

GROUP ACTIVITY - 2
Research on current topic :
Human Response on Climate Change
Group 2

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Introduction

Climate change has an impact on everyone. The way in which global warming is dealt with is largely dependent on an individual and collectively as well. The response of the corporate world has a huge impact on the path that humanity chooses. It represents a large influence on whether people make climate change better or worse. With this being the case, human resource professionals are faced with challenges of how to address one of the greatest threats of this age. They are the ones responsible for shaping and maintaining the culture of an organisation. Some organisations in the corporate sphere continue boosting the bottom line at the expense of the environment and have no genuine determination of abandoning policies that promote that behaviour. This is due to the inability to govern innocently. Those who have environmental awareness often find themselves engaging in what will compromise the environment that they are yearning to preserve.

The change of the climate has a hand in shaping the global economy. The rise of global temperature comes with the rise of operational costs which can hinder global economic growth. In a predicted worst case scenario where the Gross Domestic Product (GDP) growth per year had a reduction of one percent, this suggests that the effects will be damaging in a disproportionate manner to economies that are developing. The climate change long-term financial repercussions can be potentially made better through a collective effort to enact carbon emissions policies that are strict. Implementing these mitigation policies can reduce climate change. The remaining consequences can be dealt with through adaptation policies (Kompas, Pham & Che, 2018). The worst risks and impacts can be avoided and the climate change economic consequences can be reduced through these policies. It is expected that by the year 2060, there would be a major loss of the annual GDP unleashed from 0.9 percent to 0.8 percent if the issue of climate change is continuously ignored.

Human responses to climate and ecosystem change

Abstract

Human response to severe environmental stress is conceived and implemented by individuals, but must be approved by the group. These decisions are made with respect to perceived circumstances. Societies are enmeshed within adaptive systems that provide a matrix of opportunities and constraints for a wide range of potential behavioural variability. Such systems repeatedly readjust to short-term crises, e.g., droughts, but persistent and severe environmental stress may require substantial revision of adaptive strategies. The Sahel drought of 1968–1973 is an example of a brief but severe crisis, recurring along the Saharan margins perhaps once every 30 years. Closer inspection shows links between intensified intertribal warfare and ecological stress in the lower Omo Valley. The decline of the Egyptian New Kingdom during the 12th century B.C., in response to economic stagnation, socio-political instability, dynastic weakness, foreign pressures, and poor Nile floods over 50–70 years, represents a more complex and fundamental modification, with systemic simplification lasting 450 years. Such insights can be applied to future, global climatic change due to increasing atmospheric CO₂. Simulation and paleoclimatic experience suggest a drier climate for the North American and Soviet breadbaskets, to threaten world food supplies at a time of maximum demographic pressures and declining resources. Public perception and remedial planning should receive the attention of Quaternary scientists, in order to pre-empt an involuntary, global, systemic simplification.

Mitigation - steps taken to preserve atmosphere :

Mitigation measures include policies concerning energy, transportation, food and agriculture, and land use that will reduce GHG emissions. They include:

- Energy policies that can promote development and use of renewable energy, decrease production and use of fossil fuels, and reduce overall energy demand
- Transportation policies that promote fuel efficiency and active transport, such as walking and bicycling
- Food and agriculture policies that can promote sustainable practices, enhance food security, promote growth and consumption of fruits and vegetables, and decrease consumption of meat
- Land-use policies that aim to protect existing forests and promote growth of new forests

As of 2013, fossil fuels accounted for 67% of energy generation in the United States; nuclear power, 20%; hydroelectric power, 7%; wind power, 4%; and solar, geothermal, and other sources of energy, 2%. However, the proportion of energy generated by wind and solar power is progressively increasing.

There are many health co-benefits of mitigation policies. As examples, reducing use of fossil fuels, decreases air pollution and improves health; and promoting active transport reduces GHG emissions, increases physical activity, and helps to prevent cardiovascular disease.

Understanding human consequences

Many human actions affect what people value. One way in which the actions that cause global change are different from most of these is that the effects take decades to centuries to be realized. This fact causes many concerned people to consider taking action now to protect the values of those who might be affected by global environmental change in years to come. But because of uncertainty about how global environmental systems work, and because the people affected will probably live in circumstances very much different from those of today and may have different values, it is hard to know how present-day actions will affect them. To project or forecast the human consequences of global change at some point in the relatively distant future, one would need to know at least the following:

- The future state of the natural environment
- The future of social and economic organization
- The values held by the members of future social groups
- The proximate effects of global change on those values.

