REVIEWING CERTAIN ASPECTS OF THE CULTURAL THEORY OF RISK FOR CLIMATE CHANGE ADAPTATION IN EGYPT

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ABSTRACT

Despite the minority of blueprints for cultural work on climate change, it does not provide an instant answer for public apathy or failed policies, and the role of culture in modern climate change adaptation remains unexplored. Owing to the recent successive climatic changes, the role of culture has increased in deepening our understanding and awareness of how to confront and address the challenges facing us. Institutional cultures are essential in providing practical and appropriate solutions to tackle global climate change by influencing the formation of goals, maximizing success factors, and scientifically evaluating them. This has prompted climate experts to recognize the importance of culture in simplifying, understanding, and addressing the effects of climate change through adaptation or mitigation policies with the development of planning strategies, despite the lack of clear mechanisms for their application, especially in radioactive pollution and reducing greenhouse gas emissions. We relied on a survey based on previous studies to examine the role of the cultural theory of risk in reducing the effects of environmental risks, climate change, and the extent of university awareness. The survey was distributed it to a random sample of employees and students of Cairo University and other universities (211 votes) via internet. Adapting climate change requires a holistic approach and will help identify local and regional priorities, the development of new relationships for adaptation research and planning, barriers to climate change adaptation, and the transition from conflict to cooperation among diverse perspectives.

Keywords: Cultural Theory of Risk, Climate Change, Egypt, Adaptation, Mitigation.

INTRODUCTION

Nature and culture have co-evolved and constitute a dynamic equilibrium. Therefore, cultural and social values are inextricably associated with natural values. Nature and culture combine in numerous ways, from values, beliefs, and nomenclatures to practices, ways of life, knowledge, and languages. Consequently, mutual feedback exists between cultural systems and the environment. Knowledge evolves in tandem with the ecosystems on which it is founded, and languages comprise terms describing ecosystem components. When plants or animals become extinct, the terminology used to describe them frequently becomes extinct, altering the effect of human behaviors on the natural environment. Nature provides the context for developing cultural processes, activities, and belief systems, all of which feed back into biodiversity. Beliefs and worldviews, lifestyles and activities, knowledge bases, and norms and institutions are the four main links connecting nature and culture.

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Cultural Theory of Risk (CTR) Affected by Climate Change

According to the CTR, social learning and cultural adherence significantly influence people's risk perceptions and interpretations. An individual's level of identification with and participation in specific bonded social units or groups is measured by the degree of social regulation and restriction that the "*Grid*" (the type of social regulation) a society imposes on an individual. The theory is based on Douglas' grid-group typology (Douglas, 1966; Douglas, 1982).

Owing to the strength of the influence of ecosystems on human culture, climate change is a greatest threat that we currently face. Drought, floods, desertification, and acidification of the oceans are increasing, posing a threat to human civilization and the planet's natural resources and cultural heritage (Adger et al., 2009). Changes in ecosystems and environments can significantly impact cultural identity, social stability, and associated forms of relaxation, such as aesthetic enjoyment, recreation, artistic and spiritual well-being, and intellectual development. As evident in numerous world regions, the rapid loss of culturally significant ecosystems and landscapes leads to social unrest and marginalization (Adger, 2013; Douglas, 2003).

While a realistic movement perceives culture as an acquisition of a specific society or group of people, an abstract trend perceives it as a collection of ideas unrelated to any specific reality. The ability of humans to create and absorb culture differentiates them from organisms and is their most fundamental characteristic. For each society, there is a unique set of physical characteristics, a unique way of life, and methods used by its members to achieve their goals. Consequently, the social structures wherein culture works are where we learn about family, education, religion, morality, art, languages, economics, law, and politics. Since civilizations are constantly evolving, change is a universal law. Therefore, their activities must be recognized and used to better understand the interactions between cultures and ecosystems and to engage in a dialogue with academic knowledge. This is especially required in the context of regional development projects that may affect, develop, and share the ecosystem in question to promote environmental thinking and develop sustainable values.

Cultural traditions, attitudes, and theologies influence the ecosystems they inhabit. Aesthetic values, such as urban or rural life and resilience, rely on using "natural" areas and biological and cultural resources and serve as a reminder of history, knowledge, and identity. As it permeates our daily activities and surrounds us, culture becomes the glue that binds everything together, establishing structures, relationships, and our interactions.

