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1. Letter from Under Secretary Generals

Dear distinguished delegates,

It is our exalted pleasure to welcome you all to the 3rd annual edition of Ipekçilik International Model United Nations. Our names are Beyza Kiraz and Ayşe Pamuk and we are sophomore students studying at Bursa Ipekçilik Anatolian Imam Hatip High School. This year, we have the honor to serve you as the Under Secretary Generals responsible for United Nations Environment Program. We truly believe that your participation in MUNIA'19 will be an unforgettable experience for you.

During the session of MUNIA'19, the participants of the UN Environment will focus on the problem that has a very important place for our future and endangering the entire ecosystem namely, "Determining and preventing the adverse impacts of industrialization on environment and climate during the Globalization Process." The delegates in this committee are going to be debating about the matter from plenty of different aspects. We also strongly recommend that all delegates read the study guide before the conference. We are very excited to observe the debate in the committee and to evaluate the various solution proposals.

Last but not least, we would like to thank everyone who contributed to this program and gave us this valuable opportunity. Particularly special thanks to our Academic Head, Erdem Sami Tarakçı for his guidance and assistance.

We are looking forward to meeting you all on the 16th of November.

If you have any questions, do not hesitate to contact your USGs via e-mail.

Warmest Regards,

Beyza KİRAZ

Kirazbeyza173@gmail.com

Ayşe PAMUK

Aysepamukx@gmail.com

Under Secretary Generals of the UNEP

For Position Paper:

Muniaunep@gmail.com

2. Introduction of UNEP

United Nations Environment Programme, also referred to as UNEP, UN Environment, was established in June 1972 after the United Nations Conference on the Human Environment, also known as the Stockholm Conference, as the coordinating body of environmental affairs in United Nations. As the leading environmental authority, the mission of UNEP is specified as to “provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations”.

In order to accomplish this mission, the organization promotes the implementation of the environmental dimension of sustainable development, sets the agenda, and serves as the authoritative advocate for the global environment. While striving for realizing these tasks, UNEP categorizes its work under seven topics: climate change, disasters and conflicts, ecosystem management, environmental governance, chemicals and waste, resource efficiency, and the environment under review.

United Nations Environment Assembly, also referred to as UNEA, is the governing body of the UN Environment. In 2012, after a call made by the world leaders, at the United Nations Conference on Sustainable Development also known as the Rio+20, UNEA was established in order to strengthen and upgrade UNEP. The establishment of the Environment Assembly was the culmination of decades of international efforts which was also initiated at the UN Conference on the Human Environment.

Currently, The United Nations Environment Assembly is the highest-level decision-making body of the world on the environment with all 193 UN Member States and the full involvement of major groups and stakeholders.

3. Introducing the Agenda Item

The agenda item for this valuable committee which seeks a solution for environmental problems that affect the nature in undesirable ways is chosen as "Determining and preventing the adverse impacts of industrialization on environment and climate during the Globalization Process." The delegates are expected to debate and find solutions on these important problems in a proper way. After making the decisions of the issues, the delegates are expected to write them on a resolution paper which is going to be confirmed by the majority of the committee.

4. The Definition and The History of Globalization

Globalization is the process of interaction and integration among people, companies, and governments worldwide. As a complex and multifaceted phenomenon, globalization is considered by some as a form of capitalist expansion which entails the integration of local and national economies into a global, unregulated market economy. Globalization has grown due to advances in transportation and communication technology. With the increased global interactions comes the growth of international trade, ideas, and culture.

In 2000, the International Monetary Fund (IMF) identified four basic aspects of globalization: trade and transactions, capital and investment movements, migration and movement of people and the dissemination of knowledge. Further, environmental challenges such as global warming, cross-boundary water, air pollution, over-fishing of the ocean and suchlike are linked with globalization. Globalization affects and is affected by business and work organization, economics, socio-cultural resources, and the natural environment. However, today the most remarkable dimension of globalization is economic globalization; since the emergence of international trade, competition between countries has increased rapidly.

Globalization is not new, though. For thousands of years, people—and, later, corporations—have been buying from and selling to each other in lands at great distances, such as through the famed Silk Road across Central Asia that connected China and Europe during the Middle Ages. Likewise, for centuries, people and corporations have invested in enterprises in other countries. Many of the features of the current wave of globalization are similar to those prevailing before the outbreak of the First World War in 1914.

However, policy and technological developments of the past few decades have spurred increases in cross-border trade, investment, and migration so large that many observers believe the world has entered a qualitatively new phase in its economic development. Since 1950, for example, the volume of world trade has increased by 20 times, and from just 1997 to 1999 flows of foreign investment nearly doubled, from $468 billion to $827 billion. Distinguishing this current wave of globalization from earlier ones, author Thomas Friedman has said that today globalization is “farther, faster, cheaper, and deeper.”

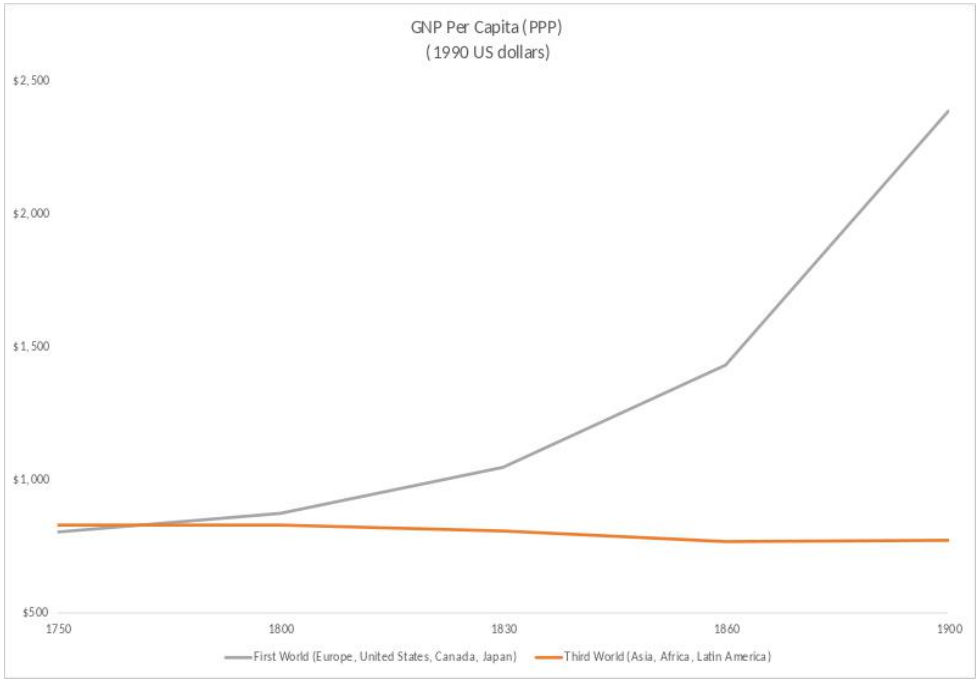
This current wave of globalization has been driven by policies that have opened economies domestically and internationally. In the years since the Second World War, and especially during the past two decades, many governments have adopted free-market economic systems, vastly increasing their productive potential and creating myriad new opportunities for international trade and investment. Governments have also negotiated dramatic reductions in barriers to commerce and have established international agreements to promote trade in goods, services, and investment. Taking advantage of new opportunities in foreign markets, corporations have built foreign factories and established production and marketing arrangements with foreign partners. A defining feature of globalization, therefore, is an international industrial and financial business structure.

Technology has been the other principal driver of globalization. Advances in information technology, in particular, have dramatically transformed economic life. Information technologies have given all sorts of individual economic actors—consumers, investors, businesses—valuable new tools for identifying and pursuing economic opportunities, including faster and more informed analyses of economic trends around the world, easy transfers of assets, and collaboration with far-flung partners.

Globalization is, however, deeply controversial. Proponents of globalization argue that it allows poor countries and their citizens to develop economically and raise their standards of living, while opponents of globalization claim that the creation of an unfettered international free market has benefited multinational corporations in the Western world at the expense of local enterprises, local cultures and common people. Resistance to globalization has therefore taken shape both at a popular and at a governmental level as people and governments try to manage the flow of capital, labor, goods, and ideas that constitute the current wave of globalization.

5. Industrialization

Industrialization is the process by which an economy is transformed from primarily agricultural to one based on the manufacturing of goods. Individual manual labor is often replaced by mechanized mass production, and craftsmen are replaced by assembly lines. Characteristics of industrialization include economic growth, a more efficient division of labor, and the use of technological innovation to solve problems as opposed to dependency on conditions outside human control.



The effect of industrialization shown by rising income levels in the 19th century. The graph is showing that the gross national product (at purchasing power parity) per capita between 1750 and 1900 in

5.1 The Industrial Revolution in Europe

The United Kingdom was the first country in the world to industrialise. In the 18th and 19th centuries, the UK experienced a massive increase in agricultural productivity known as the British Agricultural Revolution, which enabled an unprecedented population growth, freeing a significant percentage of the workforce from farming, and helping to drive the Industrial Revolution.

Due to the limited amount of arable land and the overwhelming efficiency of mechanized farming, the increased population could not be dedicated to agriculture. New agricultural techniques allowed a single peasant to feed more workers than previously; however, these techniques also increased the demand for machines and other hardware, which had traditionally been provided by the urban artisans. Artisans, collectively called bourgeoisie, employed rural exodus workers to increase their output and meet the country's needs.

British industrialization involved significant changes in the way that work was performed. The process of creating a good was divided into simple tasks, each one of them being gradually mechanized in order to boost productivity and thus increase income. The new machines helped to improve the productivity of each worker. However, industrialization also involved the exploitation of new forms of energy. In the pre-industrial economy, mostly machinery was powered by human muscle, by animals, by wood-burning or by water-power. With industrialization, these sources of fuel were replaced with coal, which could deliver significantly more energy than the alternatives. Much of the new technology that accompanied the industrial revolution was for machines that could be powered by coal. One outcome of this was an increase in the overall amount of energy consumed within the economy - a trend which has continued in all industrialized nations to the present day.

