

# **Geography 350**

*Urban Worlds*

Professor: Elvin K. Wyly

*Final Project*

**Cities Collectively Combat Climate Change**

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## **1.0 Introduction**

### 1.1 The Globalized Network of Cities

Cities are an intricate form of social organization that inevitably emerged as large human populations concentrated into regions that were able to support and sustain their collective lifestyles. At a fundamental level, Cities enable the interaction of Economic, Social, and Political systems. Historically, Cities only came into existence after our ability to create agricultural surplus through the harnessing of water. It was only after a City was able to feed its resident population, were the residents able to focus on occupations other than farming. These self-sustained Cities initially grew to become a concentration of people working in various sectors to serve the needs of one another. With time, however, these regions grew into Civilizations, and their populous Cities became part of a larger Network that enabled the diffusion of Culture, Language, Ideologies, Goods, and Services across its Nodes (Cities).<sup>1</sup>

*“Globalization represents the global integration of international trade, investment, information technology, and cultures.”*<sup>2</sup> It was enabled by the interactions between the Cities of today’s world, with each occupying a Niche in the Hierarchies of Politics, Markets, Ideologies, and Cultures.<sup>3</sup> Cities today function as nodes in a Global Network wherein each specializes in and dominates a specific niche that helps it maintain its importance and position in the Global Hierarchy. Therefore, an inequality exists in the sense that each City exerts a varying degree of influence owing to its potential (determined by various factors of advantage and constraint), and this is what creates the hierarchy. Hence, despite the system’s asymmetry, it has enabled the

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<sup>1</sup> “Cities and the Emergence of Civilizations.” *TimeMaps*.

<sup>2</sup> Staff, Investopedia. “Globalization.” *Investopedia*, Investopedia, 23 Oct. 2018.

<sup>3</sup> Wyly, Elvin K. “Lecture 3: Urban Origins and Ancient Cities.” GEOG 350. 2018, Vancouver, UBC.

crucial, world-wide exchange of Politics, Markets, Ideologies, and Cultures and has undoubtedly helped mankind advance.

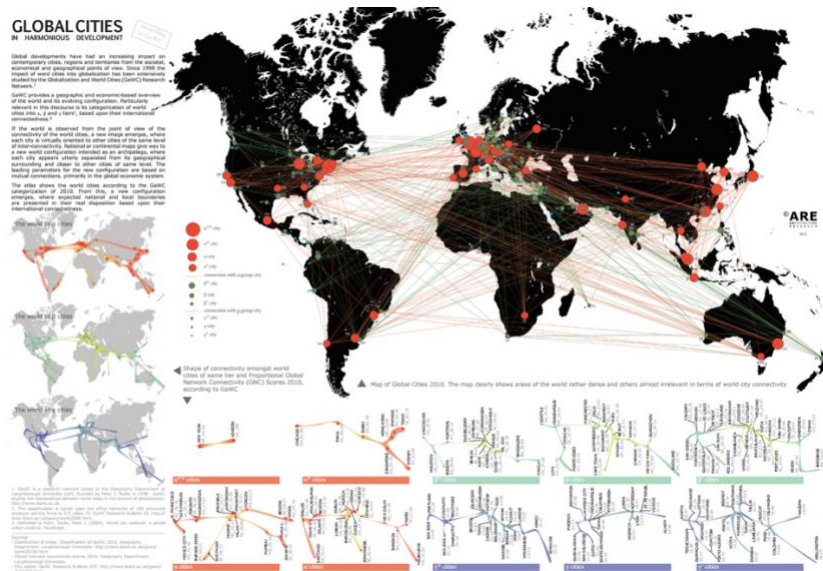
The Urban Systems theory states that, “*an urban system is a network of interdependent urban places. Significant changes in one city will have consequences for other cities in the system.*”<sup>4</sup> Each City has a different sphere of influence - some confined to the national boundaries, and some extending globally. If examined from the lens of theories such as the Central Place Theory and Economic Base Theory, it becomes apparent that all the Cities higher in the hierarchy exert a greater influence over other Cities that are lower in the hierarchy. Therefore, the most influential Cities often become the ‘trend-setters’, with Globalization ensuring an ‘trickle-down’ diffusion of their Ideologies and Structures to the other Nodes of the Global Network.

