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Fighting COVID-19: East Asian Responses to the Pandemic

POLICY PAPER APRIL 2020

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*There is no desire more natural
than the desire for knowledge*

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INTRODUCTION

The research for this policy paper is about a moving target. Neither the exact origin of the coronavirus now designated as COVID-19, nor some of its key features in terms of extent, contagiousness, variety of effects on the human being, and response to the preventive methods and barriers put in place are exactly known. In the best of circumstances, **neither the number of people contaminated nor even the exact casualty count are known for sure**, so long as complete and reliable testing cannot be performed. In the worst of circumstances - the initial outbreak in Hubei, China and its capital city Wuhan, and its ensuing spread across China, there are good reasons to doubt official figures, also we do not know by how much.

Success is therefore a relative term, which should be followed by the words “so far”. There is uncertainty about the number of asymptomatic patients, and a wave of new cases in countries where indeed success seemed to be at hand. To cite just one of the consequences, countries such as Singapore and Japan, which seemed to have avoided confinement through a combination of preventive methods, are as of April 7 having to impose increasingly severe forms of lock-down.

This research note compares the policy tools used by **China, Hong Kong, Japan, the Republic of Korea, Singapore and Taiwan** to fight against the COVID-19 pandemic. In spite of the uncertainties mentioned above, the experience of these countries has much to contribute to a toolbox of prevention policies for Europe - which has been next in line in the virus's journey. This is East Asia, and therefore a set of developed economies. Even China has reached the level of middle-income countries, and all the others have a per capita GDP in the range of the 14 wealthiest European Union member states. They differ greatly in terms of political systems - China is an authoritarian state, Singapore combines rule by law with some authoritarian features, Hong Kong combines rule of law and an executive branch vetted in Beijing. The three others are full democracies, where political life is every bit as contested as in Europe.

This matters for our purpose, since a canard about Asian policies in the fight against the coronavirus is that they are possible only in a political and cultural climate that favors authority and the collective over the individual. This is true of China, where grave policy mistakes have in fact served as a cradle for the virus's rise, while the success - so far - of containment has been helped by a **pervasive population control and mobilization**. On the contrary, all the other countries in our study with the partial exception of Japan have reacted very promptly and decisively. This has generally helped them, instead of using a sledgehammer to fight the pandemic, to adopt a combination of more specific policies. As we shall see, this does not mean that only soft policy tools were used. Certainly, **a cultural factor - mixing self-restraint**

and the experience of SARS only 17 years ago - does help. But **border closures, enforced isolation and quarantines, mandatory tracing and tracking** are found in proportions that do not have much to do with nuances in political systems.

Not all among these six cases were equally endowed in PPEs - personal protective equipment as they are now known - or testing capacities after the virus genome became available (from January 7), or ventilators and other hospital equipment. But a common feature is that **these industrial and trading states have either mobilized existing capacities or developed new ones to fill the gaps in their needs** - China and Taiwan emerging as global providers of some needed medical supplies, Singapore and South Korea as hubs for tests, and perhaps Japan for a key treatment drug. Of course, this says something about the global industry shift to the East and the corresponding fall in the West's capacity to adapt quickly to sudden needs. But none of this has happened effortlessly or in a completely ordained way. Each of these countries has undergone its own learning curve.

Strikingly, they have hardly relied on each other for solutions to the crisis. On the contrary, **partial or complete border closures for travelers** have become the norm, and this of course also has an impact on goods and services. Should the pandemic linger on or recur, these border closures would prove unsustainable for these highly integrated economies which rely on transnational and intra-firm value chains. The policies we describe are emergency responses, and this is another reason to be cautious in trumpeting their success. Getting an epidemic's R_0 (number of persons infected by each single patient) under 1 ensures “flattening” the epidemic curve and containing it. It does not mean eradication. Given the unknowns about the virus, among them the lack of a vaccine and the possibility of serious mutations, it is too early for this study to look at post-crisis policies - whether these relate to post-confinement or to a permanent state of alert.

Given these uncertainties, the future of economic policies is also in doubt. Except for hard-hit China, none of the other countries have suffered the extreme **production shock** that is now the lot of Europe and North America - precisely because their policy responses have ensured so far that they avoided confinement and full lockdowns. But the resulting drop in international trade is now creating a **demand shock** for all East Asian powerhouses, which will deepen in the second quarter of 2020, with a yet undefined exit.

What we will be looking at are **immediate measures to alleviate the economic pain** - for citizens and for companies - as well as the **willingness to coordinate and contribute to global mitigation** of the world's largest economic recession since 1945: nothing less, but nothing more. Discussions about shifting value chains, about the fate of globalization now take a second seat to economic decisions in direct connection to the on-going battle against the pandemic.

EARLY WARNING AND RAPID REACTION

The **reaction time** to a pandemic is a decisive element that determines the policy options states have for crisis management. China's initial hesitations and cover-up, in December and January, resulted in a full lockdown being unavoidable in Wuhan, Hubei province, and most of China. But Singapore, Taiwan, Hong Kong and South Korea took immediate steps at the beginning of January to screen incoming passengers from Wuhan, managing to avoid a major outbreak. Japan's experience is singular, with no quick reaction to the news from Hubei province, but very low levels of infection until early April.

China had an early warning system which is said to have failed. From available description, this is more a failure of communication or recognition by the central political authorities than a systemic breakdown: China's National Health Commission investigated conditions in Wuhan in the last days of December¹. The virus genome, only partially decrypted in Wuhan by the end of the year, has been completely mapped on January 5 by a Shanghai laboratory under the Chinese Academy of Medical Science, and in fact communicated abroad by January 7: the 48 hours delay is quite rationally described by one of China's chief doctors as due to prior communication to political authorities. By late January, Wuhan's Party chief would explain for his own defense that "a law" had prevented him from revealing facts: such a law was more likely a directive from above.

Chinese local authorities unquestionably failed to take immediate actions and measures to confine the disease in Wuhan, the first known epicenter of the outbreak. A number of pneumonia cases of unknown cause related to Wuhan's Huanan Seafood Market were discovered as early as **December 8, 2019. We can take this date as the starting point to gauge reaction time**, even though cases have later been found to have started on December 1 and even November 17 (without a known link to the Huanan market). Among doctors warning colleagues or sounding an alarm; Li Wenliang, who communicated with his colleagues, was silenced and accused of spreading misinformation. The Wuhan Municipal Health Commission communicated about the infection cases on December 31 and closed the market on January 1, 2020. Between December 8 and January 1, numerous Wuhan residents had been exposed there to the virus.

¹ For China's official timeline, see: "Timeline of China Releasing Information on COVID-19 and Advancing International Cooperation", *China Daily*, April 6, 2020, http://www.chinadaily.com.cn/a/202004/06/WS5e8b2f5aa31012821728496b_1.html

In China as a whole, the virus was recognized as an infectious disease only on January 20, a full 43 days after the first detection. **Almost no prevention and containment measures** were taken before that time. For example, on January 18, a mass "10,000-family feast" was held in Wuhan. Around this time, people also started their Lunar New Year trips - the world's largest human migration. Two days later, human to human contamination was recognized, and Xi Jinping announced strong measures. **By January 23, Wuhan went into lockdown.** Its mayor said that 5 million people had already left the city. This exodus shows that the lock-down was adopted too late. Given the known figures for infections in Wuhan before January 23, and the high probability of many asymptomatic cases, this makes it impossible to believe China's very low figures (15,000) for contamination outside Wuhan and Hubei². It should be noted that the **doubts about asymptomatic** patients and the **lack of wide and reliable testing** also put numbers in doubt elsewhere. Some of China's understated numbers may come from dissimulation. Others simply come from probable ignorance.

By contrast, neighbors who had many visitors on location or were informed by China started to react as early as the last days of December to the pneumonia cases of "unknown cause" in Wuhan. This short reaction time is linked to **pre-existing institutional arrangements** and to **quick follow-up in practice**. Taiwan, Hong Kong, South Korea, and Singapore had put coordinating institutions and procedures in place after SARS and MERS, allowing them to respond even before their first confirmed case.

Taiwan's Center for Disease Control, under the Ministry of Health, is commissioned to support epidemic management in almost all aspects (planning, research, management, drug procurement, surveillance, port controls, international cooperation, etc.). It immediately started **fever screening** at the airport and **examination for suspected cases** on all flights from Wuhan. 20 days later, a dedicated Central Epidemic Command Center (CECC) was established, allowing **mobilization and integration of national resources** to combat the outbreak. Similarly, **Hong Kong's Center for Health Protection** (CHP) under the Department of Health informed the public of the situation on December 31 and provided **general advice and instruction** to the public. Thanks to the coordination of the CHP, governmental meetings and airport screening were immediately organized, followed by the publication of "Preparedness and Response Plan". The plan provided clear **guidelines for response at different levels. Legal recognition** of the coronavirus as an infectious disease, empowering

² For explanation, see: Ruiyun Li et al., "Substantial Undocumented Infection Facilitates the Rapid Dissemination of Novel Coronavirus (SARS-CoV2)", *Science*, March 16, 2020, <https://doi.org/10.1126/science.abb3221>
Derek Scissors, "Estimating the True Number of China's COVID-19 Cases", *American Enterprise Institute*, April 7, 2020, <https://www.aei.org/research-products/report/estimating-the-true-number-of-chinas-covid-19-cases/>

authorities to enforce measures such as isolation and tracing, was also a key factor. Both Hong Kong and Taiwan issued recognition documents before China, respectively on January 8 and January 15.

Singapore's response came shortly after. Its **National Center for Infectious Disease (NCID)** under the Ministry of Health created in 2019 has been put on the front line of the fight against the disease. It reacted quickly with **pre-screening for suspected cases** at the airport on passengers from Wuhan and a requirement for physicians to identify patients with pneumonia symptoms on January 2. The NCID is also used as a **quarantine center** as it provides 330 isolation beds.

In Korea, the **Korea Centre for Disease Control and Prevention (KCDC)** had recently been upgraded to enhance its effectiveness. The **Emergency Operations Center (EOC)** was created as the command and control center for public health crisis response. On January 3, enhanced **screening measures**, including quarantine, were applied to travelers from Wuhan. At a later stage, the strong **research, investigation and testing** capacity of the KCDC team has also made a strong contribution towards testing and tracing of potential cases.

Japan has been **comparatively slow** in its reaction and did not initially take strong measures at entry points on Japanese territory. Without recent infectious respiratory disease epidemic experience, the country had **no existing centralized system** to provide immediate response. The first confirmed case is on January 16, and the first high-level cabinet meeting is convened on January 24. The coronavirus is recognized as an "infectious disease" four days later and eight days after China. With no strong legislation or local measures in place, Japan relied for a time on the **self-discipline** of its population and on **cluster investigation**.

In short, it took 46 days for China from first case to response, while Taiwan, Hong Kong and Singapore **moved ahead of China** and even before their first cases appeared. By comparison, Japan has moved late. This has dictated very different types of responses. In China, there was a rigorous lock-down, progressively extended to most cities and provinces. Others made do with highly targeted containment measures. These became more strict **at the turn of March**, when facing the return of nationals from Europe and the United States, in order to prevent **a second wave**. The case of Japan, where spontaneous social isolation and mask-wearing is said to have helped, particularly for the elderly, remains surprising as to the low number of cases. In general, different governments were presented with different challenges, as they had to respond to hundreds of cases or tens of thousands of cases, and quite likely more for China.

BORDER CONTROLS AND ENTRY BANS

Border controls (such as temperature checks or testing) and entry bans are the most obvious immediate responses to an epidemic that has started elsewhere - of the five countries, three have **no open land borders** (including for all practical purposes South Korea), Singapore has one land bridge connection to Malaysia. Closing down some or all flights, filtering passengers according to their point of departure is of course easier in this case. Much less is known about **port control** - although the odyssey of several cruise ships such as the *Diamond Princess* in Yokohama, or the landing of many passengers without precautions in other cases (Malaysia) indicates that these ports may have been open gaps. Only Hong Kong faced the conundrum of massive overland traffic with mainland China. It is also striking that after the SARS, MERS and H1N1 avian flu episodes, temperature scanners were clearly available (as temperature "guns" were in China), a situation that contrasts with Europe, where temperature scans started very late in most cases, if at all.

There are two outliers in these regards. **Japan** was late starting only from February 3 in running airport checks, and **resembles most closely in this respect the European case**. Perhaps as a result, it moved proactively towards entry bans from the same date. From February 3, Hubei residents and passengers who had visited the province were banned. Compulsory quarantine applies to incoming passengers from South Korea and China since March 5. As of April 1, the entry ban list includes 73 countries.

South Korea is the other outlier in one respect, as the only country among our case studies with **no entry ban**, despite public pressures. It relies on **strict border checks**, that initially applied to select categories of passengers. On March 19, with the implementation of its "universal special entry procedures", all passengers undergo fever checks and are requested to report their health conditions. From April 1, **compulsory quarantine** is imposed on all arrivals from overseas, a measure that had earlier been **deployed by China, Hong Kong, Singapore, and Taiwan**, although the scale varies.

Full bans - the most extreme measure on a government's playbook - are actually the mainstream response. **Singapore, Taiwan and Hong Kong** were among the ones implementing an entry ban on all non-residents in mid- or late- March, despite or because of their relative success in domestic virus containment and prevention, and as a result of **the risk of a second wave of contagion**, with residents traveling back from Europe and the United States. In the case of **China**, the entry ban even

applies to all foreign nationals with residence permits. Prior to the full bans, China and Hong Kong already imposed quarantine on all arrivals from abroad. For **returning residents/nationals**, airport screening and compulsory quarantine are mandatory.

Hong Kong's land border presented a special issue. The HKSAR had installed additional thermal imaging systems at airports as early as January 3 specially for incoming passengers from Wuhan. Border check capacity was introduced, and its use incrementally increased at **land border checkpoints** (following in part a threat by hospital personnel to go on strike).

States have a number of policy tools for border controls to face the pandemic, from temperature checks and swab tests on arrival to entry bans.

In **Hong Kong**, passengers were initially tested if they failed the basic screening and checks. Those arriving from listed high risk regions were requested to undergo **testing at a designated testing facility** or to send in their sample from their quarantine premise. Later, all inbound travelers were required to present themselves at the temporary testing center. Passengers arriving from higher risk places have to wait for the test result at the center (which takes 8 hours on average), while others have to go to their quarantine premise.

Since mid-January, the **Singaporean** government has expanded its **screening rooms** at all boundary checkpoints. Passengers with fever or showing signs of respiratory illness, have to undergo a **swab test** and leave their contact details. While being requested to minimize contact with others, they are allowed to carry on while waiting for results. If a passenger tests positive but has already left Singapore, the Ministry of Health obtains the itinerary and notifies the relevant counterpart.

Like Hong Kong and Singapore, South Korea only tested passengers who failed the initial screening. This was extended to all incoming European passengers from March 22. A **“walk-through” testing station** was set up at the **Incheon International Airport** to speed up the procedure. The whole process takes about 30 minutes.

Borders: controls and restrictions



CHINA

Travel restrictions:

- January 23rd: **suspension of travel to and from Wuhan and some Hubei cities**
- January 24th: suspension of **domestic group travels**
- January 27th: suspension of group travel to **foreign countries**
- March 28th: temporary entry suspension for foreign nationals holding valid Chinese visas or residence permits

- **Diversion of international flights to Beijing**/ international arrivals to Beijing tested and quarantined (late March)
- **International flight routes reduced and limited** (late March)

HONG KONG

→ January 3rd: **temperature checks and isolation of travelers coming from Wuhan**

Entry bans:

- January 27th: resident of Hubei province & travelers from Hubei
- January 30th: Individual Visit Scheme suspended
- March 25th: entry ban for all nonresident travelers
- March 19th: **mandatory quarantine** for all inbound travelers
- **Mandatory health declaration** at arrival, progressively extended

JAPAN

Entry ban or travel restrictions:

- February 3rd: entry ban for all individuals with Hubei province recent travel history or with a Chinese passport issued in Hubei
- February 13th: ban extended to Zhejiang province
- March 16th: extension to certain regions of **Spain, Italy, Iran, Switzerland and Iceland**
- April 1st: extension to 49 countries
- Borders stayed opened a long time

SINGAPORE

→ January 2nd: **temperature checks** for passengers from Wuhan

Entry bans:

- January 23rd: all travelers **from Wuhan**
- January 29th: suspension of Hubei-Singapore flights
- February 1st: all travelers from **mainland China**
- March 18th: all **foreigners**
- March 22nd: all short-term visitors

- **Strict border control** (swab tests on arrival if symptoms)
- **Mandatory quarantine** for nationals and residents under arrival

SOUTH KOREA

→ January 3rd: first enhanced **quarantine and screening measures** for travelers from Wuhan

→ March 19th: **temperature checks** for all inbound travelers

→ March 22nd: **testing for all inbound travelers from Europe**

→ April 1st: mandatory **quarantine for all inbound travelers**

- **No entry ban** but strict controls at airports
- **Petition for a ban of Chinese travelers** (late January), without political effect

TAIWAN

→ December 31st: **epidemiological control of passengers from Wuhan**

Entry bans:

- February 6th: all Chinese nationals
- February 7th: all foreigners coming from **China, Hong Kong and Macao**
- March 18th: **all foreigners** (and mandatory quarantine for all inbound Taiwanese travelers)

- **Access to individual travel history**
- **Mandatory health declaration** for all inbound travelers



SOCIAL BEHAVIOR MEASURES: FROM QUARANTINE AND SOCIAL DISTANCE TO CONFINEMENT

The coronavirus outbreaks are managed on two fronts. One is at the **border**, with the attempt to stop cases being imported, the other one is **behind the border**, which requires social behavior measures to limit local infections. These measures to influence social behavior range from **social distancing requests** in Japan to strictly enforced **lockdowns** in China.

Japan's case is interesting in that it relies on the **self-discipline** of the population, and reflects legal constraints that the central government has worked to relax. Even with the declaration of a “state of emergency” for Tokyo and six prefectures on April 6, governors are only empowered to request business closure to increase social distancing, **compliance is not compulsory**. Yet the incidence of flu cases, for instance, fell by two-thirds in March 2020 compared to March 2019. **Hong Kong's** relative success so far in containing the spread of the disease has also relied on self-discipline until late March. Around the same time as its border closure, regulations that **prohibit local gatherings** and enforce **social distancing** in certain contexts are issued at the end of March.

Quarantine policies differ from state to state. Apart from quarantine requirements for incoming travelers, quarantine of confirmed patient's contacts are also put in force. In **Japan**, the only enforced rule is **legal obligation to hospitalize** any patient testing positive to COVID-19, even without symptoms: this is the exact opposite of the policy generally adopted in Europe, and its limit is of course the capacity of hospitals - the Japanese government has worked to relax the rule in order to treat patients with mild symptoms at designated facilities. This hospitalization obligation may explain also the reluctance to shelter passengers from the *Diamond Princess*. As contact tracing investigation is not part of Japan's policy, only incoming passengers from South Korea and China are quarantined - until wide entry bans come into effect. On the whole, Japan remains **the lightest** in terms of **compulsory measures for social behavior**, but it is also a case of social self-discipline producing positive results. The recent increase in cases (more than 5,000 as of April 8) is now putting this policy in question.

South Korea, Hong Kong, Singapore and Taiwan currently have all their recent **incoming travelers under quarantine**, with some of them having to take care of a lighter load due to their recent entry ban on non-residents/nationals.

China is a category of its own, as it has taken the **strongest measures** to contain the coronavirus outbreak. As a result of delay in the initial phase and the movement of population due to the Lunar New Year, it took Chinese authorities only three days to go from Xi Jinping's first public address on the crisis situation on January 20 to announcement of **lockdown of Wuhan** and other nearby cities on January 23. Confinement/Lockdown is the strategy of states that have **failed to contain** the contagion and have no visibility on clusters and individual cases.

Enforcement of the quarantine relies on two main elements, apart from self-discipline. One is the **penalty coming with the violation**, and the other one is the **digital tool used to track** the person under quarantine. Taiwan imposed the highest monetary penalty on violation, with a fine up to US\$ 33,241 (TW\$1 million). South Korea and Singapore are on the same scale for the fine, respectively US\$ 8,257 (KRW 10 million) and US\$ 7,168 (SG\$ 10,000), but in Singapore the violation comes also with an imprisonment (up to 6 months), while in South Korea only one of them would be applied (fine or up to one year imprisonment). The lightest punishment is the Hongkongese one, which a penalty of up to US\$ 641 (HK\$ 5,000) and a maximum of six month imprisonment.

In **China**, no exact punishment guidelines have been published and rules varies from city to city, or even from district to district. Some local authorities have included social behavior criteria related to the prevention and control of the coronavirus as part of their **reward and punishment criteria**. Enforcement of social discipline is also helped both by the local committees of the CCP's “**mass organizations**” and by wider **peer pressure** in small communities, up to and including local blockades. For example, masks are defined as daily necessities by the Chinese Center for Control and Prevention, and made compulsory in several provinces and cities. Social pressure on individuals to wear masks, and rules set by local committees, have made it a **de facto mandatory practice**. In addition, local committees were either instructed or acted on their own to ensure all inhabitants stay at home and visitors not be allowed. The monitoring is so intense that **violation of rules is almost impossible**. The same for public space controls, for public transportation, business premises, factories, etc. that are allowed to stay open: temperature checks are strictly implemented at the entry. Simultaneously and complementary, digital tools are employed.

Discipline or self-restraint? The social behavior factor



CHINA

- Risk to be accused of "endangering public security" if breaking quarantine rules
- **Social control** via **neighborhood committees**
- Role of Social Credit system: concealing information, refusing isolation, violating mask-wearing requirement or gatherings can be sanctioned
- Creation of an **individual QR code** to show the status of travel history



HONG KONG

- **Precautionary measures** (mask wearing, social distancing) spontaneously adopted by an experienced population, strongly hit by SARS in 2003
- Government **regulations to enforce social distancing and limit gatherings**
- Clear government **communication** towards the population



JAPAN

- Requests for **self-restraint and cooperation**, generally well followed by the population (masks, social distancing, closing schools)
- A political debate on the merits of **self-restraint** versus the importance of **creating a legal framework** to impose restrictions
- Creation of a legal basis for a COVID-19 "**state of emergency**", which gives governors more power to restrict social and economic activity



SINGAPORE

- Promotion of **social distancing** and daily life rules
- **Purchase limits** in supermarket chains and **reassuring communication** on resupplying
- **Dissuasive sanction in case of quarantine violation or diffusion of fake news** (US\$ 7,168 or 6 months sentence)



SOUTH KOREA

- March 22nd - April 7th: "**Social Distanciation**" Campaign, targeting religious gatherings, entertainment and sport events
- **Strict monitoring of home quarantines** and **dissuasive sanctions** for violation (US\$ 8,257 or one-year sentence)
- **Sanction dissuasive** en cas de violation (8,257 US\$)
- Social pressure and indirect "**name and shame**" leading the central government to move to prevent privacy violations



TAIWAN

- **Self-discipline on mask use**
- **Dissuasive sanctions** for violating quarantine orders (US\$ 33,241)
- Sanctions for disseminating **fake news** (US\$ 100,000)
- Fines for not wearing masks in Taipei subway
- "**Name and shame**" an option: government allowed to publish information of people who do not respect quarantine

Quarantine policies



CHINA

- **Mandatory quarantine for high risk individuals**
- Strict monitoring (digital tools, social control from the neighbors)
- **March 25th: quarantine in designated centers** for inbound travelers in Beijing



HONG KONG

- **Home quarantine**, quarantine in **designated centers**, or in **mobile units**
- Strict monitoring** (electronic wristbands, surprise visit or video call) and **dissuasive sanctions** (US\$ 641 & 6-months jail term)
- Gradual extension of mandatory quarantine:
- **January 22nd**: for people **having been in contact with high risk individuals and confirmed cases**
- **February 8th**: inbound travelers from mainland China
- **March 19th**: all inbound travelers



JAPAN

- **No quarantine policy for Japanese nationals**, because of **mandatory hospitalisation** of confirmed cases
- Quarantine for passengers of the Diamond Princess cruise ship, which creates an infection cluster
- **March 5th**: 14-day mandatory quarantine for inbound travelers from South Korea and China
- **April 1st**: 14-day mandatory quarantine for **all inbound travelers**



SINGAPORE

- **Use of Stay-Home-Notices** for residents returning from abroad
- Strict monitoring** (GPS localisation) and **dissuasive sanctions** (US\$ 7,168)
- Pre-existing quarantine centers**
- **March 21st**: mandatory quarantine for all **Singaporean nationals** or **short-term visitors** returning from abroad



SOUTH KOREA

- **Mandatory quarantine for suspected cases** (including people who came into contact with confirmed cases), as determined by epidemiological investigation
- Strict digital monitoring** and dissuasive **sanctions** (US\$ 8,257 or one year jail term)
- Mandatory quarantine for inbound travelers progressively extended**:
- **March 22nd**: for all travelers from Europe (even if tested negative)
- **April 1st**: for **all inbound travelers**



TAIWAN

- **Strict application of quarantine** : **dissuasive fines** (US\$ 33,241), **intrusive monitoring** (tracing through smartphones provided by the state)
- Name and shame** as an option: Legal to **reveal the identity of people violating quarantine rules**
- Financial compensation** for quarantined individuals with children under 12
- **March 18th**: **mandatory quarantine for all Taiwanese nationals** flying back home

IV

THE MOBILIZATION OF INDUSTRY: MASKS AND BEYOND

All governments whose action is surveyed in this study have used policy tools to boost the production of protective and medical equipment. China is in a category of its own because of the unique combination of its **size, state capitalism and the Communist Party structure** within companies, which allows for a rapid mobilization and effects of scale. But democracies like Japan, the Republic of Korea and Taiwan also do have tools and mobilize their industries through **policy guidance, fiscal incentives and subsidies**. Singapore can act on the funding of medical research and development, and mobilize its military in mask distribution.

Industry mobilization in East Asia served the emphasis on protective masks, with governments, including local governments, often requesting or even requiring to wear masks, as is the case in most of China until mid-March 2020. An **existing infrastructure** of mask production was complemented by **redesigning of production lines** in the automotive industry (the Chinese electric car maker BYD and the joint venture between SAIC and General Motors) and at high tech factories (Sharp, Foxconn, Changying Production, lithium battery manufacturer Yinghe Technology), taking advantage of production lines equipped to fully eliminate dust. Textile factories are also reallocated, including for the supply of non-woven fabrics.

The **national production of masks** is an essential component of East Asian responses to the COVID-19 crisis. China's production in a single month – February 2020 – was multiplied by 5,5 times, from an initial 20 million per day to 110 million per day, and reached 200 million per day in early April. China uses a mix of **tax incentives, direct requests to state-owned enterprises** to reorganize production lines (in particular in the automobile industry), and **a guarantee** that any overproduction will be purchased by the government. Protective suits are in fact already in overproduction. There is also private initiative in China to seize the business opportunities arising from a huge surge in **global mask demand**, and leading to **exports** of masks playing with different certification jurisdictions - not yet certified in China, where the process is long. This effort is the basis of China's medical diplomacy, and in particular its so-called "**mask diplomacy**". According to the General Administration of Customs, China has exported 3.86 billion face masks with a value of USD 1,43 billion in March. **Quality issues** arise from the diversity of suppliers, and on early April the export of products not certified in China is forbidden.

In Japan, the Ministry of Economy, Trade and Industry has created a **subsidy scheme** to increase the production of masks and the raw material needed. The scheme works through selection of local companies, and the goal is to reach a monthly availability of 600 million masks or 20 million per day. In Hong Kong, the government has introduced a "**Local Mask Production Subsidy Scheme**" to provide subsidies to a maximum of 20 production lines. Eight approved production lines are estimated to supply in total 12.8 million masks per month to the government, and 270,000 masks per month to the market. In Taiwan, the government has initially enacted an **export ban** and has subsidized the installation of production lines to boost the national production from 4 to 15 million units per day in what has essentially become a **nationalized mask economy**: Taiwan is now donating masks internationally, in what may soon be a competing "mask diplomacy". The daily production rate reaches 13 million units in Korea, with policy incentives centered on the production of raw material to **overcome dependence on Chinese producers**, and initial limitations placed on exports. Both Korea and Taiwan have mobilized the national postal system to create a **nationwide logistics of the distribution** of masks.

Besides masks, there is a Chinese specificity in mobilizing national resources to boost the production of **medical equipment** in general. Using similar policy tools, China was able to increase its production of protective suits, infrared thermometers, goggles and ventilators, and place itself in position to partly meet the increasing global demand for medical equipment to treat COVID-19 patients. China, faced with international requests for 1 million ventilators, is also **dependent on international supply chains**. On April 9, foreign minister Wang Yi issued an appeal to Switzerland to boost production of critical subcomponents for ventilators. According to China's Ministry of Industry and Information Technology, China is capable of producing 2200 invasive ventilators a week, less than a fifth of global demand, because of this lack of necessary components.

Not all states have the ambition or the means to develop national supply chains, but Japan is notable for the government's decision to **eliminate dependence** on imports for the production of the anti-flu drug Avigan by a subsidiary of Fujifilm, after the treatment was endorsed by a Chinese study and encouraged by Prime Minister Abe. Singapore has also funded a **domestic laboratory project** to create new tests, and is boosting in general medical research.

Finally, the **mobilization of the military** for COVID-19 related missions is in the toolbox of several governments in the region. Taiwanese reserve troops and Korean army troops have joined mask production lines to make up for the difficulty of recruiting staff. The Singaporean military has been involved in the nationwide distribution

of masks. The People's Liberation Army has been dispatched to Hubei province to run some of the new hospitals and has taken over distribution of food in Wuhan. The Academy of Military Science has been tasked with research work on vaccine. In Korea and in Taiwan, CBR (chemical, biological and radiological) units have been involved in the disinfection of selected sites, like airports or universities.

Masks: a self-protection and an industry



CHINA

- Increase of daily production from 4 to 200 million units between February and April
- Mandatory to wear masks in several provinces (surgical masks or N95 recommended)
- Import during the peak of infection, then support to exports starting from March as part of China's foreign policy goals



HONG KONG

- High dependency on imports, compensated by the use of foreign suppliers, production subsidy program and Correctional institutions
- Needs estimated at 200 million masks per month
- Priority sectors for distribution (such as medical staff)
- Importance of masks highlighted since late December as advices for population
- Used spontaneously as self-protection by a responsible population



JAPAN

- Subsidies to increase national production to 150% of its usual level
- 20 million masks per day, promised by Shinzō Abe
- In addition to surgical masks, 50 million reusable masks are sent to households
- Tradition of wearing masks, seen as a form of social responsibility



SINGAPORE

- Stockpile of masks constituted in aftermath SARS epidemic
- 4 FFP2 masks distributed per household each week
- A shortfall of stocks compensated by a collaboration with local private sector
- A website to localize mask disponibilities



SOUTH KOREA

- Daily production increased from 10 to 13 million units
- National production stimulated to limit dependency to China, but insufficient to cover national demand
- Sector priority for distribution (health authorities, police)
- Fair distribution policy for general population (maximum of 5 masks per individual)
- Exportations limited and then forbidden



TAIWAN

- Increase of daily production from 4 to 13 million units
- A budget of US\$6.6 million to accelerate production
- Nationalisation of surgical and N95 masks distribution
- An app showing availability of masks
- Export ban, followed by a policy of international assistance

TESTING POLICIES

Test production: from PCR to serological testing

The DNA sequence of COVID-19 was identified in early January and China immediately started developing **PCR-based detection kits**, soon followed by other East Asian countries. The COVID-19 outbreak poses an extremely complicated **time management challenge**, as developing test kits and treatments usually requires **validation studies** that can take several months or years. The rapid spread of the pandemic placed industry and states under tremendous time pressure. Another problem is the **mass production** of test kits. Overall, our six cases managed to develop very quickly **nucleic acid amplification tests** (PCR-based test kits detecting the virus itself), and also started developing their own **serological tests** (detecting antibodies) to enable an independent national production.

In order to accelerate the test development process, different policy tools were used;

- ▶ An **accelerated authorization procedure**. In China, the National Medical Product Administration created on January 26 a fast-track approval channel for medical devices, including test kits. In Korea, the government had a fast-track approval procedure in place for testing kits, as a lesson learned from the 2015 MERS crisis. The first testing kit was thus granted an emergency use authorization by the Ministry of Food and Drug Safety on February 4. Korean government also cross-checked cases in the early cases of commercialization to ensure the tests were working properly.
- ▶ **Public-private partnerships**. In Taiwan, the CDC developed the first tests, which were then produced through public-private partnerships. In Singapore, the first PCR test was jointly developed by a public agency (Team Science and Technology Agency, HTX) and a private Singaporean company (Veredus).
- ▶ **International partnerships**. In Hong Kong, CK Life Sciences International Holdings, the pharmaceutical unit of the CK Hutchison conglomerate, purchased in late March the global distribution license of a test kit developed jointly by Singapore's Agency for Science, Technology and Research and Tan Tock Seng Hospital.