The accumulation of capital allowed investments in the scientific conception and application of new technologies, enabling the industrialization process to continue to evolve. The industrialization process formed a class of industrial workers who had more money to spend than their agricultural cousins. They spent this on items such as tobacco and sugar, creating new mass markets that stimulated more investment as merchants sought to exploit them.

The mechanization of production spread to the countries surrounding England geographically in Europe such as France and to British settler colonies, helping to make those areas the wealthiest, and shaping what is now known as the Western world.

Some economic historians argue that the possession of so-called 'exploitation colonies' eased the accumulation of capital to the countries that possessed them, speeding up their development. The consequence was that the subject country integrated a bigger economic system in a subaltern position, emulating the countryside, which demands manufactured goods and offers raw materials, while the colonial power stressed its urban posture, providing goods and importing food. A classical example of this mechanism is said to be the triangular trade, which involved England, southern United States and western Africa. Some have stressed the importance of natural or financial resources that Britain received from its many overseas colonies or that profits from the British slave trade between Africa and the Caribbean helped fuel industrial investment.

Early industrialisation in Germany, the city of Barmen in 1870. (Painting by August von Wille)

5.2 Early industrialization in other countries

Belgium was the first country to develop a proper industry in continental Europe and was the second in the world (after the United Kingdom). In Germany, France, Austria, Bohemia, and Scandinavian countries real modern industrialisation started only in 1840s. In Poland, Slovakia, Hungary after 1880 and in Baltics, Ukraine, and Russia after 1890.

After the Convention of Kanagawa issued by Commodore Matthew C. Perry forced Japan to open the ports of Shimoda and Hakodate to American trade, the Japanese government realized that drastic reforms were necessary to stave off Western influence. The Tokugawa shogunate abolished the feudal system. The government instituted military reforms to modernize the Japanese army and also constructed the base for industrialization. In the 1870s, the Meiji government vigorously promoted technological and industrial development that eventually changed Japan to a powerful modern country.

Similarly, Russia suffered during the Allied intervention in the Russian Civil War. The Soviet Union's centrally controlled economy decided to invest a big part of its resources to enhance its industrial production and infrastructures to assure its survival, thus becoming a world superpower.

During the Cold war, the other European socialist countries, organized under the Comecon framework, followed the same developing scheme, albeit with less emphasis on heavy industry.

Southern European countries such as Spain or Italy saw moderate industrialization during the final years of the XIX century and then a boom in the 1950s-1970s, caused by a healthy integration of the European economy.

5.3 The Third World

A similar state-led developing program was pursued in virtually all the Third World countries during the Cold War, including the socialist ones, but especially in Sub-Saharan Africa after the decolonization period. The primary scope of those projects was to achieve self-sufficiency through the local production of previously imported goods, the mechanization of agriculture and the spread of education and health care. However, all those experiences failed bitterly due to a lack of realism: most countries did not have a pre-industrial bourgeoisie able to carry on a capitalistic development or even a stable and peaceful state.

Those aborted experiences left huge debts toward western countries and fuelled public corruption.

5.4 Petrol-producing Countries

Oil-rich countries saw similar failures in their economic choices. An EIA report stated that OPEC member nations were projected to earn a net amount of $1.251 trillion in 2008 from their oil exports. Because oil is both important and expensive, regions that had big reserves of oil had huge liquidity incomes. However, this was rarely followed by economic development. Experience shows that local elites were unable to re-invest the petrodollars obtained through oil export, and the currency is wasted in luxury goods.

This is particularly evident in the Persian Gulf states, where the per capita income is comparable to those of western nations, but where no industrialization has started. Apart from two little countries (Bahrain and the United Arab Emirates), the Persian Gulf states have not diversified their economies, and no replacement for the upcoming end of oil reserves is envisaged.

5.5 Industrialization in Asia

Apart from Japan, where industrialization began in the late 19th century, a different pattern of industrialization followed in East Asia. One of the fastest rates of industrialisation occurred in the late 20th century across four places known as the Asian tigers (Hong Kong, Singapore, South Korea and Taiwan), thanks to the existence of stable governments and well structured societies, strategic locations, heavy foreign investments, a low cost skilled and motivated workforce, a competitive exchange rate, and low custom duties.

In the case of South Korea, the largest of the four Asian tigers, a very fast-paced industrialisation took place as it quickly moved away from the manufacturing of value-added goods in the 1950s and 60s into the more advanced steel, shipbuilding and automotive industry in the 1970s and 80s, focusing on the high-tech and service industry in the 1990s and 2000s. As a result, South Korea became a major economic power.

This starting model was afterward successfully copied in other larger Eastern and Southern Asian countries. The success of this phenomenon led to a huge

wave of offshoring – i.e., Western factories or Tertiary Sector corporations choosing to move their activities to countries where the workforce was less expensive and less collectively organized.

China and India, while roughly following this development pattern, made adaptations in line with their histories and cultures, their major size and importance in the world, and the geopolitical ambitions of their governments, etc.

Meanwhile, India's government is investing in economic sectors such as bioengineering, nuclear technology, pharmaceutics, informatics, and technologically oriented higher education, exceeding its needs, intending to create several specialization poles able to conquer foreign markets. Both China and India have also started to make significant investments in other developing countries, making them significant players in today's world economy.

5.6 Newly Industrialized Countries

The countries in green are considered to be newly industrialising nations. China and India (in dark green) are special cases.

Since the mid-late 20th century, a few countries in Latin America, Asia, and Africa, such as Brazil, Indonesia, Malaysia, Mexico, Philippines, South Africa, and Turkey have experienced substantial industrial growth, fuelled by exporting to countries that have bigger economies: the United States, China, India and the EU. They are sometimes called newly industrialized countries.

Despite this trend being artificially influenced by the oil price increases since 2003, the phenomenon is not entirely new nor speculative.

Japan and Russia both were successful in the fact that they imitated many other societies giving them flexibility. Yet they both had very little in common before the 19th century. Japan was isolated from the world with its ongoing traditions and forms of centralized government. Russia featured a more strong centralized government under the emperor.

Both would soon discover that westernization and industrialism were expanding and their ways would not hold up against the new changing world of

industrialization. In the late 19th century the requirement for them to begin industrializing would become even more prevalent for the success of their nation in this new, growing society.

6. The Connection Between Industrialization and Globalization

Industrialization is the period of social and economic change that transforms human groups from an agrarian society into an industrial society, involving the extensive re-organization of an economy for manufacturing. Globalization, on the other hand, is the interaction of one economy with other economies of the world.

It can be argued that the two phenomena can exist in isolation. This means that industrialization can go on in particular geography with new and new technologies being invented and put to use regularly. Similarly, certain economies of the world can interact with each other in terms of trade of food items, etc. This is where though, capitalism comes into the picture. As industrialization in particular geography picks up pace, the owners of those industries and the firms driving those industries want to generate more and more profits. This can be easily done by expanding the industries into other geographies and therefore other economies.

This is essentially the reason that globalization picked up pace after the industrial revolution in Europe. As the industrial revolution kept giving birth to newer technologies, capitalism started growing and globalization picked up pace as a direct result.

Overseas trade routes were established during the industrial revolution which later developed into a power struggle between major European countries as every country wanted to expand its market to newer shores. This led to the creation of empires throughout the world. As Europeans began to rule the world, indigenous people started to accept their culture. Centuries later, when the empires no longer existed, the path to globalization had already been laid.

Today, when every economy of the world is striving to move towards industrialization, we are witnessing globalization as we had never seen before. Trade among nations has grown to a point where no country of the world can survive in isolation. There is a consumption culture throughout the world and

everyone wants everything that someone else possesses. Every economy seems to be dependent on every other economy of the world.

Hence, it can be very strongly told that industrialization gave birth to capitalism and together, they became the major driving force behind globalization as we know it today.

7. The Impacts Of Industrialization On Environment

7.1 Depletion of Natural Resources

Industrialization had a profound impact on the environment that will have lasting consequences. Whether it be the pollution of the air, the effect it has on living conditions in parts of the world (China for example), or specifically the effect it has had on the earth's natural resources. These effects have been more often overlooked rather than directly addressed, until today. Earth's natural resources are finite, meaning that there is a limited amount of them. Yes, with time they can be replenished and restored to their original amount, but this takes hundreds of thousands to millions of years to do. With how much we use these resources today, that doesn't make sense.

Nonetheless, the issue before us is that the primary resource that we use for manufacturing, coal, is depleting rapidly. The article "Depleting of Natural Resources" says this about coal, "This is the most used fossil fuel and a non-renewable energy source. Peak coal extraction is predicted between 2025 and 2048. In 2011, it was estimated that we have enough coal to meet global demands for 188 years. If the demand increases, the timeframe will decrease." This is a very interesting dilemma. We need coal to produce a massive amount of resources that we use for everyday life, but if there is any increase, the time we have to use coal starts to dwindle.

This foundational use of coal is rooted in the industrial revolution. In the U.S. coal mines were set up as a means for work for the people who lived in those areas. These mines helped to support the large factories that were producing large amounts of resources to be used in America as well as to be shipped out for trade. This boosted the American economy significantly but had irreversible effects on the environment and natural resources that we are dealing with today. Further, the industrial revolution leads to the large-scale consumption of

other fossil fuels (another word for natural resources). Things like petroleum, other ores, and oil/gas are also being depleted. In addition to fossil fuels being depleted, the use/burning of fossil fuels is, in turn, polluting the air that we breathe and are affecting parts of the atmosphere.

