INTESA SANPAOLO

International Research

Note

Asia

The Second Wave and the Race for Vaccines in Asia

Asian countries are progressively launching COVID-19 vaccination campaigns using vaccines developed both by foreign multinational companies and by domestic companies on their own or in collaboration with the former. Some countries are well positioned in the race to develop a vaccine: India (with 2 vaccines) is the second Asian country after China (with 12) in terms of the number of vaccines in advanced trials, followed by Japan, Korea and Taiwan. Out of the 11 vaccines already approved in the world by at least one country, 5 are Chinese and 2 are Indian.

The availability of their own range of vaccines, approved by the competent health authorities and the WHO, will be beneficial for Asian countries, especially in terms of the lives it will be able to protect and the positive effect it will have on their economies. It will also increase their geopolitical influence as a result of the distribution of these vaccines to other countries.

The second wave of the COVID-19 epidemic has affected Asian countries differently and to a lesser extent than Europe or the United States, thanks to containment measures whose effectiveness was enhanced by the previous experience of SARS and the different approach of the population, which is more culturally inclined to positively evaluate restrictions and any impositions in favour of the community[1], as well as stricter penalties in the event of infringements. While India still finds itself within a long first wave which is now showing some improvement, Indonesia, Malaysia and Thailand have recorded a second wave, and Korea and Japan a third, with a sharp increase in infections at the turn of the year. China itself has grappled with an increase in cases, the worst since the flattening of the curve achieved in spring, which has nevertheless been much more modest than in other countries and quickly contained.

In this context, **Asian countries are progressively launching COVID-19 vaccination campaigns** using vaccines developed both by foreign multinational companies and by domestic companies on their own or in collaboration with the former. The largest multinational companies have also made agreements with some Asian companies for the local production of vaccines, albeit largely for export. Unlike in the past, **some emerging countries**, particularly **in Asia**, are **also very well positioned in the race to develop a vaccine**. China has as many as 12 vaccines developed by domestic companies, 5 of which are now in the final trial stage (see Table 2A in the Appendix) out of a global total that is currently 20. **Of the 11 vaccines already approved** by at least one country, **5 are Chinese, 2 are Indian and 2 are Russian**. In Asia, **India is the second country after China in terms of the number of vaccines in phase 3** and in phase 2 **of trials, followed by Japan, South Korea and Taiwan** (see Table 2C in the Appendix).

Throughout the world, the urgency and quantity of doses required have created unprecedented logistical and medical challenges (production, transport and cold storage, recruitment and training of medical personnel) and the pharmaceutical companies producing vaccines, many of which are based in India or China, are trying **to maximise their production capacity, not without difficulty**, due to the need to maintain high safety standards even on larger scale productions. China has stated that it could expand its production capacity to up to 2 billion doses in 2021, and then up to 4 billion, enough to cover a large part of its own population and meet part of foreign

[1] See for example: When culture clashes with Covid-19, MIT News Office, 25 June 2020.

12 February 2021

Insights

Research Deparment

International Research Network

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Economist – Emerging Asia

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See the final page for important information

demand. In India, the world's 7th largest exporter of vaccines and the first in Asia (see Fig. 2 and Fig. 4), the Serum Institute could bring its production to at least 1.5 billion doses.

China has stated that it wants to make its own vaccines "global public goods" available at "a fair and reasonable price" and is participating in **COVAX**[2], an initiative supported by the WHO that promotes the provision of vaccines at a fair price for adhering countries, especially developing countries. India has not yet joined, although it is a supplier country from which COVAX purchases vaccines and is eligible to be a recipient country. Many emerging countries rely on Chinese and Indian production, both for direct purchase and for partnership agreements to produce the vaccine locally. **As many as 19 countries, mostly emerging ones, have participated in the testing of vaccines produced in China** and 17 countries have already approved them as of today, while those produced in India have so far been approved by seven countries (see Table 1, and Fig. A and Fig. B in the Appendix). **Vaccines developed by China and India**, like the one developed by **Russia**, can be **stored at a temperature of 2-8°C** and for this reason are **more suitable for distribution in developing countries**, which do not have the capacity to store them at the low temperatures required by other vaccines.

