Calculating_Lexical_Diversity

November 23, 2021

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[1]: # For this assignment you will need to submit a text file containing some␣
      ↪document to analyze,/n
     # a python script, and a short essay.
     # Find a text document related to China that you want to analyze. This can be␣
      ↪an article from
     # Wikipedia, a text from Project Gutenberg, or a text from one of the corpora␣
      ↪we have seen in
     # class. Your file can be in either English or Chinese.
     # The python script should do the following:
     # Open the file and clean the text, calculate the frequencies of all words in␣
      ↪the document,
     # and calculate the text's lexical diversity. At the end, the script should␣
      ↪print the document's
     # lexical diversity, as well as the top ten most frequent words in the document.
     # In a short 300-500 word essay, please address the following:
     # Which text did you pick, and why? Who wrote it, and for what purpose (if it␣
      ↪was anonymously
     # written, tell me that)? Where did you find it? What other kinds of texts are␣
      ↪available from the
     # same source? What is the text's lexical diversity? What are the most common␣
      ↪words? Are lexical
     # diversity/common words useful measures for understanding your text? Why or␣
      ↪why not? How might
     # you filter the common words to learn something more useful?
     # Speculate on how you might push your analysis futher. What would you do next,␣
      ↪if you knew how?
     # Upload all three documents here (I need to be able to run your code to␣
      ↪properly grade your work).
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[5]: #Reading in the file, may run into problem and may need to add .txt onto script
     with open("Project_1_text_file",'r', encoding='utf8') as rf:
         text=rf.read()


     #need to standarize all characters, remove unnecessary characters that an␣
      ↪possibly impact word counts
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```python
text=text.lower().replace(",","").replace(".","").replace("[]","").
 →replace("\n", " ")

#get the words in the texts
words = text.split(" ")
#get the unique words
unique_words = set(words)

word_freq = {}
#iterate through all of the words and count hteir frequency
for word in unique_words:
    freq = words.count(word)
    word_freq[word] = freq
print(word_freq)

#sort the keys by their values
sorted_words = sorted(word_freq, key = word_freq.get, reverse = True)
#print(sorted_words[:10])
#or we could print how often the words occur
print("These are the counts of the ten most common words and how often they
 →appear:")
for word in sorted_words[:10]:
    print(word, word_freq[word])

#Finding the lexical diversity of the passage
lex_diversity = len(unique_words)/len(words)
lex_diversity = str(lex_diversity)
print("The lexical diversity of this document is " + lex_diversity)
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a 42
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[4]:

Environmental issues in China are plentiful, severely affecting the country's
biophysical environment and human health. Rapid industrialisation, as well as
lax environmental oversight, are main contributors to these problems. China is
ranked low on the Environmental Performance Index.[1]

The Chinese government has acknowledged the problems and made various responses,
resulting in some improvements, but the responses have been criticized as
inadequate.[2] In recent years, there has been increased citizens' activism
against government decisions that are perceived as environmentally
damaging,[3][4] and a retired official from the Chinese Communist Party (CCP)
has reported that the year of 2012 saw over 50,000 environmental protests in
China.[5]

Contents

Environmental problems

Water resources

Main article: Water resources of the People's Republic of China

The water resources of China are affected by both severe water quantity shortages and severe water quality pollution. An increasing population and rapid economic growth as well as lax environmental oversight have increased water demand and pollution. China has responded by measures such as rapidly building out the water infrastructure and increased regulation as well as exploring a number of further technological solutions. Water usage by its coal-fired power stations is drying-up Northern China.[6][7][8]

According to Chinese government in 2014 59.6% of groundwater sites are poor or extremely poor quality.[9]

A 2016 research study indicated that China's water contains dangerous amounts of the cancer-causing agent nitrosodimethylamine (NDMA). In China, NDMA is thought to be a byproduct of local water treatment processes (which involve heavy chlorination).[10]

Deforestation

Further information: Deforestation and Deforestation in Asia

Although China's forest cover is only 21.15% [11][12] the country has some of the largest expanses of forested land in the world, making it a top target for forest preservation efforts. In 2001, the United Nations Environment Programme

