Environmental Report: Urbanization & Transportation

Name: Noam Shimon

Environmental Studies, 300

San Francisco State University
1600 Holloway Avenue
San Francisco, CA 94132

510.860.9996

nshimon@mail.sfsu.edu

Spring Semester, 2018

May 6, 2018

Introduction

Solving the public transportation issues in the California, and generally in the United States is a completed and expensive process. Since the 1950's, by the direction of President Eisenhower's vision and through state and federal legislations that were highly influenced by industries such as the oil and automobile, public transportation plans and funds were redirected into the development of the Interstate Highway System. The extensive expansion of the road system, influenced the deterioration and destruction of the public transit in most American communities.

Since then, the population in the United States more than doubled itself, and urban centers were expending far into the suburbs. Despite all the community growth and prosperity, our public transportation system lagged behind, and it became insufficient and unreliable which left no other choice to the public other than relay on cars.

In order to resolve this issue, I envision a more sufficient, upgraded, affordable, and all-around better transportation system for all Americans. This upgraded system will incorporate high-speed rails, underground subways, busses, and metros; and individuals will have various transportation options that will be reasonably priced. This public system, will be regulated and maintained by local officials, state, and federal authorities, and it will create many jobs and carrier opportunities. The design and operation of the system will be sustainable and it will mostly rely on renewable energies, which will overall reduce the carbon dioxide emission.

In order to better understand the transportation need across the United States, this paper will examine some of the major progresses and challenges that our communities facing, through interaction with the natural environment. I will look at various environmental protection movements, global and local urbanization changes, resource management, urban planning, and other aspects that impacts our global ecosystem.

Freeway traffic in San Francisco

History of Environmental Alteration

Pre-industrial Europe was a period of slow change in the way people lived and worked. During those years, before 1750s, most European nations maintained their historical cultures, traditions, and beliefs, and the average income per household enabled individuals to sustain a moderate and local lifestyle. Since the beginning of the Industrial Revolution, many new technologies had been developed and put into practice, which revolutionized previous forms of manufacturing and transportation systems. The economic changes of the Industrial Revolution through machinery and advancement of new transport occurs at a fast-growing speed, which impacted the surrounding natural environment and it pressured people to migrate from their rural communities into urban centers. In his book "The Condition of the Working-Class in England in 1844", Friedrich Engels states that "In pre-industrial society, over 80% of people lived in rural areas [1]." And he continued stating that "By 1850, for the first time in world history, more people in a country (UK) lived in cities than in rural areas." Similar to the societal changes in England, by 1920, most Americans lived in cities.

In the United States, despite the accumulation in wealth, developed industries influenced the rapid expansion of urbanization centers, and it repeatedly created many damaging effects. The migrations of workers into cities occurred faster than anticipated, and many neighborhoods were crowded, polluted, and poorly planned. There was also a minimal waste management and regulations for industries, and many factories polluted their local environment with their production discarded.

Destructive man-caused environmental impacts became noticeable mainly since the 1950s, and it triggered awakening to the need of environmental protection. This change of perception, influenced a progressive societal understanding of how humanity interacts with its natural environment, which enforced new policies all across-the-board. For example, in the 1970s, President Nixon signed the National Environmental Policy Act (NEPA) into law, which enforced new environmental policies – to conserve and protect natural habitats and resources [2, 3]. This new era of environmental protection, progressively influenced new legislatives and guidelines, which imposed newly air and water regulations and the founding of the Environmental Protection Agency (EPA).

The Environmental Movement and its effect over the interaction between human and the environment, continues to influence global financial institutes and societal planning. In fact, researchers who are studying our environment believe that there is a large conflict between capitalist economies and nature, because of the abuse and over consumption of natural resources for the sake of profit. Unlike the pre-industrialized era, when people lived simply inhabiting from their surrounding lands; these days, most Americans are disconnected from nature and they overly consume for food and things that contribute to pollutions and trash. In the article *"The Tragedy of the Commons"*, Garrett Hardin argues that "four laws of ecology are conflicted with the four laws of capitalism." He continues that "the human–nature relationship is simplified to one of exchange value, where adverse costs to the environment are rarely factored into the equation [4, 5]." The concerns about over population and limited resources can no longer be neglected, and new global order and plans must immediately be forced on all nations.

Four laws of ecology

1. Everything is connected to everything else,
2. Everything must go somewhere,
3. Nature knows best, and
4. Nothing comes from nothing.

Four laws of capitalism

1. The only lasting connection between things is the cash nexus;
2. It doesn't matter where something goes as long as it doesn't reenter the circuit of capital;
3. The self-regulating market knows best; and
4. Nature's bounty is a free gift to the property owner.