Vaccine distribution in developing countries has been overshadowed by Western countries engaged in grabbing vaccines from Western multinationals and advancing vaccination campaigns, so much so that WHO Director-General Ghebreyesus recently stated that the world is on the verge of "catastrophic moral failure" in vaccine distribution[3]. According to the WHO, many countries are **circumventing contracts negotiated through the COVAX partnership** to negotiate supplies directly from producers, thus helping to raise prices, while Western multinationals have prioritised the approval of their vaccines in industrialised countries where profits are greater. Difficulties in expanding production capacity are also slowing down the delivery of contracted doses, exacerbating competition between countries. The WHO also regrets **the low participation in the C-Tap (COVID-19 Technology Access Pool) platform** which facilitates the sharing of patent-protected information and which would allow qualified pharmaceutical companies to produce already-authorised vaccines through a transparent and legal procedure.

According to Bloomberg, only considering the contracts for which the information has been made public, 9.04 billion doses have already been booked in the world, and the industrialised countries have taken 85% of Pfizer BioNtech vaccines. The US, Europe and Great Britain have allegedly assured themselves in total more than 3.1 billion doses, much more than necessary to cover their populations (and many more than those assured so far through COVAX: 700 million according to Bloomberg, up to 2 billion according to the WHO[4]). Variants of COVID-19 have recently emerged in Brazil, the UK and South Africa and experts fear that they may spread or multiply especially in **poorer countries** that **have few fiscal resources** and **risk falling behind** in the vaccination campaigns. For this reason**, many of these countries are rushing the approval of vaccines produced in China, Russia and India** (see Fig. B in the Appendix) which, in this context, offer an anchor of salvation for the population. Approval was granted despite testing and validation standards being considered less stringent and not unanimously recognised internationally due to poor data publication. The **approval by the WHO** would **greatly support the**

[2] COVAX is a vaccine-access assistance partnership coordinated by Gavi - The Vaccine Alliance, the Coalition for Epidemic Preparedness Innovations (CEPI) and the WHO. COVAX is one of the four pillars (vaccines, diagnostics, therapeutics, health system strengthening) of the programme to accelerate access to tools for combating COVID-19, known as the Access to COVID-19 Tools (ACT) Accelerator, launched in April by the WHO, the European Commission and France in response to the pandemic. For more details, see: https://www.gavi.org/vaccineswork/covax-explained or https://www.who.int/initiatives/act-accelerator/covax.

[3] "WHO: just 25 Covid vaccine doses administered in low-income countries", The Guardian, 18 January 2021.

[4] "COVAX Announces new agreement, plans for first deliveries", WHO News Release, 22 January 2021.

legitimacy and profile of these vaccines and make them more likely to gain priority distribution through COVAX. According to many analysts, China's decision to join COVAX, and the free distribution of vaccines of its own production in developing countries would also serve the purpose of increasing its **geopolitical influence** in these countries, some already important trading partners in particular for the supply of commodities (for example, several Gulf countries, Indonesia, Brazil, Chile), so much so that there is talk of "**vaccine diplomacy**", facilitated for China by investments in the countries involved in the Belt and Road Initiative (BRI) and, in particular, in the Health Silk Road projects. Similar diplomacy has also been adopted by India, which has so far focused on its neighbouring countries ("Neighbourhood First" diplomacy), and by Russia.

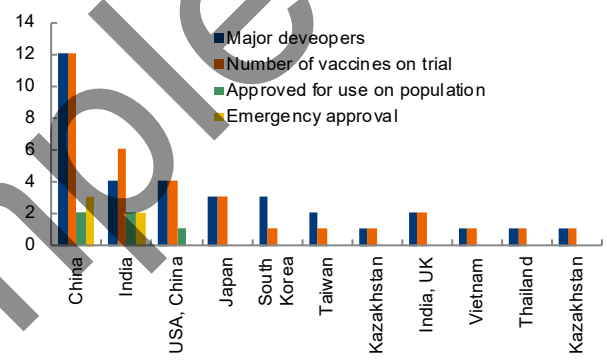
The availability of a wide range of vaccines approved by the competent health authorities and the WHO will be beneficial for Asian emerging countries, which are also producer countries, in terms of both the lives they will be able to protect and the positive effect they may have on their economies. Vaccination campaigns will reduce the need for containment measures that have greatly affected countries' economic performance, while demand for vaccines globally will support the performance of many local pharmaceutical companies and industry exports.

