Green Cities

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Abstract

Green cities are types of cities that involve the implementation of technology that helps promote healthier clean cities. In this paper, I argue that green cities are beneficial to society. I support my position with three arguments. First, I argue that green cities reduce environmental risks by applying technology that helps prevent harmful gas. Second, green cities provide large green spaces to its citizens that helps improve their health. Third, green spaces and green technology provided by green cities helps secure food and water to citizens. I also consider alternative arguments against green city construction. These arguments include the loss in job opportunities, risk of damage to wildlife, and the risk of loss of space because of green city construction. I show that green cities provide multiple new job opportunities, protect wildlife, and provide newer spaces for its citizens.

Keywords: Green cities, infrastructure, biotechnology, green spaces, eco-city

Green Cities

In this paper, I argue that the construction of green cities brings about a positive impact across the globe. A green city is a city where various eco-friendly programs are implemented to create a clean and healthy city ("Green Cities," 2019). It was constructed because of an eco-city movement initiated by California in the 1970s. This movement also consisted of urging other states to construct green cities.

I support my position with three arguments. First, I argue that green cities help reduce environmental risks. As mentioned in "Green Cities" (2019), green urbanization contains the use of alternatives, hydropower and solar systems, to current methods that emit large portions of greenhouse gases. Furthermore, green cities manage vehicle use, as it is a high source of gas emissions. Second, I argue that green cities improve the health of the community. According to Ma (2018), the construction of green cities brings about a diverse green space and clean air quality, and thus increases the happiness of the citizens. Additionally, the implementation of green spaces in educational facilities relieves stress for students and improves their focus, increasing academic performance. Finally, I argue that green cities secure food and water. Food supply programs and greenhouse are ideas that provide healthy food for citizens (Schnitzler, 2017). In addition, green stormwater facilities are implemented across a city to ensure supply of fresh and clean water (Enconsult Solutions, 2016).

I also consider alternative positions such as the negative impact of green cities. Some people argue that green cities lead to losses in job opportunities for people. Others also argue that wildlife is at risk of getting damaged because of green cities. Finally, some propose that green cities take up space. While these positions have merit, I show that there are multiple opportunities a green city may provide to stakeholders. These opportunities can be new industries such as bio-technology industries (Park & Page, 2017). I also show innovations provided by green cities to integrate wildlife into cities. I lastly show multiple new green spaces provided by green cities to accommodate territory loss.

The paper analyses a solution to many current issues in the world. These issues can affect any individual across the globe, and the construction of green cities can help reduce these issues. I conclude my paper by encouraging cities to promote green urbanization throughout the world and highlight its benefits to the public.

Positive Impacts of Green Cities

The construction of green cities has positive effects across the globe. Some of these effects include the mitigation of environmental risks by introducing environment-friendly ideas. Another effect of green cities is the provision of green spaces that positively impacts the well-being of individuals. Green cities also ensure food and water security to citizens by installing certain applications and infrastructure.

Impacts on Environment

Green cities positively impact the environmental risks that are imposed by modern cities. According to "Green Cities" (2019), urbanized areas around the world are significant contributors to greenhouse gas emissions, even when they take up little space. Boston and Lempp (2011) mention that greenhouse gasses are emitted at a higher rate relative to the last decade, and that they are leading to global warming. The authors emphasize that global warming is a serious threat to the world as it damages bio-physical systems. This threat can be overcome with Green cities, which use innovative strategies to help reduce the emission of greenhouse gasses. These innovations include alternative energy-generating methods and transportation management.

The first innovation green cities use to reduce gas emissions are alternative energy-generating methods to the burning of fossil fuel. The burning of fossil fuel, a method used to generate energy, emits around 76% of all greenhouse gas emissions in the United States (Green cities, 2019). With the implementation of green cities, alternative methods to fossil fuel are introduced by Kittner et-al. (2016). The first method is hydropower systems. Hydropower systems are systems that rely on the use of water as a source to derive energy. The second method is wind solar systems. Solar systems are systems that use heat provided

by the sun to derive energy. These two systems are alternative methods to generate energy with little or no emission of greenhouse gasses.

