Improving Urban Living:

Downtown Calgary Edition

Introduction

The world population has increased immensely throughout the last two hundred years. The increase in life expectancy, due to advancements in medical technologies, has been a key factor in this growth (Wormald, 2015)[1]. This growth has not come without its own consequences. Consumption rates continue to grow and environmental degradation continues to become an increasingly large issue. The urbanization of the world has been a result of the rapid growth of the population. In order for a sustainable future to be possible, urban centers need to be redesigned to make the most of the finite resources the world has available.

Downtown Calgary

There are many different ways to create better living conditions in urban centers around the world. Downtown is one of the many areas in and around Calgary that could use some necessary improvements. Downtown's cramped feeling and inefficient roadways, are unwelcoming to visitors as well as local commuters. No different than many other cities downtown, Calgary's is continuously busy with public transportation (i.e. the C-Train), pedestrians, vehicles, and cyclists. There are multiple run-down areas that could be improved with a little redesigning and be put to better use. As well, the eco-footprint of downtown can drastically be improved by implementing various strategies.

Improvements

Transportation

Let's start with the transportation aspect. Traffic in downtown is a continuous issue. The roads are narrow, there are people everywhere, and if you go at the wrong time of day, you are bound to be late to where ever you're going.

Calgary has already invested in implementing bike lanes into many of the roads downtown, but there can always be more. As Peter Calthorpe said, "bike is the most efficient means of transportation we know" ('7 Principles' 10:22)[2]. By having enough bike lanes, the city can then bring bike share programs to provide economic opportunities and encourage citizens to use the lanes. Bike share programs are popular in Europe and are spreading around the world. With more people biking downtown it will help decrease the number of vehicles on the streets as well as the city's carbon footprint. Biking will also give people a way to stay active in their daily lives downtown.

Along with more bike lanes, making public transportation more desirable and available will help with carbon emissions. By having routes that go all throughout downtown with minimal wait times, people will be more likely to use it as a method of travel. As well, advancements continue to be made in the electric vehicle industry, and buses can gradually be changed to electric. This will lower emissions substantially as well as save the city money in the long run. Electric vehicles are simpler, meaning less maintenance, and electricity for fuel costs less than diesel or gas (Roberts, 2018)[3].

These improvements to transportation are necessary and have the potential to be very successful. With gas prices as high as they are, some people are not able to afford to drive their vehicles. Increased availability of bikes and bike lanes, as well as an efficient public transportation system will give people more options that just so happen to be better for the environment. Eventually, buses in the public transportation system can become electric which will help with the air quality and save money in the long run. Until then, more routes throughout downtown with minimal wait times will encourage people to use the system.

Buildings

If reducing the carbon footprint of downtown is a goal, then improvements to not only the transportation system but also buildings, need to be done. Downtown is full of buildings of varying sizes. There are huge offices, smaller apartments, and commercial stores throughout the core. As more people move into downtown, being able to optimize the efficiency and livability of the buildings is key.

Many different technologies are being created that will make buildings and other architecture eco-friendlier. For example, Calgary could start implementing light-reactive glass into the buildings downtown. In the summer, the glass will reduce heat and glare which will lessen the need for air conditioning, and it will let the maximum amount of light in (if needed) to reduce the need for electric lighting (Vince, 2013)[4]. However, since Calgary experiences winter for a good part of the year, buildings need to be kept warm. By making sure all buildings have the best insulation available, less heat will be lost and not as much will need to be produced.

Each building downtown should also begin to have renewable energy sources to help maintain power. By adding solar panels to roof tops or even using newly developed transparent solar cells on windows, it will allow buildings to generate their own power using the sun's energy (Service, 2018)[5]. Finding ways to add in renewable sources to building structures will decrease our reliance on natural gas and oil.

Lastly, in the last decade or so, more multi-use buildings have begun to pop up around downtown. These buildings typically have commercial stores on the ground level and apartments in the upper levels. By building more of these structures it will allow people to use the new bike paths, transportation, or walk to where they need to go. If they want to go shopping or to work they won't have to drive and add to the carbon emissions. Having amenities in at least walking distance will encourage people to move downtown and make better choices that don't affect the environment.

Incorporating Nature

Adding natural features to downtown will help liven it up and keep the air fresh. There are many ways to do this. For example, there are multiple run-down buildings in the downtown area. If these areas were to be cleared, small parks could be created where people can escape from their busy lives for just a moment. Adding trees with barriers for protection from salt and snow plows along the streets will make downtown more welcoming and will keep the trees safe during winter. An increase in the number of plants will also help lower the carbon dioxide, and increase oxygen, in the air as plants are natural carbon sinks.

When there is not enough room on the streets for vegetation, the rooftops of buildings can be used. By building dirt beds on the top of buildings for plants to be, they can be used to hold rainwater for later use (Howard, 2012)[6]. Green roofs can also be used for gardening. As long as the amount of direct sunshine is controlled so the plants don't die, rooftop gardens are a simple way to grow fresh food without having to buy it from a store. The more gardens available in town, the less food produce will need to be shipped in.

Living organisms have now started to be used in various structures. For example, self-repairing concrete has been created by engineers. It uses sunlight or has bacteria within it that when water seeps in will activate the bacteria to release limestone to fill the cracks.