The responses that humans will have made in anticipation of global change or in response ongoing global change

These elements form a dynamic, interactive system (Kates, 1971, 1985b; Riebsame et al., 1986). Over decades or centuries, human societies adapt to their environments as well as influence them; human values tend to promote behaviour consistent with adaptation; and values and social organization affect the way humans respond to global change, which may be by changing social organizations, values, or the environment itself.

This complex causal structure makes projecting the human consequences of global change a trickier task than is sometimes imagined. It is misleading to picture human impacts as if global change were like a meteorite striking an inert planet, because social systems are always changing and are capable of anticipation. One may imagine human consequences as the output of a matrix of scenarios.

The impact-assessment tradition involves projecting the human consequences of a range of natural-environment scenarios under given assumptions about human response. The tradition of post hoc case analysis involves assessing the actual human outcomes after past environmental changes (and given the responses that actually occurred), in the hope of drawing more general conclusions. Research in these traditions, combined with analysis of human response, can offer valuable insights into the human consequences of global change environment interactions. We offer only limited discussion of how future global change might proximally affect what humans value, because the variety of possible global changes and the uncertainty about the effects of each make it far too difficult to go into detail. Instead, we review basic knowledge about how human systems respond to external stresses, in the context of discussing human responses.

UN SUSTAINABILITY GOALS:

- Sustainable development means meeting the requirements of the current population without jeopardising the future population's ability to meet its own needs.
- Economic growth, environmental stewardship, and social inclusion are the three components of sustainable development. People are moving to cycling instead of driving to enhance their health, farmers are practising climate-smart agriculture, and industries are discovering how much they can save via energy efficiency.
- Development that meets current demands without jeopardising future generations' ability to meet their own needs.
- Sustainable development (SD) entails a coordinated effort to create a future for people and the earth that is inclusive, sustainable, and resilient.
- 17 goals and 169 specific milestones must be met by 2030.

- Governments, corporations, civic society, and individuals from all walks of life must all work together to achieve the goals.
- The SDGs (Sustainable Development Goals) are not legally enforceable.

Climate change

The global community has enhanced the response mechanisms to the issue of climate change since the adoption of the United Nations Framework Convention on Climate Change (UNFCCC) in 1992.

The worldwide average temperature has risen as a result of human activity. Human-induced warming reached around 1°C (likely between 0.8°C and 1.2°C) over pre-industrial levels in 2017, according to the Intergovernmental Panel on Climate Change (IPCC) Special Report on Global Warming of 1.5°C (high confidence). The research has heightened the demand for unprecedented efforts to cut greenhouse gas (GHG) emissions and has warned of a warmer world. In accordance with global trends, India's annual mean surface air temperature was +0.41°C in 2018, much higher than average. 2018 was the sixth warmest year on record in the United States since records began in 1901.

As a result, with 2030 as the deadline for meeting the INDCs, it appears to be an opportune time for India to begin working on a new climate change action plan that leverages India's global innovator position and harnesses industry 4.0 to develop and implement technology solutions to strengthen India's climate change actions. Discussions and deliberations at many significant international forums about the role of technology interventions in different areas of climate change will go a long way toward informing new aspects of the government's climate change policy

Adaptation by humans

Adaptation is the process of adjusting to current or expected climate change and its effects. It is one of the ways to respond to climate change, along with mitigation. Adaptation aims to moderate or avoid harm, and exploit opportunities; for natural systems, humans may intervene to help adjustment.

The goal is to reduce our vulnerability to the harmful effects of climate change (like sea-level encroachment, more intense extreme weather events or food insecurity). It also encompasses making the most of any potential beneficial opportunities associated with climate change (for example, longer growing seasons or increased yields in some regions).

Adaptation actions can be either incremental (actions where the central aim is to maintain the essence and integrity of a system) or transformative (actions that change the fundamental attributes of a system in response to climate change and its impacts).

Adaptation actions can be grouped into three categories:

Structural and physical adaptation (this can be grouped into engineering and built environment, technological, ecosystem-based, services).

1. Social adaptation (educational, informational, behavioral);
2. Institutional adaptation (economic organizations, laws and regulation, government policies and programs).

