Korea's Exemplary Response to the COVID-19 Pandemic

Successes and Challenges

By Juliette Schwak

South Korea was early-on considered a model of pandemic management during the COVID-19 crisis. Considering South Korea's proximity to China, it is no surprise that it was one of the first countries to be affected by the COVID-19 pandemic. As of May 2021, the South Korean government reports that there were 136,467 confirmed cases of COVID-19 in the country since the outbreak, of which 1,934 patients died. The impact of the crisis on South Korea's health system had therefore been limited. In comparison, Japan reported 718,864 confirmed cases of COVID-19 with 12,312 casualties, as reported to the World Health Organization (WHO). This is despite the fact that South Korea experienced its first outbreak in February 2020, only one month after the first case of COVID-19 was reported in the country. South Korean authorities responded very quickly to this first outbreak, taking public safety measures that were comparatively mild compared to China's swift but repressive response, or Europe or the United States' successive, and yet much less effective, nation-wide or region-wide lockdowns. South Korea's effective response to the COVID-19 pandemic has combined technical, cultural, and political factors. It can be differentiated from neighboring countries' approaches, including those that have obtained similarly good results, but there might also be some common policy responses across countries such as Thailand, Taiwan, Vietnam, or New Zealand.

The South Korean government possessed an institutional memory derived from its initially unsuccessful response to the Middle East Respiratory Syndrome (MERS) crisis in 2015. Indeed, when South Korea faced a MERS outbreak, it initially allowed an infected patient to spread the virus in several health facilities. The Korean Center for Infectious Diseases (KDCA) learned from its errors and realized the necessity to test rapidly, trace patients' contacts, and effectively isolate infected patients. Although MERS did not degenerate into a national health crisis, it did have economic consequences on South Korea as travel to the country was discouraged by South Korea's neighbors. It was also during the MERS crisis that South Korea created legislative provisions to allow the government to collect data from infected patients and enable contact tracing, which has been crucial in the fight against COVID-19. Indeed, during the MERS epidemic, the South Korean government had been publicly criticized for its lack of transparency in disclosing essential information

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regarding the number of patients and their locations. This generated tensions between government institutions and the public, which were addressed by what Moon[1] calls "reevaluation/assessment" (puzzling) and reform (powering). The Korea Center for Disease Control and Prevention (KCDC) was granted more autonomy and capacities (including more professional specialties) and the government established protocols to control and prevent new epidemics that proved crucial to the management of the COVID-19 crisis, notably because it ensured South Korea's ability to promptly test on a massive scale.

Building upon the MERS experience, as soon as the first cases broke out in the country, South Korea, through its KDCA, traced all contacts of infected patients through information and communication technologies (ICT), massively tested the country's population thanks to drive-through and walk-through testing centers, and isolated infected patients in non-hospital quarantine centers to limit the risks of transmission in hospitals. The South Korean government did introduce campaigns to encourage social distancing and the use of masks, and despite some measures such as the early closure of restaurants and bars, no nation-wide or even region-wide lockdown of the kind seen elsewhere in the world was imposed. Yet despite the absence of strict rules, most citizens complied with social distancing recommendations. A community-oriented political culture, shared with other East Asian societies, explains that South Korean citizens are more accustomed to the sacrifice of individual freedoms for collective well-being.

In addition, South Korea's post-colonial development experience has created a strong relationship between the state and its citizens. For several decades, under Park Chung-hee's authoritarian leadership, South Korea's modernization was encouraged by mobilization campaigns whose socialization legacies have not entirely disappeared. Just as for economic development, South Korean governments' appeal to national pride and unity in the name of a unifying project like defeating COVID-19 have proven effective. The political context of 2020 was also favorable to a symbiotic relationship between the state and its citizens: Moon Jae-in's presidency, despite internal debates, had signaled a return of trust after Park Geun-hye's tenure, which had tarnished citizens' confidence in the honesty and transparency of their leaders.