A very fascinating measure was created by the Globalization and World Cities Research Network (GaWC), that aims to comprehend this global hierarchy of Cities by quantifying global interactions. The measure, “*examines cities worldwide to narrow them down to a roster of world cities, and then ranks these based on their connectivity through four advanced producer services: accountancy, advertising, banking/finance, and law.*”<sup>5</sup> For instance, the Cities categorized as ‘Alpha ++’ are the ones deemed to be most integrated in the global economy: London and New York. Such a rating implies that they exert the largest economic, political, ideological, and cultural influence over the rest of the Cities that are lower in the Hierarchy.

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<sup>4</sup> Wyly, Elvin K. “Lecture 5: The Industrial City.” GEOG 350. 2018, Vancouver, UBC

<sup>5</sup> “GaWC City Link Classification 2018.” *GaWC Research Network*, 2018.



The GaWC World City Network <sup>6</sup>

## 1.2 The Imperial Expansion of Industrialization

Nations States are arguably most heavily characterized and influenced by their major Cities. Likewise, the power of Nation States such as Britain, to a certain extent stems from the influential power of major Cities such as London. Joel Kotkin, a professor of Urban Studies, articulates this really well - *“The United Kingdom may now be a second-rate power, but London’s unparalleled legacy as a global financial capital still underpins its pre-eminence. London is not only the historic capital of the English language, which contributes to its status as a powerful media hub and major advertising center, but it’s also the birthplace of the cultural, legal and business practices that define global capitalism.”*<sup>7</sup>

The global influence of Cities like London is best exemplified through how it successfully propagated the ideals and structures of Industrialization across the world. London was where the

<sup>6</sup> “r/MapP\*\*n - Map of the Global Cities Index.” *Reddit*, GaWC, 2017.

<sup>7</sup> Kotkin, Joel. “The World’s Most Influential Cities.” *Forbes*, Forbes Magazine, 19 Aug. 2014.

British Colonial Empire originated and from where it was directed. Jonathan Wyrzten describes it as, “*the very centre of the Empire on which the sun never sets that constituted a hub of diplomacy, trade, transport, finance, and culture, becoming quite literally, by the end of the 19<sup>th</sup> century, the center from which global space and time were measured.*”<sup>8</sup> Britain, also known as ‘The Cradle of the Industrial Revolution’, is where Industrialization began in the 18<sup>th</sup> century.<sup>9</sup> And owing to the influence of the British Empire, it later spread to the rest of Europe, North America, and other parts of the world through their Colonial endeavours.<sup>10</sup> In-fact this is what created today’s Capitalist system and deeply embedded the Industrial structure across the world, making it the only way to grow and survive in the global economy. Industrialization has therefore simultaneously also connected markets globally, and facilitated market specialization, making it (global economy) a very inter-dependent and integrated system of trade.

The Industrial City gave birth to a new form of Social Organization globally - for the first time, Urban Landscapes were being designed to serve an economic function, and not humans. While Industrialization made Cities part of a larger global network of trade and increased their economic potential, it made its people disposable for the first time. Therefore, industrialization was bad for both humans and the environment as the capitalist system increased polarization between humans by privatizing gains and socializing losses, and commodified and polluted the environment.<sup>11</sup> However, in context of this essay’s argument, the Industrial City serves as a great example of how strong Political Will and Economic Incentives can lead to such ‘efficient’ and

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<sup>8</sup> Centre, Paul Mellon. “The British Empire and Its Imperial Hub.” *Photographic Archive of Paul Mellon's Collection of Prints and Drawings / Collections Overview / Research Collections / Paul Mellon Centre*, 2017.

