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RESEARCH PAPER

Applying Critical Theoretical Frameworks to Understand Biodiversity Loss in India: Present Concerns and the Way Forward

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Abstract: The Centre for Science and Environment (CSE) report, *State of India's Environment, 2021,* indicated that India faced severe losses in its biodiversity hotspots, especially in the Indo-Burma biodiversity hotspot, where vegetation loss was an overwhelming 95%. The inordinate loss of biodiversity in India was further reaffirmed in the findings of the subsequent *State of India's Environment* reports. In view of such severe biodiversity loss, caused largely by anthropogenic activities, this essay seeks to apply perspectives and theories such as the value–belief–norm model and the theory of moral development to understand why and how attitudes, belief systems, and values influence environmentally significant individual, institutional, or group behaviour. The paper also advocates for a robust criminal liability regime that can create sufficient deterrence against government agencies, private corporations, and individual actors causing environmental harm and substantive biodiversity loss.

Keywords: Biodiversity hotspots, Biodiversity loss, Anthropogenic activities, Criminal liability, Value–belief–norm model, Theory of moral development.

1. INTRODUCTION

About 63 years ago, Rachel Carson, in her celebrated book, *Silent Spring,* indicated that human activities were endangering human health and causing widespread destruction of wildlife and its habitats (Carson 1962). Among other things, Carson's work emphasized the need to show concern for

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living organisms and raise public awareness of the inextricable link between public health and environmental pollution. Garrett Hardin echoed this concern in his famous essay, "Tragedy of the Commons", arguing that the Earth is facing imminent danger because of our unlimited use of the commons—the natural environment in which we all live (Hardin 1968). According to Hardin, people, to maximize their benefits, are overusing the commons so much that they are becoming ruined completely. Elinor Ostrom further explored this subject in her seminal work, *Governing the Commons*, where she employed a three-model approach to understand and analyse commons regimes and extended it to conceptualize the global commons (Ostrom 1990). Ostrom deviated from Hardin's approach and maintained that neither the state nor the market has the ability to govern the commons; instead, local communities are best suited to regulate their use through collaborative management and collective ownership. Interestingly, the one common thread running through the works of Carson, Hardin, and Ostrom is the need to protect and preserve the natural environment.

At the international level, Earth Day, first celebrated on 22 April 1970, marked the beginning of global environmental movements that advocated for protecting the deteriorating environment. Two years later, the Stockholm Declaration underscored the non-derogable obligation of nation-states and their citizens to promote and conserve natural habitats and ecosystems. Recommendation 40, read in conjunction with Recommendation 41 of the Declaration, obligated nation-states and UN agencies to ensure that genetic resources are preserved and that the loss of biodiversity (both species diversity and genetic diversity) is prevented. Nearly two decades after the Stockholm initiative, the three Rio Declarations—especially the Convention on Biological Diversity (CBD), 1992—redefined the conservation of species, genera, and ecosystems. The CBD also highlighted the need to ensure the sustainable use of diverse biological resources. The subsequent international dialogues and discussions—including the recent Kunming-Montreal Global Biodiversity Framework, adopted in December 2022—focused on the urgent need to reverse biodiversity loss (as well as other international environmental issues). However, despite these initiatives and the legal and policy instruments operating at the global level, biodiversity loss continues unabated. If data from the *Living Planet Report 2020* (WWF and ZSL 2020) are to be believed, biodiversity loss is occurring in almost all geopolitical regions, with Latin America and the Caribbean being the worst hit (Mulhern 2020). According to the *Living Planet Report*, the five major threats to biodiversity are (a) pollution, (b) species over-exploitation, (c) invasive

species and disease, (d) changes in land and sea use, and (e) climate change (Mulhern 2020). The report further indicated that many plant and animal species are facing extinction due to anthropogenic activities such as deforestation and intensive land use (Mulhern 2020). The findings of the *Living Planet Report* were, to some extent, reaffirmed by the findings of the 2021 Chatham House report named *Food System Impacts on Biodiversity Loss* (Benton *et al.* 2021), although the latter report identified the existing global food system as the primary cause of biodiversity loss (UNEP 2021).

