

Compact City as a Response to the New Normal: Designing Resilience to Encounter Pandemics

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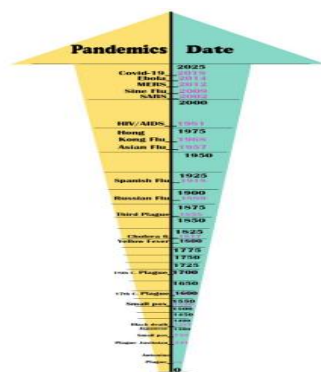
Abstract— The Coronavirus is a pandemic that defined the greatest crisis of the modern world, and it is the most critical challenge that the world has faced since World War II. Considering the effect and the scale of the outbreak, WHO declared Covid-19 as a global pandemic and identified the epidemic as an unprecedented socio-economic crisis and not just a health challenge. From early 2020, most of the countries in the world have been in lockdowns to prevent the spread, and these lockdowns critically restricted mobility resulting in empty city-scapes. The critical problem of the present is the incompatibility of the city forms to cope with the pandemic triggered by the inability to locate the 'New Normal' concept in the field of Urban Design. Non-resilience of cities is not a unique case to this pandemic but was common in the pre-pandemic world too. Modern cities being dependent on auto-mobility had created an urban crisis, and the desire of the designers to initiate sustainable alternatives was always defeated by automobile transportation. The pandemic has however created a temporary momentum towards active transportation restricting car-travel, and the study identifies the necessity of concretizing these temporary trends for the long run. Analysing the initiatives that the cities of the globe have taken, three main concepts could be identified as cycling, Avoid-Shift-Improve paradigm and 15-Minute city. The latter part of the study brings these concepts to the city fabric of Colombo and concludes by stressing the compatibilities of adapting these concepts to Colombo city.

Keywords: COVID-19, walkability, cycling, 15 - minute city

I. INTRODUCTION

The Coronavirus (Covid-19) is a pandemic which defined the greatest crisis of the modern world and it is the most critical challenge that the world has faced since World War II. On 31st of December 2019, a cluster of pneumonia caused by an unknown source was found in Wuhan, Hubei, China and was reported to the World Health Organization (WHO). This novel virus was then termed as the Coronavirus Disease 2019 (Covid-19) by WHO in February 2020. Since its initial emergence from Asia to its widespread to all the continents of the world, the effect of the virus has created an outbreak in the whole world. As for the statistics, by 15th May 2020, over 4,444,670 cases have been identified globally covering 188 countries. This has made the WHO to declare a global pandemic at the beginning of the year 2020. The term 'pandemic' is defined as "occurring over a wide geographic area and affecting an exceptionally high proportion of the population" which makes the present crisis lack nothing to be a pandemic at all senses. Yet the Covid-19 pandemic is not solely a health crisis but also an unprecedented socio-economic crisis of global scale. All these countries and communities are now facing unprecedented restrictions, and the world population are deemed to stay indoors. With the declaration of the pandemic the WHO recommended the world population to support the containment of the virus by quarantine, social distancing, and self-isolating themselves from the general public contacts. These essential procedures of pandemic containment indeed contradict with the desire of individuals for their social encounters and also conflict with the way our urban built environment are designed. Modern cities are not designed to cope with these new

restrictions or with this new way of life but instead designed to cope with the pre-pandemic world where millions of people working, commuting, sightseeing and being part of numerous forms of social encounters on a daily basis, but that pre-pandemic world seems a long way off now. Though the covid-19 pandemic and its causes are unprecedented, this is not the very first pandemic that the world faced. Over all these pandemics, the cities have evolved and the modern cities are a result of this long and continual evolution. When the evolution is considered the historical data evidence that the city designs have been always affected by these historical pandemics, and they have always resulted new forms of the city.



solely dependant on automobiles and the reliance on automobiles is not sufficient enough, specially for the developing countries, since the population that own vehicles are very less in these countries and mass public transporatation is a risk when the spread of coronavirus disease is concerned. The research problem identified is the loss of social encounters due to the new 'stay at home' concept arose with the Covid-19 pandemic and the possibility in recurrence of future pandemics as evidenced in the past and the incompatibility of the present city forms to cope with the pandemic situations triggered by the inability to locate the 'New Normal' concept in the field of Urban Design.

