The Spread of COVID-19 and Suggestions for Future Smart City Plans

Countermeasures to the global spread of infectious diseases are being considered as a result of the spread of COVID-19 (the novel coronavirus disease). In our daily lives, we are now being called upon to adopt new lifestyles whereby we avoid crowds and crowding and ensure social distancing, and it has been pointed out that the spread of COVID-19 has the potential to bring about changes to our way of thinking, with this including how public health ought to be structured moving forward. Cities formed along with the development of industry in order to improve the convenience and efficiency of everyday life by having people cluster together. Yet the spread of COVID-19 has the potential to alter our sense of values with respect to cities. As a result, it is conceivable that progress will continue to be made with redesigning existing smart city projects and reassessing urban development for a post-coronavirus world based on the use of digital technologies, changes in people's behavior, and the way infrastructure ought to be configured moving forward.

In light of the aforementioned awareness of the issues, this paper will perform a literature survey focused primarily on the most recent studies with the aim of sorting out the issues in question and offering proposals in order to find suggestions for future smart city plans from among the changes in people's awareness and behaviors brought about by the spread of COVID-19. This will be centered around the three axes below of: (1) the spread of COVID-19 and reviews of smart city projects, (2) the composition of cities and concentrations of people in the Society 5.0 era, and (3) legislation and smart cities in Japan.

1. The spread of COVID-19 and reviews of smart city projects

- Advances in digital technologies and smart city projects

The collection and analysis of a wide variety of data as a result of the recent advances in digital technologies has given rise to hopes regarding the pursuit of improved productivity and convenience. The adoption of data usage is moving forward in a wide variety of sectors, including manufacturing and retail. What is more, a new type of urban development project referred to as "smart cities" is being promoted in various countries as a type of initiative to harness digital technologies to achieve smarter urban design and social systems as a whole.

The **Cabinet Office (2020a)** has listed examples of smart cities in other countries that include the suburbs of Toronto in Canada, the United States, Buenos Aires in Argentina, Xiong'an New Area in China, Songdo City in South Korea, Singapore, Dubai in the UAE, Barcelona in Spain, Estonia, Helsinki in Finland, Amsterdam in the Netherlands, and more. Chief among these, Sidewalk Labs, a subsidiary of the major IT company Google, is promoting the case in Toronto, Canada, which had been garnering enormous attention.

- The spread of COVID-19 and reappraisals of smart city-related projects:

As reviews of smart city projects were moving forward in a number of countries, it was being pointed out that there was a possibility that the global spread of COVID-19 that began at the end of 2019 could give rise to changes in people’s behavior and to urban development. In particular, the potential for achieving measures to combat infectious diseases through the use of smart city technologies, primarily digital technologies, was identified.

Barcelona has pointed out the possibility that, amidst the environmental changes that have come about due to the spread of COVID-19, harnessing digital technologies offers the potential to be able to smoothly proceed ahead with calling off lockdown measures **(Barcelona (2020))**. In addition, Dubai has pointed to the fact that cities must ensure an even greater degree of resilience from the perspectives of employment, corporate management, and services with respect to the existence of cities that have been affected by the spread of COVID-19 and strategies that include resilience **(Smart Cities World News Team (2020))**. Ravi Seethapathy, who is an ambassador for the Global Smart Grid Federation, has stated with respect to the "new normal" that will follow COVID-19 that we must redefine our current way of thinking about smart cities, in which densely concentrating people together to boost the efficiency of public transportation and work convenience constitute important elements **(Ravi**

Seethapathy (2020)). Specific examples he has raised for this include work spaces, virtual team work, residential spaces, schools, public areas, public transportation, and greetings. In response to these, he has pointed out that we must redefine our current plans for smart cities by considering issues like: (1) redesigning physical elements, (2) considering approaches to work through the use of digital technologies, and (3) personal protections against infection. As for the impact this will have on energy, it is conceivable that the expanded use of servers as a result of the use of digital technologies will increase energy consumption, while at the same time the energy consumption needed for commuting will decrease as a result of changing work styles due to people working remotely (working from home), and so forth. At this point in time it is difficult to predict which of these factors will have the greater impact. As we go about redefining smart city plans in the wake of the spread of COVID-19, this will conceivably give rise to shifts in the types of energy consumed and qualitative changes in our energy consumption.