The **fast track certification** did not solve all issues. China had to reform its export authorization procedures in March when controversies emerged about the reliability of exported Chinese tests that had not been certified in China but only in other jurisdictions. In Spain, the Sociedad Española de Enfermedades Infecciosas y Microbiología

Clinica (SMEIC) declared on March 27th that PCR tests brought from Chinese company Shenzhen Bioeasy Biotechnology had an accuracy of only 30 percent. This was a product that had gained certification in Europe, but not yet in China. On March 31 the National Medical Products Administration (NMPA) of China imposed the Chinese certification procedure as a precondition for engaging in international trade of test kits.

Serological tests differ from PCR tests as they do not detect the virus but **antibodies from blood samples** generated by COVID-19 carriers. **An access to a large population of recovered patients** is needed before commercialization of a reliable test. Serological tests have obvious strengths. They indicate if a person has already been in contact with a virus and could show **immunity**, even though it is too early to tell at the time of writing how strong and long-lasting that immunity may be. They can be produced in the form of **rapid diagnostic kits** showing results in only a few minutes.

China launched in early February the production of serological tests. Several products are already being exported. The questions surrounding their reliability were under the spotlight when **British health authorities described the 3.5 million of serological tests imported from China “not good enough to be worth rolling out in very large scale”**. Several other Asian countries are engaged in the development of serological tests. In Singapore, serological tests developed by Duke-NUS Medical School are used domestically since early March. In South Korea, several serological tests are being developed or under validation procedure. In Japan, Kurabo Industries Ltd produces since March serological tests developed by one of their Chinese partners.

Testing policies

The reliability of currently available serological tests is still being discussed, and testing policies in East Asian states at the time of writing are about PCR tests. Testing policies depend on the **availability of tests**, and sometimes on the **legal environment**. In South Korea, the massive production of different types of PCR tests has enabled mass testing on a voluntary basis (including in a number of **“drive through” centers** that have been publicized across the world), and large-scale **epidemiological investigations**. In Japan, the legal requirement that any individual having contracted a class II infectious disease should be **hospitalized** contributed to a more limited use of testing. Institutions also play a role: in Japan, the focus on conducting **epidemiological research** in the main testing institution prevented the use of tests as a medical standard procedure for an immediate response. Instead, the Japanese authorities have focused on developing high **national standards for testing**.

In no country is testing systematic, even if Singapore has practiced swab tests on arrival for international travelers before closing the border. **Testing should mainly be understood in association with strict quarantine policies.** In Korea and in Taiwan, individuals put in domestic quarantine - for example, after being in contact with a confirmed case - undergo compulsory testing only if they display symptoms (such as fever). This is possible because the domestic quarantines are strictly monitored by health authorities. An exception exists in Korea for “high risk groups”, such as people linked to major clusters, who are tested regardless of symptoms.

Testing: test production and doctrine surrounding usage



- CHINA**
 - Authorisation of numerous **PCR test kits**
 - Development and utilisation of **serological tests**
 - **Pulmonary scanners** judged most reliable diagnosis method by Chinese medical professionals
 - End of March: Systematic PCR tests for **all incoming passengers to Beijing**
- HONG KONG**
 - March 28th: **free tests** available to asymptomatic foreign travelers
 - **An international partnership** for the development of screening kits
 - Possibility of having a screening kit **delivered to individuals placed in quarantine** (result within three days)
- JAPAN**
 - **A very restrictive testing approach** to not overwhelm the medical system
 - Co-existence of **serological tests** and the **PCR test kits**
 - **Kits produced in Japan favored** instead of foreign test kits
 - Specific number of tests performed per day
- SINGAPORE**
 - Performing PCR tests on incoming **passengers with even mild symptoms**
 - Authorisation of **swab tests** and **serological tests**
 - Joint **public-private development**
- SOUTH KOREA**
 - A daily capacity of 20,000 PCR tests
 - **Accelerated authorization** procedure for new kits (post-MERS)
 - **Serological tests under development**
 - **PCR tests offered free of charge**, including in **drive-through centers**
 - **Testing of all members** of the Shincheonji sect in Daegu.
 - March 22nd: **systematic test for all EU travelers**
- TAIWAN**
 - Tests on individuals with symptoms, but **no systematic test on quarantined individuals**
 - Joint **public-private development**
 - A **strategy** focused on the **application of a strict quarantine** rather than systematic testing

DIGITAL TOOLS

Hospitalization

CHINA

- Construction of temporary emergency hospitals **within 10 days** and **deployment of mobile medical spaces** (for mild symptoms)
- **Hospitalization** of confirmed cases, complete isolation of suspected cases and compulsory quarantine when high risk (contact with a confirmed case, etc.)
- **Online consultations** to reduce the risk of **infections acquired at hospitals**

HONG KONG

- **Deferral of non-essential medical services** to focus resources on Covid-19
- **Amendment to the Disease Prevention and Control Ordinance** which gives the Department of Health the **legal authority to compel isolation or quarantine**

JAPAN

- **A legal obligation to hospitalize** all confirmed cases, even without symptoms
- **Activated disaster system:** 700 hospitals and dedicated medical assistance teams, but not trained in the epidemic
- A reform which makes it **possible to treat mild symptoms** in **dedicated establishments** to avoid hospital congestion

SINGAPORE

- Pre-existence of a **center with 330 beds, isolation rooms and quarantine centers**
- **Reactivation of dedicated clinics**
- **Government coverage of hospital costs** for all suspected and confirmed cases

SOUTH KOREA

- Hospitalization of patients with **mild symptoms** in **Life treatment centers**
- **Cost fully covered by the State** for all confirmed patients regardless of nationality

TAIWAN

- Successful focus on **strict quarantine**, which allows hospitals to focus on procedures to increase their capacity to treat symptomatic cases
- **A limited number of isolation rooms**, but a capacity-building plan
- All hospitals, clinics and pharmacies **have access to patient travel history**

The use of digital tools has become central to the response of East Asia to the COVID-19 pandemic. From one state to another, digital tools serve a **variety of aims** and display **different functionalities**. Three main uses have emerged: **digital tracing**, which serves to identify chains of past contamination; and **digital tracking**, which involves real-time surveillance of quarantines and other forms of enforced social isolation. A third use is of course **mapping of the contamination**. Tracking treatment methods and the workflow of hospitals is also a function, which we leave aside as it is relevant to all health services, and not only to an epidemic.

For the sake of clarity, digital tools at times of epidemic can be compared along two axes. First, a **scale of intrusiveness**, showing a gradation from the less to the most intrusive methods. Second, the **nature of the end-users**, ranging from the individual who accesses a service to entities within the state, from hospital to ministries or even commercial platforms and telecom operators, harnessing big data to optimize policy making and policy enforcement. Digital tools help policy at the macro-level but they can also target individual cases and their entourage.

At the low end of the intrusiveness spectrum, digital tools provide **services to individuals**. The services can be integrated as a functionality on free messaging social applications, such as WeChat in China or Line in Japan and Taiwan. At the minimum, users interact with a server and assess their COVID-19 symptoms and obtain updates from the relevant authorities regarding the pandemic. At the maximum, in China, smartphone users can access a **close contact detector** platform allowing them to run an inquiry into the social interactions of a maximum of three individuals per registered mobile phone number, on the basis of a very intrusive contact tracing protocol described below.

Digital tools work as an interface between **government management of big data** and an **information service to users**. It is through a digital platform that a **nationalized system of mask distribution** has been operated in Taiwan. Users download from the National Health Insurance Administration the “NHI Express App”, register their social security number and access information on the availability of masks for sale on an online map. This enables the government to implement its supply policy of 3 masks per adult and 5 masks per children per week, as the platform also stores the purchase data for each registered individual so that it can be accessed at each authorized store.

A measure that deserves particular attention is the **access granted by the Taiwanese government to medical professionals** so that they can visualize the travel history of patients, after the database of the Customs administration was merged into the database of the National Health Insurance Administration. This went hand in hand with an obligation for doctors to declare cases.

But digital tools can also serve more directly the **enforcement of government policies** that **investigate individuals** and provide **surveillance** tools to restrict their movements in order to contain the spread of the disease. Several East Asian countries use digital tools to **enforce 14-days quarantine regulations**. The Taiwanese state provides smartphones to individuals placed in quarantine to monitor remotely their whereabouts and ensure that they stay at home. Hong Kong enforces quarantine for all arrivals with a connected electronic wrist. The Korean Ministry of the Interior and Safety has developed the “self-quarantine safety protection” app for Android and iOS users to monitor the location of the quarantined user. The app provides a communication channel for individuals to report their symptoms and seek advice.

The access to **localization data** is an essential resource to conduct epidemiological investigations when an individual tests COVID-19 positive, or as a prevention measure when risks are high. Such an investigation has been conducted on a massive scale in South Korea to trace and test 10,000 members of the Shincheonji cult in the city of Daegu.

The access to big data for epidemiological investigation does not necessarily come only from mobile phones. In South Korea, there have been discussions regarding the importance of **crossing geolocation data** obtained from smartphones with **credit card history** of purchases and CCTV data when conducting in-depth epidemiological investigation to retrace the history of an **individual's social interactions**. There is indeed a legal basis to obtain the collaboration of credit card companies in exceptional times of national crisis. In Japan, Data Cluster Teams also make use of such information when conducting investigations, but there are strong legal limits on access to data from mobile phone carriers. In China, the close contact detector functionality on Wechat interacts with a database compiling information from various administrations. Two aims are associated: **to provide an accurate big picture to the government** in order to optimize the effectiveness of the policy responses, including through the prediction of trends, but also to **target action on individual patients and their contacts**.

Singapore has developed the **TraceTogether** application on a voluntary basis. It uses **Bluetooth technology** to identify and record nearby phones that also have the app

installed. When a contact is suspected with an infected person, it becomes mandatory to upload the data from the phone to a server, allowing both epidemiological investigation and actual identification of possible new cases, based on the proximity and the duration of contacts. Data is stored for 21 days. This makes contact tracing a **“community-driven” approach**. In fact, it is also likely to nullify the initial protection of privacy, as more and more people carrying the app come in contact with symptomatic cases.

For the time being, the aspect of digital public health policies that has led to **privacy debates** is the **public disclosure of information**. Hong Kong's COVID-19 dashboard not only provides statistical information about the outbreak, it also makes available information on the timeline and the places visited by an infected individual. The Korea Center for Disease Control and Prevention provides anonymized information on confirmed cases on its website, but data leaked by local governments and sometimes through private initiatives can easily lead to the identification of confirmed or suspected cases, and the central government has to set guidelines preventing the release of highly private information, such as employer or address. Of all cases, Japan has the strictest and most principled approach to privacy, reflecting both political history and societal preferences. But the government took a major step in March when requesting mobile phone carriers and the largest internet platforms to share anonymized data for an early identification of clusters.

ECONOMIC SUPPORT MEASURES

The responses to a pandemic at the level of COVID-19 have been wide-ranging, with the imposition of new, restrictive quarantine measures and border controls to stop the spread of the virus. In China's case the Center has amounted to a set of **nation-wide economic blockades and labor force shortages**. These measures, despite being effective, have wrecked havoc upon the **global economy, interrupting supply chains, reducing workforce numbers and employment**, and creating all sorts of **financial emergencies**. Governments across the world are trying to mitigate the economic impact of COVID-19, before contemplating the world once the sanitary crisis has passed. This section will highlight the various economic policy responses of East Asian governments, to compare and analyse them.

China is both the largest economy of the region, the hardest hit by COVID-19, and a country with an economic structure of its own. It starts from a high but declining growth rate, a marked slowdown in infrastructure investment in 2019 that mainly reflected an attempt to rein in new public debt. Indeed, **public, para-public and future liabilities** are commonly estimated at X2,5 GDP, even though the current national budget is balanced.

The impact of the epidemic is unprecedented since the 1960s. Beyond the steep decline in January-February, by mid-March, external forecasts are in the 2-4% GDP growth range for the year 2020. By late March, a second economic shock, with the impact of **lower demand** from the rest of the world, has begun to limit any hope for a **V-shaped recovery**. Some estimates point to a 21 to 45% decline of China's exports in Q2: the impact on the GDP would be between - 3,7 and - 8,1%, resulting in negative growth for 2020. The picture is highly different from region to region and sector to sector. Simply put, SOEs and large or high-tech foreign companies are closer to full operation, South fares better than North, SMEs lag behind, handicapped by the issue of migrant workers stuck in their Lunar New Year destinations.

East Asian economies other than China were suffering marginal to negligible growth rates in 2019- either due to long-standing fiscal policies (Japan), output declines (Singapore), decline in consumption and exports (South Korea) or domestic unrest (Hong Kong). In addition, most East Asian countries are directly **linked to China in terms of trade, labour and manufacturing**. The onset of the COVID-19, therefore, has dealt a considerable blow to any prospect of economic recovery in 2020. **South Korea** is

Digital tools: Data for contact tracing



CHINA

- **Location of confirmed cases** listed on a map (**Baidu platform**)
- **Telecom data crossed with geolocation data**
- Contact tracing platform **integrated into popular applications**, each registered user can investigate the contacts of **3 individuals**
- **Argument of the anonymized nature of the data** to answer critics of the obstructions to privacy



HONG KONG

- **Compulsory health declaration** on arrival
- An **intensive and detailed contact tracing** (planes, trains, buildings in which there were confirmed cases) which allows the **follow-up** of all the contacts or at risk
- **Quarantine and electronic wristbands**: answers to concerns raised - Bluetooth or Wi-Fi systems are **less precise** than GPS location, and therefore **less intrusive**



JAPAN

- **No strict contact tracing**, emphasis on privacy
- Epidemiological investigations based more on **human cooperation** than on **digital tools**
- Existence of **strong legal safeguards**
- **Access to mobile data** and **GAFAs requested by the government** as part of adjustments to COVID-19 crisis management
- Digital tools used more to **offer information** than as a method of control



SINGAPORE

- **Tracetogether**, an app developed by the government, **warns people at risk** when a case is confirmed, Works on Bluetooth for contact backtracing
- **A very intrusive contact tracing** in order to identify possible sources of contagion
- Collaboration between the **Ministry of Health and hotels and companies**, extending to **viewing video surveillance images** to identify and follow up on cases



SOUTH KOREA

- An **intrusive and mandatory contact tracing** with access to bank statements and video surveillance
- A massive **epidemiological investigation** into the case of the **Shincheonji sect** using all available data
- **Public disclosure** of the identity and location of confirmed cases and **emergency alerts** by SMS to inform the neighborhood of the confirmation of a case
- **Government action** against disclosure of patient identities



TAIWAN

- **Integration** of national health administration and customs **databases**
- Based on a **compulsory health declaration** upon arrival in Taiwan, **precise monitoring** possible for **contact tracing**
- **Use of data** (health, travel) for preventive screening purposes

slated to face an unprecedented **economic downturn** of 2.3% this year, according to the Korea Economic Research Institute³, despite having shown positive growth in the previous year. This is due to an estimated contraction in private consumption and industrial output. **Japan and Hong Kong** will also be affected in particular, as the last quarter of 2019 saw both countries face **shrinkages** (-1.8%⁴ and -0.3%⁵ respectively). Despite Hong Kong having improved from its previous growth rate of -3%, the COVID-19 will, no doubt, slow it down. Estimates predict that both economies will face a **recession** during this period, due to pre-existing problems as well as new ones brought by the outbreak. Japan, in particular, will suffer enormously from the postponement of the 2020 Tokyo Olympics, which is estimated to cost at least US\$ 3 billion in labour and refinancing costs. On April 9, the **Bank of Japan declares all regions to be in recession**; while the official prognosis for the year is now -2,4% GDP, other estimates for Q2 cite a 20% drop.

Korea, Taiwan, Singapore have initially expected to keep the economy on an even keel in terms of positive growth, although forecasts by their respective governments saw **an outbreak-induced reduction in GDP growth rates** during the first quarter of 2020. By April 9, these forecasts have been downgraded in all three countries. While **Korea's** central bank governor still expects **marginally positive growth in 2020**, other estimates have entered negative territory. Still, Korea's exports have held up remarkably well - in March, they are only down by -0,2% YoY. This is due to the high performance of digital and IT industries, spurred by global demand at a time of confinement. Taiwan's government expects economic growth in 2020 to slow from 2.72% (as estimated in November 2019) to 2.37%, after having grown by 2.71% in 2019⁶, due to Taiwan's dependence on the Chinese manufacturing sector for its IT industry. On April 9, Moody's cites a lower figure - +0,2% - for 2020. Singapore's Ministry of Trade and Industry (MTI) expects the growth rate to slow from last year's 1.0% to 0.7%⁷. The results from Q1 - -2,2% YoY, or - 10,6% on a quarterly basis, lead to a downward revision for 2020, between - 1% and - 4,5%⁸. This would primarily be

because of problems in the manufacturing and wholesale sectors, due to diminishing demand in target markets for Singaporean products and particularly from China. In addition, these sectors would also face problems related to Chinese labour shortages and factory closures.

In terms of **monetary policy**, most national banks have taken to **slashing interest rates** and **supplementing other banking institutions** with the requisite funding. Taiwan's central bank has slashed interest rates for the first time in more than four years, and provided other banks with the financing of more than US\$ 6 billion to help businesses fight losses due to the outbreak⁹. The Monetary Authority of Singapore (MAS) also introduced a package to authorize loan and mortgage deferments, in order to tide individuals and businesses over the outbreak¹⁰. South Korea's central bank, meanwhile, kept interest rates steady initially¹¹, choosing to not pre-empt the shock from the outbreak- but in response to the rapid spread of the virus, it has slashed its rates to a record low¹². The Bank of Japan, however, seems to be struggling in this regard, due to a policy of monetary easing already adopted since 2013¹³. The People's Bank of China, while initially conservative with its approach, in early April has cut interest rates on reserves in excess of requirements to 0.35% from 0.72%, in a surprise move.

In order to salvage these issues, supplementing attempts to boost economic growth, East Asian governments have introduced a set of **economic resuscitation measures**, ranging from **stimulus packages** to **sector-specific responses**, such as subsidies and tax rebates.

Largest of all, at least in terms of announced figures, is a Japanese stimulus plan unveiled on April 7 and totaling 990 billion US\$, or 20% of the GDP. It succeeds a first plan that was about half this size. In effect, the amount is still disputed, as it includes already budgeted **investment plans**, as well as deferrals (rather than rebates) on **company tax** and **social welfare costs**. Direct handouts or residential tax rebates

3 Shin Eun-Jin, Ryu-Jung, and Seok Nam-Jun, "Unprecedented Economic Downturn Forecast This Year", *Chosun Ilbo*, April 10, 2020, http://english.chosun.com/site/data/html_dir/2020/04/10/2020041000745.html

4 Trading Economics, and Cabinet of Japan. "Japan GDP Annual Growth Rate." *Tradingeconomics.com.*, 2020. <https://tradingeconomics.com/japan/gdp-growth-annual>

5 Trading Economics. "Hong Kong - Economic Indicators." *Tradingeconomics.com*, 2020. <https://tradingeconomics.com/hong-kong/indicators>

6 Roger Tung and Yimou Lee, "Taiwan Trims 2020 GDP, Export Forecasts as Virus Risks Heighten", *Reuters*, February 12, 2020, <https://www.reuters.com/article/us-taiwan-economy-gdp/taiwan-trims-2020-gdp-export-forecasts-as-virus-risks-heighten-idUSKBN2060XS>

7 Ovais Subhani, Sue-Ann Tan. "Singapore Downgrades 2020 Economic Growth Forecast to between -0.5 and 1.5% on Coronavirus Impact." *The Straits Times*, February 17, 2020. <https://www.straitstimes.com/business/economy/singapore-downgrades-2020-economic-growth-forecast-to-05-15-on-coronavirus-impact>

8 Vivienne Tay, "Singapore's 2020 Growth Forecast Hits Negative Territory, Q1 GDP Contracts 2.2%", *The Business Times*, March 26, 2020, <https://www.businesstimes.com.sg/government-economy/singapores-2020-growth-forecast-hits-negative-territory-q1-gdp-contracts-22>

9 "Taiwan Hopes \$35 Billion Stimulus Package Will Be Enough against Coronavirus", *Reuters*, April 2, 2020, <https://www.reuters.com/article/us-health-coronavirus-taiwan-economy/taiwan-hopes-35-billion-stimulus-package-will-be-enough-against-coronavirus-idUSKBN21KOCU>

10 Aw Cheng Wei, "Coronavirus: Individuals Can Apply to Defer Property Loan, Insurance Premium Payments; Singapore SMEs to Get Cash Flow Support", *The Straits Times*, March 31, 2020, <https://www.straitstimes.com/business/banking/covid-19-individuals-can-apply-to-defer-property-loan-insurance-premium-payments>

11 "South Korea Central Bank Keeps Rates on Hold despite Coronavirus Risks", *CNBC*, February 27, 2020, <https://www.cnbc.com/2020/02/27/south-korea-central-bank-keeps-rates-on-hold-despite-coronavirus-risks.html>

12 Kim Eun-Jung, "Korea Slashes Interest Rates over Coronavirus Fears", *Chosun Ilbo*, March 17, 2020, http://english.chosun.com/site/data/html_dir/2020/03/17/2020031701009.html

13 Tomoyuki Tachikawa, "Bank of Japan Prodded to Act as COVID-19 Spreads, but Options Limited", *The Japan Times Online*, March 10, 2020, <https://www.japantimes.co.jp/news/2020/03/10/business/bank-of-japan-coronavirus-options-limited/#.XozfTmZaAw>

to stricken households (US\$ 2,750 each) are included; some measures are planned for a later date to support **economic and tourist industry resumption**. Japan's government is considering also the creation of a system of shopping vouchers to protect the tourism industry from the economic fallout of postponing the Olympics¹⁴.

China's economic response has remained on the conservative side, although there are signs of **monetary easing** in early April. Central allocation to virus responses reached CH¥ 116,9 billion (US\$ 16.7 billion) on March 13. There are reduced social contributions (analogous to a program in France) discount loans for a total of CH¥ 850 billion (US\$ 121 billion). This should be viewed in comparison to an overall CH¥ 36 trillion (US\$ 5138 billion) previously loaned to SMEs, however. Published figures for national bond issuance for Q1 2020 show **a very slow rise** (see figure 1 below): the decline in special bonds actually reflects a fall in infrastructure projects during the crisis; more debt rollover and new bonds for ordinary expenditure result in a debt rise of US\$ 84 billion, or 14% YoY.

Figure 1:

	Jan-Mar 2019		Jan-Mar 2020	
	Billion CH¥	Billion US\$	Billion CH¥	Billion US\$
National Debt Issuance	1406.7	200.78	1610.5	229.87
General Bonds	689.5	98.41	506.5	72.29
Special Bonds	717.2	102.37	1104	157.58
New Issuance	1184.7	169.09	1542.4	220.15
Rollover	222	31.68	68.1	9.72
Exchange Rate: 0.14274				

Source: Ministry of Finance of the People's Republic of China

“Helicopter money”, e.g. direct cash distribution to individuals has not happened, although many distribution companies have created sales vouchers; by late March a bout of food price inflation is tamed. However, it has announced on March 30 an interest cut from 2.4% to 2.2% on a reverse purchase agreement for banks.

Much touted international aid by China has so far focused on **delivery (or sale) of medical equipment**. Xi Jinping's speech at the March 26 G20 summit calls for “coordination” and for “cutting tariffs, removing barriers, and facilitating the unfettered flow of trade”. In other words, it is a call for the United States to drop the trade conflict. But he only announces on China's part **“a proactive fiscal policy and a prudent monetary policy”**.

In countries such as **Taiwan, Singapore and Hong Kong**, the **economic stimulus packages** were worked into their **national budgets**, since the outbreak coincided with their respective annual budget sessions. These countries were also the quickest to roll out their plans (February 2020), providing them with a **legal framework** under which each sector was targeted. Hong Kong, in particular, created an Anti-Epidemic Fund worth US\$ 3.8 billion. While South Korea only announced gradually larger packages in March, it has pre-existing legislation guaranteeing compensation for businesses and individuals affected by outbreaks (post-MERS). Japan's stimulus package, while still under deliberation, has an additional issue to contend with- the postponement of the 2020 Tokyo Olympics, which would cost the Japanese economy significantly. As the outbreak continues, these stimulus packages have been supplemented accordingly. Currently, as the figures stand, Taiwan has allotted US\$ 34.72 billion (5.8% of GDP), Singapore, US\$ 41.7 billion (11% of GDP), Hong Kong, US\$ 15.5 billion (4.2% of GDP), South Korea, US\$ 80 billion (0.5% of GDP).

These stimulus packages have wide-ranging targets- from **helping the retail, manufacturing and tourism sectors** to **SMEs, households and individuals**. For the former, the measures adopted are **bailout packages, subsidies and tax rebates**. Singapore in particular, has been successful in maintaining supply chain links with its neighbors, in order to keep the retail sector running, particularly, perishable goods¹⁵. In South Korea, where the technology manufacturing and retail sectors have been hit the hardest, the Trade Ministry, the Korea Trade-Investment Promotion Agency and related agencies are operating a support system for companies suffering due

14 “Japan May Dish out Cash to Households Impacted by Coronavirus”, *The Japan Times Online*, March 26, 2020, <https://www.japantimes.co.jp/news/2020/03/26/business/economy-business/cash-benefits-coronavirus/#.XpGXRFMzaAx>

15 Ang Hwee Min, “How F&B Outlets, Markets and Food Suppliers Will Operate amid COVID-19 ‘circuit Breaker’ Measures”, *CNA*, April 3, 2020, <https://www.channelnewsasia.com/news/singapore/covid19-how-food-establishments-operate-circuit-breaker-measures-12607170>

to interruptions at plants in China¹⁶. Hong Kong¹⁷, Singapore¹⁸ and Taiwan¹⁹ have dedicated particular supplemental budgets to the tourism industry, providing license fee, rent and tax waivers for affected businesses.

As for smaller enterprises, what all countries seem to have in common are **support schemes for both employers and employees**, based on how severely they have been affected by the COVID-19. **Hong Kong, South Korea, Taiwan and Singapore** have all either had **pre-existing rescue plans** based on disease outbreaks, or have **created new legislation** to bring these into effect. In particular, Singapore is supplementing a Jobs Support Scheme²⁰ and a Wage Credit Scheme²¹, to help businesses retain employees and maintain a standard wage. Eligible employers will be able to apply for the Leave of Absence Support Programme²². It gives the employer a maximum of \$100 per affected worker for the duration of the leave of absence. Eligible self-employed persons can also apply for these 100\$. While South Korea has the pre-existing Labour Standards Act²³ supported by the Employment Maintenance Fund²⁴, Taiwan, on 5 March has introduced a system of subsidies, sourced from the Ministry of Labor's Employment Stabilization Fund and Employment Insurance Fund²⁵. Japan, also on 5 March, has passed a US\$ 9.6 billion package to assist SMEs, businesses, and the self-employed²⁶. The government boosted special financing and guarantees primarily for micro, small and medium-sized business operators affected by COVID-19 to US\$15.6 billion, or about 0.3 percent of GDP, through the Japan Finance Corporation and other institutions. Hong Kong is providing one-off subsidies

to businesses, funded by its economic stimulus package. Hong Kong's government announced a US \$17.8 billion package of relief measures to assist individuals and businesses, including a US \$ 10.3 billion Employment Support Scheme. According to the IMF, Hong Kong also facilitated the introduction of low interest loans for SMEs with 100 percent government guarantee; and delays of loan payment, extension of loan tenors, and principal moratoriums for affected SMEs, sectors, and households as appropriate.

Each country has its own method of **compensating households**, especially those with children. Hong Kong has been the most comprehensive in this regard, introducing a **special allowance system for both low-income families and students**, helped by the Working Family and Student Financial Assistance Agency²⁷. In addition, handouts of US\$ 1,289 will be provided to all citizens over the age of 18. On March 10, Taiwan introduced the Regulations Governing **Compensation for Periods of Isolation and Quarantine**, mandating an allowance of US\$ 33 per day (over a 14-day period) for those undergoing quarantine. Singapore has introduced a "Care and Support Package" worth US\$1 billion to help households with **cost of living expenditures**, along with a **one-off cash payment** (US\$ 417.70) to all Singaporean adults²⁸. According to the Ministry of Health and Welfare in South Korea, all adults with families **under quarantine will be compensated** with US\$1000 per day of the 14-day period, while those without families will receive US\$ 500 per day. On the eve of national legislative elections, the majority party is proposing a doubling of the handout, and an extension to the entire population, rather than the bottom 70% income earners²⁹. Meanwhile, Japan plans on making **one-off stimulus cash payments** to households (US\$ 112 per person), in order to boost personal spending³⁰, which are to reach by May.