Considering the health risk and restrictions, the demand for sustainable transportation alternatives such as Walking and Biking have gained the highest ever demand without any special infrastructure improvements. In the United States of America, the state parks witnessed a 30% to 50% increase in use and some of the national and state parks were forced to close due to overcrowding in the time of pandemic. It is also accounted that the increase in demand for walking has been increased by 200% and the study shows that this time the pandemic had the most clear and visibale statistics in the rise of demand for high walkability scores in the USA. This is common to most countries and walking and cycling have become the best options left in the prevailing pandemic. Therefore, it can be claimed that the Covid-19 pandemic has paved its way towards a walkable city form. Sustaining transportation by making cities walkable was identified as a crucial necessity even in the pre-pandemic world, but the desire of urban designers and relevant authorities were defeated by the priority gained by the automobile transportation. With the prevailing pandemic, the designers and policy makers are given a greater opportunity where automobile transporatation is restricted as a health precaution and walking and cycling kind of sustainable forms of transportation are only permissible. A number of reaserch work in the field showcase that the proper designs and implications could convert this temperory trend

of walking into a long run even when the pandemic subsides in the future. Therefore, it is necessary to emphasize the need of identifying design sollutions that can turn these temperory trends of walking into permanent behavioural patterns. The research is done to provide an insight for the designers to conduct their work in sustaining future urban built environment through the identified opportunity created by the pandemic and the study will compare the concept of walkability as a remedy for the pre-pandemic world and the reliability of the same concept in sustaining the post pandemic world with reference to the concept of 'new normal'.

II. SUSTAINING THE PRE-PANDEMIC WORLD: THE CONCEPT OF 'WALKABILITY' AS THE REMEDY

A. Urbanisation and modern urban crisis

Historical studies on the human civilizations have identified three main incidents in history that transform and altered the human life and were also the driving causes of modern world. First among them was the revolution in 7000BC which resulted agriculture and Neolithic settlements (Pacione M, 2001), the second was the pre-industrial revolution that occurred before the 18th century. Third and the most crucial incident was the industrial revolution in the 18th and 19th centuries. According to Kevin Lynch's (1981) *A Theory of Good City Form*, these kind of incidents that created a very sudden and independent jumps to a new form of social settlement was the primal cause of cities. Cities were evident to be occurred in the pre-industrial age and evolved into the modern cities as a result of industrial revolution. According to Wheatley (2012), 'Urbanisation' is the process in which functionally intergrated set of institutions constructed on a kin-structure is changed and transformed into a socially stratified, politically organized, territorily based societies. Urbanisation can be a result of both natural increase of urban population and net immigration to urban areas from the rural communities, yet in either way urbanisation ultimately results the Urbanism¹. This urbanisation is the dominant force of 21st century

¹ Urbanism is the spread of changed social and behavioral characteristic due to urbanisation

and the modern world has faced a rapid urban growth all around the world, due to which 68% of the world population is living in urban built environment as per to the census of year 2020. This dominance claimed by the urban built environment have made them the sole player in the global economy. But as per the British council report on 'Global City Challenges' in 2018, the urban built environment is described not just as an economic centre but as a complex entity with social, cultural, political, technical and economic aspects.

The rapid urbanisation and Urban sprawl² being the typical form of urban expansion, most of the cities have witnessed a crisis spanned over social, environmental, cultural, political and economic aspects of a city. Patric Sisson (2012) in 'Upward and Outward Growth: Managing Urban Expansion for more Equitable Cities in the Global South' argues that the modern cities are not simply building up but indeed they are expanding out, through this it is predicted that by the year 2030 cities are to be expanded by 80%. In historic form of cities people used to walk for their work and needs and the city structure was compacted to support this life style, but with the industrial revolution and with the invention of affordable and developed automobile transportation accelerated the urban sprawl in the modern cities. Implication of public transit further enriched the situation and separated the residences and workplaces. These long and continuous transportation means of cities have affected the society, environment and economy arising an urban crisis as mentioned above.

B. Sustainable Urban Mobility

Based on a number of studies and the identification of the 'urban crisis' sustaining cities have been narrowed down to sustaining urban mobility. Providing adequate public transport, densifying the urban built environment with mix land use and compacting the cities are few sustainable amendments (Pacione M, 2001;260).

