Tackling Environmental Problems: Are People and the Environment Antithetical?

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Abstract

In the era where human communities have been plunged into unprecedented environmental problems, scientists and policymakers have been forced to revisit and reflect on the relationship between humanity and the natural environment. In light of all these developments, fundamental questions have been asked, such as, should nature be left alone? Are humans separate from nature? Is it too late to turn back the clock? How can we tackle the climate crisis? At the core of these questions lies the issue of the human-environment relationship, with humans being both dependent on and simultaneously harming the environment. Although the dependence of humans on natural systems is acknowledged, there seems to be uncertainty about balancing human well-being, ecosystem, and environmental integrity. It appears as though these three factors cannot co-exist harmoniously. In this contribution, we discuss the axioms of the *environment and humanity* and extract lessons that can be used to address the increased environmental concerns that have challenged the world. We also present a rationale for using an interdisciplinary, holistic approach to address environmental problems, proposing a Nature-integrated in Whole Systems Framework. We argue that environmental problems cannot be successfully addressed without incorporating human dimensions and treating systems as wholes. We base our argument on the fact that the challenges facing humanity are so intertwined that addressing one issue without considering the others is futile. We propose that we need to integrate nature into every aspect of life.

Keywords: nature, holistic approach, interdisciplinary approach, human-nature relationships, environmental problems

1. Introduction

Even though problems such as climate change, land degradation, and poverty are widely recognized and have been prioritised for action, notwithstanding this, there seems to be very little transformative change. Although the necessary science and policies are often in place, practical application and implementation appear to be lacking. Despite extraordinary advances in science, many complex environmental challenges remain, and novel ones are emerging, leading to a sense of perplexity as to why we seem to be missing the mark. So, the problem is not necessarily that we do not have enough knowledge, but perhaps the approaches we use to address these problems. We have come to an important crossroads where we must navigate the future of our natural environment and future generations. Is it possible to turn back the clock? Can massive land degradation realistically be reversed? The rapid decline in the state of nature has led scientists to argue that transformative change is required in how societies relate to nature (Pereira et al., 2020).

Several practices, such as ecological restoration and conservation ecology, seem to only bring partial results, often focusing only on ecological components and systems without including human dimensions. While ecology can highlight the limits of an ecologically functional and diverse planet and the consequences of ignoring them, social science is necessary to diagnose societal mechanisms at work, how to correct them, and identify potential catalysts for social transformation (Martin et al., 2016). Though this is true, ecologists and social scientists do not always acquiesce; their approaches do not often synchronise and may even seem opposing. It is now evident that

addressing global socio-environmental challenges requires a multidisciplinary approach, as these issues are complex and interconnected, and cannot be effectively tackled by individual disciplines working in isolation (Liu et al., 2019).

These issues have led to major and heated debates regarding the course of environmental conservation. For example, in light of many technological advances that seem to improve many people's lives, there are apparent trade-offs in the development process between economic, social, and conservation goals. Will human actions always be inversely related to environmental integrity? Are nature and people intrinsically opposed, or is there perhaps something we are missing?

Power (2017) accentuates that these problems are born from both human nature and society. He argues that human action has brought us to this point, and any future ahead depends on how we choose to see nature and how we perceive ourselves in terms of nature. Some scholars (Wilson, 2016) think nature should be left alone to protect ecosystems. In contrast, some believe we should move away from protected nature reserves. Others who connect the sociocultural to nature think environmental issues are consequences of human social life (Power, 2017). The big question is: are our approaches to addressing environmental issues adequate? Are they actually working?

Empirical evidence suggests that adopting a holistic approach to environmental protection and management leads to greater, richer, and more beneficial outcomes (Abdullah et al., 2019; Funtowicz & Ravetz, 1993). A holistic approach to environmental issues entails recognising the inter-connectedness of issues as they affect the environment. Too often, we try to solve environmental problems through quick fixes that focus on the symptoms rather than the root of the problems. We need to instead endeavour for more fundamental changes built on a deeper understanding of socio-political challenges and ecological dynamics (Brunner & Urenje, 2012). The reductionist approach of dividing the environment into different components and treating them separately is no longer sufficient to solve global environmental crises.

Many scholars have recommended a holistic approach, especially in nature-based initiatives; however, few studies have given a rationale or scope with details of how a holistic approach can be applied. In this paper, we discuss the axioms of nature and humanity and their implications for conserving our natural environment. We argue that a lot can be solved by connecting back to nature; thus, we urgently need to revisit and rethink our relationship with nature. We also introduce the concept of "Nature-integrated in Whole Systems Framework", claiming that nature should be included in every aspect of life, and we provide a rationale for using a holistic approach to solving environmental crises. In this context, we also emphasise the need to move away from solo discipline and practices to a pluralistic holistic approach to effectively deal with issues affecting our environments. Global environmental issues such as climate change affect all parts of the earth's systems and require expertise beyond any academic discipline's scope (Daley & Kent, 2015).

The paper is structured as follows: We start by discussing the different beliefs held about nature, the environment, and environmental problems and the implications of these beliefs. We then discuss the underlying causes of these problems and why we need to use a holistic approach, including a call to change our environmental behaviour. Finally, we present a framework for integrating nature into every aspect of life. We argue that we must incorporate nature in every sphere of society, from homes to schools to town planning and health and technology. We propose a framework called: "Nature-integrated in Whole Systems," basing our argument on the axiom that nature and people are intimately interlinked, so interlinked that one cannot live without another. The framework acknowledges the complex interdependencies between social, economic, and environmental systems and the necessity to address these interdependencies in a comprehensive and coordinated manner. To support our argument, we draw upon relevant literature, including studies on the interrelationship between human well-being and ecosystem integrity and examples of nature-integrated approaches to environmental management.

