Organizational Change in Times of Crisis. Lessons from COVID-19 for the Adaptation and Mitigation of Climate Change

Benjamín Mairena Calvo*

DOI: 10.22458/rb.v32i2.3892

Recibido – Received: 06/08/2021 / Corregido – Revised: 20/09/2021 / Aceptado – Accepted: 01/10/2021

ABSTRACT

On March 11, 2020, the World Health Organization (WHO) declared the Wuhan China respiratory virus outbreak a pandemic. There was no quick mechanism to identify those infected, so it was not possible to apply an isolation procedure that was 100% effective to prevent the spread. This required the application of general rules of physical distancing to the entire population. At the same time, this forced to reduce import, export, production, and consumption employment activities, which of course, caused the fall of markets and economies, leaving millions of people unemployed. Despite this, sanitary measures and free movement restrictions have had a positive impact on the environment, significantly reducing atmospheric emissions. In turn, organizations have implemented many strategies and new ways of working and doing business, which has implied organizational changes and has shown that the best prepared companies are those that make better use of digital technologies. All the above demonstrates the ability of human beings to face crisis, a lesson that can now be applied to a sustainable economic recovery linked to the international climate agenda that seeks to adapt to climate change and, if possible, stop the phenomenon.

Keywords: organizational change; crisis; climate change; COVID-19.

* Chemical Engineer and Master of Business Administration, Area Manager at RECOPE / Humanitarian Executive at the Costa Rican Red Cross. Limón, Costa Rica. bmca43@gmail.com
ID: https://orcid.org/0000-0001-8804-5809

Introduction

The year 2020 will always be remembered as the year in which humanity suffered the battering of a social, economic and health crisis caused by a respiratory virus. On March 11, 2020, the World Health Organization (WHO) declared, the previously called "respiratory virus outbreak from Wuhan China," as a pandemic. It had been a long time since the world had experience a global health crisis such as this, which has had an impact in practically every region of the world and in every field.

There was no mechanism or immediate way to identify those infected, so it was not possible to apply an isolation procedure that was 100% effective to avoid the spread in selective groups. This required the implementation of general social distancing rules for the entire population as well as driving restrictions, which, in turn, at some point forced an almost complete reduction in the import, export, production and consumption business activities and, consequently, the fall of markets and economies, leaving millions of people without a job. On the other hand, the limited fiscal space that many countries in the region have hampers the government's support to the economic sector (World Bank, 2021).

One of the first measures adopted by the governments to reduce the contagion and spread of the SARS-CoV-2 virus was to close their borders, which, in addition to the lockdown of cities and towns, caused countries to paralyze or significantly reduce the commercial activities and the mobility of people between countries. The airports were among the firsts to suffer the consequences of these measures and, of course, the tourism sector that depends not only on local tourists, but also on foreigners. All of the above has affected business activities all around the world, but as the Organization for Economic Cooperation and Development (OECD, Policy Responses of Cities to COVID-19, 2020) mentions in a report: there are sectors for which the impact is greater.

According to reports on the World Bank's official website, for the first time in over 20 years, extreme poverty is projected to increase globally. A report from the United Nations Program for Latin America and the Caribbean warns about the situation in the region, where according to López (2020), there is concern not only about the level or the impact of the crisis in terms of the size of the economies and their capacity to recover, but also about the distributive impact that it is having, where the crisis interacts in a heterogeneous way, affecting mainly the most vulnerable sectors of the population, such as those with limited access to public utilities, people who depend on informal markets, micro and small-scale entrepreneurs, and women in precarious employment conditions, among many others.

Humankind is fighting against an unexpected enemy, which has no gender, no economic or religious affiliations; it does not recognize borders and there is no safe location to avoid it. Its growing impact took over not only the different media outlets, but also the daily life and way of seeing the world for a large part of the planet's population. Outside the economic scope, its consequences are the loss of human lives without any distinction of any kind, which is evident and tangible in the very short term, very different from other problems that already existed and that were widely discussed, such as global warming: a

topic that is even trite and that, before the pandemic, was already regarded as of minor importance for some sectors.