Tab. 1- Chinese and Indian vaccines approved in the world

Name		Country	Approval date
Sinopharm	BBIBP-CorV	**China**	***28-Aug-20 / 31-Dec-20**
		UAE	09-Dec-20
		Bahrein	13-Dec-20
		Egypt	02-Jan-21
		Jordan	09-Jan-21
		Seychelles	11-Jan-21
		Pakistan	18-Jan-21
		Iraq	19-Jan-21
		Serbia	18-Jan-21
		Peru	27-Jan-21
		Hungary	29-Jan-21
		Morocco	23-Jan-21
		Cambodia	04-Feb-21
Sinopharm	Inactivated	**China**	***28-Aug-20**
		UAE	09-Dec-20
Sinovac	CoronaVac	**China**	***28-Aug-20 / 06-Feb_21**
		Indonesia	11-Jan-21
		Turkey	13-Jan-21
		Brazil	17-Jan-21
		Chile	20-Jan-21
		Mexico	11-Feb-21
CanSino Biologics	CanSino	China	****29-Jun-20**
		Mexico	11-Feb-21
Serum Institute of India / Oxford-Astra Zeneca	Covishield	**India**	**03-Jan-21**
		Morocco	07-Jan-21
		Bangladesh	08-Jan-21
		Nepal	15-Jan-21
		Sri Lanka	22-Jan-21
		South Africa	23-Jan-21
		Bahrain	25-Jan-21
		Maldives	28-Jan-21

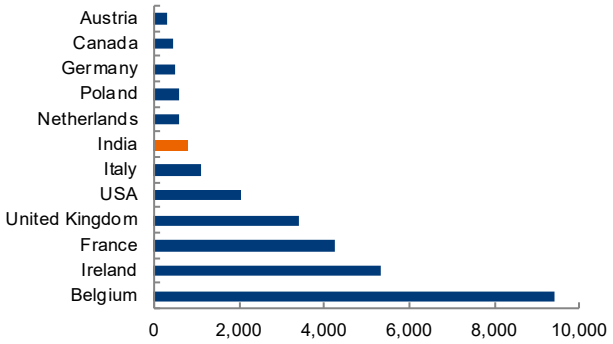
Note: (*) For high-risk groups only; (**) For military use only. Source: 2021 McGill COVID19 Vaccine Tracker Team, WHO, press sources or competent national authorities

Fig. 1 - Asia: vaccines under development by country



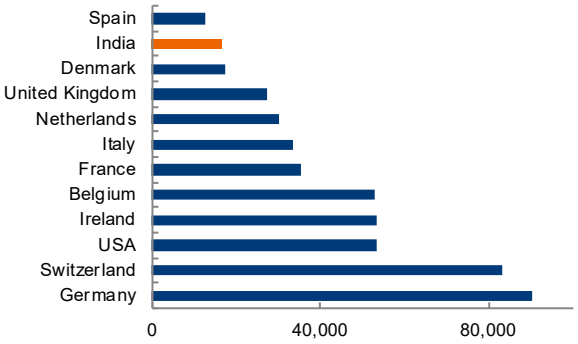
Source: 2021 McGill COVID19 Vaccine Tracker Team, WHO, press sources.

Fig. 2 - Major exporters of vaccines* (2019; million USD)



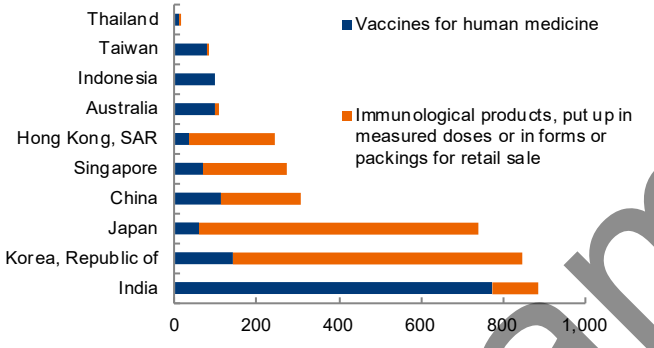
Note: (*) 300220 Vaccines for human medicine. Source: COMTRADE

Fig. 3 - Major exporters of pharmaceutical products (2019; million USD)