These stimulus packages are being financed by government spending and treasury bonds, widening fiscal deficits. Singapore's deficit will amount to US\$30.8 billion (8.9% of the GDP), according to Deputy Prime Minister Heng Swee Keat³¹. Taiwan is tapping into its Employment Stabilisation Fund and Tourism Development Fund,

16 "South Korea's Key Industries Hit Hard by COVID-19", *The Korea Herald*, February 24, 2020, <http://www.koreaherald.com/view.php?ud=20200224000651&kr=1>

17 Government Secretariat, Hong Kong, "New Item 'Anti-Epidemic Fund,'" February 21, 2020, <https://www.legco.gov.hk/yr19-20/english/fc/fc/papers/f19-46e.pdf>

18 Land Transport Authority, Singapore. "\$77 Million Point-To-Point Support Package for Taxi and Private Hire Car Drivers Affected by the Coronavirus Disease 2019 Outbreak", *www.lta.gov.sg*, February 13, 2020, <https://www.lta.gov.sg/content/ltagov/en/newsroom/2020/february/news-releases/-77-million-point-to-point-support-package-for-taxi-and-private-.html>

19 Ralph Jennings. "Taiwan Tourism Crumbles as Coronavirus Fears Add to Mainland Restrictions." *South China Morning Post*, February 29, 2020. <https://www.scmp.com/economy/global-economy/article/3052821/coronavirus-taiwan-tourism-industry-crumbles-virus-fears>

20 Inland Revenue Authority of Singapore, "IRAS | Jobs Support Scheme (JSS)", *www.iras.gov.sg*, accessed April 7, 2020, <https://www.iras.gov.sg/irashome/Schemes/Businesses/Jobs-Support-Scheme-JSS/>

21 Inland Revenue Authority of Singapore, "IRAS | Wage Credit Scheme (WCS)", *www.iras.gov.sg*, accessed April 7, 2020, <https://www.iras.gov.sg/IRASHome/Schemes/Businesses/Wage-Credit-Scheme-WCS/>

22 Ministry of Manpower Singapore, "LOA / SHN Support Programme for Businesses and SEPs", April 8, 2020, <https://www.mom.gov.sg/covid-19/loasp>

23 Korea Legislation Research Institute. "Labor Standards Act (근로기준법)", *elaw.klri.re.kr*, 2019, 2019, https://elaw.klri.re.kr/kor_service/lawView.do?hseq=50315&lang=ENG

24 Ministry of Employment and Labour, South Korea. <https://www.moel.go.kr/info/astmgmt/employ/list.do>

25 Sean Lin, "Virus Outbreak: Subsidies Approved for Furloughed, Laid off Workers - Taipei Times", *www.taipeitimes.com*, March 6, 2020, <http://www.taipeitimes.com/News/front/archives/2020/03/06/2003732165>

26 Nikkei Staff, "Japan Passes Nearly \$10bn Aid Package for Coronavirus-Hit Businesses", *Nikkei Asian Review*, March 10, 2020, <https://asia.nikkei.com/Spotlight/Coronavirus/Japan-passes-nearly-10bn-aid-package-for-coronavirus-hit-businesses>

27 Government Secretariat, Hong Kong, "New Item 'Anti-Epidemic Fund,'" February 21, 2020, <https://www.legco.gov.hk/yr19-20/english/fc/fc/papers/f19-46e.pdf>

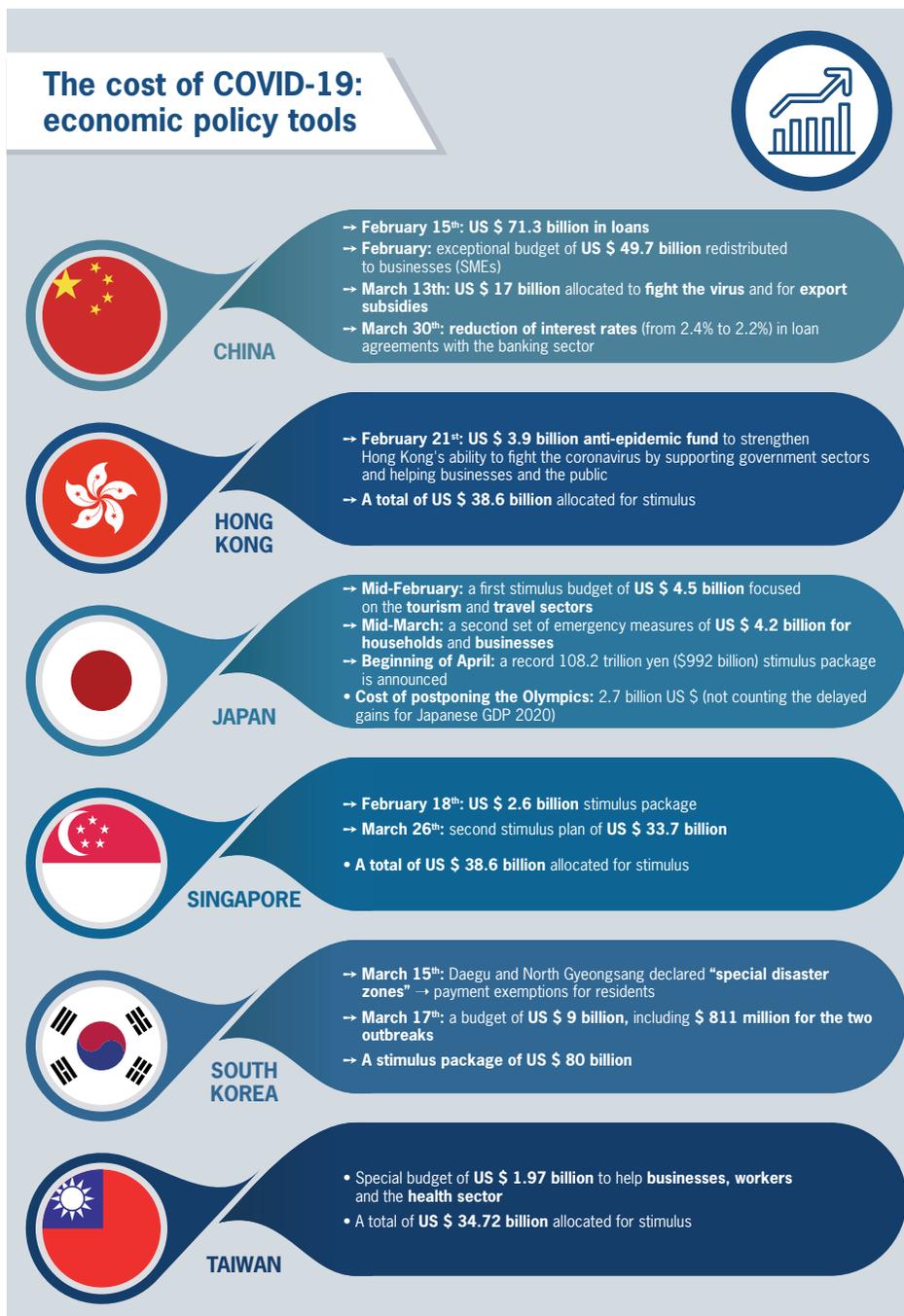
28 Yen Nee Lee, "Singapore Announces Third Stimulus Package Worth \$3.6 Billion to Soften Coronavirus Impact", *CNBC*, April 6, 2020, <https://www.cnbc.com/2020/04/06/coronavirus-singapore-plans-third-stimulus-package-to-support-economy.html>

29 Park Han-Na, "Ruling Party Pledges Virus Relief Money for All Income Levels", *The Korea Herald*, April 6, 2020, http://www.koreaherald.com/view.php?ud=20200406000719&ACE_SEARCH=1

30 "Japanese Government Weighs Cash Handouts to Households to Ease Coronavirus Impact", *The Japan Times Online*, March 19, 2020, <https://www.japantimes.co.jp/news/2020/03/19/national/japanese-government-mulls-cash-handouts-households-ease-virus-impact/#.XpBYyVMzaAw>

31 John Geddie and Aradhana Aravindan, "Singapore Plans Biggest Budget Deficit in Years to Meet Virus Threat", *Reuters*, February 18, 2020, <https://www.reuters.com/article/us-singapore-economy-budget-idUSKBN20COP2>

along with other government sources³². Hong Kong has estimated its largest-ever fiscal deficit of US\$ 4.9 billion (4.8% of GDP)³³. Japan's budget deficit, which had shrunk to 2,9% in 2019, is set to rebound to a likely level of 7,5%. Part of the new deficit will be covered by bonds (US\$ 165 billion). These could be immediately repurchased by the Bank of Japan, a method that has been used widely in previous years. On April 10, Finance minister Taro Aso denies that the method will be used again. In South Korea, the current political competition between parties on handouts to citizens - "helicopter money" rather than unemployment compensation, will likely add 5% to previously planned government spending. Information on budget deficits is unlikely to be released until after the legislative elections on April 15. Meanwhile, China plans on widening its fiscal deficit, expanding the scale of special-purpose government bonds and issuing more special government bonds, the numbers of which have not yet been finalized.



32 Liang-sa Loh and Ben Blanchard, "Taiwan Says More Stimulus Funds Available as Central Bank Sees Prolonged Virus Impact", Reuters, March 12, 2020, <https://www.reuters.com/article/us-health-coronavirus-taiwan-economy-idUSKBN20Z1HB>

33 "Hong Kong Budget for Fiscal 2020/21", Reuters, February 26, 2020, <https://www.reuters.com/article/hongkong-economy-budget/highlights-hong-kong-budget-for-fiscal-2020-21-idUSL3N2AQ1AR>

CHINA

LOCKDOWNS, DIGITAL TOOLS AND MOBILIZATION OF INDUSTRY

China is both the cradle of the COVID-19 epidemic and the country that has taken the strongest measures to contain it, so far with success. This is in spite of a late start, and a remaining deficiency of testing in spite of efforts. The Chinese solutions are distinctive by the rigor of the lockdowns, the use of digital tools and the mobilization of medical industries. The economic cost has been sharp. China now promotes its response and emerges as the world's major manufacturer of needed medical equipment.

Key Policies

1

Patient zero has not been found, but the start of the outbreak is now backtracked from December 8 (initially acknowledged) to December 1 and now November 17. Strong national measures are implemented from January 23, 46 days after the first case was initially identified and reported.

2

By contrast, genome sequencing in China has been very quick - from December 27 for a partial decoding to January 6 for the entire sequence, communicated abroad. International epidemiological investigation in Hubei province is almost entirely prevented, however.

3

The central government's turnaround between January 20 and 23 leads to a massive containment effort resting on three pillars: rigorous lock-downs and travel bans; these are enforced with the help of local "mass organizations", as well as digital surveillance tools with some tracing ability for contacts.

4

All-out mobilization for the production of medical equipment, a feat unmatched anywhere else.

5

China's lockdowns, although varying in local implementation, go beyond what has been implemented elsewhere: patients showing symptoms are put in isolation wards, local committees - and a huge distribution network - have ensured that people do not leave their homes in cities; digital tracing tools have been used to detain travelers from infected regions.

Timeline

- **November 17, 2019** – First case retrospectively detected in China
- **December 8** - First confirmed case according to the Chinese official statement to the WHO
- **December 30** - Li Wenliang, a doctor working at Wuhan Central Hospital, sends a warning to fellow medics. One day later, he is made to write a self-criticism to reflect on the topic of "not spreading misinformation".
- **December 30** - An "urgent notice on the treatment of pneumonia of unknown cause 关于做好不明原因肺炎救治工作的紧急通知" is issued by the Wuhan Health Commission, highlighting the increasing number of patients in Wuhan showing symptoms, and urging all medical institutions to report relevant information
- **December 31** – The Wuhan Municipal Health Commission issues the official communication of pneumonia cases of unknown cause at Wuhan's Hunan Seafood Market. Arrival of a National Health Commission expert team in Wuhan to investigate the pneumonia outbreak, which is reported to WHO on the same day
- **January 3, 2020** - The work unit at a Wuhan hospital is required to not discuss the diseases through public and private communication channels.
- **January 5** - The virus from Wuhan is fully sequenced in Shanghai; publication of a report by the Wuhan Municipal Health Commission with updated numbers of cases but "no clear evidence of human-to-human transmission"
- **January 7** - Xi Jinping gives verbal and written instructions on the outbreak at the CPC Central Committee Political Bureau meeting, as he retrospectively indicated in his February 3 speech.
- **January 14** - First temperature checks at Wuhan's airport, train station, coach station, and ferry terminal. Installation of 35 infrared thermometers, complemented by around 300 handheld models of infrared thermometers
- **January 20** - Start of the Lunar New Year mass migration and first public address of Xi on the crisis situation; COVID-19 recognized as a Class B infectious disease and preventive and control measures of Class A to be applied. The policy allows medical institutions to isolate and observe COVID-19 patients. China confirms human-to-human transmission of the virus.
- **January 21** – Establishment of the Joint Prevention and Control Mechanism of the State Council (肺炎疫情联防联控工作机制), composed of 32 departments coordinated by Vice Premier Sun Chunlan
- **January 23** – Lockdown announcement of Wuhan, followed by other nearby cities (Xiaotao, Chibi, Huanggang, Ezhou). Announcement of emergency construction of the first temporary hospital in Wuhan, operational on February 3. A second project is announced two days after, operational on February 5.
- **January 24** - Suspension of group travel within China. First nucleic acid test kit passes legal inspection.

- ▶ **January 26** – First meeting of the Central Leadership Group for Epidemic Response (中央应对新型冠状病毒肺炎疫情工作领导小组), chaired by Li Keqiang. Four nucleic acid test kits approved by the National Medical Products Administration (Speedy approval channel for medical devices).
- ▶ **January 27** – Suspension of group travel to foreign countries; individual travel remains open
- ▶ **February 8** - State Council issues the Notice on Orderly Resuming Production and Resuming Production in Enterprises
- ▶ **February 10** - A guideline stipulates that confirmed and suspected carriers of the virus can be charged with endangering public security if they refuse quarantine or leave before their quarantine time is up, enter public places or use public transportation.
- ▶ **March 16** - All overseas travelers entering Beijing are transferred to a centralized observation point for 14 days of isolation observation.
- ▶ **March 19** - China reports zero new local cases for the first time since the outbreak
- ▶ **March 23** - All international flights to Beijing are diverted to 12 cities, only qualified travelers can then continue their journey to Beijing.
- ▶ **March 25** - All inbound passengers arriving in Beijing are required to receive nucleic acid tests and undergo centralized quarantine
- ▶ **March 28** - Temporary entry suspension by foreign nationals holding valid Chinese visas or residence permits
- ▶ **March 29** - Each Chinese airline is only allowed to keep one route to each foreign country, while each foreign airline is only allowed to operate one route to China. A maximum of one flight per week per route is applied.
- ▶ **March 31** - Ministry of Commerce, General Administration of Customs and the National Medical Product Administration jointly issue "Notice on the Orderly Conducting of Medical Materials Export".
- ▶ **April 8** - End of Wuhan lockdown, after 76 days, but various local control and preventive measures remain in place.

Analysis

Three phases can be identified in China's overall response: the initial period of denial and lack of proper measures to confine the epidemic; a policy reversal on January 20 defined above all by the strongest lockdown measures in the world on January 23 with corresponding means of residential control and digital tracing tools; and from March 19, the claim of victory against the virus, with the accent on imported cases. As China's production capacities of personal protection equipment are eagerly sought,

China aims to reshape the global narrative regarding COVID-19. Yet any final narrative must start from the epidemic's initial rise.

The tragic cost of denial

The first phase of responses, or lack of responses, is reported by the cover story of *China News Weekly*³⁴. A number of people at Wuhan's Hunan Seafood Market (which also sells wild animals) were infected as early as December 8, 2019, but the Wuhan Municipal Health Commission only issued the official communication of pneumonia cases of unknown cause at Wuhan's Hunan Seafood Market on December 31³⁵. The market was only closed the day after, on January 1, 2020. Later investigation will backtrack and find infected patients from December 1, and later November 17, with no identified relation to the seafood market. Patient zero has yet to be found.

The 23 days between the December 8 infection cases and the market closure expose numerous Wuhan residents to the virus, contributing to a major outbreak in Hubei province, in China and then globally. Although national medical authorities are informed very early, neither the provincial nor the central government move quickly enough. Locally, information is withheld. Public gatherings and events continue until January 20. Li Wenliang, a doctor working at Wuhan Central Hospital, is one of the doctors who raises the alarm among his colleagues about this SARS-like disease. He is silenced. After his widely commented death from the epidemic and the January 20 turnaround by the leadership, the cost of denial is reassessed. China's Supreme Court makes an explicit reference to Li Wenliang's case on January 28³⁶. It tempers the definition of 'false information', noting that some of it may actually be true, or fill a gap left by a lack of public disclosure, and that it may not be malicious.

On January 31, Ma Guoqiang, Wuhan's party secretary until February 13, acknowledges that if decisions and strict control measures had been taken earlier (such as putting Wuhan under lockdown on January 12 or 13 instead of January 23), the situation

34 Xiangyu Li et al., "The Regret of Wuhan: How China Missed the Critical Window for Controlling the Coronavirus Outbreak", *China Change*, February 10, 2020, <https://chinachange.org/2020/02/09/the-regret-of-wuhan-how-china-missed-the-critical-window-for-controlling-the-coronavirus-outbreak/>

35 "武汉市卫健委关于当前我市肺炎疫情的情况通报 (Wuhan Municipal Health Commission's notice on the current situation of the city's pneumonia epidemic)", *Wuhan Municipal Health Commission*, December 31, 2019, <http://wjw.wuhan.gov.cn/front/web/showDetail/2019123108989>

36 "Judge Tang Xinghua's Article on Dealing with Rumors During the Epidemic Period", *China Law Translate*, March 26, 2020, <https://www.chinalawtranslate.com/en/speech-article/>

would have been contained better³⁷. He also blames the central government rules that prevented him from disclosing information related to the disease at an earlier stage, as he had to wait for authorization from Beijing³⁸.

The moment of truth and drastic measures

On January 20, the virus is recognized as a Class B infectious disease (which includes SARS and influenza A), requiring preventive and control measures of Class A (plague and cholera) to be applied³⁹. The upgrade of measures from Class B to A is crucial, since Class B requires faster reporting and stronger isolation measures. One day after, the Joint Prevention and Control Mechanism of the State Council 肺炎疫情联防联控工作机制 is established, comprising 32 departments under the coordination of Vice Premier Sun Chunlan. Guidelines are issued to medical institutions on January 22 urging them to keep the infection within medical institutions under control⁴⁰.

On January 23, as hundreds of millions have already arrived at their Lunar New Year destinations, a travel blockade begins in Wuhan and is sequentially adopted in other major cities. The Lunar New Year Holidays are now referred to as a “window of opportunity” for mass isolation and mass disinfection (大隔离、大消毒) on the prevention and control plan published by the National Health Commission (NHC) on January 28, and the official holidays period will be extended several times⁴¹. Much migration has already happened by that time however: the mayor of Wuhan estimates that almost 5 million people had left the city before enforcement of the travel ban⁴². A restriction

on group travel to foreign countries is only implemented on January 27, three days after the suspension of domestic group travel. The travel ban is also enforced by many informal local blockades. Confinement and complete lockdown follow - with varying degrees of severity according to time and place. Complete isolation of suspected cases is enforced. Emergency hospitals are delivered and put into operation in 10 days. Operated by the Chinese People's Liberation Army, they provide 2600 beds in total. By February 28, 16 cabin hospitals (方舱医院), which are movable medical spaces, are also built in Wuhan to treat mild symptom patients, adding 13,000 beds⁴³. The aim set by the NHC at this point is to concentrate patients, experts, resources, and treatment (集中患者、集中专家、集中资源、集中救治)⁴⁴.

While confirmed patients are subject to hospitalization, all individuals in close contact with confirmed patients, or arriving from a high-risk area, undergo a compulsory quarantine. There is mandatory compliance with the investigation, testing, collection of samples and isolation. Public security organs and digital surveillance tools are massively used⁴⁵. Medical treatment is free for individuals, covered by insurance and other government subsidies⁴⁶. Confirmed and suspected cases face charges of endangering public security if they refuse or do not respect quarantine⁴⁷.

Masks and other medical equipments - A production leap

Several provinces and cities make masks compulsory. In addition, there is major social pressure on individuals to wear masks. The Chinese Center for Control and Prevention's guidelines also advise wearing medical surgical or N95 masks in public spaces and public transportation, as well as keeping at home as “daily necessities” masks, thermometers, and disinfectant⁴⁸. To ensure the mask supply, duties on mask

37 “武汉市委书记自责：如果早一点决定，结果会比现在好 (Wuhan's party secretary blames himself: if the decision has been made earlier, the result would have been better than now)”, *Guancha*, February 1, 2020, https://www.guancha.cn/politics/2020_02_01_533985.shtml

38 Josh Chin, “Wuhan Mayor Says Beijing Rules Partially Responsible for Lack of Transparency”, *The Wall Street Journal*, January 27, 2020, <https://www.wsj.com/articles/chinas-premier-tours-virus-epicenter-as-anger-bubbles-at-crisis-response-11580109098>

39 “国家卫生健康委同相关部门联防联控 全力应对新型冠状病毒感染的肺炎疫情 (The National Health Committee, in conjunction with relevant departments, is working to combat the pneumonia epidemic of novel coronavirus infection)”, *Xinhua*, January 22, 2020, http://www.gov.cn/xinwen/2020-01/22/content_5471437.htm

40 “关于印发医疗机构内新型冠状病毒感染预防与控制技术指南的通知 (Notice on the issuance of technical guidelines for the prevention and control of novel coronavirus infections in medical institutions)”, *National Health Commission of the PRC*, January 22, 2020, <http://www.nhc.gov.cn/yzygj/s7659/202001/b91fdab7c304431eb082d67847d27e14.shtml>

41 “关于印发近期防控新型冠状病毒感染的肺炎工作方案的通知 (Notice on the issuance of the recent work programme for the prevention and control of pneumonia with novel coronavirus infections)”, *National Health Commission of the PRC*, January 28, 2020, <http://www.nhc.gov.cn/tigs/s7848/202001/808bbf75e5ce415aa19f74c78ddc653f.shtml>

42 “周先旺：春节和疫情致500万人离开武汉 (Zhou Xianwang: Lunar New Year and epidemic caused 5 million people to leave Wuhan)”, *YiCai*, January 26, 2020, <https://www.yicai.com/news/100481648.html>

43 “武汉方舱医院空余床位5600张，实现了‘床等人’ (5,600 vacant beds in Wuhan Fangcheng Hospitals, achieving the 'bed waiting for people')”, *Cyberspace Administration of Wuhan*, February 29, 2019, <https://baijiahao.baidu.com/s?id=1659825325600552338&wfr=spider&for=pc>

44 “集中优势资源、紧急科研攻关，全力以赴救治患者 (Concentrate superior resources, conduct immediate scientific research, and devote all efforts to save the patients)”, *Xinhua*, February 5, 2020, http://www.gov.cn/xinwen/2020-02/05/content_5474966.htm

45 “中华人民共和国传染病防治法 - 2013修正 (Law Of The People's Republic Of China On Prevention And Treatment Of Infectious Diseases - 2013 Amendment)”, *The National People's Congress of the People's Republic of China*

46 “国家医保局：减免新冠肺炎患者的治疗费用 (NHS: treatment for novel coronavirus patients)”, *Free The Beijing News*, February 20, 2020, <https://baijiahao.baidu.com/s?id=1659058692350312503&wfr=spider&for=pc>

47 “关于依法惩治妨害新型冠状病毒感染肺炎疫情防控违法犯罪的意见 (Opinions on the punishment of violations of novel coronavirus pneumonia epidemic prevention and control law)”, 2020, *Supreme People's Court*, <http://courtapp.chinacourt.org/fabu-xiangqing-219321.html>

48 “新型冠状病毒感染的肺炎公众防护指南 (Guidelines for public protection against pneumonia from novel coronavirus infections)”, *The Chinese Center for Control and Prevention*, January 30, 2020, <http://www.nhc.gov.cn/jkj/s7915/202001/bc661e49b5bc487dba182f5c49ac445b.shtml>

donations from abroad are waived, and subsidies are provided to companies importing masks⁴⁹.

A key feature of the Chinese response is the mobilization or retooling of production capacities in a short period of time to meet domestic demands for medical equipment. On January 21, the Ministry of Industry and Information Technology issues a notice to ensure and coordinate emergency supplies for the epidemic. A platform is established to connect suppliers and buyers of critical medical equipment to foster production. To address the worry that this could lead to overcapacity, the government promises later on that it will absorb all remaining products for stockpiling after the crisis. A list is released on February 8, which includes medical protective clothing, various types of masks, nucleic acid test kits, and automatic infrared body thermometers.

A key feature of the Chinese response is the mobilization or retooling of production capacities in a short period of time to meet domestic demands for medical equipment. On January 21, the Ministry of Industry and Information Technology issues a notice to ensure and coordinate emergency supplies for the epidemic⁵⁰. A platform is established to connect suppliers and buyers of critical medical equipment to foster production⁵¹. To address the worry that this could lead to overcapacity, the government promises later on that it will absorb all remaining products for stockpiling after the crisis⁵². A list is released on February 8, which includes medical protective clothing, various types of masks, nucleic acid test kits, and automatic infrared body thermometers.

The certification process for supplies is also simplified, allowing companies to either purchase new production lines or divert their existing production line to join the mass production of medical equipment. In less than one month (Feb. 1 – Feb. 29), China has multiplied its production capacity of masks by 5.5 times, from the initial 20 million per day to 110 million per day. The number will continue to increase, expected to reach 200 million per day⁵³. To put it in perspective, in 2019, China's total production

output was 5 billion pieces (13,7 million per day)⁵⁴. The same trend is observed with production capacity of medical protective clothing, which increases from an initial 8700 sets per day on January 28, to 852,000 sets per day on March 12.

For tests, the first nucleic acid kit passes legal inspection on January 24⁵⁵. Two days later, the National Medical Product Administration creates a speedy approval channel for medical devices⁵⁶. Four nucleic acid test kit products are approved on the same day. Two types of test kit are used in China: nucleic acid test kit and antibody test kit. By March 27, a total of 22 coronavirus test kit products are approved⁵⁷. As of March 11, production capacity of nucleic acid test kits is 2.6 million kits per day⁵⁸ (up from 773000 on February 1), while production of antibody test kits is 1 million per day. The nucleic acid test is the most commonly used detection method of coronavirus, as antibodies take time to develop and are not detected in the early stage of infection. However, the accuracy of nucleic acid tests varies and some of them seem to be on the lower end of the scale⁵⁹. Front-line doctors call for using CT scans instead of the test kit, since in their experience the test kits often fail to identify patients even when the infection is already obvious⁶⁰.

The Social Credit System, which is now referred to as the “master key 万能钥匙” solution of problems by reward and punishment, is also applied to coronavirus prevention and control policies⁶¹. The scope of punitive measures and their implementation vary greatly, depending on local authorities and there is no national standard. But they often sanction the concealment of health and contact history, the refusal of medical isolation and observation, violation of mask-wearing requirement, or flouting prohibition of

54 “2020年中国口罩行业分析报告 (2020 Analysis of China's Mask Industry)”, *China Baogao*, March 3, 2020, <http://baogao.chinabaogao.com/weishengcailiao/481689481689.html>

55 “国内首个新型冠状病毒检测试剂盒通过检验 (China's first COVID-19 test kit passed the test)”, *Huanqiu*, January 26, 2020, <https://baijiahao.baidu.com/s?id=1656754435701810172&wfr=spider&for=pc>

56 “国家药监局应急审批新型冠状病毒核酸检测试剂 Emergency approval of covid-19 nucleic acid testing kits by the National Medical Products Administration”, *Xinhua*, January 26? http://www.xinhuanet.com/2020-01/26/c_1125504307.htm

57 “国家药监局：严打非法制售新冠肺炎病毒检测试剂行为 (The National Medical Products Administration: crack down illegal manufacture and sale of COVID-19s testing kits)”, *The Paper*, March 27, https://www.thepaper.cn/newsDetail_forward_6714591

58 “新冠病毒检测试剂出海潮：十多家上市公司布局 抢滩欧盟 (COVID-19 testing kit: more than ten listed companies exporting to the EU)”, *The Beijing News*, March 18, <http://www.bjnews.com.cn/finance/2020/03/18/705832.html>

59 Yuanyuan Guo et al, “6种国产新型冠状病毒核酸检测试剂检测性能比较与分析 (Comparison and analysis of the performance of 6 new domestic coronavirus nucleic acid detection reagents)”, *Chongqing Medicine*, 2020, <http://subject.med.wanfangdata.com.cn/UpLoad/Files/202002/85c7607f82f04f0e89de458452b4147f.pdf>

60 “新冠肺炎确诊人数超2万，一线医生疾呼：请用CT检查代替试剂盒 (More than 20,000 people diagnosed with COVID-19, first-line doctors urge use CT test instead of kit)”, *Bioon.cn*, February 4, <http://news.bioon.com/article/6749952.html>

61 “公共场所不戴口罩算失信？社会信用制度要防滥用 (Is it a breach of trust to not wear a mask in public? Social credit systems need to be prevented from being abused)”, *Xinhua*, March 22, <https://baijiahao.baidu.com/s?id=1661859799281412003&wfr=spider&for=pc>

49 “China's Mask Production Recovering as Work Resumption Quickens”, *People's Daily*, February 10, 2020, <http://en.people.cn/n3/2020/0210/c90000-9655986.html>

50 “工业和信息化部统筹做好疫情防控应急物资保障 (Ministry of Industry and Information Technology (MIT) to coordinate and ensure emergency supplies for epidemic prevention and control)”, *Ministry of Industry and Information Technology*, January 23, 2020, http://www.gov.cn/xinwen/2020-01/23/content_5471813.htm

51 “重点医疗防控物资生产供需对接服务专区上线 (The supply-demand matching service for the production of key medical defense and control materials online)”, *Gov.cn*, February 21, 2020, http://www.gov.cn/fuwu/2020-02/21/content_5481854.htm

52 Huiying Zhou and Si Ma, “Firms Turn Factory Lines to Mask-Making Units”, *China Daily*, February 10, 2020, <https://www.chinadaily.com.cn/a/202002/10/WS5e4125d3a31012821727666a.html>

53 “日产口罩过亿，为何还不好买 (The production capacity of mask is over 100 million per day, why are they still hard to buy)”, *XinHua*, March 13, 2020, http://www.xinhuanet.com/fortune/2020-03/13/c_1125705427.htm

gatherings, including at home. There are cases of legal authorities temporarily lifting social credit related restrictions to allow for companies operating in critical sectors but under judiciary investigation to resume production⁶². For instance, the Guangzhou Court unfreezes the bank account of a manufacturer of infrared thermal imagers so that it can resume production⁶³.

Reducing the risk of exposure and spread through data usage

The usage of big data is the other key to COVID-19 crisis management. Since January 20, local authorities are requested to report on daily basis development related to the virus, and the National NHC publishes a daily report on confirmed cases since January 21. A list of hospitals with a flu section that is qualified to treat coronavirus is also communicated on local authorities' websites. Official data has become the source of major COVID-19 update websites and applications. But some tech companies go much further. For instance, Baidu visually pins on the map the location of coronavirus patients (without disclosing their names or personal details), as well as where they have been, allowing users to avoid areas with risk of infection. The platform also provides visibility over the availability of beds at hospitals.

Data and analysis provided by China's three state-owned telecommunication companies (China Telecom, China Unicom and China Mobile), as well as mapping service providers, are used to monitor domestic population flows and to predict trends, allowing better resource allocation and planning⁶⁴. Electricity usage data is also put into use in a residential area in Hangzhou, due to lack of human resources, for real-time monitoring and control of quarantined residents and elderly living alone. In order to keep users connected, the provision of utilities and telecoms is not cut even if the bills are unpaid.

China Electronics Technology Group Corporations (CETC) releases a "close contact detector" platform based on the data provided by the NHC, Ministry of Transport, China Railway, Civil Aviation Administration, etc. to identify individuals that have been in close contact with someone infected⁶⁵. The platform has been integrated into

existing popular applications such as Alipay, Wechat, and QQ. To facilitate enquiries, users can access the platform by scanning a QR code, and sign up with a mobile number, providing their names and national identification number. Each mobile number account can inquire about a maximum of three people. The platform is also used by authorities, companies, schools, public spaces and residential areas. As has been widely reported, social control of the local community has played a significant role in enforcing quarantine rules and other guidance.

These measures are part of a general attempt to divert movement flows, decrease the number of crowded places, and minimize social contacts as much as possible. At hospitals, automated machines are installed for medicine and disinfectors. To avoid overcrowding hospitals with false-positive visits, online medical service platforms are made available. Public hospitals and private companies start providing free online consultations, lowering the risk of cross-infection which has considerably aggravated the situation in Wuhan and other cities in Hubei.

In sum, the government is able to have an overview of the situation thanks to the data and analysis provided by both local authorities and companies. At the same time, individuals are offered a means to access their own status using various platforms. The horizontal combination of data allows authorities to easily identify individuals at risk (for instance, who traveled to a high-risk zone or who has been in close contact with someone infected) and conduct screening of this targeted group⁶⁶. These uses of data for monitoring purposes follows the the prevention and control plan published by the NHC, which emphasizes the importance of "discovering, reporting, isolating and treating in advance (早发现、早报告、早诊断、早隔离、早治疗)"⁶⁷.

As some cities are now gradually resuming work and other activities, new tools of control and monitoring are introduced. Both Tencent and Alibaba have developed their own "Health Code (健康码)" System, which provides users with a QR and color (red, yellow or green) code to prove their eligibility of "free movement". Another example is the "Itinerary Card (行程卡)" that can be used as a proof of "clean" travel history. Mobile users can obtain their travel history of the past 14 days (domestic and abroad),

62 "Guideline Outlines Measures to Resume Work", *The Supreme People's Court of the People's Republic of China*, February 27, 2020, http://english.court.gov.cn/2020-02/27/content_37533960.htm.

63 "Chinese Courts Set up Green Channel for Medical Products Manufacturers", *The Supreme People's Court of the People's Republic of China*, February 26, 2020, http://english.court.gov.cn/2020-02/26/content_37533935.htm

64 "利用大数据智斗新冠肺炎? 中央企业这样做 (Using Big Data to Fight COVID-19? Actions of SOEs)", *China News*, February 10, <https://m.chinanews.com/wap/detail/zw/sh/2020/02-10/9085592.shtml>

65 *Ibid.*

66 "工业和信息化部召开媒体通气会 介绍电信大数据分析、支撑服务疫情防控总体情况并答问 (Ministry of Industry and Information Technology held a media briefing to explain the overall situation of telecommunication big data analysis, support services and epidemic prevention and control; as well as to answer questions)", *Ministry of Industry and Information Technology*, February 14, 2020, Ministry of Industry and Information Technology, http://www.gov.cn/xinwen/2020-02/14/content_5478895.htm

67 "新型冠状病毒肺炎防控方案 (Novel coronavirus pneumonia prevention and control plan)", *National Health Commission*, <http://www.nhc.gov.cn/xcs/zhengcwj/202002/573340613ab243b3a7f61df260551dd4/files/c791e5a7ea5149f680fdb34dac0f54e.pdf>

based on the data gathered by the telecommunication companies. Mobile users are coded red if they have been to Hubei, yellow if they have been to 58 listed foreign countries (constantly updated) and the remaining countries are green. The “Itinerary Card” is valid nationwide.

The massive usage of data (such as the collection, storage, and future whereabouts) to tackle the crisis has sparked privacy concerns. In most cases, the developed platform is government-backed and the legality of usage is supported by official government statements. In other cases, the company claims that data are either anonymized to show a general trend or unassociated with a specific identity. There is strong collaboration between the private and public sector in the control and prevention of the virus.

Closing down and supplying the world

As China flattens the coronavirus curve, a third phase begins. On March 17, 41 medical rescue teams dispatched to Hubei Province, the first epicenter of the outbreak, start their home journey, signaling a certain degree of return to normalcy⁶⁸. What follows is the lifting of travel restriction of Hubei starting from March 25, with Wuhan as the only exception, which ended its lockdown on April 8 while keeping various control and preventive measures in place. On March 19, China reports zero new local cases for the first time since the outbreak. The “zero new local cases” has continued for two more days, broken by the one confirmed case on March 22, but the daily number remains low. On March 28, China reports 45 new confirmed cases, among them, 44 imported. However, the fight against the coronavirus continues. In Wuhan, all medical personnel (over 4000) dispatched by the People’s Liberation Army since January 24 are ordered to remain on the ground until “the complete victory of the battle”⁶⁹.

