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ROLE OF HUMAN ACTIVITIES ON CLIMATE CHANGE

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ABSTRACT
The goal of modern environmental research is to document and understand how mankind influences on the earth system interplay with other global change phenomenon. Human activities have an impact on the amount of greenhouse gas emissions, aerosols (small particles), and cloudiness in the atmosphere, all of which contribute to climate change. The burning of fossil fuels, which emits CO_2 into the air, is the most well-known source. Such information is required to assess the effects of continuous population growth and rising economic growth, as well as the implications for expanding water, energy, and a variety of renewable and nonrenewable resource requirements. The bulk of studies in this field employ a variety of time-limited methodologies, such as remote sensing, environmental monitoring, experiments, large-scale observation programs, and modeling.

Index Terms: Scale, Resource, Impact, Human Activities

1 INTRODUCTION

Scientists have debated and evaluated the possibility of human impacts in raising the Earth's temperature via greenhouse gas emissions for more than a century. People are warming the climate, according to a large amount of scientific evidence from a variety of sectors, and the 2013 IPCC Fourth Assessment Report declares, "The impact of humans on the climate system is undeniable." Rising atmospheric greenhouse gas concentrations, observed warming, positive radioactive forcing and a better knowledge of climate environment all support this."

Human actions, particularly the burning of fossil fuels, are increasing atmospheric levels of CO_2 and other greenhouse gases, amplifying the greenhouse effect and increasing the temperature of the Earth's atmosphere, seas, and land surface, according to compelling data. According to laboratory experiments dating back to 1856, when Eunice Foote first quantified the effect, greenhouse gases "trap" infrared heat. Fossil fuel combustion and massive land cover changes are both contributing to the well-documented trend of growing CO_2 levels in the atmosphere. Carbon isotopes provide the "smoking gun" that proves human activity is to blame for current increase of carbon dioxide in the air. Scientists can use these isotopes to "fingerprint" the source of carbon dioxide molecules in the atmosphere, demonstrating that greater CO_2 levels in the atmosphere are the result of fossil fuel combustion.

Some of the most crucial themes to teach about the human origins of climate change are:

Humans are becoming a natural force due to the fundamental physics of heat-trapping gases, as well as a very fast growth in population and energy consumption

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this is undoubtedly an issue with enormous political, economic, and emotional implications. However, empirical proof indicates that human actions, particularly the use of fossil fuels, have an impact on the climate system. Human-caused modifications in land use pattern, like deforestation, urban growth, and variations in cropping patterns, produce changes in the reflectance of the planet's surface, emission levels from forest fires, and impact on the natural water cycle. The remedies are likewise human-made, as humans are the main cause of current global climate change.

We can create and implement more effective solutions because we have a better grasp of the causes of climate change. Despite the proven research, some members of the public continue to doubt the validity of these beliefs. For a variety of reasons, students may oppose to the conclusion that humans are influencing the climate. Due to guilt, political opposition, or a true lack of scientific understanding, students may be uncomfortable with this concept. Furthermore, student assessments of climate change's societal consequences can be terrifying, overpowering, or disheartening. This can lead to denial or resistance as a result. Furthermore, even if a student has a good grasp of the material, it is almost inevitable that his or her understanding will be assessed outside of class at some time. Building a compelling and well-thought-out scientific case is crucial.

Educators should use enough scaffolding to explain this topic, including the scientific process, climate science's basic concepts, and a reliance on the rigorous scientific research that supports this conclusion. Several solutions are offered on this page regarding Teaching Controversial Environmental Issues that emphasize the affective and emotional components of student learning. When it comes to the human origins of climate change, a debate implies two plausible, conflicting opinions when the scientific community is practically unified. Second, arguing a topic in class might promote misconceptions and spark unneeded debate. However, a detailed discussion of many points of view is essential. Role playing can be an effective way to convey a diversity of points of view while retaining scientific accuracy. Environmental change is a result of both natural and human-caused processes. Hydrological regimes are important for many ecosystems. According to Oldfield processes, detaching human and natural factors is a tough undertaking. There are still strong differences of opinion on the amount to which human behavior have impacted eco - systems earlier.