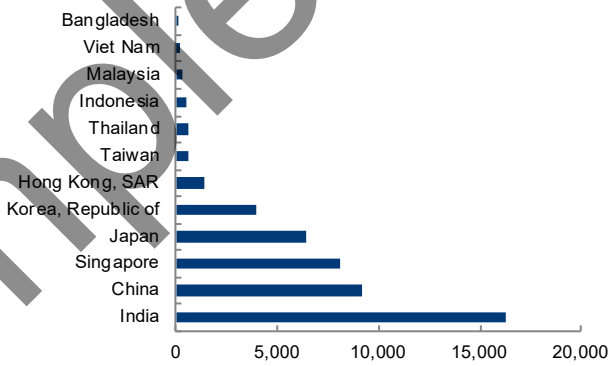
Source: COMTRADE

Fig. 4 - Asia: major exporters of vaccines (2019; million USD)



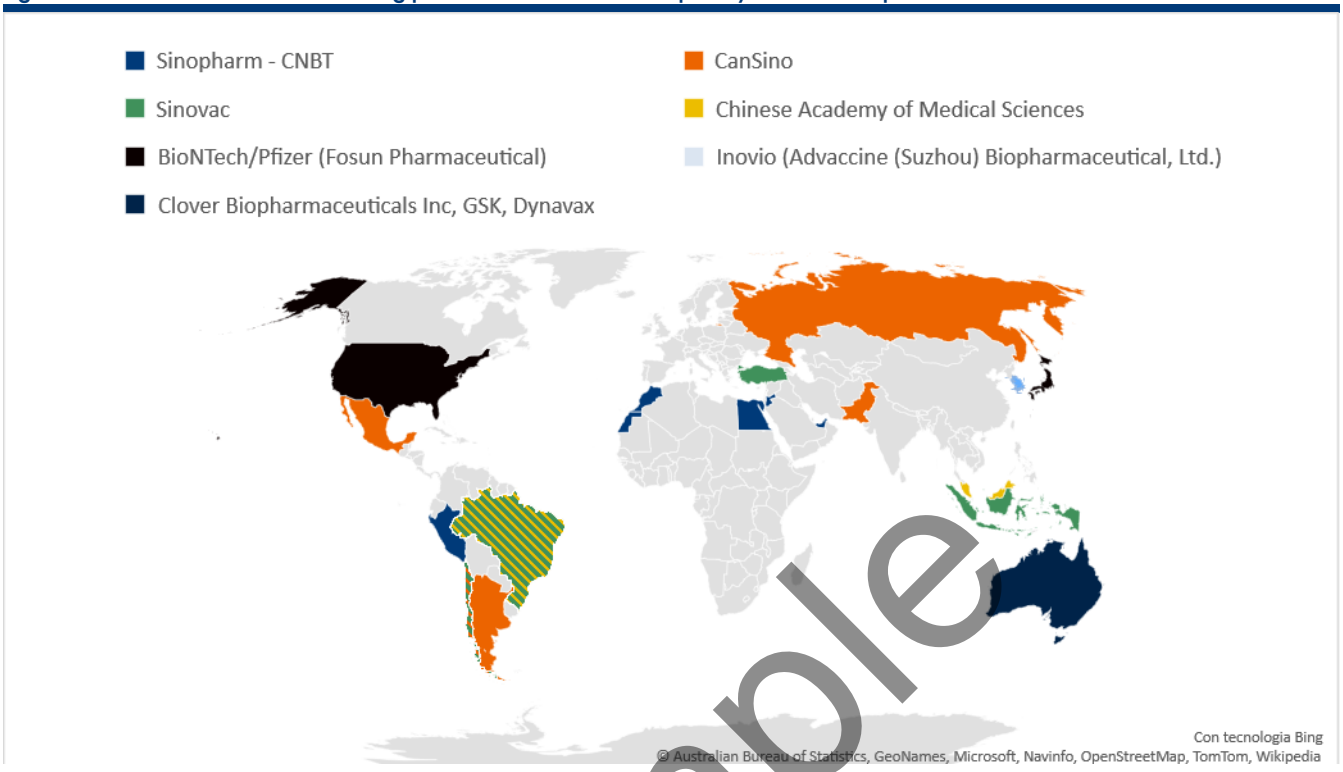
Source: COMTRADE

Fig. 5 - Asia: major exporters of pharmaceutical products (2019; million USD)