Many countries, especially those that signed the Paris Agreement, committed to significantly reduce their emissions to the atmosphere to address climate change. The fact remains that the climate agenda for 2030 is far from being met, but the actions implemented with the purpose of reducing the spread of COVID-19, despite their large and negative economic impacts, have also significantly reduced the use of fuels, fossil fuels certainly among them, which, in turn, has had a positive impact on the environment, since it has significantly reduced the greenhouse gas emissions that these produce. For example, in China CO2 emissions decreased by around 25% after four weeks with health restrictions imposed during the months of January and February (Carbon Brief, February 2020). In addition to the above, the complete shutdown of human mobility and the absence of human beings in certain areas has led not only to an increase in vegetation, but also to the fact that some animals visit cities and places where previously it was almost impossible to see them.

The two aspects mentioned, both the reduction of emissions and a greater presence of flora and fauna, although it is true that they may be temporary effects and not sustainable over time, have caused a great impact on the world population and have demonstrated that it is possible to significantly curb pollutant emissions into the atmosphere. There is also the restructuring of the social dynamics and the work and commercial environment that has forced many industries to resort to the use of digital technologies, computer platforms and virtual environments to carry out their work, in many cases, dispelling false myths, such as the impossibility to carry out certain tasks remotely through a virtual platform. While it is true that not all jobs can be carried out virtually or remotely, there are those for which the implementation of the modality called telecommute, in the case of Costa Rica, has further promoted a reduction in traffic congestion and decreased the commute of thousands of people, consequently reducing energy consumption by transport and breaking some paradigms. It is likely that even if a situation of normalcy returns, without a pandemic, many companies will choose to keep the telecommute option in some job positions.

The use of computer platforms and digital media for work and commerce has implied important changes in the way many activities are performed, which in turn has forced companies or organizations to restructure and promote irreversible changes in the way they do work and evidently, the way in which human resources are organized, led and managed.

Before the pandemic, the world was already in crisis, perhaps its effects were not as visible and immediate, but for several years it has been evident that the increase in the temperature of the planet has modified the climate and, with it, the well-being of the soils, forests, vegetation and, certainly, human activities. According to the UN Refugee Agency (UNHCR), during 2017 around 18.8 million people were displaced, mainly due to natural disasters and the impact of climate change. The current crisis that the world

is experiencing is nothing more than the combined effect of the climate crisis and the crisis due to the COVID-19 pandemic.

The above also happens at the local level, the crisis is a combined effect, although it is true that the economic impact of the COVID-19 pandemic is experienced worldwide, in some regions, it may be more pronounced. In the case of Costa Rica, its effects are due to the cumulative interaction of preexisting situations from previous years, as well as to the effects of the pandemic.

The State of the Nation Report for the year 2020 points out the convergence of multiple situations that aggravate the problem in Costa Rica, among which the following stand out:

- Inadequate use of land and natural resources.
- Difficulties in articulating production activities, their source of wealth and employment.
- Scant generation of job opportunities, lack of equity and social integration.
- Economic insolvency of the government, which prevents it from improving the condition of the most vulnerable households.

The above affects the production chains of goods and services, the economy of all sectors and; therefore, the entire population, although some more than others.

However, as noted in a report in the EKLA series: Climate Change in Times of Coronavirus, there are positive externalities that we can learn from, which are evident as a result of the actions taken to fight the COVID-19, and that have the potential to accelerate social trends and have laid the foundations for the reconfiguration of the energy landscape, such as technological innovations and business models (EKLA, April 2020). This is how many public institutions had to implement telecommuting and, in many cases, this required the readaptation of tasks and schedule adjustments, the process had to be carried out in a short period of time and, at the beginning, it was believed to be only for a few weeks, but it was extended, which implied changes and adjustments in the process. Similarly, the private sector and the businesses adapted their work strategies and some innovated and created new jobs and alternative ways to generate income. Admittedly, not everyone was able to adapt in the process, and thousands of people lost their jobs.