Social and Environmental Movements

Worldwide, social movements continuing to influence social changes. Our modern American society, is benefiting from many social changes, such as democracy, human rights protection, progressiveness toward gender equality, and protection of the environment. Despite the reforms, there are constant struggles due to economical, racial, and gender inequality, caused by corporations and political institutions that overturn and block social transformations. For example, in 1962 Cesar Chavez who co-founded the National Farm Workers Association (later known as the United Farm Workers Union) was able to promote social labor rights for many immigrant farm workers, which improve their work conditions. Nonetheless, these days many union workers around the United States are treated unfairly by their employers, as a result of corporate ruling and state legislations, which prevent them from unionizing [6].

The New Social Movement (NSM) emerged during the middle of 1960s, in Western societies – Europe and the Unites States. In fact, the North American viewpoint is more commonly known as Resource Mobilization (RM), which addresses the possibility of members within a movement to bring financial resources, supporters, and media coverage towards accomplishing the movement's goals. In contrast, the "original" social movement bring a collective group of individuals together without specific guidelines and actions. An example for the NSM in the United States is the Same-Sex Marriage movement, which was initially created in single states, and later became a new federal law by ruling of the Supreme Court. The achievement for marriage equality is due to grassroots efforts and fundraising of organizations such as the Human Rights Campaign (HRC) and the Freedom to Marry, networking between individuals and groups, media coverage, and national pressure by multiple agencies on state and federal representatives [7, 8].

The discussions about protecting the natural environment began around the late 19th century in England. Alfred Newton, a British Zoologist published several researches about the conservation of animals, which highlighted the impotence of protecting native species. In the United States, the Environmental Movement began around the mid 1960s, and it brought attention to environmental issues over oil spills, pollutions (of water and land), poor societal planning for roads, and transportation; it also addressed concerns over militarized testing of the hydrogen bombs. When looking back, we can recognize many accomplishments of the movement such as influences on states and federal policies and legislations reforms. There are also many collaborations of organizations and individuals, who work together to protect and raise awareness about the natural world. Unfortunately, there are also many challenges and obstacles that prevent the much-needed transformation of our growing society into a "greener" space, mostly due to economic pressures. Many corporations and nations are not willing to take the financial burden, and they delay the anticipated modification of their communities.

Innovated technologies and social media collaborate to find solutions for the growing environmental concerns. Online networking and global campaigns, are important communication channels for raising sustainable awareness, as it generates international pressure on decision makers to promote the desire change.

Unpacking the Natural & Built Environment

Urban planners across the United States have many challenges with sustainably design the modern American society. Unlike the twentieth century, where most Americans were interested in moving to the suburbs from the big cities, nowadays, residents across the United States are migrating back into the center of towns. The fast transition into urbanization, population growth, and the sharing economy require modifications in urban planning by constructing new public transportation systems, and redevelop and build more sustainable communities.

Investing in new public transportation systems proved to positively influence people's health, increase happiness, and reduce stress; it also creates new jobs, and drastically reduce Carbone dioxide emissions. The current transportation across the United States frustrates many Americans, because its unreliable, expensive, and insufficient. Many metropolitans experience bad car traffic, and everyday people spend hours on the road. According to a study by the Robert Half Executive Recruiting Firm that was done in October 2017, the average travel time to work in the United States is about one hour [9, 10]. Public transportation is not available in most American communities, and the infrastructures of roads, railways tracks, and bridges are detreating. Studies that were conducted in Europe in the Netherlands and Sweden indicate that most of their population choose to use public transportation instead of owning a vehicle. Surveys also suggest that people who are using public transport tend to have lower weight, experience less stress, and are also more social. Sufficient public transportation system generates less noise and it minimizes air pollutions. Sustainable community planning allows cities to decrease road sizes and instead build more parks.

Redevelop and construct more sustainable housing will reshape American communities, and it will allow all people to enjoy a better quality of life. Due to the growing demand of people to move away from the suburbs into the city and because of the housing shortage, American neighborhoods are being gentrified and people of color and poor families often lose their homes. Cities across the United States invest a lot of time and resources in re-planning their urban communities, in order to improved their residences' quality of life. Surveys across the United States find that many young Americans prefer to live in smaller homes, and remain closer to their work.

As a result, urban planners designing more walkable communities which influence people to keep an active lifestyle, shop and live locally, and overall support their local businesses. New housing developments tend to be smaller, and there are more condominiums and high-rises apartment building. Building more densely allow cities to have more public areas, which can be dedicated for parks and other recreational space.

