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"A Deep Ecological Analysis on th Imminent Application of Artificial Intelligence in achieving UN Sustainable Development Goals for the Environment"

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Abstract: Artificial Intelligence has its advantages and disadvantages when applied to the environment. The former has been recently considered to offer AI as a mitigating tool for ecological destruction, but what is more concerning here is the latter as the proliferation of AI as an environmental threat becomes more apparent. While, four out of the seventeen agendas of the United Nations Sustainable Development Goals for 2030 promote environmental sustainability, i.e., the SDGs 12-15. Yet it was more viewed as a tool than as a threat to the environment. This becomes a question of whether these four SDGs prioritize human interests over the welfare of the natural environment, especially in light of AI's positive role in SDGs 12-15 implementation. Meanwhile, in the 1970s, Arne Naess advocated a deep ecological movement to counter the Western Environmental Policies, as he deemed them Shallow Ecological Policies–laws that he believed could not attain a significant change in the behavior of the people. Thus, this paper wishes to critically analyze the UN SDGs 12-15 on its portrayal of potentially accepting Artificial Intelligence as a key solution for environmental sustainability via Arne Naess' Deep Ecology. I contend that if UN SDGs 12-15 develop its acceptance of AI, it will only intensify its anthropocentric impression, which could not make a positive change in the hopes of mitigating the threat of AI to the Environment. Thus, by integrating the insights from the Deep ecological movement of Arne Naess, it could propose a framework that could pave the way for ecological thinking in the age of AI. Lastly, this paper also hopes to present a deeper philosophical understanding of the interplay of UN SDGs, AI, and the Environment for a more sustainable future.

Key Words: AI, Environment, UN SDGs 12-15, Deep Ecology, Arne Naess

1. INTRODUCTION

As environmental activism in the 1960s, people began to show more concerns about the effect of climate change. Typically, debates on this topic are

usually linked to the two disciplines, i.e., Science and Ethics—as environmentalists see this concern requires an ethical response brought by technological advancement (Calicott & Frodeman, 2009). To heed this call, the Norwegian Philosopher, Arne Naess provided his response and developed Deep Ecology in 1973 as his form of radical environmental movement which mainly opposes Western environmental policies—typically offers mitigation to the issues, yet Naess deemed it as having an Anthropocentric element that does not truly address to the pressing issue of the global environment—which he then termed as Shallow Ecology—where its movements only care for nature with reason of it is being understood as a utility or resources for humans (Zimmerman, 1993). Naess believes that such merely focuses on "technological optimism, economic growth, and scientific management" and not on how one should relate himself to nature. Having said that Deep Ecology, on the other hand, addresses the ecological issue from philosophical, social, and political standpoints (Naess, 2005). A more radical approach that hopes to provide a more significant solution to the issue of environment.

Decades have passed since Deep Ecology was established, and undoubtedly its principles are still relevant in today's environmental problems as similar problems remain until today. However, one may argue that in today's setting, there are certainly ecological concerns that would be unfamiliar to Naess. One of which is the growing threat of Artificial Intelligence towards the environment—as during his time it was more on the dilemma brought by rapid industrialization. However, while it is true that Artificial Intelligence has long existed already in our phenomena, it is worth noting that these were not a concern for most environmentalists back then, as the capabilities of Artificial Intelligence were still limited. Currently, people have over-reliance on the usage of Artificial intelligence as such is being utilized in diverse fields of human applications as it performs reasoning, problem-solving, decision-making, and, other tasks that are usually done by human intelligence (Mabaquiao et al, nd, p. 4). Fortunately, or unfortunately, we have already arrived at a generation where people have begun embracing Artificial Intelligence due to the benefits that it offers—even for the environment.

Most works of literature at present focus on the benefits of Artificial Intelligence in mitigating the problems of the environment such as climate change. As a matter of fact, these literatures expand the possibility of integrating Artificial Intelligence as a key tool for achieving the goals of United Nations Sustainable Development Goals, especially those goals that focus on the environment namely, SDG 12 which aims for responsible consumption and production, SDG 13 for climate action, SDG 14 on life below water, and lastly, SDG 15 that concerns life on land (United Nations, nd). Although the United Nations does not have a direct claim on integrating Artificial Intelligence to alleviate environmental problems which then could be applied to SDGs, yet considering the development of positive impacts of AI on the environment, it is reasonable to say that it has a high chance of integration in the years to come.

But then again, one cannot escape the fact that such Artificial Intelligence does indeed impact the environment negatively. We cannot deny the fact that damage is far more obvious than its benefits. Hence, with this growing threat of Artificial Intelligence towards the environment, it is only fitting to say that the United Nations must not embrace such application of Artificial intelligence, otherwise, they will just come off as permissive of environmental destruction.