Protection against flooding and sea level rise

- Installing protective and/ or resilient technologies and materials in properties that are prone to flooding
- Rainwater storage to deal with more frequent flooding rainfall – Changing to water-permeable pavements, adding water-buffering vegetation, adding underground storage tanks, subsidizing household rain barrels
- Reducing paved areas to deal with rainwater and heat
- Requiring waterfront properties to have higher foundations
- Damming glacial lakes

Protection against heat waves and extreme heat

- Incentivizing lighter-colored roofs and paint of houses to reduce the heat island effect and use radiative cooling
- Specific paint formulations that reflect up to 98.1% of sunlight could be used
- Changing to heat tolerant tree varieties
- Adding green roofs to deal with rainwater and heat
- The use and development of air conditioning and cooling systems
- Solar-energy passive cooling systems for houses and/or refrigeration

Ecosystem-based

- Ecosystems adapt to global warming depending on their resilience to climatic changes. Humans can help adapt in ecosystems for biodiversity. Possible responses include increasing connectivity between ecosystems, allowing species to migrate to more favorable climate conditions and species relocation.
- Protection and restoration of natural and semi-natural areas also helps build resilience, making it easier for ecosystems to adapt.
- Humans can help ecosystems adapt to and become more resilient against climate change and its impacts. For instance, scientific research and development could be used to help coral reefs survive climate change.

Enhancing adaptive capacity

Adaptive capacity is the ability of a system (human, natural or managed) to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with consequences. As a property, adaptive capacity is

distinct from adaptation itself. Those societies that can respond to change quickly and successfully have a high adaptive capacity.

Migration -

- Of humans
- Of ecosystems
- Insurance

Institutional adaptation options

Policies have been identified as important tools for integrating issues of climate change adaptation. At national levels, adaptation strategies may be found in National Action Plans (NAPS) and National Adaptation Programme of Action (NAPA, in developing countries), and/or in national policies and strategies on climate change. These are at different levels of development in different countries.

Principles for effective policy

Adaptation can mitigate the adverse impacts of climate change, but it will incur costs and will not prevent all damage. The IPCC points out that many adverse effects of climate change are not changes in the average conditions, but changes in the variation or the extremes of conditions. For example, the average sea level in a port might not be as important as the height of water during a storm surge (which causes flooding); the average rainfall in an area might not be as important as how frequent and severe droughts and extreme precipitation events become. Additionally, effective adaptive policy can be difficult to implement because policymakers are rewarded more for enacting short-term change, rather than long-term planning.

- The Kyoto Protocol operationalizes the United Nations Framework Convention on Climate Change by committing industrialized countries and economies in transition to limit and reduce greenhouse gases (GHG) emissions in accordance with agreed individual targets.
- The Paris Agreement sets out a global framework to avoid dangerous climate change by limiting global warming to well below 2°C and pursuing efforts to limit it to 1.5°C. It also aims to strengthen countries' ability to deal with the impacts of climate change and support them in their efforts.
- The United Nations Framework Convention on Climate Change (UNFCCC), agreed in 1992, is the main international treaty on fighting climate change. Its objective is to prevent dangerous man-made interference with the global climate system.

Maladaptation

Much adaptation takes place in relation to short-term climate variability, however this may cause maladaptation to longer-term climatic trends. For example, the expansion of irrigation in Egypt into the Western Sinai desert after a period of higher river flows is a maladaptation when viewed in relation to the longer term projections of drying in the region.

Traditional coping strategies

People have always adapted to climatic changes and some community coping strategies already exist. Strengthening of the local techniques and building upon them also makes it more likely that adaptation strategies will be adopted, as it creates more community ownership and involvement in the process.

The economic impacts of climate change are the economic implications brought about by the effects of climate change. The effects of climate change include: ocean water becoming warmer and more acidic, rising sea levels, extreme weather events (such as, flooding and drought) becoming more common, and extended weather season. The economic impacts of climate change also include any mitigation (for example, limiting the global average temperature below 2°C) or adaptation (for example, building flood defences) employed by nations or groups of nations, which might infer economic consequences.

Predicted impacts of climate change

Climate change is predicted to impact regions differently. For example, temperature increases are expected to be greater on land than over oceans and greater at high latitudes than in the tropics and mid-latitudes. Warmer temperatures will cause (and are causing) changes to other aspects of climate - such as rain, snow, and clouds. They are also causing changes to the ocean, life, ice, and all other parts of the Earth system.

Changing Precipitation

A warmer average global temperature will cause the water cycle to “speed up” due to a higher rate of evaporation. More water vapor in the atmosphere will lead to more precipitation. Global average precipitation increases by 1% to 3% for each degree of warming, which means we are looking at a future with much more rain and snow, and a higher risk of flooding to some regions.

