

Final Project

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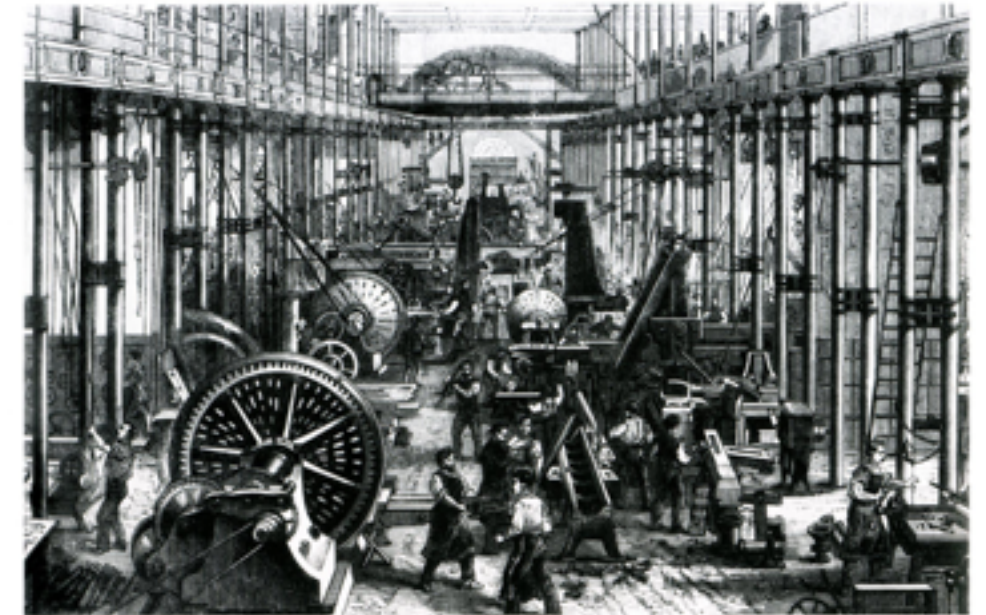
History of Environmental Development

There are seven eras all explain and illustrate how the environment changed through these past few centuries. They are pre-industrial revolution, industrial revolution, beginning of ecological planning, environmental mitigation, sustainable development and global environmental issues and post environmental sustainability.

For pre-industrial revolution (1700s), It was mainly about landscape planning and design, how to beatify the surroundings and architecture.

For the industrial revolution (1800s), the British changed the agriculture and handicraft economy to a machine-dominated economy. They invented the steam engines that made most of the fields working more efficiently and more effectively. Then, this invention, as well as the machine-dominated economy, had spread to the rest of the world. At this period, city started to be deteriorated so demand for parks raised. Therefore, park system started developing.

As environmental problem keeps appearing, the following eras are more about how to keep the environment clean and achieve sustainability.



Environmental Movement

There are three types of people's movements that we can categorize all over the years. They are the Social Movements, the New Social Movements, and the Environmental Movements. A movement is not just a crowd of people fighting for something they want. A crowd cannot stand for a long time while a movement can sustain even though it is loosely organized. Also, movements are going to communicate and coordinate activities over a wide area which marked the social change and formed the society we are enjoying right now.

Social movements are movements that people fighting for body needs and security needs like labor Movement. After that, there is a "post-materialistic" movement called new social movement, means to fight for the minority world.

New social movement means the movement fighting for the minority world after. The adjective used on lecture notes would be "post-materialistic."

For environmental movement, it is about the movement the environmentalists hold to deal with the environmental issues. They usually focus on ecology, health and human rights. These movements can involve the political, scientific and social aspect.



Natural & Built Environment

As urbanization occurs, more people are living in the city and then demand of green spaces in the city increases. There are three suggested scales on inserting green area. The two extreme scale would be half city with half park and the fragmented city and park spaces. The other one would be the intermediate one. There are pros and cons for both concentrated and fragmented city planning. If the plan is more human-based, then it would probably go for the fragmented and if it is a more environmental-based then it would probably go for the concentrated one.

Environmental Challenges—Water

It is important to sustain freshwater supply as it is essential for human beings and other fauna to stay alive. However, the effect of industrial revolution such as population growth and urbanization made freshwater being running out in this era. There are a lot of solution of relieve the pressure of freshwater shortage, some examples would be education on saving water, improve distribution infrastructure and desalinization.

Environmental Challenges—Urbanization & Deforestation

Urbanization means the increasing number of people that live in urban areas. It will also lead to the physical growth of the urban area, horizontal, vertical or both (lecture note P.5). It is usually linked to deforestation as urbanization requires cutting trees to change it to a city. The deforestation rate has increased in this century and the three main reasons are higher consumption of food, living space and raw materials.