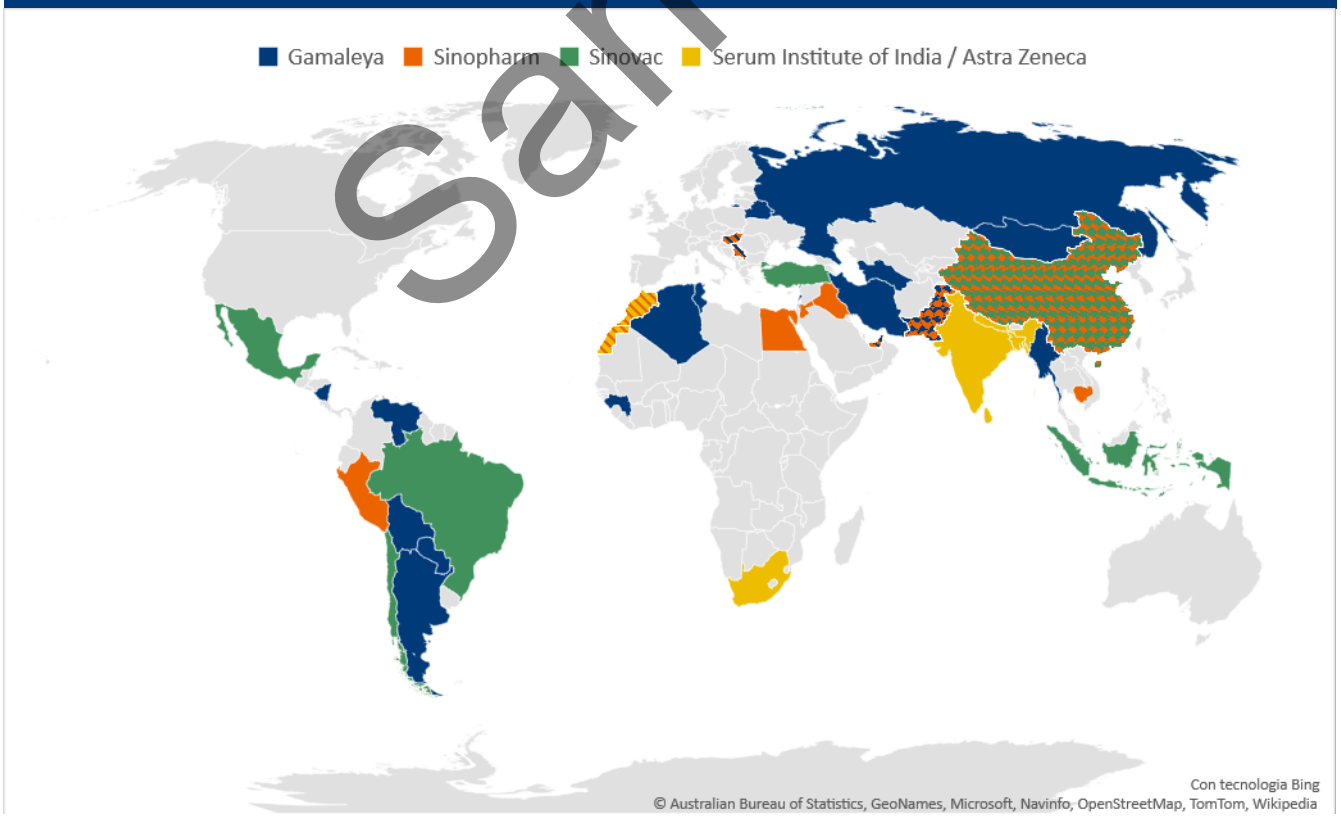
Source: COMTRADE

Fig. A - Countries that have hosted testing phases for vaccines developed by Chinese companies or in collaboration with them



Source: 2021 McGill COVID19 Vaccine Tracker Team, WHO

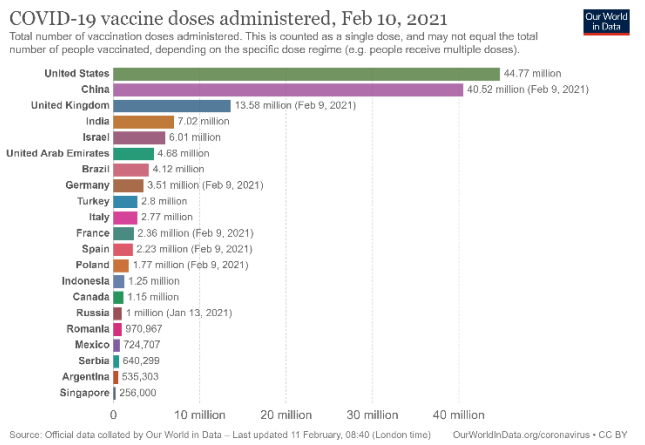
Fig. B - Countries that have approved Chinese, Russian or Indian vaccines



