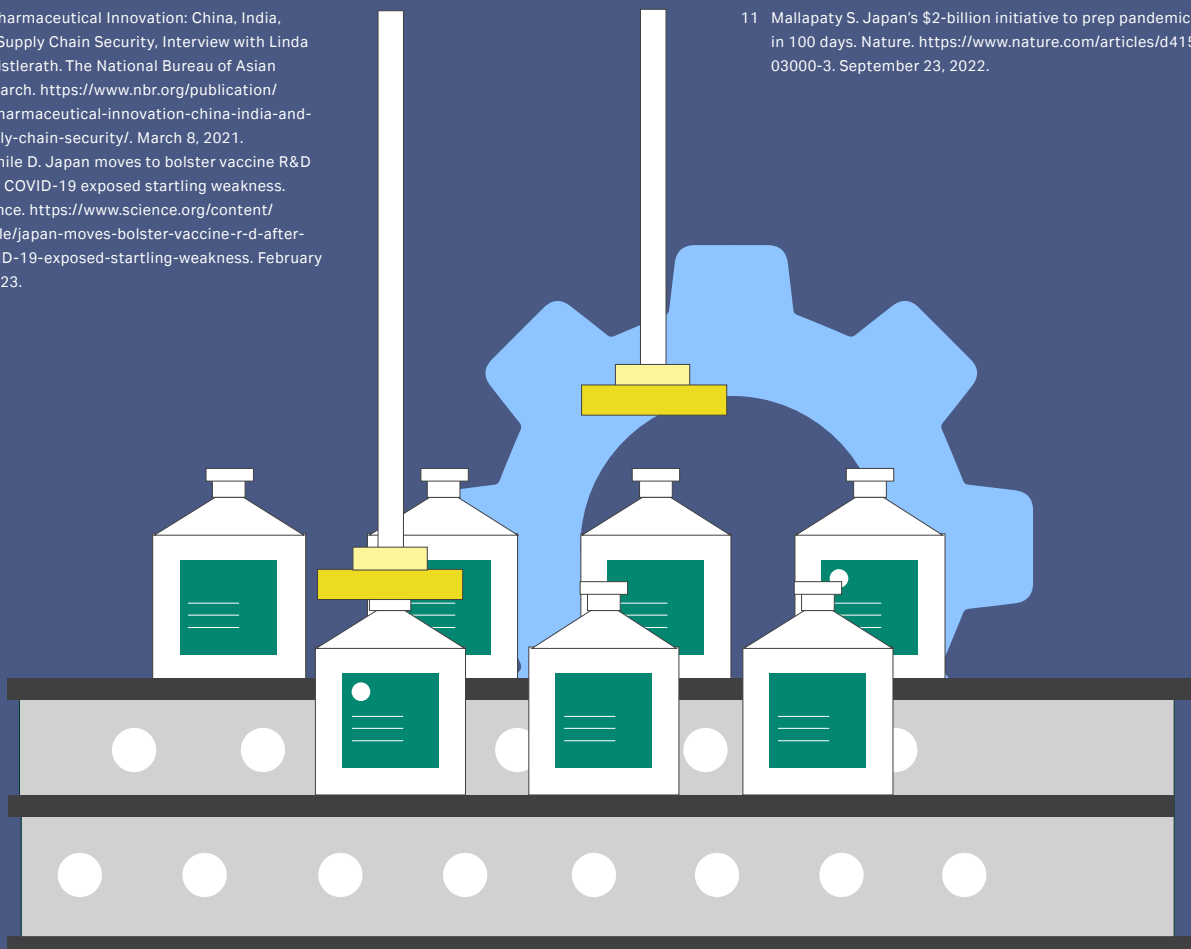
"The Japanese model of supporting R&D is very similar to what is happening in Korea," says Dr Jerome Kim, Director General of the International Vaccine Institute (IVI). "Asia, with its industrial policy, has a competitive advantage."

However, executives in Japan — alongside those in Singapore — are most likely to say that government policy is pursuing inconsistent goals. For example, it might encourage greater R&D but fail to reward successful development with adequate pricing, or it might encourage manufacturing without protecting intellectual property. Fifty-four percent of Japanese executives say this, compared with 45% across all the countries we surveyed.