It is unquestionably important to determine the relevance of human and natural drivers of prior changes in the environment, but it may be much more critical to enhance our insight into the interaction among natural and human influences, particularly in cases where their impacts are mutually reinforcing. In this aspect, the paleo-record has significant importance, though it has been underutilized thus far.

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Even when such relationships could be described using information obtained from experiments and observations, the reliability of the models developed must be tested over time periods during which paleo-environmental study focused on proxies offers most of the critical evidence. By giving reconstructions across larger time spans, proxy evidence for previous human-environmental interactions allows the record to be extended. Human populations' potential sensitivity to human-climate interactions is a key worry. Human actions may contribute to enhance or decrease the influence of natural variability since the impacts of climate change on human cultures are regulated by cultural elements. The historical evidence of such encounters aids our comprehension of them and may provide valuable information on the relationship between stress rates of change or persistence and human adaptability, for example. There are no longer any doubts that fossil fuel combustion, especially in the latter decades of the 20th century, was the primary cause of atmospheric CO2 concentrations exceeding those seen over the last 200 years. Forest removal and increased biomass burning have also contributed significantly to this process, but these factors have yet to be properly assessed and are still the subject of continuing research. Over the last few decades, atmospheric methane concentrations have likewise risen rapidly and dramatically. Human activities, such as rising agriculture, particularly paddy farming, and increasing animal populations, are undeniably at the root of this trend. Between 100BC and AD200, atmospheric concentrations of ‘pollution' lead reach a peak in Greenland and throughout Europe. Metal loads increase from the early middle Ages onwards. Prior to the mid-nineteenth century, increased loadings to remote locations were recorded, but evidence for significant contamination was often only found near to industrial or urban sources.

Evidence of atmospheric contamination became commonplace during the last century and a half of broad industrial and urban expansion. The evolution of geographical patterns reflects trends in resource consumption, production, abatement, and dispersal technologies, as well as the process of rapid industrialization. Evidence for these transitions can be found in documents such as lake sediments and ice cores, which all have official accounts of pollution from a variety of chemicals. Analysis of the widening spectrum of industrially created goods, including different particles, is required to decipher the record. Since the late 1950s, there has been a fast growth in the production of organic chemicals that are typically environmentally lasting, such as polyaromatic hydrocarbons (PAHs) and organochlorine derivatives. Many pollutant emissions peaked in the 1970s and 1980s, following the first unequivocal evidence of environmental degradation. The trend toward improved air quality in many places of the world has been corroborated by environmental archives. Other aspects, like the heritage of past political regimes, continued reliance on fossil fuels as the primary source of energy, vehicle proliferation, population increase, and continuing industrial growth, frequently

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combine and result to a prolonged construct of atmospheric pollution to the point at which regional and global issue is growing. From 1953 onwards, important radioactive pollution of the atmosphere on a global scale began as a result of post-war nuclear weapons testing. Paleorecords not only supplement and extend direct measurements, particularly where they are scant, poorly ordered, inconsistent, or altogether absent, but they also serve as markers of radioactive species' subsequent behavior and long-term destiny in the environment. This is especially true for radioisotopes with extended half-lives, such as 137Cs and various plutonium and americium isotopes. In investigations of recent human effect on ecosystems, these same radioisotopes are used as both date markers and process tracers. Acidification, eutrophication, and the ecological state of lakes, coastal waterways, and peat lands from a Paleo viewpoint many environmental archives allow us to determine the impact of contamination on ecosystems, much as they provide records of historical atmospheric contamination. Nowhere is this more evident than in the recorded repercussions of industrialization.