Biodiversity loss is further exacerbated by the loss of genetic diversity, which plays a pivotal role in facilitating adaptive and evolutionary changes in species. Reports indicate a significant decline in genetic diversity due to factors such as inclement climate conditions and habitat degradation (Hoban *et al.* 2020). The decline in genetic diversity may also be attributed to anthropogenic activities (Chaudhary *et al.* 2022; Sanou *et al.* 2015). If the population size is small, chances of genetic diversity loss are greater; studies indicate that any population comprising fewer than 100 breeding individuals is more susceptible to genetic diversity loss, mainly because of the deleterious effects of inbreeding and other forms of genetic drift (Larson 2012).

As the fever of globalization, hyper-consumerism, and (un)sustainable development grips the world, society, individuals, institutions, and social groups have seemingly become oblivious to the need to protect ecosystems and the environment. Anthropogenic emissions, damming, global warming, and habitat loss continue to have adverse effects on our natural ecosystems (Riepe 2021). Human activities are primarily responsible for depleting our natural resources and disturbing the ecological balance (Zhang *et al.* 2021). Environmentalists have established that human activities significantly contribute to climate change and other environmental damage (Nordlund *et al.* 2016). Organizations, especially large corporate establishments, also tend to harm the environment and increase biodiversity loss (Ciocirlan *et al.* 2020). In addition, unsustainable urbanization and related urban living habits add to our environmental woes (Topal, Hunt, and Rogers 2021). One possible reason for the lackadaisical attitude of many institutions and individuals is a lack of awareness of the consequences of biodiversity loss. Another reason is that their attitudes, beliefs, values, and ethical considerations do not prioritize a vibrant ecology and environment and their contributions to various environmental traditions and heritage. Various reports confirming the depletion of rainforests; the degradation of land, water, and air; biodiversity loss; and the pitiable state of carbon sequestration prove beyond doubt that the behaviour of such individuals, institutions, and social groups is not environmentally sustainable.

In the Indian environmental context, biodiversity and the food and water chain (Martin *et al.* 2024) have been critically affected by anthropogenic activities such as the misuse and overuse of land coupled with deforestation. In fact, India has lost a significant proportion of its climate refugia (areas that are resistant to adverse climate change effects) to land-use change (Price, Warren, and Forstenhäusler 2024). The *State of India's Environment, 2021,* report (DownToEarth, 2021), published by the Centre for Science and Environment (CSE), indicated that India faces severe losses in its biodiversity hotspots, especially in the Indo-Burma biodiversity region, where vegetation loss amounted to an overwhelming 95% (CSE 2021). In view of the shocking status of human-induced biodiversity loss in India, this essay aims to create a body of jurisprudence that can not only provide solutions to existing problems but also help create a futuristic design to understand and holistically address these issues. In keeping with this goal, the paper analyses relevant theories, especially the value–belief–norm (VBN) model and the theory of moral development, to understand how and why attitudes, belief systems, and values influence environmentally significant individual, institutional, or group behaviour. The paper also argues for establishing a robust criminal liability regime that can create sufficient deterrence to prevent government agencies, private corporations, and individual actors from causing environmental harm and substantive biodiversity loss. In sync with these objectives, and considering that biodiversity conservation and the well-being of human beings are intrinsically linked (Srivathsa *et al.* 2023), the two arguments of this essay are as follows:

A The pro-environmental behaviour of individuals, institutions, and groups is strongly associated with their values and belief systems; thus, environmentally friendly behaviour such as energy conservation, carbon sequestration, drinking water management, green purchasing, and ecosystem conservation can be understood by applying behavioural models.

B The offence of *ecocide*, the intentional devastation of the environment, may be included in the penal code to prevent and reverse biodiversity loss.

The paper is divided into six sections. The first section introduces the objectives of this essay and outlines the main arguments. The second section provides a brief overview of biodiversity loss in India, drawing on existing and emerging facts. The third section analyses the VBN model to ascertain its applicability in understanding the pro-environmental behaviour of individuals, institutions, and groups. The section also discusses the various kinds of environmentally significant behaviour. The fourth section

attempts to identify the relationship between the VBN model and the theory of moral development as well as the points of intersection between the two. The penultimate section of the paper explains how creating a strong criminal liability regime can help address biodiversity loss in India. The final section winds up the essay by proposing a futuristic design that applies the VBN model to understand pro-environmental behaviour among individuals, institutions, and groups.