Integrating nature in cities in forms of parks, community gardens, and planting more trees in the streets can positively affect the local environment. I believe that natural spaces around and within urban communities should have multiple designs, in order to positively affect all people, fauna, and flora. San Francisco for example, proved that creating parks within walkable distance encourages people to use them more often, and as a result individuals tend to spend more time in nature. For wildlife, natural habitats within neighborhoods and around the cities allow animals, such as birds, rabbits, insects, and rodents to sustain a diverse eco-system, and it also creates better environmental balance in urban areas. Plants such as trees, provide more shade around the city, which generally reduce temperatures.

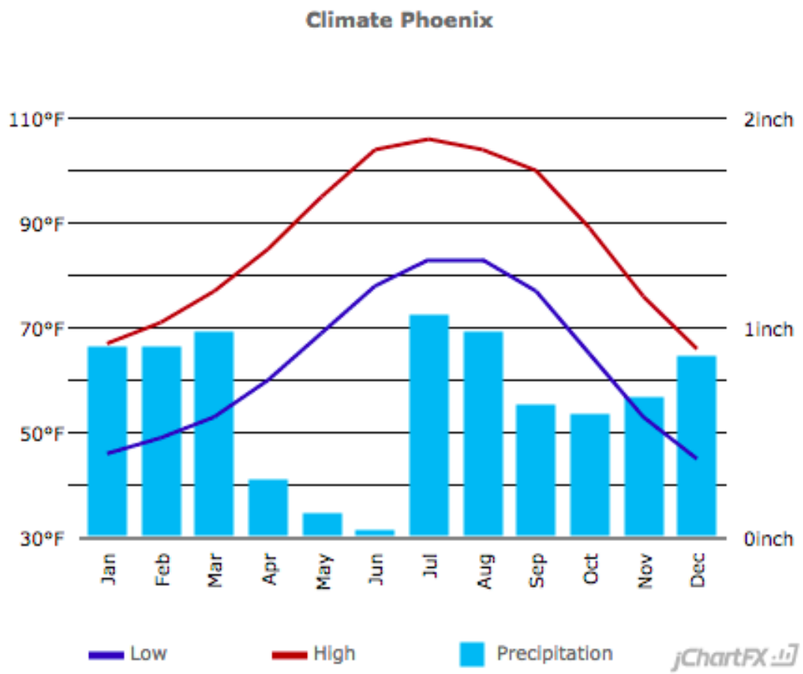
Water – Phoenix, Arizona Metropolitan Area

Phoenix Metropolitan, also known as the Valley of the Sun is located is the central-southern part of Arizona, and it covers an area of about 9,200 square miles. City of Phoenix, which recognized as the capital of the southwestern United States was funded in February 25, 1881. Before the European appeared at the beginning of the 16th Century, there were several groups of Native Americans who inhabited the region – Hohokam people, O'odham, and Sobaipuri tribes. Archeological evidences indicate that while the Hohokam lived in the region they developed a vast system of irrigation canals to make the desert area arable. Some of these waterways were later used for the modern Arizona Canal and the Hayden-Rhodes Aqueduct [11].

As of the beginning of 2018, the Phoenix Metropolitan is estimated to have over 4.5 million people, with over 1.6 million live in the city of Phoenix alone; moreover, according to the World Population Review data, Phoenix is the 5th most populated city in the United States [12]. Actually, according to the U.S. Census Bureau, Phoenix added over 32 thousand people to its population between July 2015 and July 2016, and was at the top in the U.S. for population growth [13].

Phoenix geographical location is located around coordinates 33° N, 112° W, and its elevation is 1,086 feet. The coordinates indicate that this rapidly growing metropolitan is located in an area of high barometric pressure, which influence hot and dry weather that form deserts. According to the U.S. Climate Data, Phoenix average temperature is 75.05 degrees Fahrenheit, and the average annual precipitation of rainfall is 8.04 inches [14].

Phoenix metropolitan has three water sources – surface water (rivers and lakes), groundwater pumped from wells, and reclaimed water, used for agriculture, and industrial cooling and landscaping. The actual sources are – the Colorado River, Lake Powell and Glen Canyon Dam, Hoover Dam and Lake Mead, Cap Canal, Salt and Verde Rivers, and Roosevelt Lake and Dam [15]. According to the Arizona Department of Water Resources, the water usage per person per day is about 100 gallons, in compare to San Francisco where the average daily usage stands on 40.60 gallons [16]. Research studies that were conducted in 2014 indicate that if people will continue using the same amount of water in the Phoenix area, water can run out in less than a decade.