<sup>9</sup> Wyly, Elvin K. “Lecture 5: The Industrial City.” GEOG 350. 2018, Vancouver, UBC

<sup>10</sup> “Urban Geography: A Global Perspective.” *Urban Geography: A Global Perspective*, by Michael Pacione, Routledge, 2008, p. 56.

<sup>11</sup> Wyly, Elvin K. “Lecture 5: The Industrial City.” GEOG 350. 2018, Vancouver, UBC

intricate forms Social Organization, that Globalization perpetuates throughout its 'Network of Cities'.

### 1.3 The Changing Climate

Climate Change is, “*a change in global or regional climate patterns, in particular a change apparent from the mid to late 20th century onwards and attributed largely to the increased levels of atmospheric carbon dioxide produced by the use of fossil fuels.*”<sup>12</sup> It has been on the rise owing to such global systems Industrialization. This is leading to irreversible, human-induced changes to the environment that are threatening to the very existence of humans, and all other species. Climate change is a problem created by our short-sighted and inefficient social organization.

While, ideally, getting rid of Capitalism itself would help solve a majority of the climate problem, it is not realistic and simple as the world currently functions because of it. Therefore, while strongly opposed to the values of a capitalist society, the scope of this paper will be limited to exploring and proposing changes that can be made from within the pre-existing capitalist system. What we need now is a use of the same processes that created the Industrial City to tackle climate change. This essay is based on the presumption that the two main factors in the creation of the Industrial city were Political Will and Economic Incentive. And that Globalization enabled the perpetuation of such structures and ideals through the Network of Cities. Hence, the essay argues that with similar Political Will and Economic Incentives that gave rise to the Industrial City, the Global Cities of today may re-organize themselves to Collectively Combat Climate Change.

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<sup>12</sup> “Climate Change | Definition of Climate Change in English by Oxford Dictionaries.” *Oxford Dictionaries | English*, Oxford Dictionaries.

#### 1.4 The Power of Cities

This approach argues for change that stems from World Cities, wherein Political Will establishes an environmentally sustainable framework (transportation systems, green building code, renewable energy grid, etc.), Economic Incentives drive the structure (renewable energy market, green subsidies, etc.), and Globalization exports it other world cities (City Network Diffusion).

Change in any community such as a City may either be initiated top-down or bottom-up. With the first being through political enforcement and the latter being through collective support and push from individuals to change the political environment. Cities are described as the grassroots and are, *“becoming the sites where ordinary people come together and demand change.”*<sup>13</sup> Either ways, the only concrete way of making changes to the way the world functions is through a Political approach that constitutes and safeguards the new norm.

Urbanization is the, *“process by which a large number of people becomes permanently concentrated in relatively small areas, forming cities.”*<sup>14</sup> In 2007, more than 50% of the world’s population lived in these urbanized areas.<sup>15</sup> Therefore, *“Cities are key in the fight against climate change, as they consume over two-thirds of the world’s energy, and account for more than 70 percent of all carbon dioxide emissions.”*<sup>16</sup> In that respect, Nations States are just a collective of its Cities, and it is rather the Cities that have the largest concentration of people with the ability and power to propagate ideologies, cultures, markets, etc. Therefore, any Global change must start

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<sup>13</sup> Wyly, Elvin K. “Lecture 17: Nature’s Metropolis.” GEOG 250. 2018, Vancouver, UBC

<sup>14</sup> OECD Statistics Directorate. “Urbanization Definition.” *Glossary of Statistical Terms*, 2001.

<sup>15</sup> Wyly, Elvin K. “Lecture 1: Course Introduction.” GEOG 350. 2018, Vancouver, UBC

<sup>16</sup> Taylor, Michael. “Major Cities Can Fight Climate Change and Make Billions: Researchers.” *Reuters*, Thomson Reuters, 5 Dec. 2018.