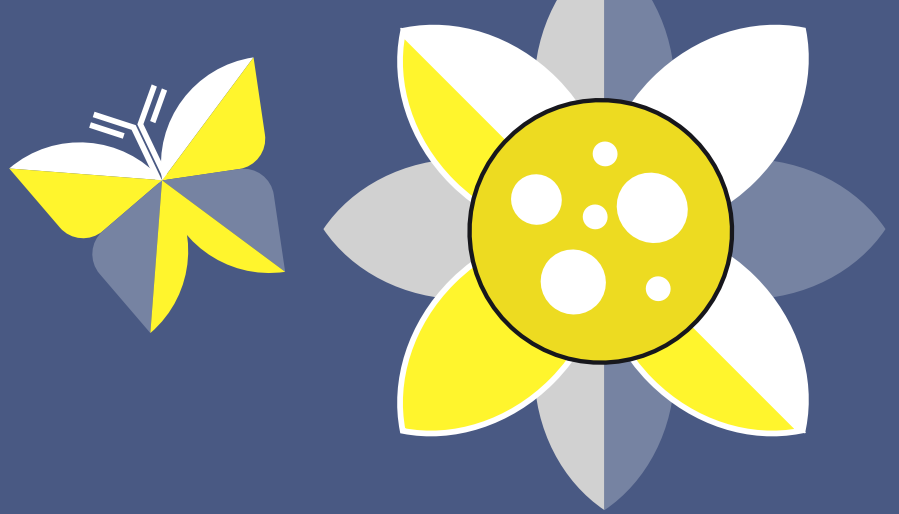
9 Biopharmaceutical Innovation: China, India, and Supply Chain Security, Interview with Linda M. Distlerath. The National Bureau of Asian Research. <https://www.nbr.org/publication/biopharmaceutical-innovation-china-india-and-supply-chain-security/>. March 8, 2021.

10 Normile D. Japan moves to bolster vaccine R&D after COVID-19 exposed startling weakness. Science. <https://www.science.org/content/article/japan-moves-bolster-vaccine-r-d-after-covid-19-exposed-startling-weakness>. February 9, 2023.

11 Mallapaty S. Japan's \$2-billion initiative to prep pandemic vaccines in 100 days. Nature. <https://www.nature.com/articles/d41586-022-03000-3>. September 23, 2022.







### Finding 3:

## Singapore and Australia say there is growth in their national biopharma industries, and faster drug approvals

Alongside those in China, executives in Singapore and Australia are most likely (73% and 68% respectively, compared with a global average of 56%) to report growth in their national biopharma industries over the past 12 months as measured by the industry's contribution to GDP.

They are also more likely than executives in other countries to report faster drug approvals: 70% of executives in Singapore and 62% of those in Australia say that the ease and speed at which new medications are approved in their country has increased in the past year, compared with 58% across all the countries surveyed.

In 2022, Singapore became the first out of 28 countries formally assessed by the World Health Organization to achieve the highest maturity level (ML 4) in the WHO's classification of regulatory authorities for medical

products.<sup>12</sup> This assessment of regulatory authorities is based on a benchmarking tool that checks regulatory functions against a set of more than 260 indicators.

Alongside efforts to harmonize regulatory approval with global norms, manufacturing infrastructure is also evolving across APAC to keep up with demand.

Australia, for example, is working to improve its viral vector manufacturing capability<sup>13</sup> as viral vector-based therapies expand their reach to address more common diseases.

"The stress on the manufacturing infrastructure, both academic and commercial, is quite painful, and it drives the development of technologies that allow us to minimize those problems," says the University of Sydney's Leszek Lisowski. "There have been a lot of very positive developments in this space."

12 The Strategy for Strengthening the Vaccine Development and Production System. Ministry of Economy, Trade and Industry (Japan). [https://www.meti.go.jp/english/policy/mono\\_info\\_service/mono/bio/vaccine\\_development/](https://www.meti.go.jp/english/policy/mono_info_service/mono/bio/vaccine_development/). March 20, 2023.

13 Singapore medicines regulator world's first to achieve highest maturity level in WHO classification. World Health Organization. <https://www.who.int/news/item/27-02-2022-singapore-medicines-regulator-world-s-first-to-achieve-highest-maturity-level-in-who-classification>. February 27, 2022.

### Finding 4:

## Scarcity of biopharma talent is hampering progress, particularly in emerging markets

Talent shortages are a recurring theme in this year's index. On the talent pool pillar, APAC again lags behind Europe and North America at 5.34 (compared with a global average of 5.60), but it outperforms South America and the Middle East & Africa.

Just as our research shows that there is a divergence between developed and emerging economies on R&D performance, there is also a talent challenge for emerging economies. Executives in emerging markets are far more likely to say that labor regulations around scaling the workforce and foreign talent are rigid or very rigid.