International Efforts to Deepen the Concepts of Culture and Environmental Changes

International organizations, including the United Nations Environment Program, UNESCO, the United Nations Food and Agriculture Organization, the International Union for Conservation of Nature, and the World Wildlife Fund, are focusing on identifying "*cultural landscapes*," "*Agrocultural ecosystems*," and "*World heritage*," along with "*Man and the biosphere sites*" and "*Reserves*" Therefore, a social ecosystems strategy is required, and policy formulations must allow local people to participate in natural resource management as an integral part of their cultural landscapes.

UNESCO's headquarters in Paris hosted a conference from February 24th to February 28th, 2020, highlighting the importance of culture in reducing and adapting to climate change.

Over the past decade, UNESCO's efforts to protect the role of culture in sustainable development have yielded numerous successes. There were three major United Nations resolutions

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recognizing the importance of culture as an enabler and engine for long-term development in 2010, 2011, and 2013. When the United Nations Sustainable Development Goals (SDG) was established in 2015, there was a direct reference to culture in Goal XI, "*strengthening efforts to protect and preserve the global cultural and natural heritage*," consequently. At the United Nations Conference on Housing and Sustainable Urban Development in Quito, Ecuador, in October 2016, the New Urban Plan included cultural elements. In addition, it emphasized the importance of culture in developing the economy, society, and environment. Therefore, if we intend to tackle climate change, we must include culture in our decision-making processes.

Slow-onset climate impacts can cause long-term loss and harm, which can be minimized and avoided by combining social protection with environmental protection and restoration (Aleksandrova & Costella, 2021; Gerlach & Rayner, 1988). Social welfare programs are becoming increasingly intertwined with environmental conservation efforts. Tree planting and conditional cash transfers for sustainable use of a community's natural resources are examples of public works projects. Another example is skill development to assist people in transitioning from livelihoods dependent on natural resources to alternative sources of income owing to climate change.

The remaining socioeconomic losses and harm from climate change mitigation and adaptation efforts can be mitigated, avoided, and remedied with social protection (Costella et al., 2021). These policies may negatively affect workers in industries that emit large amounts of carbon dioxide or households in lower-income brackets, who spend more money on goods and services that emit large amounts of carbon dioxide. (UNFCCC, 2016; Malerba, 2021; Thompson & Rayner, 1998). However, it is possible to use social protection to compensate for the losses owing to these actions and make the required measures more equitable (McNeeley & Lazrus, 2014; Rayner & Gross, 1985; Rayner, 1991; Rayner, 1995; Slovic & Peters, 1998).

Egyptian Efforts to Deepen the Concepts of Culture and Environmental Changes

The decent life initiative for rural development: A cornerstone of "*Egypt Vision 2030*" the "*Decent Life*" project is the first and largest development initiative in Egypt's modern history. It aims to improve living conditions, infrastructure, and services for 58% of Egypt's 102 million residents, spread across 4,658 villages nationally. The first phase of the "*Decent Life*" initiative, covering 375 villages in 14 governorates, reduced the poverty rate by 11% and improved the quality of life (QoT) index linked to the availability of basic services, which is linked to the QoT. In addition to state agencies, ministries, nongovernmental organizations, and the private sector, the 700 billion-pound budget includes these entities. Owing to its excellence in achieving all SDG, the inclusion of the United Nations for the "*Decent Life*" project on its platforms is a major achievement owing to its international standards for "*Fighting poverty and gender equality."* By incorporating all aspects of sustainable development, gender-sensitive planning, and green recovery into this project, the Egyptian countryside will undergo a complete transformation. Furthermore, the project will apply environmental sustainability standards in a "*Decent Life*" by increasing the percentage of green public investments from the total directed investments to reach approximately 20%, rehabilitating and lining canals and establishing sewage treatment plants. Moreover, it improves population characteristics and controls population growth by expanding family development centers, developing integration hospitals, and mechanizing services (Pimentel, 2010).

Egypt's National Climate Change Strategy 2050:

On the sidelines of the United Nations Conference of the Parties on Climate Change in

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Glasgow, the Egyptian strategy targeted five main objectives: achieving sustainable economic growth by reducing emissions from various sectors, promoting the use of new energy resources, and producing energy from waste and using energy alternative such as green hydrogen. This strategy aligns with the Egypt Vision 2030, which focuses on serving the United Nations SDG as follows:

