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Territories' adaptation to climate change and the effects of pandemics

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Territories' adaptation to climate change and the effects of pandemics

Introduction

Both climate change and pandemics have been shown to have huge impacts on spatial planning at different levels. Before the announcement of climate deregulation, the history of spatial planning was linked mainly to health crises. Major epidemics have made it possible to significantly change the way space and territory are organized and make them resilient to these recurring threats. Some epidemics have ended reigns, dynasties or regimes and heralded new eras leading to a reorganization of space and a renewed territorial organization. The global COVID-19 crisis, from the outset, emphasized the imbalances among territories and the need to take these into account in order to organize their response. Land use planning has returned to the fore in a spectacular way: spatial planning influences crisis management and can save lives or worsen health outcomes.

The management of both climate change and pandemics crises has undoubted territorial dimensions. First, on a global level, the first critical impacts of climate change have increased migration and caused huge displacements among populations. The International Organization for Migration (IOM) report on climate change states that “environmental refugees” exceeded total documented refugees from war and political persecution (IOM, 2008). Indeed, “As early as 1990 the Intergovernmental Panel on Climate Change (IPCC) noted that the greatest single impact of climate change might be on human migration – with millions of people displaced by shoreline erosion, coastal flooding and agricultural disruption. Since then, successive reports have argued that environmental degradation, and in particular climate change, is poised to become a major driver of population displacement – a crisis in the making” (IOM, 2008, p 9).

But to where do these migrants flee? Some studies highlight cities and megacities with access to water, food and health services the main reasons for their attraction. In Argentina, Chile and Brazil, immigrants are concentrated mostly in large cities. In Argentina, it is estimated that 70% of migrants reside in the Metropolitan Area of Buenos Aires, in Chile 65% reside in the Metropolitan Area of Santiago, while the majority of migrants to Brazil live in São Paulo, followed by Rio de Janeiro and Paraná (Warn and Adamo, 2014).

Thus, we observe that, first, climate change is causing global migration and, second, that the COVID-19 crisis has resulted in some interesting population evolutions. This is leading to new mapping and territorial dynamics.

Once the COVID-19 pandemic began affecting decisions about study, work, medical treatment, travel and food supplies, land management became vital. The COVID-19 pandemic serves as a test of the shortcomings, strengths and weaknesses of past land use planning policies around the world.

The aim of this short paper is to highlight five trends revealed by the COVID pandemic and the climate change crisis related directly or indirectly to land use planning. It studies the relationship between concentration of productive and social activities, the territory's health network, digitalization of the economy and future mobility projects, and the need to move to healthier production. It concludes with some recommendations for future regional planning policies.

1. The risks of concentrating productive activities

The concentration of productive activities is a high-risk factor that requires cities to become more sustainable, smart and circular. The global health crisis has revealed the limits of the current model of concentration of activities in overpopulated and highly polluted territories: Wuhan, the Paris region, New York, San Paolo, Milan, London, etc.. Many studies find a correlation between air pollution and the impact of COVID-19 (Travaglio *et al.*, 2020; Cole, 2020 ; Suresh, 2020) and some consider that pollution has exacerbated the spread of the virus. Hippocrates said, "If you're sick on your own, you must have eaten something bad. But if several of us are sick, it is because the air is not good. So, we have to change the air, make it circulate". The idea that air quality mattered persisted up to the 19th century. Haussman and Napoleon III tried to clean Paris up through architectural and town planning projects that promoted better public hygiene (Chevallier, 2010).

The limits of super-concentrated cities and public transport systems have become clear. However, the emphasis on climate change considered displacement of populations over the long term. In contrast, the recent pandemic has resulted in waves of city dwellers around the world fleeing cities for the countryside in the search for better sanitary conditions. These population displacements from large cities to the countryside is unprecedented in modern history. However, this redistribution of populations across territories revealed the constraints on the

organization of logistics to provide basic services and the limitations of the current model.

Some studies of the phenomenon of a slow, but progressive urban exodus since the 1970s in France, emphasize that it has multiple consequences for demography, social life, housing and mobility, agriculture and the environment, which are poorly understood (Merlin, 2009). In France, regional imbalances have emerged, with some territories accumulating services and others deprived of services. The corollary of this is that rural areas were emptied of their medical resources.

The old model of territorial organization led to the establishing of a logistics chain oriented towards large cities to the detriment of the remaining territory. Around the world, travel restrictions have meant that supply chains have had to be reorganized and cope with the partial shutdown of international trade. The search for local products and local services to compensate for imported products and services has led to a resurgence of the idea of efficient local economies. Territorial specialization and transport and transfer of services and goods should become typical of the past, making circular local development a must for territorial development.