Methodology

The methodology used was a desk research, in order to identify the primary and secondary sources related to the global health crisis due to COVID-19 that the different organizations, governments, and the general population have had to face, and how the situation has unveiled and illustrated a series of opportunities that can be used to address other crises, such as climate change.

To achieve the goals, the starting point were two main sources of information: scientific articles from journals, and reports or documents from different national and international agencies and organizations. The search was done using the google search engine and the databases of indexed journals regarding the topics: organizational change, current situation due to COVID-19, and climate change.

For the research, the main question to answer was, what have we learned from COVID-19 that could help us with climate change?

The article aims to propose an analysis on the climate crisis, and on how the emergency due to the COVID-19 pandemic has demonstrated that, through certain actions it is possible to significantly reduce the release of polluting emissions into the atmosphere and, thus, to further forge the path of the governments' climate agenda, as well as to promote sustainable actions over time to curb climate change.

Results and Discussion

The COVID-19 pandemic crisis has once again exposed the need for flexible organizational structures that can adapt to the different transformations demanded by the environment, some of them may be simple, but others may involve organizational changes. According to Rivera (2013), organizational change is a strategic process, since the permanence of the organizations in the environment depends largely on it. A change can have a positive or a negative impact on the structures, functions and processes within the organizations, it is a strategic process.

Faced with the COVID-19 crisis, the economic sectors that best adapted were those that in one way or another were able to take advantage of the internet and the digital technologies. From the most basic daily activities such as attending a class at school or university, to the most complex ones such as industrial work, they took advantage of the benefits and opportunities of computer technologies and virtual platforms to maintain their work.

The Development Bank of Latin America, the OECD and the Economic Commission for Latin America and the Caribbean (ECLAC) recently presented a report called *Latin American Economic Outlook 2020: Digital Transformation for Better Reconstruction,* in which it is clearly indicated that the countries of Latin America and the Caribbean, which have been characterized by a large productivity gap, compared to the developed economies, must take advantage of the digital revolution so that it may drive an increase in productivity, especially those that are lagging behind. These digital tools are triggering innovations in business models and production systems, the reorganization of the economic sectors, new dynamics in the world of work, the supply of smart goods and services and new competitive conditions.

Information technologies and virtual environments require the organization's leaders and the employees, in general, to adapt to new changes and to develop abilities or strengthen skills that allow them to communicate clearly and effectively through computer platforms that allow it. This poses new challenges because it requires basic knowledge of the different alternatives or means of communication, and each media or platform has many tools for the different environments, which cover both simple aspects such as showing the picture of the participants and sharing the screen, to educational platforms that allow for the creation of forums, presentations, videos and progress monitoring structures and information exchange between teachers and students.

In addition to the above and according to Anchal (2020), other communication skills

are required to influence the employees in the most effective way possible, so that through the new virtual platforms they may be motivated enough to achieve the goals. What was previously considered a skill or good communication practices, such as looking at different points in the audience, smiling, looking at people in the eye, shaking hands or patting on the back, must be replaced by other actions that we might even ignore today, given the speed with which the changes have been taking place.

The aforementioned aspects involve changes in the work methods, changes in leadership and changes in the ways we communicate, and they also require the development of new skills by both employees and leaders, all of which would be impossible without organizational changes.

The latter is the basis for a new organization model, organizations that are able to adapt quickly to changes in the environment. "The digital transformation should contribute to the achievement of a" fair" transition towards sustainable low-carbon growth that goes hand in hand with the advancement of social justice" (OECD et al.; 2020).

To reduce or mitigate the impact of the COVID-19 pandemic, the governments had to implement a series of measures and strategies, some of which evolved or completely changed during 2020. According to an IDB report (2020), among the main actions to address the crisis are financial measures, work-related measures, digitization, reorientation of the production capacity and security protocols in facilities. In addition, there are many other measures which, although related, are worth mentioning, such as investment in biotechnology for potential vaccines/treatments and social distancing measures. They are briefly explained below:

1. Work-related, such as flexible hours, subsidies to cover the salaries of affected workers partially, telecommuting, among others.

