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Fighting COVID-19 through Government Initiatives and Collaborative Governance: The Taiwan Experience

COVID-19
Viewpoint

Abstract: *Taiwan is situated less than 200 kilometers from the first COVID-19 outbreak state, China, and it has millions of international visitors yearly. Taiwan's collective efforts to block and eliminate the invisible enemy (COVID-19) from the island have resulted in relatively low infection and death numbers and have been hailed as a successful anomaly amid the global pandemic. This review provides some background on the systems and organizations that helped Taiwan streamline a task force (command center) in a timely manner to launch related initiatives, mobilize the public, and engage private resources to implement strategies and policies that were further enhanced by collaborative behaviors and volunteers. Even subject to threatening conditions such as cruise ship stopover and numerous foreign immigrant workers, there were no outbreaks of community infection in Taiwan similar to those in Singapore, Japan, and other countries. Taiwan's successful measures offer a good example for future comparative studies.*

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In three months, the coronavirus originated from Wuhan, China, and spread rapidly to the entire world. According to World Health Organization statistics, on May 18, 2020, there were 4,628,903 confirmed cases and 312,009 deaths worldwide (WHO 2020). Taiwan, in the meantime, fared relative well compared with other regions and countries. As of May 18, Taiwan had recorded only 440 cases and 7 deaths (TCDC 2020a). For a country of more than 23 million people living on a mountainous island the size of Maryland, with only 30 percent inhabitable lands, the odds of preventing the spread of a highly infectious disease are not very promising. Favorable conditions and successful strategies are behind this anomaly.

Regarding the blocking of infectious diseases, Taiwan underwent a similar crisis in 2003 during the SARS (severe acute respiratory syndrome) epidemic, which caused 668 probable cases (Chen et al. 2005). During the SARS epidemic, one of the major urban hospitals (Ho-Ping Hospital) was locked down to avoid outbreaks and thousands of people were quarantined. After the loss of a number of frontline workers, this smaller-scale epidemic was finally contained over a few months with minimal casualties. For Taiwan's Centers for Disease Control (TCDC), SARS was both a warning and a rehearsal to test the public health capacities and reactions. From the reviews and experiences, Taiwan envisioned a better structure for a command center and developed some standard operating procedures to deal with possible future epidemics.

Taiwan is an open society in which information can be used or abused and government can be trusted or opposed, all at the same time. During the SARS period, there were panics and missteps that led to uneasiness and uncertainty. However, overall, good judgment based on knowledge dictated the pace and direction in battling this infectious disease. To be sure, government agencies play a leading role in mobilizing all possible resources. Positive perceptions such as "transparency" and "authority" toward them are even more critical in soliciting public support during a pandemic.

In this new round of the COVID-19 battle, both "transparency" and "authority" were generally assumed in society. Moreover, a degree of "social capital" (i.e., people in Taiwan tend to trust public institutions) facilitated policy implementation during the public health crisis. This can be seen in people's active civic engagement and public participation throughout the crisis. Citizens were willing to trust and help each other, dedicating themselves to maintaining a safe and healthy society. This essay reviews some of the conditions and practices that highlight the positive interplay between government initiatives and public support in Taiwan.

Battling COVID-19 in Taiwan

The Government Setting

National Health Insurance System. The National Health Insurance (NHI) system covers almost everyone in Taiwan. NHI is government-implemented social insurance, and it has the Ministry

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of Health and Welfare as its competent authority (NHIA 2018, 9). The government's original intention in establishing the NHI program was to provide health security to all citizens through a mutual assistance system. The system was designed to ensure that everyone enjoys equal rights to health care. The inclusion of different groups in the program means that all citizens have equal rights to access medical services when they get sick, are injured, or give birth. With the Integrated Circuit (IC) health card, every patient can check clinic records thru the NHI's app. This system became a tool to help the government distribute masks through pharmacies to citizens all over Taiwan and helped trace citizens' travel records.

Central Epidemic Command Center. After SARS, a number of prominent public health leaders, such as Dr. Chen Chien-jen (an epidemiologist who served as minister of health at the time and as vice president in 2020) and Dr. Kuo Shu-song (director of the TCDC in 2003) realized that it was not a matter of "whether" but "when" a large-scale infectious disease would threaten Taiwan. They suggested preventive hoarding of first-response equipment and medicines (such as Tamiflu). To streamline leadership and avoid confusion, they advocated setting up the National Health Command Center (NHCC) in 2004. The NHCC is designed to respond to large outbreaks swiftly and acts as a nerve center to mobilize resources, coordinate personnel, and provide advice guidelines during pandemics. This mission-oriented ad hoc system includes the Central Epidemic Command Center (CECC), the Biological Pathogen Disaster Command Center, the Counter-Bioterrorism Command Center, and the Central Medical Emergency Operations Center. This joint framework serves as a comprehensive platform for preventing epidemics. Its legal foundation is based on the Communicable Disease Control Act and the Enforcement Regulations Governing the Central Epidemic Command Center.