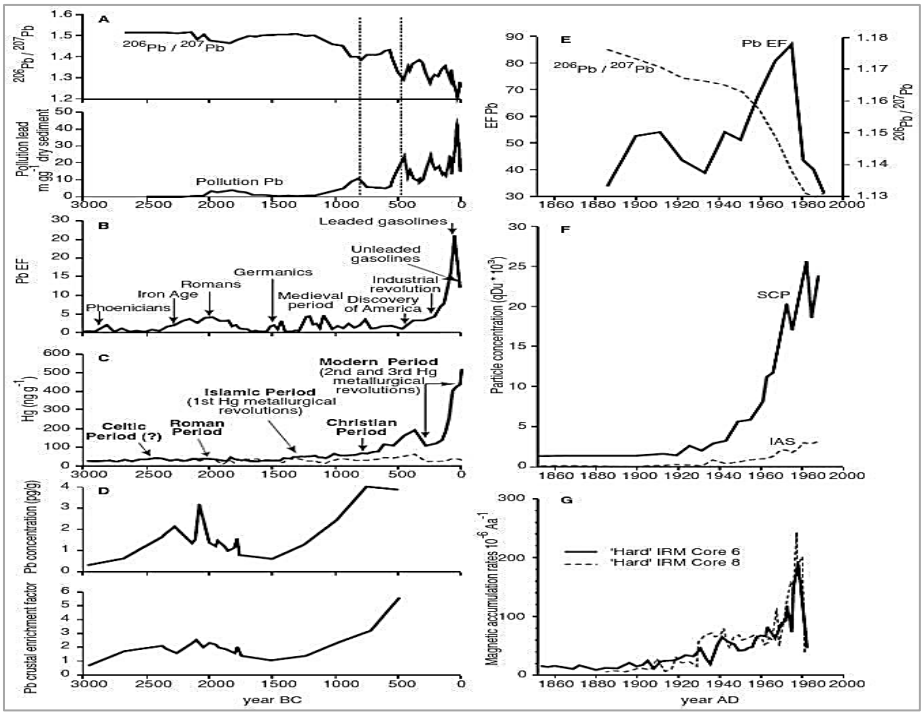

Figure 1 - The sedimentary timelines of trace metal and industrially produced particle deposits are depicted. Concentrations of lead pollution and the 206Pb/207Pb ratio in a small lake in southern Sweden.

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2 LITERATURE REVIEW

1. The first section of this chapter provides an overview of the development of human rights-based responses to climate change, as well as some of the challenges that come with doing so. This lays the framework for researcher, which will identify some limitations to a human rights-based approach to climate change and assess if they can be overcome by establishing a stand-alone environmental right. The goal of modern environmental research is to chronicle and understand how human impacts on the environment interact with other global change events. The amount of greenhouse gas emissions, aerosols (small particles) in the atmosphere, and cloudiness are all influenced by human activities, all of which contribute to climate change. The combustion of fossil fuels, which emits CO2 into the atmosphere, is the most well-known source. Weather conditions Changes on a local scale should not be confused with changes on a global scale, which are often far more significant. At the global level, distinctions between temporal scales should be made: Climate change has occurred over millions of years.

Over hundreds of years, climate change can be substantially more severe for a variety of reasons. Finally, the sole explanation for warming in the twenty-first century is natural climate variability. Environmental change is caused by both natural and human-induced activity. Hydrological regimes are important to many ecosystems. According to Oldfield processes, separating human and natural causes is a challenging endeavor. Still, there are major distinctions.

2. Discovered by the researcher within the context of economic, social, and cultural rights, it is not necessarily difficult to define a right to a decent or healthy environment. Clarifying the existence of such a right would imply assigning more weight to the global public interest in environmental protection and sustainable development, but this could be done without endangering the fabric of human rights legislation and while fully respecting nations' wide margin of appraisal. It would draw on precedents established under the International Covenant on Economic, Social, and Cultural Rights and reflect international policy on sustainable development supported at the 1992 Rio de Janeiro Olympic Games and subsequent international conferences. Procedural rights are being developed using the Aarhus Convention.