2. Digital, such as subsidies for the implementation of new technologies, platforms for MSMEs, training in digital skills, digital tools repository, among others.

3. Reorientation of the production capacity, such as public-private cooperation for idle production capacity towards the provision of essential supplies.

4. Health and safety protocols implemented in companies, businesses and institutions with the purpose of reducing the chances of infection among personnel, users and the public.

5. Isolation and social distancing measures in public places, which in turn required the creation of the driving restrictions to reduce the number of people in public places.

6. Investment in biotechnology and medicine, many governments and companies invested not only in the research and development of potential vaccines, but also in treatments against the disease and medical equipment and infrastructure. In many instances, very large investments.

7. Financial measures, such as soft credits, guarantees, debt maturity extensions, deferrals and / or tax reduction, timely or advance payment to state providers, interest rate reduction, among others.

The aforementioned measures, especially the health safety protocols, implied closing public places and most businesses, which evidently required a new approach to business alternatives that, in addition to the other measures, implied a series of changes and structural reassessment in order to work and do business, which led to rapid organizational changes to some extent. The companies or businesses that did not achieve this evolution, suffered large economic losses and some disappeared, or are destined to collapse.

An important aspect, which is worth mentioning and that will be delved into later, is that although it is true that the actions taken to contain the COVID-19 emergency were not planned before the pandemic, their creation and implementation has evidenced the positive environmental impact that can be obtained from some of them, by opening a range of opportunities, so that an adequate creation of a post-pandemic strategy would not only allow for economic recovery, but also that it may conform to a climate agenda that had been already discussed at the international level years before the pandemic.

The pandemic caused by the SARS-CoV-2 virus implied the implementation of a series of measures that evidenced the direct relationship between economy, production and environment. Witnessing the direct effect of some restrictions enforced due to the pandemic on the environment and in turn on the economy, allows us to demonstrate some actions that may eventually be part of a sustainable economic recovery agenda and that is compatible with the international climate agenda. As mentioned by Cárdenas and Guzmán et al. (2020), to build that path towards an economic system that is better adapted to these risks, it is necessary to build governance and financial systems that respond with better science, better information and measures towards which governments, firms and investors can direct resources to rebuild the economy with natural capital, where risks are reduced and resilience is strengthened.

An IDB report of April 2020, entitled *Responses to COVID-19 on the basis of science, innovation and production development,* points out four basic aspects that can contribute to the creation of the conditions needed to expedite a way out of the crisis.

1. Have a comprehensive strategy in place to achieve an appropriate balance between emergency interventions to support companies and others necessary to generate future growth.
2. Have local capabilities to be able to provide a response that is adapted to the needs and realities of the region.
3. Have innovation ecosystems that are more mature and more developed institutional capabilities.
4. The opportunity to drive transformative agendas and new business models must be leveraged.

All these measures, in one way or another, require modifications to the work methodology, which, in turn, imply organizational changes to some extent. On the other hand, as León (2020) mentions, the lessons about the connections between the business activity and the health of urban and rural ecosystems and their impact on the quality of life of the households are

beginning to emerge. Air quality can change over a very short period if the industrial activity and the forms and technologies of citizen mobility change. The aqueducts in the large cities are experiencing a reduction in their wastewater treatment costs from which we can appreciate the economic benefits of a conversion in the treatment and processing technology of the industry.

León (2020) emphasizes on a series of "windows of opportunity" for an economic recovery and environmental sustainability agenda in Latin America and the Caribbean, among which he mentions: rethinking city transport, telecommuting, sustainable consumption and practices, e-commerce and fair and sustainable trade chains. While it is true that these are general opportunities for the entire Latin American region and that some of them may already be in practice even before the pandemic, it is worth briefly reviewing each one and in the future –in the case of Costa Rica– strengthen the existing ones, or implement those that have not yet been put into practice. Below we will analyze each of them:

1. Rethinking City Transport: the social distancing and driving restriction measures have demonstrated the need for a better reorganization of the cities and their means of transportation. Both based on the need to reduce crowds due to the possible transmission of respiratory diseases among people, as well as on the need to reduce commutes and the use of motor vehicles that generate pollution, there are initiatives that seek to promote the use of bicycles and walking.