Another method to reduce greenhouse gas emissions is the management of modern vehicles. Szeto and Chen (2017) assert that it is important to manage vehicles because they emit greenhouse gasses. To avoid the use of modern vehicles, green cities contain ways to manage transportation vehicles, such as electric vehicles and car-free cities. As mentioned by Szeto and Chen, electric vehicles are a healthier alternative for the environment. More specifically, electric vehicles operate on an electric battery fuel that emits almost zero gasses. This zero-gas emission means that electric vehicles are a safer alternative because they do not contribute to environmental risks.

Managing transportation vehicles is another method used to manage transportation. Car-free is a concept introduced by Lindfield and Michael (2012**)** that helps reduce gas emissions by eliminating excessive car use. The authors describe the concept in three parts: Car-free cities, car-lite cities, and car-free days. Car-free cities are cities that prohibit the use of cars and promote the use of other methods such as busses and bicycles. Car-lite cities are cities that minimize the use of cars by integrating taxis and busses with more people riding in one car. Car-free days is an idea where on certain days of the year, the citizens of a city are advised not to drive their cars. This concept helps minimize greenhouse gas emissions. Essentially then, alternatives to modern vehicles, such as electric vehicles and limiting the use of modern vehicles minimizes environmental risks by greenhouse gas mitigation.

In sum, environmental risks across the globe are only increasing, and green cities help moderate these risks. Fossil fuel burning is a type of energy generating method that releases greenhouse gas emissions. Consequently, green cities use healthier alternatives to fossil fuel burning, such as hydropower and solar systems. These sources do not release greenhouse gas emissions, and thus are deemed as better alternatives. Additionally, some green cities limit the use of modern vehicles by using alternative vehicles and car-free concepts. These limitations are effective because they reduce greenhouse gas emissions.

Quality of Life

Green cities bring back nature and implement green facilities that improve the quality of life of a citizen. Hodson and Sander (2017) claim that over half of the population of the world is situated in cities. According to the authors, the urbanization of the population means that citizens are being disconnected from nature. Hodson and Sander elaborate that this disconnection is a problem to society because it worsens the physical and mental state of citizens. Green cities help reconnect citizens to nature, increasing quality of life by improving the health and academic performance of citizens.

The first factor that is improved because of green cities is the physical health of individuals. Green cities contain green spaces that mitigate air pollution. According to Ma et al. (2018), the implementation of green areas into a city improves the air quality of that city because cleaner air is being provided from plants. Seo et al. (2019) further assert that cleaner air quality reduces the rate of cardiovascular and respiratory diseases within citizens. Reduction in disease rates can neglect any excess medical costs from diseases and maintains the physical health of individuals. The benefits of cleaner air on physical health become apparent. Through these improvements on health, the citizens' quality of life improves.

In addition to the reduction in air pollution, green spaces increase happiness. Green cities provide greener spaces and more parks for people. Ma et al. (2018) emphasize that these areas encourage people to connect with nature and exercise, and thus reduce the mental distress of an individual. The reduction in mental distress increases happiness of individuals and their social harmony to others, and further improves their mental well-being (Environment European Green Capital, n.d.). Generally, the life quality of citizens increases from green cities because their physical and mental well-being improves.

Another factor that is improved because of green city construction is the academic performance of students. In 2017, Hodson and Sander classified the disconnection from nature as a natural deficit disorder. These disadvantages affect the focus and education of students. There are two pieces of evidence for maintaining natural deficit disorder by

implementing green spaces in educational facilities. First, Leung et-al (2019) mention that students exposed to a green landscape, such as trees and shrubs, do better on their tests and are more likely to graduate. These benefits help the student in terms of learning and academic performance. Second, Hodson and Sander assert that the availability of water bodies across educational facilities helps relieve student stress and enables them to focus better. Consequently, better focusing contributes to increased academic performance. Essentially, the provision of green spaces provides several educational opportunities because of increased academic performance. As a result, the quality of life of individuals is improved.