3. The potential linkages between climatic change, human capital formation, and internal migration in Africa are investigated in this research. The researcher aims to achieve two-sector of world economic model which is being constructed, with endogenous education and movement decisions. Negative climatic circumstances, according to this simplified model, increase the proportion of individuals moving from rural to urban regions. As a result, a greater proportion of people invest in tertiary

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education because access and returns to education are greater in metropolitan locations. Severe weather changes, according to the research, may have the unintended consequence of increasing educational attainment in African economies. Increased internal mobility, according to the study, could explain this effect.

4. Many people have provided feedback on the researcher's paper. Some views of philosophers' engagement in climate change are primarily concerned with philosophical development or with philosophers as individual citizens. Against these points of view, I argue for a Skill View: philosophers should use their unique skills to combat climate change by incorporating it into our teaching, research, service, and community participation. Some of these contributions can be made if the focus is on theoretical advancement, citizenship, expertise, virtue, ability, social role, or power rather than talent. But, I argue, the Skill View captures the breadth of philosophers' role in climate change in a way that no other view does; it promises to make us more effective in practice; and it offers a compelling way to overcome our own lingering climate denial by incorporating climate change into all aspects of philosophical activity.

5. In this paper there are two types of driving forces in desertification are climate change and human activities, and determining their proportional roles in the process is critical to fully comprehending the mechanisms and limiting desertification growth. In this study, the researcher looked at the progression of research on determining the relative impact of climate change and human activities on desertification from qualitative, semi-quantitative, and quantitative viewpoints.

3 MATERIALS

This should be changed to – 14 of the 15 hottest years have occurred since 2000. Because it was the hottest, Europe's temperature rose by around 1 degree Celsius, compared to the global average. Global temperature will rise by 1 to 6.3 degrees Celsius by 2100, with a rate of warming of 0.74 degrees Celsius because greenhouse gas concentrations in the atmosphere are higher than they have been in recent years. Increased frequency and intensity of harsh weather events altered rainfall trends, and regional climate and trends imply a steady rise in the coming years; decreasing thickness and extension of Arctic glaciers, which may result in their extinction; retreating glaciers in mountain areas, with the prospect of the elimination of more than 70% of continental glaciers; Early blooming plant species, extinction of amphibian species, and other examples of bio-system mutations. The report emphasizes the importance of policies and initiatives to reduce greenhouse gas emissions, as failure to do so will result in dangerously high global temperatures.

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4 METHOLOGY DESIGN

This analytical research on the role of human activities in climate change is based on observations and qualitative/quantitative/predictive inferences drawn from the material and data gathered for this study. The influence of human activities in climatic change and Security Facts were the two elements of our data collecting. We also looked at the nature of their global impacts.

5 DATA COLLECTION

We needed newspaper information to conduct observation and analysis on the role of human activities in climate change. We spoke with experts, journalists, and institutes working on important studies/activities on the impact of human activities in climate change to learn more about the topics. We also recommended a number of academic, research-based online libraries to help us enrich and evaluate the information quality. The data and information presented in this study are believed to be accurate to the extent that they are declared in the corresponding source.