2. Methods

We conducted a targeted literature review on various schools of sustainable thinking to explore claims made about views of nature, human-nature relationships, causes of environmental issues, nature-integrated approaches, systems thinking, and holistic and interdisciplinary approaches to tackling environmental crises. A targeted literature review method entails a focused search of relevant literature within a specific research subject. We used a combination of electronic databases such as PubMed, Scopus, Web of Science and Google Scholar to search for relevant articles. Our keywords included: "nature perception", "ecology", "sustainability", "integrated approaches", "ecological psychology", "green infrastructure", "holistic approaches, "environmental problems", among others. We also manually searched the reference lists of selected articles to pick out other relevant studies. All literature was scrutinized, relevant themes were extracted, and the findings were then synthesized to provide an overview of

the current state of knowledge on the perception of nature and nature-integrated approaches, tackling environmental problems, and identifying the gaps in research on nature-integrated approaches. We then used the information to develop a conceptual framework addressing the gaps identified.

3. Understanding the Value and Perceptions of Nature/Environment

The way nature, biodiversity, and ecosystem services are conceived and valued vary across cultures and societies (Pereira et al., 2020) because of different philosophical views and schools of thought (Gardner & Bell, 2007). So, the perception of the natural environment is subject to contrasting and sometimes contradictory interpretations, which are influenced by individuals' fundamental beliefs. Therefore, the word 'environment or nature' carries a range of connotations and is intertwined with implicit but deeply held assumptions and beliefs (Daley & Kent, 2015). Hence, nature means different things to different people. Due to confusion in using these concepts, some people have asked questions such as; do people exist for the environment, or does the environment exist for the people? The answer to these questions highly depends on a person's belief system and religious views.

The current crisis pertains to what people perceive as natural and unnatural and their perception of the environment. According to Grumbach & Hamant (2020), some people perceive their natural environment as controllable through scientific means and at the service of humanity. Thus, there are two prevailing schools of thought regarding the value of nature: non-utilitarian approaches that prioritize the aesthetic, emotional, spiritual, and ethical values of nature, and utilitarian approaches that prioritize the species and ecosystems as resources or service providers for human use (Loreau, 2014). Loreau (2014) contends that the fundamental cause of the division between the two schools of thought is the notion that humankind is separate from nature, which is also the underlying factor behind the global ecological crisis. According to Loreau (2014), neither perspective challenges this separation fundamentally; therefore, neither alone offers a solid foundation for biodiversity conservation. While one school of thought prioritize the ecological aspect whilst neglecting human interactions, the other group perceives nature solely as a commodity without intrinsic value. Hence, the primary challenge lies in striking a balance between the two schools of thought.

In general, the analysis of environmental philosophies has tended to conceptualise these philosophies as either ecocentric or anthropocentric (Kopnina et al., 2018), and there exist extremes on both ends of the spectrum. Since the introduction of environmental ethics, there has been discussion and debate about whether values in nature are anthropocentric (human-centred) or ecocentric (Kopnina et al., 2018). These beliefs have enormous implications for how we treat and value nature. Some scientists (e.g. O'Connor & Kenter, 2019; Vucetich et al., 2015) have argued that nature has intrinsic values despite its benefit to humans. Some consider the idea that certain aspects of nature have intrinsic value as a fundamental principle of conservation; however, others do not necessarily hold the same postulate. Vucetich et al., (2015) emphasised that acknowledging nature's intrinsic value is not misanthropic because concern for nature's welfare does not exclude being concerned for human welfare. Therefore, it is possible to express concern for both human welfare and the welfare of the natural world. According to Ducarme & Couvet (2020), the idea of 'nature' is at the core of science, considered its flagship and most profound link with human societies. However, while safeguarding nature has become a major social concern, the idea of nature remains elusive. One of the fundamental questions in conservation science is whether people perceive themselves as separate or part of nature.

3.1 Axiom 1: Is Humanity an Entity Outside the Natural Environment?

According to Loreau (2014), the notion that humans are separate from nature is one of the most dominant and influential myths in modern Western society. Even though it lacks significant scientific evidence, it is deeply embedded in modern philosophy, science, technology, and economy. Vining et al., (2008) argue that the connection between defining oneself as natural or unnatural may have repercussions for environmental action. Some people may also see themselves as part of nature and yet see nature as a non-human world. So, one's perception of nature determines their attitude towards nature, which may either be beneficial or detrimental to nature.

While nature is often seen as separate from humans and society, this is only one way of conceptualising it. Furthermore, because humans have physical bodies, they physically interact with nature, and through this interaction, nature is constantly remade or reconstituted, which again suggests that it is unrealistic to think of nature as something separate from humans (Buckingham & Turner, 2008). Dalrymple (2022), in her article "Are humans separate from nature," challenges us to think about our ethos regarding nature. She argues that we are not separate from nature and are certainly not exempt from ecological processes. Humans are intricately connected to the environmental landscape within which our daily lives unfold. It follows that it is not particularly helpful to conceptualise the environment without including a notion of a relationship with humans. Even many ecologists

have fallen into the trap of exemptionalism, where they define natural processes as excluding anything that is modified by humans.

4. Connecting Back to Nature

Resolving the current ecological crisis necessitates, first and foremost, a reconciliation between humans and nature. This will require refocusing both human development and nature conservation on fundamental human needs (Loreau, 2014). Human nature is neither profoundly selfish and utilitarian, nor fundamentally altruistic and non-utilitarian; humans merely have fundamental needs that require fulfilment (Loreau, 2014). Like all living organisms, these needs are met by nature, including respecting and loving the world around them. It should be acknowledged that humans and nature are co-dependent and interconnected components of the earth system, with some resilience when a disturbance is at low levels (Wang, 2020).