2. BIODIVERSITY LOSS IN INDIA: A FEW FACTS

Before delving into biodiversity loss in India, let's first examine the definition of biodiversity to see if it is complete and comprehensive.

Article 2 of the 1992 CBD defines biological diversity as "the variability among living organisms from all sources, including inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems" (Ekardt *et al.*, 2023, 2). A plain reading of this definition indicates that the term "biodiversity" includes not only the complex relationships between genera, species, and ecosystems but also variations starting from the genetic level to the level of ecosystems. In a way, the definition incorporates both structural and functional diversity, where structural diversity includes structural heterogeneity, height, and openness and functional diversity includes diversity of traits (LaRue *et al.* 2019). The definition further implies that these two aspects of diversity in genera, species, and ecosystems complement each other; for example, the structure of a forest tends to promote the functional diversity of the plants and wild animals that thrive in it (LaRue *et al.* 2019).

Biodiversity plays a critical role in protecting the environment from natural calamities. Extreme weather conditions (induced by climate change), such as flooding, storms, and landslides, are predicted to pose significant threats to the environment. Neil Adger *et al.* (2005) underscored the importance of building resilient systems to address natural disasters, with a particular focus on coastal regions. The variety of responses among different species that perform the same role in an ecosystem is crucial for its stability and adaptability, especially when it is undergoing changes (Elmqvist *et al.* 2003). Richard Munang *et al.* (2013) highlight the importance of safeguarding ecosystems from the harms caused by natural disasters, particularly as weather patterns have become increasingly difficult to predict due to climate change. Ecosystems need to be managed in a way that protects biodiversity, so that the impacts of landslides, flooding, droughts, or wildfires can be mitigated more effectively. While research related to climate

change has significantly increased in the last decade, particularly with the ecosystem as an intrinsic parameter, some critical knowledge gaps, especially in reference to climate-related data assimilation and integration, remain.

Today, India hosts 8% of global biodiversity, with about 50,000 plant species, of which about 10% are endemic, and 3,439 fish, 641 reptile, 1,343 bird, 427 amphibian, and 429 mammal species (Chaudhary *et al.* 2022). In addition, India's coastline, which is approximately 8,000 km long, facilitates biodiversity preservation with its lagoons, mangroves, estuaries, marshy waterbodies, coral reefs, rocky coasts, and sandy stretches (Anil, Kumari, and Wate 2014). Further, India grows a wide variety of crops and is home to numerous native breeds of farm animals (Sarang, Sreekumar, and Sejian 2024). However, the Indian biodiversity landscape is fast deteriorating; the country has two of the world's most threatened "hotspots", the Western Ghats and the Eastern Himalayas. The *State of India's Environment, 2021,* indicated that many plant and animal species in these hotspots are either extinct or on the verge of extinction (CSE 2021). Furthermore, the report exposed the shocking state of carbon sequestration, a natural process that removes and captures carbon dioxide from the atmosphere and which can help reverse and mitigate the effects of global warming (CSE 2021). The report clearly highlighted the inability of incumbent environmental policies and laws to address biodiversity loss and other harms caused to the ecology and ecosystems (CSE 2021). The *State of India's Environment, 2022,* reconfirmed the alarming extent of biodiversity loss, with large tracts of forest land either shrinking or disappearing (Perinchery 2022). Further, it held the increase in wildlife offences responsible for the extinction of various undomesticated animal species. The 2022 report also predicted that a significant part of the forest cover would soon become a climate hotspot. Abhishek Chaudhary and colleagues' (2022) study found that harmful agricultural and aquacultural practices and landscape approaches pose significant threats to species diversity in India. These findings relating to biodiversity loss in India seem to correlate with India's ranking on the 2022 Environment Performance Index (Bavadam 2022). It is predicted that by 2100, unfavourable changes in land-use patterns, changes in the atmosphere's CO_2 content and nitrogen deposition, and the introduction of new species will adversely impact India's biodiversity. Habitat loss is occurring at a rapid rate. The destruction of habitat is the result of human actions such as clearing forests to make way for agriculture, filling marshes, and building massive structures (Bar *et al.* 2023). In sum, the aforementioned data and facts clearly attest to India's enormous

biodiversity loss and indicate that India's environmental conservation priorities are inadequate and misplaced (Lopes 2022).