On March 23, Li Keqiang urges officials not to hide cases in order to keep the reported number low, and requests everyone not to let their guard down as the fight against coronavirus is a long-term fight⁷⁰. During a meeting three days later, he

68 “首批41支医疗救援队撤离武汉 (First batch of 41 medical rescue teams to withdraw from Wuhan)”, *Zaobao*, March 18, 2020, <https://www.zaobao.com.sg/znews/greater-china/story20200318-1037948>

69 “国防部：军队支援地方抗击疫情不获全胜决不收兵 (Ministry of National Defense: The military supporting the local fight against the epidemic will not withdraw troops until a complete victory)”, *Xinhua*, March 26, http://www.gov.cn/xinwen/2020-03/26/content_5495981.htm

70 “李克强：各地要实事求是公开透明发布疫情信息，不得瞒报漏报 (Li Keqiang: All regions should be truthful, open and transparent in releasing information on the epidemic, and must not conceal and omit information)”, *Gov.cn*, March 24, http://www.gov.cn/premier/2020-03/24/content_5494917.htm

also stresses the need of paying attention to asymptomatic carriers⁷¹. According to a team of Chinese researchers published by *Science*, 86% of cases in Hubei before January 23 went undetected, and only complete lockdown has reduced the transmission rate⁷². Overall, as of April 9, China has reported nearly 81,907 cases and 3336 deaths, of which 3216 in Wuhan and other cities in Hubei⁷³. Both figures are debated and there are serious doubts whether China’s statistics of cases and deaths are reliable.

China decides on February 7 to stop including asymptomatic patients in confirmed cases. Classified Chinese government data disclosed by the *South China Morning Post* estimate that one-third of coronavirus cases may be asymptomatic. Asymptomatic⁷⁴ carriers, also known as “silent carriers”, can still transmit the virus to others, and with the resumption of normal life in China, preventive and control measures must remain in place to avoid the resurgence of cases. With the growing public fears over spread caused by asymptomatic patients, China decides to report asymptomatic cases starting from April 1.

At the same time, efforts are placed on preventing imported cases. As of March 26, there is a recorded total of 541 imported cases⁷⁵. Starting from March 16, all international travelers arriving in Beijing have to fill in a health statement card and are screened⁷⁶. Falsification of health conditions leads to a maximum sentence of three years in prison or detention⁷⁷. After customs screening, at risk inbound travelers are hospitalized while the rest is transferred to a centralized observation point for 14 days⁷⁸. Travelers have to cover their own isolation expenses. Xiaotangshan Hospital

71 “李克强：要高度重视防治无症状感染者 (Li Keqiang: great attention should be paid to the prevention and treatment of asymptomatic patients)”, *Gov.cn*, March 27, 2020, http://www.gov.cn/premier/2020-03/27/content_5496190.htm

72 Ruiyun Li et al., “Substantial Undocumented Infection Facilitates the Rapid Dissemination of Novel Coronavirus (SARS-CoV2)”, *Science*, March 16, 2020, <https://doi.org/10.1126/science.abb3221>.

73 “截至4月9日24时新型冠状病毒肺炎疫情最新情况 (As of 24:00 on April 9, the latest situation of the novel coronavirus pneumonia epidemic)”, *National Health Commission*, April 10, 2020, <http://www.nhc.gov.cn/xcs/yqtb/202004/6b7e8905b62f4cf89517cb0ebdf24d00.shtml>

74 Josephine Ma, Linda Lew, and Jeong-ho Lee, “A Third of Virus Cases May Be ‘Silent Carriers’, Classified Data Suggests”, *South China Morning Post*, March 22, 2020, <https://www.scmp.com/news/china/society/article/3076323/third-coronavirus-cases-may-be-silent-carriers-classified>

75 “China Still under Pressure to Prevent COVID-19 Spread: Official”, *Xinhua*, March 26, 2020, http://www.xinhuanet.com/english/2020-03/26/c_138919532.htm

76 “3月16日起所有境外进京人员均需转送至集中隔离观察14天 (From 16 March, all persons entering Beijing from abroad will be transferred to a centralized observation centre for 14 days)”, *Xinhua*, March 15, 2020, http://www.xinhuanet.com/politics/2020-03/15/c_1125715805.htm

77 “Health Falsification Named as Criminal Offense by Authorities”, *The Supreme People’s Court of the People’s Republic of China*, March 16, 2020, http://english.court.gov.cn/2020-03/16/content_37534439.htm

78 “Xiaotangshan Hospital Put into Use as a Designated Hospital in Beijing”, *Ministry of Foreign Affairs of the People’s Republic of China*, March 17, 2020, https://www.fmprc.gov.cn/mfa_eng/topics_665678/kjgzbdyyq/t1756900.shtml

is reactivated for screening and treatment of confirmed and suspected imported cases. The requirement to have all incoming passengers undergoing nucleic acid testing is added at a later stage. Shanghai also applies similar measures⁷⁹.

As days go by, the compulsory quarantine requirement has placed Beijing under huge pressure to handle the increasing number of travelers at their designated accommodation. To relieve the pressure, starting from March 23, all international flights to Beijing are diverted to 12 cities⁸⁰. Upon landing in one of the cities, the traveler is only allowed to continue the journey if the required conditions are met. On March 26, China's Ministry of Foreign Affairs announces a temporary entry suspension for foreign nationals holding valid Chinese visas or residence permits, effective from March 28⁸¹. From March 29, each Chinese airline is only allowed to keep one route to each foreign country, while each foreign airline is only allowed to operate one route to China⁸². A maximum of one flight per week and per route is set.

Given the massive production capacity increase of medical equipment and their global shortage, China is now receiving requests from other countries hit by the virus crisis. However, mask producers are still struggling to meet domestic demand, as they only fulfill 70%-80% of it⁸³. Now that work and schools are restarting, the demand will further increase. The shortfall is also acknowledged by Li Xingqian, Director of the Foreign Trade Department of the Ministry of Commerce⁸⁴. With the increasing demands and orders from overseas, it remains interesting to see how China plans to fulfill them. On the other hand, the export of medical protective clothing is encouraged as its supply has exceeded the demand since the end of February.

The export is facilitated by other policies. For instance, China's Civil Aviation Administration increases its international air freight capacity and opens a "green channel" for

approval of charter flights, in order to ensure shipment of medical equipment⁸⁵. China is using its unequalled capacity to shift production towards required personal protective equipment and other medical supplies to provide these abroad, along with a political line about its superiority against democracies. China starts having bilateral trade agreements with countries having medical equipment shortage. On March 29, a first delivery of 5,5 million masks to France⁸⁶, and on the same day, the US also receives a government-led airlift from China⁸⁷ (12 million gloves, 130,000 N95 masks, 1.7 million surgical masks, 50,000 gowns, 130,000 hand sanitizer units, and 36,000 thermometers). China reports to have exported 3.86 billion face masks between March 1 and April 6⁸⁸. However, the quality and reliability of medical equipment exported are being questioned. For instance, both Spain and Slovakia found test kits received from China unsatisfactory⁸⁹. Facing backlash, China's Ministry of Commerce, General Administration of Customs and the National Medical Product Administration jointly issue "Notice on the Orderly Conducting of Medical Materials Export" on March 31. All listed medical equipment must obtain domestic "Registration Certificate for Medical Device" before being exported, while this was previously not a requirement - and exporters were able to play with different certification processes to obtain licences.

China has also used its WHO membership and influence to regain some control of the narrative regarding the outbreak, and is launching a major bilateral public diplomacy in countries where the epidemic has shifted - chiefly, Europe and America, but also Africa⁹⁰.

79 "Shanghai Requires All International Arrivals to Undergo Nucleic Acid Testing", *China Daily*, March 23, 2020, <http://global.chinadaily.com.cn/a/202003/23/WS5e782e91a3101282172813b6.html>

80 "关于目的地为北京的国际航班从指定第一入境点入境的公告 (Announcement on the arrival of international flights destined for Beijing through designated first point of entry)", *Civil Aviation Administration of China (CAAC)*, March 22, 2020, http://www.caac.gov.cn/XXGK/XXGK/TZTG/202003/t20200322_201625.htm

81 "National Immigration Administration Announcement on the Temporary Suspension of Entry by Foreign Nationals Holding Valid Chinese Visas or Residence Permits", *Ministry of Foreign Affairs of the People's Republic of China*, March 26, 2020, https://www.fmprc.gov.cn/mfa_eng/wjbxw/t1761867.shtml

82 "民航局：每家航空公司往返中国和任一国家航线只能保留1条 每周最多1班 (Civil Aviation Administration: Each airline division can only keep 1 route between China and any country, up to 1 flight per week)", *Guancha*, March 26, 2020, https://www.guancha.cn/politics/2020_03_26_543970.shtml

83 Yuhao Bai, Liangzi Sun, and Xuan Zhao, "China's Face-Mask Makers Deluged With Overseas Orders They Cannot Fill - Caixin Global", *Caixin*, March 13, 2020, <https://www.caixinglobal.com/2020-03-13/chinas-face-mask-makers-deluged-with-overseas-orders-they-cannot-fill-101528274.html>

84 "商务部：从未发布过口罩出口禁令 (Ministry of Commerce: no export ban on masks has ever been issued)", *China News*, March 5, 2020, <http://www.chinanews.com/cj/2020/03-05/9115160.shtml>

85 "民航局：确保疫情期间国际航空货运供应链稳定 (Civil Aviation Administration: ensuring stable supply chain of international air cargo shipments during the epidemic)", *Xinhua*, March 29, 2020, http://www.gov.cn/xinwen/2020-03/29/content_5496840.htm

86 "Coronavirus : Un Avion Avec 5,5 Millions de Masques Atterri à Roissy (Coronavirus: A Plane With 5.5 Million Masks Landed at Roissy)", *Le Parisien*, March 29, 2020, <http://www.leparisien.fr/societe/coronavirus-un-avion-avec-100-tonnes-de-materiel-medical-dont-5-5-millions-de-masques-arrive-a-roissy-29-03-2020-8290287.php>

87 Jonathan Swan and Joann Muller, "Inside the Start of the Great Virus Airlift", *Axios*, March 29, 2020, https://www.axios.com/coronavirus-airlift-masks-medical-supplies-1d1913bf-744e-41cf-895c-d8934afa2c36.html?utm_source=twitter&utm_medium=social&utm_campaign=organic&utm_content=1100

88 Juan Chen, "China Has Exported 3.86 Billion Face Masks Worldwide", *Yicai Global*, April 6, 2020, <https://www.yicai.com/news/china-has-exported-386-billion-face-masks-worldwide>

89 Roxanne Liu, "China Clamps down on Coronavirus Test Kit Exports after Accuracy Questioned", *Reuters*, April 1, 2020, <https://www.reuters.com/article/us-health-coronavirus-china-testkits/china-clamps-down-on-coronavirus-test-kit-exports-after-accuracy-questioned-idUSKBN21J51S>

90 François Godement, "Fighting the Coronavirus Pandemic: China's Influence at the World Health Organization", *Institut Montaigne*, March 23, 2020, <https://www.institutmontaigne.org/en/blog/fighting-coronavirus-pandemic-chinas-influence-world-health-organization>

Economic consequence and policies

The epidemic arrives in a context where there was already much public and underlying quasi-public debt (circa 2,5 GDP), a trend toward slower growth, an impact of the US tariffs on exports to the US. The government was constrained by these financial risks; it had reduced infrastructure investment and adopted; over the past two years a stop-and-go attitude towards more stimulus, especially with the local real estate bubble.

The impact of the epidemic is unprecedented since the 1960s. Official figures for January-February reflect a very steep decline: -13,5% YoY for industrial production, -13% for services, -20,5% for retail consumer sales, -24,5% for fixed investment, -9,6% for foreign trade, -9,9% for fiscal revenue (and -21,4% for February alone)⁹¹. By mid-March, external forecasts are in the 2-4% GDP growth for the year 2020.

Resumption in operations starts quickly but without full results so far., since resuming some production does not mean reaching full capacity. Steel and similar industries never stopped, but have even larger stockpiles than usual. 97% of SOEs, often with employees at hand and a command structure, report to have resumed production⁹². High-tech foreign firms, less dependent on SMEs and on migrant labor, are ahead by late March. This is not the case for SMEs so far, with only a work resumption rate of 71,7%⁹³. Energy usage, traffic statistics indicate an uptick but not yet a return to normalcy. For example, the use of cars in large cities has increased, but not subway rides; intercity traffic is still slow on March 26 (22 out of 51 trains from Beijing to Shanghai, similar cuts on flights in spite of heavy discounts).

A key interrogation is now on a second economic shock, with the impact of an EU, US, and possibly global recession. There can be no export rebound except in very limited categories (medical equipment) in Q2. Some estimates point to a 21 to 45% decline of China's exports in Q2: 21% is equivalent to the 2008 financial crisis and the impact on GDP would be between -3,7 and -8,1% (according to Gavekal Research). The entry ban, quarantines and general decline in air travel will not favor a rebound of foreign investment and activity in the new quarter. For 2020 as a whole, a GDP decline is entirely possible, given these first two quarters.

91 “疫情期间，中国经济怎么样？(How has the Chinese economy performed during the epidemic?)”, *Gov.cn*, March 16, 2020, http://www.gov.cn/xinwen/2020-03/16/content_5491866.htm

92 “‘战疫’之下稳就业 国资央企打出‘组合拳’ (Stable employment despite the epidemic ‘war’, cooperation among SOEs)”, *Xinhua*, March 27, 2020, http://www.gov.cn/xinwen/2020-03/27/content_5496341.htm

93 “中小企业复工率超七成 (Over 70% of SMEs have resumed work)”, *China Youth Daily*, March 26, <https://baijiahao.baidu.com/s?id=1662199842425707999&wfr=spider&for=pc>

The government's economic response remains on the conservative side. Central allocation to virus responses reached CH¥ 116.9 billion (US\$ 16.7 billion) on March 13⁹⁴. There are reduced social contributions, discount loans: CH¥ 500 billion (US\$ 71.4 billion) on February 15 at a “discount” rate of 2,5% to 4,5% followed by a special quota of CH¥ 350 billion (US\$ 50 billion) lending quota to policy banks⁹⁵. This should be viewed in comparison to an overall CH¥ 36 trillion (US\$ 5138 billion) previously loaned to SMEs, however. Export subsidies are put in place in mid-March. Infrastructure spending (which dropped in Jan.-Feb) is meant to increase, but from a low base in 2019, and will not by far reach 2008 levels. “Helicopter money” e.g. cash disbursements to individuals have not happened (although large companies and platforms are instituting large sale vouchers), nor has there been so far an across-the-board interest rate cut by the central bank. However, it has announced on March 30 an interest cut from 2.4% to 2.2% on a reverse purchase agreement for banks⁹⁶.

Much touted international aid by China has so far focused on delivery (or sale) of medical equipment. Xi Jinping's speech at the March 26 G20 summit calls for “coordination” and for “cutting tariffs, removing barriers, and facilitating the unfettered flow of trade”. In other words, a call to the United States to drop the trade conflict. But he only announces on China's part “a proactive fiscal policy and a prudent monetary policy”.

94 “国务院联防联控机制新闻发布会介绍困难群众兜底保障工作 (State Council's Joint Defense and Joint Control Mechanism press conference on the efforts to protect the people in difficulty)”, *Gov.cn*, March 15, 2020, http://www.gov.cn/xinwen/2020-03/15/content_5491449.htm

95 “人民银行召开电视电话会议部署金融支持中小微企业复工复产工作 (People's Bank of China holds teleconference to deploy financial support for SMEs to resume work and production)”, *People's Bank of China*, February 26, <http://www.pbc.gov.cn/goutongjiaoliu/113456/113469/3977820/index.html>

96 “央行开展500亿元逆回购操作 利率降低20个基点 (The central bank launched a 50 billion yuan reverse purchasing operation, reducing the interest rate by 20 basis points)”, *Xinhua*, March 30, 2020, http://www.gov.cn/xinwen/2020-03/30/content_5497129.htm

HONG KONG

China: lockdowns, digital tools and mobilization of industry

THE TIME FACTOR

Significant delay between the first acknowledged case on December 8, and the first measures at the end of January

Quick and strong action at the end of January

Emergency hospitals built and made operational within 10 days in Wuhan, some operated by the People's Liberation Army (2,600 beds)



STRICT CONFINEMENT POLICY

Lockdown of Wuhan, and other cities on January 23. Wuhan until April 8 for Wuhan

Strict enforcement of confinement, exceeding measures applied elsewhere in terms of means and tools for residential control and digital tracing

Punitive measures



MOBILIZATION OF INDUSTRY

Policy targeting production of medical equipment: tax incentives, simplification of certification processes, mobilization of SOEs

Daily mask production increased from 4 to 200 million units between February and April

As of March 11, a production capacity of 2.6 million PCR kits per day



UTILISATION OF BIG DATA

"Close contact detector" platform based on official data in order to identify trace contacts, integrated into popular applications such as Alipay, WeChat, and QQ.

Use of data from mobile phone operators and mapping platforms to monitor population flows and trends

Data collection collaboration between the private and public sector for tracking and tracking purposes.



BORDER MANAGEMENT, EPIDEMIOLOGICAL TRACKING AND SOCIAL RESPONSIBILITY

An early response, tracking of each suspected and confirmed case, quarantine of incoming travelers, and, above all, self-discipline and solidarity : here is the recipe for Hong Kong's relative success in managing the COVID-19 crisis - at least until recently. New challenges now emerge...

Key Policies

1

Immediate reaction as early as December 31 through the Center for Health Protection, created after the 2003 SARS crisis under the Department of Health for disease prevention and control.

2

Activation of the Serious Response Level on January 4, 18 days before the identification of the first confirmed case in Hong Kong

3

Gradual reduction of cross-border inflow and quarantine of incoming travelers instead of shutting down completely the border.

4

All Hubei residents from Hong Kong requested to leave the city or go in quarantine.

5

Social pressure for more stringent border controls and travel bans, with protests on February 3.

6

Tracing and investigation of each suspected and confirmed case with details of each shared on the dedicated government website.

7

Social responsibility among an experienced population strongly hit by SARS. Precautionary measures such as mask wearing and social distance are adopted independently.

8

A surge of infection cases starting mid-March leads to compulsory quarantine for all incoming passengers on March 19 and the closure of the border on March 25.

9

Electronic wristband to enforce quarantine.

10

Government regulations to enforce social distancing and limit gatherings, including closing bars and not allowing restaurants to supply foods or drinks for on-site consumption.

Timeline

- **December 31, 2019** – Press release on pneumonia cases of unknown cause at Wuhan's Hunan Seafood Market.
- **January 2, 2020** – Government holds inter-departmental meeting on the cluster of pneumonia cases in Wuhan and reminds all relevant departments to heighten their vigilance and be well prepared.
- **January 3** – Additional thermal imaging systems installed at the airport for body temperature check of travelers from Wuhan. For all boundary control points, fever patients with acute respiratory symptoms who had visited wet markets or seafood markets in Wuhan within 14 days prior to the onset of the illness will be immediately referred to public hospitals for isolation, treatment and follow-up.
- **January 4** – Launches the Preparedness and Response Plan for Novel Infectious Disease of Public Health Significance and activates the Serious Response Level.
- **January 6** – Government convenes the Steering Committee meeting to prevent novel infectious disease.
- **January 8** – "Severe Respiratory Disease associated with a Novel Infectious Agent" defined as a notifiable infectious disease. Medical practitioners required to report patients with fever, and acute respiratory illness, or pneumonia, and who had visited Wuhan within 14 days prior to the onset of symptoms to the Centre for Health Protection (CHP).
- **January 9** – The Scientific Committee on Emerging and Zoonotic Diseases and

the Scientific Committee on Infection Control under the CHP convened a joint meeting, during which members were updated on the latest progress relating to the Wuhan cases and provided with advice on various aspects of disease prevention and control, including surveillance, emergency preparedness, port health measures, risk communication and health promotion.

- **January 13** – The HKSAR Government delegation departs for Wuhan on January 13 to participate in a two-day working visit under the arrangement of the National Health Commission (NHC).
- **January 21** – Health Declaration is made a requirement for all passengers arriving from Wuhan by air. Later, on January 24, it is extended to travelers arriving at Hong Kong West Kowloon Station. On January 29, extended again to cover all travelers by air from the mainland and finally to all travelers on March 8.
- **January 22** – First highly suspected case of COVID-19, a patient detected with fever at the Hong Kong West Kowloon Station and sent to the hospital for isolation and treatment. Immediate contact tracing of the patient, quarantine for close contacts while medical surveillance for other contacts.
- **January 23** – The Lady MacLehose Holiday Village converted as a quarantine center to host close contacts of confirmed cases.
- **January 25** – Activation of Emergency Response Level in relation to novel coronavirus infection; suspension of flights and high-speed train services between Hong-kong and Wuhan; advice against travel to Hubei province
- **January 27** – Hubei Province residents and people who visited Hubei Province (except for Hong Kong residents) in the past 14 days are barred from entering Hong Kong.
- **January 28** – Hong Kong residents who have visited Hubei Province in the past 14 days should approach staff of DH's Port Health Division for relevant assessment upon their arrivals. If members of the public are found to be asymptomatic, they will be required to wear a surgical mask immediately and self isolate for 14 days as far as possible. They will also be placed under medical surveillance by the DH. Hong Kong residents returning from other parts of the mainland are advised to stay home for 14 days upon their return as far as possible. Those who need to go out should wear a surgical mask.
- **January 30** – Suspension of the Individual Visit Scheme. Number of mainland flights reduced to half.
- **February 4** – Confirmation of the first local infection case.
- **February 8** – a 14-day mandatory quarantine on all individuals entering Hong Kong from the mainland and who have stayed in the mainland for any period during the 14 days prior to the arrival in Hong Kong.
- **February 17** – Non-emergency and non-essential medical services adjusted and/or postponed by Hospital Authority for four weeks to focus manpower and resources on COVID-19 cases.

- ▶ **February 20** – 106 Hong Kong residents from the Diamond Princess arrive on a 1st chartered flight arranged by HKSAR are sent to quarantine centers.
- ▶ **February 28/29** – several HK authorities (HA, LCSD, ICAC, etc) announce they will resume normal services with preventive measures. Other public services continue to reduce their activities.
- ▶ **March 2** – Government gradually resume public services after implementing targeted measures (reduce social contact and infection control measures).
- ▶ **March 19** – Compulsory quarantine for persons arriving at Hong Kong from abroad.
- ▶ **March 25** – Hong Kong bans entry of all nonresident travelers, for a tentative period of 14 days. On April 6, the entry ban period is extended until further notice.
- ▶ **March 28** – Prohibits catering businesses from selling or supplying foods or drinks for on-site consumption, for a maximum period of 14 days.
- ▶ **March 29** – Prohibits group gatherings with more than four people in public places for 14 days (except transport, government, healthcare facilities, etc).
- ▶ **April 3** – Closure of bars and premises selling liquor for 14 days.
- ▶ **April 8** – The government extends social distancing measures until April 23.

Analysis

Hong Kong, China's Special Administrative Region, has managed to keep its number of coronavirus infections low in January and February despite a land border and intense human interactions with mainland China. Its government has taken the initial reports of the coronavirus outbreak at the end of December extremely seriously and communicated information to the Hong Kong population. Each suspected and confirmed case is tracked thoroughly. The Hong Kong government's crisis management focuses on a gradual reduction of cross-border inflows and the quarantine of incoming travelers. It appears that the low number of local infections during this phase is in large part due to the community's self-discipline and solidarity, and the emphasis on masks.

However, since mid-March, the number of confirmed cases starts to surge, even if it remains at very low levels compared to the United States, Western Europe or China during the peak of the crisis. On March 20, a record high 48 new cases is reported, bringing the total number to 256. Stricter measures have been implemented since then, but the number of Hong Kong residents returning from overseas and the risk posed by asymptomatic cases are posing challenges to the containment. As of April 10, Hong Kong has 990 confirmed cases⁹⁷.

97 *The Government of the Hong Kong Special Administrative Region*, "Latest situation of cases of COVID-19 (as of 10 April, 2020)", https://www.chp.gov.hk/files/pdf/local_situation_covid19_en.pdf

Early stage crisis management

In 2003, Hong Kong was strongly hit by SARS. The outbreak resulted in 298 deaths, second only to mainland China⁹⁸. The lessons of the crisis are compiled in a report published by Hong Kong's SARS Expert Committee "SARS in Hong Kong: From Experience to Action"⁹⁹. The report recommends short and long-term action to prepare the public health system for future crises, and leads to the establishment in June 2004 of the Center for Health Protection (CHP) under the Department of Health. The center is the main entity responsible for disease prevention and control. **Its mission mirrors the recommendation of the report¹⁰⁰, with three focuses ("3Rs"): real-time surveillance, rapid intervention, and responsive risk communication¹⁰¹.**

This institutional arrangement facilitates immediate action after the Wuhan Municipal Health Commission acknowledges severe pneumonia cases of unknown cause linked to Wuhan's Hunan Seafood Market, on December 31. The CHP issues a press release that provides an overview of the situation and informs the public that CHP is in contact with China's National Health Commission for further information¹⁰². An alert about the disease is sent to the Hospital Authority. The document lists personal and environmental hygiene advice to prevent pneumonia and respiratory infection, and health advice for travel outside Hong Kong. Cleaning and disinfection of public transportation and spaces are promoted. People with respiratory symptoms are advised to wear surgical masks and seek medical assistance.

The CHP has maintained regular updates on the diseases since then, and each government department has transferred information to their respective sector. **In addition, a dedicated website is set up to disseminate coronavirus-related information and health advice, including daily case reports¹⁰³.** Health-related information is promoted at all boundary control points through broadcast, leaflets and posters¹⁰⁴.

98 "Cumulative Number of Reported Probable Cases of SARS", *World Health Organization*, July 11, 2003, www.who.int/csr/sars/country/2003_07_11/en/

99 *The Government of the Hong Kong Special Administrative Region*, "Report of the SARS Expert Committee - 'SARS in Hong Kong : From Experience to Action'", October 2003, www.coronavirus.gov.hk/eng/sars-report.html

100 Hon-yeek Chan, "Message from the Director of Health." *Centre for Health Protection - Department of Health*, www.chp.gov.hk/en/static/23992.html

101 K.H. Wong "Message from the Controller." *Centre for Health Protection - Department of Health*, www.chp.gov.hk/en/static/23993.html

102 *The Government of the Hong Kong Special Administrative Region*, "CHP Closely Monitors Cluster of Pneumonia Cases on Mainland", December 31, 2019, www.info.gov.hk/gia/general/201912/31/

103 COVID-19 Thematic Website, www.coronavirus.gov.hk/eng/index.html

104 *The Government of the Hong Kong Special Administrative Region*, "CHP Provides Latest Information on Cluster of Pneumonia Cases in Wuhan (with Photo)", January 3, 2020, www.info.gov.hk/gia/general/202001/03/P2020010300836.htm

On January 2, the first government meeting takes place to discuss the pneumonia cases detected in Wuhan. All departments are requested to heighten their vigilance and preparedness¹⁰⁵.

The government response is rapid, but also gradual and light. Thermal imaging was already in place at border checkpoints, but additional equipment is installed on January 3 specifically for body temperature checks of incoming passengers from Wuhan¹⁰⁶. The frequency of random temperature checks is later increased for other travelers. The Hong Kong West Kowloon Station, which connects Hongkong to Shenzhen, is equipped with more staff to operate and manage body temperature checks. All passengers with fever and severe respiratory symptoms are interrogated about their travel history, and are transferred to the hospital for isolation and treatment if they have visited Wuhan seafood markets within the past 14 days. Medical practitioners who encounter fever patients with and several respiratory symptoms and had visited Wuhan seafood markets within the past 14 days are requested to report to the CHP suspected cases for further investigation.

On January 4, the government launches the "Preparedness and Response Plan for Novel Infectious Disease of Public Health Significance" that provides guidance in case of a novel infectious disease outbreak¹⁰⁷. It presents a three-tier response level (alert, serious and emergency) with a corresponding command structure. On the same day, the Serious Response Level is activated. It corresponds to the assessment that the spread of the disease is limited, with a moderate risk to public health.

As numbers of confirmed coronavirus cases increase in the mainland and imported cases start to be reported in other countries, the government upscales its monitoring and revises its reporting criteria. On January 16, medical practitioners are required to report individuals with fever and severe respiratory symptoms fulfilling one of the following criteria within 14 days prior to demonstrating symptoms to CHR: a visit to Wuhan, and no longer only to the seafood market; the visit of a medical hospital in the mainland; or having been in close contact with a confirmed symptomatic patient¹⁰⁸. From January 21, all passengers traveling from Wuhan by air are required to fill a health declaration. **However, the border remains open, and the government displays its trust in its well-developed public**

105 *The Government of the Hong Kong Special Administrative Region*, "Government holds inter-departmental meeting on cluster of pneumonia cases in Wuhan (with photo)", January 2, 2020. <https://www.info.gov.hk/gia/general/202001/02/P2020010200831.htm>

106 *Ibid.*

107 *Food and Health Bureau, Department of Health, Centre for Health Protection, Preparedness and Response Plan For Novel Infectious Disease of Public Health Significance* (2020), January 4, 2020, https://www.chp.gov.hk/files/pdf/govt_preparedness_and_response_plan_for_novel_infectious_disease_of_public_health_significance_eng.pdf

108 *The Government of the Hong Kong Special Administrative Region*, "CHP closely monitors confirmed case of infection of novel coronavirus in Japan and revises reporting criteria", January 16, 2020. <https://www.info.gov.hk/gia/general/202001/16/P2020011600659.htm>

health system and hospital infrastructure, and in other words, in its capacity to contain the emergence of clusters linked to imported cases¹⁰⁹.

After two cases are confirmed on January 23, more measures and advice are issued¹¹⁰. The health declaration form system is extended to travelers arriving at Hong Kong West Kowloon Station. Schools are asked to reconsider their exchange activities with mainland China, and travel to Wuhan is advised against. But the Emergency Response Level is only activated on January 25¹¹¹, one day after the announcement of investigations of three additional imported cases, acknowledging the COVID-19 risk as high and imminent¹¹². A Steering Committee cum Command Centre is established to develop strategies and measures against coronavirus¹¹³. Chaired by Carrie Lam, the Command Center is composed by 4 workgroups and an expert advisory group. Each workgroup is assigned specific tasks and led by a secretary-level official.

Contact Tracing and disclosure of information

On January 22, a highly suspected imported coronavirus case (from Wuhan) is reported¹¹⁴, followed by a second case the day after¹¹⁵. Suspected individuals are placed in isolation to receive medical care, and both individuals are confirmed positive on January 23¹¹⁶. Contact tracing starts immediately. **Travel history of patients, including travel date, train/flight number and seat number, with the results of the investigation**

109 *The Government of the Hong Kong Special Administrative Region*, "CHP provides latest information on pneumonia cases of novel coronavirus infection in Mainland and Korea and revises reporting criteria", January 20, 2020. <https://www.info.gov.hk/gia/general/202001/20/P2020012000618.htm>

110 *The Government of the Hong Kong Special Administrative Region*, "Third Steering Committee meeting in accordance with the Serious Response Level under the Preparedness and Response Plan convened (with photos)", January 23, 2020, <https://www.info.gov.hk/gia/general/202001/23/P2020012300970.htm>

111 *The Government of the Hong Kong Special Administrative Region*, "CE announces activation of Emergency Response Level in relation to novel coronavirus infection (with photo)", January 26, 2020, <https://www.info.gov.hk/gia/general/202001/26/P2020012600087.htm>

112 *The Government of the Hong Kong Special Administrative Region*, "CHP investigates three additional imported cases of novel coronavirus infection", January 25, 2020, <https://www.info.gov.hk/gia/general/202001/25/P2020012500012.htm>

113 *Legislative Council Panel on Health Services*, "Measures for the Prevention and Control of Novel Coronavirus Infection in Hong Kong," January 30, 2020. <https://www.legco.gov.hk/yr19-20/english/panels/hs/papers/hs20200130cb2-575-1-e.pdf>

114 *The Government of the Hong Kong Special Administrative Region*, "CHP investigates highly suspected imported case of novel coronavirus infection", January 22, 2020. <https://www.info.gov.hk/gia/general/202001/22/P2020012200982.htm>

115 *The Government of the Hong Kong Special Administrative Region*, "CHP investigates the second highly suspected imported case of novel coronavirus infection", January 23, 2020. <https://www.info.gov.hk/gia/general/202001/23/P2020012300032.htm>

116 *The Government of the Hong Kong Special Administrative Region*, "CHP announces latest situations and measures on imported cases of novel coronavirus infection", January 23, 2020. <https://www.info.gov.hk/gia/general/202001/23/P2020012300914.htm>

published online. All their close contacts, such as passengers seated close by, taxi drivers etc, are subject to quarantine at the Lady MacLehose Holiday Village, converted as a quarantine center to host close contacts of confirmed cases. Regarded as "contacts", passengers in the same carriage or cabin are subject to medical surveillance. A hotline is set up to answer public enquiries linked to the cases, and the CHP urges passengers on the same train/flight to call the line.

Individuals are required to share any information considered relevant to the handling of the public health emergency¹¹⁷. **Refusal leads to a maximum penalty of a HK\$10,000 (US\$ 1,283) fine and six months imprisonment.** The general public is provided with detailed information related to confirmed and suspected cases. The CHP publishes daily a list of flights, trains, ships, vehicles taken by confirmed or suspected patients¹¹⁸. In addition, a list of buildings that have confirmed or suspected cases, and a list of buildings where people under quarantine reside made available to the public online. To better visualize information published by various government departments, the HKSAR government launches an "Interactive Map Dashboard" on February 3. **The Dashboard presents all confirmed cases on the map and provides statistical updates on the number of cases, suspected, confirmed, discharged from hospital and deceased.** It also provides information on the timeline and places visited by the infected person¹¹⁹.