Source: 2021 McGill COVID19 Vaccine Tracker Team, WHO, press sources or competent national authorities

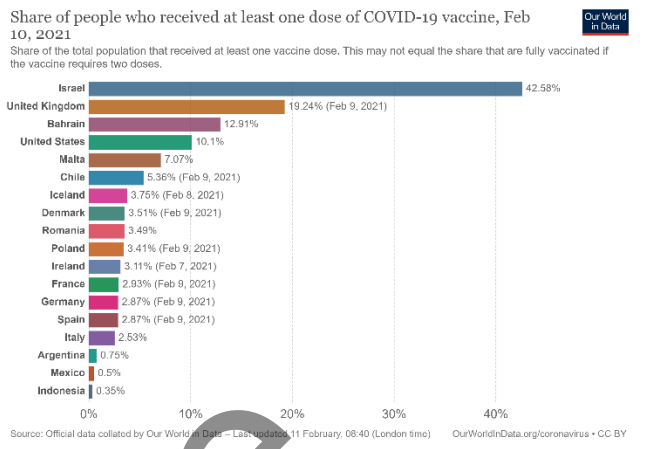
Appendix

COVID-19 vaccine doses administered



Source: https://ourworldindata.org/COVID-vaccinations

Percentage of people in the local population that have received at least one dose of COVID-19 vaccine



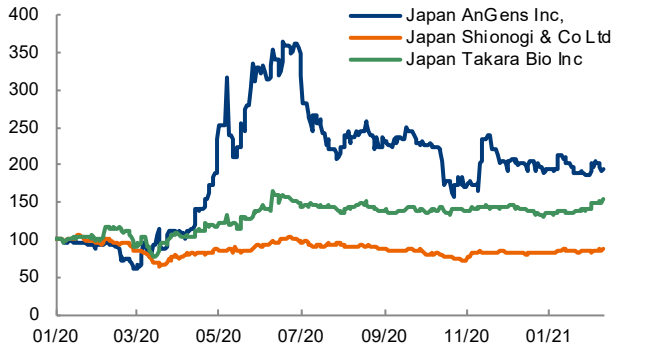
Source: https://ourworldindata.org/COVID-vaccinations

Tab. 1 - Vaccine doses whose purchase has been contracted - Asia Pacific and Oceania (millions)

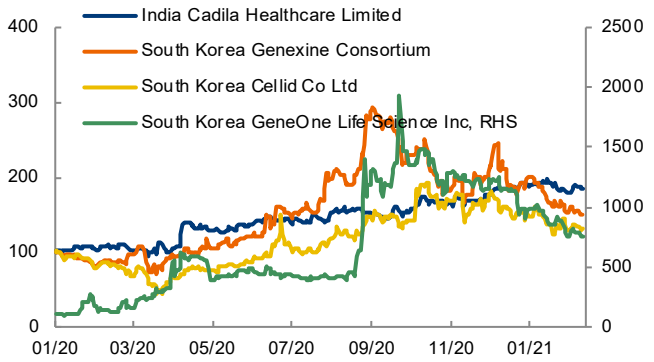
	Pfizer	AstraZeneca	Sinopharm	Sinovac	CanSino	Gamaleya	Clover	Moderna	Janssen (J&J)	Novavax	Totali dosi negoziate
India		1000				200				1000	2200
China	100	200									300
Philippines		17		25				20		30	92
Indonesia	50	100	60	125.5	15					50	400.5
Thailand		61	2								63
Vietnam		30									30
Malaysia	12.8	12.8		14	3.5	13					56.1
Brunei											
Myanmar											
Laos											
Cambodia											
Singapore											
Taiwan											
Hong Kong	7.5	7.5		7.5							22.5
South Korea	20	20						40	4		84
Japan	120	120						50			290
Australia	20	54								51	125
New Zeland	0.75	7.6							5	10.72	24.07

Note: AstraZeneca, Pfizer and Sinovac vaccines require two doses. Cells are empty where data is not available. Source: Bloomberg Vaccine Tracker for contracts made public, various press sources and national authorities