Vining et al., (2008) argued that people should stop building borders between themselves and nature. These human-perceived barriers must be removed to protect the whole environment successfully. An individual's degree of concern for the environment is directly associated with the sense of connectedness the individual feels with nature (Vining et al., 2008). It has been suggested that a positive human-nature relationship is essential for countering today's environmental problems (Liefländer et al., 2013)..

According to Balázsi et al., (2019), an emotional and experiential connection with nature has many positive results for human well-being, and pro-environmental behaviour may promote conservation initiatives of natural and cultural heritage within landscapes. Nature should no longer be treated as an external, exploitable domain (Escobar, 2002), not if we want to keep it. Undoubtedly, one of the main areas in which dramatic cultural change is needed is our relationship with nature. Seifert (2021) emphasised that the climate change emergency has brought forward the need to rethink how humans interact with the environment.

According to Commoner (1972), any living thing that expects to live on the earth must fit into the ecosphere or perish. The environmental crisis indicates that the finely sculpted fit between life and its surroundings has begun to disintegrate. As the connections between one living thing and another, and between all of them and their environments begin to break down, the dynamic interactions that support the whole have begun to weaken, and in some places, stop. It seems technology has created an environment for humans devoid of nature which creates a kind of oblivion in our relation to the environment, though biologically, human beings participate in the environmental system as subsidiary parts of the whole (Commoner, 1972). Thus we need to be re-educated regarding our relationship with nature. The exploitation of our environment and aspiration to live in a way that is demonstrably and completely unsustainable evidence our disdain for our interdependence with nature (Dalrymple, 2022).

Commoner (1972) likens the environment to a vastly complex living machine that creates a thin dynamic stratum on the earth's surface, and every human action depends on the integrity and the proper operation of this machine. Without plants, there would be no oxygen for our engines, smelters, and furnaces, and no support for human and animal life. "This machine is our biological investment, the basic apparatus on which our total productivity depends." If destroyed, even our most sophisticated technology will become worthless, and any economic and political system that depends on it will fail. The environmental crisis is a signal of this imminent tragedy.

5. Understanding the Interacting Complex Causes of Environmental Problems

Many scientists have put forward explanations for the causes and potential solutions to the environmental problems we face today. However, due to differences in beliefs regarding nature, economics, and politics, individuals may hold opposing views on the root causes of these problems and the most effective approaches to addressing them (Commoner, 1972).　While some scientists (Beckrich, 2013) believe that most environmental problems can be traced to human population growth and consumption patterns, others believe this is not necessarily the case. For example, Commoner emphatically declared that environmental impact is not correlated with the population growth rate. He debunked the theory that environmental degradation is primarily due to population growth and claimed that the data does not support it. Pinker noted that although the global population has notably increased in recent centuries, this has not automatically led to an inevitable environmental decline. He gave examples of nations such as Japan and the Netherlands, with high population sizes but have managed to maintain a healthy environment. In order to effectively distinguish the nature of causes, it is crucial to consider both ultimate and proximate causes. One must look at the underlying factors to accurately diagnose a problem. Just merely looking at the symptoms and not the roots will not be practical. There is an urgency for a deeper knowledge and awareness of the roots of

the environmental crisis and its possible cures.

Environmental problems often occur due to the interaction of multiple factors, meaning that degradation cannot be attributed to any single cause. The direct drivers are mainly physical, chemical and biological, but social, political, and economic processes also have distinguishing scales, which may vary widely in duration and extent (Alcamo et al., 2003). Those of ecological and socio-political processes do not often complement. Many environmental problems originate from this mismatch between the scale at which the ecological process happens, the scale at which decisions are made, and the level of institutions for decision-making (Alcamo et al., 2003). Some problems may need interventions at the national level, some may require policy changes and mainstreaming, and some may only be location and context-specific. In the same light, some interventions at the global level may lack both the relevance and credibility necessary to lead to changes in ecosystem management at the local scale where interventions are needed (Alcamo et al., 2003). Addressing environmental problems involves multiple dimensions, and the outcomes at a particular scale are repeatedly shaped by the interplay of ecological, socio-economic, and political factors from other scales.

Thus, concentrating exclusively on a single scale will likely miss interactions with other scales vital in understanding ecosystem determinants and their implications for human well-being. We must redefine or rethink how we define these problems and their causes. First, there should be an acknowledgement that the causes of these problems are multiple in scale and dimensions. According to Commoner (1972), we have become accustomed to thinking of separate, singular events, each determined upon a specific cause, but in the ecosphere, every effect is also a cause.

Given the many recognised social ills of inequality, it is often assumed that inequality is a significant factor to consider when predicting biodiversity loss (Kopnina et al., 2018). According to Kopnina et al., (2018), the contention that inequality is a major cause of unsustainability is best understood as an item of faith and an expressed wish. Furthermore, the evidence does not support the assumption that economic development and higher income levels can mitigate biodiversity loss through improved willingness and affordability to implement measures such as protected areas (Kopnina et al., 2018). There are deeper causes contributing to inequality that should be addressed, including recognising that increasing the standard of living and decreasing inequality does not necessarily mean damage to nature will decrease. Among many factors, poverty has also been highlighted as a cause of environmental degradation.

5.1 Axiom 2: Does Poverty Lead to Environmental Degradation?

Much debate surrounds the poverty-environmental degradation relationship (Duraiappah, 1996). The prevalent school of thought contends that poverty is a significant cause of environmental degradation, and if policymakers want to address the environmental issues, they must first address the poverty problem. According to Masron & Subramaniam (2019), poverty is among the principal sources of environmental damage across countries. As a result, those who are poor tend to overuse the resources unsustainably, and it can trigger destruction to the environment. Some viewed poverty and environmental problems from a broader perspective and expected poverty to be the primary cause of environmental degradation in developing nations. Though many view poverty as a cause of degradation, this is simply a mere assessment of the outside. A combination of factors, such as past environmental injustices, poor policies, etc., may have caused poverty. Poor people may be responsible for 'hands-on' environmental degradation, but is it because they are irrational to persist in a behaviour that degrades the environment? Not at all. Poverty, debt, and a struggle for survival are yet another of the ultimate causes that motivate such behaviours (Shaw, 1989).