Travel Ban and Reducing cross-border travel with the mainland

To reduce the risk of imported cases, three major changes occur. On January 25, flight and high-speed train services to and from Wuhan are indefinitely suspended. Exchanges, visits, cultural and sport activities organized by the HKSAR government are also put on hold. On January 27, Hubei Province residents and people who have visited the province (except Hong Kong residents) in the past 14 days are banned from entering Hong Kong¹²⁰. Hubei residents who already are in

117 *The Government of the Hong Kong Special Administrative Region*, "Compulsory Quarantine of Certain Persons Arriving at Hong Kong Regulation and Prevention and Control of Disease (Disclosure of Information) Regulation gazetted", February 7, 2020. <https://www.info.gov.hk/gia/general/202002/07/P2020020700674.htm>

118 Center for Health Protection, "List of flights/trains/ships/vehicles taken by confirmed or probable cases of COVID-19 from 2 days before onset of symptoms or with 2 or more confirmed or probable cases taken during incubation period", April 10, 2020. https://www.chp.gov.hk/files/pdf/flights_trains_en.pdf

119 "Latest Situation of Coronavirus Disease (COVID-19) in Hong Kong", <https://chp-dashboard.geodata.gov.hk/covid-19/en.html>

120 *The Government of the Hong Kong Special Administrative Region*, "HKSAR Government imposes immigration restrictions on Hubei Province residents and persons visited Hubei Province in past 14 days", January 26, 2020. <https://www.info.gov.hk/gia/general/202001/26/P2020012600751.htm>

Hong Kong are tracked down and are either requested to leave or transferred to quarantine centers¹²¹. **On January 30, the Individual Visit Scheme, the travel permit granted to mainland residents to visit Hong Kong, is suspended. Flights from the mainland are reduced to half¹²².**

The government statement celebrates the impact of the above measures on reducing inflow from the Mainland¹²³. **On February 2, the number of incoming visitors has already diminished by 57% compared to January 29 (not including air travel).** However, the border remains open to the mainland and the rest of the world, a decision justified by Hong Kong's Chief Executive Carrie Lam as necessary to sustain the economic activity in the city¹²⁴. She also makes reference to the WHO suggestion to not implement measures that may fuel discrimination¹²⁵.

Protesting against the soft border restrictions, 2500 medical workers go on a three-day strike on February 3, demanding a full ban on entry from the mainland. The government announces on February 5 the implementation of compulsory quarantine for all incoming travelers from the mainland, effective on February 8. Carrie Lam's statement denies that this is a measure to appease the strikers and describes it as a response to expert advice¹²⁶. However, it is believed that public pressure and the confirmation of the first local infection on February 4 played a significant role¹²⁷. **Overall, the focus of the government strategy remains on drastically reducing the cross-border flow rather than shutting down the border. A full border closure is only announced on March 23**, effective from March 25 for all nonresident travelers for a tentative period of 14 days¹²⁸. The government later decides to extend

121 *The Government of the Hong Kong Special Administrative Region*, "Government enhances disease prevention and control measures with reference to WHO's advice", January 31, 2020. <https://www.info.gov.hk/gia/general/202001/31/P2020013100826.htm>

122 *The Government of the Hong Kong Special Administrative Region*, "HKSAR Government announces enhanced measures for disease prevention and control", January 29, 2020. <https://www.info.gov.hk/gia/general/202001/29/P2020012900006.htm>

123 *The Government of the Hong Kong Special Administrative Region*, "HKSAR Government further reduces cross-boundary people flow (with photo)", February 24, 2020. <https://www.info.gov.hk/gia/general/202002/04/P2020020400025.htm>

124 Victor Ting, "Coronavirus: Why Won't Carrie Lam Shut Hong Kong's Border with Mainland China?" *South China Morning Post*, February 5, 2020.

125 Felix Tam, "Hong Kong Leader Rejects Calls to Close Border despite Virus Fears", *Reuters*, January 31, 2020. www.reuters.com/article/us-china-health-hongkong/hong-kong-leader-rejects-calls-to-close-border-despite-virus-fears-idUSKBN1ZU1K6

126 "Hong Kong Tightens Border as Medical Workers Call for Shutdown", *The New York Times*, February 3, 2020. www.nytimes.com/2020/02/03/world/asia/hong-kong-coronavirus-china-border.html

127 *The Government of the Hong Kong Special Administrative Region*, "Government to impose mandatory quarantine on people entering Hong Kong from Mainland", February 5, 2020. <https://www.info.gov.hk/gia/general/202002/05/P2020020500793.htm>

128 "Inbound Travel - Points to Note for Home Quarantine for Inbound Travellers", *COVID-19 Thematic Website*. <https://www.coronavirus.gov.hk/eng/inbound-travel.html>

the border closure period until further notice¹²⁹. This change reflects the concern about the surge in the imported case number. Hong Kong reports 10 new confirmed cases on March 17, and 8 of them had travel history¹³⁰.

Quarantine and Enforcement

To allow better monitoring of the situation, the Prevention and Control of Disease Ordinance is amended on January 8 to include coronavirus as a notifiable infectious disease¹³¹. This amendment gives the Department of Health (DH) the legal power to enforce isolation or quarantine. Four quarantine centers are put into use, complemented with mobile units of modular housing¹³².

On February 8, a 14 day compulsory quarantine on all travelers arriving from the mainland and all individuals who have stayed in the mainland for any period 14 days prior to the arrival in Hong Kong is implemented¹³³. They are transferred to a quarantine premise once they pass airport checks for symptoms and temperature. Travelers failing the check are referred to the Department of Health for further handling and testing. **The quarantine arrangements on inbound travelers have been constantly updated, finally applying to all international arrivals since March 19, three days after Beijing implemented the same measure¹³⁴.**

Initially, with the first few imported cases, only close contacts were subject to quarantine in quarantine centers. **As the number of cases increases and the quarantine**

requirement expands to a larger public, available quarantine space becomes insufficient. People considered less at risk start being placed into home or hotel quarantine. The latest published criteria states that **travelers arriving from Daegu and Gyeongsangbuk-do in Korea, Emilia-Romagna, Lombardy and Veneto regions in Italy, and Iran have to stay in a quarantine center¹³⁵.** Returning Hong Kong residents who request to stay at a quarantine center instead of their home, are charged a quarantine fee¹³⁶. Free testing is made available¹³⁷ to asymptomatic inbound travelers from overseas on March 28, after having the covered group expanded a few times¹³⁸. Due to the limited resources available at the airport for testing, passengers to either visit the DH's Temporary Specimen Collection Centre after landing to undergo a throat swab or to have it delivered it by a family member (the door-to-door collection service becomes available on April 3) while they stay in quarantine. However, starting from April 7, passengers are directly transferred to the testing center from the airport. Passengers landing from high risk places have to wait for the test result at the center which takes 8 hours on average. Other passengers have to go to their quarantine premise.

The quarantine is enforced by disciplinary forces conducting spot checks¹³⁹, and electronic wristbands¹⁴⁰. **Upon arrival at the Hong Kong International Airport, travelers are requested to put on an electronic wristband and install a mobile application (Stay Home Safe).** The wristband has to be activated once at home and will be able to detect location change of the subject based on environmental communication signals (such as bluetooth and wifi). **Changes in signals are recorded by the app, alerting the Department of Health and Police.** Amid privacy concerns, the government explains that the Privacy Commissioner was consulted: there shouldn't be any privacy concerns since the determination of location is not based on the monitoring of the precise location (thus not GPS) but signal changes of the surrounding environment¹⁴¹.

129 *The Government of the Hong Kong Special Administrative Region*, "HK entry restrictions extended", April 6, 2020, https://www.news.gov.hk/eng/2020/04/20200406/20200406_204326_222.html?type=category&name=covid19&tl=t

130 Elizabeth Cheung, "Coronavirus: 10 New Hong Kong Cases Is the City's Biggest Daily Increase, as Health Officials Express Fears..." *South China Morning Post*, March 17, 2020. www.scmp.com/news/hong-kong/health-environment/article/3075601/coronavirus-hong-kong-confirms-five-more

131 *The Government of the Hong Kong Special Administrative Region*, "Government to gazette inclusion of "Severe Respiratory Disease associated with a Novel Infectious Agent" as statutorily notifiable infectious disease under Prevention and Control of Disease Ordinance", January 7, 2020. <https://www.info.gov.hk/gia/general/202001/07/P2020010700603.htm>

132 *The Government of the Hong Kong Special Administrative Region*, "Quarantine arrangements in response to novel coronavirus infection (with photo)", February 3, 2020. <https://www.info.gov.hk/gia/general/202002/03/P2020020300722.htm>

133 *The Government of the Hong Kong Special Administrative Region*, "Compulsory Quarantine of Certain Persons Arriving at Hong Kong Regulation and Prevention and Control of Disease (Disclosure of Information) Regulation gazetted", February 7, 2020. <https://www.info.gov.hk/gia/general/202002/07/P2020020700674.htm>

134 *The Government of the Hong Kong Special Administrative Region*, "DH to further extend health quarantine arrangements on inbound travellers from overseas", March 17, 2020. <https://www.info.gov.hk/gia/general/202003/17/P2020031700754.htm>

135 "Inbound Travel - Points to Note for Home Quarantine for Inbound Travellers", *COVID-19 Thematic Website*. <https://www.coronavirus.gov.hk/eng/inbound-travel.html>

136 *The Government of the Hong Kong Special Administrative Region*, "Government clarifies reports on fee for persons undergoing quarantine", March 16, 2020. <https://www.info.gov.hk/gia/general/202003/16/P2020031600827.htm?fontSize=1>

137 *The Government of the Hong Kong Special Administrative Region*, "Door-to-door specimen collection service for participants of Enhanced Laboratory Surveillance Programme for COVID-19 testing", April 2, 2020. <https://www.info.gov.hk/gia/general/202004/02/P2020040200340.htm>

138 "64 COVID-19 Infections Confirmed." *Hong Kong's Information Services Department*, March 29, 2020. www.news.gov.hk/eng/2020/03/20200329/20200329_105215_522.html

139 *The Government of the Hong Kong Special Administrative Region*, "First batch of persons under compulsory quarantine completes quarantine", February 22, 2020. <https://www.info.gov.hk/gia/general/202002/22/P2020022100827.htm>

140 "'StayHomeSafe' Mobile App User Guide", *COVID-19 Thematic Website*. <https://www.coronavirus.gov.hk/eng/stay-home-safe.html>

141 "Bracelets for All as New Quarantine Takes Effect - RTHK." *Rthk.Hk*, March 18, 2020. <https://news.rthk.hk/rthk/en/component/k2/1515386-20200318.htm>

The quarantined persons may also receive a surprise visit or video call from CHP staff to check whether they are staying at the quarantine premise. The government also encourages the public to report suspected violations via the online platform "e-Report Center"¹⁴². Quarantined individuals who leave the quarantine premise without permission are subject to criminal charges and a maximum penalty of HK\$ 5,000 (US\$ 641) and six months imprisonment¹⁴³.

Community awareness and self-restraint

Hong Kong's success in containing contagion so far is often attributed to community awareness and self-restraint¹⁴⁴. **The SARS outbreak has not only forced the government to take action to improve its capability of handling health emergencies, but also trained the Hong Kong population.** Disappointed by the government's poor management of SARS and distrusting the government, local communities decided to act on their own responsibility¹⁴⁵. "Every citizen did their part, including wearing masks and washing their hands and taking necessary precautions, such as avoiding crowded places and gatherings." according to Kwok Ka-ki, a former member of the Legislative Council's Medical functional constituency¹⁴⁶. The importance of wearing masks, personal protection and hygiene, and avoiding crowded spaces has been on government press release documents since December 31, but in the form of advice. It is therefore for individuals to take the responsibility to wear masks and refrain from going out and using public transportation. This is only a few months after wearing masks in public assemblies was banned by the government to prevent pro-democracy protesters from hiding their identity.

Supplying masks to the public sector and private citizens is a challenge for the government, given its strong dependency on imports. The government ensures its mask supply mainly through the Government Logistics Department (GLD),

which is in charge of procurement¹⁴⁷. However, the outbreak leads to an increase of the consumption rate by five to six times. On January 30, GLD's available stockpile for relevant government departments is adequate for about one to two months only. The masks are distributed based on risk level assessment, meaning that front-line officers and essential services providers are prioritized. **The Hospital Authority also has a stockpile that can sustain consumption by medical professionals for about three months. To meet the increasing demand, the GLD decides to remove unnecessary procedures related to the import of masks, and proactively contacts global suppliers.** The government is also in touch with chambers of commerce, the retail industry and the mainland authorities to ensure sufficient market supply.

In addition to imports, local production is boosted to meet government demand, **but its production capacity remains limited compared to the estimated need of 200 million per month**¹⁴⁸. The Correctional Services Department (CSD), increases its mask production volume and has them exclusively supplied to GLD since January 2020¹⁴⁹. Some Correctional Institutions switch to 24 hours operations and recruit off-duty and retired officers as volunteers. In 2019, the CSD produced around 1,1 million masks per month¹⁵⁰. By mid-March 2020, production has reached 2.5 million per month¹⁵¹.

As it becomes harder to acquire sufficient masks and other medical equipment from abroad, the government introduces a HK\$ 1,500 million (US\$ 192 million) "Local Mask Production Subsidy Scheme" under the Anti-Epidemic Fund to tackle the mask shortage. The HK\$ 30 billion (US\$ 3.85 billion) commitment for the Anti-Epidemic Fund is approved on February 21 by the Finance Committee of the Legislative Council, with the goal to enhance Hong Kong's capacity in combating coronavirus by supporting government sectors, and assisting enterprises and members of the public¹⁵². The "Local Mask Production Subsidy Scheme" opens for application on March 2.

147 *The Government of the Hong Kong Special Administrative Region*, "Government increases supply of surgical masks through multi-pronged approach", January 30, 2020. <https://www.info.gov.hk/gia/general/202001/30/P2020013000689.htm>

148 Zoe Low, "Coronavirus: Lawmaker, Local Factory Team for Reusable, Antibacterial Masks, Though Efficacy Against..." *South China Morning Post*, January 31, 2020. www.scmp.com/news/hong-kong/health-environment/article/3048481/coronavirus-lawmaker-local-factory-team-reusable

149 *The Government of the Hong Kong Special Administrative Region*, "LCQ11: Filter masks produced by Correctional Services Department", March 18, 2020. <https://www.info.gov.hk/gia/general/202003/18/P2020031800267.htm>

150 *The Government of the Hong Kong Special Administrative Region*, "Filter masks produced by Correctional Services Department", March 18, 2020. <https://www.info.gov.hk/gia/general/202003/18/P2020031800267.htm>

151 Ibid.

152 *The Government of the Hong Kong Special Administrative Region*, "Anti-epidemic fund committee meets", January 26, 2020. https://www.news.gov.hk/eng/2020/02/20200226/20200226_183011_813.html?type=ticker <https://www.legco.gov.hk/yr19-20/english/foi/papers/f19-46e.pdf>

142 "E-Report Centre Police Public Page." *Police.Gov.Hk*, 2020.

<http://www.erc.police.gov.hk/cmisercc/CCC/PolicePublicPage?language=en>

143 *The Government of the Hong Kong Special Administrative Region*, "Quarantine arrangements in response to novel coronavirus infection (with photo)", February 3, 2020. <https://www.info.gov.hk/gia/general/202002/03/P2020020300722.htm>

144 Justin McCurry et al. "Mass Testing, Alerts and Big Fines: The Strategies Used in Asia to Slow Coronavirus." *The Guardian*, March 11, 2020. www.theguardian.com/world/2020/mar/11/mass-testing-alerts-and-big-fines-the-strategies-used-in-asia-to-slow-coronavirus.

145 Ilaria Maria Sala. "How SARS Trauma Made Hong Kong Distrust Beijing." *Quartz*, February 12, 2020. <https://qz.com/1798974/how-sars-trauma-made-hong-kong-distrust-beijing/>

146 "Tracking the Coronavirus: How Crowded Asian Cities Tackled an Epidemic." *The New York Times*, March 17, 2020. www.nytimes.com/2020/03/17/world/asia/coronavirus-singapore-hong-kong-taiwan.html

Each successful applicant is entitled to receive a subsidy of up to HK\$ 3 million (US\$ 385,000) for the first mask production line, and up to HK\$ 2 million (US\$ 256,000) for the second¹⁵³. The government will purchase the first 2 million produced masks each month, while the remaining stock can be sold for local consumption. Export is prohibited by the scheme. The purchase price of masks is based on production cost and not uniformized. The government also encourages and facilitates relocation of production lines to Hong Kong.

Local Infections and Restrictions

These measures however are not sufficient to prevent an increase of local infection cases, e.g. cases with no travel history or no reported contact with confirmed cases. **The government lacks the capacity and resources to test the general population without any epidemiological links, and urges better enforcement of social distancing**¹⁵⁴. In order to reduce gatherings, the government issues on March 27 a regulation on requirements and direction for business and premises, effective the following day¹⁵⁵. Catering businesses are no longer allowed to sell or supply foods or drinks for on-site consumption. In accordance with the Regulation, the Secretary for Food and Health is empowered to issue directions to scheduled premises, for a maximum period of 14 days. The legal representative of the business may face a fine of up to HK\$ 50,000 (US\$ 6,415) and six months imprisonment for non compliance.

Catering businesses are then issued new regulations. the number of customers in their premises should not exceed 50% of their normal seating capacity; a minimum 1,5 meters distance between tables; less than 4 persons seated at the same table; temperature checks of customers before entry; mask-wearing in the premise; and provision of hand sanitiser. A list of premises required to close is also published, and updated. Decisions on these temporary closures are based on risk assessment, taking in consideration the gathering opportunity and the intensity of confirmed cases in the area. For instance, with the emergence of 62 confirmed coronavirus cases related to bar visits, leading to 14 cases of contamination, **all bars, pubs and other premises**

selling liquor for on site consumption are closed for 14 days, starting from April 3¹⁵⁶. Another prohibition on Group Gathering takes effect on March 29, banning group gathering of more than 4 people in public space for 14 days, imposing a maximum fine of HK\$ 25,000 (US\$ 3225) and six months imprisonment. Workplace and weddings are exempted¹⁵⁷. On April 8, the government decides to extend all regulations above that enforce social distancing to April 23¹⁵⁸.

Hong Kong's measures have so far been effective in containing a major outbreak of COVID-19. However, many local experts and public figures discuss worst case scenarios¹⁵⁹. **Bernard Chan, Convenor of Hong Kong's Executive Council, stresses the need for tougher measures and does not exclude the possibility of strict lockdown.** Yuen Kwok-yung, a leading microbiologist, warns the public on April 5 about the possibility of a new wave of infections coming from the mainland as it resumes economic life. The Hong Kong population is told to stay alert. There is a strong possibility that the coronavirus crisis will not be fully contained in the short term and that more prevention and containment efforts will be required.

153 Commerce and Economic Development Bureau, "HKSAR Government Engaged HKPC as Secretariat for Local Mask Production Subsidy Scheme", *Hkpc.Org*, www.hkpc.org/en/our-services/additive-manufacturing/latest-information/hkpc-mask-production-support

154 "CHP Explains Rise in COVID-19 Cases." *Hong Kong's Information Services Department*, 28 March 2020, www.news.gov.hk/eng/2020/03/20200328/20200328_172308_875.html

155 *The Government of the Hong Kong Special Administrative Region*, "Prevention and Control of Disease (Requirement and Directions) (Business and Premises) Regulation gazetted", March 27, 2020. <https://www.info.gov.hk/gia/general/202003/27/P2020032700878.htm>

156 *The Government of the Hong Kong Special Administrative Region*, "Latest directions under Prevention and Control of Disease (Requirements and Directions) (Business and Premises) Regulation", April 2, 2020. <https://www.info.gov.hk/gia/general/202004/02/P2020040200608.htm>

157 "Group Gathering Ban Gazetted." *Hong Kong's Information Services Department*, 28 March 2020, www.news.gov.hk/eng/2020/03/20200328/20200328_110413_745.html

158 *The Government of the Hong Kong Special Administrative Region*, "Measures to fight virus extended", April 8, 2020, https://www.news.gov.hk/eng/2020/04/20200408/20200408_100904_334.html?type=category&name=covid19&tl=t

159 "Third Wave of Infections Will Come from Mainland" *Rthk.Hk*, April 5, 2020. <https://news.rthk.hk/rthk/en/component/k2/1519011-20200405>

Hong Kong: border management, epidemiological tracking and social responsibility

THE TIME FACTOR

An **immediate reaction** of the Center for Health Protection, created after the SARS epidemic, on December 31

Isolation, treatment and monitoring of passengers from Wuhan in case of fever symptoms on January 3

Activation of the **"serious response level"** following the guidelines of the "Preparedness and Response Plan" on January 4



EPIDEMIOLOGICAL TRACING

A **compulsory health declaration** upon arrival

Meticulous contact tracing (planes, trains, buildings) and **quarantine of those who had contact with confirmed cases**

Quarantine in dedicated quarantine center or at home, enforced by **strict surveillance** (electronic wristbands, surprise visits or video calls)



AN INFORMED POPULATION

Spontaneous adoption of **individual precautionary measures** (masks, social distancing) by a **population** who has learned lessons from the 2003 SARS experience

Community solidarity and self-restraint, however, not without a feeling of distrust for the Hong Kong government

Prudent and responsible behavior facilitated by **constant public communication**



THE BORDER ISSUE

Gradual reduction in cross-border flows. Implementation of quarantine measures rather than border closure.

Suspension of the Individual Visit Scheme (travel permit granted to mainland Chinese residents to visit Hong Kong)

Border finally closed on **March 25** upon intercepting threat of second wave



SELF-RESTRAINT, PATH DEPENDENCE AND THE SHADOW OF THE OLYMPICS

No lockdowns, a very conservative testing policy centered on symptomatic cases, no digital contact tracing, no intrusive surveillance to enforce quarantine, open borders for a long time: Japan seems to have followed a unique path, taking none of the strong measures adopted by other East Asian countries. Yet the country has managed throughout February and March to avoid a major outbreak of COVID-19 with a package of mildly constraining policies – mostly social distancing "requests", limited travel restrictions and an emphasis on masks. However, at the beginning of April, the Japanese government is adopting stricter measures to manage the risk of a major increase of cases.

Key Policies

- 1 Requests for "self-restraint" - social distancing, personal protection - have been rather followed
- 2 A focus on small clusters to prevent the formation of larger clusters with investigation teams
- 3 Industrial mobilisation for a rapid increase of the national production of masks, tests and medical treatment
- 4 Mandatory hospitalization for all patients who test positive, even with no symptoms, as a legal obligation under Japan's Infectious Diseases Prevention Act

5

A very restrictive approach to tests to avoid overwhelming the medical system

6

A legislative amendment to authorize forms of confinement and lockdowns as part of a "state of emergency"

7

The declaration of the "state and emergency" for Tokyo and six prefectures, allowing for partial and soft lockdowns

8

The incremental preparation of the health system to a rapid increase of contagion

9

A massive stimulus package of 10% of GDP to be approved as a special budget by the Parliament

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Timeline

- **January 16** – Japan confirms first case, a Chinese national (in his 30s) who previously traveled to Wuhan.
- **January 24** – Shinzo Abe convenes the first high-level cabinet meeting on the novel virus, following the WHO statement, also including experts
- **January 28** – Designation of coronavirus as an 'infectious disease' under the Infectious Diseases Control Law.
- **January 29** – Japan is one of the first two countries to evacuate citizens from Wuhan.
- **January 30** – Decision to create a Novel Coronavirus Response Headquarters.
- **February 1** – COVID-19 is added as a designated category II infectious disease under the Infectious Diseases Control Law, which requires doctors to immediately report diagnosed COVID-19 cases to the public health center in their jurisdiction. The Ministry of Health, Labor and Welfare (MHLW) asks prefectural authorities to establish COVID-19 related consultation centers and outpatient wards at local public health facilities.

- **February 3** – First travel ban imposed on those with Hubei Province in their travel history or with a Chinese passport officially issued in Hubei.
- **February 4** – The *Diamond Princess* is quarantined in the Port of Yokohama, with 10 positive cases.
- **February 12** – The Ministry of Economy, Trade and Industry announces that it will subsidize domestic mask production, aiming to lift the current output to 150%.
- **February 13** – First COVID-19 related death, a woman in her 80s in Kanagawa Prefecture.
- **February 13** – Travel restriction for Zhejiang residents and foreigners with Zhejiang province travel history
- **February 14** – First Novel Coronavirus Expert Meeting called by Prime Minister Abe
- **February 17** – Health Minister Katsunobu Kato warns of 'new phase' in the outbreak.
- **February 21** – Japan suspends all major public gatherings.
- **February 24** – The Ministry for Trade, Economy and Ministry institutes financial safety nets in place for SMEs and businesses affected adversely by COVID-19.
- **February 25** – Six weeks after the first case, adoption of 'Basic Policies for Novel Coronavirus Disease Control'
- **February 27** – Shinzo Abe asks all schools in Japan to be closed temporarily, but not universities.
- **March 1** – All on board the *Diamond Princess*, including the captain and the crew, disembark. 672 confirmed cases.
- **March 5** – New quarantine restrictions.
- **March 10** – The Second Novel Coronavirus Disease Emergency Response Package is instituted.
- **March 14** – Diet approves amendment of the Act on Special Measures for Pandemic Influenza and New Infectious Diseases Preparedness and Response to include coronavirus
- **March 16** – Expansion of entry restrictions to travelers from specific areas in Spain, Italy, Iran, Switzerland and Iceland.
- **March 24** – Postponement of the Tokyo Olympics until 2021.
- **March 26** – Governor of Tokyo urges people to avoid unnecessary gatherings until April 12
- **April 7** – Prime Minister Abe declares a state of emergency for Tokyo, Kanagawa, Saitama Chiba, Osaka, Hyogo and Fukuoka
- **April 7** – Prime Minister announces a record 108.2 trillion yen (\$992 billion) stimulus package

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Analysis

As of April 10, 5347 cases and 88 deaths had been reported¹⁶⁰ in Japan – not including the 672 passengers of the Diamond Princess cruise ship who tested positive when in quarantine off the port of Yokohama, leading to ten additional deaths. But this relative success is fragile by all measures. The fear of a major outbreak slowly building silently in undetected clusters has overwhelmed Japan. **At the beginning of April, the Ministry of Health, Labor and Welfare considers an incoming "peak of infection" inevitable** and has redefined its priority to delaying and lowering¹⁶¹ that peak to avoid overwhelming the medical infrastructure and contain the socio-economic damage. By comparison, at the end of February, Japan's stated goal was to "end the epidemic in its early stages¹⁶²".

With no clear end in sight to the epidemic, **Japan is entering April adopting much more stringent policies: the declaration of a COVID-19 state of emergency** that provides a legal basis for mandatory lockdowns, however without strong enforcement power for executive authorities, an expansion of the entry ban¹⁶³ to cover foreigners who have been to the US, China, South Korea and most of Europe, and a 108,2 trillion yen (US\$992 billion) stimulus package to help companies and households withstand the global economic shock of the coronavirus – including the postponement of Tokyo 2020 Olympics, initially scheduled for July, until the summer 2021.

Self-restraint

By the standards of East Asian democracies, Japan has reacted slowly to the Hubei crisis. The Abe administration only convened an emergency meeting on January 24, after the WHO statement that finally confirmed human-to-human transmission of the coronavirus - by that time, South Korea and Taiwan already had screening procedures in place for incoming passengers from the Wuhan area and were treating the coronavirus as a major threat. Four days later, COVID-19 is added as a designated

infectious disease under the 1998 Act on the Prevention of Infectious Diseases¹⁶⁴ and Medical Care for Patients with Infectious Diseases (Infectious Diseases Prevention Act) – a modern version of a legal framework adopted in 1897 in the Meiji era, when cases of cholera in Japan exceeded 100,000 per year.

A Class II infectious disease entails a number of standard operating procedures, and a decentralized crisis management system. **In practice, strong executive power is given to the governors of Japan's 47 prefectures¹⁶⁵.**

They can decide to arrange questioning of patients, to authorize an investigation of the contacts and places visited by the affected persons, request individuals to undergo medical examinations, and also decide the relocation of the burial and cremation of corpses affected by any Class II disease. The Governor can rely on a number of medical institutions across the prefecture specifically designated for Class II infectious diseases. Forced hospitalization is an option under the Infectious Diseases Prevention Act.

But the keyword that captures the first phase of Japan's containment effort is self-restraint (自粛). **In the absence of a legal state of emergency, the Japanese government responds to the COVID-19 threat with polite requests to the population, which have more or less been followed.** This is the essence of the February 25 Basic policies for Novel Coronavirus Disease Control¹⁶⁶: "We ask all the people in Japan to refrain from seeking medical care without appropriate consultation due to the anxiety of potential infection, and avoid the environments with high risk of infection. Moreover, we request the people to wash their hands and to cover their mouth when coughing, refrain from going out when they have symptoms, and wear masks when they need to go out".

This approach, reinforced by a personal call for self-restraint by Prime Minister Abe, achieves some results in containing the virus spread. On February 27, he asks the nation's elementary, junior high and high schools to close from March 2¹⁶⁷ up through the spring break. **Despite this being a request and not a legal obligation, data**

160 Ministry of Health, Labour and Welfare, Japan, "About Coronavirus Disease 2019 (COVID-19)", *MHLW Website*, April 11, 2019, https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/newpage_00032.html

161 *The Government of Japan*, "Updates on COVID-19 in Japan", March 31, 2020, <https://www.mhlw.go.jp/content/10900000/000617550.pdf>

162 Headquarters for Novel Coronavirus Disease Control, *The Government of Japan*, "Basic Policies for Novel Coronavirus Disease Control (Tentative Translation)", 2020, <https://www.mhlw.go.jp/content/10200000/000603610.pdf>

163 Ministry of Justice, Japan, "Information Related to New Coronavirus Infection(COVID-19) from Immigration Services Agency (Updated)", *Moj.go.jp*, Updated on April 3, 2020, http://www.moj.go.jp/EN/nyuukokukanri/kouhou/m_nyuukokukanri01_00003.html

164 The Government of Japan, "Act on the Prevention of Infectious Diseases and Medical Care for Patients with Infectious Diseases", *Japaneselawtranslation.go.jp*, October 2, 1998, <http://www.japaneselawtranslation.go.jp/law/detail?id=2830&vm=04&re=02>

165 The Library of Congress, "Japan: Legal Responses to Health Emergencies", *Loc.gov*, 2012, <https://www.loc.gov/law/help/health-emergencies/japan.php>

166 Headquarters for Novel Coronavirus Disease Control, *The Government of Japan*, "Basic Policies for Novel Coronavirus Disease Control (Tentative Translation)", 2020, <https://www.mhlw.go.jp/content/10200000/000603610.pdf>

167 "Coronavirus: Abe Asks All Schools Nationwide to Close", *Nippon.com*, February 27, 2020, <https://www.nippon.com/en/news/ntv20200227004/>

from the Ministry of Education shows that **98.8% of all municipally run elementary schools imposed extraordinary breaks**¹⁶⁸.

The same approach is taken in Hokkaido after 66 cases are confirmed on the island, a major touristic winter destination. On February 28, Hokkaido governor Naomichi Suzuki declares a state of emergency, but without a legal basis – in other words, a request for self-restraint. Despite the absence of legislation, the 5,3 million inhabitants of the island who are asked for their "understanding and cooperation"¹⁶⁹ mostly take it seriously. Of course, the Hokkaido state of emergency is far less strict than Chinese-style lockdown and European-style confinement. **If commercial life is largely brought to standstill and a number of companies implement telework policies, the population is not asked to stay at home except during weekends.** The same approach is taken by Governor Yuriko Koike in Tokyo when she asks the capital's residents on March 25 for their "cooperation"¹⁷⁰ in avoiding outdoor activities.