6 STUDY AREA

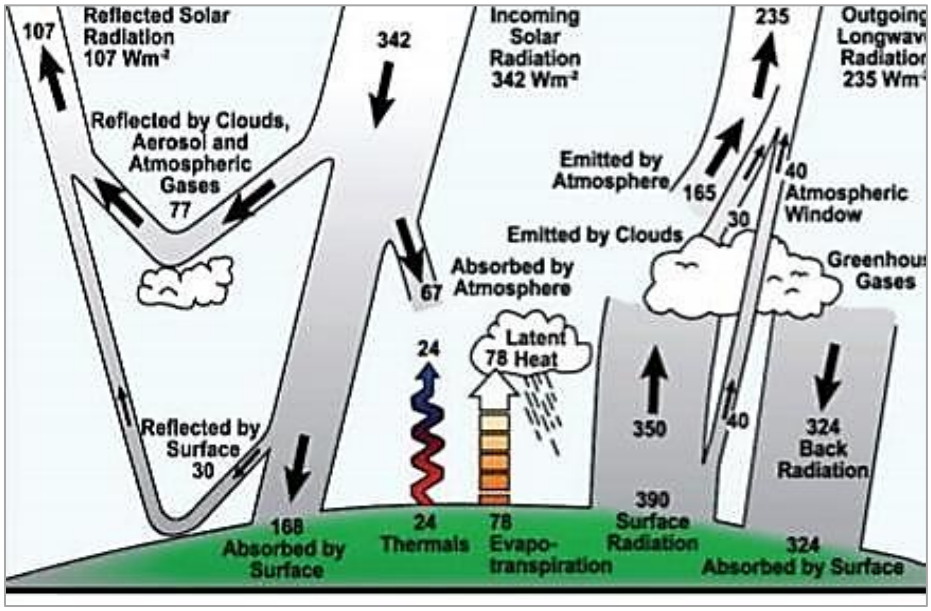

Figure 2 - Radiative balance at the surface of the Earth

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In this figure Radiative balance at the surface of the Earth human activities have led to increased amounts of greenhouse gases in the atmosphere during the industrial period (Fig.2). Furthermore, human activities contribute to climate change.

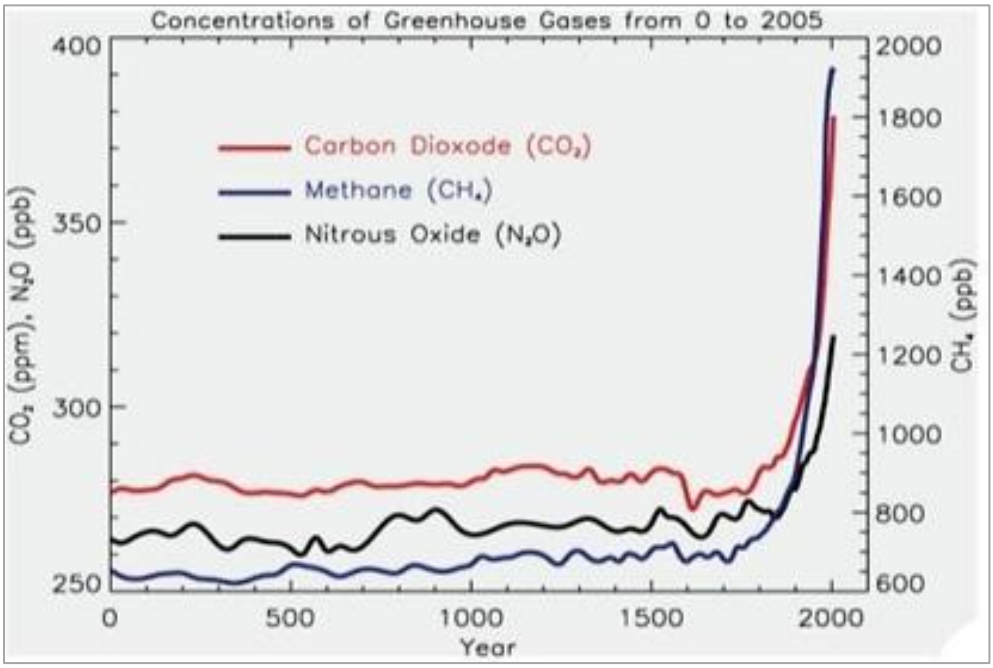

Figure 3 – The atmospheric concentration of major greenhouse gases with high life time in the last 2000 years