1. Improving energy efficiency by improving the efficiency of thermal power plants, distribution networks, and activities related to oil and natural gas.
2. Building resilience, promoting adaptation, and mitigating the negative effects of climate change by strengthening the health sector and preparing studies and training. In addition, protecting natural resources and ecosystems; improving adaptive capacities; protecting forests, biodiversity, agricultural land, and fisheries; improving crops; and developing extraordinary water resources, it preserves historical and cultural heritage and selects new sites for developmental communities. Furthermore, it focuses on infrastructure, including comprehensive coastal zone management, implementing flood protection systems, establishing an early warning system, and improving sewage systems, water services, irrigation systems, and roads.
3. Improving good governance and business management in climate change, advancing Egypt's international position concerning luring more foreign investments and climate change financing opportunities.
4. Improving the infrastructure for financing climate activities, especially through promoting green banking activities at the local level, green credit lines, and innovative financing strategies that prioritize adaptation measures, such as green bonds, the private sector's participation in financing climate action, and promoting green jobs.
5. Enhancing scientific research, knowledge management, transferring technology, and spreading awareness about climate change, especially among policymakers, citizens, and students.

In this paper, we argue that comprehending, measuring, shaping, and promoting an effective culture can significantly impact our response to climate change.

RESULTS

The statistical analysis of the CTR survey results and its relation to climate change highlighted a striking variance according to the gender of participating students and their faculties and universities (Table 1). The percentage of female students reached 171(81%), outperforming male students, which reached 40(19%). This highlights that the participation of practical faculties was at the expense of the remainder of the faculties, where the highest percentage was from Science, 186(88.2%); then Agriculture, six (2.8%); followed by Pharmacy, four (1.9%); and the Faculty of Education, two (0.9%) whereas the proportion of the participation of the remaining faculties combined was 13(6.2%). The students from the Department of Chemistry had the highest participation rate, 52(24.6%); then Biochemistry, 34(16.1%); followed by Biophysics, 30(14.2%); and Biotechnology, 27(12.8%). The remaining faculty departments participated in below 8%. In addition, the results showed that Cairo University students ranked first with 144(68.2%), followed by Ain Shams University, 25(11.8%). Meanwhile, the participation of remaining universities was below 3% (O'Riordan & Jordan, 1999; Slovic & Peters, 1998).

Table 1
THE DEMOGRAPHIC PROFILE TABLE

	Category	Frequency	Percent
Gender	Female	171	81
	Male	40	19
	Total	211	100
	Faculty of Agriculture	6	2.8

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	Faculty of Education	2	0.9
	Faculty of Science	186	88.2
	Other	13	6.2
	Pharmacy	4	1.9
	Total	211	100
	Biochemistry	34	16.1
	Biology	2	0.9
	Biophysics	30	14.2
	Biotechnology	27	12.8
	Botany	13	6.2
	Chemistry	52	24.6
	Entomology	5	2.4
	Microbiology	3	1.4
	Nutrition and Food Science	3	1.4
	Other	17	8.1
	Physics	14	6.6
	Special Chemistry	6	2.8
	Zoology	5	2.4
	Total	211	100
	Agriculture Research Center	2	0.9
	Ain Shams University	25	11.8
	Al-Azhar University	6	2.8
	Alexandria University	2	0.9
	Arab Academy for Science Technology	1	0.5
	Aswan University	2	0.9
	Benha University	2	0.9
	Cairo University	144	68.2
	El-Arish University	1	0.5
	Fayoum University	1	0.5
	Helwan University	4	1.9
	Mansoura University	2	0.9
	Menoufia University	5	2.4
	Misr University for Science & Technology	1	0.5
	Nahda University	1	0.5
	Sohag University	1	0.5
	Suez Canal University	3	1.4
	Taibah University	1	0.5
	Tanta University	3	1.4
	Umm Al-Qura University	1	0.5
	Zagazig University	2	0.9
	Total	211	100

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	First level	0	0
	Second level	13	6.2
	Third level	38	18
	Fourth level	50	23.7
	Fifth level	1	0.5
	Graduate	109	51.7
	Total	211	100

Table of Statements

Table 2 shows that the respondents agreed on 17 statements, three were neutral, and eight strongly agreed (Table 2). In addition, the following was found:

1. The highest weighted average was awarded to the last statement, "*Adopting a policy to work on expanding the use of solar energy instead of electric energy because of its many benefits, such as reduces air pollution, reduce water usage, reduces dependence on nonrenewable Energy Sources, improves humanity's health*" (μ=4.58, S=.832).
2. Followed by, "*A warmer climate will likely increase the melting of polar ice, which will lead to an overall rise of the sea level*" with (μ=4.5, S=0.858), followed by "*Reducing consumption of disposable or single-use items (e.g., plastic bags, paper towels, and packaged foods)*" with (μ=4.44, S=.9).
3. In contrast, the lowest averages were awarded to "*Over the next few decades, the climate will change evenly around the world*" (μ=2.93, S=1.265).

