



# HACKATHON



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A **COVID-19** Virtual Ideation Experience

**Team Topic and Number:** Environment and Climate Change, Team #4

**Team sponsor/chapter (if applicable):** N/A

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**Input your submission below. Please remember that you have 1500 words to share your insights.**

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## **Executive Summary**

Climate change has a direct impact on human health. We must understand that impact and create a resilient society.

More responsible management of urban growth will be crucial to support sustainable urbanization. As an industry, we should bring our voices to educate policy makers and those involved with updating building codes so that together we can create new public health requirements.

Transit oriented development will gain momentum to reduce reliance on cars and long commutes and increase reliance on localized smart solutions. In turn, costs will go down for companies based on a reduction in business travel and subsidized commuter costs.

The high prevalence of working from home will continue post-pandemic, driving a new perspective on location strategies, energy needs, workplace design, training and education and the desire to avoid enclosed, dense spaces.

COVID-19 has and will continue to affect the built environment, both in the way companies operate and how employees behave. To that end, every company must develop directives around resiliency, sustainability, health, and wellness into their design, construction, and operation requirements.

# How COVID-19 has Affected the Environment and Climate Change within the Built Environment

## Introduction

**Climate change has a direct impact on human health. We must create resiliency.**

We must reduce our environmental footprint to mitigate the current and future impacts on health, habitat, and our economic wellbeing. During the period 1998–2017, direct economic losses from disasters were estimated to be almost US\$3 trillion. Climate-related and geophysical disasters claimed an estimated 1.3 million lives ([source](#)). We cannot afford to continue to sit idly by.

Key factors that contribute to increased emissions in the built environment stem from community engagement, buildings (design, construction, operations), transportation and commuting, electricity generation and consumption, and occupant and stakeholder habits. People are at the core of driving these shifts, as our habits directly influence the way in which the world evolves.

COVID-19 has, and will affect the built environment, both in the way companies operate and how employees behave. To that end, we will see short, medium, and long-term impacts through all pillars of the built environment.

Those organizations that cannot adapt principles that promote operational efficiencies and a reduction on our environmental impact in each of the core pillars will become obsolete. Either way, both companies and employees must hold themselves accountable for the impact of direct pollutants and GHG emissions on our health and habitat.

## The Pillars

### *Community*

**More responsible management of urban growth will be crucial to guarantee sustainable urbanization. We should educate lawmakers and those updating building codes so that we are creating new public health requirements.**

Buildings and real estate must remain an essential part of that conversation. We must seek and maintain an active discourse with experts in public health, sociology, urban design, and public policy to consistently adapt and develop more appropriate building codes that address occupant health and reduce the carbon intensity of the space.

Government agencies and policymakers will be held accountable, as politics (and the influence they have over the required change) affect and are affected by climate change policies and regulations.

Going further, the real estate community should embrace all levels of environmental justice. Historically, certain sections of the population have been disproportionately affected by climate change, and now, COVID-19. Preliminary data across the country show these communities are facing higher rates of infection and death from the new Coronavirus. In fact, a 2018 US federal report demonstrated that these same communities have higher rates of health concerns, are exposed to more environmental hazards, and take longer to bounce back from natural disasters, such as hurricanes, flooding and wildfires ([source](#)). These are also populations least able to protect themselves by working from home.

**Recommendation:** Zoning Changes are to be made equitable for all populations, and workplaces in those locations have a keen sense of environmental justice and sustainability.

## ***Transportation***

**Transit oriented development will gain momentum to reduce reliance on cars and long commutes and increase reliance on localized smart solutions. In turn, costs will go down for companies based on a reduction in business travel and subsidized commuter costs.**

Transportation has long been associated with land development and planning and has been dominated by the backing of fossil fuels, which will continue to erode our natural resources and accelerate climate change. This is a cyclical event that drives the growth of our cities in an outward pattern, directly impacting commute times and necessity of single vehicles to reach employment opportunities in larger metropolitan cities.

Through the pandemic, we have seen more people work from home (WFH), and as a result, transportation emissions are dropping ([source](#)). The return to work phase, however, may see people using more single occupancy vehicle (SOV) vs public transit. *As a result, emissions may temporarily spike higher than previous periods.*

Business must play a part in reducing emissions. For the short to medium term, we will experience a slow-down in the extent of business travel altering how business operates. Long term, we will see a focus on more Transit Oriented Development tying together smaller communities within the metropolitan areas with rail lines and replacing SOV commute times with a live-work-play balance where people leverage bicycles, walking and electric buses as their preferred means of transportation to and from the office.