source: U.S. Climate Data - Climate Phoenix

There are three strategies that can help preserving water at the Phoenix metropolitan area, and provide longer-term solution for the growing population and community. First, is education about water consumption. As noted, the average daily usage of water per person is much higher than many other parts of the United States; it mostly due to hot summers and the common usage of swimming pools. Education programs should be implemented in schools and universities to better educate about reduction in water consumption, and ways that people can reuse their water. This basic plan can lead to change in lifestyle and responsible water consumption. Second, there must a proper municipal, state, and federal plans for population growth across the nation. Due to geographic location and climate change, the rainfall precipitation around the Phoenix metropolitan is likely to decrease. Therefore, city planner must develop a long-term water plan for the region, together with limitation for population capacity. This can possibly prevent a future disaster of the area drying out of water. And last, cost of water should be increased in order to reduce water consumptions. I believe that it should be a maximum capacity for water usage, and those who pass the limit will have to pay higher water fees. For example, a proposed legislation can be that people who has swimming pools at their homes will pay higher water fees. Ideally, the city should restrict new residential development from building private pools, and invest in community pools.

Urbanization & Deforestation

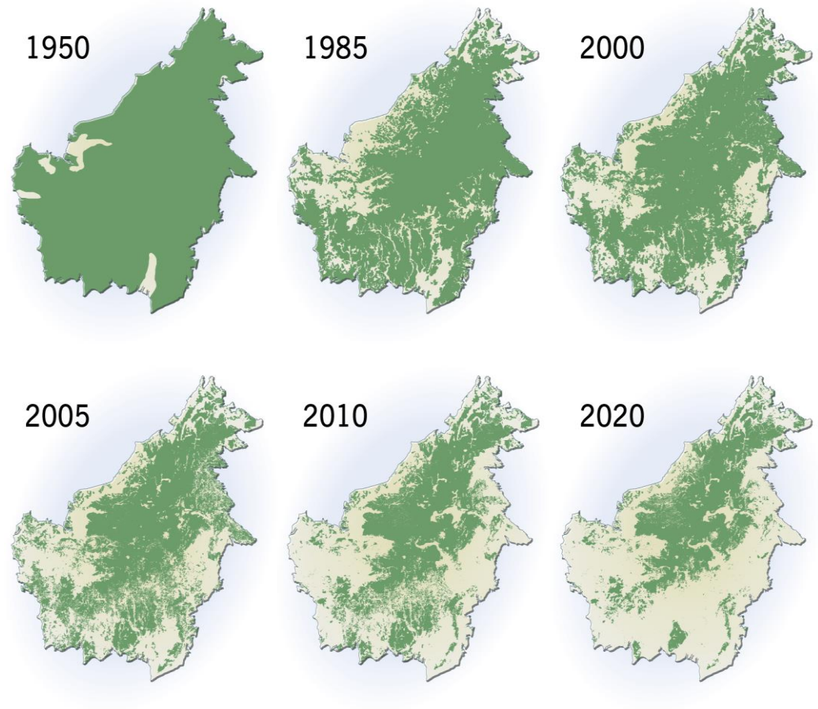
Archeological evidence dating several thousand years ago reveals that Homo sapiens, as well as our ancestors such as Homo neaderthalenesis were migratory species. Scientific researches suggest that early human species were involved in exploring their natural habitats for food, shelter, and trade with other groups [17]. Throughout many generations due to curiosity, increased in population size, and constant search and competition for food and water humans traveled across the globe to find better life.

Similar to our ancestors, modern humans continuing to move across the land in order to find better opportunities and improving their quality of life. However, unlike our pre-historic relatives who lived in harmony with the natural environment in order to sustain life, most of our current societies function irresponsibly and arm natural habitats. Each day, many people leave their rural communities migrating into urban centers due to economic pressures. In fact, in 2009 the United Nations and in 2015 the International Organization for Migration both estimated that “around 3 million people are moving to cities every week.” They continued stating that “approximately 54% of people worldwide now live in cities, up from 30% in 1950. [18]” Since the beginning of the Industrial Revolution, people across England, Europe, and Northern America, following with many other parts of the world began moving into cities in order to find better economic opportunities. Even many of those who chose to stay in the countryside, eventually are relocating into the cities because they are no longer able to sustain their community lifestyle. Sociologists that are studying the global social change, believe that some of the main causes for global urbanization are the pursuit for economic opportunity, corporate expansion and global trade – which relate to larger companies and governments that are taking over smaller business and gaining control over natural resources, and the rapid population growth. The further people are being separated from their natural environment, the harder it will be to protect ecological habitats and maintain environmental balances.