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(UNEP) listed China among the top 15 countries with the most "closed forest," i.e., virgin, old growth forest or naturally regrown woods.[13] 12% of China's land area, or more than 111 million hectares, is closed forest. However, the UNEP also estimates that 36% of China's closed forests are facing pressure from high population densities, making preservation efforts especially important. In 2011, Conservation International listed the forests of south-west Sichuan as one of the world's ten most threatened forest regions.[14]

China had a 2018 Forest Landscape Integrity Index mean score of 7.14/10, ranking it 53rd globally out of 172 countries.[15]

Three Gorges dam
The three gorges dam produces 3% of the electricity in China but has displaced houses and caused environmental problems within the local environment. Due to the construction of the dam over one million people have been displaced from their homes.[16] The dam has also caused frequent major landslides due to the erosion in the reservoir. These major landslides included two incidents in May 2009 when somewhere between 20,000 and 50,000 cubic metres (26,000 and 65,000 cu yd) of material plunged into the flooded Wuxia Gorge of the Wu River.[17]

Coastal reclamation
China's marine environment, including the Yellow Sea and South China Sea, are considered among the most degraded marine areas on earth.[18] Loss of natural coastal habitats due to land reclamation has resulted in the destruction of more than 65% of tidal wetlands around China's Yellow Sea coastline in approximately 50 years.[19] Rapid coastal development for agriculture, aquaculture and industrial development are considered the primary drivers of coastal destruction in the region.[19][20]

Desertification
Desertification remains a serious problem, consuming an area greater than the area used as farmland. Although desertification has been curbed in some areas, it is still expanding at a rate of more than 67 km2 every year. 90% of China's desertification occurs in the west of the country.[21] Approximately 30% of China's surface area is desert. China's rapid industrialization could cause this area to drastically increase. The Gobi Desert in the north currently expands by about 950 square miles (2,500 km2) per year. The vast plains in northern China used to be regularly flooded by the Yellow River. However, overgrazing and the expansion of agricultural land could cause this area to increase.[22] In 2009, it was estimated that over 200 high-altitude lakes in Zoigê Marsh, which provides 30% of the Yellow River's water, had dried up.[23]

Climate change
Further information: Climate change in China
Climate Change had already impacted China. It increased mortality from extreme weather events, infectious disease, poor air and water quality. The effects of air pollutions are exacerbated by the rise in temperatures. In the future

climate change may lead to "typhoons, floods, blizzards, windstorms, drought, and landslides" and to more severe damage from infectious diseases[24]

According to one report, China is the country with the largest number of people who can be impacted by Sea level rise.[25]

One of the main problems is the melting of glaciers and permafrost in Tibet. These glaciers and permafrost supply water to approximately 2 billion people. The temperatures in the region rise 4 times faster than anywhere in Asia. According to Xinhua News Agency 18% of glaciers already melted from the middle of the 20th century. The water level in big rivers is lowering. This has an impact on the water supply of China because many rivers, including the Yangtze and Yellow River are getting water from the Tibet glaciers. According to China's Ministry of Water Resources 28,000 of rivers disappeared in China by the year 2013 and the melting of Tibet glaciers and permafrost can be one of the causes. The melting also has an impact on the water supply of others countries in eastern Asia, including India, Pakistan, Bangladesh and more, that can lead to conflicts over water. According to Chinese Academy of Science "more than 80 percent of Tibetan Plateau permafrost could be gone by the year 2100, and that almost 40 percent of it would be gone within the "near future." Some researchers even suppose that most of the Himalayan glaciers will disappear in 20 years.[26]