The political economy legacy of South Korea's developmental state also enabled the government to implement effective testing and tracing policies. From the 1960s, the South Korean state has largely orchestrated the country's economic development policies and although economic liberalization from the 1990s has decreased its planning capacities, the state's intervention remains both high and politically legitimate. Hence the Moon administration promptly introduced an ambitious public order of nationally produced face masks in February 2020 to ensure control of the available stocks and to fix the sale price of masks. It cooperated with the South Korean pharmacists' association to ration mask sales and allocate more masks to at risk- groups. The South Korean government also resorted to protectionist market measures that have a relatively long history in South Korea's modern economic development. It prohibited the export of nationally produced face masks and set production targets for national companies, which reached a daily production of close to 10 million masks.[2]

Unlike many countries that relied almost exclusively on the import of testing kits, South Korean companies produced testing kits in-country. Many of these companies are start-ups in the biomedical sector that have benefited from government support over the last decade. For instance, Seegene Inc., which produces test kits in Seoul, has received the financial support of the Korea Credit Guarantee Fund, a public organism created during the development state era to turn small and medium enterprises

(SME) into national industrial champions. The company has since become an international leader in the export of test kits. A public-private cooperation model between companies like Kogene Biotech and the Korean Disease Control and Prevention Agency was also implemented to make the approval protocol of test kits faster. Hence, the South Korean state, building upon the experience of the MERS crisis, has used its developmental legacy to plan, in cooperation with the private sector, the local production and distribution of face masks and test kits, which proved essential to its strategy of "Test, Trace, and Treat" (TTT). It also represented a strategic investment to boost national industries.

These laudable results are also the outcome of long-term investment strategies conducted both by the public and the private sectors. The drive to maintain South Korea's economic competitiveness, which has taken on an almost obsessive character since the 1990s, has led the South Korean state and South Korean companies to invest massively in research, particularly in the biomedical sector. For instance, in 2018, the Ministry of Health and Welfare allied with major chaebols (LG, SK), South Korean pharmaceutical companies and the Bill and Melinda Gates Foundation to create the RIGHT (Research Investment for Global Health Technology), a public-private research fund dedicated to fighting infectious diseases. The research infrastructure and capacities were therefore already solid when COVID-19 struck.

South Korea's national health system has also proved crucial to the success of the TTT strategy. Indeed, it combines a universal public health coverage (97 percent of the population is covered by the national health insurance program, and the remaining 3 percent are covered by a medical support program) with the advanced resources of the private sector. This enabled easy access to tracing and testing for the entire population. While the country's health system is not exempt from difficulties (regional inequalities and lack of services in rural areas and an aging population, for example), it guaranteed low-cost access to testing and medical services for all South Koreans.

In addition, a successful equilibrium was created between the public health system, private resources, and civil society organizations. Civil society has traditionally been active in South Korean modern history, often providing social services and receiving in return (limited) concessions from the authoritarian government. During the first COVID-19 outbreak, non-governmental organizations (NGOs) and trade unions participated in the national response, providing information to citizens, thereby improving communication with the public and acting as trusted intermediaries between government authorities and citizens. Civil society volunteers also helped to compensate for the gaps in

Mask-sharing campaign held near Gwanghwamun Square. Gwanghwamun, Jongno-gu, Seoul, South Korea. (Photo by: Kim sun joo, Ministry of Culture, Sports and Tourism. March 25, 2020)

support and access to health services of vulnerable citizens. Finally, civil society organizations together with medical staff participated in decision-making processes and contributed to ensuring informed, transparent decisions.[3]

Transparent and Legal Use of ICT

Central to South Korea's successful management of COVID-19 has been its use of information and communication technologies (ICT) to trace infected patients and their potential contacts. This is a strategy that presents political risks, mostly connected to surveillance, and which is often hotly rejected by the public in other contexts. However, in South Korea the use of contact tracing has been relatively well accepted by the population. This is certainly related to two factors: the country's political culture, and the legal framework that was created to protect civil liberties from abuses in the use of ICT.

The South Korean government has created applications and online tracing maps to trace cases and share information with the public about the pandemic's evolution and mask supplies.[4] These digital instruments were produced by private companies mandated by the government.[5] Such use of personal data to manage the pandemic has raised concerns regarding personal privacy and the limits of surveillance for public safety purposes. Indeed, while the collection and use of data about the first infected patients in Daegu enabled the government to effectively contain the first outbreak, South Korean scholars report potential safety and privacy threats related to the collection and use of data:[6] identity spoofing, data tampering, repudiation, information disclosure about the retention period of the data, and denial of service. While patients were anonymized on the main contact tracing application used in South Korea, the data shared with the public (such as residential addresses) could inadvertently reveal their identities. Indeed, South Korean citizens were concerned about data-related scandals, such as extra-marital affairs, coming into the public spotlight. Some also expressed concern about the social stigmas associated with contagion, and research revealed that rapidly disclosing too much information could damage businesses and individuals.[7] South Korean researchers have indeed conducted studies to assess the privacy risks associated with data disclosure practices in the country.[8] They conclude that the main risk is that by making inferences from publicly available data, members of the public could deduce the identity of a confirmed case, which could lead to social blame, exclusion, stigmatization, or even threats to the patients' physical safety. They recommend that the South Korean government detail the type and availability of collected data and use safer technological tools for tracing purposes.