The environmental impacts due to urbanization and population growth are now more than before affect our planet, as it produces air, water, and land pollutions and it causes the global temperature to rise. In addition, many forests are being clear-cut in order to build our cities, “freeing space” for cattle, and for increase land for agricultural purposes. According to Nature Journal, 2015 there are around 3 trillion trees on our planet, and about 15 billion trees are cut down annually [19]. Prior to 1630, one half of the United States land area was forest. Forests still cover about 30 percent of the world’s land area. According to a report issued by the World Bank, between 1990–2015 Latin America and the Caribbean experienced the biggest lost in forest area, losing 970,000 square kilometers [20].

There are several solutions that can drastically reduce deforestation, and protect woodlands for future generations. First, appoint governmental and global committees that will oversee the world’s forests. These agencies will create regulations and legislate laws that will insure the protection of forest from corporations that abuse such resources. For example, between 2005-2013 Brazil deforestation rate was down from 7,500 to 2,255 square miles, due to heavy pressure and regulations of the soybean and cattle industries by government and local agencies. Second, communities around the world should develop a long-term land-use planning. Instead of cutting trees to clear lands for urban sprawl, municipalities should regulate developers and builders to build new buildings around forested areas, and or relocate and plant new trees within new developments. Portland, Oregon which has also turned a freeway into a riverfront park, has the most trees inside a city in the United States. And lastly, is investing in education. Educating children, students, and adults about recycle, reuse, and reduction of paper and wood will help reducing deforestation.

Trees are valuable for our ecological and environmental balance, as they improve air quality, provide oxygen, influence climate, provide water conservation, preserve soil, and support wildlife. Trees also reduce level of greenhouse gases, as they take in carbon dioxide. Therefore, having more trees can help us fight and delay global warming, and it will provide healthier and sustainable environment for all sorts of life.

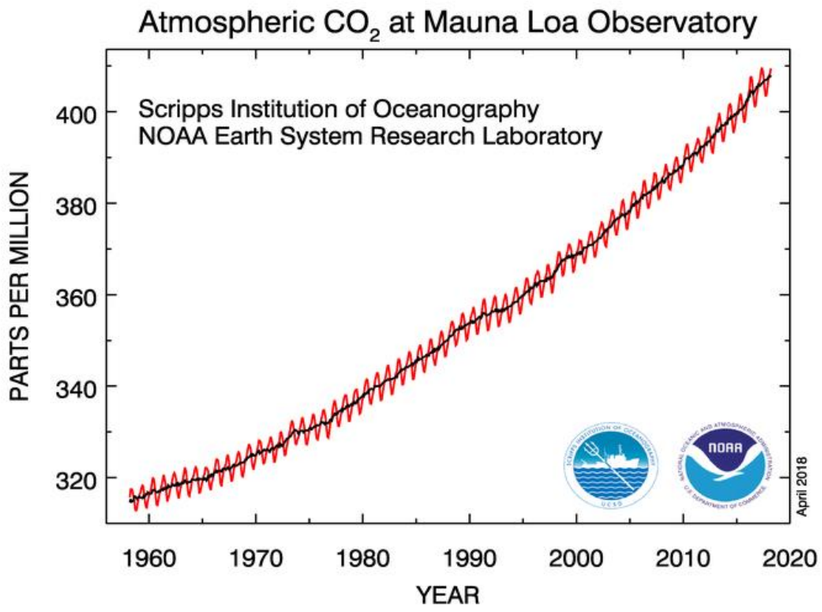


Deforestation in Borneo by WWF

Climate Change

Earth's climate has been changing many times since our planet formed, about 4.5 billion years ago. Digging through evidence, such as fossils, soil, ice, and particles in rocks scientists believe that during the last 400,000 years, Earth's average temperatures fluctuated several times, as a result of events such volcanic eruptions, and meteors that hit our planets. Mainly since the beginning of the Industrial Revolution, the world climate changes in relatively high-speed due human activities. The main contributor to the global temperature change (64%) is the accumulation of greenhouse gases in the atmosphere, mostly CO2 resulting from the burning of fossil fuels by manufactures, power stations, and transportation. Deforestation also contributes to the increase in carbon dioxide, because trees absorb CO2 from the atmosphere, as part of their photosynthesis. In order to reverse or decrease the global greenhouse emissions, scientists suggest that our societies must change its current way of living by eliminating the burning of fossil fuels for energy production, and instead (1) use renewable energy sources (2) transforming the transportation system by investing in better public transportation (3) design more walkable communities, and (4) develop new urban communities. They also suggest that people should be more conscientious about their carbon footprints by reducing consumption and eat more local vegetarian diets, limiting birth rate, and in general being responsible citizens. Because climate is already changing, the most sufficient way to make an impact and slowdown climate change is to appoint a global committee that will impose regulations and legislations on all nations, corporations, and people. Allowing individual countries and communities to create their own plan is already too late, and it will not impact the global environment in the required time to reverse climate change.