Thus, this potential endorsement of the UN of Artificial Intelligence to achieve SDGs 12-15 will be critically analyzed using Arne Naess's Deep Ecological principle in order to reveal the anthropocentric nature that obscures the goal of sustainable development of the environment.

2. The Environmental Impact of AI

It could be observed that this kind of discussion lacks interest for the majority of the scholars knowing that the impact of Artificial Intelligence on the environment still lacks clarity at present. Also, there might be a more important issue in the contemporary world that needs to be addressed than having this topic—e.g., social inequalities, war, human rights, and the like (Jose, as edited by Mabaquiao, nd, p. 186). But despite the vagueness that it presents due to minimal scientific claims and the lack of interest brought by being unnoticed with more apparent global issues, one thing is for sure, i.e., there is a clear negative impact of AI on the environment.

According to a report from UN, there are four major effects of Artificial Intelligence on the environment—i.e., Data Centres, E-waste, Water Consumption, and Excessive Energy Consumption (UN Environmental Programme, nd). Primarily, it comes from the Data Centres which serve as the location for service providers, that use microchips for their computers that require 800 kg of raw materials from mining.

Second, electronic waste (e-waste) as AI hardware is overused, it results in being easily damaged and does not last long, such waste uses mercury, and lead and is claimed as hazardous for the ecological whole if not disposed of properly as it contains dangerous materials that cause global warming (UN Environmental Programme, nd). Data says that electronic waste attained 53.5 million tons in the year 2019 and it is anticipated that 75 million tons in 2030 (Thangam, et al, 2024). Hence, recycling is necessary so as to mitigate such waste that mostly ends up in landfills.

Third, is the overconsumption of water to cool down the temperature of the machines to stop the servers from overheating during their usage of energy (Thangam et al, 2024). Apparently, it has been estimated that using AI infrastructure may soon consume 6 times more water than Denmark and it is alarming that many people in the world are thirsting due to the lack of access and clean water sanitation (UN Environmental Programme, nd).

Lastly, on the Excessive consumption of Energy, it has been studied that using Artificial intelligence consumes 10 times the electricity from a Google search (UN Environmental Programme, nd). In addition, this machine Learning Artificial Intelligence requires a substantial amount of energy for data processing and data storage, nearly 300,000 kg of carbon dioxide is equivalent when one is using natural language processing (NLP), which would mean that it is five times what a car produces over its lifetime (Coeckelbergh, 2020, p. 2).

Now, with the data given above presenting an alarming threat of AI to the environment, a study has been presented that despite its threats, “The number of data centers worldwide has surged from 500,000 in 2012 to over 8 million, with energy consumption doubling every four years. The rise in internet penetration rates and the introduction of 5G technologies and Internet of things (IoT) devices will further exacerbate the issue, increasing the demand for data processing.” (UN Environmental Programme, nd). In this manner, it manifests that industries of Data Centres present themselves as Technocentric(Wealth, 2019) — which values technology over ecology in favor of economic development.

Having said that, the irreversible growth of Artificial Intelligence would eventually lead to its embracing in society especially since its negative effects on the environment are being outweighed by its beneficial ones. Such as using AI as a reduction for disaster risk, for it could analyze and predict natural disasters, e.g. tsunami alerts. AI could also support conservation efforts as it could analyze large datasets through the use of drones. Also, AI could be an aid for environmental policies as it could provide faster data-driven solutions for environmental challenges (Schneegans, 2019). These functions of AI are only one of the numerous beneficial effects that have been discovered through studies. This only serves as a sign that it will be completely utilized by humanity and even governmental entities to achieve environmental sustainability.

3. Integrating Deep Ecological Principles on UN SDGs

A decade (1984) after Arne Naess developed Deep Ecology, his follower George Sessions came up with an eight-point platform that summarizes the aims of the movement:

> 1. The well-being and flourishing of human and nonhuman Life on Earth have value in themselves. These values are independent of the usefulness of the nonhuman world for human purposes.
> 2. The richness and diversity of life forms contribute to the realization of these values and are also values in themselves.
> 3. Humans have no right to reduce this richness and diversity except to satisfy vital needs.
> 4. The flourishing of human life and cultures is compatible with a substantial decrease of the human population. The flourishing of nonhuman life requires such a decrease.
> 5. The present human interference with the nonhuman world is excessive, and the situation is rapidly worsening.
> 6. Policies must therefore be changed. These policies affect basic economic, technological, and ideological structures. The resulting state of affairs will be deeply different from the present.
> 7. The ideological change is mainly that of appreciating life quality.
> 8. Those who subscribe to the foregoing points have an obligation directly or indirectly to try to implement the necessary changes. (Naess, 2005)