Overall, green cities positively impact citizens because they improve the citizens' quality of life. Green cities provide a cleaner supply of air for the city, reducing the rate of diseases. The installation of green spaces in educational facilities helps students nurture their academic performance. These impacts are crucial to cities, especially when current cities fail to address the well-being of its citizens.

Food and Water Security

The green urbanization of cities imposes a solution to food and water security. Food and water scarcity is a major issue across the globe. As argued in Lindfield and Steinberg (2012), the sudden shift in a significant portion of the population to cities is a risk because citizens have less access to resources. This risk results from several factors including limited space for farming that limits food and water resources. The construction of a green city provides different approaches to deal with food and water scarcity, such as greenhouse infrastructure, a food supply program, and green storm water facility.

Green city construction involves two methods that help secure food supply. These methods are the implementation of greenhouses and food supply programs. First, the establishment of a greenhouse provides clean food. According to Schnitzler (2016), a greenhouse is an indoor facility where crops are grown. Schnitzler states that with the help of wind turbines and solar panels, these crops grow with almost zero net carbon emissions. As a result, these crops are clean food for people to eat. In addition, the implementation of a food

supply program can ensure that food is provided to citizens. Shnitzler introduces the term "Green food from green roofs," which is a food supply program that was initiated in Egypt during green city construction to supply food to poor people (p. 3). The author mentions that the program consisted of providing green spaces and areas for families to start growing their crops. This program thus ensures that food is available to these people. Overall, green city construction proposes methods that help ensure clean and available food to citizens.

Green cities provide infrastructure that helps manage stormwater. An article published by Enconsult Solutions showcased the impact of green stormwater infrastructure. Green stormwater is a facility that provides fresh quality stormwater using water-soil-plant systems. This system involves two processes. Initially, the system collects stormwater before it reaches the ground. Then, the system filters some of the water to the ground and some to sewer systems. The water-soil-plant system through this procedure helps retain a natural water cycle in urban areas, providing clean water. Generally, green stormwater infrastructure is a green city innovation that helps provide clean water to citizens.

Overall, green cities deliver cleaner food and water to all their citizens. This availability of food and water is the result of several projects implemented within a green city. These projects include a greenhouse program that supplies clean food, a food supply program that ensures the availability of food to citizens, and a green stormwater facility that provides clean water. Food and water are necessities in life and making sure that they are available to people is important.

Arguments Against Green City Construction

Some people believe that green cities are disadvantageous. They argue that constructing green cities provides many economic losses to stakeholders and government. Additionally, many also argue that green cities disrupt wildlife by taking over their occupied space. In contrast, constructing green cities provides benefits that directly oppose the aforementioned arguments. Green cities increase opportunities for stakeholders, increase government budget, and provide alternative shelters to wildlife.

Economic Risks

Critics claim that green city construction is disadvantageous to the economy. They believe that current practices that will be substituted because of green cities will impose threats to companies. To elaborate, certain factories and facilities that emit greenhouse gas are substituted ("Green cities," 2019). Some believe that this substitution negatively affects these companies and is costly.

Some people argue that the substitution of companies imposes economic risks on employees. They believe that green city policies, which reduce or eliminate practices like fossil fuel burning, lead to losses in job opportunities for employees (Park & Page, 2018). However, green city policies provide many new job opportunities for employees. For example, green stormwater facilities in Philadelphia produced a revenue of 3.1 billion dollars to the economy (Enconsult Solutions, 2016). These facilities then provide one thousand new jobs annually. In addition, the implementation of green spaces and industries in the United States lead to roughly two million job opportunities for its citizens (Ross, 2014). These new job opportunities thus replace any job opportunities for companies that shut down because of green city policies. In brief, green cities provided new job opportunities as a substitute for citizens who lost their jobs because of green city policies.

Another argument on green cities negatively affecting the economy is the government income deficit. Some argue that governments lose money because of technology required to construct green cities, and thus impose the loss of money as taxes ("Green cities", 2019) However, the facilities created from green cities generate high tax revenue. To illustrate, green stormwater facilities in Philadelphia gained a tax revenue of 2 million dollars annually (Enconsult Solutions, 2016). These revenues to the government accommodate for the money loss. Essentially, green cities provide facilities that generate a positive net gain for the city.