On January 20, 2020, the TCDC announced the activation of the CECC for severe special infectious pneumonia. The TCDC director-general, Chou Chih-haw (周志浩), was appointed as commander to integrate resources across government agencies and to further protect the health of the Taiwanese public from the outbreak. A cross-agency command center meeting and an expert consultation meeting were held that day (TCDC 2020b). It was a level-3 emergency establishment.

Wuhan City, China, was shut down starting beginning at 10 a.m. on January 23, indicating increasing coronavirus infections. The CECC announced that starting on January 23, the outbreak level for the Wuhan pneumonia would be escalated to level 2 and that the minister of health and welfare, Chen Shih-Chung (陳時中), would act as commander (TCDC 2020c).

On February 27, Premier Su Tseng-chang announced that he had accepted Minister Chen's recommendation to upgrade the CECC to a level-1 facility in light of the mounting global urgency to contain the novel coronavirus disease (COVID-19). Minister Chen continued as commander. The premier explicitly instructed all agencies concerned to maintain the highest vigilance as the government continued to combat the outbreak, provide economic relief, and stimulate local industries. A cabinet meeting was

held to propose an economic relief act, which was passed by the Congress on February 25, 2020. According to the Preparedness and Contingency Planning in Response to COVID-19 Epidemic, the CECC was gradually upgraded, as table 1 shows.

According to the authorization of Enforcement Regulations Governing the Central Epidemic Command Center, the CECC commanding officer has the unified authority to command, supervise, and coordinate government organizations at various levels, public enterprises, reserve servicemen's organizations, and nongovernmental organizations to implement disease control matters. When necessary, support of the army may be coordinated. The commanding officer may instruct government organizations at various levels to requisition, expropriate, and integrate resources, facilities, or manpower of organizations (institutions) concerned. The CECC may invite one deputy minister or designated representative of each ministry, council, and commission concerned to be a member of the center.

The CECC hosted a daily press conference to announce further information about confirmed cases, infection sources, and related treatments. Representatives from related ministries were also required to attend and provide necessary explanations. This demonstrated a transparent operation and government decision-making process, including a Q&A briefing, which helped stabilize the public and clarify the rumors and fake news.

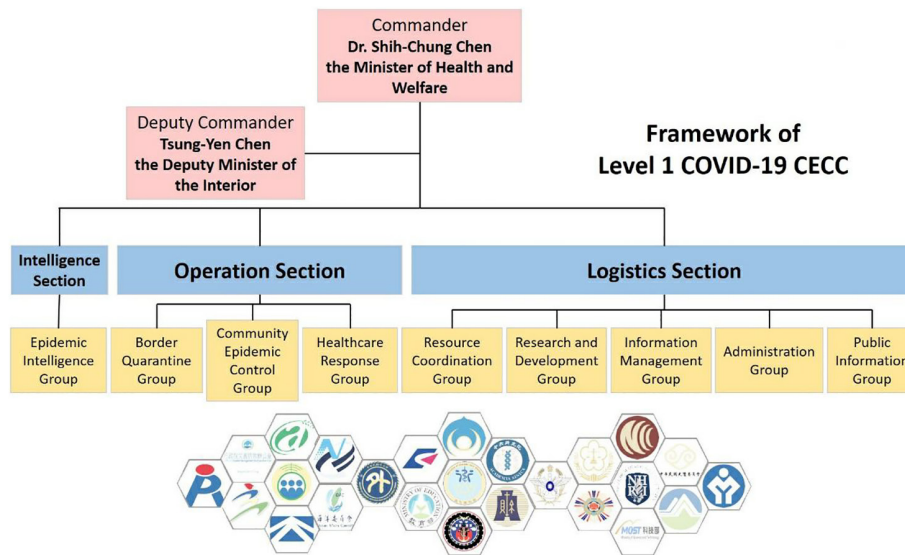
The CECC/TCDC produced many one-minute programs to play on cable television channels almost every hour for public health education. These included how to wear a mask, how to wash one's hands completely, how to keep proper social distance, and so on. They invited all specialties of physicians to explain how to avoid virus infection, including how to reduce stress and anxiety caused by quarantine. Figure 1 details the structural response of the government.