Table 2
ANALYSIS OF STATEMENTS SURVEY

	Mean	Std.	Decision	Rank
1. Natural variations are the primary cause of climate change (such as changes in solar radiation intensity and volcanic eruptions).	3.52	1.168	Agree	24
2. The climate will change equitably over the world during the next few decades.	2.93	1.265	Neutral	28
3. Since 1950, there is more than 95% certainty that human impact has been the primary cause of global warming.	4.17	0.956	Agree	9
4. Human activities are the primary source of greenhouse gas emissions.	4.28	0.864	Strongly Agree	7
5. The global temperature increase in the recent century was the highest in the last 1,000 years.	4.02	1.007	Agree	14
6. A warming climate will likely accelerate the melting of polar ice, resulting in a global rise in sea level.	4.5	0.858	Strongly Agree	2
7. Extreme events such as droughts, floods, and storms will become more often in the next decades.	4.07	0.913	Agree	11
8. Since the early 20th century, the Earth's average surface temperature has increased by around 0.8 °C (14 °F).	3.47	1.048	Agree	25
9. The ocean is getting hotter, which causes water to expand and sea levels to increase. In many places of the world, plants are blossoming early. There is a higher level of humidity in the air.	3.7	0.957	Agree	20
10. Changes associated with 4 °C (7.2 °F) warming are projected to be more profound than those associated with 2 °C (7.2 °F) warming.	3.6	1.122	Agree	22
11. As a result of rising temperatures, many land and marine species have had to relocate their geographic ranges. Several extinctions have been attributed to global warming, including the extinction of some frog species in Central America.	4.04	0.95	Agree	13

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12. According to the IPCC, 4 °C of global warming might result in "significant species extinctions," "major concerns to global and regional food security," and irreversible ice sheet destabilization in Greenland.	4.13	0.994	Agree	10
13. The ocean is getting hotter, which causes water to expand and sea levels to increase. In many places of the world, plants are blossoming early. There is a higher level of humidity in the air.	3.87	1.012	Agree	18
14. The IPCC discovered that while certain high-latitude places benefit from global warming, negative effects are becoming more widespread worldwide. Crop yields in places like California are expected to drop by 40% by 2050.	3.71	0.961	Agree	19
15. The average spatial expanse of the snow blanket in the northern hemisphere has stayed constant.	3.01	1.171	Neutral	27
16. Sea ice has grown at a record rate in Antarctica in recent years, but it is a very different habitat from the Arctic, and losses in the north greatly outnumber increases at the South Pole. Thus, total global sea ice is declining.	3.55	1.074	Agree	23
17. The climate is predicted to cool substantially during the next few decades.	3.12	1.311	Neutral	26
18. Technological advancements and worldwide initiatives to reduce emissions will determine the amount of gas emitted in the coming decades.	4.02	0.953	Agree	14
19. A global problem necessitates a global response, but there is a chasm between ambition and action regarding climate change.	3.92	1.077	Agree	17
20. A global obligation lies in the most developed countries to increase the global minimum annual income for individuals, particularly in developing countries.	4	1.058	Agree	16
21. Consistent worldwide and local efforts to raise individual moral, behavioral, and cultural levels to mitigate climate change.	4.2	1.065	Strongly Agree	8
22. Eating more plant-based foods and fewer animal proteins and products in order to adopt a more plant-rich diet (e.g., meat, dairy, eggs).	3.64	1.254	Agree	21
23. Reducing food waste by only purchasing what is necessary and composting any leftovers.	4.34	1.012	Strongly Agree	4
24. Whenever possible, eat seasonal foods.	4.07	1.051	Agree	11
25. Instead of driving a car, go for a walk, ride a bike, or take public transportation.	4.31	1.026	Strongly Agree	5
26. When electrical gadgets are not in use, remove or turn off the power supply plug (e.g., mobile phone chargers and laptop power supplies).	4.31	1.027	Strongly Agree	5
27. Reducing throwaway or single-use items (such as plastic bags, paper towels, and packaged foods).	4.44	0.9	Strongly Agree	3
28. Adopting a policy to promote solar energy rather than electric energy because of its numerous advantages, including reduced air pollution, reduced water usage, reduced reliance on nonrenewable energy sources, and improved human health.	4.58	0.832	Strongly Agree	1

CONCLUSION

Recent efforts (a decent life and maximizing the role of Egyptian women in leadership, planning, and management as well as their involvement in the judiciary, etc.) may have had the greatest impact on university students' active and predominant participation in the investigation of the CTR and its relation to climate change.