Environmental Challenges—Climate Change

There are four factors contributing to climate change and they are the excess of greenhouse gases, human practices, global warming and the Earth natural climate cycle. In my opinion, human practices are the most significant factor because it is also a factor in global warming and the excess of greenhouse gases. For the Earth natural climate cycle, it might really be a reason that the amount of CO₂ keeps raising up but there is still no scientific proof that we are really going through a pre-ice age. Therefore, I think the most significant factor would be human practices.

There are five main human practices that contribute to climate change and they are all about escalating greenhouse effect. They are burning coal, oil and gas which produce carbon dioxide and nitrous oxide, cutting down forest which eliminates the carbon dioxide being absorbed and oxygen being produced during photosynthesis, increasing livestock farming which increases methane being produced when livestock digest food, the usage of fertilizers which emit nitrous oxide, and the usage of fluorinated gases which produces a warming effect.



Environmental Justice & Disadvantaged Communities

An environmental justice area is where 20 percent or more live in poverty and/or 30 percent or more of the population is minority. This term is often linked to environmental racism or environmental equality. Environmental racism means people with lower social standing, like the black and the poor, are more often exposed to bad environment than those with higher social standing, like the white and the rich. Then, the term environmental equality is brought up to reverse this phenomenon.

There are a few factors causing environmental injustice. First, it was about the low land price around the highly polluted areas. As living environment is not good around the highly polluted areas, land price drops, attracts the poor, and forms environmental injustice. Second, law enforcement may be looser in a poor neighborhood than in a rich neighborhood. According to Maslow Hierarchy of Needs, human beings will satisfy their basic needs first, like getting full and a shelter. Then, they will seek for safety, belongings and so on. Therefore, plants worsen the environment may face less obstacles if they are built in a poor area than a rich area because poor may just focus on basic needs and be absent in politics. This leads to the poor living in a highly polluted area and brings out environmental injustice

Third, market is also a reason leading to environmental injustice. Maybe there is a special need of an item around a specific neighborhood which attract the production plant to move in, causing environmental injustice. Besides that, market can also mean the labor market. By putting the whole production process in a relatively labor excessive neighborhood which is usually the poorer can help with the business.

Environmental Policy/Planning

For environmental policy and planning, it can be divided to three different scales, they are the local scale, regional scale and international scale.

For local scale, it is about working within a state. These projects are also aim to bringing a better living environment to the citizens directly and the effects should be able to be seen in the shortest period of time. Some examples in local scales would be the Mission District Streetscape Plan, The Transit Center District Plan, The Fisherman's Wharf Public Realm Plan and Better Streets San Francisco Project. For regional scale, it would be some projects brought by several states. These projects aim to bigger problems that will not only affect one state, like air pollution and freshwater shortage. An example discussed in class would be the Interstate Environmental Commission (IEC), a tri-state water and air pollution control agency for New York, New Jersey, and Connecticut.

For international scale, projects would be aim at the problem affect globally like global warming and climate change. Some projects launched before would be the Kyoto Protocol and the Paris Agreement.



Global Environmental Sustainability

Science Policy interface is the way which scientists, policy-makers and others make up after cooperating, communication and exchanging ideas. It would be helpful if scientists and policy makers carry out a sustainability plan as it will be more practical and effective. There are 17 Global Goals such as no hunger, clean water, quality education and gender equality. To achieve these goals, there are four instruments suggested which are the regulatory instruments with adding more limits and bans, the economic instruments with adding taxes and subsidies, the information-based instruments with adding eco-labelling and customer guidelines and the behavior instrument with aiming at influencing human behavior.

Achieving Environmental Sustainability

The three aspect in sustainability would be social, environmental and economic. If three aspect has been balanced, then environmental injustice will be lowered and number of green economy would be raised. Also, citizens can also participate in achieving environmental sustainability. They can start with manipulation, then therapy, informing, consultation, placation, partnership, delegated power and then citizen control



Personal Reflection on Environmental Challenges

Since industrial revolution took place in the 1800s, the Earth has experienced a huge change and some of them are pushing our Earth to pass the environmental tipping point. There are four spheres when we talk about the Earth. They are Biosphere, Lithosphere, Atmosphere and Hydrosphere. Therefore, environmental challenges can also be seen and analysed in these four spheres.