Taking that into account, we are currently working on alternative forms of energy that will replace coal in the future. For example, solar power, wind energy, and nuclear energy are a few alternatives to coal. These a far cleaner, meaning that they are safer for the environment, and they would start to solve the issues that we are having with pollution, environmental effects, and depletion of natural resources.

7.2 Pollution

7.2.1 Water Pollution

The effects of industrial pollution are far-reaching and liable to affect the ecosystem for many years to come. Most industries require large amounts of water for their work. When involved in a series of processes, the water comes into contact with heavy metals, harmful chemicals, radioactive waste, and even organic sludge.

These are either dumped into open oceans or rivers. As a result, many of our water sources have a high amount of industrial waste in them which seriously impacts the health of our ecosystem. The same water is then used by farmers for irrigation purpose which affects the quality of food that is produced.

Water pollution has already rendered many groundwater resources useless for humans and wildlife. It can at best be recycled for further usage in industries.

7.2.2 Soil Pollution

Soil pollution as part of land degradation is caused by the presence of xenobiotics (human-made) chemicals or other alteration in the natural soil environment. It is typically caused by industrial activity, agricultural chemicals or improper disposal of waste. The most common chemicals involved are petroleum hydrocarbons, polynuclear aromatic hydrocarbons (such as naphthalene and benzo(a)pyrene), solvents, pesticides, lead, and other heavy metals. Contamination is correlated with the degree of industrialization and intensity of the chemical substance. The concern over soil contamination stems

primarily from health risks, from direct contact with the contaminated soil, vapors from the contaminants, and secondary contamination of water supplies within and underlying the soil.

Mapping of contaminated soil sites and the resulting cleanups are time-consuming and expensive tasks, requiring extensive amounts of geology, hydrology, chemistry, computer modeling skills, and GIS in Environmental Contamination, as well as an appreciation of the history of industrial chemistry.

In North America and Western Europe, the extent of contaminated land is best known, with many countries in these areas having a legal framework to identify and deal with this environmental problem. Developing countries tend to be less tightly regulated despite some of them having undergone significant industrialization.

7.2.3 Air Pollution

Air pollution has led to a steep increase in various illnesses and it continues to affect us daily. With so many small, mid and large scale industries coming up, air pollution has taken a toll on the health of the people and the environment.

Industrial pollution contributes a startling amount of air pollution to the atmosphere, as evidenced by the EPA's regulation of 80 different categories of toxins. Examples of common industrial emissions deemed hazardous to the environment include asbestos, dioxin, methylene chloride, perchlorethylene and metals like lead and chromium. The EPA indicates that factories, oil

refineries, coal-fired power plants, steel mills, dry cleaners and chromium electroplating facilities are among the worst air polluters in the United States. Also, trucks used in shipping goods and services to these industries discharge toxic benzene and toluene from fuel oil.

It has been shown that the industrialized nations emitted more carbon dioxide than the other nations. In fact records have it that in 1997, the United States emitted about 20% of the total global greenhouse gases. Up until 2007, the US was the world's largest emitter of greenhouse gases in terms of total output but when measured per capita, the US still remains the largest emitter and accounts for some 40% of industrialized country emissions. Due to its much longer period of industrialization, the US has emitted far more into the atmosphere than China. This is a serious situation because greenhouse gases such as carbon dioxide linger on in the atmosphere for decades.

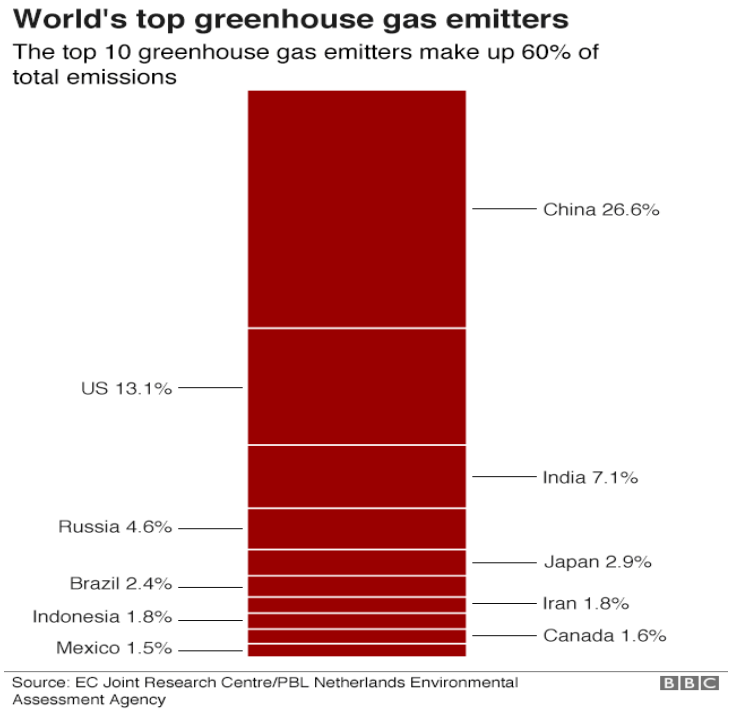
7.3 Climate Challenge

The reality of the relationship between industrialization and climate change is captured in the statement by World Resources Institute quoted in that, "There is a huge contrast between developed/industrialized nations and poorer developing countries in greenhouse emissions, as well as the reasons for those emissions. For example:

• To date, industrialized countries account for roughly 80% of the carbon dioxide buildup in the atmosphere.

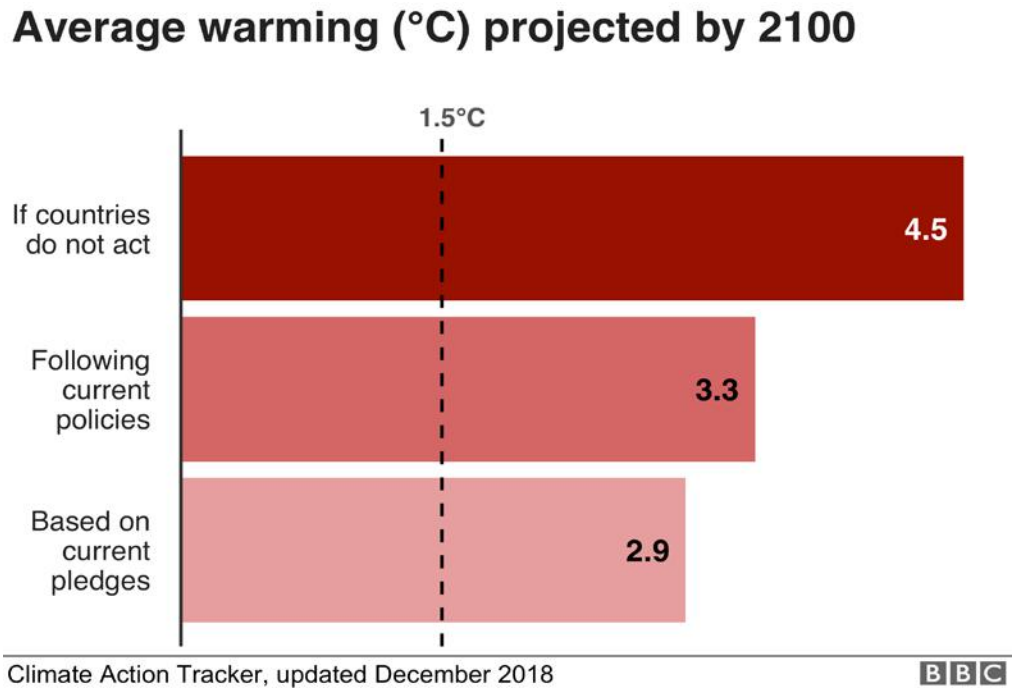
• Annually, more than 60% of global industrial carbon dioxide emissions originate in industrialized countries, where only about 20 percent of the world's population resides.

• Much of the growth in emissions in developing countries results from the provision of basic human needs for growing populations, while emissions in industrialized countries contribute to growth in a standard of living that is already far above that of the average person worldwide."



Climate change resulting from the enhanced greenhouse effect due to heightened industrialization has been presented to have widespread consequences, causing: sea-level rise and possible flooding of low-living areas; melting of glaciers and sea ice; changes in rainfall patterns with implications for floods and droughts; and changes in the incidence of climatic extremes, especially high-temperature extremes. These effects of climate change have been shown to have impacts on ecosystems, health and key economic sectors such as agriculture, and water resources. It has been shown by the IPCC reports that industrialized nations have emitted far more greenhouse gas emissions although some developing nations are also now increasing theirs in the bid to industrialize. It has been proven by the IPCC reports that it was the emissions from rich countries that accumulated in the atmosphere for so long to trigger climate change. Despite the 16 nearly annual international conferences on climate change i.e. United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties (or, COP for short) so far, there has still been little progress on reducing emissions. Worse still, the industrialized nations, who are actually the main polluters (at the COP16—Cancún Climate Conference held in Cancún, Mexico in December 2010), managed to reduce their commitment to the reduction of emissions while increasing those of the developing countries. The natural carbon cycle and human-induced climate change differ in that the latter is rapid. This means that ecosystems have less

chance of adapting to the changes that will result and so the effects felt will be worse and more dramatic if things continue the way they are now. Therefore, more commitment is required from the industrialized nations towards the reduction of emissions. Plans towards industrialization should be more articulate and broadly think of its consequences both in the present and in the future. The environmental impact assessment should be a key part in every plan towards industrialization. Companies and industries should not push back on environmental programs in order to increase profits or to survive in a tough business world. Environmental maintenance agencies should be more focused on the main goal of restoring and keeping the environment in a state fit for human habitation.



7.4 Deforestation

Deforestation is the permanent destruction of forests in order to make the land available for other uses. An estimated 18 million acres (7.3 million hectares) of forest, which is roughly the size of the country of Panama, are lost each year, according to the United Nations' Food and Agriculture Organization (FAO).