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from Cities, especially with ones higher up in the hierarchy, so that its structures and ideologies trickle down to the others, making it the new norm. And this is what I mean when I say Cities Collectively Combat Climate Change - it is through this global network of cities and its diffusive nature.

## **2.0 Body**

### 2.1 Political Will – A Global Effort

*“Industrialization is as much an economic as it is a political project that requires unorthodox thinking, difficult policy choices, innovation, and creativity.”*<sup>17</sup> England’s centralized production model was a politically implemented structure to help realize the Nation’s economic ambitions. One of the best examples of such a large-scale urban organization is of the iconic shock city of the industrial age, Manchester.<sup>18</sup> Also known as Cottonpolis, Manchester only grew into what it was because of the its cotton Mills. Manchester's, *“urbanisation was brought on by a boom in textile manufacture during the Industrial Revolution and resulted in it becoming the world's first industrialised city.”*<sup>19</sup> It imported raw material from the Indian colony, processed it in its factories, and exported it back out to the global market. And what this goes to show is that a City that focused on processing just one commodity was set up, as a Node of in the larger Global Network. And this was only enabled through the Political Will and Economic Incentive to create such a large-scale production and meet market needs.

Just as social organization to industrialize Cities was politically directed, in the contemporary world, a politically driven social re-organization can aid in tackling climate change. *“Toward a Healthier World, a new report released by C40, a Global Network of cities committed to confronting Climate Change, argues, that progressive urban policy can not only make a significant dent in the problem, but benefit the economy at the same time.”*<sup>20</sup> The report by C40,

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<sup>17</sup> “Industrialization Is a Political Project.” *Economic Commission for Africa*, United Nations, 12 Mar. 2015.

<sup>18</sup> Wyly, Elvin K. “Lecture 1: Course Introduction.” GEOG 350. 2018, Vancouver, UBC

<sup>19</sup> Kidd, Allan. *Manchester: A History*. Lancaster: Carnegie, 2006. ISBN 1-85936-128-5.

<sup>20</sup> Sisson, Patrick. “Cities, on Front Lines of Climate Change, Can Make Outsized Difference.” *Curbed*, Curbed, 4 Dec. 2018.

emphasizes that Cities will be the leaders in fighting climate change.<sup>21</sup> Touching nearly every aspect of urban policy, the report lays out various actions C40's 96-member Cities can take, that would have significant impact.<sup>22</sup>

Transportation is one of the most crucial systems of today's world. Especially in Cities, the robustness of such systems is what determines its efficiency. However, transportation is also the most environmentally taxing system owing to the excessive greenhouse emissions from fuel combustion. C40's recommendations emphasize on restructuring the transportation systems of Cities to encourage, *"walking, cycling, and mass transit, as well as prioritizing transit-oriented development and introducing zero-emission districts in cities."* Furthermore, for buildings and industries, the report calls for, *"stringent energy-efficiency standards and codes, that work to cut energy usage with a focus on energy retrofits and technology, and emissions capture."* The report even claims that, *"If the steps laid out in the C40 report were to be taken, in concert with a decarbonized energy grid, the result would be an 87 percent reduction in greenhouse gas emissions, 223,000 premature deaths averted, and \$583 billion in economic benefit."*<sup>23</sup>

Recently, several Chinese Cities have taken serious steps curb pollution after a nation-wide public outcry. The governments employed several environmental impact mitigation strategies where, *"Political will and ambitious targets set by the government have delivered very impressive gains."*<sup>24</sup> This is attested by the fact that, *"Until 2009, 16 of the world's 20 most polluted cities were in China. In 2018, however, only the last four -- minus Beijing -- are in China."*<sup>25</sup> For

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<sup>21</sup> "Toward a Healthier World." *New Research Gives Cities Plans to Tackle GHG Emissions & Air Pollution Simultaneously*, C40 Cities: Why Cities? Ending Climate Change Begins in the City, 2018.

<sup>22</sup> Sisson, Patrick. "Cities, on Front Lines of Climate Change, Can Make Outsized Difference." *Curbed*, Curbed, 4 Dec. 2018.