   The contribution of a mobility strategy based on walking and the use of bicycles, with room for maneuver in many of the cities of the region, could generate social benefits in terms of reducing excessively long mobility timeframes, reducing emissions and reducing morbidity and mortality caused by respiratory diseases. The physical exercise involved also considerably improves health. Furthermore, trade benefits derived from a greater flow of cyclists and pedestrians have been documented (Carmona et al., 2018).

2. Telecommuting: it is one of the main actions taken by companies and institutions to avoid the need to shut down completely their services. While it is true not all jobs can be adapted to this modality, and the options may vary from one place to another, in Costa Rica this is a very widespread practice as a result of the national emergency due to COVID-19. In addition to being able to work remotely, it reduces the need to commute and, therefore, traffic congestion and the carbon footprint of vehicles. According to Castro (2020), in 2020, given the situation, that pervades the entire world, it became clear that telecommuting is a form of organization that becomes necessary to address health crises, and which can be continued for many job positions even without a pandemic.

3. Sustainable Consumption and Practices: the driving restrictions and lockdown measures have forced people to reduce or limit their purchases, which, in addition to the difficult financial situation, motivates to reduce the consumption of non-essential products. In turn, staying at home for longer periods has influenced many people to choose to value and implement healthier and more environmentally friendly habits such as sports,

recycling, composting, among others. According to León and Cárdenas (2020), a clear example of this is composting, which apparently has aroused the curiosity of many people in their homes. The data from searches for terms such as compost, reusing, repurpose increased during 2020 and 2021, if compared with searches in the same periods of previous years, contrary to the word shopping, which shows a decrease when making the same comparison..

4. Electronic Commerce and Fair and Sustainable Trade Chains: like telecommuting, electronic commerce has increased due to vehicle restrictions and lockdown measures. Many goods and services organizations implemented electronic commerce strategies and others strengthened activities that they already had in place under this modality. On the other hand, consumers saw this as a way to hold on some of their habits and, thus, the low value chain was strengthened in this form of trade. The economy's new work methodologies can provide opportunities for the transformation of employment in Latin America and the Caribbean (OECD, 2020). This allows for certain sectors of the population to have other options to enter into the labor market, this is especially important in those regions where the only forms of employment are agricultural. Naturally, the above will require access to the internet and organizational changes, both at the company and at the public policy levels, to ensure that these sectors can have access to digital platforms.

5. Green Taxes and Fair Prices: the reduction in the emissions released into the atmosphere and the presence of unusual flora and fauna, in cities and towns, has generated a greater environmental awareness worldwide, and both the companies and the people are more open to measures such as taxes on fuels and polluting products; in addition to promoting green and sustainable technologies. According to León and Cárdenas (2020), the latter could generate income and reconcile the need to assist the population affected by the pandemic, in addition to meeting the sustainable development goals.

The reinforcement of an environmentally sustainable agenda and the degree of utilization that can be obtained from each of these opportunities will depend largely on each country's public policies and the organizational changes that it will require from both state organizations, and the private sector.

According to Gutiérrez (2020), health now appears more clearly determined by our behavior, customs and both global and local mechanisms of economic development. The types of energy (currently slowed down) and industrialization that the developed world has mobilized, the exponential growth of cities, the agrochemicals and waste dumped in our fields and waterways are now being questioned.

While it is true that some of the measures implemented to curb the COVID-19 emergency will be eliminated if the health crisis comes to an end, others are here to stay. This is the case of those measures that, in one way or another, were already gradually put into practice, such

as telecommuting and digital commerce. They both rely on the development and the use of digital platforms and on the internet, in addition to promoting an economic recovery that is environmentally sustainable and compatible with the sustainable development goals and the Costa Rican Climate Agenda, this according to the National Adaptation Plan to Climate Change 2018-2030, which, at the same time, is a contribution on behalf of Costa Rica, which committed to the Paris Agreement of the United Nations Framework Convention on Climate Change in September 2015.

