The Effects of Increasing Urbanization Rates on the Environment

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Introduction

While the extent and scale can vary greatly, urbanization can generally be thought of as a shift in a population from a rural to an urban landscape. Globally, it is estimated that in a span of only 60 years (from 1950 to 2010) the percentage of the population living in urban areas increased by from 30% to 50% (Colmer, 2016, p.1). This dramatic shift to the majority of the human population living in urban communities has brought with it many changes to the way that humans interact with the environment, and it continues to be a focal point for understanding the local and global environmental consequences of urbanization. Additionally, urbanization has drastically altered the way in which communities communicate, trade, build infrastructure, and seek employment, all of which can be reflected in the cultural landscape of a region. With such major changes occurring around the globe, it is important to understand how urban development has changed across time and space as well as the extent and ramifications of urbanization on natural landscapes and ecosystems.

Process

The process of urbanization has never occurred uniformly across time and space. Instead, many regions have seen lengthy, consistent urban growth patterns while many other regions remain majority rural populations or have seen much more recent, quick shifts to urban populations. Looking at Eastern Asia as an example, the percent of the region's urban population has risen from 18 percent in 1950 to over 60 percent in 2015. This same percentage of growth for North America took place between 1875 and 1955, more than half of a century prior, but at a slower rate that elapsed 15 years longer (United Nations, 2018, p.2). Some of the primary drivers that create the variability of urban growth around the world are categorized into push and pull factors. In the context of urbanization, push factors include things that expel people from rural

regions. Pull factors draw people to urban areas. Examples of common push factors include poor living conditions, unemployment, and natural disasters, whereas common pull factors include better living conditions, more job opportunities, and access to education and health services (BBC, 2021). These factors can vary greatly depending on the region's social and economic opportunities and can influence the rate of urbanization in certain regions to some extent. Additionally, the extent of resource consumption, land-use change, and other processes that impact the natural environment can differ greatly for different areas of urbanization. Accelerated urban growth can expedite the loss of arable land, natural habitats and vegetation, and even influence climate patterns at local, regional, and global scales (Mohan et al., 2011, p.1274).

National Scale

Taking into consideration the influence of rapid urban growth on the environment, it is possible to research and monitor regions of the world that are seeing increasing urbanization rates. Focusing on the national scale, one country that has seen substantial urban growth over the last several decades is India. Beginning in the 1970s, there was an intense increase in development in India at the start of the nation's industrial revolution (Moha, 2011, p.1275). While reports in 2012 measured that only 31.16% of the population of India was located in urban centers, this has increased from just 11.16% in 1901. (Sudhira & Gururaja, 2012, p.37). The same report by Sudhira and Gururaja used Census data from India to determine the proportion of the population living in urban areas of India increased by 6% from 2001 to 2011, showing that much of this growth has come in recent years (p.37).

With the rapid development and expansion of urban areas, environmental degradation has been a primary concern for researchers. Furthermore, processes within city limits such as increased industrial processes as well as automobile and other transportation use increases have

led to the steady degradation of air and water quality within major cities. One study from 2006 to 2011 measured average Nitrogen Dioxide (NO2) (automobiles being a major emission source) and fine particulate matter and found increasing levels that exceeded permissible limits of three major Indian cities: Delhi, Mumbai, and Kolkata (Kumar et al., 2017, p.81). Additionally, the impacts of contaminants from urban centers in India stretch far beyond the city limits. The high density and resource-intensive style of living within cities has greatly increased the consumption of natural resources in the country (Rai, 2017, p.128). Along with this, urban sprawl and continuous expansion have encroached on productive agricultural land as well as forests, wetlands, and other vital ecosystems (Rai, 2017, p.127-128). Moreover, it is important to recognize the increasing demand for agricultural production and natural resource consumption as urban populations rise.

Local Scale

Looking through an even smaller lens of the local scale, the influences of urbanization can be studied within individual cities and their neighboring areas. Focusing on the populous city of Delhi, India, researchers have studied the effects of urbanization in one of the most rapidly growing cities in the world. The population of Delhi has increased by 57% to 21.7 million people from 2001 to 2009 (Mohan et al., 2011, p.1275). More recently, estimates of the population fall around 30.5 million (United Nations, 2019). With such a rapidly growing population, the question turns to how the expansion and growth of urban centers are affecting the natural landscapes of the region.

In the years from 1997 to 2008, the built-up area increased drastically by 251.18 sq. km (or nearly 17%) (Mohan et al., 2011, p.1276). With this, agricultural and agriculturally viable land area decreased by 146.75 sq. km, and other natural landscapes such as scrublands and sandy

areas decreased by roughly 80 sq. km (p.1276). Not only has this impacted the extent of agriculture in the region, but it has severely impacted local landscapes and the natural habitats of native species. Other consequences of the rapid urbanization of the area include increased resource consumption such as water. In the same stretch of time, the measured area of water bodies decreased from roughly 58.26 to 27.43 sq. km (52.9%) (Mohan et al., 2011, p.1276). Focusing on the local scale permits researchers to collect and analyze more precise and manageable data. In turn, this data can then be collated with other local or regional scales to gain insight into broader perspectives.

Connection

Throughout the course, learning how to analyze the relationship and influences of human interactions with the environment has been prominent. Several chapters from the Human Geography textbook by Fouberg and Murphy have discussed ways in which humans change landscapes and how they affect the world. Chapter 9, which focused on urbanization, introduced many key concepts that relate to the topic of how urban environments impact the natural landscape. Suburbanization is one of those concepts and relates to the ongoing expansion of cities such as Delhi and the shift of land use to more residential areas surrounding cities. The textbook describes the process as land outside of the urban area being transformed into urban areas. This implies urban expansion impacts surrounding land and helps to understand the way in which suburbanization can influence the natural landscape of a region. Additionally, Chapter 13 (which focuses on the human effects on the environment) describes how the construction of urban areas and impervious surfaces have influenced natural processes such as flood patterns and natural heat distribution. There is a term known as the urban heat island which describes the process of how increased asphalt, cement, and other impervious surfaces can trap and hold more

heat, effectively creating a warmer environment than surrounding areas. On a final note, the process of urbanization and the effects that it is having must not be ignored. It is important to continue monitoring and researching how effective the policy changes and other environmental strategies aimed at restoring natural landscapes are. Lastly, urban planning and the consideration of environmental consequences in the process of urbanization are crucial for a more sustainable future.

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