Some other statistics:

- About half of the world's tropical forests have been cleared, according to the FAO.
- Forests currently cover about 30 percent of the world's landmass, according to National Geographic.
- The Earth loses 18.7 million acres of forests per year, which is equal to 27 soccer fields every minute, according to the World Wildlife Fund (WWF).
- It is estimated that 15 percent of all greenhouse gas emissions come from deforestation, according to the WWF.

Location

Deforestation occurs around the world, though tropical rainforests are particularly targeted. If current deforestation levels proceed, the world's rainforests may completely vanish in as little as 100 years, according to National Geographic. Countries with significant deforestation in 2016 included Brazil, Indonesia, Thailand, the Democratic Republic of Congo and other parts of Africa, and parts of Eastern Europe, according to GRID-Arendal, a United Nations Environment Program collaborating center. The country with the most deforestation is Indonesia. Since the last century, Indonesia has lost at least 39 million acres (15.79 million hectares) of forest land, according to a study by the University of Maryland and the World Resource Institute.

Though deforestation has increased rapidly in the past 50 years, it has been practiced throughout history. For example, 90 percent of continental United States' indigenous forest has been removed since 1600, according to the University of Michigan. The World Resources Institute estimates that most of the world's remaining indigenous forest is located in Canada, Alaska, Russia, and the Northwestern Amazon basin.

Deforestation and Climate Change

Deforestation is considered to be one of the contributing factors to global climate change. According to Michael Daley, an associate professor of environmental science at Lasell College in Newton, Massachusetts, the No. 1 problem caused by deforestation is the impact on the global carbon cycle. Gas molecules that absorb thermal infrared radiation are called greenhouse gases.

If greenhouse gases are in large enough quantity, they can force climate change, according to Daley. While oxygen (O2) is the second most abundant gas in our atmosphere, it does not absorb thermal infrared radiation, as greenhouse gases do. Carbon dioxide (CO2) is the most prevalent greenhouse gas. Trees can help, though. About 300 billion tons of carbon, 40 times the annual greenhouse gas emissions from fossil fuels, is stored in trees, according to Greenpeace.

The deforestation of trees not only lessens the amount of carbon stored, but it also releases carbon dioxide into the air. This is because when trees die, they release the stored carbon. According to the 2010 Global Forest Resources Assessment, deforestation releases nearly a billion tons of carbon into the atmosphere per year, though the numbers are not as high as the ones recorded in the previous decade. Deforestation is the second largest anthropogenic (human-caused) source of carbon dioxide to the atmosphere (after fossil fuel combustion), ranging between 6 percent and 17 percent, according to a study published in 2009 in Nature.

Carbon isn't the only greenhouse gas that is affected by deforestation. Water vapor is also considered a greenhouse gas. "The impact of deforestation on the exchange of water vapor and carbon dioxide between the atmosphere and the terrestrial land surface is the biggest concern with regard to the climate system," said Daley. Changes in their atmospheric concentration will have a direct effect on climate.

Deforestation has decreased global vapor flows from the land by 4 percent, according to an article published by the journal National Academy of Sciences. Even this slight change in vapor flows can disrupt natural weather patterns and change current climate models.

Counteracting deforestation

Many believe that to counter deforestation, people simply need to plant more trees. Though a massive replanting effort would help to alleviate the problems deforestation caused, it would not solve them all.

Reforestation would facilitate:

- Restoring the ecosystem services provided by forests including carbon storage, water cycling and wildlife habitat.
- Reducing the buildup of carbon dioxide in the atmosphere.
- Rebuilding wildlife habitats.

Reforestation won't completely fix the damage, though. For example, Daley points out that forests cannot sequester all of the carbon dioxide humans are emitting to the atmosphere through the burning of fossil fuels and a reduction in fossil fuel emissions. It is still necessary to avoid buildup in the atmosphere. Reforestation will not help with extinction due to deforestation, either. "Unfortunately, we have already diminished the population of many species to such an extreme that they might not recover, even with a massive reforestation effort," Daley told Live Science.

In addition to reforestation, some other tactics are being taken to counteract or slow deforestation. Some of them include shifting the human population to a plant-based diet. This would lower the need for land to be cleared for raising livestock.

Global Forest Watch has also initiated a project to counteract deforestation through awareness. The organization uses satellite technology, open data and crowdsourcing to detect and alert others of deforestation. Their online community is also encouraged to share their personal experiences and the negative effects of deforestation.

Other effects of deforestation

Loss of species: Seventy percent of the world's plants and animals live in forests and are losing their habitats to deforestation, according to National Geographic. Loss of habitat can lead to species extinction. It also has negative consequences for medicinal research and local populations that rely on the animals and plants in the forests for hunting and medicine.

Water cycle: Trees are important to the water cycle. They absorb rainfall and produce water vapor that is released into the atmosphere. Trees also lessen the pollution in water, according to the North Carolina State University, by stopping polluted runoff. In the Amazon, more than half the water in the

ecosystem is held within the plants, according to the National Geographic Society.

Soil erosion: Tree roots anchor the soil. Without trees, the soil is free to wash or blow away, which can lead to vegetation growth problems. The WWF states that scientists estimate that a third of the world's arable land has been lost to deforestation since 1960. After clear-cutting, cash crops like coffee, soy, and palm oil are planted. Planting these types of trees can cause further soil erosion because their roots cannot hold onto the soil. "The situation in Haiti compared to the Dominican Republic is a great example of the important role that forests play in the water cycle," Daley said. Both countries share the same island, but Haiti has much less forest cover than the Dominican Republic. As a result, Haiti has endured more extreme soil erosion, flooding and landslide issues.

Life quality: Soil erosion can also lead to silt entering the lakes, streams and other water sources. This can decrease local water quality and contribute to poor health in populations in the area.

The disturbance of native people: Many native tribes live in the rainforests of the world, and their destruction is the destruction of these peoples' homes and way of life. For example, the film "Under the Canopy" takes a look at the Amazon rainforest and the people who live there, including an indigenous guide named Kamanja Panashekung. "Kamanja's community is one of over 350 indigenous communities throughout Amazonia that depend on the rainforest, as we all do, for the air we breathe and the water we drink," M. Sanjayan, Conservation International's executive vice president and senior scientist, said in a statement.

7.5 Sea Levels

Sea levels are rising several times faster than they have in the past 2,800 years, with the process accelerating because of manmade global warming, according to new studies.

An international team of scientists examined two dozen locations across the globe to chart rising and falling seas over centuries and millennia.

Until the 1880s and the world's industrialization, the fastest seas rose was about 3cm to 4cm a century. During that time global sea levels did not get much higher or lower than 7.6cm above or below the 2,000-year average. But in the 20th century the world's seas rose 14cm.

Two different studies published in the journal Proceedings of the National Academy of Sciences said that by 2100 the world's oceans would rise between 28cm to 131cm, depending on how much heat-trapping gas Earth's industries and vehicles expel.

Rutgers earth and planetary sciences professor Bob Kopp, the lead author of the study, which looked back at sea levels over the past three millennia, said: "There's no question that the 20th century is the fastest."It's because of the temperature increase in the 20th century which has been driven by fossil fuel use." Sea level rise in the 20th century, was mostly manmade, the study authors said. A separate, not-yet-published study by Kopp and others found that since 1950 about two-thirds of the US coastal floods in 27 locales were linked to manmade warming.

Study co-author Stefan Rahmstorf, of the Potsdam Institute for Climate Impact Research in Germany, said that if seas continued to rise as projected, another 45cm would cause lots of problems and expense, especially with surges during storms.

If greenhouse gas pollution continues at the current pace, both studies project increases of about 57cm to 131cm. If countries fulfill the treaty agreed upon last year in Paris and limit further warming to another 2F, sea-level rise would be in the 28 to 56cm range.

8. Some More Visible Effects

8.1 The USA

Greenbrier Valley floods: Confronting climate change in Trump's coal country

On 23 June 2016 the residents of a small West Virginia town were fighting to survive, White Sulphur Springs. They had been engulfed by a flash flood after torrential rain described by the US National Weather Service as a "one-in-a-thousand-year" storm. Water, mud and debris coursed down from the steep, thickly-forested slopes of the Appalachian Mountains into Greenbrier Valley where the town sits. It smashed into homes and businesses, rupturing gas lines and setting properties ablaze.

By the time it was all over, 23 people across West Virginia were dead, most of them in Greenbrier County.

"The 2016 flood in the Greenbrier Valley was absolutely catastrophic," says Professor Nicolas Zegre, director of the Mountain Hydrology Laboratory at West Virginia University (WVU).

"Twenty three people killed. Millions of dollars worth of damage. Total disruption of the social system as well as economic system within that area. And incidentally we've had very large storms and floods almost every year since 2016 as well."

While scientists tend not to link individual weather events to climate change, they have published a wealth of evidence that rising global temperatures make catastrophic floods such as the one which struck White Sulphur Springs more likely.

"With warming air temperatures the atmosphere can hold more water and there's more evaporation," says Prof Zegre, whose work is funded by the National Science Foundation. And that means "more frequent intense precipitation events". West Virginia is actually one of the few US states which does not, on average, show significant warming over the past century. Nor is there an overall precipitation trend during the 118-year period on record.

However, the wider region, the country and the world have recorded rapidly rising average temperatures in recent years, and the number of "extreme precipitation events" such as the 2016 downpour has been above average since the late 1990s. In the northeastern region of the US, which in this context includes West Virginia, "extreme precipitation" increased by 71% from 1958 to 2012 according to the National Climate Assessment, a comprehensive US government study. Those extremes are driven, says Prof Zegre, by mass production of energy and food pumping greenhouse gases into the atmosphere. As a result, he says, the US is experiencing not only more-frequent, more-intense rainstorms, but also longer periods of drought.

https://www.bbc.com/news/world-us-canada-49802038

8.2 Italy

Families Fight Against Toxic Dust From Italy's Ilva Steelworks

A mother is cradling her baby. The mother's eyes are loving, but her breast has morphed into a smokestack and she's nursing her child with toxic fumes instead of nourishing milk.