Change the concentration of aerosols and the amount of cloud cover. The greatest contribution comes from fossil fuels, which emit CO2 into the atmosphere. Human actions have a significantly greater impact on the climate than natural processes. The following are the main components as a result of human activities that play a significant impact in climate change: Carbon dioxide is produced when fossil fuels are burned for transportation, heating, cement manufacturing, deforestation, and other purposes. Natural processes are also released; Methane (CH4) is produced as a byproduct of agricultural activities, natural gas distribution, waste disposal, and natural processes, particularly in swampy areas. Nitrogen oxides are emitted as a result of nitrogen fertilization, fossil fuel combustion, and natural processes in the soil, as well as ocean concerns. Halocarbons (mixtures of fluorine, bromine, chlorine, carbon, and hydrogen) are the major products of human activity CFC11 and CFC12, and their concentration has decreased in recent times of international treaties to protect the ozone layer. Ozone (O3) – creates and constantly ruins the atmosphere as a result of a chemical reaction under the action of UVU rays; in the stratosphere, human activities have increased the amount of O3 by discharging CO, N2O, as well

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as other toxins that chemically reacts and start producing O3; most prevalent and necessary greenhouse gas is water vapor. Some aerosols are directly discharged into the atmosphere. Human activities that contribute to the existence of aerosols in the atmosphere include the burning of fossil fuels and biomass, surface mining, and other industrial processes. Surface dust, breaking waves, biogenic emissions, and volcanic eruptions are all natural sources of aerosols.

7 CONCLUSION

Some aspects of today's climate change are distinct from those of previous epochs. At the same time, CO2 levels in the atmosphere have increased at an unprecedented rate compared to the previous half-million years. Global average temperatures have risen for the first time in centuries, if not millennia. Geologically and biologically substantial changes may occur if the current warming trend continues. Another striking element of current climate change is that, whereas prior rises were mostly attributable to natural causes, the last 50 years' warming has been primarily due to human activity. Three aspects should be considered when comparing the current environment to those of prior eras: Comparison variables include greenhouse gas concentrations, temperature, and other parameters. Local changes should not be confused with global changes, which are frequently far more significant. At the global level, distinctions between temporal scales should be made: Climate change has occurred over millions of years. On a timeframe of hundreds of years, climate change can be much more severe and for other causes. Finally, the sole explanation for warming in the twenty-first century should not be concurred as natural climatic variability.

REFERENCES

[1] IPCC, 2007: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen,M. Marquis, K.B. Averyt, Matignon and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA

[2] Dima, M., Ştefan, SabinaFizicaschimbărilorclimatice, Ed. ArsDocendi, UniversitateadinBucureşti,2008.

[3] Săndoiu, Ileana, Fizica Factorilor de Mediu, Ed. Elisavaros, Bucureşti, 2005.

[4] Changwon, S., D. Changnon, T. Karl, 2006: Temporal and Spatial Characteristics of Snowstorms in the Contiguous United States. J. Appl. Meteor. Climatol., 45, 1141–1155. Doi: 10.1175/JAM2395.1

[5] Christidis N, P.A. Stott, F.W. Zwiers, H. Shiogama, and T. Nozawa, 2009: Probalistic estimates of recent changes in temperature: a multi-scale attributions analysis. Climate Dynamics 2009.

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E-Publication: Online Open Access
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DOI 10.17605/OSF.IO/BWTS2

[6] Christidis, N., P.A. Stott, and S. Brown, 2011: The role of human activity in the recent warming of extremely warm daytime temperatures. Journal of Climate doi:10.1175/2011JCLI4150.1
http://journals.ametsoc.org/doi/abs/10.1175/2011JCLI4150.1

[7] Cohen, J., J. Foster, M. Barlow, K. Saito, and J. Jones, 2010: Winter 2009–2010: A case study of an extreme Arctic Oscillation event, Geophys. Res. Lett., 37, L17707, doi:10.1029/2010GL044256.