Having these eight-point platforms it provides an understanding that the principles of Deep ecology differ from those other environmental movements that fail to deliver a substantial change in the ecological consciousness of the people. First, it offers an ecocentric approach whereas other environmentalists simply counter anthropocentrism. By having an ecocentric attitude it offers the idea that every living organism has its value. Second, Deep ecology is not simply a philosophy from a theoretical standpoint but it takes philosophy in a practical manner where Naess strongly proves his point that his movement is a form of activism (Naess, 2005) —that social change is needed to fight the upheavals of the environment, especially from selfish perpetrators of its degradation for the sake of personal interests (Migle, 2019).He then adds that the other environmental movements do not provide a significant change as they fail to grasp the real need as he sees this as simply an "elite concern" (Rootes, 2008). Which results from not considering those underrepresented. Consequently, for Naess when movements fail to have these principles, they are then within movements of Shallow Ecology.

In the 6th platform, he stated the need for changing policy as it has been insisted upon so that the aims of deep ecology will be attained. Deep ecology during its time criticized the ideologies on the environment as it is valuable in the market economy (Naess, 2005). Hence, it is necessary to take note that radical policies are important for Arne Naess Deep Ecological Movement.

Most experts have their anticipation that the UN SDG would embrace Artificial Intelligence as a tool for addressing environmental issues. Considering the number of benefits that it provides, it is worth assuming that it may occur soon. But the question arises: Does the potential acceptance of UN SDG on AI use to mitigate environmental concerns conform to the standard of the Deep Ecological Movement?

While Artificial Intelligence was still limited during the time of Arne Naess since during his time it was the rapid technological advancement brought by Industrization which activists have been protesting during the time of Arne Naess which they considered as the major factor for the adverse effect of the environment. But we have to take note that the aim of the Deep Ecological Movement is also known as *Long-range* ecology to be relevant not only during their time but also for the impending ecological crisis, i.e., the environmental impacts of AI.

Scholars observed that it focuses more on the benefits that AI offers for the environment, similar to how the EU AI Act was drafted—"We are told these benefits can be found in agriculture, biodiversity, and ecosystem conservation and restoration, and climate change mitigation and adaptation" (Warso & Shrishak, 2024). With this it manifests a downplay of the disadvantages that Artificial Intelligence brings and no sign of precautionary measures could be observed with respect for the environment.

According to Akamani (nd), the UN Sustainable Development Goal is deemed to focus more on economic growth than human needs. He adds, "The shortfalls associated with the lack of integrated approaches to sustainable development are best illustrated in policies on food, energy, and water resource systems where the pursuit of narrow sectoral approaches have often resulted in adverse consequences that threaten food, energy, and water security" (Akamani, nd, p. 6). Thus to answer the question posed above, Arne Naess then would consider UN SDG as a Shallow Ecology.

Despite such, this paper still suggests that, for UN SDG to be more relevant to the environmental concerns brought by AI, it is thus proper to adopt Deep Ecological principles so that such policies evolve not merely prioritizing the economic benefits of Artificial intelligence but rather focus on the holistic approach of ecological sustainability, i.e., not only for the selected few but for the every being—human and non-human. Ergo, it calls for an ecocentric approach.

Lastly, while at present, the United Nations SDGs do not directly endorse Artificial intelligence as a tool for mitigating environmental issues, in due time the UN SDG will perhaps embrace and certainly, it would only add optimism of reinforcing anthropocentric thinking—thus becoming more categorized as shallow ecology from the framework of Naess. Hence, UN SDGs 12-15 that seek environmental protection will remain an inadequate solution to ecological issues—as they only seek to protect nature as it serves as a mere utility that fails to uncover the intrinsic value of nature.

4. CONCLUSIONS

To end, the potential application of the UN SDG of Artificial Intelligence presents a Shallow Ecology. As the application of Artificial Intelligence only fails to lead to an ecological paradigm despite the positive effects that it offers, it could be denied that the negative ones are evidently observed. Thus, the latter has only been overshadowed by the former as experts assume that Artificial Intelligence from Big Tech companies could offer significant economic growth—a manifestation of prioritizing personal human needs over the ecological whole. As a result, AI-driven SDG solutions and the Deep Ecology of Naess are obviously in conflict. With this, the aim of UN SDGs 12-15 will only remain problematic for it being shallow. This simply relates to the reason why Arne Naess developed his movement in 1973—one may argue that this concern posed by AI towards the environment belongs to the long-range plans for ecocentric thinking proposed by Arne Naess's Deep Ecology.