That is the image portrayed in one of Carla Lucarelli's first paintings, following the death of her son Giorgio at the age of 15.

The smokestacks, Carla explains, depict the chimneys of Ilva, the largest steel factory in Europe. It is in Taranto, a coastal city in southern Italy. "We live next to a cancer factory," she says. Her paintings are not just a way to channel grief, but a form of protest against the huge plant, the government that allows it to operate, and its new owner ArcelorMittal, the world's largest steel producer.

Three years ago, Giorgio was diagnosed with a rare form of cancer. "They will never tell you that it is due to pollution," Carla says of the doctors at the hospital. But after discovering that Giorgio grew up in Taranto, she adds, the look in their eyes "made you understand everything".

Since the 1970s, scientific studies have linked emissions from the Ilva plant, which was built by the government, to health issues among the local population. One of the most recent and comprehensive reports, published by the epidemiological group Sentieri, found that between 2005 and 2012, more than 3,000 deaths were directly linked to "limited environmental exposure" to pollutants. For some forms of cancer, Taranto's rates were 70% higher than the regional average. Respiratory, renal and cardiovascular diseases also exceed regional averages, and children were found to be more likely to be born with disabilities.

What does air pollution do to our bodies?

"We're always exposed," says Celeste Fortunato, the mother of a six-year-old boy. Their neighbourhood is right next to the plant, separated only by "ecological hills" - a supposedly natural barrier meant to shield the population from toxic dust. Last year, however, the hills were found to have been produced from the factory's toxic waste.

Two schools next to the ecological hills were deemed unsafe by the local mayor and closed in March, forcing 700 children to travel to schools further afield. The children had to take classes in shifts because of overcrowding.

"This last school year was really difficult for the children of the neighbourhood and their parents," Celeste says. The hills have since been cleaned up, according to the municipality, and the schools will be open when classes resume on Wednesday. But many of Taranto's parents have had enough. Carla and Celeste have helped set up grassroots groups demanding clean air for their children. They have organised marches, sit-ins, and protests, and have lobbied government officials. "What we are asking the authorities," Celeste says, "is to shut down all sources of pollution". Since 2011, the European Court of Justice (ECJ) has repeatedly ruled that the Ilva plant has been flouting environmental standards. The ECJ ordered the Italian government to act - with little success. In

its most recent ruling in January, it noted the government's failure to protect its citizens from pollution that was endangering their health.

Italian courts were also unsuccessful. In 2012, a court order to shut down the most polluting parts of the plant was overruled by the government in Rome. In a poverty-stricken region 20,000 jobs depended on Ilva, and losing your job, the health minister said at the time, would also have a detrimental impact on an individual's health.

Local officials agree that more should be done to protect the local population, but they say that the mayor does not have the power to close Ilva. The best they can hope for, the city says, are improvements to the factory.

https://www.bbc.com/news/world-europe-49713147

8.3 Brazil

Brazil Environment: Vast Oil Spill Hits Dozens of Beaches

Brazilian officials are investigating the source of a vast oil spill that has hit dozens of beaches along the country's north-eastern coast.

Analysis showed the oil found was of a type not produced in Brazil, the environmental agency Ibama said. There is no evidence that fish and shellfish have been contaminated but at least six sea turtles and a seabird have been found dead. A clean-up operation is underway in the areas affected. The spill, first detected on 2 September, spans over 1,500km (932 miles) and has been detected in 105 locations in eight states, affecting wildlife and popular beaches including Praia do Futuro in Ceará, and Maragogi, in Alagoas.

Fines for environmental crimes drop under Bolsonaro

Molecular analysis of the oil by Brazil's state-run company Petrobras showed the crude oil spilled did not originate in the country, Ibama said in a statement (in Portuguese). The test also determined the oil came from a single source that has not yet been identified. Crude oil is tested before being exported to make sure it follows the standards of the refinery it is being sent to, and can be identified by its chemical elements, Reuters news agency reports.

Authorities believe the spill could have been caused by a tanker transporting oil far from the coast. Two oil barrels have been found on two beaches off Sergipe state, local authorities said.

Beachgoers and fishermen have been urged to avoid the material. Two sea turtles rescued alive were returned to the sea by beachgoers while another was sent to a rehabilitation center.

The situation was said to be stable in the most-affected state, Rio Grande do Norte, while efforts were now being focused on Maranhão - part of the Amazon rainforest region - where new spills were being reported.

"We've never had an accident like this in Brazil... It's the first time we're seeing an accident with an undetermined source affecting so many states," Ibama co-ordinator Fernanda Pirillo was quoted by Agência Brasil news agency as saying.

Petrobras said it would deploy some 100 employees in the clean-up effort despite not being involved in the spill. Anna Carolina Lobo, a co-ordinator of the marine program at WWF conservation group in Brazil, said the case exposed how fragile the country's surveillance system was. "Brazil has few boats and analysts to follow what happens in our waters," Ms. Lobo was quoted by Associated Press as saying. She said state support for such surveillance was receding even further under the government of far-right President Jair Bolsonaro.

The president, who came to office in January, has repeatedly criticized the work of non-governmental groups and activists, and slashed the budget of environmental agencies, including Ibama.

https://www.bbc.com/news/world-latin-america-49837355

Hundreds Killed in Brazil's Amazon Over Land, Resources: HRW

A Human Rights Watch (HRW) report has found that more than 300 people have been killed over the past decade in conflicts over the use of land and resources in the Amazon, many by organised criminal networks profiting from illegal deforestation. Of those cases, only 14 were tried in courts, the nonprofit said in the report based on 170 interviews.

"This really shows the level of impunity," Cesar Munoz, a senior investigator at HRW told Reuters news agency on Tuesday on the sidelines of an event in Sao Paulo to discuss the report. "There is really a failure of investigation and accountability." The president's office in Brazil did not respond to Reuters' request for comment. Environment Minister Ricardo Salles, responding to the report, told Reuters the government has combated criminality, including in the environmental sphere. He pointed to the mobilization of troops to combat illegal fires and other environmental crimes in recent weeks.

About 60 percent of the Amazon rainforest, considered a crucial barrier against climate change, lies in Brazil. Destruction of the forest has surged this year, and the highest number of fires since 2010 has drawn worldwide condemnation of the policies of President Jair Bolsonaro, who advocates opening the Amazon to development. HRW traveled to several Brazilian states between 2017 and the first half of this year to research the report, which showed that almost half of the murders linked to deforestation took place in the northern state of Para. The town of Novo Progresso, in Para, recently made headlines for a "day of fire", in which prosecutors suspect a coordinated group set a series of blazes to burn forest and pasture land on August 10.

"In most of the killings that we examined, the victims had received threats or had been attacked before. If the authorities had taken their complaints seriously, these people might be alive today," said Daniel Wilkinson, acting environment director at the rights group. Bolsonaro has weakened Brazil's environmental enforcement agency Ibama, cut its budget by 25 percent and restricted the ability of field agents to torch the equipment of those found committing environmental crimes, Reuters has reported. Wilkinson said Bolsonaro's "assault on the country's environmental agencies is putting the rainforest and the people who live there at much greater risk".

Marina Silva, a former environment minister and presidential candidate, said the report was evidence of Brazil's backsliding on the environment. "The little that we achieved in the past is now being taken apart," she said.

https://www.aljazeera.com/news/2019/09/hundreds-killed-brazil-amazon-land-resources-hrw-190917181412983.html

8.4 UK

Foam Pollution Kills Fish in River Great Ouse

More than 2,000 fish have died after pollution left a river looking like a bubble bath. The foam was first spotted in the River Great Ouse in Brackley, Northamptonshire on Friday, 29 June and travelled onto Buckingham.

The Environment Agency said the unidentified substance has now "sufficiently diluted" and is no longer "causing any issues". One Buckingham resident described it as like a "washing machine has exploded".

Agency officers have provided the casualty figure, but believe the number of dead fish could be higher as the "pollution has severely impacted the river's ecosystem". They said it may take "years" for the river to recover.

The Environment Agency is investigating the incident, and a spokesman said they were waiting for sample results to confirm the pollutants, which may contain detergents.

They do not believe there is a risk to humans or animals, but as a precaution are asking people to stay out of the river and keep pets and livestock away from the stretch between Brackley and Milton Keynes until the investigation is complete. Anglers are also being asked not to fish in the polluted areas.

https://www.bbc.com/news/uk-england-beds-bucks-herts-44737022

8.5 Vietnam

By the Numbers: Illegal Wildlife Trade Threatens Species

Conservation groups are imploring world leaders to take action to protect vulnerable and endangered species from the illegal wildlife trade at a time when biodiversity "is declining faster than at any time in human history,"

according to a report from the Intergovernmental Science-Policy Platform on Ecosystem Services (IPBES), a United Nations partner organization.

More than 180 parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) will meet in Geneva on Saturday. CITES regulates trade in more than 30,000 species of plants and animals that are used for food, clothing, cosmetics, medicine, and housing.

This year's World Wildlife Conference comes after a recent report found that some of the world's most endangered and vulnerable animals are being trafficked in record numbers through Vietnam and the country is doing too little to stop it.

The report - issued by the nonprofit Environmental Investigation Agency - found Vietnam's "out-of-control, illegal wildlife trade" has helped drive demand globally, and that the Southeast Asian nation is now "the leading destination for illicit ivory".