A political debate on the merits of self-restraint versus the importance of creating a legal framework to impose restrictions has thus been at the core of Japan's response to the virus crisis. This debate reached a conclusion by Mid-March, when the Japanese Diet approved legislation giving the Prime Minister the authorization to declare a state of emergency by amending the 2012 *Act on Special Measures for Pandemic Influenza and New Infectious Diseases Preparedness and Response* (新型インフルエンザ等対策特別措置法)¹⁷¹ to include COVID-19. The 2012 act created an emergency system on the basis of the lessons learned by the Japanese government during the 2009 outbreak of A/H1N1 influenza. **The state of emergency confers to local governments the right to declare lockdowns, and even take over land and buildings to use as temporary medical facilities.** They can also request the sale of good products and medicine as part of the emergency measures. The Act also strengthens the power of the Prime Minister's office, which can issue mandatory orders¹⁷² to governors, hospitals or railway companies. The special measures are activated on April 7. Despite the dramatic step, the state of emergency remains a request to the public, without punishment for people who go out. It is not entirely ruled out that Japan

168 "Almost 99% of Japan's Public Elementary Schools Shut as COVID-19 Spreads | The Japan Times", *The Japan Times*, March 5, 2020, <https://www.japantimes.co.jp/news/2020/03/05/national/99-japan-elementary-schools-close-doors-coronavirus/#.Xo-ZuVMzZE5>

169 "Hokkaido Declares 'state of Emergency' over Coronavirus : The Asahi Shimbun", *The Asahi Shimbun*, 2020, <http://www.asahi.com/ajw/articles/13175177>

170 "Tokyo Gov. Koike Hints at Lockdown, but Will Japan Issue a Strict State of Emergency? - The Mainichi", *The Mainichi*, March 30, 2020, <https://mainichi.jp/english/articles/20200330/p2a/00m/0na/009000c>

171 The Government of Japan, "Act on Special Measures against Pandemic Influenza", *E-gov.go.jp*, March 13, 1980, https://elaws.e-gov.go.jp/search/elawsSearch/elaws_search/lsg0500/detail?lawId=424AC0000000031

172 "News Navigator: What Is Japan's Coronavirus Special Measures Law? - The Mainichi", March 11, 2020, <https://mainichi.jp/english/articles/20200311/p2a/00m/0na/008000c>

could adopt more constraining measures which would require legal amendments. Tokyo governor Yuriko Koike captures the nature of the problem when she states: "I am asking [for restraint] so we do not have to excessively exercise our authority."¹⁷³

Crisis management and a path-dependent response to the test challenge

Another limitation to the early response capacity of the Japanese government is the lack of a centralized epidemic crisis management institution - by comparison with South Korea and Taiwan. **Japan was spared the 2003 SARS and the 2015 MERS crisis and did not have to revamp its system to face an infectious respiratory disease epidemic.** Japan's institutional arrangement creates a path dependence that explains to a large extent the initial governmental approach to tests.

In Japan, the Deputy Chief Cabinet Secretary for Crisis Management is in charge of coordinating the government's response to disease outbreaks. On January 30 a "Novel Coronavirus Response Headquarters" (新型コロナウイルス感染症対策本部) is established as a coordination meeting in the Cabinet Secretariat of the Prime Minister's office, and chaired by Prime Minister Abe¹⁷⁴. **This leads to the decision to activate Japan's disaster medical system, organized around 700 disaster base hospitals and disaster medical assistant teams composed of doctors, nurses and other staff.** But the system is geared towards addressing natural disasters – its last major revamping was in the aftermath of the 1995 Kobe earthquake – and as a result, the medical teams have no prior training for addressing outbreaks of infectious diseases. The Ministry of Health took the executive decision to involve the disaster medical teams¹⁷⁵ in the disembarkation of the quarantined *Diamond Princess* cruise ship, with the ensuing mistakes, as there was no standard procedure to follow to address such a crisis.

Japan's National Institute of Infectious Disease (NIID), a research institution established in 1947 under the Ministry of Health and Welfare, plays a key role in the government's response to the COVID-19 crisis. **The institution has two missions: conducting fundamental and applied research on infectious diseases; and national tests for release and development of antibiotics and vaccines.**

173 Akane Okutsu, Tokyo governor says lockdown in Japan is 'impossible', *Nikkei Asian Review*, April 3, 2020, <https://asia.nikkei.com/Editor-s-Picks/Interview/Tokyo-governor-says-lockdown-in-Japan-is-impossible>

174 Prime Minister's Office, 新型コロナウイルス感染症対策本部の設置について (About the establishment of the Novel Coronavirus Response Headquarters), March 26, 2020, https://www.kantei.go.jp/jp/singi/novel_coronavirus/th_siryou/konkyo.pdf

175 Shinichi Egawa, "Does Japan Need an Equivalent of the CDC to Fight Coronavirus?", *Nikkei Asian Review*, March 17, 2020, <https://asia.nikkei.com/Opinion/Does-Japan-need-an-equivalent-of-the-CDC-to-fight-coronavirus>

Once activated, NIID does what it has been built for: it conducts an "active epidemiological investigation"¹⁷⁶ into people with flu-like or respiratory symptoms, rather than a systematic medical procedure. The aim is to develop NIID's own testing procedures and to get an overview of the risks for Japan. This explains why the Ministry of Health, Labor and Welfare excludes until March 6 the test kits developed by company Roche, that have been used widely in Wuhan, from the public health care¹⁷⁷ insurance program. There are concerns regarding the reliability of the tests, and strict procedures in place before approvals.

Because NIID conducts an epidemiological investigation, each individual test needs to be approved by the Institute. The conditions for approval are set relatively high: a close contact with a person who has tested positive, an examination of an infected patient without protective measures, or a combination of fever, respiratory symptoms and a visit to Hubei or Zhejiang province. As a screen, NIID can rely on a network of 860 newly established coronavirus counseling centers across the nation for evaluation. Therefore, as of March 31, 32497 individuals only had been tested¹⁷⁸. **This restrictive approach creates a major bottleneck¹⁷⁹ and leads to the notion of "test refugees" (検査難民) to designate the individuals who seek testing but are not eligible.** It is also the source of the debate regarding the possibility that clusters of infection may have been left undetected.

Another self-imposed constraint explaining Japan's testing policy is the fact that under the Infectious Diseases Prevention Act, any patient infected with a class II disease is hospitalized. As a result, all patients testing positive, even with no or mild symptoms, will occupy a hospital bed. This legal obligation could create a major crisis in case of an exponential rise of the number of cases. **It has led to a proposal by the Tokyo governor to revise the Act so that patients with no symptoms can recover at home and those with mild ones in designated facilities, such as the Olympics' athletes village.** A similar policy is advocated by the Medicine Nobel Laureate Shinya Yamanaka: he argues that people with no or light symptoms should not be hospitalized or asked to stay at home but cared for in special facilities¹⁸⁰ to be established (無症状や軽症の感染者専用施設の設置を).

176 Nikkei Staff, "Coronavirus: Why Japan Tested so Few People", *Nikkei Asian Review*, March 18, 2020, <https://asia.nikkei.com/Spotlight/Coronavirus/Coronavirus-Why-Japan-chose-to-test-fewer-people>

177 *ibid.*

178 Ministry of Health, Labour and Welfare, Japan, "About Coronavirus Disease 2019 (COVID-19)", *MHLW Website*, April 3, 2019, https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/newpage_00032.html

179 Azby Brown, "COVID-19 Testing in Japan: The Situation and Ramifications", *Safecast*, March 18, 2020, <https://safecast.org/2020/03/covid-19-testing-in-japan-the-situation-and-ramifications/>

180 Shinya Yamanaka, "Five Recommendations to Prevent Novel Coronavirus Transmission(山中伸弥の提言)", *Covid19-yamanaka.com*, March 31, 2020, <https://www.covid19-yamanaka.com/cont6/main.html>

In this legal context, the question of hospital capacity is central to Japan's crisis management challenge. According to Prime Minister Abe, Japan in Mid-March had 12000 beds¹⁸¹ for serious COVID-19 cases and a total of 3000 ventilators. Japan's legal constraints normally prevent general hospitals with no departments specialized in infectious diseases to accept COVID-19 patients, but exceptions will be needed. **And the Japanese government has asked all Japanese prefectures to increase the number of specialized beds¹⁸².**

A mobilized industry

At the same time, Japan displays its usual strength in mobilizing its national industrial structure to combat the pandemic, using a mix of requests and business incentives. Several Japanese companies have engaged in developing tests. **Kurabo Industry is able to manufacture 1000 test kits per day¹⁸³, at a unit cost of 25,000 yen (US\$235), with each kit able to conduct 10 tests. The test detects antibodies in blood, and thus differs from the polymerase chain reaction (PCR) that detects the presence of the virus through its genetic sequence with a nasal swab.** These test kits start becoming available for designated laboratories and medical institutions on March 16.

At the same time, Nagasaki University, Canon Medical Systems and the National Institute of Infectious Diseases are developing a PCR device¹⁸⁴ that can conduct 700 checks per day and deliver the results in 10 minutes. Shimadzu Corporation¹⁸⁵ is developing a PCR variant and has announced plans to produce 50000 kits per month. **As a result of these efforts, the daily test capacity increases from less than 4000 to more than 9000 between mid-February to the end of March.** But this has no impact on the daily number of actual tests, which stay stable under 2000, according to the Ministry of Health¹⁸⁶.

181 Linda Sieg and Rocky Swift, "In Nagoya, Scramble for Hospital Beds Highlights Coronavirus Challenge for Aging Japan", *The Japan Times*, March 17, 2020, <https://www.japantimes.co.jp/news/2020/03/17/national/science-health/nagoya-hospital-beds-coronavirus-aging-japan/>

182 Kyodo News, "24 Prefectures in Japan yet to Add Extra Hospital Beds for Coronavirus", *Kyodo News+*, February 27, 2020, <https://english.kyodonews.net/news/2020/02/e7b7d4002289-24-prefectures-yet-to-add-extra-hospital-beds-for-coronavirus-survey.html>

183 Julian Ryall, "Coronavirus: Japan Company Launches '15-Minute Testing Kit' as Government Ramps up Screening Capacity", *South China Morning Post*, March 17, 2020, <https://www.scmp.com/week-asia/health-environment/article/3075539/coronavirus-japan-company-launches-15-minute-testing>

184 Nikkei Staff, "Team Japan Develops 10-Minute Coronavirus Test", *Nikkei Asian Review*, March 20, 2020, <https://asia.nikkei.com/Spotlight/Coronavirus/Team-Japan-develops-10-minute-coronavirus-test>

185 Magdalena Osumi, "Will Japan's Virus Testing Policy Be Enough to Flatten the Curve?", *The Japan Times*, March 16, 2020, <https://www.japantimes.co.jp/news/2020/03/16/national/japan-coronavirus-policy-flatten-curve/>

186 The Government of Japan, "Updates on COVID-19 in Japan", March 31, 2020, <https://www.mhlw.go.jp/content/10900000/000617550.pdf>

On the treatment side, **Japan Prime Minister Abe expresses support for using the anti-flu Avigan drug that was assessed to be effective by the Chinese Ministry of Science and Technology.** Its producer Fujifilm subsidiary Toyama Chemical, announces an increase in production¹⁸⁷ shortly after the endorsement. As a result of the Japanese government's decision to establish a national supply system¹⁸⁸ for the production of Avigan without reliance on imports, the company Denka restarts production of a key component, three years after having abandoned it as a result of foreign competition.

Japan does not face the mask issues - availability and energy consumed in an ill-informed debate regarding their usefulness - that have plagued several European countries. **There is an ingrained habit of wearing masks as a form of social responsibility, to refrain from infecting other people.** Professor Shinoda Hideaki from Hiroshima University explains by this culture of wearing masks is the "Japanese mystery" that packed commuter trains¹⁸⁹ never proved to become clusters of infection. Japan has an industrial base for the production of masks and has ramped up production to meet Prime Minister Abe's promise of 600 million masks availability per month. For example, Sharp has converted an LCD-display panel factory in Osaka to produce 500000 masks per day¹⁹⁰. All companies have boosted production. The main limitation they face is the necessity to use existing industrial facilities and recruiting of trained workers, as building new ones would take up to one year. For example, producer Unicharm estimates that at full capacity it can produce a maximum of 25 million units per week.

METI has been the key actor behind Japan's national mask policy¹⁹¹. The Ministry created a subsidy scheme to boost local production, first selecting a batch of three companies at the end of February (Kowa and Xins for manufacturing masks, and Hata Industries for manufacturing components). A second batch of eight companies was announced on March 13. Overall, 120 companies have been asked to increase their production. **In 2018, Japan's market absorbed 5,5 billion masks, with**

20% produced domestically and 70% imported from China¹⁹². Domestic production boost considerably reduces reliance on Chinese supply. However, import is not excluded. METI has encouraged imports from China since they resumed during the week of February 17, seeking a gradual increase to reach a weekly import of 20 million units per week in early April. METI has announced that these measures will suffice to reach Prime Minister Abe's supply target. **At the beginning of April, there was still some tension on the supply side, and the Japanese government decided to send two sets of washable and reusable cloth masks**¹⁹³ **to 50 million addresses in Japan, to complement the market of surgical face masks.**

The digital dimension

Unlike South Korea, Singapore, Taiwan and Hong Kong, **Japan makes relatively little use of digital tools. For one thing, there is no quarantine for Japanese nationals as hospitalization is mandatory when testing positive.** But there is still an important digital dimension to Japan's crisis management, and a legal privacy protection issue surrounding it. Prefectural governments have created official accounts on Line¹⁹⁴, Japan's most popular free messaging application, that users can add as friends to enter information so that the application can determine if they need to consult in a designated coronavirus facility, provide guidance and store data. **But this is not a contact tracing approach, as access is not granted to the list of contacts registered in the Line app of the user.** The AI software regularly asks for updates from registered users. In Kanagawa prefecture, 210000 people had registered by the end of March. The Ministry of Health is also using the application Line to run a "National Survey for New Corona Countermeasures"¹⁹⁵ asking the users about different symptoms associated with COVID-19, and their postcode.

One important step was taken by the Japanese government in late March when it requested mobile phone carriers and popular internet platforms such as the GAFAs and Yahoo! Japan to provide anonymized data¹⁹⁶ **to help with an early**

187 Nikkei Staff, "Fujifilm Starts Clinical Trial on Avigan for Coronavirus", *Nikkei Asian Review*, March 31, 2020, <https://asia.nikkei.com/Business/Pharmaceuticals/Fujifilm-starts-clinical-trial-on-Avigan-for-coronavirus>

188 Nikkei Staff, "Japan Aims to Make Avigan for Coronavirus Minus Imported Material", *Nikkei Asian Review*, April 2, 2020, <https://asia.nikkei.com/Spotlight/Coronavirus/Japan-aims-to-make-Avigan-for-coronavirus-minus-imported-material>

189 Hideo Shinoda, "Expert Meeting on the Analysis and Proposal on the 'Japan Model' (「日本モデル」に踏み込んだ専門家会議「分析・提言」, アゴラ 言論プラットフォーム)", April 2, 2020, <http://agora-web.jp/archives/2045194.html>

190 BBC Staff, "Coronavirus: Sharp to Use TV Factory to Make Surgical Masks", *BBC News*, March 2, 2020, <https://www.bbc.com/news/technology-51706629>

191 Ministry of Economy, Trade and Industry, "Current Status of Production and Supply of Face Masks, Antiseptics and Toilet Paper / METI Ministry of Economy, Trade and Industry", *Meti.go.jp*, 2020, <https://www.meti.go.jp/english/covid-19/mask.html>

192 Hiroki Obayashi, "Mask Shortage in Japan to Linger despite Abe's Production Push", *Nikkei Asian Review*, March 4, 2020, <https://asia.nikkei.com/Spotlight/Coronavirus/Mask-shortage-in-Japan-to-linger-despite-Abe-s-production-push>

193 Nikkei Staff, "Coronavirus: Week of Mar. 28 to Apr. 4, Indonesia Now Has More Deaths than South Korea", *Nikkei Asian Review*, April 4, 2020, <https://asia.nikkei.com/Spotlight/Coronavirus/Coronavirus-latest-Japan-to-send-cloth-face-masks-to-every-household>

194 The Mainichi, "19 Japan Prefectures Using Line App to Offer Coronavirus Consultations - The Mainichi", March 31, 2020, <https://mainichi.jp/english/articles/20200331/p2a/00m/0na/012000c>

195 Inbound Ambassador, "LINE App Collects COVID19 Data - Sustainable Inspiration from Japan", April 2020, <http://www.inboundambassador.com/line-app-collects-covid19-data/>

196 The Mainichi, "Concerns over Privacy as Japan Gov't Asks Tech Firms for User Data to Combat Coronavirus - The Mainichi", April 1, 2020, <https://mainichi.jp/english/articles/20200401/p2a/00m/0na/019000c>

identification of clusters. This follows the establishment of a "Cluster Response Section" (クラスター対策班) as part of the February basic policies¹⁹⁷. In practice, once medical facilities test new cases, the cluster team is dispatched to conduct an epidemiological investigation. A data team under the leadership of NIID brings together data analysis experts from Hokkaido University, a contact tracing team from NIID's own staff, and risk management analysts from Tohoku University. **But given Japan's privacy legislation, their investigations rely very much on human cooperation**¹⁹⁸.

Facing the economic cost

Japan's crisis management has been colored by the high stakes linked to the preparation of the 2020 Tokyo Olympics, which were finally postponed to the summer of 2021 by late March. A controversy has arisen, with Former Prime Minister and opposition politician Yukio Hatoyama accusing the government of an "Olympics first"¹⁹⁹ approach with a weak response to the coronavirus crisis in order to project the impression that the city was "taking control of the virus". This accusation however neglects the fact that **the Olympics postponement was a necessary measure given the international spread of the virus, and not only the situation in Tokyo.** The Olympics is about international prestige, but also investment and economic gains, and their postponement sheds the light on the economic cost of the crisis for Japan. The Japan center for Economic Research estimates that Japan, mostly through public companies, has invested between US\$32 and US\$41 billion in infrastructure projects, including the additional hotel capacity. The Olympics Committee estimates that the additional cost²⁰⁰ of delaying the games is 300 billion yen (US\$2.7 billion), a cost that does not include the delayed gains for the Japanese GDP in 2020.

Beyond the Olympics, Japan's answer has to address the global macroeconomic environment, and the impact of weakened domestic activity, especially if the government decides to impose a state of emergency. **A first package of measures is approved in mid-February, with 500 billion yen (US\$4,5 billion)** centered on the tourist and travel industries, with inbound tourism down 58% year-on-year in February, and a

projected revenue loss of US\$2.8 billion for Japanese airlines between February and April²⁰¹. **The government announces a second emergency package of measures of US\$4,2 billion in mid-March**, including subsidies for freelancers and for parents obliged to stay at home as a result of the closures of schools²⁰².

A major economic policy decision is in preparation at the time of writing this article. On April 7, Prime Minister Abe announces a package of support measures for the Japanese economy in the amount of 108 trillion yen, approximately 20 percent of Japan's annual GDP. . The measures envisaged include tax facilities for small and medium enterprises, subsidies to maintain employment, facilities for banks to extend loans, and direct cash payments to eligible households and small and medium size businesses²⁰³. The stimulus is planned to be financed by a massive issuance of supplementary bonds, estimated at US\$165 billion.²⁰⁴

197 Source: website of the Ministry of Health, *Labor and Welfare*, <https://www.mhlw.go.jp/content/10906000/000599837.pdf>

198 Hideo Shinoda, "Expert Meeting on the Analysis and Proposal on the 'Japan Model' (「日本モデル」に踏み込んだ専門家会議「分析・提言」), アゴラ 言論プラットフォーム, April 2, 2020, <http://agora-web.jp/archives/2045194.html>

199 Mari Yamaguchi, "Tokyo's Sudden Rise in Coronavirus Infections After Olympic Delay Sparks Questions", *Time*, March 30, 2020, <https://time.com/5812376/tokyo-olympics-coronavirus-infections-spike/>

200 Nikkei Staff, "Tokyo Olympics Price Tag Skyrockets by \$3bn", *Nikkei Asian Review*, March 25, 2020, <https://asia.nikkei.com/Spotlight/Tokyo-2020-Olympics/Tokyo-Olympics-price-tag-skyrockets-by-3bn>

201 Thisanka Siripala, "Japan Mulling Additional Coronavirus Economic Rescue Measures", *The Diplomat.com*, March 21, 2020, <https://thediplomat.com/2020/03/japan-mulling-additional-coronavirus-economic-rescue-measures/>

202 The Asahi Shimbun, "Abe Announces 2nd Round of Support Steps for Coronavirus : The Asahi Shimbun", 2020, <http://www.asahi.com/ajw/articles/13203373>

203 Rieko Miki, "Japan's \$1tn stimulus offers \$18,000 to mom and pop businesses", *Nikkei Asian Review*, April 7, 2020, <https://asia.nikkei.com/Economy/Japan-s-1tn-stimulus-offers-18-000-to-mom-and-pop-businesses>

204 Tetsushi Kajimoto, "Japan finmin dismisses need for BOJ to underwrite debt over virus stimulus", *Reuters*, April 10, 2020.

Japan: self-restraint, path dependence and the shadow of the Olympics

A LATE AND TARGETED RESPONSE

Lack of pre-existing health emergency measures and a centralized institution for epidemics

Compulsory hospitalization for the patients of infectious diseases

A restrictive testing approach to avoid overwhelming the public health system

A state of emergency declared in the beginning of April in Tokyo and six prefectures, but without strong executive powers to enforce compliance



SELF-RESTRAINT

Calls for self-restraint and cooperation, widely respected by the population (masks, social distancing, closing of educational establishments)

A political debate on the relative merits of self-restraint versus the importance of legally binding measures

The creation of a legal statute for the state of emergency over COVID-19, permitting prefectural governors to call for tighter restraints



INDUSTRIAL MOBILIZATION

A solid industrial base boosted by a subsidy programme (120 companies) for the production of masks on a national scale

Public-private partnership in the development of test kits

Boosting the production of Avigan, a treatment considered promising by a Chinese epidemiological study and supported by the Japanese Prime Minister



LIMITED RELIANCE ON DIGITAL TOOLS

Targeted epidemiological investigations into outbreak clusters with limited use of big data

Use of the application Line: by the Ministry of Health for a survey on the symptoms of COVID-19, by the local governments to facilitate exchanges with potential cases

Towards light contact tracing? requested access to mobile and GAFA data



SINGAPORE

ANTICIPATION, SWAB TESTS AND INTRUSIVE CONTACT TRACING

Singapore illustrates the lessons learned during the 2003 SARS crisis and immediately reactivated. The policies combine digital tracing of patients and their contacts, quarantine, border controls including swab tests upon arrival for individuals showing mild symptoms and up to border closure on March 23. Confinement has been avoided so far.

Key Policies

1

Centralization of executive decisions through the Ministry of Health (MOH); use of pre-existing institutions for infectious disease control (the National Centre for Infectious Diseases and the National Public Health Laboratory) and quarantine facilities that were created after the 2003 SARS outbreak.

2

Responses start 21 days BEFORE the first case is detected: the Ministry of Health requests (January 2) physicians to identify patients with symptoms of pneumonia and a travel history to Wuhan; regular temperature checks are instituted for incoming passengers from Wuhan.

3

Delay between the first case and strongest measures in place: 4 to 22 days.

4

Upon first case detected, public health response shifts from "preparedness" to "enhanced preparedness". Measures include contact tracing and quarantine for close contacts, entry restrictions for travelers, and reactivation of Public Health Preparedness Clinics (PHPCs).

5

Development of more fine-tuned contact tracing technologies to overhaul preparedness for communicable diseases.

6

Strict enforcement. Violation of quarantine and dissemination of false information leads to a Singapore US\$6,900 fine or a 6-month jail sentence.

7

Compulsory screening for all incoming passengers. Individuals with symptoms, local or foreign, receive a swab testing.

8

Public distribution of 4 FFP2 masks per household per week, drawing from a stockpile of masks post-SARS outbreak.

9

Entry ban on foreigners adjusted over time: January 23 to passengers from Wuhan, for all short-term visitors from March 22 or permanent residents and long-term pass holders, a Stay Home Notice spanning 14 days is issued.

10

Implementation of "Circuit Breaker" Measures: Upon a fresh wave of cases, the government implements a stricter lockdown from April 3 onwards, spanning a month, closing all businesses and schools except essential services and economic sectors.

residents and long-term pass holders returning from China; introduction of a government stimulus package to boost affected economic sectors.

- **March 18** – Introduction of a tier-system to classify passengers based on risk level, foreigners banned from entering Singapore.
- **March 21** – Singapore residents returning from abroad and short-term visitors have to observe a 14-day stay-home notice and be monitored by the government through their GPS location.
- **March 22** – Short-term visitors no longer allowed to enter or transit through Singapore. Work pass holders are only allowed to return if they work in essential service sectors such as healthcare and transport.
- **April 3** – Partial lockdown: announcement of one-month closure of nonessential businesses, schools and universities

Analysis

As of mid-April 2020, Singapore had managed to contain the COVID-19 contagion by anticipating its crisis potential from late December 2019. The country is now dealing with a second wave of cases, mostly among Singaporean citizens returning home, and leading to the unprecedented border closure to almost all short-term foreign visitors. On April 9 Singapore had 1,910 cases and 6 deaths, according to Ministry of Health data²⁰⁵. The country experienced a second wave of infection since the end of March, as a result of Singaporean residents flying back home. Of the 54 second wave cases confirmed on March 23, 48 had been imported - a testimony to the efficiency of the country's border control, the practice of swab tests on arrival, but also the efficiency of the active measures taken to prevent the eruption of local clusters inside Singapore.

Overall, Singapore's relative success in containment so far can be attributed to the steps taken by the government to improve its public health infrastructure after the 2003 SARS outbreak, which caused more than 30 deaths²⁰⁶. **The SARS outbreak led to the creation of the National Centre for Infectious Disease by the Ministry of Health which opened in 2019²⁰⁷, and is equipped with 330 isolation beds.** In addition, Singapore had put in place national quarantine facilities prior to the COVID-19 outbreak.

205 Reuters, "Singapore Reports 287 New Coronavirus Cases in Biggest Daily Jump", April 9, 2020, <https://www.reuters.com/article/us-health-coronavirus-singapore-idUSKCN21R1VP>

206 World Health Organisation, "WHO | Summary of Probable SARS Cases with Onset of Illness from 1 November 2002 to 31 July 2003", WHO, December 31, 2003, https://www.who.int/csr/sars/country/table2004_04_21/en/

207 Rei Kurohi, "New Centre to Bolster Singapore's Infectious Disease Management", The Straits Times, January 16, 2019, <https://www.straitstimes.com/singapore/health/new-centre-to-bolster-singapores-infectious-disease-management>

Timeline

- **January 2** – Singaporean Ministry of Health requires physicians to identify patients with pneumonia symptoms and a history of visits to Wuhan; compulsory temperature checks put in place.
- **January 23** – first case identified, a tourist from Wuhan. Public health measures shift from "preparedness" to "enhanced preparedness". Measures instituted: contact tracing, quarantine of close contacts, entry restrictions to people who traveled to China.
- **January 27** – Singaporeans warned against nonessential travel to Wuhan, temperature screening expanded at Changi airport. 14-day leave imposed on people working with vulnerable populations. Teaching activities moved online.
- **January 29** – Travel between Hubei and Singapore suspended. Hospital bills to be covered by the MOH for all suspected and confirmed patients.
- **February 1** – All visitors with recent travel history to mainland China within the previous 14 days are denied entry and transit through Singapore.
- **February 14** – Reactivation of Public Health Preparedness Clinics (PHPCs)
- **February 18** – Stay-Home notices (spanning 14 days) issued for all Singapore

This preparedness is accompanied by measures taken on the news that a viral new pneumonia was showing signs of spreading in Wuhan²⁰⁸ and Hubei province. In Singapore, temperature screening of incoming passengers from Wuhan starts in early January, and a complete ban on inbound flights from Wuhan is imposed on January 23, 2020. From the beginning of February, Singapore has imposed increasingly strict controls on incoming travel, broadening it to the various areas affected severely by COVID-19, and extended in mid-March to all foreigners.

A feature of Singapore's containment strategy is the swab testing of incoming passengers showing mild symptoms. Since mid-January, the government has worked to expand screening rooms²⁰⁹ at various checkpoints. The test kits²¹⁰ with a 99% success rate²¹¹ used at the checkpoints are developed in February by The Home Team Science and Technology Agency (HTX), and a Singaporean company, Veredus, to facilitate in vitro diagnosis. Tests are now conducted on the basis of a tiered system of controls²¹² classifying passengers according to risk.

On February 7, the government raised its Disease Outbreak Response System Condition (DORSCON) level to "orange"- instituting multiple precautionary measures for large-scale events, the workplace, and at the individual level, such as regular checks for fever and respiratory symptoms.

The Singaporean government also puts the emphasis on sharper contact-tracing tools, the creation of more laboratories, and higher investment levels in biomedical science and clinical research.

As other East Asian countries, Singapore emphasises the production, the availability and the wearing of masks. On February 4, with the help of the Singapore Armed Forces (SAF) the government undertakes a massive operation of distributing 4 FFP2 masks per household²¹³ per week from the government-run stockpile of Personal Protective

Equipment (PPEs) and masks. An online²¹⁴ program provides information on where and when citizens can collect these. Singapore quickly faces a shortage of masks, due to export restrictions imposed by neighboring countries and having previously no local production. It is replenishing the stockpile through collaboration²¹⁵ with local private manufacturers such as Wellchem Pharmaceuticals²¹⁶. In addition, 1.6 million masks unclaimed by Singaporean households have been returned to the government. The Ministry of Trade and Industry, which manages the production and storage of masks, does not disclose the size of the country's stockpile²¹⁷. Tackling a related issue, the government prevents price-gouging by issuing warnings to companies and ordering incoming travelers to declare their masks and PPEs²¹⁸.

Another major characteristic of Singapore's crisis management is extremely intrusive contact tracing and cluster identification. Health professionals on the ground are trained to question those who test positive in order to identify potential clusters. They can use a new serological test developed by the Duke-NUS Medical School²¹⁹. In addition, the Ministry of Health works in tandem with hotels and companies, going as far as to consult CCTV footage to identify and track cases²²⁰. The Singaporean government has developed the app Tracetgether, **which records through Bluetooth other users who have been in close proximity to a smartphone user. After that user is found to be positive, individuals at risk are contacted directly**²²¹.

Proactive testing and contact tracing are accompanied by strict quarantine policies. The quarantine measures adopted by Singapore range from government-mandated leave of absences to Stay-Home Notices (SHNs)²²², first violations²²³ of which are

214 *The Government of Singapore*, "Mask Go Where", <https://www.maskgowhere.gov.sg/>

215 Joyce Lim, "Singapore's Stockpile of Masks Replenished from Many Sources", *The Straits Times*, March 8, 2020, <https://www.straitstimes.com/singapore/health/singapores-stockpile-of-masks-replenished-from-many-sources>

216 Wellchem Pharmaceuticals Official Website, <http://www.wellchem.com.sg/>

217 "Mask Stockpile Replenished | The Star Online", www.thestar.com.my, March 9, 2020, <https://www.thestar.com.my/news/regional/2020/03/09/mask-stockpile-replenished>

218 Rachel Genevieve Chia, "Shipping Masks and Thermometers to Singapore? You Now Have to Declare Them - Here's How to Do It, Business Insider - Business Insider Singapore", www.businessinsider.sg, February 17, 2020, <https://www.businessinsider.sg/buying-masks-and-thermometers-from-overseas-you-now-have-to-declare-shipments-heres-how-to-do-it>

219 "Duke-NUS Used COVID-19 Antibody Tests to Establish Link between Church Clusters in a World-First", *Channel News Asia*, February 25, 2020, <https://www.channelnewsasia.com/news/singapore/covid19-coronavirus-duke-nus-antibody-tests-12469184>

220 Salma Khalik, "Coronavirus: How Contact Tracers Track down the People at Risk of Infection", *The Straits Times*, February 8, 2020, <https://www.straitstimes.com/singapore/health/how-contact-tracers-track-down-the-people-at-risk-of-infection>

221 Jonathan Swan and Sam Baker, "Singapore's Big Brother Fights against Coronavirus", *Axios*, March 23, 2020, <https://www.axios.com/singapore-coronavirus-big-brother-bd7cec2b-eb47-4b49-a337-f4f4ecff5712.html>

222 Ministry of Health Singapore, "MOH | Implementation of New Stay-Home Notice", [Moh.gov.sg](http://moh.gov.sg), February 17, 2020, <https://www.moh.gov.sg/news-highlights/details/implementation-of-new-stay-home-notice>

223 Salma Khalik, "Wuhan Virus: \$100 a Day for Those Quarantined; Severe Penalties for People Who Flout Quarantine Orders", *The Straits Times*, January 28, 2020, <https://www.straitstimes.com/singapore/health/100-a-day-for-those-quarantined-severe-penalties-for-people-who-flout-quarantine>

208 *Government of Singapore*, "How Is Singapore Limiting the Spread of Coronavirus Disease 2019?", www.gov.sg, January 29, 2020, <https://www.gov.sg/article/how-is-singapore-limiting-the-spread-of-covid-19>

209 Yuen Shin, "Coronavirus: Travellers with Symptoms Face Quick Test on Arrival in Singapore", *The Straits Times*, March 6, 2020, <https://www.straitstimes.com/singapore/quick-test-for-travellers-with-symptoms-on-arrival-in-spore>

210 Science and Technology Agency, Singapore, "Home Team Science and Technology", www.htx.gov.sg, accessed April 6, 2020, <https://www.htx.gov.sg/news/featured-news-securing-singapore>

211 Yuen Shin, "Coronavirus: Travellers with Symptoms Face Quick Test on Arrival in Singapore", *The Straits Times*, March 6, 2020, <https://www.straitstimes.com/singapore/quick-test-for-travellers-with-symptoms-on-arrival-in-spore>

212 Government of Singapore, "Transcript of Remarks Made by Minister Lawrence Wong at COVID-19 Press Conference", www.sgpc.gov.sg, March 18, 2020, https://www.sgpc.gov.sg/sgpcmedia/media_releases/mnd/transcript/T-20200318-1/attachment/Transcript%20of%20Remarks%20by%20Minister%20Lawrence%20Wong%20at%20COVID-19%20Press%20Conference%20on%2018%20March%202020.pdf

213 Lim Min Zhang, "Wuhan Virus: SAF Working Round the Clock to Ensure 5.2m Masks to Be given out Are Packed by Saturday", *The Straits Times*, January 31, 2020, <https://www.straitstimes.com/singapore/wuhan-virus-saf-working-round-the-clock-to-ensure-52m-masks-to-be-given-out-are-packed-by>

either fined heavily (US\$6,900) or given a six-month jail sentence. The Stay-Home notices²²⁴, which have been mandated for all incoming Singaporean residents from 21 March, come with a requirement to share GPS location with the government, thus allowing real-time tracing. In terms of advocating social distancing, Singapore has practiced "leading by example". Many Singaporean MPs have exhibited social distancing during walkabouts²²⁵.