3. APPLYING THE VBN MODEL TO UNDERSTAND BIODIVERSITY LOSS IN INDIA

The attitudes, belief systems, and values—both moral and ethical—of individuals, institutions, and social groups play a major role in forming institutional and personal mindsets and determining individual, institutional, and group behaviour towards society in general and the environment in particular. Attitudes, belief systems, and values are fundamental factors that shape our approach to environmental concerns, as they tend to directly influence pro-environmental behaviour (López and Cuervo-Arango 2008). From the perspective of environmental jurisprudence, pro-environmental behaviour is determined not only by how individuals, institutions, and social groups nurture their values and belief systems, but also by their understanding of how environmental norms function within a given societal set-up. Such behaviour may be defined reasonably by its impact (Stern 2000) and can be dissected by probing the vital interrelationships among (a) socio-psychological determinants, (b) external factors, and (c) personality traits (Topal *et al.* 2021). Studies indicate that pro-environmental behaviour—which is also termed as environmentally significant behaviour, environmentally sensitive behaviour, environment-friendly behaviour, green behaviour, and environmentally responsible behaviour (Karimi 2019)—is reflected in activities such as prudent waste management, energy conservation, carbon sequestration, drinking water management, green purchasing, conservation of endangered species, and smart recycling; these activities are closely related to one's conceptualization of moral norms and how such norms have a bearing on the environment (Fornara *et al.* 2020). Pro-environmental or green behaviour may stem from the middle-class value of thrift (Fitriningrum and Paramudita 2024) or from the strict enforcement of penal laws. In addition, such behaviour may also be an outcome of "green product positioning", a marketing strategy adopted by firms to highlight the environmentally friendly nature of their products (Sooriyaarachchi 2023). Environmentally sensitive behaviour is the hallmark of activists, green consumers, avoiders, utility savers, recyclers, or green passengers (Ghazali *et al.* 2019), where personal norms influence the behaviour (Aguilar-Luzón *et al.* 2012) It comprises activities that protect the environment from the devastating effects of air and water pollution and climate change. Arguably, those whose nature is more pro-social and altruistic are likely to evince green behaviour, whereas people with competitive and selfish motivations are less likely to exhibit pro-

environmental behaviour (Achchuthan, Umanakenan, and Kajenthiran 2017).

Another point that needs to be discussed here is that the pro-environmental behaviour of individuals is a prerequisite for the environmentally significant behaviour of institutions and social groups, as institutions and groups tend to engage in activities that are environmentally significant only if the individuals who represent them demonstrate pro-environmental behaviour. Institutional structures and human agency are inextricably linked and tend to mutually influence one another in their respective concerns for the environment. Even though the pro-environmental behaviour (categorized by its impact on the existing environment) of an individual may be seemingly insignificant, when many individuals (as part of an institution or a social group) independently evince such behaviour, the behaviour becomes significant enough to bring positive changes in the environment. For example, if the decision-makers of a company resolve to discard false trade-offs and embrace conscious capitalism, considering that prosperity and profit must be in sync with environmental stewardship and social justice (Hosmanek, Smith, and Dayton 2023), the employees of that company are likely to exhibit green behaviour. Similarly, employees who adopt a "common-good approach" are likely to influence the environmental behaviour of the institutions or firms they are part of (Vevere and Svirina 2020).

To understand pro-environmental behaviour, it is essential to analyse the VBN model, proposed by Paul Stern and colleagues (1999) and later developed by others. The VBN model owes its genesis in part to the norm activation model, proposed by Milton Schwartz in 1977. While the norm activation model primarily focuses on the activation of a personal norm in the event of a threat or a perceived threat (Nordlund, Jansson, and Westin 2016), the VBN model contends that any environmentally friendly action emanates from a stepwise causal chain that includes (a) values, (b) pro-environmental beliefs, (c) awareness of consequences, (d) ascription of responsibility, and (e) personal norms (Fornara *et al.* 2020). The VBN model can be used to understand the process by which people perceive the need to preserve ecosystems and react to biodiversity threats (Riepe *et al.* 2021). In a study that successfully applied the VBN framework, the researchers found that personal norms, eco-altruistic values, and beliefs relating to the ecology and the environment had a direct and constructive influence on environmental behaviour (López and Cuervo-Arango 2008).