The axiom that poverty is caused by economic underdevelopment and that the problem can be solved through economic development, such as increasing investment, creating jobs, or improving the general standard of living, is also common and dangerous (Yapa, 2002). Yapa (2002) argues that poverty is not necessarily a result of a lack of development, poor technology, or scarce resources but a typical manifestation of the very process of economic development that is supposed to cure it. As it is then, "development contributes to modern poverty through "socially constructed scarcity" (Yapa, 2002). According to Peet & Watts (2002), those who emphasise more on the poverty factor must acknowledge that impoverishment is no more a cause of environmental deterioration than capitalism is. There is a danger in neglecting the obvious power of capital as a material force in degradation and only blame the poor, who are often the victims of capitalism. This points to the need for rethinking conservation and development (Peet & Watts, 2002).

According to Chaigneau & Schill (2022), multidimensional poverty can affect how individuals and communities behave toward the environment by, for example, restricting capabilities and choices. When it comes to matters of life and death, individuals are driven to prioritize their own survival, even if it means harming the environment; if

alternative options are lacking. As it is, then, sometimes people do not have a choice or other options other than exploiting the environment. Therefore, in order to successfully address environmental problems, we have to consider the underlying factors, which in many cases include socio-economic aspects.

5.2 Axiom 3: Are Environmental Problems Social Problems, then?

As Zimmerman (1993) emphasised, ecological problems cannot be understood, much less solved, without resolutely dealing with societal problems. There must be a recognition that nearly all ecological problems arise from deep-seated social problems. Apart from problems caused by natural catastrophes, many economic, cultural, and gender conflicts lie at the centre of the most serious ecological dislocations we face today. Indeed, to separate ecological problems from social problems or give only nominal recognition to their crucial relationship would be to misinterpret the sources of the growing environmental crisis (Zimmerman 1993). In order to be able to understand environmental issues adequately, and among them, the very urgent issue of climate change, we need to consider human dimensions.

So, in essence, environmental problems are social problems. For example, according to Blaikie & Brookfield (1987), land degradation should be called a social problem because degraded processes imply social criteria related to land and its actual uses. All these ideas indicate that people will need to look at things through a different lens for a shift in their values and a tangible change in their behaviours toward the environment.

According to Buckingham & Turner (2008), the environment is a product of an interplay between social, physical, and natural processes. Our actions as human beings, organisations and communities are influenced by a set of cultures or practices that inform our worldviews. The natural environment will therefore be affected by these practices. Unfortunately, how we study ecosystems, investigate environmental management, and apply conservation measures continue to perpetuate the alienation of humans from nature (Dalrymple, 2022). We need to do something about this, and soon.

6. Why We Need a Paradigm Shift: A Call to Action

Societal values that are centred on development and that rely on technology to mitigate environmental problems have not fully addressed the environmental crisis central to conservation science. There is a need to address the environmental crisis in a holistic and social context. However, society and conservation science have tried unsuccessfully to resolve this need (Martin et al., 2016). Martin et al., (2016) highlight that humans need a fundamental shift in values that safeguard the transition from a growth-centred society to one acknowledging biophysical limits. Moreover, he emphasises a society central to human well-being and biodiversity conservation. This will require an integration of social and ecological sciences. According to Daley & Kent (2015), scientists have acknowledged that the study of environmental science and management should ideally be interdisciplinary, so that insights from many academic disciplines and scientific specialisms are available to inform their study of environmental issues.

Considering the amount of environmental damage currently occurring globally, we need to take our stance on concepts that will help bring real change. With the rise of technology and development, we have also seen a sharp increase in environmental degradation where people live. This indicates that development without environmental awareness, education, and planning could be counterproductive.

Ecosystem-related problems have traditionally been approached issue by issue but rarely by pursuing multisectoral objectives (Alcamo et al., 2003). This approach has not endured the test of time. Progress toward a single goal, such as increasing food production, has often been at the expense of progress toward other goals, such as conserving biological diversity or improving water quality. According to Drew & Henne (2006), conservation biologists now recognise the importance of culture and cultural diversity in conservation success. However, most conservation biologists are not trained in social science. There is a great need to integrate human elements into conservation programs that recognise human society's role in producing what we consider "natural" (Drew & Henne, 2006).

We need profound paradigm shifts, transformative change in governance systems, and a collective effort to address these issues. Collective action will be indispensable to safeguard vital systems and resources. The governments should commit to it as much as the people. According to Alcamo et al., (2003), good policy and management initiatives can often overturn ecosystem degradation and improve the contributions of ecosystems to human well-being, but knowing when and how to intervene needs a substantial understanding of both the ecological and the social systems involved. Better information cannot guarantee improved decisions, but it is a prerequisite for sound decision-making.

In light of the above background, we propose a framework for using a holistic, interdisciplinary approach to address environmental problems – The whole system Approach. We need to apply systems thinking and methods to ecological/environmental problems. Having realised that the interactions between the environment and society are complex, the environmental solutions require not just ecological and scientific approaches but also historical, political, ethical, and economic approaches (Edwards, 2019). Furthermore, we propose the Nature-integrated in Whole Systems Framework, arguing that we need to synthesise nature in every sphere of human life to sustain our natural environment and ensure continued support. We give a rationale for including nature in everyday living in many different human activities. The two interrelated frameworks are outlined below.