In order to address these public concerns the South Korean government implemented a legislative framework to protect personal liberties and citizens' privacy. Even before the COVID-19 pandemic, South Korean citizens were already subject to a significant level of data collection that was then channeled towards the tracking of COVID-19 patients. Public authorities used credit cards (regularly and widely used in the country), smartphones, and security cameras (8 million security cameras are placed over the country, for a population of approximately 50 million inhabitants) to collect data about infected individuals, and then used the data to alert potential contact-cases and promptly sanitize the premises visited by the positive-testing patients.[9] The data was shared with citizens via a public-private app that ensures transparent collection and use of data. This was guaranteed by the Infectious Disease Control and Prevention Act (IDCPA), which was revised after the MERS outbreak in 2015, and allows the government to collect data from potential patients while guaranteeing a public right of information on this data. The revised Act was the first legislative step in the process of building democratic control over the use of tracking technologies. This

liberal democratic response to citizens' concerns has been further enhanced by additional steps taken during the COVID-19 pandemic.[10] In early 2020, the National Human Rights Commission of Korea requested that the government implement new dispositions on data collection and disclosure to ensure the anonymity of potential COVID-19 patients and protect infected individuals from mental health threats. As a result, the Korea Center for Disease Control (KCDC) published new dispositions in March 2020. The new directives excluded the personal data of patients (particularly their professional and residential addresses) from the publicly shared information and restricted the duration of the data's public availability to one day before the appearance of symptoms until the start of quarantine (one day before quarantine for asymptomatic patients).

This legal response was complemented by the sharing of detailed and transparent information of the evolution of the pandemic in the country. The KCDC, in particular, provided the South Korean public with daily updates on its website, available in both Korean and English. This contributed to the high level of trust displayed by South Korean citizens towards their government's response to the crisis. Indeed, Lee and colleagues highlight the significant role played by the "infodemic" during the COVID-19 crisis, as misinformation and unsupported rumors greatly limited citizens' belief in the efficacy of individual prevention measures and, in turn, their willingness to comply with them.[11] Hence, they argue that in South Korea, clear and complete information, presented to the public in an accessible and transparent manner, guaranteed citizens' belief in the efficacy of the measures and therefore their high degree of compliance.

In late February 2020, a survey showed that most citizens approved the government's use of tracking methods to control the pandemic.[12] The political climate in the country was favorable to political trust: Moon Jae-in's election followed the impeachment of his predecessor Park Geun-hye and signaled the return of a more trustful relationship between citizens and the government after numerous corruption scandals. But beyond this conducive context, South Korea's political culture is also characterized by a relative lack of tension between the state and the citizens, compared to countries like the United States, for instance. While South Korea's civil society is very active and attached to constitutional freedoms, due to the country's development history South Korean citizens are also aware of the state's capacity to ensure their safety and their economic well-being. Hence while South Korea today is a liberal democracy, its experience of economic development under a mobilizing authoritarian regime has left a legacy in that citizens are sometimes willing to sacrifice certain personal freedoms for the sake of national safety. This was the case during the COVID-19 pandemic.