Continuous technological advancement that took place in the society since the industrial revolution has made the modern urban

communities strive to move faster and almost all the service provisions, urban design implications and infrastructure developments were done to facilitate this fast transportation which was further fostering an 'automobile oriented' city structures. Identification of reducing the scale and effect of urban spaces being dominated by automobiles have led the modern urban planning towards the phenomenon of 'walkable cities' (Turon K et al, 2017). The walkable city model involves walkability concepts. Walking in general meaning is a *movement* which is also *the simplest form of transportation* (Rafiemanzelat et al, 2016). In the urban context the verb, 'walking' is defined as *a short distance movement from one point to another* (Rafiemanzelat et al, 2016). With the industrial revolution and technological advancements walking and even public transport became less prioritized in the urban planning agendas. But with the identification of negative impacts of transportation being oriented on automobiles brought back the need of creating walkable environments which promotes walking. Concept of 'Walkability' is a more recent and rarely used word in the general vocabulary, but often used in the professional fields and this concept is defined as *'measurement of pedestrian friendly degree of a certain area'* (Rizali et al, 2017). According to Jeff Speck (2012) getting walkability right is the most crucial factor and the vitality of the concept is believed to be the correction for all other concerns. A study done by Leinberger (2011) on real estate performance, shows that the real estate markets in USA demands for walkable environment over the commonly supplied drivable sub-urban areas (Leinberger, 2011). Furthermore, the same study concludes by emphasizing the probability of losing economic opportunities by non walkable urban built environment. Speck in another study done in Philadelphia and Detroit in 2006 also found that the well educated professionals choose walkable neighbourhoods over non walkable neighbourhoods (Speck, 2012;22). Moreover Speck identified the prominence given to 'Walk score' in the field of real estate markets. Catherine Lutz and Anne Lutz in a study identified an inverse relationship between the car dependency and land values, all these studies

² Urban sprawl is defined as unplanned or uncoordinated low-density expansion, & involves rapid land consumption (Bhatt,2010)

show the economic values and attractions gained by the walkable city forms over non walkable, automated zones.

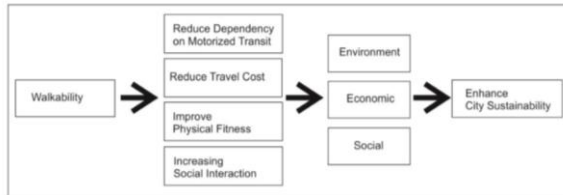


Figure 2. Relationship between Walkability and Sustainability

Further in studies, the author brings up a practical notion which is simple in implying and sustainable in functioning. It is termed as the 'General Theory of Walkability' (Speck, 2012;10). The theory includes four main qualities and 10 steps to acquire those four qualities.

Table 1. Four qualities of a walkable environment

| | |
|-------------|--|
| USEFUL | Daily routines are organized in a way that walking serve them well and walking help the user to reach much of the daily life |
| SAFE | The streets must be free and safe from car accident and most importantly the environment should make the user perceive it as a safe place |
| COMFORTABLE | Streets, street furniture, building, landscape should ultimately transform the street into 'an outdoor living room' eliminating wide open spaces which usually effect the attractiveness |
| INTERESTING | Sidewalks to be organized with interesting and unique elements with friendly faces that accommodate humanity |

Source: Speck,J, 2012: *How Downtown can Save America:*

one step at a time.

Table 2. The ten steps of Walkability

| CRITERIA | STEPS TO ACHIEVE THE CRITERIA |
|-------------------------|--|
| 1. the USEFUL walk | 1. Put cars in their place 2. Mix the uses 3. Get the parking right 4. Let transit work |
| 2. the SAFE walk | 1. Protect the pedestrian 2. Welcome bikes |
| 3. the COMFORTABLE walk | 1. Shape the spaces 2. Plant trees |
| 4. the INTERESTING walk | 1. Make friendly and unique faces 2. Pick your winners |

Source: Speck,J, 2012: *How Downtown can Save America:*

one step at a time.

III. SUSTAINING THE POST-PANDEMIC WORLD: THE CONCEPT OF 'WALKABILITY' AS THE REMEDY

The prevailing pandemic has caused unprecedented measures in the use of present cities. However, the present cities were shaped to resist these pandemics over time by changing its form time to time based on the epidemics they were facing. With this unprecedented measures of Covid-19 pandemic it was made clear that the present city forms are not coping up with the prevailing disease. Any pandemic can be divided into five main segments and third among them is the containment which the world tried and failed with Covid-19 pandemic. Therefore, the world is at the next phase at the present which is the Mitigation. When the precautions for mitigation is considered, a huge number of surveys have stress the necessity requirement of urban reform that make our cities more resilient to this pandemic and for the possible future pandemics too.