7. A proposed Framework for a Holistic, Interdisciplinary Approach to Address Environmental Problems
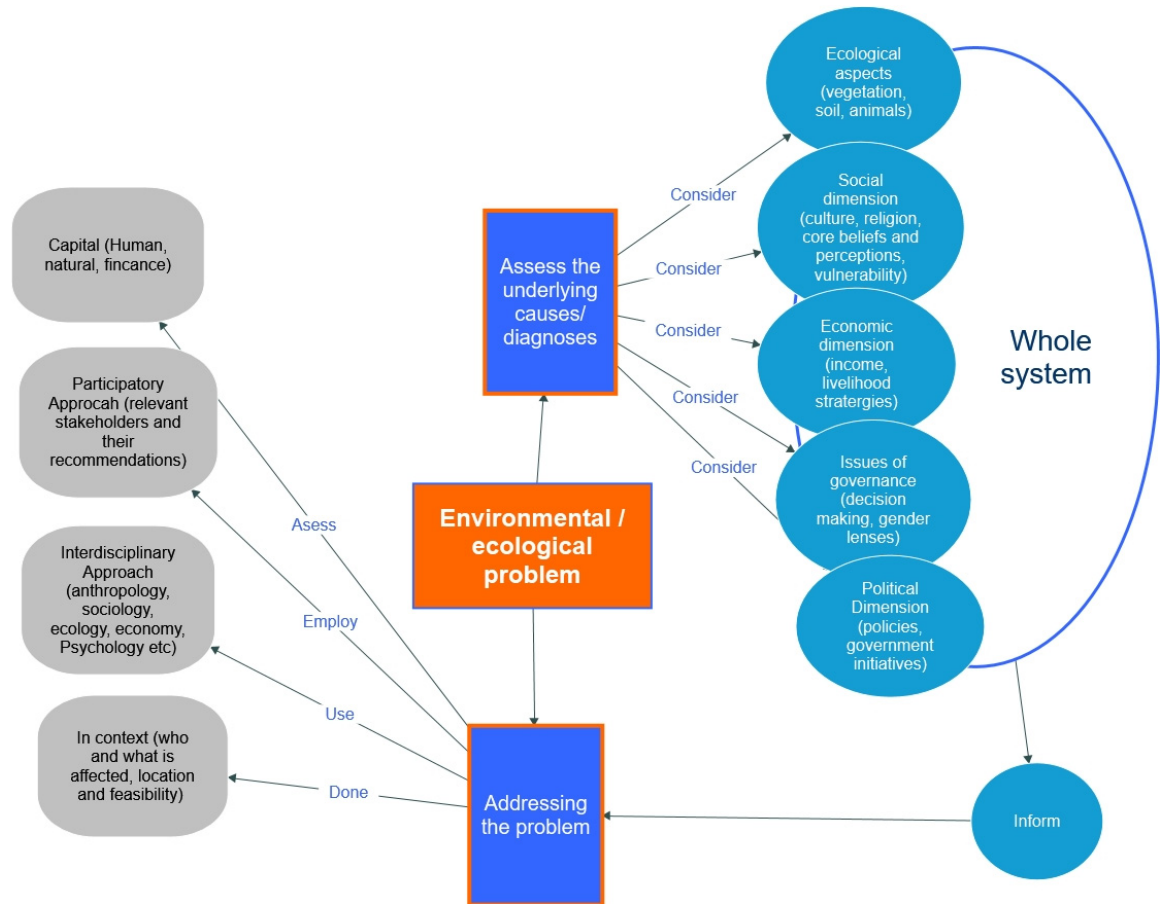

Figure 1. Framework to use a holistic, interdisciplinary approach to address environmental problems. The context is characterised by two crucial elements – *assessing the causes of the problem* and *addressing the problem*. The latter cannot be addressed successfully without addressing the former. Assessing the environmental problems will require considering a whole system represented by different dimensions*: ecological, social, political, economic, and governance*. On the other hand, in order to address the problem effectively, a participatory and interdisciplinary approach needs to be employed. Additionally, it is essential to consider the capital required, the feasibility, and the context of the problem. We expand on these elements below:

7.1 Understanding the Underlying Causes of the Problems and Using an Interdisciplinary Approach

In the past, responses to environmental and biodiversity problems have remained mainly within the environmental sector, failing to tackle their underlying causes. We argue that proper problem-solving requires proper diagnosis, like a person going to a doctor for a whole-body check-up. In this context, we propose that a proper diagnosis must focus on a whole system and include the social-economic, political, historical governance, and cultural elements. The incursions on the environment are so powerful, numerous, and finely interconnected that although their damage is evident, it is challenging to discover the underlying causes (Commoner, 1972). Thus we need a whole

system *interdisciplinary approach*.

For example, because human behaviour is a critical determiner of environmental problems, science and technology alone cannot create the necessary solutions. We also need to assess human behaviours toward the environment. Behaviours that affect the environment are driven by human perceptions, attitudes, beliefs, values, communications, motivations, choices, and decisions (Malt, 2019). Malt (2019) claims that the root causes of environmental problems lie squarely within the domain of *psychological science*, as do their solutions. Psychological research is critical to understanding and influencing our response to environmental issues such as climate change (Clayton et al., 2016).