Pollution
Main article: Pollution in China
Various forms of pollution have increased as China has further industrialized, which has caused widespread environmental and health problems.[27] China has responded with increasing environmental regulations and a build-up of pollutant treatment infrastructure which have caused improvements on some variables. As of 2013 Beijing, which lies in a topographic bowl, has significant industry, and heats with coal, is subject to air inversions resulting in extremely high levels of pollution in winter months.[28] In response to an increasingly problematic air pollution problem, the Chinese government announced a five-year, US$277 billion plan to address the issue. Northern China will receive particular attention, as the government aims to reduce air emissions by 25 percent by 2017, compared with 2012 levels, in those areas where pollution is especially serious.[29] According to a report published by Greenpeace and Peking University's School of Public Health in December 2012, the coal industry is responsible for the highest levels of air pollution (19 percent), followed by vehicle emissions (6 percent). Ambient air pollution is measured by the amount of particulate matter in the air. This is a result of burning fossil fuels. "Because coal is the primary fuel used to power China's industrial sector, it is responsible for about 40 percent of the deadly fine particulate matter found in China's atmosphere." [30] In January 2013, fine airborne particulates that pose the largest health risks, rose as high as 993 micrograms per cubic meter in Beijing, compared with World Health Organization guidelines of no more than 25. The World Bank estimates that 16 of the world's most-polluted cities are located in China.[31]

Coastal pollution is widespread, leading to declines in habitat quality and increasing harmful algal blooms.[32] The largest algal bloom recorded in history occurred in China around the southern Yellow Sea in 2008, and was easily observed from space.[33]

Rising affluence is another indirect cause of pollution. In particular, car ownership has skyrocketed. In 2014, China added a record 17 million new cars to the road and car ownership reached 154 million.[34]

China is the biggest producer of single use plastic what causes severe pollution. The biggest landfill of the country was filled 25 years before it was planned.[35]

Land pollution
In July 2015, Council on Foreign Relations Director of Asia Studies Elizabeth Economy writing in The Diplomat listed soil contamination as a "poor stepchild" of the Chinese environmental movement, and questioned whether or not recent measures from the Ministry of Environmental Protection would be adequate in combating the problem.[36] In her 2004 book The River Runs Black, she wrote, "China's spectacular economic growth over the past two decades has dramatically depleted the country's natural resources and produced skyrocketing rates of pollution. Environmental degradation has also contributed to significant public health problems, mass migration, economic loss, and social unrest."[37]

Population
Main articles: Demographics of the People's Republic of China and One-child policy
China currently has the world's largest population but population growth is very slow in part due to the one-child policy. The environmental issues are also negatively affecting the people living in China. Because of the emissions created from the factories, the number of people diagnosed with cancer in China has increased. Lung cancer is the most common form of cancer that is plaguing the population. In 2015, there were more than 4.3 million new cancer cases in the country and more than 2.8 million people died from the disease.[38]

Animal welfare
Main article: Animal welfare and rights in China
A 2005-2006 survey by Prof. Peter J. Li found that many farming methods that the European Union is trying to reduce or eliminate are commonplace in China, including gestation crates, battery cages, foie gras, early weaning of cows, and clipping of ears/beaks/tails.[39] Livestock in China may be transported over long distances, and there are currently no humane-slaughter requirements.[39]

China farms about 10,000 Asiatic black bears for bile production-an industry worth roughly $1.6 billion per year.[39] The bears are permanently kept in cages, and bile is extracted from cuts in their stomachs.[39] Jackie Chan and Yao Ming have publicly opposed bear farming.[40][41][42] In 2012, over 70 Chinese celebrities took part in a petition against an IPO application by Fujian

Guizhentang Pharmaceutical Co. due to the company's selling of bear-bile medicines.[43]

China is the biggest fur-producing nation.[39] Some fur animals are skinned alive, and others may be beaten to death with sticks.[39]

According to Prof. Peter J. Li, a few Chinese zoos are improving their welfare practices, but many remain "outdated", have poor conditions, use live feeding, and employ animals for performances.[39] Safari parks may feed live sheep and poultry to lions as a spectacle for crowds.[44]

Natural disasters
According to Jared Diamond, the six main categories of environmental problems of China are: air pollution, water problems, soil problems, habitat destruction, biodiversity loss and mega projects.[22] He also explained that "China is noted for the frequency, number, extent, and damage of its natural disasters".[22] Some natural disasters in China are "closely related to human environmental impacts", especially: dust storms, landslides, droughts and floods.[22]

Response
General overview of the environmental policy
Main article: Environmental policy in China
In 2012 the Center for American Progress has described China's environmental policy as similar to that of the United States before 1970. That is, the central government issues fairly strict regulations, but the actual monitoring and enforcement is largely undertaken by local governments that are more interested in economic growth. Furthermore, due to the restrictive conduct of China's undemocratic regime, the environmental work of non-governmental forces, such as lawyers, journalists, and non-governmental organizations, is severely hampered.[45]