<sup>23</sup> Sisson, Patrick. "Cities, on Front Lines of Climate Change, Can Make Outsized Difference." *Curbed*, Curbed, 4 Dec. 2018.

<sup>24</sup> "As India Fails to Clean up Its Air, China Is Winning War on Pollution." *The Economic Times*, Economic Times, 15 Nov. 2018.

<sup>25</sup> "As India Fails to Clean up Its Air, China Is Winning War on Pollution." *The Economic Times*, Economic Times, 15 Nov. 2018.

instance, in Beijing, it was estimated that the motor vehicles alone were responsible for 30 percent of the city's air pollution, and to mitigate this, the government limited the number of license plates issued. Furthermore, the several Cities shut down thousands of factories that violated emission standards, fined 18,000 companies for excessive pollution, and sacked several officials, *“for being lax in controlling pollution.”*<sup>26</sup>

## 2.2 Economic Incentives – The Renewable Market

The Industrial City was a structure that was politically set up owing to the incentive of growth in the Nation’s Gross Domestic Product, by establishing the City as a crucial Node in the Global Network of trade. With increased income from exports, Industrial Cities are further able to expand production, specialize, and eventually dominate a Market Niche. Moreover, a growth in the GDP also benefits citizens by increasing their incomes, literacy, life span, and quality of life. Britain industrialized for similar reasons and, *“when it was industrializing, total national income increased by more than 600% from 1801 to 1901.”*<sup>27</sup>

Even now, many impoverished Nations look to Industrialization as the solution to escape poverty. For instance, *“China successfully led the fight against poverty in the world by lifting more than 600 million people out of poverty on the heels of rapid economic growth, sustained by industrialization.”*<sup>28</sup> However, while Industrialization may produce economic gains, it functions by exploiting their natural resources and severely degrading their environment. Moreover,

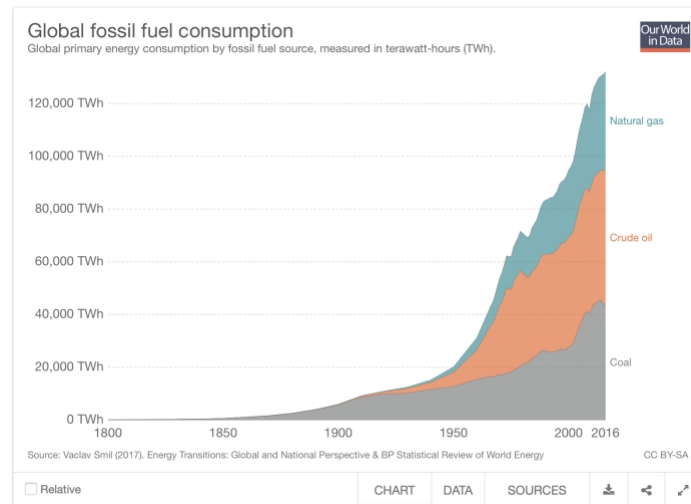
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<sup>26</sup> “As India Fails to Clean up Its Air, China Is Winning War on Pollution.” *The Economic Times*, Economic Times, 15 Nov. 2018.

<sup>27</sup> Ross, Sean. “How Can Industrialization Affect the National Economy of Less Developed Countries (LDCs)?” *Investopedia*, Investopedia, 20 Apr. 2015.

<sup>28</sup> “Industrialization Is the Key to Create Jobs and Reduce Poverty in Africa .” *ReSAKSS*, Regional Strategic Analysis and Knowledge Support System, 21 Oct. 2015.

Industrialization requires high inputs of Energy for electricity, transportation, machinery, etc., and this energy is derived from fossil fuels like oil, coal, and gas. “Fossil energy was a fundamental driver of the Industrial Revolution”<sup>29</sup> – The graph below shows the spike in fossil fuel usage since the industrial revolution.