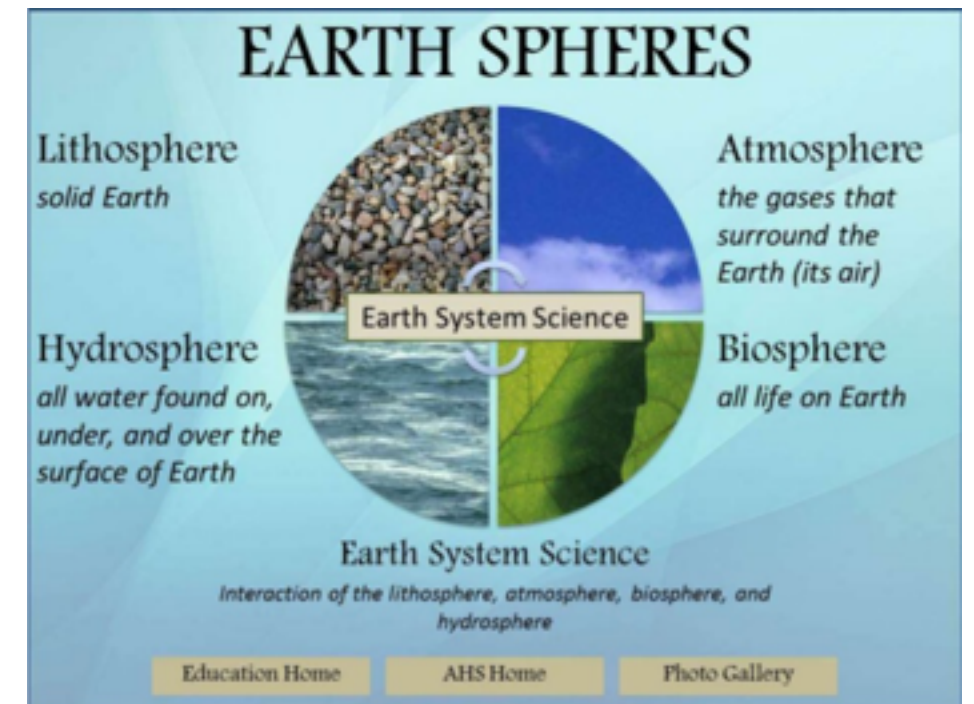
For Biosphere, flora and fauna are undergoing a life threatening period. For fauna, marine lives are threatened because of the excess pesticides from agricultural uses run to the ocean or river causing algae bloom. The algae absorb the nutrients from pesticides and consume all oxygen under the water which kills the marine lives. As the Earth is undergoing climate change, fauna which cannot adapt to the new climate and living environment is facing extinction like the polar bears and Chinese white dolphin. Even human beings are being affected too. Industrialization brought air pollution which kills 7 million people a year (theguardian.com). For flora, deforestation has been taken place for decades for raw materials and space for urbanization, 750,000 square kilometers of the Amazon rainforest has been cleared since 1978 (Mongabay).

For Atmosphere, industrialization brought the common usage of fossil fuels for factory, motor vehicles and electricity which leads to a serious air pollution problem. Also, excess of greenhouse gases caused global warming, the Earth warmed by 1.5°F (0.85°C) from 1880 to 2012 (climatesignals.org)

For Hydrosphere, acid rain occurs in this era due to the chemical reaction of SO₂ and NO_x from fossil fuel combustion with oxygen, water and other chemicals. They dissolved in the air, forming acid rain, and lowering the pH value of the seawater as well as the freshwater. Due to urbanization and population growth, there is already a freshwater shortage and the occurrence of acid rain is escalating the problem.

For Lithosphere, due to acid rain, the soil and bedrock became more acidic. Adding on the effect of population growth, more people are dragging groundwater which will lead to sinkholes.

It is easy to see the environmental challenges on biosphere, lithosphere, atmosphere and hydrosphere but it is difficult to separate the root of the problem for these four spheres. It is because there is only one root of the problem which is sustainability has not yet achieved. We have not considered all the three elements in sustainable development enough. In my opinion, most of the countries are focusing on economy more than the society and the environment, especially in developing countries. However, it is true that sustainable development needs capital. Technology plays an important role in balancing the economy and environment aspect by introducing new technology like renewable



energy plants and these innovations need money. It is also true that it will be hard for the developing countries to boost their economy in a sustainable way because people there may not be educated enough to care about sustainability and may not have enough money to achieve it. As we all are living in the same planet, environmental problems happened in developing countries will affect the developed countries too. It is just a matter of time. Countries should help each other out, carry out a possible plan, work together and be responsible for what environmental effect their own country brought, but not criticizing each other. Also, there is also a “Not in my Backyard” phenomenon. Developed countries dump garbage and electronic waste and place the dirty production factories to developing country. Therefore, I think an appropriate and a possible way to prevent the Earth from passing the environmental tipping point would be all countries cooperate together and work hard on it. Developed countries can provide capital, technology, and expertise while the developing countries can provide labor and raw materials. Besides cooperation internationally, education is also important. Even though San Francisco has a 75% diversion rate on garbage, meaning only 25% of the trash is going to landfill, it is still common to see people in San Francisco not working hard on achieving the zero waste goal set by the city. From my personal experience, I saw a lot Americans raised in San Francisco do not have so much sense on being green. I worked in a grocery store with San Francisco born and bred, they always just throw the compostable like rotten apples to the trash bin, use a lot of paper towels to dry their hands every time they wash them, consume unnecessary plastic bags and so on. Therefore, I think education on being green is also an important element on achieving sustainability. However, it is useless to talk about it unless there is actual actions. I think the most important message is that every global citizen needs to help with environmental challenges and every little step helps. Also, we may still be enjoy the environment in our lifetime but not our next generation if the plans do not have enough support by global citizens.