However, these and many other measures require major organizational changes in both the private sector and public institutions. According to Castro (2020), decree No. 39225-MP-MTSS-MICITT was issued since 2015 and it focused on the implementation of telecommuting in public institutions, but it was not until 2019 that law N° 9738 "Law Regulating Telecommuting" was created, it remains in force today. In addition, as a result of the COVID-19 pandemic, during 2020 guidelines N° 73, N° 77 and N° 88 were issued with regard to telecommuting. This had public institutions rush to assimilate these great changes in a short period of time, changes that under different circumstances would not have been successful, but that, due to the declaration of a state of health emergency imposed by the government of Costa Rica on March 16, 2020, were mandatory in most institutions.

While it is true that these work-related measures have been successful, it has also been demonstrated that the benefits of this modality could have been leveraged for several years, since, although it is true that some companies had already implemented it, it was at will. According to Castro (2020), out of 18,095 people who participated in a survey about telecommuting, 92.8% of the participants claimed to be telecommuting, and 85.9% claimed that they were granted this employment opportunity as a result of the COVID-19 health measures.

One of the great challenges and organizational changes to leverage from the COVID-19 experiences, and to ensure that they may be sustainable over time, is to focus on creating the optimal structure and conditions so that telecommuting can continue to be implemented in the job positions that allow it, and that those that do not could be assessed to consider the possibility of implementing it at least partially. According to Castro (2020), out of the 18,095 people who participated in the survey about telecommuting, 5,357 stated that one of the disadvantages of this work modality is the emotional detachment and isolation from the work team, and 4,417 people indicate that frequent problems with the internet connection is a major disadvantage. On the other hand, 3,512 people stated that they have had difficulty in the initial adaptation to this work mode, 2,134 people indicate that they have had difficulty working in a team, 2,094 say that they have had difficulty accessing the institution's computer systems during working hours, 1383 indicate the presence of other disadvantages, and 1327 claim that failure to provide them with the information necessary to carry out their tasks is a considerable disadvantage.

The above requires changes and adjustments so that the people under this work modality do not lose the sense of belonging to their work team or to the organization, it requires

better tools and computer platforms, training and, by all means, improved internet access. In all these respects, the leaders of the organizations must assume an important role.

Digital commerce and the new ways of doing business also require the aforementioned changes and adjustments, especially when it comes to small businesses. According to the OECD, Costa Rica continues to be a dual economy, combining an innovative and dynamic export sector with an alternate sector, which is mainly composed of local SMEs that do not benefit from the opportunities provided by the integration into the global economy. To increase productivity, it will be necessary to establish the appropriate conditions for local companies to thrive and, at the same time, maintain and reinforce our long commitment to foreign trade and direct investment (Economic Studies of the OECD Costa Rica, 2020).

Public policies must ensure that SMEs have the necessary tools to innovate and achieve the appropriate changes. Likewise, large multinational companies have an important task, their CEOs (Chief Executive Officer) must ask themselves if they are being proactive or if, on the contrary, they are only making decisions to stand up for themselves.

The percentage of teams that must telecommute permanently, the acceleration of the innovation processes, or the new needs derived from the change in consumer behavior, are some of the most relevant issues that business leaders currently have to address (Renjen, 2020).

An issue of vital importance, especially in instances where great changes happen over a short period time, is to ensure that the human resources not only have the technological tools necessary for the adaptation process, but that their concerns, expectations and motivations are identified, so as to confirm that they are aligned with the goals of the organization. If they are not, the negative aspects must be counteracted and addressed as lessons learned. Now, more than ever, the corporate environment must be monitored constantly.