Williams (2019) in her paper argues the importance of the circular economy on the spatial planning perspective, emphasizing the need to make more physical space in cities through planning instruments and involvement of circular economy, and transform cities to circular cities. Cities should be organized as a network of “villages”. The new city will be a chance and a challenge in the same time, since the mitigation and adaptation strategies as regard of climate change impacts and environmental protection (Lai, 2017). Social distancing in order to prevent the spread of COVID-19 has enabled creation of less density in the cities, smart working and balanced spatial distribution of activities. Lai (2020, p.241) states that COVID-19 should serve as a lesson to “drive towards innovative theoretical and technical visions concerning categories such as land take, soil sealing, intensive versus extensive urbanization, transportation networks, carbon capture and storage, and, ultimately, environmental, social and economic sustainability”.

First, the COVID-19 crisis questions the concentration of productive and social activities and for spatial planning to focus on peripheral areas to promote a circular economy based on short supply chains and smart and sustainable cities.

2. The health map to promote regional planning

The COVID-19 pandemic has renewed interest in the health map and coverage of territories by health facilities. Migration is often based on maximizing survival chances by fleeing from risky places and increasing proximity to health facilities. In this context, there are striking inequalities with 'medical deserts' clearly discernible. For instance, some regions had no hospital facilities, no intensive care facilities and no ventilators or other essential equipment. In some cases, including New York, the military set up field hospitals and, in almost all countries, patients were moved long distances to relieve the pressure on the hardest hit areas.

The health map needs to be reviewed. Provision of health facilities cannot follow a pure market logic and, across the world, public health provision is an issue (Chung, 2020). Provision of public health cannot be based purely on economic reasoning. Also, the countries suffering the greatest health crises are that have reduced public health sector spending the most over the past two decades, that is, Italy, England, the US, Brazil, etc., or which have ignored health provision. Without the engagement of civil society, the momentum provided by international solidarity, and without last-minute interventions the situation could have become catastrophic.

The ageing population is leading to a reconsideration of the health map and its network in every territory. A representative of Silver told us that « the COVID-19 crisis emphasized the daily issues that older people face in rural and mountainous areas due to the lack of services. The Silver Economy sector has demonstrated its capacity to assist the most vulnerable ones. The situation encourages reflexion on regional policies to support this crucial sector in our territories» (Interreg Europe, 2020). Living close to a good health care facility is a necessity for older people and it is clear that the decision to move to an urban center is sometimes dictated by access to hospitals and other health care establishments. A redistribution of the population will require some replanning of the health map and provision of university hospitals. Relevant health care policies could increase the attractiveness of some areas.

Scott (2020) shows how the COVID-19 crisis has caused great inequalities and spatial inequalities across cities and regions in matter of health. The most vulnerable people were older people. The solution of society for an elderly population has often been the predetermined separation - residential care units,

pension villages, nursing homes. In this matter health needs to be restructured and to put more effort in creation of adequate health services for population of all ages. Further Scott (2020), states that messages such as stay home has been meaning for homeless people. A recent report in The Lancet highlights the challenges of coping with Covid-19 outbreaks in Brazil. "In the favelas, conditions are crowded and access to clean water is limited. In such circumstances, social distancing and hand-washing are virtually impossible" (Burki, 2020, p. 547).

Second, the crisis highlights the need to think about spatial planning in relation to the health map and to take more account of the so-called "silver economy". Demographic transition has an important effect on regional planning and health care must be part of this planning.

3. The consequences for the territory of increased digitization

COVID-19 has validated and accelerated the digital trajectory. Use of digital technologies increased during the pandemic: work, leisure, study, social life, health, shopping was all enabled by digital platforms. In the space of a few days, people became dependent on Zoom to enable their social and work interactions. Many individuals who had never participated on an online seminar (webinar), never participated in a virtual meeting, never made an online purchase became champions of online services and questioned the need for unnecessary trips, unnecessary interactions, unnecessary meetings etc.

In France, in eight weeks, queues at post offices and social services offices disappeared and online money transfer solutions which had been in abeyance for 20 years were put in place. Traders who had never used a keyboard began selling online and organized their logistics accordingly. Suddenly we all went online.

COVID-19 is leading to a rethinking of our lifestyles and increasing digitization. It has shown very clearly that a switch to online services is both necessary and urgent. This will involve infrastructure improvements (in particular optical fiber), coverage of the entire territory and a rethinking of the physical facilities to enable to switch to digital.

For example, many universities across the world will switch to E-learning in September 2020.

The implications are huge: no more need for university residences and need for fewer means of transport; however, the savings derived should be used to ensure fast broadband connections for students, provision of adequate equipment, space for working close to their homes and more library facilities. The increase of the level of digital skills positively influences students' performance (Ben Youssef et al. 2020). This would allow local populations to study close to their families and ensure more balanced territorial development.

For traders, logistics chains will need to be reorganized as online sales continue to grow, which will require secure transactions and payments methods and efficient logistics platforms. There will be no need to rent premises in a city to set up a business. The impact on office space will be huge and especially in the context of large international megacities. The impact on land use planning will be unprecedented. Many workers will be able to work remotely which will reduce migration to cities driven by employment. State services will be affected and will require rationalization and a focus on essential functions. It is estimated that 80% of state services could go online. The most difficult part of the process is starting it; once started, nothing will stop it. The COVID-19 pandemic has promoted this start process.