Melting Snow and Ice

As the climate warms, snow and ice melt. It is predicted that the melting of glaciers, ice sheets, and other snow and ice on land in the summer will continue to be greater than the amount of precipitation that falls in the winter, which means a decrease in the total amount of snow and ice on the planet. Over the past 100 years, mountain glaciers in all areas of the world have decreased in size and so has the amount of permafrost in the Arctic. Greenland's ice sheet is melting faster, too. Melting ice may lead to changes in ocean circulation, too.

Acidic Ocean Water

Earth's oceans are predicted to act as a buffer against climate change by taking up some of the excess heat and carbon dioxide from the atmosphere. This is good news in the short run, but more problematic in the long run. Carbon dioxide combined with seawater forms weak carbonic

acid. Scientists believe this process has reduced the pH of the oceans by about 0.1 pH since pre-industrial times. Further acidification of 0.14 to 0.35 pH is expected by the year 2100. Higher acidity in the ocean causes problems for coral reefs and other marine organisms.

Disruption of thermohaline circulation

If the ocean's circulation changed dramatically or even shut down altogether, the transfer of heat in the climate system would be altered in a huge way.

Risks to Life on Land:

Changes in temperature, precipitation, and seasonal timing will alter the geographic ranges of many types of plants and animals. Since species can only survive if they are in a habitat that suits their needs, many species will face extinction if the geographic range where they can survive shrinks. If warming is kept to 2°C, 18% of insects, 16% of plants, and 8% of vertebrate animals are projected to lose over half of their geographic range. However, if we can keep the amount of warming to 1.5°C, the habitat loss to insects, plants, and vertebrates decreases by about a half. On the other hand, the range of some species, such as mosquitoes which carry different types of diseases, may increase due to climate warming.

Furthermore negative predictions

More frequent and intense drought, storms, heat waves, rising sea levels, melting glaciers and warming oceans can directly harm animals, destroy the places they live, and wreak havoc on people's livelihoods and communities. As climate change worsens, dangerous weather events are becoming more frequent or severe.

Five negative impacts:-

- More frequent and severe weather. Higher temperatures are worsening many types of disasters, including storms, heat waves, floods, and droughts.
- Higher death rates.
- Dirtier air.
- Higher wildlife extinction rates.
- More acidic oceans.
- Higher sea levels.

There has been a tremendous increase in the negative effects of climate change which has resulted in severe distress. A study by the International Federation of Red Cross and Red Crescent Societies estimated that, globally between September 2020 and February 2021, 12.5 million people were displaced by adverse impacts of climate change, the annual average exceeding 20 million.

Measures

1. Make Your Commute Green

Millions of people drive to work every day. It is simply unavoidable in our modern-day society. However, the downside to this is that millions of cars emit greenhouse gases that destroy our atmosphere. Vehicle emissions are a close second when it comes to the top causes of climate change. There are always other options that you can utilize to make your commute to work eco-friendly. For starters, taking public transportation to work is a great way to cut out emissions. Riding your bike to work is also incredibly helpful to the environment and is a great method to get exercise

2. Be More Conservative with Energy Usage

Becoming more energy efficient is a great way to prevent pollution. It causes the power plants to expend less energy that can lead to the production of greenhouse gasses. This means that you should do what you can to cut down on energy usage in your household. Make sure to turn off lights and unplug devices that you are not using anymore when you are done with them. Replace your light bulbs with energy-efficient light bulbs to help you save electricity too.

3. Get Active and Vote:

One of the best ways to improve climate change is to help those who will fight against it get into office. This means voting for legislation and politicians that aid against the detrimental effects of climate change. Many corporations have politicians on their payroll and use them to lobby against legislation that would require more regulations against them. Voting the right people into office will help pass legislation that allows us to fight against these corporations that are mainly to blame for climate change.

4. Recycle

Manufacturing plants emit a large number of greenhouse gasses per year. It is unavoidable in the production of goods that we use on a regular basis. However, a cleaner alternative would be to invest in recycling. Recycling is a cost-effective and eco-friendly process that eliminates waste and doesn't emit greenhouse gasses into the environment. Be sure to collect your discarded paper, glass, plastic, and electronics to your local recycling center. The professionals will take these items to a processing plant where they will be remade into other recyclable materials again.