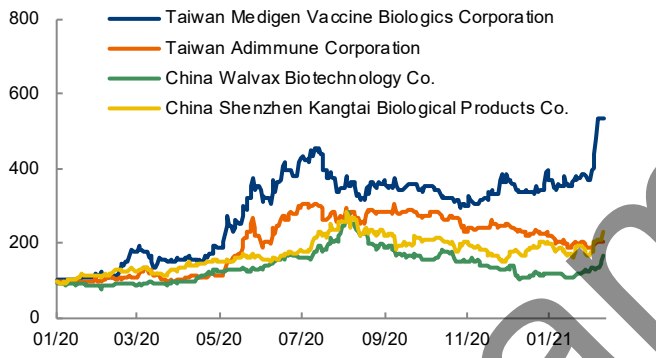
Stock performance of major listed Asian companies involved in the development of COVID-19 vaccines (01/01/2020=100)



Source: Bloomberg. Indices rebased at 01.01.2020=100



Source: Bloomberg. Indices rebased at 01.01.2020=100



Source: Bloomberg. Indices rebased at 01.01.2020=100

Source: Bloomberg. Indices rebased at 28.04.2020=100

Prices as at 12 February 2021.

Tab. 2A - Vaccines developed by Chinese companies

Name		Main Developers	Trials*	Phase of clinical trial**	Approvals – countries or number	Type
Sinopharm - CNBT	BBIBP-CorV	China National Biotec Group Company Limited (CNBT) and affiliated Sinopharm, G42 Healthcare company, Abu Dhabi Health Services Company, Wuhan Institute of Biological Products Co. Ltd, Beijing Institute of Biological Products Co. Ltd	Bahrain, Egypt, Jordan, UAE Argentina Peru UAE China	3 3 3 3 1,2	13	Inactivated
Sinopharm-CNBT	Inactivated SARS-CoV-2 vaccine (Vero cell)	China National Biotec Group Company Limited (CNBT) and affiliated Sinopharm, Wuhan Institute of Biological Products, Universidad Peruana Cayetano Heredia, Universidad Nacional Mayor de San Marcos	UAE Peru Morocco China	3 3 3 1, 2	China, UAE	Inactivated
CanSino	Ad5-nCoV	NPO Petrovax, CanSino Biologics Inc	Argentina, Chile, Mexico, Pakistan, Russia Russia China	3 3 1, 2	China, Mexico	Non-Replicating Viral Vector
Anhui Zhifei Longcom	RBD-Dimer	Anhui Zhifei Longcom Biopharmaceutical, Institute of Microbiology Chinese Academy of Sciences	China	3		Protein Subunit
Sinovac	CoronaVac	Sinovac Biotech Ltd, Pontificia Universidad Catolica de Chile, Ministry of Health Chile	Chile Brazil Indonesia Turkey China	3 3 3 3 3	China, Indonesia, Turkey, Brazil, Chile	Inactivated
Chinese Academy of Medical Sciences	Inactivated	Institute of Medical Biology, Chinese Academy of Medical Sciences (IMBCAMS), West China Second University Hospital, Yunnan Center for Disease Control and Prevention	Brazil, Malaysia China	3 1, 2		Inactivated
West China Hospital	Recombinant (Sf9 cell)	West China Hospital, Sichuan University	China	2		Protein Subunit
Wantai	DelNS1-2019-nCoV-RBD-OPT	Beijing Wantai Biological Pharmacy, Jiangsu Provincial Center For Disease Control and Prevention	China	2		Replicating Viral Vector
Minhai Biotechnology Co	SARS-CoV-2 Vaccine (Vero Cells)	Beijing Minhai Biotechnology Co Ltd, Shenzhen Kangtai Biological Products Co., Ltd.	China	2		Inactivated
Shenzhen Geno-Immune Medical Institute	LV-SMENP	Shenzhen Geno-Immune Medical Institute, Shenzhen Third People's Hospital, Shenzhen Second People's Hospital	China	2		Non-Replicating Viral Vector
Shenzhen Geno-Immune Medical Institute	COVID-19/aAPC	Shenzhen Geno-Immune Medical Institute, Shenzhen Third People's Hospital, Shenzhen Second People's Hospital	China	1		Replicating Viral Vector
Yunnan Walvax Biotechnology Co., Ltd	SARS-CoV-2 mRNA vaccine	Walvax Biotech, Shulan (Hangzhou) Hospital + Center for Disease Control and Prevention of Guangxi Zhuang Autonomous Region, People's Liberation Army (PLA) Academy of Military Science	China	1		RNA based vaccine