*Global Fossil Fuel Consumption From 1800 – 2016*<sup>30</sup>

It is therefore empirically evident that Industrialization helps impoverished nations develop. And while Industrialization itself may not be avoided, at least a switch to renewable sources of energy can be made. Just as Industrialization was politically established and driven by economic incentives, if a renewable energy consumption habit is enforced, then the Energy Markets will eventually adapt to serve the need as the global demand for it will undoubtedly increase. Recognizing that it is impossible to make a sudden switch in energy sources, fossil fuel usage will have to be phased out slowly. “Climate change policy will likely cost more, benefit more, and require more changes in behavior by firms and individuals than any other environmental policy. The magnitude of this challenge has drawn attention to the potential use of

<sup>29</sup> Ritchie, Hannah, and Max Roser. “Fossil Fuels.” *Our World in Data*.

<sup>30</sup> Ritchie, Hannah, and Max Roser. “Fossil Fuels.” *Our World in Data*.

*market-based or economic-incentive instruments to ensure that polluters face direct cost incentives to mitigate emissions at the lowest possible cost.*"<sup>31</sup>

There is already a new Global Market for Renewables, that has been perpetuated politically by collectives like the C40. One of the, "*C40 reports showed that 27 cities around the globe have already seen their emission peak, suggesting it is possible to combine growth and emissions reductions.*"<sup>32</sup> For instance, India, a country that is still Industrializing was able to, "*meet a 2020 goal of installing 20 gigawatts of solar power four years early, and is now aiming for 100 gigawatts by 2022, making it one of the world's most ambitious adopters.*"<sup>33</sup> However, it is important to recognize that not all nations have the potential to realize this shared goal of reducing emissions owing to various political and social circumstances. But this very fact can be the economic incentive for able Nations to produce more renewable energy and earn money by giving back to the grid. Denmark, a leader in wind power, "*produces enough power from its turbines for 40% of its (small) population. On some windy days this year, Denmark produced as much as 140% of its own needs*"<sup>34</sup>, and exported energy to Norway, Germany and Sweden.<sup>35</sup>

Therefore, to create alternative consumption patterns, "*We need incentives to save the climate - not just agreements.*"<sup>36</sup> And as the major Global Cities adopt such sustainable practises and create a market need for renewables, the switch will eventually trickle down to all the other Cities in the Global Network.

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<sup>31</sup> Robert, Stavins N, and Aldy E Joseph. "Economic Incentives in a New Climate Agreement." *Belfer Center for Science and International Affairs*, Harvard Kennedy School, 7 May 2018.

<sup>32</sup> Sisson, Patrick. "Cities, on Front Lines of Climate Change, Can Make Outsized Difference." *Curbed*, Curbed, 4 Dec. 2018.

<sup>33</sup> Rowling, Megan. "Developing Nations Say..." *Reuters*, Thomson Reuters, 6 Dec. 2018.

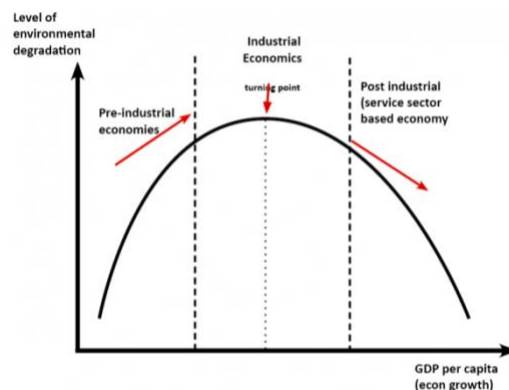
<sup>34</sup> Werber, Cassie. "Where in the World Have We Achieved 100% Renewable Power?" *Quartz*, Quartz, 18 Dec. 2015.

<sup>35</sup> Neslen, Arthur. "Wind Power Generates 140% of Denmark's Electricity Demand." *The Guardian*, Guardian News and Media, 10 July 2015.