Taiwan is a unitary state. The central government is responsible for policy formulation and the local governments for implementation. According to the Communicable Disease Control Act, local governments are in charge of the following responsibilities:

Table 1 Four Levels of Command Unit Activation Protocols Corresponding to Different Extent of Outbreak and Risk Assessment

Level	Extent of Outbreak and Risk Assessment	Command Unit Activation Protocol
1	COVID-19 epidemic confirmed in Wuhan, China	Organize contingency team
2	Evident ongoing community spread of COVID-19 in Wuhan, China	Establish Central Epidemic Command Center (CECC), appoint Taiwan CDC director as chief commander
3	Confirmed imported cases of COVID-19 in communities in Taiwan	Establish Central Epidemic Command Center (CECC), appoint minister of health and welfare as chief commander
4	Community spreading of COVID-19 in Taiwan	Establish Central Epidemic Command Center (CECC), appoint premier as chief commander

Source: Taiwan Ministry of Health and Welfare, 2020.



Source: TCDC (2020i).

Notes: Division of work among ministries mandated by the Communicable Disease Control Act. 1. Ministry of Interior: Matters concerning the control of entry and exit, assistance in supervising local governments in the implementation of public services such as in-house isolation. 2. Ministry of Foreign affairs: Matters concerning liaison with foreign governments and international organizations, issuance of visas to foreign passport holders. 3. Ministry of Finance: Matters concerning lease of state properties for use. 4. Ministry of Education: matters concerning promotion and education of disease control for students and school personnel and surveillance and control of communicable diseases among them. 5. Ministry of Justice: Matters concerning surveillance and control of communicable diseases among inmates in correctional centers. 6. Ministry of Economic Affairs: Matters concerning supply of protective equipment, and control of industry-specific ports. 7. Ministry of Transportation and Communication: Matters concerning control of airports and commercial seaports, service requisition of transport facilities. 8. Mainland Affairs Council: Matters concerning the coordination of policies governing contacts between people of the Taiwan Area and people of the mainland China area, or Hong Kong, and Macau. 9. Environmental Protection Administration: Matters concerning the sanitation and disinfection of public environment, and disposal of wastes. 10. Council of Agriculture: Matters concerning the control of communicable diseases common to humans and animals, and control of fishing harbors. 11. Ministry of Labor: Matters concerning occupational safety and health and protection of workers' rights. 12. National Communication Commission: Matters concerning the management and release of news, dissemination of government orders, and designating radio and television media for broadcast. 13. Ocean Affairs Council and Coast Guard Administration: Matters concerning the seizure of smuggling of vectors of communicable diseases at sea areas, sea coasts, river mouths and noncommercial ports, and illegal entry and exit across the national borders. 14. Other relevant organizations: Implementing relevant matters necessary to control communicable diseases.

Figure 1 Framework of Taiwan CECC.

1. Develop implementation plans and implement those plans according to the communicable disease control policies and plans formulated by the central government and locality-specific disease control practices. Also report to the central competent authority for reference.
2. Implement various communicable disease control measures in the locality, including immunization, prevention of communicable diseases, epidemiological surveillance, case reporting, investigations, laboratory testing, management, drills, mobilization by level, training, pharmaceutical, device and protective equipment stockpile, and home isolation.
3. Conduct quarantine of local ports.
4. Implement matters instructed or commissioned by the central government.
5. Other matters that shall be implemented by local competent authorities.

Policy Tools/Efforts to Control the COVID-19 Spread Quarantine

By January 5, 2020, the TCDC began monitoring all individuals who had traveled to Wuhan within 14 days and exhibited a fever or symptoms of an upper respiratory tract infection. These people were screened for 26 known pathogens, including SARS and MERS

(Middle East respiratory syndrome), and those tested positive were quarantined (Wang, Ng, and Brook 2020).

As of March 14, people returning directly to Taiwan from most of Europe, plus people who had transferred through China, Hong Kong, Macau, and Dubai, had to quarantine at home for 14 days (*New York Times* 2020). As of March 17, the only foreign nationals permitted into the country—those holding Alien Resident Certificates or those on urgent diplomatic, business, or other special missions—could rent a room in a public quarantine center (MOFA 2020). On March 20, the CECC raised the global travel notice to level 3, and Taiwanese citizens were advised to avoid all nonessential travel (TCDC 2020e).