According to Pérez et al. (2016), the ability to responde to difficult situations and to unexpected problems is a variable of increasing importance and one that will determine the continuity of organizations in the market. This capability is directly dependent on the vision of its management to understand that the internal processes of the organization must be generated by a dynamic without which it would be impossible to address the changes. Moreover, as Valderrama (2019) mentions, one of the greatest obstacles is resistance to change; the key to achieve it is a cultural transformation with the purpose of becoming an agile organization that is customer-oriented, which benefits from the collaboration of empowered individuals in team networks, that is prompt when making decisions, and that has leaders who promote commitment and innovation.

Conclusions and recommendations

Through thousands of years, humans have managed to prevail, evolve and survive adversity. Although it is true that the current pandemic has caused the loss of human lives and severe economic losses; it is an event from which we can learn and generate social and scientific knowledge, which is what we

have done indeed. There are several vaccines available against COVID-19 and, through it all, there have been opportunities to reflect on the direct relationship between production, economy and environment. So far, the environment has been the most favored by the current crisis, which demonstrates the potential extent that some changes in transportation and consumption habits could achieve. Evidently, this also requires political and administrative changes to which both the state and the private sectors have had to adapt. Those who had the technological tools and the most agile organizations had more opportunities to cope with the crisis, some even generated new businesses and different ways of trading.

Telecommuting, digital commerce, innovation and the digitization of many public services will no longer be perceived as issues for the future, or alien to our current context; however, organizational and leadership changes are required. Digital technologies offer new opportunities, but they also create great challenges, one of them being how to undertake the changes in communication and how to assume a leadership role at the present time, working from a computer and with dozens of coworkers, potentially, in different parts of the world. In addition to the above, the economic recovery is expected to go hand in hand with environmental sustainability and in accordance with the climate agenda; this will imply significant commitments in order to leverage the lessons and experiences learned from the COVID-19 pandemic.

References

Agencia de la ONU para Refugiados (2020). Cambio Climático y Desplazamiento por Desastres. https://www.acnur.org/cambio-climatico-y-desplazamiento-por-desastres.html

Anchal, R. (2014). E-Leadership- A New and Modern Style of Leadership. *International Journal of Advances in Management and Economics, Volumen 3, Issue 5*. https://www.managementjournal.info/index.php/IJAME/article/download/480/418

Banco Mundial (2020). Aumento en la pobreza extrema debido a la pandemia. https://www.bancomundial.org/es/news/feature/2020/10/07/global-action-urgently-needed-to-halt-historic-threats-to-poverty-reduction.

Banco Interamericano de Desarrollo (2020). Respuestas al COVID-19 desde la Ciencia, la Innovación y el Desarrollo Productivo. Primera Edición, abril del 2020. http://dx.doi.org/10.18235/0002347

Carbon Brief (Febrero 2020). Analysis: Cororonavirus temporarily reduced China´s CO^2 emissions by a quarter. https://www.carbonbrief.org/analysis-coronavirus-has-temporarily-reduced-chinas-co2-emissions-by-a-quarter

Cárdenas, M., Guzmán, J., Hernández, J. (2020). Boosting ESG Finance for the Post-Covid-19 World. *Commentary. Center on Global Energy Policy*. SIPA-Columbia University.https://energypolicy.columbia.edu/sites/default/files/file-uploads/BoostingESGFinancePost-COVID_CGEP_Commentary_042220-3.pdf

Carmona, M. Gabrieli, T., Hickman, R., Laopolou, T., Livingstone, N. (2018). Street appeal: The value of street improvements. *Every Journey Matters*. http://content.tfl.gov.uk/street-appeal.pdf

Castro, L. (2020). Situación del Teletrabajo ante el COVID-19, Costa Rica 2020. Ministerio de Trabajo y Seguridad Social. http://www.mtss.go.cr/elministerio/despacho/teletrabajo/informe_teletrabajo_covid19.pdf

Konrad Adenauer Stiftung (2020). La Gestión Ambiental en Tiempos de Pandemia. *Serie EKLA: Cambio Climático en Tiempos de Coronavirus. N°1.* https://www.kas.de/documents/273477/8706787/Art%C3%ADculo+CG+-+CC+en+tiempos+de+Coronavirus+Final.pdf/b6dc26b2-63a7-4c2c-f4d8-897f0ad41e8a?version=1.0&t=1586355690808