In relation to public health issues related to preventing infectious diseases in particular, **Sugiyama (2020)** has pointed to a number of measures to reduce our environmental impact since before the spread of COVID-19. These include how many researchers of environmental problems and activists have been encouraging people to ride together in automobiles through ride-sharing and reducing energy consumption by improving the utilization rates of facilities, and other measures that had been expected to contribute to lessening the environmental impact. In this capacity, Sugiyama points to the possibility that due to the spread of COVID-19—the so-called coronavirus pandemic—emphasis is being placed on the upsurge in people's health preparedness which has historically persisted, which in turn may lead to expanding energy consumption by promoting private ownership of goods and spaces, such as by promoting increased use of privately-owned automobiles instead of vehicle ride-sharing, for example. He also indicates the importance that health preparedness has as a driver of future scenarios.

As part of a study concerning the spread of COVID-19 and cities in Japan, **Fujita and Hamaguchi (2020)** found that during the period when COVID-19 infections were spreading in Japan, the connection between the increase in people infected by prefecture and the proportion of the population of each prefecture to the national total indicated a trend whereby the number of people infected was rising the most in places where people are densely concentrated, mainly Tokyo. They pointed to the "effects of population size," based on which they posited that "Major cities that have grown as a result of the 'Three C's' (closed spaces, crowded places, and close-contact settings) are faced with the paradox that they must now avoid the Three C's to evolve in response to the risk of infectious diseases in the future. The key to overcoming this lies in ensuring that office work and remote work function in a complementary manner, rather than having one replace the other" **(Fujita and Hamaguchi (2020))**. In Japan as well, when it comes to modalities for cities the back and forth of people primarily centered around modalities for how workplaces are structured and the growth in data communications through the increased use of digital technologies could potentially result in the emergence of changes to both the places where energy is used and the amount consumed unlike those seen in past trends.

- The Google subsidiary Sidewalk Labs has pulled out of a smart city project

Canada's Sidewalk Toronto project is one of the projects which is expected to make greater use of data and which has garnered the greatest amount of attention from the smart city plans due to the involvement of a subsidiary of the major IT company Google. However, amidst discussions over reappraising its smart city plans in the wake of the spread of COVID-19, on May 7, 2020 Daniel Doctoroff, a representative of Sidewalk Labs, announced that the company's continued involvement in the project had become difficult due to the unforeseen decline in economic transparency in both global real estate markets and Toronto's own market.[1]

The Sidewalk Toronto project was launched in October 2017. Sidewalk Labs categorizes the composition of cities up into the physical areas of infrastructure, public areas, mobility, and buildings, as well as a digital layer. The project had been planning to undertake urban development as a platform

[1] Daniel L. Doctoroff (2020), Why we're no longer pursuing the Quayside project — and what's next for Sidewalk Labs, May 7, 2020, https://medium.com/sidewalk-talk/why-were-no-longer-pursuing-the-quayside-project-and-what-s-next-for-sidewalk-labs-9a61de3fee3a

for coordinating between these various different layers **(Iran Hayashi (2020))**. Issues with data privacy had been pointed out as one of the challenges with promoting the project. In April 2019 the Canadian Civil Liberties Association (CCLA) initiated legal proceedings to shut down the project **(Iran Hayashi (2020))**. Such incidents point to the concerns felt over privacy violations due to the sensors used to handle big data as well as the ownership of said data, and the project was plagued by repeated delays. Sidewalk Labs has stated that its reasons for discontinuing its involvement in developing smart cities was due to the financial challenges this entailed. Yet some have pointed to the possibility that this was directly caused by issues of data and privacy given the development of digital technologies related to this project, as well as the relationship of trust between Sidewalk Labs and the city of Toronto **(Gaku Funada (2020) and Masahiro Ogamino (2020))**. The claim could be made that the company's withdrawal from the project in the wake of the spread of COVID-19 has resulted in renewed recognition of the challenges for smart city projects.

Some have pointed to the possibility that the spread of COVID-19 will prompt people to change how they think about and behave in their everyday lives, and that the impact from this could even extend to changes in our sense of values for things like health preparedness. We must adopt the use of digital technologies and alter people's behavior in order to achieve a new lifestyle in which we avoid crowds and crowding as a countermeasure against infectious diseases. When it comes to urban development for a post-coronavirus world, consideration will continue to be given to the changes liable to newly arise in the wake of the spread of COVID-19, as well as to responses to challenges that have once again been thrown into sharp relief with respect to the previous plans, such as issues surrounding data and privacy. The thinking is that this will lead to discussions over redesigning the existing smart city projects.