<sup>36</sup> Paulson, Henry. "We Need Incentives to Save the Climate - Not Just Agreement." *Financial Times*, 17 Nov. 2015.

### 3.0 Conclusion

It is also important for Western Cities to take the lead in this sustainability drive, as many Cities of the Lesser Economically Developed Countries are still dealing with post-colonial issues of poverty, illiteracy, unstable governments, etc. As James Blaut expressed, the industrial city would not have appeared without colonialism, as the Industrial dream was realized at the expense of the colonies.<sup>37</sup> Therefore, it is crucial to acknowledge that if these systematically disadvantaged Nations want to be a part of the modern world economy, it is currently only achievable through Industrialization. The West has already industrialized and peaked in terms of their environmental impact, which is now on the decline with their move the post-industrial service sector. This trend is best explained by the Environmental Kuznets curve, that illustrates how, “*economic development initially leads to a deterioration in the environment, but after a certain level of economic growth, a society begins to improve its relationship with the environment and levels of environmental degradation reduces.*”<sup>38</sup> Hence, it is now the duty of the West to guide the ‘Rest’ in the right direction by aiding the disadvantaged Nations in Industrializing their Cities Sustainably by minimizing the Environmental Degradation.



*The Environmental Kuznets Curve*<sup>39</sup>

<sup>37</sup> Wyly, Elvin K. “Lecture 5: The Industrial City.” GEOG 350. 2018, Vancouver, UBC

<sup>38</sup> Pettinger, Tejvan. “Environmental Kuznets Curve.” *Economics Help*, 11 Sept. 2017.

<sup>39</sup> Pettinger, Tejvan. “Environmental Kuznets Curve.” *Economics Help*, 11 Sept. 2017.

At the same time, Cosmopolitanism is also essential. Climate Change is a global problem and we need to treat it as such by harmonising our actions through transnational cooperation. In today's world, one cannot pinpoint where Greenhouse Gases are coming from because it is a complex globalized system where a Country may be outsourcing from another to produce its goods while still being the consumer. Hence, we need to ignore National Boundaries and work to achieve our environmental targets as a collective. William Rees rightfully expresses, *“no individual, no city, and no country can achieve sustainability if the system of which it is a part is unsustainable. Some Cities might become exemplars of sustainable urban design and lifestyles, but if the global system of which they are a part remains on an unsustainable path, then even our model cities would be taken down by, for example, severe climate change, depleted resources, and resultant geopolitical instability.”*<sup>40</sup>

Finally, we need strong political structures that are lobby-proof - Economic Incentive must never trump and hinder Political Action that is genuinely in the best interest of People and Environment. It is crucial to understand that infinite growth on a planet of finite resources is impossible. In realizing the Limits to Growth of markets and businesses, we may make them more sustainable by respecting the Earth's natural carrying capacity. Furthermore, Cities were previously built in harmony with their environments, but the Urban landscapes of today are concrete jungles - we need Urban Forestry to bring nature back in. *“The alienation of urban techno-industrial society from nature has produced modern cities that are not only incomplete as*

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<sup>40</sup> “Canadian Cities in Transition: New Directions in the Twenty-First Century.” *Canadian Cities in Transition: New Directions in the Twenty-First Century*, by Trudi E. Bunting et al., Oxford University Press, 2010, p. 77.

*human ecosystems but that exist in essentially hostile relationship to the natural ecosystems that sustain them.*<sup>41</sup>

Global organizations like the C40, that recognize the power of Cities and Globalization, are important in facilitating the change towards a sustainable future. They understand the how Cities are the initiators and reinforcers of Change. Therefore, with strong Political Will and Economic Incentive, Cities can Collectively Combat Climate Change, and realize the dream of an Environmentally Sustainable Planet.

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<sup>41</sup> “Canadian Cities in Transition: New Directions in the Twenty-First Century.” *Canadian Cities in Transition: New Directions in the Twenty-First Century*, by Trudi E. Bunting et al., Oxford University Press, 2010, p. 70.

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