Urban living and the natural world can coexist if cities are designed correctly. Some of the large problems humans face (i.e. pollution) can be solved or alleviated with the incorporation of nature. Downtown Calgary is just one of the many communities around the world that will greatly benefit from more nature.

Concept

(7)

The image above shows how some of the concepts and improvements previously talked about can be incorporated into the city setting. Calgary's downtown has the potential to look very similar to this with bike lanes heading in both directions, mixed use buildings, and more plant life. In addition to what is seen in the picture, the windows of the buildings could have transparent solar cells on them and green roof tops.

All of these improvements will help make downtown eco-friendlier, by lowering carbon emissions, as well as more welcoming and livable.

Amsterdam

Many cities all over the world have begun implementing various tools to become more sustainable and livable as populations continue to rise. Amsterdam and Singapore are two of the top leaders in being sustainable. To start, Amsterdam currently has more bikes than people in its limits. The main mode of transportation is by bicycle. The city has worked on creating more space for cyclists and pedestrians and has been focusing on the benefits of cleaner air (Kilian, 2018)[8]. As well, the city is working on making almost all transportation electric powered. By 2025 the entire bus system, as well as taxis, will be emissions-free.

To make this happen, Amsterdam has begun offering subsidies to companies that switch their vehicles to electric, and allowing electric cars to park free at various charging stations and have priority for parking permits. Another aspect of the sustainability of Amsterdam is the fact that these charging stations are powered by wind turbines.

Downtown Calgary and eventually the rest of the city can slowly become more like Amsterdam. Making people want to use eco-friendly options is the largest hurdle to get over. With more bike lanes, electric transportation, and bikes, Calgary can also offer subsidies to begin to try and catch up to Amsterdam and become more sustainable for the future.

Singapore

Singapore has called itself the “Garden City”, and for a good reason (Kolczak, 2017)[9]. To begin, green building has been mandatory since roughly 2008 to ensure all buildings are as sustainable and eco-friendly as possible. The city currently has about 72 hectares of rooftop greenery and is aiming to triple that by 2030 (Heok, 2016)[10].

All of the greenery improves air quality, reduces the need for heating and cooling energy use, and makes urban environments more enjoyable to live in. Several studies are being conducted on the benefits vegetation in cities has on the mental health of individuals. For an island city that has very little resources, Singapore has had to be creative in becoming sustainable for their own well-being as well as the Earth’s. There are more benefits than negatives when it comes to adding more vegetation to a city. Calgary could use more to help clean the air and add freshness into the core.

Conclusion

Technologies are being advanced every day that will help create a sustainable future for the generations to come. City planners need to start utilizing the help of scientists to help make a healthy future possible. Downtown Calgary is only one of many communities that will benefit from changes like using renewable energy sources and adding more green spaces. The changes discussed can be implemented easily and with time, downtown will be able to make the most out of the space available.

Bibliography

1. Wormald, Benjamin. “Main Factors Driving Population Growth.” *Pew Research Center's Religion & Public Life Project*, Pew Research Center's Religion & Public Life Project, 12 May 2015, www.pewforum.org/2015/04/02/main-factors-driving-population-growth/.
2. TEDtalksDirector. “7 Principles for Building Better Cities | Peter Calthorpe.” *YouTube*, YouTube, 31 Aug. 2017, www.youtube.com/watch?v=IFjD3NMv6Kw.
3. Roberts, David. “Electric Buses Are Coming, and They're Going to Help Fix 4 Big Urban Problems.” *Vox*, Vox, 28 Apr. 2018, www.vox.com/energy-and-environment/2017/10/24/16519364/electric-buses.
4. Vince, Gaia. “Future - Smart Cites: Sustainable Solutions for Urban Living.” *BBC*, BBC, 2 May 2013, www.bbc.com/future/story/20130502-how-to-make-our-cities-smarter.
5. Service, Robert F., et al. “Skyscrapers Could Soon Generate Their Own Power, Thanks to See-through Solar Cells.” *Science | AAAS*, 28 June 2018, www.sciencemag.org/news/2018/06/skyscrapers-could-soon-generate-their-own-power-thanks-see-through-solar-cells.
6. Howard, Brian Clark. “10 Green Ways to Improve Our Cities – National Geographic Blog.” *National Geographic Blog*, 2 Aug. 2012, blog.nationalgeographic.org/2012/08/02/10-green-ways-to-improve-our-cities/.
7. Wu, Monica. “Complete Streets Strategy Report Draft Release.” *Ecology Ottawa*, 10 July 2015, ecologyottawa.ca/2014/06/04/complete-streets-strategy-report/.
8. Kilian, Crawford. “In Amsterdam, Transportation Is Electrifying.” *The Tyee*, The Tyee, 26 Sept. 2018, thetyee.ca/Opinion/2018/09/26/Amsterdam-Electrifying-Transportation/.
9. Kolczak, Amy. “This City Aims to Be the World's Greenest.” *Singapore Aims to Be the World's Greenest City*, 31 Aug. 2017, www.nationalgeographic.com/environment/urban-expeditions/green-buildings/green-urban-landscape-cities-Singapore/.
10. Heok, Kua Ee. “Green Urbanism and Mental Health.” *The Straits Times*, 11 Aug. 2016, www.straitstimes.com/singapore/environment/green-urbanism-and-mental-health.