COVID-19 has accelerated the use of innovation and digital technologies also in the healthcare system. Healthcare in the future needs to be focused in the investment on innovation and digitalization (Barnes, 2020), since robots, sensors, artificial intelligence, blockchain and broadband networks provide components for monitoring and managing the personal health care of the most vulnerable patients remotely in the home environment (Abdur Rahman et al., 2019).

Third, technology is having a strong impact on our territories. COVID will greatly accelerate the digitalization of companies. However, digital transformation is an opportunity to rethink the territorial development model and our priorities. It is a unique opportunity to break free of old paradigms, without subscribing to a totalitarian paradigm.

4. The fight against climate change and quality of the environment and life are the priorities in post-COVID-19 land use planning

COVID-19 has given the world an 'ecological break. Some suggest the establishing of an interactive map to remind us and to which we can contribute¹. This ecological break brought a realization of how much humans are overwhelming nature and the latter's capacity to reclaim its territory. Former near-extinct varieties of fish appeared in different oceans and rivers; turtles were able to lay and hatch their eggs undisturbed, butterflies appeared in their tens of thousands in city centers etc. The flora and fauna breathed during this ecological break while human beings enjoyed quieter, less frenzied and less polluted living environments and were able to observe their surrounding biodiversity.

Pedestrians and cyclists returned to city centers. COVID-19 underlined that our territory is shared and that to survive our natural resources need our ecological footprint to be reduced. Future development should take account of these aspects and translate them into active policies. The Thai government has decided to close its national parks for several months a year to allow nature to regenerate – one of the lessons of COVID-19.² King and Krizek (2020) emphasize the importance of encouraging walking and cycling activities by using creating future pedestrian and cycling trails. The clean public transport should be encouraged by making buses and and environmentally-friendly (De Vos, 2020).

A change in the habits of citizens was noticed during lockdown in many countries worldwide (Lai et al 2020; Ben Youssef et al. 2020). Social distancing has enabled working online, conferencing online, shopping online, exploring tourism online and other related activities has shift online during the lockdown. As activities has shift online and the travel has been in a halt, there has been a decrease in carbon emissions and was noticed an improvement in the air quality (Ben Youssef, 2020).

Further, the innovation and the digitalization are the key for the reduction of carbon emissions. Ben Youssef (2020) states that significant technological change

¹ <https://globalpause.usahidi.io/views/map>

² <https://www.ulyces.co/news/la-thailande-va-fermer-ses-parcs-naturels-plusieurs-mois-par-an-pour-que-la-nature-se-regenere/>

and the introduction of several new digital technologies which could allow radical transformations and the reduction of carbon emissions.

Preserving wild natural places and reducing pollution are essential to avoid future pandemics. Changing behavior related to the exploitation of resources is fundamental for a biological balance and food security. These concerns, which COVID-19 has highlighted, need to be translated into land use planning. An ambitious climate change policy should preserve our coastlines and our natural resources and encourage citizens to prepare for these adaptations. The COVID-19 crisis will be salutary if it leads to a reduction in uncontrolled development and increased sustainable development.

Fourth, development models need to take account of nature, the climate and biodiversity. The COVID-19 pandemic has shown us that the destruction of nature is damaging our food and health security and this destruction is reversible if the political will exists.

5. The agricultural map of the territory and the need for a return to more organic agricultural land

During the crisis, the European Commission published two strategies for 2030 – related to biodiversity and agriculture. The objective of these strategies in combination is to restore biodiversity and return to organic farming which will have a major impact on human health. The COVID-19 pandemic has highlighted the link between a poor diet and health (Nutri-Net, 2020). A return to peasant farming will change the dynamics in rural populations and could reduce migration.

In this context, the strategies propose to transform “at least 30% of European lands and seas into protected areas managed in an efficient way and by ensuring that at least 10% of the agricultural surface consists of topographical features of high diversity organic” (European Commission, May 20, 2020). The good news is that “the actions planned for the protection, sustainable use and restoration of nature will economically benefit local communities, creating jobs and sustainable growth. Funding of € 20 billion per year will be made available for biodiversity through various sources, including EU funds and national and private funding” (European Commission, May 20, 2020).

The aim of this short note was to summarize the effects of the COVID-19 pandemic on current economic and social development models and the repercussions for land use planning policy. In the space available, we were able to discuss only four aspects. The consensus that COVID-19 has been 'a trend accelerator' provides a better understanding of the challenges we face in the 21st century. We must use this opportunity to rethink land use planning. Dismantling large metropolises, ensuring environmental quality in cities, promoting a circular and local economy, changing the priorities related to digital equipment, preserving critical natural capital and preparing citizens to adapt to climate change are among the many priorities that must be addressed in future land use plans.

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