Konrad Adenauer Stiftung, (2020). ¿Podrá el COVID-19 reducir la huella de carbono en América Latina?, *Serie EKLA: Cambio Climático en tiempos de coronavirus. N° 3.* https://www.kas.de/documents/273477/8706787/Podr%C3%A1+el+COVID-19+reducir+la+huella+de+carbono+en+Am%C3%A9rica+Latina_dise%C3%B1o.pdf/02850da0-2412-0110-d33e-c5038ced511f?version=1.0&t=1587297086905

León, D., Cárdenas, J. (2020). Lecciones del COVID-19 para una agenda de sostenibilidad en América Latina y el Caribe. *PNUD América Latina y el Caribe*. PNUD LAC C19 PDS N° 14 A. https://www.latinamerica.undp.org/content/rblac/es/home/library/crisis_prevention_and_recovery/lecciones-del-covid-19-para-una-agenda-de-sostenibilidad-en-amer.html

López, L. (2020). Implicaciones socioeconómicas de la pandemia por COVID-19. Ideas para la acción en políticas públicas. *PNUD América Latina y el Caribe. Visiones Transversales Volumen 1*. https://www.latinamerica.undp.org/content/rblac/es/home/library/crisis_prevention_and_recovery/the-socio-economic-implications-of-the-covid-19-pandemic--ideas-.html

Ministerio de Ambiente y Energía (2018). Política Nacional de Adaptación al Cambio Climático de Costa Rica 2018-2030. San José, Costa Rica. Dirección de Cambio Climático (DCC), Ministerio de Planificación y Política Económica. Programa Arauclima, abril 2018. https://cambioclimatico.go.cr/politica-nacional-de-adaptacion/

Organización para la Cooperación y el Desarrollo Económicos (2020). Unidos en un Esfuerzo Global. Respuestas Políticas de las Ciudades al COVID-19. *Afrontar el coronavirus (COVID-19).* https://www.oecd.org/coronavirus/policy-responses/respuestas-politicas-de-las-ciudades-al-covid-19-12646989/

Organización para la Cooperación y el Desarrollo Económicos, Banco de Desarrollo de América Latina, CEPAL (2020). Perspectivas Económicas de América Latina (2020). Transformación Digital para una Mejor Reconstrucción. https://www.cepal.org/es/publicaciones/46029-perspectivas-economicas-america-latina-2020-transformacion-digital-mejor

Pérez, L., Vilariño, C., Ronda, G. (2016). El cambio organizacional como herramienta para coadyuvar la implementación de la estrategia. *Ingeniería Industrial. Volumen 37, N° 3.* https://www.redalyc.org/articulo.oa?id=360448031007

Programa de las Naciones Unidas para el Desarrollo (2020). Innovación, resiliencia y transformaciones urgentes hacia una justicia inclusiva en América Latina y el Caribe. https://www.latinamerica.undp.org/content/rblac/es/home/library/democratic_governance/innovacion--resiliencia-y-transformaciones-urgentes-hacia-una-ju.html

Programa del Estado de la Nación (2020). Consejo Nacional de Rectores. Informe del Estado de la Nación. San José, Costa Rica https://estadonacion.or.cr/informes/

Renjen, P. (2020). The preserverance of the resilente leadership: Sustaining impact on the road to thrive. *Deloitte article.* https://www2.deloitte.com/us/en/insights/economy/covid-19/sustaining-resilient-leadership-covid-19.html

Rivera, A. (2013). El cambio organizacional: un proceso estratégico de adopción y adaptación. *Revista Gestión y Estrategia*, *N°44.* http://gestionyestrategia.azc.uam.mx/index.php/rge/article/view/66

Valderrama, B. (2019). Transformación Digital y Organizaciones Ágiles. Universidad Politécnica de Madrid. *Universidad Tecnológica Intercontinental, Paraguay. Volumen VI.* https://www.utic.edu.py/revista.ojs/revistas/6/pdf/1.pdf