Furthermore, disciplines such as *economics* should play a critical role in meeting the sustainable development challenge. A central focus of economics is allocating scarce resources to meet desired goals, including understanding the production, distribution, and consumption of goods and services. Much of the work in environmental sciences focuses on environmental sustainability, while much of development economics focuses on alleviating poverty (Polasky et al., 2019). The two approaches must be integrated for better outcomes (Polasky et al., 2019). Additionally, anthropology may provide an excellent place to start understanding and addressing some of the most critical questions regarding environmental crises. This is especially important because anthropology seeks to understand all the interactions of political, cultural, and economic factors to fully explore the complexity of human-environmental interactions. Often, environmental interventions are viewed as a concern of the natural sciences. However, the social sciences can and should play an important role in ensuring a change in orientation amongst members of society to not only create awareness of the need for environmental preservation but also to develop knowledge and skills to ensure that they become active role players in environmental interventions (van der Westhuizen, 2021).

7.2 Using a Participatory Approach and Addressing Problems in the Context

In order to understand the deep causes and address the environmental problems, the relevant stakeholders must be engaged and allowed to participate at all stages and levels. For example, at community levels, scientists and researchers must collaborate with the communities to learn from and capacitate them. Integrating local and scientific knowledge will be critical to developing practical solutions to these problems. Scientific information cannot solely determine a policy issue concerning complex natural and social systems. It must be supplemented by other inputs from various sources, including life experiences and social norms (de Marchi & Ravetz, 2000). In this context, all interested or affected parties should participate in diagnosing and addressing the problems.

Social, economic, and environmental *context* is critical because it affects human attitude and agency. The effect of context on individual attitudes is especially important when considering how and when environmental policy gains support from the public (Huss, 2006). Furthermore, economic context is important in explaining the relationship between social groups and environmental concerns. Whatever the ultimate outcome, it must be wholly integrated into the local ecosystem. Therefore, the use and design of participatory approaches must be context specific. Furthermore, whatever is undertaken as part of participatory decision processes should be set within a broader political process. Therefore, the problems to be addressed relate not only to the structure of a particular exercise and its declared purposes but also to the meaning that it will have in a given context as well as to the broader processes which it will favour or hinder (de Marchi & Ravetz, 2000).

7.3 Considering the Capital Required to Address Environmental Problems

It is imperative to appreciate that solving environmental problems will require capital in some form or another. Therefore, sustainable development and environmental problems cannot be described independently from its financing (Panayotou, 1994). The capital required may be in the form of money, human or natural. To be sustainable, an initiative must ultimately be self-financed, even though it may need a short-term injection of outside funds to solve a cash flow problem. This can be challenging in developing countries, but the cost of reversing a problem should be assessed before taking further steps. First, it is important to assess what is on the ground, especially regarding natural and human capital. A bottom-up approach must be used to avoid undermining the potential of the stakeholders. A collective effort must be executed to implement practical initiatives for each unique circumstance. The intricacy of natural systems and the irreversibility of some environmental changes mean that substituting natural capital with other types is often not feasible or carries significant risks (European Environment Agency, 2015). Our economic, social, and decision-making systems have not yet sufficiently integrated the risks and costs associated with ongoing ecosystem degradation and the loss of ecosystem services (European Environment Agency, 2015). This is critical to solving any dilemma.

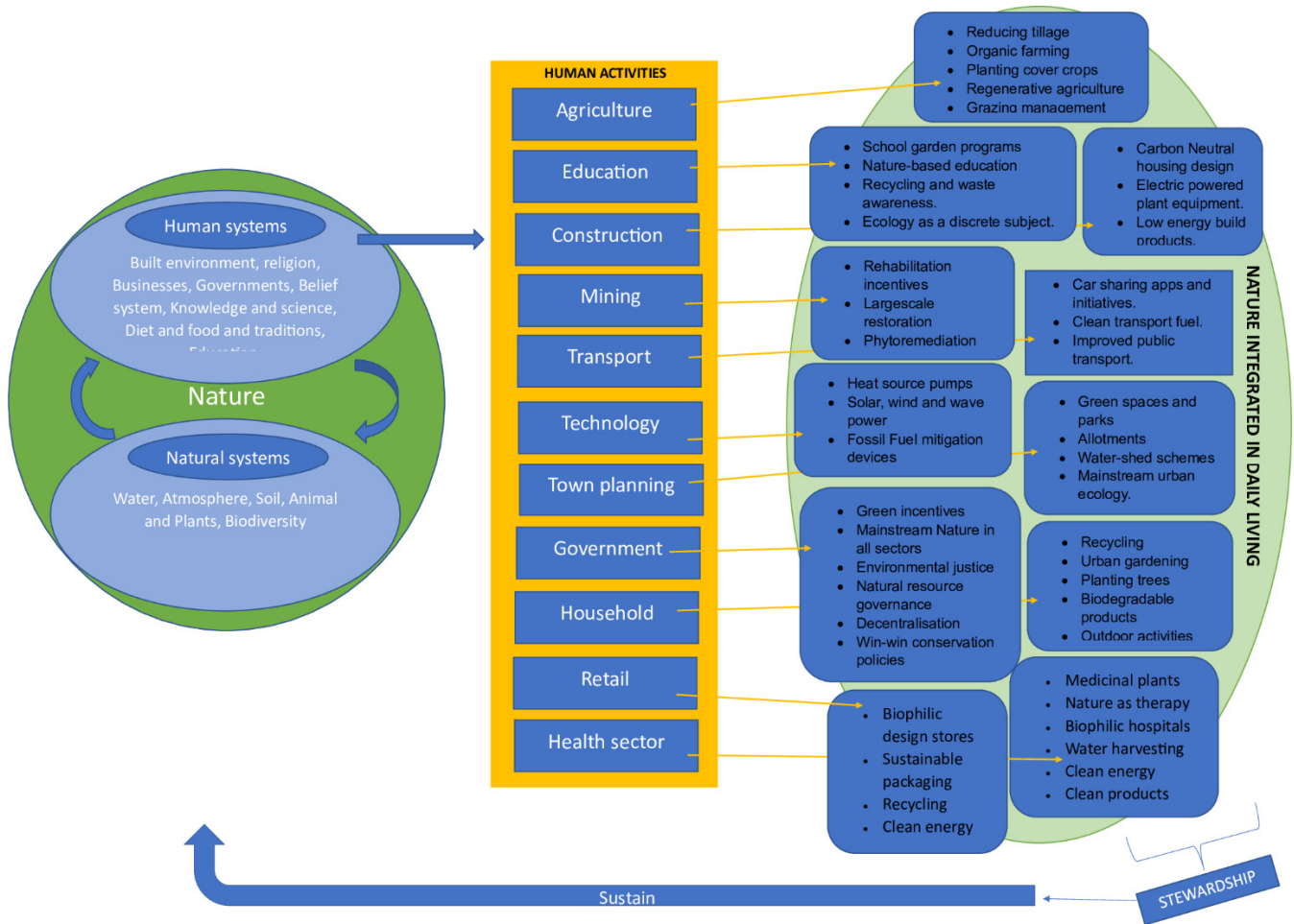## 8. A Proposed Framework for Nature-integrated in Whole Systems Approach