Vietnam is implicated in more than 600 seizures related to the illegal wildlife trade, including a minimum of 105.72 tonnes of ivory, 1.69 tonnes of rhinoceros horn, the bodies and scales of 65,510 pangolins and the skins, bones and other products from a minimum of 228 tigers, the EIA report found.

The products are being trafficked from Africa and other parts of Asia for Vietnamese consumption and for transit into China, Myanmar and Laos, among other places. Some of the animals are killed so that their skins, horns and tusks can be used as decorations; others, including pangolins and rhinoceros, are killed for use in traditional Chinese medicine.

Pangolins are the world's most-trafficked mammal, and the eight species found in Africa and Asia range from vulnerable to critically endangered, according to

the World Wildlife Fund. An estimated one million pangolins have been trafficked in the past decade alone, according to the WWF. Leaders at this year's World Wildlife Conference will specifically look at measures to protect pangolins, the organisation said.

Time is running out to stem the tide of illegal poaching and trafficking, conservationists warn. Many of the animals that have been trafficked through Vietnam are endangered or extremely vulnerable. There are only about 3,900 tigers and fewer than 5,000 black rhinos left in the wild, according to the WWF.

https://www.aljazeera.com/ajimpact/numbers-illegal-wildlife-trade-threatens-species-190813200335875.html

8.6 Bangladesh

Scores Killed, Millions Displaced As Monsoon Batters South Asia

More than 100 people have been killed and millions of others forced from their homes across Nepal, India, Pakistan and Bangladesh as rain-triggered floods and landslides left a trail of destruction in parts of South Asia. The death toll was the highest in Nepal, where torrential rains unleashed mudslides and caused rivers to overflow, killing at least 67 people and leaving 30 others missing, officials said on Monday.

The annual deluge, which hit the country on Thursday and has impacted around a third of all districts, has so far displaced at least 10,000 people there.

The downpours have eased but authorities still fear the death toll could rise, according to police spokesman Bishwaraj Pokharel.

"There are the challenges of resettlement of the displaced as many houses ... have been swept away. We are also cautious about the risk of epidemics due to

polluted water," Pokharel told AFP news agency.
https://www.aljazeera.com/news/2019/07/scores-killed-millions-displaced-monsoon-batters-south-asia-190715112857902.html

8.7 Myanmar, Thailand, Laos, Cambodia

Cambodia's Lifeline Threatened As Mekong Recedes to Historic Low

Phnom Penh, Cambodia - As world leaders meet in New York from Monday to discuss the global challenge of climate change, thousands of kilometers away people in Cambodia are grappling with dramatic changes to the country's ecosystem, including the lowest water levels in the crucially-important Mekong River ever recorded.

The United Nations Development Programme, which partners with the Cambodian government on climate, says the country is among the three most vulnerable areas in Asia.

"[Cambodia] is highly vulnerable due to a relatively low adaptive capacity," said Nick Beresford, UNDP Cambodia's Resident Representative.

"Agriculture is mostly rain-fed, and most infrastructures are not yet climate-resilient," he added, warning that many households would probably be unable to withstand "climate-related shocks" like droughts or floods.

In July, the Mekong River Commission reported water levels below any on record for the Mekong River, which stretches for some 4,500 kilometers (2796 miles) from its source in China through Myanmar, Thailand, Laos, and Cambodia before emptying into the South China Sea in Vietnam. The commission, an inter-governmental agency set up to help manage a river of crucial importance to millions, cited "very deficient rainfall" and numerous upstream dams for the lack of water in a situation it described as "unprecedented".

Cambodia's Tonle Sap Lake is the largest freshwater lake in the region and provides Cambodia with 500,000 tonnes of fish, about 70 percent of the country's total protein intake. The lake is fed by a tributary of the Mekong

which reverses course when the larger river floods. This year, the Tonle Sap reversal happened much later than usual.

Brian Eyler, the author of Last Days of the Mighty Mekong and head of the Stimson Center's Mekong Policy Project, has been following the water levels closely. With more than 100 dams now operational on either the mainstream Mekong or its tributaries, Eyler warns that the dams are preventing fish migration and sediment flow that is vital for agriculture. Eyler said the dams also reduce the intensity and duration of the Tonle Sap reversal.

"Climate change is now delivering shorter monsoon seasons - this too reduces the intensity and duration of the Tonle Sap River's reversal," he said, adding that rain falls less often, but falls more intensely, leading to droughts in some areas and flooding in others.

Eyler warned that should the Tonle Sap not reverse, the ecosystem would be "irrevocably damaged" and the Cambodian diet "severely affected".

Eyler praised the Cambodian government for exploring a shift towards solar power and an apparent reluctance to build new dams on the Mekong. However, he said the government should immediately be preparing alternative protein access through aquaculture and agriculture.

"Cambodia is likely ill-equipped to shoulder a major shock to its food supply, so a crisis delivered by a failure of the Tonle Sap River to reverse could be looming on the horizon. This could trigger major out-migration from Cambodia to neighboring countries and challenge the capacity of the Cambodian government to maintain stability within the Kingdom," he warned.

But the Tonle Sap is not the only danger Cambodia faces as the climate changes.

"Rising temperatures are expected to have an impact on worker's health and productivity, particularly in agriculture, industry and construction sectors which are very exposed," Beresford said, adding that agriculture will also be affected. Beresford said Cambodia adopted a 10-year climate change plan in 2013, dedicating nearly $200m to the issue.

"Public funds have been primarily allocated in support of adaptation activities, with a focus on irrigation, climate-resilient roads, agriculture, access to clean water and sanitation," Beresford said.

But Cambodian environmental activist Sun Mala, who was arrested in 2015 for protesting against sand-dredging, doubts the government's commitment to the environment. Politicians and politically-connected businessmen have frequently been linked to environmentally-damaging activities like sand-dredging and illegal logging.

"We can't expect Cambodia to take action to stop deforestation or anything harmful to nature," Mala said, explaining that powerful people benefit too much from the exploitation of resources.

Mala said Cambodia is also in an unfortunate position as a downstream country on the Mekong River. "On the mainstream, China and Thailand build a lot of dams, so in the dry season they keep the water in the reservoir and in Cambodia we don't have enough water to generate electricity," Mala explained, referring to countrywide blackouts earlier this year. Mala also said the government has not come up with an effective plan to replace lost jobs or protein sources.

https://www.aljazeera.com/news/2019/09/cambodia-lifeline-threatened-mekong-recedes-historic-190920072518567.html

8.8 Indonesia

'When Is This Going To End?': Indonesians Shrouded In Toxic Haze

Parts of Indonesia have been ablaze since July as plantation owners burn land that is no longer considered productive to prepare it for replanting in the coming season or to turn jungle into plantation, sending plumes of choking smoke into the air.

The islands of Sumatra and Kalimantan have been the worst affected by what's known as the haze, but is really a toxic smog made up of microscopic particles, including soot and tar, and chemicals such as cyanide and carbon monoxide. With the fires still raging the cloud of pollution spread across Malaysia and Singapore this month, affecting millions more people.

One such clinic is headed by Dr Tety who told Al Jazeera that she had seen a spike in patients seeking treatment for acute respiratory infections in recent days.

"If patients come in with respiratory complaints, we take them straight to the emergency room and give them a nebulizer and oxygen. Then they go to the 'recovery room' for 'cooling down' where they are given more oxygen until their breathing returns to normal," she said.

Dr Tety said the treatment was free for patients suffering from haze-related medical conditions, on the orders of the mayor of Jambi City.

Many of the patients are children, including six-year-old daughter Marwa who has a cough, fever and runny nose. "I'm worried about my children's health," her mother Nurhasana told Al Jazeera.

"They like doing their daily activities outside, but for the past few days, I've kept them in isolation in the house. We only go out now if we really need to." But while the response in town has been praised, people living closer to the fire hotspots, say they feel abandoned by their local authorities.

In the village of Catur Rahayu, about an hour away from Jambi City, Siti Sunarsi can do nothing but sit in her home and hope for things to improve. Her daughter, five-year-old Nabilla, has been off school for one and a half months, and Sunarsi says she's worried about her education as well as the health effects of the haze. "She's already forgotten everything she learnt, and the smoke is getting worse and darker every day. We keep asking ourselves: 'When is this going to end?'" she said. Pointing to the thick orange glow in the air, Sunarsi added that the smoke pollution was taking a huge psychological and physical toll on the local population.

https://www.aljazeera.com/news/2019/09/indonesians-shrouded-toxic-haze-190923074629869.html

9. Relevant UN Conferences And Treaties on Environment

One of the important dimensions of the efforts for environmental protection is raising public awareness and participation. The problems can only be properly addressed through cooperation among the public sector along with the private sector, non-governmental organizations, and civil society.
Addressing the global environmental problems that threaten our living planet requires national efforts as well as international collaboration on both bilateral and multilateral levels and the active participation of all members of the international community.

In this respect, international organizations such as the UN, the OECD, OSCE and other international financial institutions, global and regional fora, have been promoting and coordinating the efforts for the joint confrontation of global environmental problems, on a multilateral level. The United Nations Environment Programme (UNEP) was established, as one of the productive consequences of the 1972 Conference on the Human Environment (Stockholm Conference). The UNEP provides a basis for comprehensive consideration and coordinated action within the UN system on the problems of the environment. Major international agreements and conventions covering a wide range of environmental issues such as climate change, biological diversity, combating desertification, control of movements of hazardous wastes, the ozone layer,

illegal trade in endangered species, have been elaborated under UNEP's auspices.

9.1 Timeline of Major Treaties

There are hundreds of bilateral and multilateral environmental treaties creating states' rights and obligations. The UN Environment Program (UNEP) and the UN Commission on Sustainable Development have negotiated many of these treaties.