An example of habitat restoration took place in Yellowstone National Park, after wolfs had been reintroduced to their natural habitat. The idea behind trophic cascade, indirect interactions of reintroducing a specie that was extinct and was on top of the food chain back into its natural environment which can affect an entire ecosystem, was brought to congress in 1966 by biologist who were concerned about the large elk population and its ecological impacts. Several years after releasing the wolfs back into the wild, Yellowstone landscape was radically changed. First, the wolf killed elks, and as a result they changed behavior and migrated into different parts of the park. This allow native plants such as aspens, willows, and cottonwood to regrow; bird's population was increased; and beavers were back in the rivers – building dams, which provided habitats for many other species such as rodents, and birds of prey.



Recent Monthly Average Mauna Loa CO_2
March 2018: 409.46 ppm
March 2017: 407.18 ppm

Consequently, the wolfs transformed the ecosystem as well as the physical geography of the park – where rivers were stabilized by regenerated forests which alleviated the banks, and new vegetation prevented some soil erosion. This inspiring story about Yellowstone wolfs, provides hope for future protections and rehabilitation of areas that are damaged due to irresponsible human behavior [21, 22].

On the other hand, if will not change the way our society function and not sufficiently prepare for changes, such as rising sea level, our communities will pay higher price. For example, the Nile Delta is located in northern Egypt east of Alexandria, and its where the Nile river open up before draining into the Mediterranean Sea. The Nile, the longest river in the world which supports millions of lives is a region where Egypt grows most of its produces. Similar to many other regions across the globe, climate change already impacts this fertile agricultural land. Damming the river is one of many issues that the Egyptian government is trying to resolve. Even though in the past, controlling the river provided many benefits such as electricity and food control, these days damming the Nile does the opposite. Lack of precipitation continuously decreasing the river flow, and it impacts farmers who depend on the water for growing their crops. In addition, the dams prevent sediments to flow down the river, and it causes the land surface to decrease and it also effects the soil from being fertilized. Researchers believe that that fish population along the delta was also crashed due to major reduction in sediments flow to the sea. Another issue that the Nile delta region is experiencing is the expected rise in sea level, due to global warming. Because the agricultural land is very closer to sea-level is at risk of being flooded.

Environmental Justice

Slums are type of housing that are often located in fast-growing metropolitan areas, found in developing countries. People who live in slums are often poor or have a very low-income, migrate workers, and people who got pushed out or been evicted from their home and had no alternate housing option. The main causes for slum expansion relates to fast population growth, lack of affordable low-income housing and poor planning, and the modern economy which continually cutting jobs due to technological advancement. According to Habitat of Humanity, United Kingdom, there are currently 1.6 billion people who lives in unsuitable housing; 1 in every 7 people in the world currently lives in a slum, and by 2030, 1 in every 4 will live in slum. In developing countries, already 1 in 3 urban residents live in slum [23]. Sadly, many local municipalities and governments undermined efforts to remove, reduce or upgrade slums into better housing option for the poor, due to political interests. For example, China's leader Xi Jinping decided to reduce the growing population in Beijing, and in 2017 he ordered to demolish tens of thousands of homes occupied by migrant workers. Similar to Chine, many other slum's residents around the globe experiencing unfair treatment from their local authorities.

People who reside in slums, are vulnerable to harsh weather conditions due to unsuitable housing, poor sanitary, infectious and chronic diseases, and lack of resources such as clean water, nutritious food, and electricity. Children are often dropping out of schools, which later makes it difficult to pursue better lives outside the slum. Studies shows that as a result of global warming many families living in slums have to cope with an increasing number of storms, and therefore are forced to rebuild their homes every year – sometimes several times a year. In addition, slums are often lack of sewage, and as a result it causes diseases to spread quickly. This sanitary issue creates an environmental hazard for large populations who are often unable to access sufficient health clinics to get treatment in time.

If poor communities will continue to be treated unfairly and remain unprotected by their local municipalities and governments, then slum population will grow and it will cost more to maintain and support its communities. In order to resolve this crisis, countries must invest in upgrading slums instead of evicting people. Land must be secured and protected for the purpose of secured living. Schools must be developed and maintained, and health clinic should be developed for providing accessibility for basic healthcare services.