6. REFERENCES

Akamani, K. (2019). Rethinking Sustainable Development Using Deep Ecology and Adaptive Governance of Social-Ecological Systems: Implications for Protected Areas Management.

AperTO - Archivio Istituzionale Open Access dell'Università di Torino. (2025). The Environmental Challenges of AI in EU Law: Lessons Learned From the Artificial Intelligence Act (AIA) With Its Drawbacks [Journal-article]. *Transforming Government: People, Process and Policy*, 1–13.

Calicott, J. Baird and Frodeman, Robert. (2009). Encyclopedia of Environmental Ethics and Philosophy editors in chief Macmillan Reference USA/Gale Cengage Learning Farmington Hills, Mich.

Coeckelbergh, M. (2020). AI For Climate: Freedom, Justice, and Other Ethical and Political Challenges. *AI And Ethics*, *1*(1), 67–72. https://doi.org/10.1007/s43681-020-00007-2

Jose, Joseph Martin (nd) "AI for the Environment? A Sketch of Ethical Considerations", in the book AI Ethics: Primer for Filipinos, ed Napoleon Mabaquiao, Unpublished.

Laukyte, M. (2019). Against Human Exceptionalism: Environmental Ethics and the Machine Question. In *Philosophical studies series* (pp. 325–339). https://doi.org/10.1007/978-3-030-01800-9_18

Naess, Arne. (2005). The Basics of Deep Ecology. *The Trumpeter*, *21*(1). Retrieved from https://trumpeter.athabascau.ca/index.php/trumpet/article/view/44.

_____. (2005). "The Deep Ecology Movement: Some Philosophical Aspects". In The Selected Works of Arne Naess, ed. Drengson, A. *Dordrecht: Springer*: 33-55. https://doi.org/10.1007/978-1-4020-4519-6_88.

_____. (2012). The deep ecological movement : some philosophical aspects. In Roy Bhaskar, Ecophilosophy in a world of crisis: critical realism and the Nordic contributions. New York: Routledge, Taylor & Francis Group.

_____. "The Shallow and the Deep, Long-range Ecology Movement. A Summary*," Inquiry 16, no. 1–4 (January 1973): 95–100, https://doi.org/10.1080/00201747308601682.

Schneegans, S. (Ed.). (2019). *ARTIFICIAL INTELLIGENCE FOR SUSTAINABLE DEVELOPMENT: Challenges and Opportunities for UNESCO's Science and Engineering Programmes*.

Thangam, D., Muniraju, H., Ramesh, R., Narasimhaiah, R., Khan, N. M. A., Booshan, S., Booshan, B., Manickam, T., & Ganesh, R. S. (2024). Impact of Data Centers on Power Consumption, Climate Change, and Sustainability. In *Advances in computational intelligence and robotics book series* (pp. 60–83). https://doi.org/10.4018/979-8-3693-1552-1.ch004

The European Parliament & the council of European Union. (2024). REGULATION (EU) 2024/1689 of the European Parliament and the Council laying Down Harmonised Rules on Artificial Intelligence and Amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828 (Artificial Intelligence Act) (Text With EEA Relevance). In *Official Journal of the European Union* [Report]. http://data.europa.eu/eli/reg/2024/1689/oj

United Nations Environment Programme. (n.d.). AI Has an Environmental Problem. Here's What the World Can Do About That. UNEP. https://www.unep.org/news-and-stories/story/ai-has-environmental-problem-heres-what-world-can-do-about

United Nations, "THE 17 GOALS | Sustainable Development," n.d. https://sdgs.un.org/goals.

Warso, Z., & Shrishak, K. (2024, May 21). *Hope: The AI Act's Approach to Address the Environmental Impact of AI*. Tech Policy Press. https://www.techpolicy.press/hope-the-ai-acts-approach-to-address-the-environmental-impact-of-ai/

Wealth, Linus. (2019, January 24). *Ecocentrism & Technocentrism | Sustainable Environment Online*. Sustainable Environment Online | Environment Resources and Sustainable Development.

https://www.sustainable-environment.org.uk/Earth/Ecocentrism_and_Technocentrism.php

Zimmerman, Michael E. (1993). Environmental Philosophy: From Animal Rights to Radical Ecology. J. Baird Callicott et. al. ed. New Jersey: Prentice Hall, Englewood Cliffs