[8] Dai, A.: 2011: Drought under global warming: a review. Wiley Interdisciplinary Reviews: Climate Change, 2: 45–65. Doi: 10.1002/wcc.81

[9] Ding, T., Qian, W. and Yan, Z. (2010), Changes in hot days and heat waves in China during 1961–2007. International Journal of Climatology, 30: 1452–1462. Doi: 10.1002/joc.1989

[10] Emanuel, K., 2007: Environmental factors affecting tropical cyclone power dissipation. Journal of Climate, 20(22), 5497-5509.

[11] https://www.researchgate.net/publication/350742746_Climate_Change_and_Educational_Attainment_The_Role_of_Human_Mobility

[12] American Philosophical Association. (2020) Good Practices Guide. Availablehttps://www.apaonline.org/general/custom.asp?page=goodpracticesguide. Last accessed March 12, 2021.
Annas, Julia. (2011) Intelligent Virtue. New York: Oxford University Press. Brister, Evelyn and Robert Frodeman, eds. (2020) A Guide to Field Philosophy: Case Studies and Practical Strategies. New York: Routledge.

[13] Callicott, J. Baird. (2010) 'Why Study Environmental Ethics?' In David R. Keller (ed.), Environmental Ethics: The Big Questions (Oxford: Blackwell), 33-35.
Caney, Simon. (2012) 'Addressing Poverty and Climate Change: The Varieties of Social Engagement'. Ethics & International Affairs, 26, 191-216.
Caney, Simon. (2014) 'Two Kinds of Climate Justice: Avoiding Harm and Sharing Burdens'. The Journal of Political Philosophy, 22, 125-49.

[14] Clowney, David, and Patricia Mosto (eds.) (2009) Earthcare: An Anthology in Environmental Ethics. New York: Rowman & Littlefield. Cohen, Stanley. (2001) States of Denial: Knowing about Atrocities and Suffering. Cambridge, MA: Polity Press.

[15] Collins, Patricia. (2013). On Intellectual Activism. Philadelphia: Temple University Press. Ericsson, K. Anders, Robert R. Hoffman, and Aaron Kozbelt (eds.) (2018) The Cambridge Handbook of Expertise and Expert Performance, 2nd ed. Cambridge.

[16] Fridland, Ellen and Carlotta Pavese, eds. (2021) The Routledge Handbook of Philosophy of Skill and Expertise. London: Routledge.

[17] Fridland, Ellen. (2021) 'The Nature of Skill: Functions and Control Structures.' In Ellen Fridland and Carlotta Pavese (eds.), The Routledge Handbook of Philosophy of Skill and Expertise (London: Routledge), 245-57.

[18] Gardiner, Stephen. (2006) 'A Perfect Moral Storm: Climate Change, Intergenerational Ethics, and the Problem of Moral Corruption'. Environmental Values, 15, 397-413.

[19] Gardiner, Stephen. (2011) A Perfect Moral Storm. New York: Oxford University Press.

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[20] Gardiner, Stephen M., and Allen Thompson (eds.). (2017). The Oxford Handbook of Environmental Ethics. New York: Oxford University Press.

[21] Goldberg, Matthew H., Abel Gustafson, and Sander van den Linden. (2020) 'Leveraging Social Science to Generate Lasting Engagement with Climate Change Solutions'. One Earth, 3, 314-24.

[22] Herzog, Lisa. (2018) Reclaiming the System: Moral Responsibility, Divided Labor, and the Role of Organizations in Society. New York: Oxford University Press.

[23] Heyward, Clare, and Dominic Roser (eds.). (2016) Climate Justice in a Non-Ideal World. Oxford: Oxford University Press.

[24] https://www.researchgate.net/profile/Duanyang-Xu-2/publication/226143178_Assessment_of_the_relative_role_of_climate_change_and_human_activities_in_desertification_A_review/links/0deec539a41b0b6896000000/Assessment-of-the-relative-role-of-climate-change-and-human-activities-in-desertification-A-review.pdf