Local governments cooperated with the CECC to ensure the quarantine. Based on these and later border controls, the CECC required all travelers arriving in Taiwan to be quarantined for 14 days and their information to be passed to local governments. Next, street-level officers in district governments visited those quarantined to make sure that they were healthy and abiding by the requirement, and they were provided with an antivirus pack including masks and disinfectant. Those quarantined were fined if they went outside. The district governments were responsible for monitoring those quarantined by tracking their cellphones. The police also worked to find those quarantined who went outside or even tried to escape the quarantine.

Border Control. On March 22, the CECC announced that the COVID-19 outbreak had become a global pandemic and that the number of imported cases continued to rise. To stop the spread of COVID-19 through air transport, the CECC announced that the transit of airline passengers through Taiwan would be suspended from March 24 until April 7, to decrease the cross-border movement of people and to reduce the risk of disease transmission (TCDC 2020d).

Mask Supply and Distribution. To curb panic buying and hoarding of face masks in Taiwan, the CECC announced on February 3 that a name-based rationing system for face masks would be launched on February 6. This would ensure universal access to face masks as well as fairness and transparency of resource allocation (TCDC 2020f). People were able to get masks on alternate days (odd/even) depending on the last digit of their IC health card. The number of masks available to each person was rationed.

One of the innovative ways that the CECC helped the general public get masks was an online order system. The CECC announced on March 10 that an online ordering mechanism would be added on March 12 to the name-based rationing system for face masks. The purpose of this new mechanism was to ensure even distribution. It made distribution of face masks more convenient for people such as office workers and students who lacked the time to go to pharmacies and public health center distribution spots, where there were sometimes long lines.

Social Distancing. The CECC announced social distancing measures on April 1 to encourage the general public, in phases, to maintain social etiquette and observe social distancing. This further reduced the risk of community transmission of COVID-19, which continued to spread across the globe. These measures sought to protect people's rights while bolstering epidemic prevention and control efforts, which could be undermined by infected people who did not seek medical help or were asymptomatic (TCDC 2020g).

Very few COVID-19 cases were found in Taiwan: only 55 cases were attributable to community transmission, plus another 31 from the *Panshi* fast supply war ship. This was in contrast to the significant number of 343 imported cases, either early on from Wuhan or later from students and travelers returning from around the world. Because of the low infection and death rates, the high standards and professionalism of the health care system and workers, and the NHI scheme, Taiwanese abroad generally felt that they wanted to be back home. Their return also made quarantining and social distancing very important.

The rules specified separate social distancing standards for restaurants, school campuses, offices, mass transport, supermarkets, other commercial sites, locations with long lines of waiting people, and special institutions such as long-term care facilities and prisons. During the continuing COVID-19 outbreak, social distancing is to be followed to prevent community transmission and to protect oneself and others. Public participation and acceptance have been a crucial factor, and fines and charges for disobedience have been very few. This is an exceptional example of democratic concern for the public good.

Cellphone Tracking. On April 8, the CECC announced that a Line Bot system called Disease Containment Expert, developed jointly by

the CECC, Line Taiwan, and HTC Corporation's health care unit DeepQ, would be officially launched for use on April 3 to track people in home quarantine. The CECC also added a new function to the current SMS (Short Message Service) reporting mechanism, allowing those in home quarantine or isolation to report their health status via SMS (TCDC 2020h).

With the Line Bot system, those in home quarantine can voluntarily report their health status to the disease prevention staff every day and obtain information concerning disease prevention. Those in home quarantine can use the Line Bot system by clicking a link, sent to them via SMS, to add the Disease Containment Expert to the friend list on Line and then complete the identity verification process. In addition to information on disease prevention and health status reporting, the system sends home quarantine-related details and notes to users two days before the end of the home quarantine period to remind them to conduct an additional seven-day period of self-health management. In addition to the Line Bot system, on April 5, the CECC began to send SMS messages every day to track the health status of those in home quarantine and home isolation. The quarantined and isolated people can directly reply to the messages to report their health conditions.

Public Collaboration and Voluntary Assistance

No less important in effecting government policies are public collaboration and voluntary assistance. Masks, which were in high demand, were originally collected and distributed by the government through all of the existing manufacturers. Backed by government funds, the factories soon expanded their capacity and made up to 17 million masks per day. The government also sent soldiers to the factories to work to speed up production. Under the coordination of the Taiwan Pharmacy Association, all the masks were mailed to local pharmacies, which allocated certain hours to sell masks without fees to the general public. To help with social distancing, many popular gathering places such as "night markets" organized patrollers to control the flow of crowds.