Note: (*) Countries where the trial phase indicated in the next column is organised. (**) Highest trial phase achieved, unless otherwise indicated.
Source: 2021 McGill COVID19 Vaccine Tracker Team, WHO

Tab. 2B - Vaccines developed by foreign companies in collaboration with Chinese companies

Name		Main Developers	Trials*	Phase of clinical trial**	Approvals – countries or number	Type	Country
BioNTech/Pfizer	BNT162b1	Pfizer/BioNTech, Shanghai Fosun Pharma, Jiangsu Provincial Center for Disease Prevention and Control (Sponsor)	Argentina, Brazil, Germany, South Africa, Turkey, United USA	3		RNA based vaccine	USA, China
BioNTech/Pfizer	BNT162b2	BioNTech SE, Pfizer, Shanghai Fosun Pharmaceutical Development Co, Ltd	Argentina, Brazil, Germany, South Africa, Turkey, United USA	3	55 countries	RNA based vaccine	USA, China
Inovio	INO-4800	Inovio Pharmaceuticals, International Vaccine Institute, Advaccine (Suzhou) Biopharmaceutical, Ltd.	USA USA China USA South Korea	3 2 2 2 2		DNA	USA, China
Clover	SCB-2019	Clover Biopharmaceuticals Inc, GSK, Dynavax	Australia	1		Protein Subunit	USA, UK, China

Note: (*) Countries where the trial phase indicated in the next column is organised. (**) Highest trial phase achieved.
Source: 2021 McGill COVID19 Vaccine Tracker Team, WHO

Tab. 2C - Vaccines developed by or in collaboration with Asian companies (excluding China)

Name		Main Developers	Trials*	Phase of clinical trial**	Approvals– countries or number	Type	Country
AnGes	AG0301-COVID19	AnGens Inc, Japan Agency for Medical Research and Development	Japan	3		DNA	Japan
Kazakhstan RIBSP	QazCOVID-in	Research Institute for Biological Safety Problems Rep of Kazakhstan	Kazakhstan	3		Inactivated	Kazakhstan
Serum Institute of India Oxford/AstraZeneca	Covishield	Serum Institute of India Private Limited, Indian Council of Medical Research (ICMR) – Oxford/AstraZeneca	India	3	India, Bangladesh, Nepal, Sri Lanka	Non Replicating Viral Vector	India, UK
Bharat Biotech	Covaxin (BBV152)	Bharat Biotech International Ltd, Indian Council of Medical Research	India	3	India	Inactivated	India
Biological E Limited	BECOV2B	Biological E Limited	India	2		Protein Subunit	India
	BECOV2A	Biological E Limited	India	2		Protein Subunit	India
	BECOV2C	Biological E Limited	India	2		Protein Subunit	India
	BECOV2D	Biological E Limited	India	2		Protein Subunit	India
Shionogi	S-268019	Shionogi & Co Ltd	Japan	2		Protein Subunit	Japan
Nanogen	Nanocovax	Nanogen Pharmaceutical BioTechnology Co Ltd	Vietnam	2		Protein Subunit	Vietnam
SpyBiotech	RBD SARS-CoV-2 HBsAg VLP	SpyBiotech, Serum Institute of India	Australia	2		Virus-like particles	UK, India
Genexine	GX-19	Genexine Consortium	South Korea	2		DNA	South Korea
Zydus Cadila	ZyCoV-D	Cadila Healthcare Limited	India	2		DNA	India
GeneOne Life Science Inc	GLS-5310	GeneOne Life Science Inc	South Korea	2		DNA	South Korea
AnGes	AG0302-COVID19	Osaka University, AnGes, Takara Bio	Japan	2		DNA	Japan
Chulalongkorn University	ChulaCov19	Chulalongkorn University, Mahidol University, National Vaccine Institute (NVI) Thailand, National Research Council of Thailand	Thailand	2		RNA	Thailand
Cellid Co	AdCLD-CoV19	Cellid Co Ltd	South Korea	2		Replicating Viral Vector	South Korea
Medigen	MVC-COV1901	Medigen Vaccine Biologics Corporation	Taiwan, Vietnam	2		Protein Subunit	Taiwan
Adimmune Corporation	AdimrSC-2f	Adimmune Corporation	Taiwan	1		Protein Subunit	Taiwan

Note: (*) Countries where the trial phase indicated in the next column is organised. (**) Highest trial phase achieved.
Source: 2021 McGill COVID19 Vaccine Tracker Team, WHO

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