2. The composition of cities and concentrations of people in the Society 5.0 era

As was mentioned in the previous section, the spread of COVID-19 has sparked discussions on reappraising the thinking behind smart cities. Based on these, this section will lay out issues like urban values and an outlook for cities in a post-coronavirus / Society 5.0[2] era based on the composition of cities in Japan by referring to a study by Associate Professor Soichiro Takagi of the University of Tokyo announced at COMEMO by NIKKEI on the composition and roles of cities.

- The concentration of the population in cities in Japan

Takagi (2020a) posits that the concentration of the population in cities in the post-war period continued as a result of increased labor productivity in the agricultural industry and the shift from agriculture to manufacturing in the period of rapid economic growth from the 1960s to the 1970s. Then the latter half of the 1970s through the first half of the 1990s saw the concentration of white-collar manufacturing industry jobs in major cities and the relocation of factories overseas. As for the heavy concentration in Tokyo seen from the 1990s onward, he states that the shift to a knowledge-based economy coupled with urban redevelopment led to an erasure of the geographical constraints placed on cities, which in turn promoted this heavy concentration. He points out that each time transitions in the composition of industry have proceeded from agriculture to manufacturing, and then on to the information industry, the conditions required of residential areas have changed dramatically in order to procure the resources required for this. He points out that this has resulted in a history in which each transition has continued to heighten the pressure on people to concentrate in cities. In other words, the areas in which people resided were situated in rural regions when agriculture formed the heart of the economy, but in an economy centered around manufacturing these came to be situated around factories, then in locations where knowledge was concentrated with the knowledge industry.

[2] The Cabinet Office (2020) defines Society 5.0 as "A human-centered society that balances economic advancement with the resolution of social problems by a system that highly integrates cyberspace and physical space." It goes on to state that, "In Society 5.0, AI exceeding the capabilities of humans analyzes vast quantities of big data and the results obtained from this are fed back to humans through robots and the like. This process brings new value to industry and society in ways not previously possible."

When it comes to considering how cities should be structured in the future based on the spread of COVID-19, Takagi similarly organizes this by dividing up those elements of urban life that can be replaced by technology from those that cannot by applying the concept of deframing.[3] Of these, he listed those elements that cannot be achieved in short order in a technical sense by digital and other technologies as including the act of holding carefree discussions, standing around engaged in conversation, and enjoying the atmosphere of wherever they are, as well as the appeal of the actual site where artistic performances are held. In light of this, he points out that, "The majority of these are not directly tied to work, but are those moments found in the margins of daily life. Yet the fact of the matter is that perhaps this in itself constitutes one of the major reasons that people will continue to live in cities in the future" **(Takagi (2020a))**. In other words, such elements can be thought of as one example of the value that is likely to remain in cities as we consider new movement patterns for people, such as remote work, in societies that must respond to the coronavirus pandemic. Moreover, with regards to the value of cities **Nakagawa (2020)** has pointed out the importance of productivity that harnesses the "*technology* of cities" in light of the fact that people have continued to concentrate in cities in Japan over the long-term amidst past infectious diseases, earthquakes, and other such shocks. He posits that, "Rather than intermixing aggregation with crowding and congestion, perhaps we ought to emphasize the continued formation of aggregation that avoids the latter two" **(Nakagawa (2020))**.

From the studies by Takagi and Nakagawa mentioned above, as well as that by Fujita and Hamaguchi from the previous section, the presumption is that when it comes to urban development for a post-coronavirus world, it will be important to continue examining the question of what sort of value cities possess as a result of their clustering functionality together that is more than mere crowding and congestion, with this including the use of digital technologies.

- What will concentrations of people look like in the Society 5.0 era?

What is more, when it comes to the question of how cities ought to be structured in the coming Society 5.0 era, for the four eras that have led up to Society 5.0 (hunting era, agricultural era, industrial era, information era) **Takagi (2020b)** posits that the resources that were important in each era have differed, and that the differences in these resources have significantly altered the mechanisms by which populations clustered together (Fig. 1). In this regard, he contends that one important resource in the Society 5.0 era will be the ability to perform analysis in cyberspace, or in other words, the ability to generate insights. He points out that another important resource will be the data generated from physical spaces. Having passed from the decentralization of the hunting and agricultural eras through the eras of concentration in the industrial and information eras, the thinking is that in the Society 5.0 era the data generated by concentrations of people and analytical capabilities that can be demonstrated anywhere will respectively serve as resources. The question of what direction clustering will move in as a result—whether people will move towards decentralization, or towards concentration, or in another direction entirely—has not been clearly elucidated within the discussion.