Mitigation of the pandemic initially involves travel restrictions and isolation to prevent further spread of the virus due to which millions of people all around the world were restricted to their homes. The world was under lockdowns for an year and a half now, and when the real situation is considered respective to its geographical locations, not all the counties were in lockdown for this long. Throughout this one and half years different countries were in lockdowns in different times, for an example when New Zealand and Taiwan were in lockdown, USA was not when USA was under the lockdown New Zealand and Taiwan were not. This is the initial concept of sustaining post pandemic world. These countries were considered as clusters and professional studies emphasize the ability of adapting this natural form of clusters into initial neighbourhood of a given urbanity. This simply brings back the concept of compact and densed city form with higher land use mix. When the transmission of corona virus is concerned higher density can be identified as a negative implication. The New York city which is recorded with the highest rate of covid cases but its density (10,400 people per Km²) is not as high once compared to Singapore (8,130 people per Km²) but Singapore didn't have the alarming rates as USA . According to statistics Seoul, Korea was one of the most successful countries to contain the first wave and the density of Seoul is at 15,763 people per square

kilometer which is even higher than New York city based on which, it can be stated that the density is not the most effective component for the spread of the virus. Therefore, the crucial need of present could be identified as to design sustainable and healthier cities that successfully accommodate the prevailing densities without reducing them. **Higher densities, compacted cluster development** can therefore be identified as the initiatives of sustaining post-pandemic cities and it is then required to enrich its sustainability in the aspects of economy, environment and society.

Pandemic has made **Walking** more appealing mostly because its covid-safe in the present and due to mobility restriction, lockdowns, preventions of public transport have naturally increased walking as a means of physical and mental well-being. Furthermore, prior to the pandemic also walking was found to be the most sustainable form of transportation and also while the pandemic it is still sustainable since it typically avoids the three **Cs** of covid spread (Closed spaces, Crowded spaces and Close contact situation). While avoiding the possible contacts of the virus spread walking tends to provide the human a sense of social encounters and prevent them from many possible mental disorders that may occur due to the norm of 'stay at home'. The main issue that the pedestrians of the pre-pandemic world faced was the constant competition that they were engaged with automobiles. But the main difference of the pandemic is that this competition is now lost.

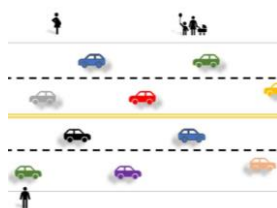


Figure 3. Relationship between Walkability and Sustainability

As shown in the figure 3, some cities in the world have added 'pop-up sidewalks' in which a portion of road where vehicles were moving were converted into sidewalks, and some cities have initiated 'al fresco streets' in which retail and restaurants on the either side of the road allowed to expand their shops to the road. Both these two

concepts have given a number of benefits, first among them is the avoidance of 3Cs with the widened up pedestrian spaces and the next benefit is the reduction of automobile usage which reduces the traffic and congestion, improving the both environmental and economic standards of the city. And the last benefit is the improvement of social encounters through which the society is strengthened.

However, the concept of walkability and promoting walking is only designed to connect public transit to work places in the pre-pandemic world and above mentioned general theory of walkability is designed to those short connections. But the present requirement of the pandemic is somewhat different as public mass transportation is a risk when the disease spread is concerned. The studies on this regards have identified two solutions and one is **Cycling** and the other one involves a structural **reform** in the urban built environment.

A. Cycling

Cycling has been identified as a sustainable form of transportation in the initial stages of pandemic mitigation as it is an open-air form of transportation. Except for that nature, a bike with its physical footprint enriches social distancing and the active form of cycling further influences distancing. With this identification both the developed and developing countries have initiated pop-up bike lanes to enhance the sustainable transportation and support walking. These initiatives can be seen from London, Paris to Berlin, Bogota and Wuhan. When the infrastructure provisions are concerned initiating these cycling lanes cause a very little cost when compared to automobile infrastructure and very little time span to initiate the project. All these initiatives are temporary and it is essential to transform these into permanent cycling tracks as cycling kind of active transportation means can lead the urban built environment on the right direction. A study in the field shows that 56% of Londoners have conveyed their want in pavements to be permanently widened up making more pedestrian spaces in the city and 57% wanted the cycling tracks to be established permanently. Moreover, by the case of Bogota, it was evident that the initiation of permanent and proper

cycling tracks can sustain the urban built environment. An addition of 583km long permanent cycling track in Bogota absorbed 800,000 rides on a daily basis which accounts for a 6% of all the trips that take place in a day.