Figure 1. Framework of Nature-integrated in Whole Systems. This design's main characteristic is nature, which includes natural and human systems. Nature here is represented by a green sphere, in which the two systems are found. The next element is a list of human activities with arrows indicating how they can integrate nature into all these activities. An important part of this framework is human beings as stewards of nature. The main message is that if nature is synthesised in our everyday living, then we can sustain nature; however, it should come from an understanding that we are part of nature, and nature is part of us.

8.1 Human Systems Are Part of Nature, and Humans Are Stewards

Our perspective regarding nature and the relationship between humans and the natural world impacts our decisions, actions, and notions of environmental responsibility and consciousness (Chambers, 2008). At the core of nature, a profound interconnection exists between people who act as stewards of nature and who are also completely reliant on the natural world. It will be helpful to remember that humanity is housed by nature. Nature, the environment, is our home, and not only are we part of nature, but we are custodians of nature too, and the only organisms capable of environmental stewardship. This mindset needs to be instilled into the minds of everyone from a young age and integrated into every aspect of human life. We need to be re-educated through "hands-on experience" to see nature differently, not just as a thing of beauty but as part of our very self. Understanding how social and institutional change has influenced human-nature connectedness, in turn, provides important pointers for reconnecting humanity to nature (Balázsi et al., 2019).

8.2 Discussions on How Nature Can Be Integrated into the Human Activities Indicated in the Framework

In **agriculture**, many farmers are enhancing biodiversity while increasing productivity and employment potential through organic farming systems that also enhance the availability of wild foods. Organic farming can create

sustainable food systems for healthy farms, people, and a healthy planet. Increased translation to organic agriculture can contribute to reducing greenhouse gas emissions while also bringing essential benefits, such as increased system resilience to the effects of climate change (Organics Europe, 2022). Nature can be integrated into agriculture by implementing regenerative agriculture (Montgomery, 2017), grazing management, and minimal tillage (Ratanapet et al., 2020). The main idea is restoring soil health to sustain healthy natural environments, which is at the core of sustainable farming.

In **education**, ecology and environmental education could be offered as discrete subjects and incorporated richly into science and social studies. According to Chambers (2008), the experiences of children in school can influence their personal relationships with the social and natural world, and these relationships support their sense of social and environmental responsibility. Nature-based education must be introduced to children early to instil a love for nature. This does not need to be anything highly sophisticated, but it can start with elementary lessons, such as children understanding the importance of not dropping litter in open areas and understanding the importance of plants. So, we need to cultivate a love for nature in children and in young people so that they can value nature. Urban and rural schools should introduce outdoor activities, school gardens, water harvesting, and the use of clean energy.

In **construction**, initiatives such as carbon-neutral housing design, low-energy construction materials, and eco-homes can be used to reduce ecological footprints. The aim is to integrate the built environment with nature. One of the ways to maximise environmental performance is by adopting living building strategies (Hegazy et al., 2017). In this context, a building should be 'Living' when it attains some requirements such as generating its own energy on-site using renewable sources, capturing and treating its own water, constructed using non-toxic and sustainably sourced materials, and using only previously developed 'brownfield' sites (Hegazy et al., 2017). Other initiatives may include incorporating trees or garden areas along pathways or around buildings and using hedges. Water can then be harvested to water these green areas.

In **mining**, it is usually hard to balance income and environmental integrity, but the mining environment can emphasise large-scale restoration programs, such as using phytoremediation, prioritising and guaranteeing rehabilitation, and investing in green initiatives. Due to their isolation, most mining operations rely heavily on fossil fuels such as diesel, heavy oil, and coal for on-site generation. In principle, however, mining could use many clean energy solutions such as energy efficiency, energy recovery, renewable energy, and carbon capture (Igogo et al., 2020). Combining clean energy technologies would be necessary to completely address the mining industry's energy-related challenges. For example, several activities powered by electric power could shift to renewable energy sources and replace coal-fired activities with renewable electricity through electrification. They could also invest in hydrogen production where possible (Igogo et al., 2020).

In **transport,** the opportunities for cleaner energy and ultra-low-emission vehicle development are immense. The solution to the problem should be part of our new industrial strategy to be a dominant player in clean energy and ultra-low emission vehicles. Other activities include investing in clean public transport, car-sharing apps and cycling infrastructure.

In **technology**, it will be necessary to mainstream biodiversity in development. With the urgent, widespread, and systemic nature of climate change, technological innovations can be used synergistically with Nature-based Solutions to better adapt to its effects. Nature-related technology – nature tech should be embraced. According to Sanin (2019), using creativity fuelled by nature around us can promote systems that would enhance our experiences in life while being sensitive to the environment. More nature-based innovations, such as those focusing on heat source pumps, clean energy, and fossil fuel mitigation devices, are needed. Nature should be integrated into technology to ensure sustainability.