[3] This is a neologism coined by Takagi that signifies the collapse of a framework (or frame). Here, the consideration will be advanced via the notions of "decomposition and recomposition," which are the foremost concepts of deframing.

Industrial structure	Important resources	Directionality of clustering
Hunting era	Game	Decentralization
Agricultural era	Agricultural land	Decentralization
Industrial era	Factory plots / logistical access	Decentralization around a central core
Information era (Improving efficiency through digitization)	Access to information / face-to-face access to other people	Concentration
Society 5.0 Integration of cyber / physical spaces	Analytical abilities / access to technology	???

Fig. 1. Industrial structure, resources, and the directionality of clustering
(Source) Soichiro Takagi (2020b), “What will urban clustering look like in the Society 5.0 era?”

- Alternatives to a future of urban concentration

In response to smart city-type ideas that are predicated on clustering in cities in the information era, Professor Kazuto Ataka of Keio University has proposed the "Valley of Wind" concept as an alternative to a future of urban concentration. Ataka has this to say about the Valley of Wind: "If we persist in this manner on our present course, then I feel that mankind will inevitably arrive at a 'future of urban concentration.' Yet as opposed to this, perhaps there are other alternatives apart from this whereby the power of technology can be harnessed to live lives of abundance together with nature? This is our idea, to create a Valley of Wind-type future" **(Ataka (2020))**. Thus, he proposes future cities and social systems that harness technology. In this sense, the "Valley of Wind" concept sets forth automation through the use of technology as an unsolvable problem, while also raising the issue of converting the enormous burden of infrastructure costs in local regions that Japan is facing over to an off-grid approach, and also the issue of generating a "centripetal force" pushing people towards local regions by reorganizing the relationship with cities.

Consideration of the "Valley of Wind" concept began in the fall of 2017, and was announced by **Ataka (2020)** on March 2, 2020. As COVID-19 happened to begin spreading in Japan after the start of 2020, there was growing interest in moving away from the densely-packed life in cities to more socially-distanced lifestyles. The author is of the opinion that, based on the connection between industry, resources, and the direction in which clustering is headed as indicated in Takagi's discussion, Ataka's concept could potentially produce a diverse array of directions in which clustering could head as a result of new resources being sought-after outside of cities. It is impossible to foresee how this will be integrated with the social systems, urban development, and smart city plans of the Society 5.0 era. But it is conceivable that as the situation continues to change in light of the spread of COVID-19, there will likely be a growing need to pursue the possibility of alternatives to urban concentration.

Based on the above, the discussion by Takagi and Ataka's "Valley of Wind" concept can be thought of as raising points of view regarding questions of what sort of value is to be found in cities in a Society 5.0 era and a post-coronavirus world, what sort of value is to be found in alternatives to cities, and how to go about altering these via advances in digital technologies and technology in a broader sense.

3. Legislation and smart cities in Japan

As indicated above, discussions have been raised surrounding reassessing the thinking behind smart cities and over what are the inherent values of cities amidst the coronavirus pandemic. As part of this,

Japan enacted the Super Cities Act as a law that will have an impact on future urban development. In addition, it has also set forth new governmental policies on improving infrastructure, which is an important element of urban development and will also pose a challenge given the country's declining population. This section will show examples of recent revisions to laws, while also laying out the hopes and challenges for the related laws when it comes to smart city projects, urban development, and improving infrastructure in Japan.