Since 2002, the number of complaints to the environmental authorities increased by 30 percent every year, reaching 600,000 in 2004; meanwhile, according to an article by the director of the Institute of Public and Environmental Affairs Ma Jun in 2007, the number of mass protests caused by environmental issues grew by 29 percent every year since that time.[46][47] The growing attention upon environmental matters caused the Chinese government to display an increased level of concern towards environmental issues and the creation of sustainable growth. For example, in his annual address in 2007, Wen Jiabao, the Premier of the People's Republic of China, made 48 references to "environment," "pollution," and "environmental protection", and stricter environmental regulations were subsequently implemented. Some of the subsidies for polluting industries were cancelled, while some polluting industries were shut down. However, although the promotion of clean energy technology occurred, many environmental targets were missed.[48]

After the 2007 address, polluting industries continued to receive inexpensive access to land, water, electricity, oil, and bank loans, while market-oriented

measures, such as surcharges on fuel and coal, were not considered by the government despite their proven success in other countries. The significant influence of corruption was also a hindrance to effective enforcement, as local authorities ignored orders and hampered the effectiveness of central decisions. In response to a challenging environmental situation, President Hu Jintao implemented the "Green G.D.P." project, whereby China's gross domestic product was adjusted to compensate for negative environmental effects; however, the program lost official influence in spring 2007 due to the confronting nature of the data. The project's lead researcher claimed that provincial leaders terminated the program, stating "Officials do not like to be lined up and told how they are not meeting the leadership's goals … They found it difficult to accept this."[48]

China included the target of achieving Ecological civilization in its constitution, but there are some concerns about implementation.[49]

In 2014, China amended its protection laws to help fight pollution and reverse environmental damage in the country.[50]

In 2019, it launched the Belt and Road Initiative International Green Development Coalition.

In September 2020, General Secretary of the Chinese Communist Party Xi Jinping announced that China will "strengthen its 2030 climate target (NDC), peak emissions before 2030 and aim to achieve carbon neutrality before 2060".[51] According to Climate Action Tracker if it will be accomplished it will lower the expected rise in global temperature by 0.2 – 0.3 degrees – "the biggest single reduction ever estimated by the Climate Action Tracker".[52] The announcement was made in the United Nations General Assembly. Xi Jinping mentioned the link between the corona pandemic and nature destruction as one of the reasons for the decision, saying that "Humankind can no longer afford to ignore the repeated warnings of nature."[53] On the 27 September 2020, China's climate scientists presented a detailed plan how to achieve the target.[54]

Reforestation
According to the Chinese government website, the Central Government invested more than 40 billion yuan between 1998 and 2001 on protection of vegetation, farm subsidies and conversion of farmland to forest.[55] Between 1999 and 2002, China converted 7.7 million hectares of farmland into forest.[56]

33.8 million hectares (338,000 km2) of forest had been planted in China in the years 2013 - 2018. The Chinese government pledged to increase the forest cover of the country from 21.7% to 23% in the years 2016 - 2020[57] and to 26% by the year 2035[58] According to the government's plan, by 2050, 30% of China's territory should be covered by forests.[59] According to the govrment's Xinhua News Agency one third of the population of China participated in tree planting in the first half on 2020. 1.69 billion trees were planted, increasing the forest cover by 4.43 million hectares.[60]

Ou Hongyi the single climate striker of China created an initiative named "Plant for survival". In 2 - 3 months, more than 300 trees were planted.[61]

Stopping erosion and desertification
In 1994, China started the Loess Plateau Watershed Rehabilitation Project.

In 2001, China initiated a "Green Wall of China" project. It is a project to create a 2,800-mile (4,500 km) "green belt" to hold back the encroaching desert. The first phase of the project, to restore 9 million acres (36,000 km2) of forest, will be completed by 2010 at an estimated cost of $8 billion. The Chinese government believes that, by 2050, it can restore most desert land back to forest. The project is possibly the largest ecological project in history.[62] It has also been criticized on various grounds such as other methods being more effective.[63]

Stopping Climate change

Since 2000, rising CO
2 emissions in China and the rest of world have eclipsed the output of the United States and Europe.[64]

Per person, the United States generates carbon dioxide at a far faster rate than other primary regions.[64]
Main article: Climate change in China
See also: Debate over China's economic responsibilities for climate change mitigation
The position of the Chinese government on climate change is contentious. China is the world's current largest emitter of carbon dioxide although not the cumulative largest. China has ratified the Kyoto Protocol, but as a non-Annex I country was not required to limit greenhouse gas emissions under terms of the agreement.