In addition, our findings indicated that survey respondents were more aware of utilizing

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alternative energy sources, particularly solar energy, and focusing on greenhouse gas reductions to reduce pollution and improve the lives and health of people.

Consequently, the theory of risk culture and its impact on climate change requires additional research. This includes expanding the survey to include local alternatives to climate change challenges and increasing the targeted random sample size to ensure the validity of the results. In addition, future research should emphasize surveying the largest possible number of faculty members, students, staff, and workers in the cultural and environmental fields.

We believe that applying the CTR to climate change adaptation requires an understanding of people's cultural worldviews about social organization and nature, shaping their perceptions of how the climate system "*works,*" and participatory, community-based approaches to analysis to decipher the nuances of the relation between culture, climate change, and adaptation strategies.

Consequently, we can better understand the underlying principles governing how societies and their numerous institutions make decisions and implement policies to adapt to climate change threats currently and in the future. Another reason for incorporating the CTR insights into decision-making is to inform collaborative partnerships in applied research initiatives involving key decision-makers. Through early involvement, we can ensure that research questions and knowledge are coproduced and usable outputs. Consequently, we can more accurately diagnose barriers to climate change adaptation and enhance communication by framing/reframing climate in ways reflecting shared understanding and collective learning.

According to the climate research that applies the CTR to local resource management and climate adaptation contexts, culture influences how individuals develop policy preferences and accept or reject resource management decisions. According to research on institutions and adaptive governance of common-pool resources, local users who collaborated could make better collective decisions than those subjected to regulations imposed by outsiders across multiple environments and involving various goods, including water. Therefore, the key to long-term, sustainable resource management is collaboration among stakeholders and holistic resource management.

By incorporating diverse values and community objectives discovered through the CTR analysis, local adaptations can increase social relevance and community compliance.

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REFERENCES

Adger, W.N., Barnett, J., Brown, K., Marshall, N., & O'brien, K. (2013). Cultural dimensions of climate change impacts and adaptation. *Nature Climate Change*, *3*(2), 112-117.

Adger, W.N., Dessai, S., Goulden, M., Hulme, M., Lorenzoni, I., Nelson, D. R., & Wreford, A. (2009). Are there social limits to adaptation to climate change?. *Climatic Change*, *93*(3), 335-354.

Aleksandrova, M., & Costella, C. (2021). Reaching the poorest and most vulnerable: addressing loss and damage through social protection. *Current Opinion in Environmental Sustainability*, 50, 121-128.

Douglas, M. (1966). Purity and danger: An analysis of concepts of pollution and taboo. *2*.

Douglas, M. (2003). Purity and danger: An analysis of concepts of pollution and taboo. Routledge.

Douglas, M., & Wildavsky, A.(1982). Risk and Culture: An Essay on the Selection of Technical and Environmental Dangers. University of California Press, 221.

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Gerlach, L., & Rayner, S. (1988). Culture and the common management of global risks. *Practicing Anthropology*, *10*(3-4), 15-18.

Kahan, D. M., & Braman, D. (2006). Cultural cognition and public policy. Yale L. *24*, 149.

McNeeley, S.M., & Lazrus, H. (2014). The cultural theory of risk for climate change adaptation. Weather, *Climate, and Society*, *6*, 506–519.

O'Riordan, T., & Jordan, A. (1999). Institutions, climate change and cultural theory: Towards a common analytical framework. *Global Environmental Change*, *9*(2), 81-93.

Pimentel, J.L. (2010). A note on the usage of Likert Scaling for research data analysis. *USM R&D Journal*, *18*(2), 109-112.

Rayner, S. (1991). A cultural perspective on the structure and implementation of global environmental agreements. *Evaluation Review*, *15*(1), 75-102.

Rayner, S., & Gross, J.L. (1985). Measuring culture: A paradigm for the analysis of social organization.

Rayner. (1995).

Slovic, P., & Peters, E. (1998). The importance of worldviews in risk perception. *Risk Decision and Policy*, *3*(2), 165-170.

Thompson, M., & Rayner, S. (1998). Cultural discourses. *Human choice and climate change*, 1, 265-343.

Wildavsky, A., & Dake, K., (1990). Theories of Risk Perception: Who Fears What and Why?

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