- The Super Cities Act and reviews by local governments

Japan's Super City Initiative[4] is being considered as an initiative that aspires to achieve the cities of the future by having local regions, businesses, and the national government work together by applying Japanese technology[5] to regional challenges. On May 27, 2020, the Bill for the Partial Amendment of the National Strategic Special Zones Law, which incorporates the establishment of systems geared towards achieving the Super City Initiative, was enacted. Regarding the role of the Super Cities Act, the **Cabinet Office (2020a)** has stated, "First, it will establish procedures for the simultaneous and integrated promotion of regulatory reforms in multiple sectors in order to simultaneously establish multiple services. Second, it will add provisions that will enable businesses engaged in projects to improve data linkage infrastructure to request that national and local governments provide the data in their possession." In other words, the expectation is that under this law local governments will submit project plans rooted in the consensus of their residents to the prime minister, based upon which reviews by each ministry will proceed forward in an integrated manner, thereby ensuring that consistency is maintained with the contents of said projects. What is more, the expectation is that this will be used in an orderly fashion through the use of the linkage infrastructure. Local governments will continue to formulate plans to resolve challenges in their own particular regions, and projects will proceed based on the approval of the national government. The subjects under review by local governments span a wide range, and as of June 1, 2020 the Cabinet Office has received ideas submitted from 56 organizations **(Cabinet Office (2020a))**.

- Improving energy infrastructure and revising related laws

Concurrent with the enactment of the Super Cities Act, which serves to set in place the legal framework for urban development as a whole, discussions were also advanced over revising laws related to improving the energy infrastructure that underpins said urban development. The Act for Establishing Resilient Energy Supplies[6] was adopted and enacted at a plenary session of the House of Councillors on June 5, 2020. This law incorporated revisions to laws like the Electricity Business Act and the Act on Special Measures Concerning Procurement of Electricity from Renewable Energy Sources by Electricity Utilities in the aim of responding to recent natural disasters, promoting the dissemination of renewable energy, and improving upon the development of energy networks centered around electricity. Particular items related to smart cities found within the law include the revision of the feed-in tariff (FIT) scheme, the introduction of a revenue cap scheme for wheeling charge, the formulation of cooperation plans for when disasters occur, cross-region grid development plans to

[4] An overview of the Super City Initiative has been organized by the Cabinet Office (2020a) as indicated below. (1) Initiatives must not be proof-of-concept initiatives limited to individual fields like those for self-driving and renewable energies carried out to date. Rather, the initiatives must extensively cover daily life as a whole, including making payments completely cashless, making it so that administrative procedures only have to be carried out once, distance education and remote medical care, and making full use of self-driving within certain areas, for example. (2) The experiments must not be for temporary proofs-of-concept, but rather must be initiatives actually implemented within people's lifestyles and society in order to take the lead in achieving the lifestyle from the "ideal future" that is achievable by around the year 2030. (3) In addition, efforts must be made to achieve a better life from the perspective of the citizens, rather than from the perspective of the suppliers and technical experts.

[5] World-class Japanese technologies that were "developed in Japan" are referred to as "J-Tech."

[6] This law was enacted as a bill incorporating revisions to the Electricity Business Act, the Act on Special Measures Concerning Procurement of Electricity from Renewable Energy Sources by Electricity Utilities, the Act on the Japan Oil, Gas and Metals National Corporation, Independent Administrative Agency, and others in order to respond to challenges such as the frequency of natural disasters, changing geopolitical risks, and the primary sources of renewable energies.

develop "push-type"[7] power distribution grids, the adoption of licenses for electricity distributors, and consistency with the provisions of the Measurement Act. With regard to the improvement of power distribution grids in particular, an expert committee of the Organization for Cross-regional Coordination of Transmission Operators (OCCTO) has proposed deepening discussions in the form of a master plan. This is designed to promote cross-regional grid improvements that take costs and benefits into consideration while ensuring consistency with the Strategic Energy Plan and other plans.[8] The expectation is that presenting these legal frameworks and policies will ensure that resilient social infrastructure is set in place in a more efficient manner.

- Legal frameworks in Japan and challenges for urban development and smart city-related projects during the coronavirus pandemic

The thinking is that the Super Cities Act and the Act for Establishing Resilient Energy Supplies, which had been under discussion since prior to the spread of COVID-19, have laid the groundwork for promoting distinctive urban development and smart city plans at the local government level. The following section will lay out future challenges for urban development and smart city plans, including challenges that have come to the forefront due to the coronavirus pandemic.