**Recommendation:** Despite the current circumstances, businesses should look to the long term, and find ways to commute their employees safely perhaps employing a hub and spoke

model of portfolio optimization. This is where healthy indoor practices can find their way in the public sector, as **constant sanitization, hand washing, covering the mouth and nose, and cycling fresh air will help reduce the likelihood of spreading any virus or bacteria during transit.** ([source](#))

It doesn't stop there. **Transparency builds trust, thus, public transit authorities must develop strict guidelines and protocol around cleaning and sanitization, and be very transparent about their practices.** ([source](#)) Rounding this out, communities and government agencies should incentivize public transit authorities to show a unified ecosystem of safety, health, and sustainability. By prioritizing transparency, we pressure agencies to have better practices, making the roadways more healthy for all ([source](#)).

## ***Buildings***

**The high prevalence of working from home will continue post-pandemic, driving a new perspective on location strategies, energy needs, workplace design, training and education and the desire to avoid enclosed, dense spaces.**

In the near term, reduction in occupancy in commercial buildings may not result in a proportional decrease in waste and water/energy use, nor in cost of occupancy to tenants, as most are committed to lease terms and the related obligations. ([source](#))

As companies shift to more permanent mobility models, investment in technology to support this will increase as will employee's personal environmental footprint and utility bills. Indeed, net energy and water consumption may increase, particularly in regions that have noticeable seasonal differences. In those areas, residential heating and air conditioning requirements tend to exceed those requirements in commercial buildings. ([source](#)). Companies should address this through energy and water efficiency education, partnerships with local utilities to promote residential efficiency programs, and even incentivizing efficiency measures at employees' homes.

**Recommendation:** Building owners should explore and invest in smart building technologies that ensure the safety of ventilation systems, water in buildings, and possible technologies such as ultraviolet lighting or filtration, frequency of air exchange and opportunities to automate lighting and HVAC use. The challenge here will be to ensure that higher ventilation rates do not translate to lower energy efficiency.

Developers and building managers will need to think creatively to keep those two metrics in line, whether through re-commissioning, operation and maintenance changes, efficiency-focused capital upgrades, or a renewed focus on net-zero buildings.

In general, forward-looking companies should create estimations and metrics around the energy usage associated with increased home energy consumption and consider them part of their emissions inventory.

## Conclusion

**COVID-19 has and will continue to affect the built environment, both in the way companies operate and how employees behave. To that end, every company must develop key frameworks around resiliency, sustainability, health, and wellness into their design, construction, and operation requirements.** We have been complacent far too long and it must not stop there. A combination of strategies is needed to reduce greenhouse gas emissions and our catastrophic carbon footprint.

Short-term strategies involve reimagining how and where we work and switching from carbon-intensive energy sources to alternate and renewable sources. Long-term strategies involve innovative research and a fundamental change in our habits towards energy usage. By committing to new ideas and investing to facilitate these ideas into healthy sustainable alternatives, our planet and its people will yield long-term rewards.

## Resources

- [Sustainable Development Goal #11: Sustainable Cities and Communities](#)
- [Sustainable Development Goal #13: Climate Action](#)
- [Sustainable Development Goals](#)
- [Climate Change will Hurt Poor People the Most](#)
- [Climate Change Threatens Minority Communities](#)
- [Why working from home may be less sustainable](#)
- [Why empty office buildings still consume lots of power during COVID-19-19](#)
- [How WELL helps combat viruses in the built environment](#)
- [How Lockdowns have Improved Air Quality](#)
- [Nationwide Work From Home Shift](#)
- [Why Empty Office Buildings Still Consume Lots of Power During a Global Pandemic](#)
- [\\*van Lierop, D., \\*Boisjoly, G., \\*Grisé, E., & El-Geneidy, A. \(2017\). Evolution in land use and transport research. In T. Sanchez \(Ed\), Planning Knowledge and Research. Routledge, New York, USA.](#)
- [Sustaining the Metropolis LRT and Streetcars for Super Cities, TRANSPORTATION RESEARCH CIRCULAR E-C177, 12th National Light Rail Conference, Salt Lake City Utah, 2012](#)
- <https://www.forbes.com/sites/nazbeheshti/2019/01/16/10-timely-statistics-about-the-connection-between-employee-engagement-and-wellness/#306a912822a0>
- [US Department Of Transportation Reduce Spread of Covid-19](#)
- [CDC Re-Open Public Places Checklist Guidance](#)
- [CDC How to protect yourself and Others from Covid-19](#)