Due to considerable panic following the first wave of cases, Singaporeans begin to empty supermarket shelves. To quell fears, Prime Minister Lee Hsien Loong delivers on February 8 an address in the four official languages, explaining the situation directly to the citizens, and this has proven effective so far²²⁶. Moreover, purchase limits (ranging from US\$ 20 to 35) are imposed on supermarket chains, to prevent overbuying²²⁷. These limits are also a response to Malaysia, a crucial food supplier of Singapore, entering partial lockdown and closing its borders. On March 17, the Minister for Trade and Industry announced plans for stockpiling, diversification of overseas sources, and local production. In response to the expansion in the number of cases, the Singapore government has taken extra steps in April to maintain international supply chains for perishable goods, particularly supermarket chains²²⁸.

In the second half of March, a second wave of contagion occurs in Singapore, with 80% of the confirmed cases imported. As a result, from March 22, the 14-day stay-home notice system has been expanded to all permanent residents and long-term pass holders returning from any part of the world. Short-term visitors from all over the world are barred from entry or transit. The measure is also described as allowing the conservation of resources and the direction of medical focus on Singaporeans.

As a result of quick action, strict border control with swab tests on arrival and quarantine, proactive contact tracing, Singapore was initially able to stave off a general lockdown²²⁹. This extreme measure was however not entirely ruled out. Following a fresh wave of cases, Singapore has instituted a one-month partial lockdown from April 3 onwards, known as a 'circuit-breaker' measure. Most businesses and workplaces, except for essential service are closed, having shifted to telework, and schools shift entirely to a home-based learning system. In the first wave of contagion, a majority of cases so far were young people²³⁰, indicating that the elderly have either self-isolated or are protected by their kin. By way of a contingency plan, however, the government has introduced a stimulus package²³¹ of US\$ 2.6 billion on February 18 to assist the inevitable economic slowdown, with a second plan introduced on March 26, totaling US\$ 11.8 billion²³². A third economic stimulus plan is announced by the government on April 6, worth US\$ 3.6 billion, in response to the continuing outbreak²³³.

224 Kevin Kwang, "From Mar 21, All Singapore Residents Returning from Abroad and Short-Term Visitors Will Have to Observe a 14-Day Stay-Home Notice. What Does It Mean and What Happens if You Don't Comply?", *Channel News Asia*, March 16, 2020, <https://www.channelnewsasia.com/news/singapore/covid-19-faq-stay-home-notice-what-you-need-to-know-coronavirus-12542892>

225 Brandon Tanoto, "COVID-19: MPs Apply Social Distancing Measures during Walkabouts | Video", *Channel News Asia*, March 15, 2020, <https://www.channelnewsasia.com/news/singapore/covid-19-mps-apply-social-distancing-measures-during-walkabouts-12540496>

226 Rachel Phua, "Return of 'sense of Normalcy' Observed at Supermarkets and Shops, Say Ministers", *Channel News Asia*, February 9, 2020, <https://www.channelnewsasia.com/news/singapore/ntuc-fairprice-wuhan-virus-coronavirus-supermarket-shops-12412592>

227 Ang Hwee Min, "Purchase Limits Imposed at FairPrice Supermarkets on Vegetables, Rice, Toilet Paper and Other Products", *Channel News Asia*, March 17, 2020, <https://www.channelnewsasia.com/news/singapore/ntuc-fairprice-purchase-limits-toilet-paper-rice-eggs-12545610>

228 Ang Hwee Min, "How F&B Outlets, Markets and Food Suppliers Will Operate amid COVID-19 'circuit Breaker' Measures", *CNA*, April 3, 2020, <https://www.channelnewsasia.com/news/singapore/covid19-how-food-establishments-operate-circuit-breaker-measures-12607170>

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230 Ministry of Health, Singapore", MOH | Updates on COVID-19 (Coronavirus Disease 2019) Local Situation", *moh.gov.sg*, March 2020, <https://www.moh.gov.sg/covid-19>

231 Yen Nee Lee, "The Coronavirus Outbreak Presents a 'twin Crisis' for All Countries, Says Singapore Minister", *CNBC*, March 18, 2020, <https://www.cnbc.com/2020/03/18/coronavirus-singapore-minister-on-outbreak-and-its-economic-impact.html>

232 Faris Mokhtar and Michelle Jamrisko, "Bloomberg - Singapore Boosts Virus Package to 11% of GDP, Tap Reserves", *Bloomberg.com*, April 6, 2020, <https://www.bloomberg.com/news/articles/2020-03-26/singapore-boosts-virus-package-to-11-of-gdp-draws-on-reserves>

233 Yen Nee Lee, "Singapore Announces Third Stimulus Package Worth \$3.6 Billion to Soften Coronavirus Impact", *CNBC*, April 6, 2020, <https://www.cnbc.com/2020/04/06/coronavirus-singapore-plans-third-stimulus-package-to-support-economy.html>

Singapore: anticipation, swab tests and intrusive contact tracing

A QUICK RESPONSE

Responses formulated on **January 2**, 21 days before the detection of the first case

First case detected on January 23.
Quarantines and entry

restrictions implemented the same day

National Center for Infectious Disease created after SARS is equipped with isolation chambers and national quarantine facilities

Partial confinement imposed from the beginning of April in the wake of a new wave of cases



STRICT MONITORING UPON ARRIVAL

Mandatory screening of **all passengers** on arrival (**swab tests**), even if only showing **mild symptoms**

Gradual strengthening of **entry restrictions** and a **14-day quarantine policy** for all returning citizens and permanent residents

Entry restrictions extended to affected areas, **then to all foreigners (mid-March)**



A STRATEGY FOR MASKS

Building of a stockpile after SARS

A shortage risk prevented by **collaboration with the local private sector**

Weekly government distribution of 4 FFP2 masks per household, with a **website** providing availability and collection information

Prioritization of stocks



ACTIVE CONTACT TRACING

The government application, **TraceTogether**, records contact history of the smartphone user via Bluetooth. Persons having been in contact with confirmed cases are identified and **informed through SMS**

Examining **video-surveillance images** (helped by hotels, businesses, etc.) for identifying interactions

Requirement for people under quarantine to communicate GPS locations to the government



SOUTH KOREA

MASS-TESTING, TARGETED INVESTIGATIONS AND THE TRANSPARENCY ISSUE

The Republic of Korea is held as a model in Europe for systematically testing risky individuals for COVID-19 and making free-testing widely available across the country. Like Taiwan and Singapore, South Korea has reacted immediately to the early signs of crisis in Wuhan, and has instituted strict digital monitoring of individuals placed in quarantine. But Korea has had to face a major localized cluster in the city of Daegu, requiring a massive government investigation, and provides an interesting case for weighing privacy in times of pandemic.

Key Policies

1

A quick reaction to the Wuhan outbreak, with screening, tracing and monitoring of incoming travelers as early as the beginning of January

2

Mass-testing for free, including at drive-through test centers and for international travelers arriving in Korea

3

A fast-track procedure approval of testing kits for contagion outbreaks

4

Intense and compulsory contact tracing

5

A government epidemiological investigation of the Shincheonji cult, at the origin of a large contagion cluster in the city of Daegu

6

Strict digital monitoring of quarantines, with fines and prison terms to deter violators

7

Central government action against the leaking of the identity of infected patients to the public

8

Entry bans limited to Chinese nationals with a passport issued from Hubei province and anyone who has visited Hubei province within the past 14 days

9

Free-of-charge medical care for all confirmed patients regardless of their nationality

Timeline

- ▶ **January 3** – First enhanced quarantine and screening measures for travelers from Wuhan.
- ▶ **January 20** – First confirmed case (a Chinese woman) of COVID-19 in South Korea
- ▶ **End of January** – Call among the population for a ban on all Chinese travelers, with a petition signed by around 540,000 South Korean citizens on the Presidential Blue House website
- ▶ **January 31** – 700 South Korean nationals evacuated from Wuhan on two chartered flight and sent to two isolation facilities located in Asan and Jincheon
- ▶ **February 4** – A COVID-19 testing kit, developed by Korean company Kogene Biotech, gets KCDC approval; start of production
- ▶ **February 12** – A third chartered flight sent to evacuate 147 people from Wuhan, including South Korean citizens and their Chinese family members
- ▶ **February 18** – Middle-aged woman ("Patient 31") is tested positive to COVID-19 and believed to have spread the virus to hundreds of people in the city of Daegu
- ▶ **February 19** – The central government (Ministry of Health and Welfare and KCDC)

dispatches a special task force in Daegu to implement disease control measures with the local government.

- ▶ **February 21** – In relation with "Patient 31", the number of infections jumps to 204 (multiplied by 6 in 3 days), with 16,196 people already tested, mostly in Daegu.
- ▶ **February 22** – KCDC sends a rapid response team to Daegu, conducting epidemiological investigation and environmental disinfection. The Daegu Shincheonji members (circa 10,000) are monitored and tested, their travel history is investigated.
- ▶ **February 23** – Government raises the alert level to "Red" (highest level)
- ▶ **February 25** – KCDC acquires the list of all 210,000 Shincheonji members and monitors them via phone to check any symptom
- ▶ **February 26** – Government opens "drive-through" testing centers, gas station-like facilities where people can be tested while still sitting in their car
- ▶ **February 29** – Government says it supplied nearly 4.5 million masks via public organizations. Among them, 1.54 million went to the cluster cities of Daegu and Cheongdo. KCDC recommends "social distancing"
- ▶ **March 1** – Seoul's city government files criminal complaint with the Seoul Central District Prosecutors' Office against leader of the Shincheonji cult on charges of murder and disease control act violations.
- ▶ **March 2** – Korea Post started distributing 650,000 masks through its 1,406 post offices. Each customer can buy up to five masks at a time at a price of US\$ 0.75 per mask
- ▶ **March 3** – Government creates "Life treatment centers" (생활치료센터), in order to move virus patients with mild symptoms in every city
- ▶ **March 5** – Prime Minister Chung Sye-kyun announces Republic of Korea will ban mask exports and fairly distribute face masks to people
- ▶ **March 9** – President Moon Jae-in states that South Korea may enter a "phase of stability"
- ▶ **March 15** – Moon Jae-in declares Daegu as a special disaster zone, first time for reasons unrelated to natural disasters
- ▶ **March 19** – Extension of "special entry procedure" to all inbound travelers (temperature check, health declaration, travel records and contact information)
- ▶ **March 22** – Government decides to test all incoming travelers from Europe for the COVID-19 at the airport. Start of the "Social Distanciation Campaign" (March 22–April 7): Prime Minister Chung Sye-kyun strongly calls for suspending operations in facilities such as religious gatherings, indoor sports and entertainment facilities.
- ▶ **March 26** – Government launches new 10-min digital contact tracing program, using big data
- ▶ **April 1** – All inbound travelers (Korean nationals as well as foreigners) now obligated to undergo a 14-days quarantine upon arrival
- ▶ **April 5** – Fine for violating self-quarantine raised to US\$ 8,257

- ▶ **April 13** – Government invalidates short-term visas and temporarily halt visa waiver programs for countries that bar entry to Koreans

Analysis

The Republic of Korea (ROK) is now held out by the WHO as a policy response example to the COVID-19 crisis. The government has so far contained the virus outbreak without confinement or travel ban, despite having a high number of confirmed cases - 10,450 by April 10. The ROK has developed a policy of mass-testing, with a testing capacity of 20,000 tests per day. As of April 10, a total of 503,051 tests were performed²³⁴. Korea's first phase of response is very similar to Singapore and Taiwan, with a rapid government reaction in anticipation of the crisis and building on procedures developed after the 2015 Middle East Respiratory Syndrome (MERS) outbreak, which caused 38 deaths in Korea. However, the ROK has had to face a major cluster in the city of Daegu linked to the covert activities of the religious cult Shincheonji. This has precipitated the government's choice of a mass-testing policy.

Immediately after credible reports of severe contagious pneumonia cases **in Wuhan, Korean health authorities start strengthening surveillance measures. An emergency team is set up by the Korea Centers for Disease Control and Prevention (KCDC, 질병관리본부) to study the disease.** On January 3, enhanced screening measures, including quarantine, are adopted for travelers coming from Wuhan. To prepare for the Lunar New Year inflow of Chinese visitors, the KCDC also instructs health facilities to enhance infection prevention and control practices²³⁵.

The emergence of suspected and confirmed cases in Korea in January and the absence of travel restrictions lead to public outrage. A petition on the Presidential Blue House website calling for a ban on all Chinese travelers receives 540,000 signatures²³⁶. However, public pressure does not change the prevention centered Korean strategy, enforced through screening, local quarantine and self-quarantine recommendations. KCDC conducts epidemiological investigation and contact tracing

234 코로나바이러스감염증-19(COVID-19) [Coronavirus Infection-19 (COVID-19)]. <http://ncov.mohw.go.kr/> (consulted April 10, 2020)

235 KCDC, "KCDC strives health facilities to enhance prevention and control practices on 2019-nCoV infection", January 22, 2020. https://www.cdc.go.kr/board/board.es?mid=a30402000000&bid=0030&act=view&list_no=365844&tag=&nPage=14#

236 Hyonhee Shin, Sangmi Cha, "South Koreans call in petition for Chinese to be barred over virus", *Reuters*, January 28, 2020. <https://www.reuters.com/article/us-china-health-reaction-southkorea/south-koreans-call-in-petition-for-chinese-to-be-barrd-over-virus-idUSKBN1ZR0QJ>

for confirmed cases, as well as for travelers coming directly from Wuhan. The ROK is among countries having conducted an evacuation from Wuhan²³⁷. On January 31, two chartered flights evacuate around 700 South Korean nationals from Wuhan and send them in designated facilities for 14-days isolation²³⁸.

This early response fails to prevent a sudden increase of the contagion in mid-February. A "super-spreader", otherwise known as Korea's "Patient 31", creates a major cluster in the city of Daegu. As of March 24, **71.28%** of Korean confirmed COVID-19 cases are located in the Daegu area²³⁹. A member of a religious cult called **Shincheonji Church of Jesus**, the middle-aged woman came into contact with more than 1,100 people during a religious gathering in the southeastern city of **Daegu**, a city of 2.5 million inhabitants. She refused a coronavirus test 3 times, under the pretext she had not recently traveled to China. A Ministry of Justice investigation revealed that the sect had a secret office in Wuhan and 42 members traveled from there to Korea in the previous 6 months; a criminal investigation is launched²⁴⁰. By early March, the Daegu cluster results in multiplication of cases in Korea by 100 times. The extremely fast number increase brings a high number of patients with mild symptoms in hospitals, while at the same time, on February 28, 1,800 patients are at home waiting for hospital beds and two of them die in the process²⁴¹.

A specificity of Korea's crisis management is the localized outbreak management in and around Daegu, which requires a strategic adjustment. The Ministry of Health and Welfare and KCDC dispatches a special task force in Daegu to implement specific control measures jointly with the local government. In practice, KCDC describes the new approach as a mix of both **"containment and mitigation"**. From February 24, in the infected municipalities of Daegu and Cheongdo, the focus is on isolating and treating potential cases rather than tracing. In other regions, *"epidemiological investigation and environmental disinfection are conducted to find Shincheonji-related cases as well as to prevent sporadic community spread"*²⁴². Even though tracing is not prioritized in

237 KCDC, "Urges cooperation in preventing the spread of 2019-nCoV in community", January 28, 2020. https://www.cdc.go.kr/board/board.es?mid=a30402000000&bid=0030&act=view&list_no=365888&tag=&nPage=13

238 Daewoung Kim, Hyonhee Shin, "South Korean evacuees from Wuhan welcomed to quarantine centers", *Reuters*, January 31, 2020. <https://www.reuters.com/article/us-china-health-southkorea/south-korean-evacuees-from-wuhan-welcomed-to-quarantine-centers-idUSKBN1ZT39V>

239 코로나바이러스감염증-19(COVID-19) [Coronavirus Infection-19 (COVID-19)]. http://ncov.mohw.go.kr (consulted March 24, 2020)

240 "42 Shincheonji followers came to S. Korea from virus-hit Wuhan over 8 months: gov't", *Yonhap News Agency*, February 29, 2020. <https://en.yna.co.kr/view/AEN20200229004000315>

241 Antony Kuhn, "How A South Korean City Is Changing Tactics To Tamp Down Its COVID-19 Surge", *NPR*, March 10, 2020. <https://www.npr.org/sections/goatsandsoda/2020/03/10/812865169/how-a-south-korean-city-is-changing-tactics-to-tamp-down-its-covid-19-surge>

242 KCDC, "The updates on COVID-19 in Korea as of 24 February", 2020. https://www.cdc.go.kr/board/board.es?mid=a30402000000&bid=0030&act=view&list_no=366328&tag=&nPage=7

the biggest cluster, the government does not let go of the tracing strategy to identify cases outside of the region.

Indeed, the Korean government engages in a targeted nation-wide testing campaign of Shincheonji cult members²⁴³. On February 25, KCDC acquires the **full list of the 210,000 Shincheonji members**, present in 12 branches across the country, and starts testing and tracing members. This targeted testing campaign implies a coordination effort between the national and local levels. Local governments are given lists of Shincheonji members in their areas, and contact them via phone one by one²⁴⁴. On March 9, KCDC declares the testing of the 10,000 Daegu Shincheonji members is almost complete.

After another cluster is discovered on March 16 in a church in Seongnam, near Seoul, the government launches on March 22 a two weeks 'social distancing campaign' ('사회적 거리두기' 캠페인) to incite religious, sport and entertainment activities to shut down, and the Seoul mayor decides the closure of several churches. The Seongnam church had not respected previous government recommendation to avoid religious gatherings, resulting in an infection of at least 51 people. According to a study from the KCDC published on March 22, people in their teens and 20s represents 34% of total infection in Korea. It could be because, like in Singapore, young people respect less social distancing than older generations²⁴⁵.

Beyond Daegu and the Shincheonji affair, the ROK's crisis management relies on a campaign of mass testing. From the experience of mismanagement of the 2015 MERS outbreak, KCDC creates a fast-track approval process of testing kits for immediate production in case of a virus outbreak. Before that, the private sector, representing 90% of Korean test production, needed a lengthy authorization process to launch new tests²⁴⁶.

Thanks to this new system, on February 4, only two weeks after China releases the genetic sequence of COVID-19, a virus testing kit developed by Korean company Kogene Biotech Co Ltd is granted an emergency use authorization by the Ministry of Food and Drug Safety²⁴⁷. The test kit, which gets results in six hours, becomes

available in 50 clinics just three days after its official approval²⁴⁸. Health authorities are thus able to test hundreds of thousands of citizens for the virus in the space of a few days. As of late March, five Korean companies were producing test kits and Korea had started exporting tests, including to Europe²⁴⁹.

The COVID-19 testing campaign is a mix of **free testing and intense compulsory tracing**. Testing is free of charge for suspected cases (i.e. in the presence of symptoms or of a link to a confirmed case) since January, including for foreign nationals. Government covers hospitalisation costs, treatment and provides compensation for people living in self-quarantine. After the Daegu outbreak, the Korean government creates "Drive-through Test Centers", where people can be tested for free and on demand inside their own car. Results are later sent by text message. The aim of those structures is to limit contact between patients and medical workers, as well as gaining time on the testing process, since it is possible to test 10 persons an hour. Within one month, a total of 40 drive-through facilities is active nationwide²⁵⁰. In addition, to face the wave of incoming infected travelers returning or visiting Korea after mid-March, the government decides to test for COVID-19 all incoming travelers from Europe at the airport on March 22. In practice, passengers arriving from EU countries, if tested positive, are transferred to a hospital and treated immediately. Passengers testing negative still need to undergo a period of quarantine; Korean nationals must undergo a second examination within three days after returning home²⁵¹.

The Korean government also conducts intrusive contact tracing to track known and suspected cases alike, **without the need of individual's approval**. At first, KCDC uses mostly **mobile phone records** as well as **CCTV camera footage** to determine who has come in contact with a confirmed carrier. The newspaper Chosun Ilbo describes the tracing process as: 1/ identifying people who came within a 2-m distance of a confirmed case a day before the person started displaying symptoms, and 2/ narrowing down depending of the conditions of contact (if the person was wearing a mask, sneezed, etc)²⁵². Suspected cases are then put in self-quarantine for 14 days, regardless of if they are displaying symptoms or not (testing is done if symptoms appear, except for "high risk groups" related to major clusters). **Credit card records**

243 KCDC, "The updates on COVID-19 in Korea as of 22 February", 2020. https://www.cdc.go.kr/board/board.es?mid=a30402000000&bid=0030&act=view&list_no=366299&tag=&nPage=8

244 Sung-Eun Lee et al., "Hospital beds sought for infected people from Daegu", *Korea JoongAng Daily*, March 4, 2020. <http://koreajoongangdaily.joins.com/news/article/Article.aspx?aid=3074539>

245 Sang-woo Heo, Chul-joong Kim, "Biggest Group of COVID-19 Patients in Korea Are Young People", *Chosun Ilbo*, March 23, 2020. http://english.chosun.com/site/data/html_dir/2020/03/23/2020032302779.html

246 Anthony Kuhn, "South Korea's Drive-Through Testing For Coronavirus Is Fast — And Free", NPR, March 13, 2020. <https://www.npr.org/sections/goatsandsoda/2020/03/13/815441078/south-koreas-drive-through-testing-for-coronavirus-is-fast-and-free>

247 Chad Therhune et al., "Special Report: How Korea trounced U.S. in race to test people for coronavirus", *Reuters*, March 18, 2020. <https://www.reuters.com/article/us-health-coronavirus-testing-specialrep/special-report-how-korea-trounced-u-s-in-race-to-test-people-for-coronavirus-idUSKBN2153BW>

248 "(LEAD) Novel coronavirus test kits to be available at hospitals this week", *Yonhap News Agency*, February 4, 2020. <https://en.yna.co.kr/view/AEN20200204005251320>

249 AFP, "Coronavirus Test Kits Pour off South Korean Production Line." *Msn.com*, March 27, 2020.

<https://www.msn.com/en-us/news/world/coronavirus-test-kits-pour-off-south-korean-production-line/ar-BB11N3ns>

250 "Coronavirus: Can S. Korea be a model for virus-hit countries?", *The Korea Times*, March 12, 2020. http://www.koreatimes.co.kr/www/nation/2020/03/113_286096.html

251 "Immigration Restrictions - Korean Air." *Koreanair.com*, 2020 (consulted March 26). https://www.koreanair.com/global/fr/2020_02_TSA_detail.html

252 "Credit Card Use Helps Stem Coronavirus", *Chosun Ilbo*, March 3, 2020. http://english.chosun.com/site/data/html_dir/2020/03/03/2020030300633.html

are also used to improve tracing, as these records are more precise than phone records (roughly 80% of transactions in Korea are now made with credit cards). This tracing is done in collaboration with credit card companies: the KCDC sends information about a case with the date of first symptoms, and the companies send back data. **According to Korean law, this kind of information is usually given upon court approval or personal consent, but in case of a national crisis, the KCDC is able to skip this step.** Article 76-2 from the **"Infectious Disease Control and Prevention Act"** states that, if necessary to prevent infectious diseases and block the spread of infection, the Minister of Health and Welfare and the KCDC can request administrative agencies, local governments, public institutions, medical institutions, corporations, organisations and individuals to **provide personal information** on confirmed and suspected cases (including information related to movement paths of patients)²⁵³. This article was added in July 6, 2015, after the MERS outbreak in Korea, to provide the MOHV and KCDC with legal authority to collect private data without a warrant (health authorities, under the previous law, struggled to understand the path of infection during MERS outbreak, which was heavily criticized)²⁵⁴.

The Korean government strictly monitors quarantined individuals, like Singapore and Taiwan. The Korean Ministry of the Interior and Safety has developed a mobile phone application named "self-quarantine safety protection" for Android and iOS users²⁵⁵. The app monitors the location of the quarantined user and offers a channel to communicate directly with health authorities and report on the evolution of their symptoms²⁵⁶. Health officials can decide if a test is needed at a later stage of a quarantine. Starting from April 1, all inbound travelers are required to undergo a 14-days quarantine, and are tested upon arrival if they display symptoms or are travelling from Europe (for people without symptoms, quarantine can be done at home or at designated centers)²⁵⁷. Violators of the self-quarantine terms are first fined up to 3 million won (US\$ 2,477), and then 10 million won (US\$ 8,257) or one-year jail sentence starting from April 5²⁵⁸.

253 Infectious Disease Control and Prevention Act, Act No. 9847, Dec. 29, 2009, amended by Act No. 13639, Dec. 29, 2015, English translation available at: https://elaw.klri.re.kr/eng_mobile/ganadaDetail.do?hseq=37239&type=abc&key=INFECTIOUS%20DISEASE%20CONTROL%20AND%20PREVENTION%20ACT¶m=l

254 Brian Kim, "Lessons for America: How South Korean Authorities Used Law to Fight the Coronavirus." *Lawfare*, March 16, 2020. <https://www.lawfareblog.com/lessons-america-how-south-korean-authorities-used-law-fight-coronavirus>

255 Max Kim, "South Korea is watching quarantined citizens with a smartphone app", *MIT Technology Review*, March 6, 2020. <https://www.technologyreview.com/s/615329/coronavirus-south-korea-smartphone-app-quarantine/>

256 Max Fisher, Sang-Hun Choe, "How South Korea Flattened the Curve", *The New York Times*, March 23, 2020. <https://www.nytimes.com/2020/03/23/world/asia/coronavirus-south-korea-flatten-curve.html>

257 "[Q&A] All Overseas Arrivals Required to Spend 2 Weeks in Quarantine as of Apr. 1.", *Hankyoreh*, March 31, 2020. http://english.hani.co.kr/arti/english_edition/e_national/935085.html

258 "Self-Quarantine Violators Face Tougher Punishment.", *Chosun Ilbo*, April 6, 2020. http://english.chosun.com/site/data/html_dir/2020/04/06/2020040602115.html

But what is more specific of the Republic of Korea is the controversy regarding disclosing to the public the identity and the location of patients and quarantined individuals. On its website, KCDC provides **extended lists of confirmed cases**. Even though the names are not revealed, a wide range of personal information is disclosed: age, sex, neighborhood, where the infection took place. **Local governments relay this information** through local and social media. Some cities even release **"emergency alerts" through text messages** to inform inhabitants of confirmed case in their vicinity²⁵⁹. Names are not mentioned, but information such as occupation, employers and travel history are relayed, and even translated in English for foreign inhabitants. Private initiatives emerge, such as an aggregation of KCDC data through the website Coronamap²⁶⁰.

On April 11, the government announces violators of self-isolation rules will have to wear an electronic wristband. The invasion of privacy becomes so extreme that the **National Human Right Commission** expresses concern about the excessive disclosing of private information of patients, which are easily identified by their workplace or travel history. On March 10, KCDC sets new guidelines preventing regional governments from leaking information (such as address or employer) that could lead to identification of patients. However, an exception is made for cases where a patient has infected large numbers of colleagues at work²⁶¹. On March 26, the government launches a new digital contact tracing program using big data, which reduces the time for epidemiological investigation to 10min. Only KCDC is allowed to access data - no other government agency²⁶².

The Korean government, like Taiwan, has adopted an industrial policy to support and control mask production and distribution. The country has a daily mask production capacity of 10 million units, yet 90% of the raw materials are imported from China²⁶³. This explains why the Korean policy to boost production centered on the local production and retail of the key raw material for mask production, melt-blown nonwoven fabric filters²⁶⁴. According to Finance Minister Hong Nam-ki, the ROK targets an increase of its daily mask output from 10 million to at least 13 million²⁶⁵. To avoid shortages, the

259 Nemo Kim, "More scary than coronavirus: South Korea's health alerts expose private lives", *The Guardian*, March 6, 2020. <https://www.theguardian.com/world/2020/mar/06/more-scary-than-coronavirus-south-korea-health-alerts-expose-private-lives>

260 코로나 맵 [Corona Map]. <https://coronamap.site>

261 "S. Korea sets guidelines limiting release of private info of coronavirus patients", *Yonhap News Agency*, March 14, 2020. <https://en.yna.co.kr/view/AEN20200314002000315>

262 "Seoul to launch 10-minute contact tracing program", *The Korea Herald*, March 26, 2020. <http://www.koreaherald.com/view.php?ud=20200326000987>

263 Moon-hee Choi, "Korean Mask Manufacturers Concerned about Short Raw Materials Supply from China", *Business Korea*, February 7, 2020. <http://www.businesskorea.co.kr/news/articleView.html>

264 Yoon-seung Kang, "S. Korea to take tighter grip on mask material and production amid coronavirus spread", *Yonhap News Agency*, March 5, 2020. <https://en.yna.co.kr/view/AEN20200305001500320>

265 "(3rd LD) S. Korea striving to improve supply of face masks amid mounting public anger", *Yonhap News Agency*, March 3, 2020. <https://en.yna.co.kr/view/AEN20200303003653320>

government first limits mask exports to 10% of the output before completely banning mask exports from March 5. On the same day, to prevent hoarding situations faced earlier in the month, the Korean government decides rationing and control of their national distribution. Prime Minister Chung Sye-kyun announces that masks will first be provided to the medical, quarantine and law-enforcement sectors, and then evenly distributed to the general population²⁶⁶. Korea Post is put in charge of distributing 650,000 masks through all its post offices, with buying limited to five masks by person at a price of 1,000 won per mask (around US\$ 0.75). Overall, compared to Taiwan, the mask production and distribution strategy has been much less successful, leading the vice-minister of Health to state on March 1: "We apologize deeply to people regarding mask issues".

The crisis in Daegu leads the Moon administration to declare the city and three nearby municipalities in North Gyeongsang as a "**special disaster zone**" on March 15²⁶⁷. It is the first time this status is used for non-natural disaster causes. Under the Korean legislation, people within the designated zones are eligible to receive state support for livelihood costs and exemptions in paying utility bills and public health insurance fees. The Korean government has set aside a massive supplementary bill of 11.7 trillion won (approximately US\$ 8.81 billion), with 1 trillion won going to the cluster of Daegu-city and North Gyeongsang Province (approximately US\$ 753 million - legislation is passed by the National Assembly on March 17²⁶⁸).

The ROK is now associated in the media with mass-testing, and indeed the free testing possibility, including the drive-through testing, has been a major feature of the government's response, emulated today by other governments. Yet neither the number of available masks, nor the quantity of tests are enough to cover the entire population. Two features are actually more significant. First, the massive investigation conducted to address the emergence of the Daegu cluster and avoid contagion along the national network of the Shincheonji sect, making use of all available data. Second, Korea displays features similar to the other Asian dragons: a quick reaction centered on tracing and monitoring to avoid a major contagion, targeted border controls expanding over time, and a strict quarantine policy. Finally, there is tension around leaking of the identity of infected patients to the wider public, and how the central government places local governments under control to avoid such practices. This raises the question of the deterrent effect of naming and shaming on the social behavior of the population, vs. the impact on privacy and individual rights.