➢ Data and privacy issues

With the data and privacy issues from Sidewalk Labs in mind, **Takahashi (2020c)** indicates the unique features of cities where data is concerned with the word “accountability.” Specifically, he points to the fact that projects are increasing in complexity as a result of the sharing and linking of data via the public nature of cities, their involuntary participatory nature, individual interventionality, and urban OS, and posits that the extent to which any one person is accountable presents a challenge. He is concerned that as cities get smarter on the whole, the relationship between the beneficiaries and the providers of data will continue to grow more complicated. As one example of responding to this challenge, he indicates that during an initiative by Kakogawa City that aimed to achieve a city where people could raise their children with peace of mind through the installation of surveillance cameras, the city worked to promote understanding among the residents by enacting ordinances, receiving comments from the public, and carefully addressing data and privacy issues. This is a case example where attempts were made to deal with the issue of accountability pointed out by Takahashi and the issue of trusting relations that arose between the people implementing the Sidewalk Labs project and the local government. Most recently, there have been initiatives in places like China and South Korea that make use of data on infected people as measures to combat the spread of COVID-19, and even in Japan the Ministry of Health, Labour and Welfare (MHLW) has released a contact-tracing app for the novel coronavirus. While initiatives that harness digital technologies from a public health perspective like this are promising, issues of data and privacy regarding information on infected persons remains a point at issue.

With respect to data and privacy issues in considerations of smart cities, obtaining the consent of those involved, to include both residents of the city in question as well as the people who are not direct beneficiaries themselves, presents a challenge. In addition, the concern is that to the extent that data administrators are unable to clearly shoulder accountability, projects will not proceed ahead due to a lack of trust in the plans. Attention is being paid to how each local government is considering such questions under the Super Cities Act, including what sort of data each person is handling as well as the technical responses to this.

[7] With respect to push-type grids, the Agency for Natural Resources and Energy (2019) has stated, "In the interest of promoting the large-scale adoption of renewable energy sources while curbing the burden on the public, it will be important to move ahead with considerations for shifting away from creating 'pull-type' grids, which comply with each request for power from a power source, to 'push-type' grids that comply with said requests in a systematic manner by taking the power source potential into consideration."

[8] Secretariat of the Cross-regional Grid Development Committee (2020), “Modalities for Shaping Core Grid Facilities (Basic Thinking behind the Master Plan regarding Electricity Grids),” Document 2 from the 48th meeting of the Cross-regional Grid Development Committee,
http://www.occto.or.jp/iinkai/kouikikeitouseibi/2020/files/seibi_48_02_01.pdf

➢ Installing core energy infrastructure and local infrastructure

Under the Act for Establishing Resilient Energy Supplies, the thinking behind a master plan was presented that would provide predictability regarding the use of power distributor licenses and the improvement of electricity infrastructure at the national level. Conversely, under the Super Cities Act there are a diverse array of municipal projects and plans. In addition, uncertainties remain over how to promote the establishment of local infrastructure based on the smart city plans unique to each local government in harmony with the policy of establishing infrastructure in the form of core power grids based on the power potential as seen from Japan as a whole in a push-type approach. What is more, as consideration goes to ways of working with a certain degree of freedom, including ensuring social-distancing, and people examine urban development that makes it possible to avoid crowding that includes consideration for public health due to the spread of COVID-19, there will potentially come to be calls for the installation of sparse infrastructure in a manner that is spread out geographically. The expectation is that decentralized urban development covering a wide range whereby infrastructure is not excessively concentrated in urban areas will result in contributing to increasing the number of people bearing the cost of the infrastructure in rural regions.

For some time, discourse had been promoted on compact cities projects that were initiatives to reduce the cost burden and improve the efficiency of cities by promoting the concentration of infrastructure in rural areas. The compact cities concept was centered primarily around issues like the concentration of commercial districts and means of transportation. But under the Super Cities Act, considerations are being advanced on the efficient use of energy, with this including the local production of renewable energies for local consumption, together with the use of data, with the expectation being that comprehensive reviews will be carried out on the infrastructure underpinning people's lives. In light of the existing plans for smart cities and as we give consideration to post-coronavirus societies, attention will be paid to how the Super Cities Act and the Act for Establishing Resilient Energy Supplies will continue to contribute to new urban development and the formation of infrastructure.

4. Conclusion

This paper reassessed behavioral changes in people and the plans for smart cities in the wake of the spread of COVID-19. It also suggested and arranged various points at issue regarding what sorts of modalities for cities will be required in a post-coronavirus world through a literature survey. It also arranged trends with the relevant laws in Japan and their impact in relation to this. This literature survey did not try to organize and analyze a single direction on the whole. Rather, it was nothing more than an attempt to indicate the existence of a diverse array of viewpoints and to present outlooks that can prove useful for future considerations to the extent possible. The hope is that presenting these diverse viewpoints and outlooks can contribute to further analyses and considerations pertaining to this issue in the future.

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