Slum, South Africa

Environmental justice is a general term to describe the unjust relationship between natural environments and certain populations – their community's locations and accessibilities to basic resources. Some of the factors that influence these unfair habitats are racism, poverty, and economic planning. For example, in the United States many residential communities who resides by people of colors and poor families are located right next to oil refineries and other industries that pollute their environments. As a result of polluted environments – of soil, air, and water – many people in those communities suffer from asthma, metal intoxications, carcinogens, and many other illnesses. Unfortunately, many of these communities often lack financial resources to fight these companies, and they also do not have alternate housing options. For example, is Kettleman City located in the heart of California's San Joaquin Valley. Many low-income Spanish-speaking farmworkers residents suffered from diseases resulted from water contamination with benzene and arsenic from a Chemical Waste Management landfill that was located close to their town [24].

I believe that Locally Unwanted Land Uses (LULUs) and its somewhat irresponsible development is purposely situated around disadvantage communities. Noticeably, large corporations and government authorities choose to locate environmentally harmful facilities close to poor populations and racial minorities, because they recognize it will be more difficult for these communities to fight against them; and it also allows them to operate with less regulations. Fortunately, these days there is a greater awareness about environmental injustice practices, and through assistance of non-profit organizations more disadvantage communities are able to fight against harmful violators and win.

Global Environmental Sustainability

On January 1st, 2016, the 17 Sustainable Development Goals (SDGs) of the 2030 Agenda for Sustainable Development officially came into practice. Over the next 13 years, it agreed that countries will collaborate efforts to slowdown climate change, end all forms of poverty, and fight inequalities. I would like to focus on SDG Goal number 9: industry, innovation and infrastructure, and examine the obstacles that may prevent from achieving it, here in the United States.

SDG Goal number 9, promotes sustainable industrial practices and fosters innovation made in all sorts of industries, and it also pushing for improvement in infrastructure to drive economic growth. This goal is essential for all nations – poor as well as developing countries where environmental challenges and energy efficiency may be driving the need for higher regulations and new infrastructures investments. The main challenges that delaying the required changes related to lobbying groups that deliberately trying to deregulate the system and prevent changes, financial funding and investments, and rapid urbanization spread that preventing the acquired sustainable design.

Many Americans view political lobbying as a way to advance special interests at the expense of the greater good. When it comes to lobbying on climate change, the common public view is that most firms lobby against climate regulations to reduce carbon emissions, because greater regulation threatens industry and our economy. For example, the U.S. Chamber of Commerce, the country's largest lobbying organization and its affiliates, spent $90 million lobbying around climate change legislation in 2014 — more than any organization, based on our analysis. That same year, one of the highest-polluting utilities, Southern Company, spent an estimated $9 million on climate change lobbying. If our political and societal systems will continue

allowing corporate interests to be valued more than our environment, our global community will have hard time achieving this goal.

Funding and financial investments that are much needed in order to achieve this goal, are continually being burden on citizens by taxes, instead of having corporations sponsor the required changes. For example, the deterioration of roads and bridges across the United States is mostly due to lack of infrastructure investment and improvement in public assets, such as reliable transportation systems. If our states and federal legislators would have been committed in improving public infrastructure, they would have corporations, who are using the public lands and roads to transport their goods sponsor the desirable changes. However, if we will continue increasing individual taxes without having corporation pay their fair share, people will fight against improvements in infrastructures and it can possibly prevent us from reaching this goal.

The two policy instruments that can assist us in implementing the Sustainable Consumption and Productions (SCP), and will help us to achieve overall development plans are the regulatory and economic instruments. If all of our regulator – local, state, and federal – will collaborate efforts to ensure a more sustainable and fair economy and community design it will help the United States achieve all the Sustainable Development Goals. On the other hand, if we will let corporations and capitalists dictate our societal rules without regulations, than eventually it will cost more money to efforts to repair the damages and our modern communities will fall apart. The economic designs and implications are also should be carefully reviewed, and all agencies should collaborate forces in order to assist companies to adopt to the required changes. If the overall plans to become more sustainable are done right, it can generate more jobs, which will boost the economy; it can ensure proper building codes and pollution regulations, which will than improve the quality of life for all citizens; and it will also help agencies to regulate and properly manage all of our natural resources and land.