B. Avoid- Shift- Improve Paradigm

Pandemic has forced the modern world to take emergency measures and stresses the urban designing profession to alter the urban mobility into sustainable urban transportation. As per the evidences, the pandemic has positively influenced towards a paradigm shift in the field of urban transportation by restricting unnecessary travel and promoting walking and cycling kind of active transport mediums as covid-safe options of mobility. The noticeable reduction of auto-mobile usage has given the planners an opportunity of lifetime to improve infrastructure for active transportation (walking and cycling) as the necessity of prioritizing automobile provisions in the urban agendas is not much needed when the present pandemic is concerned. In the pre-pandemic world the issue was how to prioritize and initiate active transportation in a world which is oriented on automobiles and in the post-pandemic world the issue is how to concrete this organically occurred trend of active transportation for a long time run preventing the cities being bounced back to where it was prior the pandemic. This is where exactly the 'New normal' should be located, and the new normal can simply be this '**Avoid-Shift-Improve**' paradigm. If the designers and authorities were able to get this momentum right the post pandemic world will transform into a sustainable entity with sustainable urban mobility, recovering the environmental standards, reviving the urban economies while creating 15 million jobs worldwide. Therefore, this is the most fortunate opportunity of our times and nothing will be able to make it affordable if this opportunity is neglected.

Table 3. The paradigm of Avoid-shift-improve

| Shift | Avoid | Improve |
|---|--|--|
| - Walking - Biking - Public transport | - Commuting by car - Unnecessary travel | - Broadband - Frequency of service - Quality of infrastructure |

| | | |
|-----------------|--|--|
| - Telecommuting | | |
|-----------------|--|--|

C. 15- Minute City

Researches in the field of of sustaining post-pandemic urban built environment often emphasize the acceleration on negative impacts of pandemic, that have been created by pre-pandemic urban models which were depending on automobiles. With this typical form, most of the urban built environment in the pre-pandemic world were not easily accessible without a heavy reliance on automobiles and which is the main reason of causing a bottleneck in providing essential services in the pandemic. It is now evidenced that most of the cities in the world have adapted some temporary initiatives to sustain through the pandemic and the City of Paris bears a winning story. The concept used in the city of Paris is the '15-Minute City' concept. With this concept, the City of Paris has led it way to boost their economy, while reviving the social cohesion and sustaining the city as a whole even after experiencing a brutal wave of Covid-19. Based on this success, a number of cities have already adapted the concept as a temporary initiative and implying it as a permanent urban reform is highly viable in sustaining the post-pandemic cities. The 15-Minute city model is based on 'chrono-urbanism' which outlines an inverse proportion between quality of urban life and amount of time spent on automobile based transportation. The concept of 15-Minute city was founded by Carlos Moreno, who initiated an urban set up in which the local residents were able to reach their essential needs within 15 minutes of time using active transportation such as walking or cycling. The updated form in concern to pandemic, Moreno states the need of fulfilling six essential urban social functions, such as, *living, working, commerce, healthcare, education and entertainment*. To attain these social functions, according to Moreno the urban built landscape needs to reform essentially including components such as, proximity, diversity, density and ubiquity. The 15-Minute city model is characterized by ubiquitous deployment of Information Communication Technology(ICT). Following the success, a number of cities reformed their city structures adapting this concept and the vitality is proven in almost all

those cases, due to which the concept gained recognition in the C40 Cities, WHO, UN-Habitat and Organisation for Economic Co-Operation and Development (OECD).



Figure 4. The 15-Minute city framework

Based on the practical success, vitality in sustaining cities, the concept of 15-minute city model is one resilient urban reform framework that promote, walking, cycling and social encounters while accommodating digitalization through which economic growth is acquired.

IV. THE CASE OF COLOMBO

The city of Colombo is defined to be the most distinguished urbanity in Sri Lanka due to its origin. The vernacular urban patterns and kinghoods never gave its concerns to the city of Colombo. The city was elevated up to the city level by the colonialists (Munasinghe.H) by starting its evolution as Portuguese outpost in 1505, and later fell into the hands of Dutch and British respectively. Irrespective to its non-organic origin the city claimed its place as the capital of the country even after the independence in 1948. In the modern world, city of Colombo recorded the highest urbanisation rates and Urban sprawl is the base means of urban expansions. Over years the city has been expanded and prior to the pandemic majority of the city users were living in dormitory suburbs travelling to city on a daily basis, which made Colombo, a sole dependent on automobiles. The statistics show an urban crisis affecting environmental, social, and economic aspects of the city. A study done on the Colombo city to figure the compatibility of the socio-spatial structure of the city with the concept of walkability, have proven that the city form and its

social component is highly prospective to be sustained through the concept of walkability. The study concludes by emphasizing the possibility of sustaining the city with the general theory of Walkability and it further clarifies the users' perception on walkability, being relied on safety above all the other universal criteria of walkability.