In addition, the containment of COVID-19 was largely perceived as a national effort in the same way that economic development has united the South Korean population from the 1960s and even through the 1997 Asian Financial Crisis. This common sentiment of individual responsibility towards the nation is obviously strengthened by the North Korean threat on the other side of the 38th parallel, as young South Korean men must also undergo a long military service that anchors this experience of national sacrifice. National solidarity was strong following the candlelight protests against the Park Geun-hye government, and the Moon government tapped into this reservoir to encourage citizens to behave responsibly in the fight against COVID-19. Indeed, citizens promptly followed governmental advice, even in the absence of compulsory nationwide lockdown measures. Many self-enforced social distancing or volunteered to distribute masks, for instance. Much public discourse about social mobilization was articulated in the language of collective effort and national pride (even for liberal left-leaning

journalists who are less likely to express nationalist sentiments). 13

Beyond South Korea, scholars have reflected upon the country's experience with data collection and sharing to address the compatibility of democratic government with surveillance measures implemented in response to the COVID-19 pandemic. While some South Korean scholars recommend continuous measures to balance public safety and personal privacy, such as the de-identification of data,[14] other authors consider South Korea to be an exemplary case of democratic governance despite the use of surveillance and emergency decrees. Greitens contrasts China's response with South Korea's and Taiwan's and argues that the pandemic has exacerbated previous governance trends:[15] states that exhibited autocratic trends before the pandemic often responded with surveillance measures and undemocratic policy processes. On the contrary, she argues, in South Korea state action remained democratic because policy responses were necessary and proportional to the risks, but also because data collection was limited in time and scope of access, as well as submitted to a democratic review process. In addition, the KCDC quickly reacted to the recommendations of the National Human Rights Commission to ensure a democratically delineated collection and use of information. For this author, South Korea's experience is a positive response to the legitimate concerns of the American public over the potentially undemocratic character of COVID-19 responses.

South Korea has used surveillance technologies to address the COVID-19 pandemic. But it has done so with public support and within a well-adapted and democratic legislative framework. Hence South Korean citizens who were appropriately informed about the evolution of the pandemic but also the limited use of their personal data chose the risk of contact tracing to avoid nation-wide lockdown measures. South Korea's democratic institutions have been efficient in using technology for a legitimate national purpose and setting limits on this use to protect personal freedoms.

Borders

Like most states, South Korea has also resorted to border controls to limit the spread of the pandemic in the country. However, unlike Japan, for instance, its border policies have remained relatively flexible and open while preventing the arrival of infected overseas passengers. In February 2020, the South Korean government introduced a Special Immigration Procedure (SIP) to guarantee this flexibility. The aim of the procedure was to maintain open borders, particularly with China, while increasing inspection measures. With this procedure, South Korea has required that all inbound travelers install a self-check mobile app. It has imposed screening processes including medical inspections at South Korean airports and strict two-weeks quarantine measures on incoming visitors, but foreign visitors can still visit the country provided that they provide evidence of negative PCR tests and comply with these measures. Initially the SIP applied exclusively to Chinese visitors before it was expanded to all foreign travelers. In addition, in order to prevent the departure and return of travelers potentially infected with COVID-19 during their travel overseas, the South Korean government also implemented a screening process for outbound travelers. This includes multiple temperature checkpoints at airports and seaports before boarding a flight or boat in order to ensure that no infected patient travels.[16]

The South Korean government has remained flexible in adapting its border control policies to the evolution of the pandemic and updated alert levels in other countries, thereby guaranteeing a significant level of public understanding and trust both within the domestic population and among international visitors. Border controls were occasionally

used as geopolitical statements rather than public health decisions. In the spring of 2020, when several countries in Europe and Asia banned South Korean citizens from entry, Seoul responded with a similar ban on entry for citizens of these countries.[17] This came as a retaliatory measure, particularly against Japan, which had banned South Koreans from entry into its territory—a measure considered driven by political antagonism rather than health concerns. Obviously, South Korea's geography and the Korean peninsula's geopolitical situation made it easier for the country to control its borders than was the case for continental countries. Visitors entering Korea can only do so via air or sea, which greatly limits the resources needed to deploy at all points of entry.

More recently the government has introduced a pre-screening system for visitors from countries with which South Korea has visa-free travel agreements. Indeed, South Korea had such agreements with 112 countries before the start of the pandemic, but it currently only allows citizens from 21 of these countries to enter South Korea without requesting a visa at the South Korean embassy in their home countries. To respond to the planned growth of foreign visitors, the Korea Electronic Authorization (K-ETA) program—like the United States' Electronic System for Travel Authorization (ESTA) system—will be implemented from September 2021 to restore the halted agreements while ensuring appropriate screening and documentation of arriving travelers. In addition, a re-entry permit system was introduced in June 2020 to ensure the tracking of foreign residents who leave and re-enter the country with the same visa and to reduce the number of imported cases through foreign residents.[18]