REFRENCES

PAGE 3

[1] Friedrich Engels, The Condition of the Working-Class in England in 1844 (London: Swan Sonnenschein & Co., 1892), pp. 45, 48-53.
Link: https://webs.bcp.org/sites/vcleary/modernworldhistorytextbook/industrialrevolution/PSEnglesManchester.html

[2] National Environmental Policy Act (NEPA)
Link: https://ceq.doe.gov

[3] Thompson Copperfield von Agner, et al. Postindustrial Society and the Environment a Proposal for the Application of Emergy, *In* Ortega, E. & Ulgiati, S. (editors): Proceedings of IV Biennial International Workshop "Advances in Energy Studies". Unicamp, Campinas, SP, Brazil. June 16-19, 2004. Pages 197-205
Link: http://www.unicamp.br/fea/ortega/energy/Thompson.pdf

[4] Foster JB. The Four Laws of Ecology and the Four Anti-Ecological Laws of Capitalism. New York: Monthly Review Press; (2012).
Link: http://climateandcapitalism.com/2012/04/02/four-laws/

[5] ardin G. The tragedy of the commons. Science (1968) 162(3859):1243–8.10.1126/science.162.3859.1243
Link: http://science.sciencemag.org/content/162/3859/1243.full

PAGE 4

[6] Miriam Pawel, *The Union of Their Dreams: Power, Hope, and Struggle in Cesar Chavez's Farm Worker Movement* (New York: Bloomsbury Press, 2009),
Link: https://monthlyreview.org/2010/05/01/the-rise-and-fall-of-the-united-farm-workers/

[7] Freedom to Marry - http://www.freedomtomarry.org/

[8] Marriage Center – Human Rights Campaign
http://www.hrc.org/marriage-center

PAGE 5

[9] Average Commute Time
Link: https://project.wnyc.org/commute-times-us/embed.html#5.00/42.000/-89.500

[10] Robert Half Commuting Study, October 2017
Link: http://rh-us.mediaroom.com/2017-10-23-Ahead-Of-Halloween-Robert-Half-Reveals-U-S-Cities-With-Spookiest-And-Most-Stressful-Commutes

PAGE 6

[11] Hohokam Legacy: Desert Canals; Pueblo Grande Museum Profiles No. 12, Jerry B. Howard
Link: http://www.waterhistory.org/histories/hohokam2/

[12] Phoenix Population 2018; 2018 World Population Review
Link: http://worldpopulationreview.com/us-cities/phoenix-population/

[13] Phoenix City, Arizona; United States Census Bureau; Population estimates, July 1, 2017, (V2017)
Link: https://www.census.gov/quickfacts/fact/table/phoenixcityarizona/PST045216

[14] Climate Phoenix – Arizona; U. S. Climate Data; Climate data for phoenix sky hrbr intl ap, Longitude: -112.004, Latitude: 33.4277 Average weather Phoenix, AZ - 85034 - 1981-2010 normals
Link: https://www.usclimatedata.com/climate/phoenix/arizona/united-states/usaz0166

[15] Where is My Water From? Water Resources & Management; City of Phoenix, Arizona
Link: https://www.phoenix.gov/waterservices/resourcesconservation/water-efficiency#!SourcesArea

[16] Securing Arizona's Water Future; Arizona Department of Water Resources
Link: http://www.azwater.gov/AzDWR/StatewidePlanning/Conservation2/Residential/Residential_Home2.htm
- http://projects.scpr.org/applications/monthly-water-use/san-francisco-public-utilities-commission/

PAGE 7

[17] Smithsonian National Museum of Natural History; Human Evolution Evidence; Species
Link - http://humanorigins.si.edu/evidence/human-fossils/species

[18] Bret Boyd, Urbanization and the Mass Movement of People to Cities, Grayline Group,
Link: https://graylinegroup.com/urbanization-catalyst-overview/

[19] World Preservation Foundation; Deforestation statistics,
Link: http://worldpreservationfoundation.org/environment/deforestation/

[20] The World Bank Organization, Forest Area
Link: https://data.worldbank.org/indicator/AG.LND.FRST.K2/

\

PAGE 8

[21] Wolves Keep Yellowstone in Balance, Earthjustice

Link: https://earthjustice.org/features/infographic-wolves-keep-yellowstone-in-the-balance

[22] Insight from Yellowstone, Thomas Newsome; University of Sydney; Monthly archive: May 2014

Link: https://thomasnewsome.com/2014/05/

PAGE 9

[23] Habitat for Humanity, Great Britain; What is a Slum?

Link: https://www.habitatforhumanity.org.uk/what-we-do/slum-rehabilitation/what-is-a-slum/

[24] Greenaction for Health & Environmental Justice; Stop Toxic Waste Dumping & Pollution in Kettleman City

Link: http://greenaction.org/?page_id=343

OTHER

[25] Data Booklet, The World's Cities in 2016; United Nations

Link:

http://www.un.org/en/development/desa/population/publications/pdf/urbanization/the_worlds_cities_in_2016_data_booklet.pdf