With the pandemic, urban cityscapes of Colombo have become literally empty and this showcases the non-resilient characteristic of the city form that prevailed prior to the pandemic. Sustaining the city in the futuristic post-pandemic world needs specific field studies, but this section of the study is intended to provide a broad insight to the process of sustaining the commercial capital of Sri Lanka which is the epicentre of Local economy.

A. Compatibility of the city with the Avoid-Shift-Improve (ASI) Paradigm

The city structure of Colombo, highly demarcate and separate the CBD (Central Business District) from Dormitory Suburbs, which prevents the sudden adaptation of active transportation means such as walking and cycling due to the considerable gap of distance. When the distances are concerned walking all the way from home to workplace is impractical and need of a proper cycling infrastructure is crucial in order to support the ASI paradigm. With the case of Colombo the total cut-off of public transport will not work and public transit being connected to this active transportation means will be effective. Furthermore, provision of adequate public transport with higher standards according to health concerns will help to reduce and avoid the commuting by car in the Post-pandemic Colombo when the pandemic subsides. To create a vibrant pedestrian environment the Colombo city inheritance (natural environment, land use mix, vibrant culture) are sufficient.

B. Compatibility of the city with the 15-Minute City Model

The 15-Minute City model demands an urban reform rather than a modification unlike in ASI Paradigm. But according to the 15-Minute city framework the four pillars of the concept, Diversity, Density, Proximity and Digitalization. The city of Colombo already possesses 'diversity'

and 'density'. As per to the original idea of the model, if the urban development authorities could improve the divisions of Colombo city into 15-Minute city models by introducing the 6 social functions, the factor 'proximity' too could be achieved. Introducing *working, commerce, healthcare, education* and *entertainment* into residential areas will easily fulfill the framework and making the residential zones into these models will surely increase the resilience of the city in future epidemics. In that case, 'Digitalization' is the only aspect that requires a whole new introduction into the system.

V. CONCLUDING REMARKS

City of Colombo possesses a number of potential possibilities that could make the city sustainable in the time of this pandemic. This sustainability could be reached by adapting the above mentioned concepts (ASI Paradigm & 15-Minute city model). Out of these, two ASI paradigms would be the easier method to adopt during this pandemic since all it demands is a modification rather than a whole new urban reform. In contrast, the 15-Minute city concept by Carlos Moreno, would be comparatively harder in adaptation since it demands a new urban restructuring. However, the ASI Paradigm is also unlikely to be 100% efficient due to the noticeable distance between CBD and suburbs but the sustainability might be achieved at least partly through this concept if public transport could be restricted to the greatest possible extent and improving it health-wise during this pandemic. These mobility restrictions could be enhanced by introducing digitalization to the city functions. However, the 15-Minute city concept is the most effective, versatile and the appropriate option that could make the city resilient for all time and also during any possible future outbreaks. It will also overcome the most general issue, 'Urban Crisis' that existed in the pre-pandemic world. Even though this adaptation is costly, time consuming and difficult in adaptation with emergency measures unlike ASI Paradigm, the adaptation is not impossible since residential areas of Colombo already possess the two factors; 'density' and 'diversity'. Thereby implying other five essential social functions (as per the 15-Minute city model) could create a group of 15 minute cities. This pandemic time is the most appropriate time to initiate this concept

since constant and concrete behavioral patterns of the pre-pandemic world are changed and the general public is now in the process of adapting to the new normal concept. Therefore, this is the greatest opportunity for the policymakers and designers to initiate this 15-Minute city concept which is more suitable to make the city sustainable in the longer run. If this concept could be initiated during this pandemic, it will sustain the city of Colombo at all times, with or without pandemics. In conclusion, it could be stated that ASI paradigm is the timeliest and convenient adaptation that could be used to overcome this ongoing pandemic and the 15-Minute city model is the most versatile, appropriate and efficient method to sustain the city in a longer run. The study can be concluded on the note that city of Colombo is compatible with both the concepts and adaptation of ASI paradigm as the initial step will make the city survive in the pandemic and implying primal steps of 15-minute city model in to Colombo city structure will sustain it in the longer run.

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