Civil society organizations and international organizations have been concerned worldwide that COVID-19-related border controls would expose vulnerable migrants to heightened discrimination and xenophobic responses.[19] In South Korea the

Subway station undergoes disinfection during COVID-19 pandemic. Dongdaemun History & Culture Park Station, Seoul, South Korea. (Photo by Kim sun joo, Ministry of Culture, Sports and Tourism. May 7, 2020)

government has been keen to avoid such counter-productive reactions that would have made illegal immigrants more likely to avoid testing and tracing, thus resulting in heightened public health risks. It has instead suspended crackdowns on the 380,000 illegal immigrants living in the country and has encouraged them to access medical facilities, tests, and masks, ensuring that they would not face legal consequences if they contacted public health authorities.[20]

Therefore, South Korea's political culture and governance structure have been central in enabling prompt responses to the first wave of infections. South Korea's past experience with MERS had established an institutional and legal framework for the treatment of patients' data, which was updated in response to public concerns. After the MERS outbreak, the South Korean government had also implemented regularly updated (every five years) preparedness plans to deal with a potential pandemic, notably by ensuring the stockpiling of resources.[21] The country's political and economic experience enabled rapid collaboration between the public and private sectors to ensure, through partnerships, high testing capacities. Both medical and financial resources were allocated appropriately by government authorities, allowing the sorting and treatment of patients without spreading the virus. Finally, the government's transparent and trust-worthy communication channels kept the public well informed and in compliance with social distancing measures that relied essentially on public cooperation rather than coercion.[22]

Geopolitical and Geoeconomic Reorganization

The COVID-19 pandemic has led the South Korean government to make a series of changes in its domestic economic strategy, but also in its economic cooperation structure and relationships with key allies.

Domestically, the social-democratic Moon Jae-in government introduced an ambitious Keynesian policy framework—the Korean New Deal—to mitigate the economic consequences of the COVID-19 crisis, particularly on consumer confidence, exports, and inbound tourism. The purpose of the New Deal has been to support vulnerable businesses and citizens and to promote economic recovery, while pushing for a green and digital transition. A large financial package of 599 trillion South Korean Won (KRW) has been put in place by the Ministry of Economy and Finance (31.2 percent of Korea's annual gross domestic product) to be distributed as direct and indirect support to small and vulnerable businesses, but also to stabilize the financial market, protect stable employment, and stimulate economic activity by supporting and encouraging consumption.[23] As a result, consumer confidence increased, and the manufacturing and ICT sectors have been performing very well despite the limitations of the pandemic. The absence of nation-wide lockdown measures has also limited the consequences of a crisis in national production, and some industrial sectors, such as biotechnology, have been boosted by growing demand for South Korean exports overseas. A task force was also created to restructure the South Korean economy in the aftermath of the COVID-19 pandemic, particularly to protect vulnerable groups while encouraging innovation and boosting the country's global economic competitiveness.[24]

In addition to the support package of 599 trillion KRW, an additional budget of 35.3 trillion KRW was allocated to implementing these changes. With the New Deal, the government plans to invest 160 trillion KRW by 2025 to create jobs, enforce the digital and green transition, and strengthen the country's international economic leadership. This large-scale project signals Moon's plan to invest in reducing socio-economic inequalities in the country, but it also suggests South Korea's international

ambitions as a leader of the post-COVID-19 global economic order.

While COVID-19 will undoubtedly force South Korea's global corporations to reorganize their industrial value chains, it has also allowed the South Korean state to strengthen its partnerships with international allies. Although the two countries adopted diametrically opposed pandemic containment strategies, the pandemic has led the government to nurture its ties with China. When the COVID-19 crisis erupted in China, the Moon government refused to close its borders to Chinese visitors, a decision that was heavily criticized by segments of the South Korean public.[25] The South Korean government donated 3 million masks to China and emphasized the necessity to cooperate with its great power neighbor. This cooperative endeavor was praised by Chinese policymakers[26] and media[27] as the two countries celebrated the 30th anniversary of their diplomatic relations. On the other hand, the COVID-19 crisis has put a further strain on South Korea's difficult relationship with Japan. Both countries have used the pandemic to tarnish each other's image,[28] and a series of diplomatic incidents related to the pandemic, such as border control measures, has added to the tensions surrounding the comfort women memory controversy.