A few major treaties are listed below:

- UN Conference on Human Environment, Stockholm, 1972 (Effect of Environmental degradation on Quality of Human Life)
- Vienna Convention for the Protection of the Ozone Layer, 1985
- Montreal Protocol on Substances that Deplete the Ozone Layer, 1987
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 1989
- UN Conference on Environment and Development (Earth Summit) Rio de Janeiro, Brazil, 1992 (Environment and Sustainable Development)
- UN Convention on Climate Change, New York, 1992 (Economic Development and Environmental Protection)
- Convention on Biological Diversity, 1992
- Kyoto Protocol, 1997 (Stabilization of Green House Gases)
- World Summit on Sustainable Development, Johannesburg, 2002 (International Solidarity on Environmental Issues)
- Cartagena Protocol on Biosafety to the Convention on Biological Diversity, 2000
- Copenhagen Summit, 2009 (Road map for Post-Kyoto treaties)
- United Nations Climate Change Conference, Doha, Qatar, 2012 (The Doha Climate Gateway)
- Paris Agreement, 2016
-

9.2 Key Declarations and Treaties

9.2.1 United Nations Conference on Human Environment

The Declaration on the Human Environment was adopted at the United Nations (UN) Conference on Human Environment (Stockholm Conference) that was held between 5-16 June 1972 and brought together 113 countries of different socio-economic structures, convening to evaluate the environment. The meeting agreed upon a Declaration containing 26 principles concerning the environment and development; an Action Plan with 109 recommendations, and a Resolution. This declaration represented a first major attempt at considering the global human impact on the environment, and an international attempt to address the challenge of preserving and enhancing the human environment. The Stockholm Declaration espouses mostly broad environmental policy goals and objectives rather than detailed normative positions.

9.2.2 World Commission on Environment and Development

The term “sustainable development” was first used in the Brundtland Report, prepared by the World Commission on Environment and Development in 1987 in which it is defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”.

In very broad terms, the Brundtland Report defined the relationship of poverty eradication, equitable distribution of benefits derived from natural resources, population policies and the development of environmentally sound technologies with the principles of sustainable development.

In this regard, the Brundtland Report maintained that it was possible to achieve economic growth with an environmentally sound approach and called for the commencement of a new long-term growth era, in which the developing nations had important roles to play and restructuring was made possible, in order to solve the environmental problems of the world and to eliminate poverty.

9.2.3 UN Conference on Environment and Development

The UN Conference on Environment and Development (Rio Conference) held in Rio de Janeiro between 3-14 June 1992 was the largest gathering of world leaders as of 1992, with 117 heads of state and representatives of 178 nations in all attending. It also constituted a big step towards the adoption of a set of principles to enable sound management of the environment by governments. During the Conference, Agenda 21, a comprehensive plan of action, as well as the Rio Declaration on Environment and Development and Statement on Forest Principles are adopted. In addition, the UN Framework Convention on Climate Change and Convention on Biological Diversity was opened for signature during the Conference. The outcome of the Rio Conference also led to the preparation of the UN Convention to Combat Desertification that was opened for signature in 1994.

A major achievement of UNCED was Agenda 21 a thorough and broad-ranging program of actions demanding new ways of investing in our future to reach global sustainable development in the 21st century. The Rio Declaration consists of 27 principles intended to guide future sustainable development around the world. Its recommendations ranged from new ways to educate, to new ways to care for natural resources, and new ways to participate in designing a sustainable economy.

A simultaneous "Global NGO Forum" was also held in Rio de Janeiro, which was attended by an unprecedented number of representatives from NGOs outlining their vision of the future environmental and socio-economic/developmental state of the world. In 2012 the 20th anniversary of the Rio Earth Summit was commemorated by the Rio+20 UN Conference on Sustainable Development.

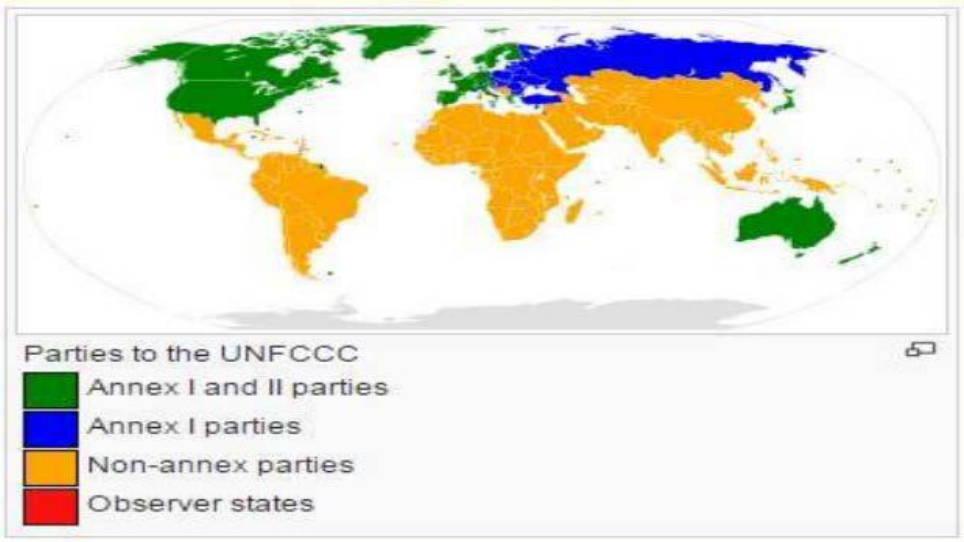
9.2.4 Kyoto Protocol

The Kyoto Protocol is an international treaty that extends the 1992 United Nations Framework Convention on Climate Change (UNFCCC) that commits state parties to reduce greenhouse gas emissions, based on the scientific consensus that global warming is occurring and it is extremely, likely, that human-made CO2 emissions have predominantly caused it. The Kyoto Protocol was adopted in Kyoto, Japan, on 11 December 1997 and entered into force on 16 February 2005. There are currently 192 parties (Canada withdrew from the protocol, effective December 2012) to the Protocol.

The Kyoto Protocol implemented the objective of the UNFCCC to reduce the onset of global warming by reducing greenhouse gas concentrations in the atmosphere to "a level that would prevent dangerous anthropogenic interference with the climate system". The Kyoto Protocol applies to the six greenhouse gases listed: Carbon dioxide (CO_2), Methane (CH_4), Nitrous oxide (N_2O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), and Sulphur hexafluoride (SF_6).

The Convention divides countries into three main groups according to differing commitments:

Annex I Parties include the industrialized countries that were members of the OECD (Organisation for Economic Co-operation and Development) in 1992, plus countries with economies in transition (the EIT Parties), including the Russian Federation, the Baltic States, and several Central and Eastern European States.
Annex II Parties consist of the OECD members of Annex I, but not the EIT Parties. They are required to provide financial resources to enable developing countries to undertake emissions reduction activities under the Convention and to help them adapt to the adverse effects of climate change. In addition, they have to "take all practicable steps" to promote the development and transfer of environmentally friendly technologies to EIT Parties and developing countries. Funding provided by Annex II Parties is channeled mostly through the Convention's financial mechanism.
Non-Annex I Parties are mostly developing countries. Certain groups of developing countries are recognized by the Convention as being especially vulnerable to the adverse impacts of climate change, including countries with low-lying coastal areas and those prone to desertification and drought. Others (such as countries that rely heavily on income from fossil fuel production and commerce) feel more vulnerable to the potential economic impacts of climate change response measures. The Convention emphasizes activities that promise to answer the special needs and concerns of these vulnerable countries, such as investment, insurance, and technology transfer.



Source: UNFCCC, 2016

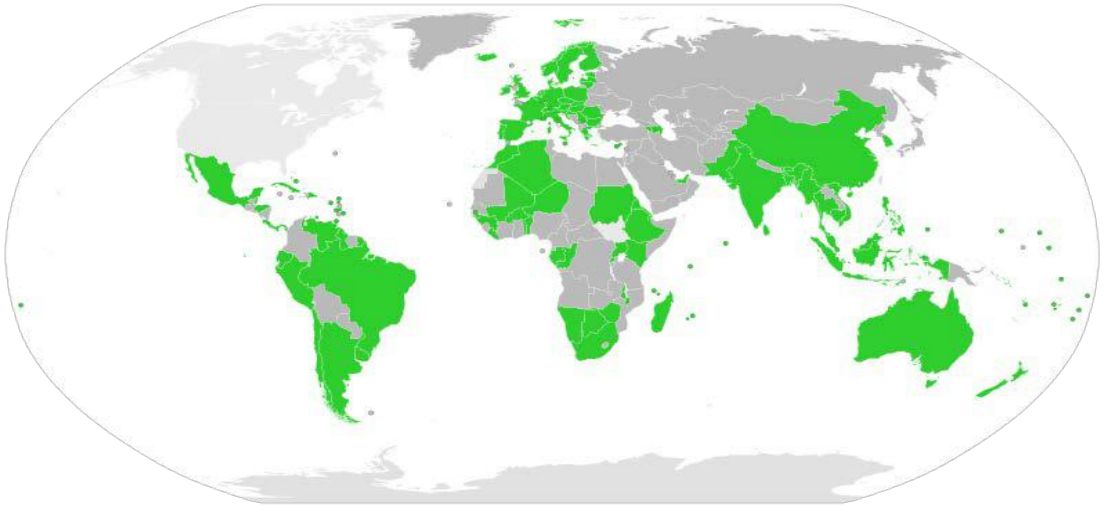
Brown = Countries that have signed and ratified the treaty
(Annex I & II countries in dark brown)
Blue = No intention to ratify at this stage.
Dark blue = Canada, which withdrew from the Protocol in December 2011.
Grey = no position taken or position unknown

Source: UNFCCC, 2016

The Protocol's first commitment period started in 2008 and ended in 2012. A second commitment period was agreed in 2012, known as the Doha Amendment to the Kyoto Protocol, in which 37 countries have binding targets: Australia, the European Union (and its 28 member states), Belarus, Iceland, Kazakhstan, Liechtenstein, Norway, Switzerland, and Ukraine. Belarus, Kazakhstan, and Ukraine have stated that they may withdraw from the Kyoto Protocol or not put into legal force the Amendment with second-round targets. Japan, New Zealand, and Russia have participated in Kyoto's first-round but

have not taken on new targets in the second commitment period. Other developed countries without second-round targets are Canada (which withdrew from the Kyoto Protocol in 2012) and the United States (which has not ratified).