266 "S. Korea to evenly supply face masks to public, ban mask exports: prime minister", *Yonhap News Agency*, March 5, 2020. <https://en.yna.co.kr/view/AEN20200305002300315>

267 "Moon declares virus-hit Daegu, part of North Gyeongsang Province as special disaster zones", *The Korea Herald*, March 15, 2020. <http://www.koreaherald.com/view.php?ud=20200315000064>

268 "Nat'l Assembly Passes Massive Supplementary Budget to Cope with Coronavirus", *Chosun Ilbo*, March 18, 2020. http://english.chosun.com/site/data/html_dir/2020/03/18/2020031800721.html

Republic of Korea: mass-testing, targeted investigations and the transparency issue

A QUICK RESPONSE

A response formulated as early as January 3 (17 days before the detection of the first case)

A **pre-existing fast-track procedure** for approving **testing kits for infectious disease outbreaks**



PREVENTIVE TESTING, FREE OF CHARGE

Preventive testing on a **massive scale: free testing**, testing conducted in "**drive through**" centers, **epidemiological investigation** into a religious cult at the origin of a contagion peak in the Daegu area

Full state support for medical care of confirmed cases, regardless of nationality, and **compensation for** spontaneous quarantines



A TARGETED RESPONSE

No confinement and border closure. **Targeted entry restrictions** (Hubei province) enforced at the border

Concentrated monitoring over the members of **the Shincheonji sect** and the **clusters**



DIGITALIZATION AND PRIVACY

An **intrusive and compulsory contact tracing practice** through usage of **credit card records**, CCTV footage, **strict surveillance** over those quarantined with the help of digital tools, and **deterrent sanctions** (up to US\$ 8,257)

Government action to protect privacy against disclosure of patient identities



SWIFT, METICULOUS AND DIGITAL

An immediate response, before the first positive test on the island, a strict quarantine policy, a nationalized mask economy, and precise digital tools for a case-by-case situation awareness: these are the ingredients of Taiwan's response to the COVID-19 crisis.

Key Policies

1

Responses 21 days BEFORE a first case is detected: as early as December 31 with increased inspection measures to screen passengers on inbound travel from Wuhan for early signs, with a Central Epidemic Command Center activated by January 20, under the centralized authority of the Ministry of Health and Welfare.

2

Delay between first case and most strong measures in place: 2 to 11 days.

3

Integration on January 27 of databases to ensure access to the travel history of suspected cases to the National Health Administration.

4

Extremely strict enforcement of quarantine rules: intrusive tracing during the 14-day incubation period, screening of contact history, fines for violators, allowing Taiwan to avoid confinement and major lockdowns.

5

Testing of individuals showing symptoms but no systematic testing of individuals quarantined.

6

Strong focus from Jan. 24 on surgical and N95 mask production and distribution: government measures to ramp up production, rationing and nationalization of distribution, early export ban, and a nation-wide digital system to show the availability of masks in real-time

7

Entry bans gradually expanding from Hubei residents to all Chinese nationals in early February and to all foreigners in mid-March (with an exception for low-skill foreign labor).

8

A rule-of-law approach based on the standard operations procedures detailed in the Communicable Diseases Control Act.

Timeline

- **December 31, 2019** – Taiwanese officials start assessing inbound passengers flying from Wuhan for fever and pneumonia-like symptoms on the planes upon landing.
- **January 5** – Individuals who have traveled to Wuhan in the past 14 days start being screened for symptoms
- **January 15** – The Taiwan Centers for Disease Control classifies the novel coronavirus as a class-V communicable disease
- **January 20** – Activation of the Central Epidemic Command Center for coordinating and implementing crisis management
- **January 21** – First case detected in Taiwan, a Wuhan-based Taiwanese businesswoman returning home
- **January 22** – The Executive Yuan announces fines for disseminating epidemic fake news content, up to NT\$ 3 million (US\$ 100000)
- **January 24** – One-month export ban on surgical masks
- **January 28** – First case of Taiwanese national infected in Taiwan
- **January 29** – Adoption of electronic monitoring of quarantined individuals
- **January 30** – Fixation of a price for surgical masks (NT\$8)
- **February 1** – The Executive Yuan passes a special budget of NT\$200 million (US\$6.6 million) to help manufacturers increase mask production capacity
- **February 6** – Entry ban on Chinese nationals
- **February 7** – Entry ban on foreign nationals who have traveled to China, Hong Kong and Macao in the past 14 days
- **February 16** – Extension of the National Health Administration Database to cover 30-day travel history
- **February 26** – President Tsai Ing-wen promulgates the Special Act on Covid-19 Prevention, Relief and Restoration providing for a NT\$60 billion (US\$1.97 billion) special budget to help businesses, workers and the health sector, and reviewing fines and penalties for breaking quarantine or hoarding medical supplies

- ▶ **March 10** – President Tsai Ying-wen promulgates the Regulations Governing the Compensation for Periods of Isolation and Quarantine for Severe Pneumonia with Novel Pathogens
- ▶ **March 18** – 23 new cases confirmed, the single highest increase since the beginning of the outbreak, with 22 returning from Europe, Asia or the US.
- ▶ **March 18** – Entry ban on foreign nationals and 14-day quarantine for all inbound Taiwanese travelers
- ▶ **April 1** – President Tsai announces that the amount of stimulus measures will increase to NT\$1.05 trillion (\$34.72 billion)
- ▶ **April 3** – Wearing a mask becomes compulsory on Taipei subway

Analysis

Taiwan is widely heralded as a successful containment model of the COVID-19 outbreak²⁶⁹. As of April 11, less than three months after the first positive test was registered in Taiwan, and despite the deep human and economic integration of the island with mainland China, only 385 individuals had tested positive to the virus, with six deaths. Two thirds of these cases had been recorded since mid-March, in a second wave of infection.

This result has been achieved on the basis of an immediate recognition, by the end of December 2019, of the gravity of the crisis. Like many East Asian states, Taiwan learned lessons during the traumatizing 2003 SARS crisis. Taiwan's current Vice-President Chen Chien-jen, who was Director General of the Department of Health during the SARS crisis, said in an interview that his first reaction to the detection of severe pneumonia cases in Wuhan was "Wow! SARS has returned"²⁷⁰. He then realized that the coronavirus was both much more transmissible and harder to detect given the long incubation period and the mild symptoms shown by a majority of cases.

The lessons of SARS were put into practice. The Center for Disease Control under the Ministry of Health started fever screening for arriving passengers and full-scale examinations for suspected cases on all flights from Wuhan as early as December 31²⁷¹.

269 Kathrin Hille and Edward White, "Containing Coronavirus: Lessons from Asia | *Financial Times*", *www.ft.com*, March 16, 2020, <https://www.ft.com/content/e015e096-6532-11ea-a6cd-df28cc3c6a68>

270 Jeremy Olivier, "Learning from the Past: Vice President Chen Chien-Jen's Observations", *Taiwan Business Topics*, March 21, 2020, https://topics.amcham.com.tw/2020/03/vice-president-chen-observations/?utm_source=share_button&utm_medium=social_media&utm_campaign=social_share

271 Taiwan Today, "CDC Implements Extra Inspection Measures for Wuhan Flights", 2019, <https://taiwantoday.tw/news.php?unit=2>

With contagion spreading in Hubei province and in China, the government activated in January 2020 the Central Epidemic Command Center (CECC) for Severe Special Infectious Pneumonia, allowing mobilization of national resources to prevent an outbreak in the island²⁷².

Taiwan's policy response to the coronavirus pandemic has taken advantage of digital technologies and big data to allow for precise live monitoring of the situation and make information available to health sector professionals and the general population.

Integrating data from the National Health Administration and Customs was one of the first moves of the Taiwanese government to strictly monitor the risk of imported COVID-19 cases. This allowed the health administration to access the 14-day travel history of any individual, and later their 30-day travel history. Taiwan's Executive Yuan allowed all hospitals, clinics and pharmacies to access the patients' travel history. To enhance the monitoring of incoming travelers to the island, the Taiwanese government created a mandatory health declaration for all inbound passengers. Providing inaccurate information can lead to a fine up to US\$ 5000. This declaration provided a basis for classifying travelers into risk categories and implementing Taiwan's quarantine policy.

The stored data of the National Health Administration was also used to identify 113 individuals who had consulted for severe respiratory syndromes in January and February and tested negative for influenza. They were all proactively re-tested for COVID-19, and one tested positive²⁷³. This sophistication in the use of medical data and digital tools relies on wide data collection practices. All health professionals on the frontline have been trained to ask patients about their travel history, occupation, contact history and "cluster" – the group activities in which they have recently been involved – when consultations reveal respiratory syndromes²⁷⁴.

Taiwan's crisis management is characterized by a strong emphasis on the necessity of wearing masks. Taiwan has essentially created a nationalized mask economy. The government organizes production, imposes rationing, centralizes distribution and has acted to preempt panic-buying by focusing on the combat against fake news.

272 Taiwan Centers for Disease Control, "Taiwan CDC Announces Activation of Central Epidemic Command Center (CECC) for Severe Special Infectious Pneumonia", *Cdc.gov.tw*, January 22, 2020, <https://www.cdc.gov.tw/En/Bulletin/Detail/vmv22PIH7-k3K-yh6FkmKw?typeid=158>

273 C. Jason Wang, Chun Y. Ng, and Robert H. Brook, "Response to COVID-19 in Taiwan", *JAMA*, March 3, 2020, <https://doi.org/10.1001/jama.2020.3151>

274 Jeremy Olivier, "Learning from the Past: Vice President Chen Chien-Jen's Observations", *Taiwan Business Topics*, March 21, 2020, https://topics.amcham.com.tw/2020/03/vice-president-chen-observations/?utm_source=share_button&utm_medium=social_media&utm_campaign=social_share

On the production side, Taiwan enacted a temporary export ban on surgical and N95 masks; and ordered on February 11 the installation of 60 production lines to boost mask production from 4 million to 10 million units per day²⁷⁵. The military mobilized 1800 reserve troops²⁷⁶ to join the production lines. Many media reports praise the companies for 24 hours of no-interruption production – in Tainan city, the company Ge'ande increased its daily production from 200 000 to 600 000 units per day by adding 39 workers from the military to its staff of 10 employees²⁷⁷.

Taiwan started implementing a rationing system in early February, making masks only available at pharmacies, medical stores and in the ubiquitous network of convenience stores. In practice, the distribution system is linked to National Health Insurance cards. Each citizen is allowed to buy three masks on designated days based on the last digit of their social security number. Their purchase history is stored in the system for each selling unit to check. To ensure the effective allocation of masks to selling points, the national distribution of masks is carried out through the mobilization of the state-owned Chunghwa post company²⁷⁸. 1,4 million masks have been allocated each day to the medical workforce in the early stages of the outbreak. This distribution system was complemented by a government-managed ordering website that went online on March 12²⁷⁹. Wearing face masks is important as a self-protection measure, but there is also a strong encouragement by the government, and on April 4, the Taipei city government announces that passengers entering subway stations without a face mask will receive a verbal warning followed by a fine between NT\$3,000 (US\$100) and NT\$15,000 (US\$500)²⁸⁰.

Taiwan's national mask economy is digitalized so that the population has full visibility of the availability of masks. An application integrating Google Maps shows on each connected device the stocks of masks in all designated selling locations. Access to that information is also possible through Line (the main chat app in Japan and Taiwan) and other applications. This effort required the setting up of 20 servers by the National

Health Insurance Administration (making it 32 in total) to ensure the cloud capacity to handle the surplus traffic²⁸¹.

Taiwan's policy is intrusive when it comes to monitoring quarantined individuals. Once an individual is placed in quarantine, on the basis of their health declaration upon arrival in Taiwan or on the basis of their contact history, they have to follow strict rules. The Taiwanese government provides quarantined individuals with a mobile phone to monitor their whereabouts during their quarantine period. Upon request, health authorities can be given access to police and mobile phone records to track with whom infected or risky persons have been in contact and extend quarantine measures²⁸². Digitalization is thus an essential tool to enforce Taiwan's strict quarantine.

But the threat of sanctions also matters enormously. In the space of two weeks in early March, Taipei municipal government sanctioned 70 individuals for violating quarantine regulations, with dissuasive fines up to 1 million NT\$ (29 871€)²⁸³. And the "Special Act on COVID-19 Prevention, Relief and Restoration" (嚴重特殊傳染性肺炎防治及紓困振興特別條例) allows the government to film and photograph people who break quarantine and publish their personal information – a naming and shaming approach²⁸⁴. However, sanctions are not the only aspect of the quarantine policy. The Taiwanese government has promulgated legislation to compensate quarantined individuals when they have to take care of children under 12 – the compensation is of NT\$1,000 (US\$33.35) per day²⁸⁵.

In sum, strict quarantine of risky individuals, rather than confinement or testing, is the cornerstone of Taiwan's crisis management. This has allowed the Taiwanese government to focus testing on individuals showing COVID-19 symptoms. Backed by precise data access and prohibitive sanctions, complemented by travel bans and proactive screening, the strict approach to quarantine has so far allowed Taiwan to contain the contagion.

275 Radio Free Asia, "Taiwan Boosts Production of Face Masks, Controls Sale And Exports", March 10, 2020, <https://www.rfa.org/english/news/china/coronavirus-taiwan-03102020154641.html>

276 C. Jason Wang, Chun Y. Ng, and Robert H. Brook, "Response to COVID-19 in Taiwan", *JAMA*, March 3, 2020, <https://doi.org/10.1001/jama.2020.3151>

277 "5片口罩1片出自台南 24小時不斷電拚出日產能202萬片"(One in five masks is produced in Tainan, 2,02 million pieces a day with machines running 24hours), *Lienhebao*, March 17, 2020, <https://udn.com/news/story/7326/4421171>

278 Hsin-Yin Lee, "Tech Experts Helped Make Taiwan's Mask Rationing System a Success - Focus Taiwan", *Focustaiwan.tw*, February 28, 2020, <https://focustaiwan.tw/society/202002280019>

279 Government of Taiwan, "EMask 口罩預購系統", *Taiwan.gov.tw*, 2020, <https://emask.taiwan.gov.tw/msk/index.jsp>

280 Taipei City Policy Department, Passengers Required to Wear Face Mask When Taking MRT Starting April 4, 2020, https://english.police.gov.taipei/News_Content.

281 Lee Hsin-Yin, "Tech Experts Helped Make Taiwan's Mask Rationing System a Success", *Focustaiwan.tw*, February 28, 2020, <https://focustaiwan.tw/society/202002280019.aspx?n=9E7670F7D08B6646&sms=DFFA119D1FD5602C&s=0781CF3F1BCB9D6A>

282 C. Jason Wang, Chun Y. Ng, and Robert H. Brook, "Response to COVID-19 in Taiwan", *JAMA*, March 3, 2020, <https://doi.org/10.1001/jama.2020.3151>

283 Shen Pei-yao, Yao Chieh-hsiu, and Jake Chung, "Virus Outbreak: Quarantine Breaker Fined NT\$1m", *Taipeitimes.com*, March 11, 2020, <https://www.taipetimes.com/News/taiwan/archives/2020/03/12/2003732549>

284 Sean Lin, "Virus Outbreak: Special COVID-19 Act Passed, Ratified", *Taipeitimes.com* (台北時報), February 25, 2020, <http://www.taipetimes.com/News/taiwan/archives/2020/02/26/2003731638>

285 Focus Taiwan - CNA English News, "Home Isolation/Quarantine Subjects to Get Compensation", *Focustaiwan.tw*, March 10, 2020, <https://focustaiwan.tw/society/202003100020>

Taiwanese hospitals have thus been able to anticipate and focus on best managing patient flows, in order to guarantee the isolation of COVID-19 infected patients in the event of a sudden case increase. The country has a limited number of beds in isolation negative pressure wards (943) but government officials have announced that the reconfiguration of wards and use of single-bed rooms was possible to build isolation capacity if necessary²⁸⁶. The Executive Branch has also adopted a special budget to address the cost of crisis management, including the longer term cost on economic activity, when enacting Special Act on COVID-19 Prevention, Relief and Restoration (嚴重特殊傳染性肺炎防治及紓困振興特別條例), which includes a stimulus package of maximum NT\$60 billion (US\$1.97 billion). In early April, the stimulus package is announced to include measures of a maximum NT\$1.05 trillion (\$34.72 billion)²⁸⁷.

All in all, despite a population of 23,78 million, Taiwan has managed to focus on individual cases and their entourage and to craft a policy response based on precise situation awareness to preempt contagion, relying on digital technologies to monitor, inform and impose sanctions against socially dangerous behavior.

Taiwan: Swift, Meticulous and Digital

A QUICK RESPONSE

A response formulated as of **December 31**; 21 days before the detection of the first case: **enhanced controls** on passengers arriving from Wuhan

Classification of the novel coronavirus as a class-V communicable disease on January 15

Activation of the Central Epidemic Command Center from **January 20**

Delay between the first case and the implementation of the strictest measures : **from 2 to 11 days**



DIGITALIZATION

Integration of health and customs databases for health professionals to **access travel history of patients**

Contact tracing on the basis of a **compulsory health declaration** upon arrival in Taiwan for risky cases

Use of **medical data** for preventive screening purposes

A **dedicated application** showing availability of masks in real time

Strong sanctions against misinformation on the internet



STRICT QUARANTINE POLICY

Strict surveillance of individuals placed under quarantine: mobile phones provided to monitor **all movement, government access to data** of the personal mobile phones

A **high fine** for **violation of quarantine rules**, up to US\$ 33,241

Legislation permitting **"name and shame"**: identities of those infringing quarantine rules **made public**



PRIORITIZING MASKS

A **nationalised economy** for the production and distribution of masks

An increase of daily mask production from 4 to 13 millions units

Early ban on mask exports, before a policy of international assistance

A special budget worth US\$ 6.6 million supporting **local production**

Mobilization of postal service for distribution and **the armed forces** for production



286 Focus Taiwan - CNA English News, "Taiwan Hospitals Step up Efforts against Coronavirus", *Focustaiwan.tw*, March 2020, <https://focustaiwan.tw/society/202003010012>

287 "Taiwan hopes \$35 billion stimulus package will be enough against coronavirus", *Reuters*, April 2, 2020, <https://www.reuters.com/article/us-health-coronavirus-taiwan-economy/taiwan-hopes-35-billion-stimulus-package-will-be-enough-against-coronavirus-idUSKBN21K0CU>

CONCLUSION

As of mid-April, none of the six East Asian countries studied in this policy note have eradicated the COVID-19 pandemic inside their borders. Given its 46 days delay in adopting proactive measures, China - which was also the first to experience the virus - has experienced a nearly nationwide lockdown with rigorous characteristics. But even the epicenter, Wuhan, is cautiously exiting its confinement as of April 8. **Having moved early, none of the other five countries have imposed the full confinement that large parts of Europe and Northern America are now experiencing.** The epidemic curves of these five countries have not shown the exponential trend at China's epicenter, or in Italy, Spain, France, the United Kingdom and the United States. Although a second economic shock - from the collapse of demand in Europe and America and the breakdowns in global logistical chains - is now hitting these large exporters hard, they have not suffered the damage to economic and social life experienced in China, Europe and the United States.

A word of caution: to this day, the actual contagiousness of COVID-19 is not assessed with certainty. The extent of asymptomatic cases is not known. Doubts have also appeared on post-disease negative status of former patients. As of this writing, it is unclear whether these doubts relate to defective testing or acquired immunity. And there are questions everywhere regarding the numbers of recorded cases and casualties. No country elicits as many questions as China - where the actual numbers for Hubei, and the very low declared numbers for other provinces in spite of the massive Lunar New Year travel will bear much scrutiny. A second wave of infection in Singapore, Japan and to a lesser degree South Korea's capital, local alerts in China, and of course the issue of imported cases are in fact provoking a move to curtailment of many social activities or even a partial (Singapore) or suggested (Japan) lockdown. Elsewhere - notably in Africa - the pandemic has not yet run its course.

Still, by April 9, the number of cases in South Korea, Taiwan, Singapore and Hong Kong - respectively 10450, 382, 1910 and 989 - is significantly below the hundreds of thousands of cases recorded in Western Europe and the United States. The country facing the greatest risk of an exponential increase of cases is Japan, according to its own government. It has just declared a partial state of emergency, after an initial success without the strong measures used by other East Asian states. But even Japan's case count stands at only 5566 on April 9, showing a rather successful containment of the first wave of contagion in the winter of 2020.

For itself, China claims to have had only 317 new cases between April 1 and April 9 - of which 300 were imported. **China's entire epidemic curve beggars belief:** from

the almost constant ratio, day by day, between cases and deaths until mid-March, the anecdotal evidence from Hubei, the lack of mass contamination despite a mass outflow from Hubei to other provinces until lockdown, and finally the lightning fast disappearance of new cases. Of course, doubts as to total numbers of cases, attribution to COVID-19, and deaths exist elsewhere. But they are so great in the case of China that the Chinese experience cannot represent a model for others.

The Chinese response to the crisis combines very different features: one is its unique ability, through mass surveillance to enforce a strict lockdown. Even so, this neglects the use of a large logistical workforce - China's e-commerce is the most developed in the world, and it rests on this largely migrant and vulnerable workforce - and in some cases, for example in the Wuhan area, army mobilization to distribute food up to housing staircases. The claim that no PLA soldier was infected is even less believable than the rest. China's other tools to combat the epidemic are masks and PPEs generally, digital tracing and tracking, isolation of symptomatic patients including from their families, and testing: with varying intensity and success, **they are the same methods used in other East Asian cases.**

In all six countries, one finds indeed **a package of the following elements: activation of crisis management procedures designed for addressing infectious respiratory diseases; border control measures; measures targeting the behavior of the population, ranging from self-restraint and quarantine to full lockdowns in China; the production of medical equipment; the mobilization of industry, and sometimes the military; a testing policy; the use of digital tools; and economic policy tools, from fiscal incentives to subsidies.**

The difference among East Asian modes of COVID-19 crisis management - essentially, China versus the rest - is a fundamental one between an all-out effort aiming at "flattening the curve" and targeted actions at individuals and clusters. The first is a mode of action at the macro level which remains the only option when the curve starts to increase exponentially. Then, it is no longer possible to detect new infections and clusters rapidly or to anticipate these. The second mode consists of actions targeted at individuals and clusters, to prevent the spread of new undetected across the country. The difference between these two modes of action is not only a question of scale. It is very much also about intelligence and situation awareness.

When contagion starts spreading inside a country's borders and cases are in the tens of thousands, no state has a full situational awareness. This can only be achieved at an early stage, when contagion is limited. At this early stage, it is intelligence about individuals and clusters, not about macro-trends and the risk of collapse of the hospital

infrastructure overwhelmed by patients with acute symptoms. **Most importantly for the future, elements of the early stage crisis management can hopefully be replicated in post-confinement situations - when the epidemic has been contained, although not eradicated. The early lessons from East Asia may therefore also serve us for post-confinement strategies.**

The following sections summarize these lessons as takeaways from the case studies.

1. Early warning and crisis management

The measures implemented immediately after the Wuhan “unknown pneumonia” outbreak was recognized, at the very end of December 2019, were particularly efficient in containing the disease. This is the result of East Asia’s crisis management history - with Japan as an outlier because it was more prepared for natural or man-made disasters rather than epidemics.

The lessons learned during the SARS, MERS and H1N1 crises led the health authorities in these countries to immediately consider the Wuhan outbreak as a serious risk, despite China’s cover-up, and in the absence of an adequate WHO warning. **These countries acted under the immediate assumption that the new coronavirus was human-to-human transmissible, and did not wait for an official confirmation by WHO, gaining precious advance time.**

Institutional memory gets the signals right, allowing for a much more realistic threat assessment than in Europe and the United States. The first measure is simple. It is a focus on the geographical source of the outbreak. This is of course only meaningful when the disease is concentrated in a single city or region, allowing for border controls and targeted investigations on recent visitors having entered the country.

In a second step, during the course of January, crisis management modes are formally activated: “enhanced preparedness” in Singapore, “serious response level” in Hong Kong, the Central Epidemic Command Center in Taiwan... This shows the **importance of having standard operating procedures that allow for coordinated threat assessment and the previous preparation of resources against infectious respiratory diseases.** It is also a reminder that precise situation awareness will be extremely difficult to reach if the first cases are not traced rapidly.

2. Democratic digital tools

The use of digital tools for contact back-tracing, targeted epidemiological investigations to prevent the emergence of new clusters, enforcement of quarantine varies from state to state. **An obvious lesson from the study of East Asian responses is that there is no monopoly of authoritarian governance over the intrusive use of digital tools. Democracies also develop their own approach of the use of big data for public health and crisis management.** This political dimension is important, because China has engaged in a battle of narratives to sell its COVID-19 crisis management as a model, politicizing international cooperation and seeking to promote China’s model of governance.

There are efficient alternatives to China’s modus operandi. In the three complete democracies we have covered - Japan, South Korea, Taiwan, there remain differences: a general reluctance to go beyond voluntary tracing in Japan, the emphasis on digital tools as a quarantine enforcer in Taiwan, their role in epidemiological investigations in Korea...Each government makes political and technical choices, and the range of East Asian options is of great value for the European crisis response.

One should emphasize, however, that once implementation reaches a certain proportion of a population, the issue in terms of privacy and personal data is just as present as in a compulsory system. None of these systems have had the time to prove decisively their actual usefulness in terms of tracking movements. **But they are already at work in terms of tracing past chains of infection.** That they don’t have a 100% success ratio should not surprise: again, **it is the combination of tools that matters most. For example, tracing and tracking without testing and isolation in quarantine is meaningless.**

3. Strictly enforced quarantine as an alternative to confinement

The study of East Asian responses shows **the importance of individual quarantine as an alternative to general confinement. Suspected cases with a risk of exposure to the coronavirus are not just told to stay at home to wait and see if symptoms develop.** A clear quarantine doctrine has been in place everywhere, with the exception of Japan. But Japan’s legal obligation to hospitalize any patient testing positive to a class II infectious disease more or less serves the same purpose. To avoid the saturation of hospitals that could occur in case of an increase of patients,

Japan has to arrange isolation in designated places for patients with no or mild symptoms, moving de facto to a form of quarantine.

Individual quarantine versus mass confinement - this again is only possible with good intelligence, but a successful quarantine policy is necessary to prevent general confinement as long as tests are not entirely reliable. Indeed, in South Korea for example, a test is needed at the end of the quarantine period.

4. Masks as the first line of defense

Mask-wearing in East Asia is sometimes described in Europe as a cultural phenomenon, either a sense of social responsibility or one of individual submission to the collective. East Asia has been spared the European controversies surrounding the wearing of masks (and hiding the shortage of supplies across the continent). Masks have been part of the answer everywhere. The Japanese cite **masks as the factor behind the “miracle” that no cluster has been linked to peak time public transportation in overcrowded trains and subways**. Recent evidence on the contamination radius of virus droplets, especially where there is airflow, reinforces the evidence. The fact that masks are not 100% effective is simply part of the general issue about the necessity of combining methods.

The cultural analytical framework is therefore misguided. Masks are just an efficient protection for individuals, and constitute a public policy tool for states seeking to fend off the epidemic. Governments can encourage mask-wearing, and they have a responsibility to organize supplies and distribution. The reflex to wear masks has been particularly strong in Hong Kong, Japan and Taiwan. **There must be clear messaging regarding the usefulness of masks. Constraining measures must be adopted to ensure that this easy first line of defense is not overlooked.** Weighing this option will be particularly important for deconfinement.

5. Medical supplies as an issue of national security

Each crisis generates its own demand for strategic supplies. In the case of COVID-19, masks, protection equipment, ventilators and test kits are in high need and have highlighted the dependence of many states on imports from China. China itself had to import some of those items during the peak of the epidemic, before the country's

industrial powerhouse started operating at full strength. States without stockpiles or national industrial capacity to cope with domestic demand find themselves vulnerable - the COVID-19 crisis has taken its toll among medical staff across Europe because of a lack of protective equipment.

This raises questions of stockpiling and the production capacity of national industries. In all cases, the East Asian states took measures to increase the production of medical equipment, in particular masks. China is in a category of its own for industrial capacity. **Does this create a strong argument for relocating these productions as being critical to our security? Yes to some degree, but as with other forms of debate on relocating, the argument has its limits.** A country with a strong artificial textile industry (such as China or Vietnam today), including suppliers to the auto industry; has an obvious advantage to increase production quickly and at a minimal cost. That is even more the case for ventilators, which require digital control modules and screens, air pumps and valves, tubes. West-based industries can make these, but likely at a much higher cost. **Alongside with some relocation, the diversification of sourcing - to avoid fallout from a single country's crisis or leveraging a situation - may matter as much.** The current Japanese stimulus plan includes support for moving away from China some production capacities. European independence should be based both on relocation and diversification of external supplies.

6. Economic contributions towards exiting the crisis

No debate exists in East Asia on a common economic approach to the crisis - immediate emergency funding has remained strictly national, as have the existing stimulus packages. While Japan has just announced a plan that would amount to 20% of its GDP, China is holding back - for the time being - its spending: while Western countries and Japan are accepting huge budget deficits, China is more conservative than it was during the 2008 financial crisis. Among the others, only Singapore, the world's economy most dependent on trade, stands out for the size of its stimulus. A similar national division exists for border closures: while Korea has now largely shut down incoming international travel, its exporters clamor for other countries to reopen their own borders; China has moved from condemning the limitations placed by others to a nearly complete shutdown of international arrivals.

These trends suggest two policy responses. One is towards **a coordinated reopening of borders**. But since the epidemic is not eradicated, it can only be **on the**



ABB FRANCE
 ABBVIE
 ACCURACY
 ACTIVEO
 ADIT
 ADVANCY
 AIR FRANCE - KLM
 AIR LIQUIDE
 AIRBUS
 ALLEN & OVERY
 ALLIANZ
 ALVAREZ & MARSAL FRANCE
 AMAZON WEB SERVICES
 AMBER CAPITAL
 AMUNDI
 ARCHERY STRATEGY CONSULTING
 ARCHIMED
 ARDIAN
 ASTORG
 ASTRAZENECA
 AUGUST DEBOUZY
 AVRIL
 AXA
 BAKER & MCKENZIE
 BANK OF AMERICA MERRILL LYNCH
 BEARINGPOINT
 BESSÉ
 BNP PARIBAS
 BOLLORÉ
 BOUGARTCHEV MOYNE ASSOCIÉS
 BOUYGUES
 BROUSSE VERGEZ
 BRUNSWICK
 CAISSE DES DÉPÔTS
 CANDRIAM
 CAPGEMINI
 CAPITAL GROUP
 CAREIT
 CARREFOUR
 CASINO
 CHAÎNE THERMALE DU SOLEIL
 CHUBB
 CIS
 CISCO SYSTEMS FRANCE
 CMA CGM
 CNP ASSURANCES
 COHEN AMIR-ASLANI
 COMPAGNIE PLASTIC OMNIUM

basis of agreed and verified preventive measures, and it cannot exclude local closures in case of new outbreaks and clusters. This leads back to the necessity of **common approaches on prevention, testing, confinement and quarantines, and therefore of sharing available supplies. It is a huge global task, in fact, that extends to the development and availability of vaccines**²⁸⁸. The lesson for Europeans is quite clear: **instead of shrinking back from integrated European approaches, we should promote them to external partners.**

The second policy response concerns China. While it claims to be almost entirely back on its feet as a producer, it is not contributing currently as much as it could to the huge effort by most developed countries on the demand side. **We should be attentive that China rejoins this effort instead of free-riding the monetary and budget initiatives by the West and Japan.**

To sum up, the technical tools analyzed in this policy paper work in each country as a package of measures, in unique combinations with each other. A confinement exit strategy, and a post-confinement policy that manages the risk of future new waves of COVID-19 contagion, will need to incorporate these policy tools in a national package: But it will not be effective unless it is crafted through close international cooperation. Indeed, **some of the measures that have contributed to containing the COVID-19 can only be temporary. Their relaxation, or lifting, will not be achieved without international cooperation and coordination.** This does not only apply to border closures. The reopening of borders will take a coordinated international effort - international travelers can not be placed in 14-day quarantine systematically. For increased effectiveness, no element of the crisis management package can stay purely national. All measures of the COVID-19 crisis management package will need some degree of information exchange and coordination, if not joint action.

288 Bill Gates, "Masks, Tests, Treatments, Vaccines – Why We Need a Global Approach to Fighting Covid-19 Now", *The Telegraph*, April 12, 2020, <https://www.telegraph.co.uk/global-health/science-and-disease/masks-tests-treatments-vaccines-need-global-approach-fighting/>.

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THERE IS NO DESIRE MORE NATURAL THAN THE DESIRE FOR KNOWLEDGE

Fighting COVID-19: East Asian Responses to the Pandemic

This policy paper offers a detailed overview of the public policy tools that China, Hong Kong, Japan, the Republic of Korea, Singapore and Taiwan have used to fight the COVID-19 pandemic. In all six countries, one finds indeed a package of the following elements: activation of crisis management procedures designed for addressing infectious respiratory diseases; border control measures; measures targeting the behavior of the population, ranging from self-restraint and quarantine to full lockdowns in China; the production of medical equipment; the mobilization of industry, and sometimes the military; a testing policy; the use of digital tools; and economic policy tools, from fiscal incentives to subsidies.

There is no magic recipe to find anywhere to eradicate COVID-19 at the time of writing, and the reference to success is in a relative term. But through a comparative analysis of the six case studies, the policy paper highlights important takeaways to the construction of a crisis management toolbox and post-confinement strategy for France and Europe.

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