5. Educate Yourself and Others

The importance of educating others about climate change cannot be overstated in our modern society. There are many platforms for us to utilize that can allow us to spread our message easily. Whether you use word of mouth or social media, there are always ways to educate others on what climate change is doing to our planet. You can help protect the planet by educating others about the dangers of climate change and how to act against it.

6. Encourage the use of renewable energies

Focusing your efforts to spread awareness about renewable energy is the best way to create a positive impact in your community. By informing others about how renewable energy is better than utilizing fossil fuels, you will sway others into investing in the idea.

CLIMATE CHANGE - the biggest health threat facing humanity

The impacts of climate change include warming temperatures, changes in precipitation, increases in the frequency or intensity of some extreme weather events, and rising sea levels. These impacts threaten our health by affecting the food we eat, the water we drink, the air we breathe, and the weather we experience.

The severity of these health risks will depend on the ability of public health and safety systems to address or prepare for these changing threats, as well as factors such as an individual's behavior, age, gender, and economic status. Impacts will vary based on where a person lives, how sensitive they are to health threats, how much they are exposed to climate change impacts, and how well they and their community are able to adapt to change.

Temperature-Related Impacts

Warmer average temperatures will lead to hotter days and more frequent and longer heat waves. These changes will lead to an increase in heat-related deaths in the United States—reaching as much as thousands to tens of thousands of additional deaths each year by the end of the century during summer months.

These deaths will not be offset by the smaller reduction in cold-related deaths projected in the winter months. However, adaptive responses, such as wider use of air conditioning, are expected to reduce the projected increases in death from extreme heat.

Air Quality Impacts

Changes in the climate affect the air we breathe both indoors and outdoors. Warmer temperatures and shifting weather patterns can worsen air quality, which can lead to asthma attacks and other respiratory and cardiovascular health effects. Wildfires, which are expected to continue to increase in number and severity as the climate changes, create smoke and other unhealthy air pollutants. Rising carbon dioxide levels and warmer temperatures also affect airborne allergens, such as ragweed pollen.

Impacts from Extreme Weather Events

Increases in the frequency or severity of some extreme weather events, such as extreme precipitation, flooding, droughts, and storms, threaten the health of people during and after the event. The people most at risk include young children, older adults, people with disabilities or medical conditions, and the poor. Extreme events can affect human health in a number of ways by:

- the availability of safe food and drinking water.
- Damaging roads and bridges, disrupting access to hospitals and pharmacies.
- Interrupting communication, utility, and health care services.
- Contributing to carbon monoxide poisoning from improper use of portable electric generators during and after storms.

Vector Borne Diseases

Vector Borne diseases are illnesses that are transmitted by disease vectors, which include mosquitoes, ticks, and fleas. These vectors can carry infectious pathogens, such as viruses, bacteria, and protozoa, from animals to humans. Changes in temperature, precipitation, and extreme events increase the geographic range of diseases spread by vectors and can lead to illnesses occurring earlier in the year.

Water-Related Illnesses

People can become ill if exposed to contaminated drinking or recreational water. Climate change increases the risk of illness through increasing temperature, more frequent heavy rains and runoff, and the effects of storms. Health impacts may include gastrointestinal illness like diarrhea, effects on the body's nervous and respiratory systems, or liver and kidney damage.

WHO response

WHO's work plan on climate change and health includes:

Advocacy & Partnerships: to coordinate with partner agencies within the UN system, and ensure that health is properly represented in the climate change agenda, as well as to provide and disseminate information on the threats that climate change presents to human health, and opportunities to promote health while cutting carbon emissions.

Monitoring science and evidence: to coordinate reviews of the scientific evidence on the links between climate change and health; assess country's preparedness and needs when facing climate change; and to develop a global research agenda;

Supporting countries to protect human health from climate change: strengthening national capacities and improving the resilience and adaptive capacity of health systems to deal with the adverse health effects of climate change

Building capacity on climate change and human health: to assist countries to build capacity to reduce health vulnerability to climate change, and promote health while reducing carbon emissions.

Conclusion

Human-induced climate change has contributed to changing patterns of extreme weather across the globe, from longer and hotter heat waves to heavier rains. From a broad perspective, all weather events are now connected to climate change. While natural variability continues to play a key role in extreme weather, climate change has shifted the odds and changed the natural limits, making certain types of extreme weather more frequent and more intense.

While our understanding of how climate change affects extreme weather is still developing, evidence suggests that extreme weather may be affected even more than anticipated. Extreme weather is on the rise, and the indications are that it will continue to increase, in both predictable and unpredictable ways.

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