Negotiations were held in the framework of the yearly UNFCCC Climate Change Conferences on measures to be taken after the second commitment period ends in 2020. This resulted in the 2015 adoption of the Paris Agreement, which is a separate instrument under the UNFCCC rather than an amendment of the Kyoto Protocol.



Ratification of the Doha Amendment of the Kyoto Protocol of December 2012, in which commitments for the period 2013-2020 are formalized.

States that ratified
Kyoto protocol parties that did not ratify
Non parties to the Kyoto Protocol

As of September 2019, 132 states have accepted the Doha Amendment, while entry into force requires the acceptance of 144 states. Of the 37 countries with binding commitments, 7 have ratified.

9.2.5 Paris Agreement

The Paris Agreement is an agreement within the United Nations Framework Convention on Climate Change (UNFCCC), dealing with greenhouse-gas-emissions mitigation, adaptation, and finance. The agreement's language was

negotiated by representatives of 196 state parties at the 21st Conference of the Parties (COP21) of the UNFCCC in Le Bourget, near Paris, France, and adopted by consensus on 12 December 2015.

The agreement stated that it would enter into force only if 55 countries that produce at least 55% of the world's greenhouse gas emissions ratify, accept, approve or accede to the agreement. On 1 April 2016, the United States and China, which together represent almost 40% of global emissions, issued a joint statement confirming that both countries would sign the Paris Climate Agreement. 175 Parties (174 states and the European Union) signed the agreement on the first date it was open for signature. On the same day, more than 20 countries issued a statement of their intent to join as soon as possible with a view to joining in 2016. With ratification by the European Union, the Agreement obtained enough parties to enter into effect as of 4 November 2016. As of February 2019, 194 states and the European Union have signed the Agreement. 185 states and the EU, representing more than 87% of global greenhouse gas emissions, have ratified or acceded to the Agreement, including China, the United States, and India, the countries with three of the four largest greenhouse gas emissions of the UNFCCC members total (about 42% together). It will replace the Kyoto Protocol after its second commitment period ends on 31 January 2020.

The Paris Agreement's long-term goal is to limit the rise in the global temperature “to well below 2C (3.6 F) above pre-industrial levels” and appealed to countries to engage in efforts to restrict the increase to 1.5C, since this would substantially reduce the risks and effects of climate change.

A promise to generate a global assessment of climate improvement by 2018; and the nations will be back to the negotiating table by 2020 for presenting climate objectives that would represent an advancement ahead of their then-existing target.

Voluntary pledges made by 188 countries to climate change action in the shape of Intended Nationality Determined Contributions (INDCs).

Emissions-slashing pledges from individual countries and promises to help the developing nations adapt to the detrimental effects of global warming.

Moreover, the negotiators agreed on measures to amend, strengthen, and scrutinize countries' individual contributions (INDCs).

Countries furthermore aim to reach "global peaking of greenhouse gas emissions as soon as possible". The agreement has been described as an incentive for and driver of fossil fuel divestment.

9.2.5.1 The Withdrawal of the U.S from the Paris Agreement

President Trump announces the United States' withdrawal from the Paris Agreement on climate change in the Rose Garden on June 1, 2017.

In a televised announcement from the White House Rose Garden on June 1, 2017, Trump said, "In order to fulfill my solemn duty to protect the United States and its citizens, the United States will withdraw from the Paris climate accord," adding "The bottom line is that the Paris accord is very unfair at the highest level to the United States." He claimed that the agreement if implemented, would cost the United States $3 trillion in lost GDP and 6.5 million jobs. He added that it would "undermine our economy, hamstring our

workers," and "effectively decapitate our coal industry". He said he was open to renegotiating the arrangement or negotiating a new one, but European and UN leaders said the pact "cannot be renegotiated at the request of a single party". Trump also criticized the Green Climate Fund, calling it a scheme to redistribute wealth from rich to poor countries.

The White House said that Trump will end the implementation of carbon reduction targets set by former President Barack Obama and that the withdrawal will be done in accordance with the years-long exit process spelled out in the accord. On September 16, 2017, a European official said the Trump administration had appeared to soften its stance on withdrawing the agreement. The White House told the press that it had not changed its position on the agreement.

Examinations of Trump's speech by The Washington Post and The New York Times pointed to numerous fallacies, including, but not limited to, claims that the U.S., under the Paris Agreement, was forbidden to build coal power plants; that a difference of 0.2 degrees Celsius is insignificant in climatology; that U.S. contributions to the Green Climate Fund were paid out of the U.S. defense budget; projections that the U.S. is on course to become the "cleanest" nation on earth; and Trump's reiterated claim of personal support for environmental causes. In accordance with Article 28 of the Paris Agreement, the earliest possible effective withdrawal date by the United States cannot be before November 4, 2020, four years after the Agreement came into effect in the United States and coincidentally one day after the 2020 U.S. presidential election.

The withdrawal of the U.S. from the Paris Agreement aroused great response both in and outside the country. Former U.S. President Obama pointed out that Trump's decision has made the U.S. join the minor group of countries that have rejected the future. In the U.S., dozens of states joined a newly established American Climate Alliance. More than 200 city mayors committed to adopting, respect, and obey the goals of the Paris Agreement. Numerous U.S. companies claimed to support these decisions. Nevertheless, several Republican politicians supported the decision for withdrawal. Outside of the U.S., the Secretary-General of the United Nations and several international organizations showed great disappointment in the withdrawal of the U.S. from the Paris Agreement.

Meanwhile, the presidents and head officials of the governments of China, Germany, France, and Italy claimed that they will continue to fulfill their obligations in the implementation of the Paris Agreement.

9.2.5.2 U.S. public opinion

The Paris Agreement is broadly popular among Americans. A national poll by the Chicago Council on Global Affairs conducted in June 2016 found that 71 percent of American adults favored U.S. participation in the Paris Agreement. Similar, a November 2016 poll conducted by the Yale Program on Climate Change Communication found that 69 percent of U.S. registered voters favored U.S. participation in the Paris Agreement, while just 13 percent were opposed. Trump's decision to withdraw the U.S. from the accord was seen as an attempt to appeal to his base, even at the risk of alienating Democrats and independent voters. This strategy diverged from the typical approach taken by most U.S. presidents, who historically have sought to appeal to the center. A New York Times analysis described the move as "a daring and risky strategy" taken by "the first president in the history of polling to govern without the support of a majority of the public from the start of his tenure," adding: "In effect, Mr. Trump is doubling down on presiding as a minority president, betting that when the time comes, his fervent supporters will matter more, especially clustered in key Midwest states.

A Washington Post/ABC News public opinion survey of American adults, conducted from June 2–4, 2017, found that 59 percent opposed Trump's decision to withdraw the U.S. from the Paris Agreement, and just 28 percent supported it. Asked about the effect of withdrawal on the U.S. economy, 42 percent said it would hurt the economy; 32 percent believed it would help the economy; and 20 percent believed that it would make no difference. The poll showed a sharp division among partisan lines: 67 percent of Republicans supported Trump's decision, but just 22 percent of independents and 8 percent of Democrats supported it.

9.6 UN Climate Action Summit 2019

The Secretary-General has called on all leaders to come to New York in September with concrete, realistic plans to enhance their nationally determined contributions by 2020, in line with reducing greenhouse gas

emissions by 45 percent over the next decade, and to net zero emissions by 2050.

The Summit has served as a public platform for only for leaders – Member States, as well as finance, business, civil society and local leaders from the public and private sectors –

In order to ensure that the transformative actions in the real economy are as impactful as possible, the Secretary-General has prioritized the following action portfolios, which are recognized as having high potential to curb greenhouse gas emissions and increased global action on adaptation and resilience.

Finance: mobilizing public and private sources of finance to drive decarbonization of all priority sectors and advance resilience;

Energy Transition: accelerating the shift away from fossil fuels and towards renewable energy, as well as making significant gains in energy efficiency;

Industry Transition: transforming industries such as Oil and Gas, Steel, Cement, Chemicals and Information Technology;

Nature-Based Solutions: Reducing emissions, increasing sink capacity and enhancing resilience within and across forestry, agriculture, oceans and food systems, including through biodiversity conservation, leveraging supply chains and technology;

Cities and Local Action: Advancing mitigation and resilience at urban and local levels, with a focus on new commitments on low-emission buildings, mass transport and urban infrastructure; and resilience for the urban poor;

Resilience and Adaptation: Advancing global efforts to address and manage the impacts and risks of climate change, particularly in those communities and nations most vulnerable.

In addition, there are three additional key areas:

Mitigation Strategy: to generate momentum for ambitious Nationally Determined Contributions (NDCs) and long-term strategies to achieve the goals of the Paris Agreement.

Youth Engagement and Public Mobilization: To mobilize people worldwide to take action on climate change and ensure that young people are integrated and represented across all aspects of the Summit, including the six transformational areas.

Social and Political Drivers: to advance commitments in areas that affect people's well-being, such as reducing air pollution, generating decent jobs, and strengthening climate adaptation strategies and protect workers and vulnerable groups.

The Summit showcased a leap in collective national political ambition and it demonstrated massive movements in the real economy in support of the agenda. Together, these developments sent strong market and political signals and inject momentum in the "race to the top" among countries, companies, cities and civil society that is needed to achieve the objectives of the Paris Agreement and the Sustainable Development Goals.

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