Executives in several countries warn that there are shortages in manufacturing talent. Governments including Japan's are supportive of dual-use manufacturing, where facilities can pivot their operations according to changing demand in order to boost capacity. However, there are concerns that there is not enough manufacturing talent to operate these kinds of models.

Executives in Singapore are most likely to be positive about the education system's ability to train engineers that are GMP ("good manufacturing practice") capable: 73% compared with 59% of executives in all of the countries we surveyed. In Thailand, this figure falls to just 32%.

Other developed markets, including Australia, are also struggling with a limited and highly sought-after talent pool. "It's not only the challenge of training, but also the retraining," says Ian Alexander, Clinical Geneticist at the University of Sydney. "Because there's a big global market out there, and what Australia offers is not necessarily internationally competitive."



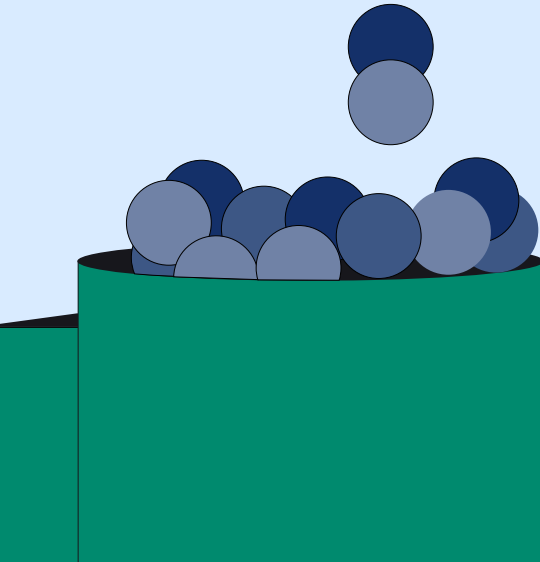
# Our recommendations for biopharma in APAC



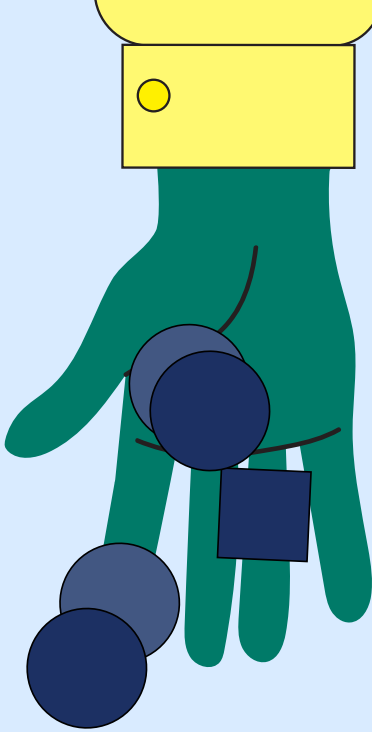
## 1. Improve access to talent

Countries such as Thailand could benefit from tackling the “brain drain,” while Australia could adopt more flexible policies when it comes to recruiting talent from overseas.

In South Korea, meanwhile, Dr Jerome Kim says that IVI has had difficulty hiring because there is fierce competition for a pool of highly qualified vaccine research and development people in biologics manufacturing.



“And the huge scale-up in demand — not only for biotechs that make COVID-19 vaccines, but for other things as well — adds a lot of pressure,” he says. “In Korea in particular, the massive increase in manufacturing around monoclonal antibodies and the new efforts in vaccine research and development have really driven up hiring costs. So there is a shortage of people, and they are more expensive.”



## 2. Nurture the R&D ecosystem

Closer collaboration between government, academia and business is crucial. In particular, it is important to put in place the policies and regulatory frameworks that allow new ideas to be rapidly developed and scaled up. As India's progress highlights, it is sustained investment from both government and the private sector that will strengthen the R&D ecosystem.

## 3. Strengthen manufacturing capabilities for advanced therapeutics

Many APAC countries score highly when it comes to manufacturing agility. Dual-use projects among companies and universities are expanding manufacturing facilities that can switch production from biopharma to vaccines in an emergency.

To accelerate progress, countries will have to obtain the technologies and expertise they need to manufacture novel therapeutics and personalized medicines. South Korea is a leader here.

## 4. Close the gap between developed and emerging economies

Thailand and India lag behind other countries on many of the pillars. This creates a risk that their populations will struggle to access essential medications. What can these countries learn from others about fostering growth in their biopharma sectors?



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