The economic benefits gained from green cities accommodate for initial losses. Some are concerned with job losses and high taxation. However, the significant number of job opportunities, as well as tax revenue, ensure that people will work and that no additional

taxes are implemented. These benefits should ensure citizens that no economic risks may result from construction of green cities.

Local Wildlife Issue

Some opponents argue that green cities disrupt wildlife. Green cities use up natural resources for its construction, which occupies the homes of animals. As mentioned by "Green cities" (2019), green cities use local forests and jungles for construction of biotechnology. People believe that this use leaves animals astray and thus contributes to their extinction. Contrary to the aforementioned disadvantage, green cities provide multiple advantages to the wildlife's habitats. Wolch (2017) reveals that green cities contain programs that provide new spaces for animals. These programs are technology that contribute to the installation of a corridor, a green rooftop, and a vertical farm.

Green corridors are an element of a green city that shelters animals. According to Wolch (2017), corridors are a type of green space that are embedded within the heart of a city. These corridors benefit animals in two ways. First, the implementation of the corridor helps integrate animals back into a friendly environment and safer one from natural disasters. The accessibility to a larger environment also gives these animals more freedom to live a more natural life. Second, the corridor provides the natural resources that were initially depleted to construct green cities. This accommodation provides an environment very similar to the previous one the animal lived in.

Another implementation provided by green cities are green rooftops. Soanes (2017) defines green rooftops as the growth of plants in the roofs of certain houses. The author goes on to mention that these rooftops can be an alternative environment to animals. For example, animals like bees and butterflies are increasing in Australia because of the implementation of rooftops. They use these rooftops as a new environment live on. Rooftops can thus protect animals by providing a shelter for them to live in.

Vertical farms are also another green city infrastructure that provide spaces to animals. Oliva et al. (2019) say that vertical farms are a type of farms that are

compartmentalized inside buildings and are constructed inside cities. Crops that are initially farmed in wide farms can now be farmed in these buildings, with the help of certain biotechnology. Vertical faming thus acts as a substitution for large green spaces, leaving these spaces empty for animals and grants them the opportunity to use these spaces as shelters.

Green cities involve the construction of three platforms that protects animals from environmental disasters and shelters them. Corridors are implemented at the heart of the city and act as an accommodated space for the one lost because of green city construction. Green rooftops are an alternative shelter that makes sure certain animals do not migrate from the country. Vertical farming is a tall building in which crops are planted it, substituting green spaces, and leaving them empty to animals. These three applications can assure people that animals will not be disrupted from green city construction.

Conclusion

Green city construction is vital across the globe because of the significant benefits it provides. Green cities include the implementation of nature in cities using biotechnology. This implementation provides significant benefits, ranging from minimized environmental risks to ensuring quality of life to citizens.

Green cities guarantee that greenhouse gas emissions are mitigated. For example, alternatives to the main greenhouse gas emissions, such as hydro powers and solar powers, are used in green cities. Additionally, the encouragement of limited car use, a source of greenhouse gas emissions, is implemented in these green cities. These techniques help minimize environmental risks by avoiding the emission of greenhouse gases. Green cities also ensure positive well-being for its citizens through natural resource integration. The integration of natural resources in cities reduces disease rates, mental distress, and improves focus. These factors create a happier and healthier community. Green cities also use various methods to provide healthy food for its citizens. These methods include the implementation

of green stormwater facilities, greenhouse programs, and food supply programs. These positive impacts are essential for a community to strive.

Even with these positive impacts, people argue that green cities can be risky. Some believe that green cities cause economic disadvantages, hurt local wildlife, and limit space availability. However, several economic benefits, such as job opportunities and tax revenue, accommodate any initial loss. Additionally, a program was implemented to integrate wildlife into cities, surrounding them with nature and ensuring their safety. Lastly, green cities provide new green spaces to citizens. All these factors show that green city implementation is a safer and better alternative.

Green cities are vital for a community to ensure sustainable growth. It is recommended that people further research the impact of green cities on various prominent issues related to modern city construction. Governments are encouraged to start making their cities green because of the numerous benefits such a change can provide.

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