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On the 27 September 2020, China's climate scientists presented a detailed plan how to achieve the target, described as "The most ambitious climate goal the world's ever seen". According to the plan GHG emission will begin to decline between 2025 and 2030, while total energy consumption will do so in 2035. By

2050 China will stop producing electricity with coal. By 2025, 20% of energy will be produced without fossil fuels. By 2060 emissions will fall to 200 million and these emissions will be mitigated with Carbon capture and storage, Carbon sequestration, Bioenergy.[67]

Energy efficiency
According to a 2007 article, during the 1980 to 2000 period the energy efficiency improved greatly. However, in 1997, due to fears of a recession, tax incentives and state financing were introduced for rapid industrialization. This may have contributed to the rapid development of very energy inefficient heavy industry. Chinese steel factories used one-fifth more energy per ton than the international average. Cement needed 45 percent more power, and ethylene needed 70 percent more than the average. Chinese buildings rarely had thermal insulation and used twice as much energy to heat and cool as those in the Europe and the United States in similar climates. 95% of new buildings did not meet China's own energy efficiency regulations.[48]

A 2011 report by a project facilitated by World Resources Institute stated that the 11th five-year plan (2005 to 2010), in response to worsening energy intensity in the 2002-2005 period, set a goal of a 20% improvement of energy intensity. The report stated that this goal likely was achieved or nearly achieved. The next five-year plan set a goal of improving energy intensity by 16%.[68]

Animal Welfare
China currently has no animal-welfare laws.[39][69][70]

In 2006, Zhou Ping of the National People's Congress introduced the first nationwide animal-protection law in China, but it didn't move forward.[44] In September 2009, the first comprehensive Animal protection law of the People's Republic of China was introduced, but it hasn't made any progress.[70]

In 2016, the Chinese government adopted a plan to reduce China's meat consumption by 50%, for achieving more sustainable and healthy food system.[71][72]

Reducing plastic pollution
In 2017 China banned the import of most types of plastic. In 2019 it announced a ban on single use plastic, but it should enter into force gradually, through 6 years. China's government is trying to replace it with biodegradable plastic, but it can work only in certain conditions. Refillable containers can solve the problem better.[35]

In September 2020 the ministry of commerce said that single use plastic bags and single use cutlery will be banned in big cities by the end of the year. Plastic single use straws will be banned all over the country.[73]

Community activism

Protests commenced in the southern town of Yinggehai in April 2012 following the announcement of a power plant project to be constructed in the small town. The protesters initially succeeded in halting the project, worth 3.9 billion renminbi (£387m) plant, as another town was selected for the location of the plant; however, the residents in the second location also resisted and the authorities returned to Yinggehai. A second round of protests occurred in October 2012 and police engaged aggressively with around 1,000 protesters on this occasion, leading to 50 arrests and almost 100 injuries (according to reports from the Information Centre for Human Rights and Democracy, a Hong Kong-based rights group).[74]

In response to a waste pipeline for a paper factory in the city of Qidong, several thousand demonstrators protested in July 2012. According to the Xinhua news agency, 16 protesters from Qidong were sentenced in early 2013 to between 12 and 18 months in prison; however, 13 were granted a reprieve on the grounds that they had confessed and repented.[75]

School strike for climate are forbidden in China. These strikes in China have only one participant: Ou Hongyi. She was told by the authorities to stop her activism or she will not be allowed to return learning.[61] She was arrested on Nanjing Road in September 2020 for participating in the Global Climate Strike after 3 hours of silence protest and released hours later. According to Andreas Fulda, an associate professor at the University of Nottingham's school of politics and international relations, after Xi Jinping went to power it became harder for environmental organizations to operate.[76]

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