In **Town/urban planning**, efforts must be made to provide opportunities for people to interact with elements of the natural world in predominately built environments by integrating more green spaces or parks and nature trails and allocating spaces to be used as allotments by the residents in urban areas. Green spaces have many benefits, including reduced domestic violence, quickening healing times, reduced stress, improved physical health, and cognitive and psychological benefits in individuals (Tidball, 2012). Access to nature has been proven time and time again to increase health metrics (Jimenez et al., 2021). Regrettably, access to green space is inequitably distributed in many urban areas, leading to gentrification and, ultimately, displacement of those most vulnerable (Mcdonagh, 2022). We can learn a lot from England. London was a rapidly expanding city in the mid-1800s to late 1800s, and a solution needed to be found for the huge burgeoning population, so new urban towns needed to be created. Howard designed cities like Welwyn Garden City, designed explicitly with open areas incorporating elements of the environment, enabling the people to be in a town and still enjoy elements of nature. Howard had

this idea of planning towns with concentric circles. So, for example, in the inner circle, there would be shops and services, and then in the circle outside of that, there might be like a ring of trees and gardens, and then the ring outside of that, there might be offices, and then the ring outside of that might be another ring of gardens and trees, etc. The green belt in Garden City was made up of cultivated and uncultivated farmland and the provision of allotments in the town (Cabannes & Ross, 2018).

Governments should integrate the protection and restoration of biodiversity and ecosystem services into all policy agendas and strategies at all levels of government. All initiatives discussed above will require effort from the governments because the laws, policies, and regulations need to speak to these initiatives and provide an enabling environment for these initiatives to be implemented. There are many activities that governments can do to support nature integration in all sectors, such as supporting nature-based solutions for water and wastewater management, enhancing water use efficiency in agriculture, and sustainable freshwater extraction. Governments should also protect land tenure, empower indigenous communities, and ensure that action on biodiversity is part of conflict prevention, peacekeeping, and peacebuilding strategies. In addition, the governments might need to invest more in training communities and horticulture and providing them with water to grow food. The government might also need to invest in projects such as tree-planting campaigns to encourage people to care for the environment and offer green incentives to industries.

At the **household level**, families must invest in clean energy, environmental education, recycling, outdoor activities, and urban organic gardens. The most important role families can play is cultivating a love for nature in children at an early age and training them to be environmental champions, which will translate into a healthy environmental culture. Of course, the best place to learn to love nature is from home. However, people's living standards should enable them to do this.

In the **retail industry**, many companies have only recently begun to explore their impact on biodiversity loss, and only a few pioneering companies have published credible biodiversity strategies with robust biodiversity goals. However, many companies likely rely on natural capital, which can impact them somehow. Therefore, businesses should consider including biodiversity and natural capital in their mainstream risk register. Several experiments with small-scale units using natural dyes and medicinal plants demonstrate that sustainable use is possible and desirable. The main starting point will be to invest in initiatives such as biophilic stores, using clean energy to power production, maintaining zero waste, and supporting local nature conservation and planting trees.

In **health**, several activities can be undertaken to synthesise nature in health care, hospital building, and treatment. For example, nature within hospital infrastructure should become a feature in all areas of the national health system. For this, more emphasis can be put on building Biophilic hospitals. Biophilic design is not just a vegetation way in a place or space but a strategic implementation providing a specific pattern and a visual connection to nature (Messeidy, 2019). Biophilic design can diminish pressure and help humans be more creative and feel comfortable. In addition, it enhances healing and improves well-being. Biophilic design has demonstrated its benefits in various contexts, such as improving the working environment and encouraging children to learn. Other activities that can integrate nature into the healthcare sector include encouraging power operations with clean energy in hospitals, water harvesting, and biodegradable health products. The investment could also focus on medicinal plants and incorporating this in formal markets.

9. Conclusions

It is now common knowledge that humanity is living invalidly and that an unparalleled collective effort is needed to return human use of natural resources to within sustainable limits. There is no better way to do it than to reconnect to nature, steward nature, and invest in and restore nature. This will require a paradigm shift in our beliefs, actions, and environmental behaviour. It will require us to change policies, re-strategise and adopt new ways of doing things. There is no better time to start than now. Thus, we propose the two interrelated frameworks to solve our environmental crises using a whole system approach to ensure proper diagnoses and assess the underlying causes of our predicaments. We must be ambitious and adopt a nature-integrated approach, synthesising nature in all life activities. We should think of nature in our everyday activities to sustain our natural environment, which we are part and custodians of. Nature must be prioritised and tended to, as well as maintained. We, humans, have the moral obligation to do this.

The two frameworks are a working tool to build on more practical solutions to our environmental crises. Integrating nature into every aspect of life can promote sustainable development and enhance human well-being while safeguarding our natural environment. Integrating nature into daily life can also contribute to more sustainable practices. For example, by including natural elements and principles in urban planning, architecture, transportation,

and consumption patterns, we can decrease resource consumption, reduce waste generation, and promote renewable energy sources.#Additionally, the frameworks can encourage sustainable agriculture and land management practices to sequester carbon and reduce social cohesion. Furthermore, incorporating nature into our daily activities can foster community engagement and#social cohesion. For instance, creating public parks, community gardens, and nature-based recreational spaces can bring people together, encourage social interaction, and strengthen community bonds. The human-environment relationship is a complex and multifaceted issue requiring an interdisciplinary and holistic approach. Our proposed Nature-integrated in Whole Systems Framework recognizes the interdependencies between human, social, economic, and environmental systems and provides a comprehensive and integrated approach to address environmental problems.

Acknowledgments

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