Most importantly COVID-19 has provided a new opportunity for South Korea to behave and present itself as a leader in international cooperation. From the start of the pandemic, the country has provided medical supplies including face masks and test kits to numerous countries, including great powers and allies such as the United States. It has positioned itself as a model of liberal democratic response to the COVID-19 challenge, connecting its effective management of the crisis to its decades-old concerns with image management. Overall, the pandemic has enabled South Korea to fill the governance gaps opened by world powers struggling to contain the spread of the disease. It is a diplomatic opportunity for the country to strengthen its position as a leader in global governance, particular in medical fields.[29]

One of the main initiatives reflecting South Korea's political ambitions in the post-COVID-19 world order is its effort to export its COVID-19 management model. Since many states have turned to South Korea with official requests for health management support, the Moon government has attempted to systematize the country's response to the pandemic under the umbrella of the "K-quarantine" model. It has implemented a plan to export its 3T (trace, test, and treat) approach throughout the world, committing a budget of 11.4 billion KRW (US$ 9.5 million) to the project. It was requested that the International Organization for Standardization examine South Korea's COVID-19 management model and standardize some of its main components such as RT-PCR testing or drive-through testing centers.

The country has organized numerous video-conferences with foreign public officials to share its expertise in pandemic prevention. These efforts are undoubtedly driven by promotional concerns, but also by economic necessities. Indeed, the export of K-quarantine is accompanied by commercial efforts from several government agencies such as the Korea Trade-Investment Promotion Agency (KOTRA) to sell South Korean health-related products and technologies in overseas markets. The pandemic therefore provides the South Korean government with an opportunity to revitalize the country's successful export-oriented industrialization model by expanding into new markets, particularly on the African continent. Indeed, the capital budget for overseas activities of the Export-Import Bank of Korea (KEXIM) has been tripled to support the export of South Korean products, and the Ministry of Economy and Finance has partnered with South Korean producers of K-quarantine products to support their export efforts.

Boosting South Korea's exports, particularly in the health sector, would enable the Moon government to position South Korea as a technological leader, to respond to the demands of South Korea's conglomerates, some of which have been strengthened by the pandemic, particularly those working in the biotechnology sector, but also to limit the domestic economic damage of the pandemic, particularly on employment, as many SMEs have been forced to close, even in the absence of nation-wide lockdowns.

However, South Korea's attempts to position itself as a leader of the liberal international order, with its democratic COVID-19 management strategy and its willingness to share its industrial and technological know-how, faces several challenges. First, other states have responded to the COVID-19 challenge with equally efficient and democratic strategies. Taiwan and New Zealand, in particular, are among South Korea's competitors as it presents itself as a leader of international cooperation. Despite its challenging geopolitical position, particularly with regards to the World Health Organization (WHO) headed by the People's Republic of China (PRC), Taiwan has also been working closely with foreign countries to share its lessons in pandemic management. Its exports have also grown in response to pandemic-generated demand.

In addition, South Korea has faced successive pandemic waves, some of which (the third wave in November 2020-February 2021 in particular) have been harder to contain due to the late enforcement of social distancing measures.[30] Some of these waves have been connected to imported cases, as foreign residents have not always followed quarantine measures upon returning to the country.[31] "Pandemic fatigue"[32] has also reduced the effectiveness of prevention measures; South Koreans have experienced weariness towards social distancing, resulting in decreased vigilance.[33] Moreover, despite their success in developing test kits, South Korean pharmaceutical companies have not developed a vaccine, and the country has therefore not been able to position itself as a leader in vaccine diplomacy, thereby being unable to compete with China's aggressive vaccine exports. The vaccination campaign started relatively late, at the end of February 2021, and it was initially slower than in Europe and the United States, until an acceleration at the end of spring 2021.[34] Finally, the Moon government's response to the economic consequences of the pandemic generated heated discussions across the political spectrum. The Keynesian strategy adopted by the social democratic administration was criticized by conservative economic elements.[35] while left-wing civil society organizations[36] demanded even higher investments to provide social safety nets to vulnerable segments of South Korean society. While South Korea's response to the COVID-19 pandemic has been exemplary in many regards, most notably in its democratic nature and flexible approach to restrictions, it is not exempt from challenges, particularly as the management of the pandemic must now be considered on a long-term basis. PRISM

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