From the beginning, and depending on the sources of entry back to Taiwan or the likelihood of being infected, different levels of quarantine were mandated for different people. Thanks to flexible manpower and voluntary assistance, the implementation and effectiveness of these quarantines were ensured with low social cost. Those designated as "stay-home-isolation" or "stay-home-quarantine" were not supposed to leave their residence for 14 days. Not only were their health conditions monitored by health workers or borough chiefs twice a day, their whereabouts were reported by whistle-blowers or building managers when they went out of bounds.

Also, tens of thousands of volunteers provided food to people who were under quarantine and checked their conditions on-site. Even though fewer infected people means fewer people need to be quarantined, these volunteers helped lower the likelihood that COVID-19 would spread in the community.

Conclusion

The Collaborative Governance Model for Fighting COVID-19

In a "collaborative governance" model, the critical elements include cooperation between the central and local governments,

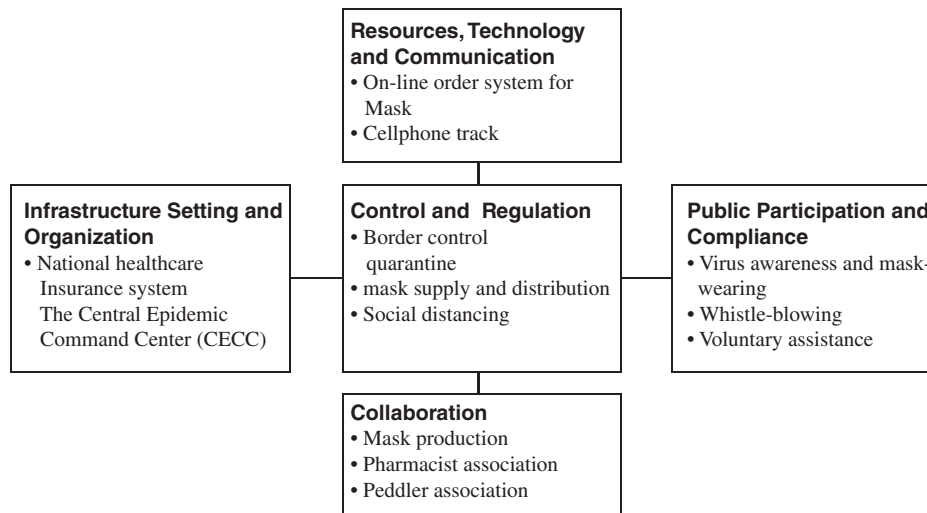


Figure 2 Government Initiatives and Collaborative Governance Framework for Fighting COVID-19 in Taiwan.

coordination with nongovernmental organizations and major associations, and mobilization of corporate resources to provide essential goods. Despite the inherent mistrust of public management in a democracy, the Taiwan experience shows that once people realize they are “at war” amid a pandemic, cross-sector collaborative governance can be applied successfully in a large-scale crisis. From the perspective of emergency management, the government has a responsibility to take necessary actions to avoid or reduce damage and to look for resources from possible stakeholders. In the Taiwan experience, government initiatives and collaboration from other sectors worked together to prevent the spread.

Based on the foregoing description, we can conclude that the government initiatives and collaborative governance model for fighting COVID-19 in Taiwan is as shown in figure 2.

Effective Policy or Extremely Lucky?

A combination of well-implemented measures to block, track, and isolate possible sources of infection, along with high public compliance, helped Taiwan have an outstanding “report card” in the global wave of COVID-19. Taiwan was also extremely lucky in that, in some of the potential cases, it miraculously escaped community outbreaks. These includes the late blocking of throngs of Chinese visitors; the disembarking of the *Diamond Princess* in Taiwan with 2,600 visitors roaming around northern Taiwan; and the hundreds of thousands of foreign immigrant labors work in Taiwan. But, unlike Japan, Singapore, and other countries that developed community-transmitted infections after similar situations, Taiwan remained unscathed.

If we add in the factor that there was a lack of large-scale testing in Taiwan, such good fortune raises a question: do a higher proportion of Taiwanese have an “antibody” in the first place? This is a puzzle that requires further epidemiological study.

How various factors played a role in fighting the pandemic remains to be studied in related fields in the future. Whether in a control group or experiment group, Taiwan’s experience provides evidence that contributes to our understanding of this public health crisis.

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