The VBN model is an analytical tool that can assess choices related to travel modes, energy policies, and purchasing patterns (Nordlund, Jansson, and Westin 2016). The model also helps in discerning the reasons behind

individuals' energy-saving behaviour (Akitsu and Ishihara 2018)—for example, why some individuals switch to environmentally friendly vehicles while others do not. A study conducted in this regard indicated that certain individuals felt morally obligated to go for green vehicles because they were aware of the problems caused by the use of fossil-fuel-consuming vehicles (Nordlund, Jansson, and Westin 2016). People who subscribe to biospheric values are more concerned about the environment and are motivated to reduce the adverse ecological impacts of fuel-consuming vehicles (Hiratsuka, Perlaviciute, and Steg 2018). Thus, multiple motives may underlie such behaviour: certain individuals may buy environmentally friendly products either because they are positional goods (Sooriyaarachchi 2023) or because they are heavily impacted by green advertising (Krstić, Stanković, and Cvijović 2021). The VBN model is also fairly effective in analysing why certain individuals exercise environmentally sustainable food choices (Carfora *et al.* 2020) or choices regarding water conservation (Roobavannan *et al.* 2018), although their sense of moral obligation in making these choices is closely connected to their evaluation (in individualistic terms) of the pros and cons of the pro-environmental behaviour (Carfora *et al.* 2020).

The VBN framework may also be used to understand the pro-environmental behaviour of institutions and social groups. A study that applied an extended VBN model concluded that the Chinese are more likely to evince environmentally significant behaviour than the Malays (Ghazali *et al.* 2019). In another study, the VBN model successfully explained students' pro-environmental behaviour (viz., waste prevention, energy use, recycling) at an agricultural university (Karimi 2019). Using VBN theory, a study classified farmers' behaviour as (a) environmental activism, (b) organizational behaviour, (c) inaction in the public sphere, or (d) environmentalism in a specific sphere; it concluded that the reasons for farmers' pro-environmental behaviour—such as using compost, organic fertilizers, and manure and other green technologies in farming—might be understood by applying the VBN framework (Rezaei‐Moghaddam, Vatankhah, and Ajili 2020). The study also indicated that farmers with a high sense of ethical and moral obligation with reference to the environment are more likely to adopt clean and green technologies (Rezaei‐Moghaddam, Vatankhah, and Ajili 2020). However, good environmental intentions (of farmers in the current reference) alone do not translate to sustainable practices. Government subsidies and monetary support play a big role in helping farmers switch to organic farming and sustainable cultivation methods (Kulin and Sevä 2019; Yang, Dai, and Zhang 2024). Another study effectively adopted the extended VBN model

to explain the pro-environmental behaviour of farmers living in the Wei River Basin, Shaanxi Province, China, in promoting ecological protection (Zhang *et al.* 2021). The VBN framework may also be applied to understand why certain organizations adopt a progressive corporate social responsibility approach. A study employed the VBN model to identify the antecedents of conserving behaviour—such as reusing, reducing use, repurposing, and recycling—among employees in an institutional setting (Ciocirlan *et al.*, 2020).

Unlike the theory of planned behaviour—which states that the intention to perform a certain kind of behaviour may be predicted by (a) the individual's attitude towards the behaviour, (b) subjective norms, and (c) perceived behavioural control (Achchuthan, Umanakenan, and Kajenthiran 2017)—the VBN model focuses on psychosocial (Carfora *et al.* 2020) and cultural (Roobavannan *et al.* 2018) factors shaped by morality, which are likely to influence critical environment-related outcomes and decisions. However, surprisingly, the VBN model and the theory of planned behaviour can be applied simultaneously to elucidate the motivation for green behaviour among individuals and social groups. In one study, the VBN model and the planned behaviour model were applied concurrently to discern the relation between pro-environmental purchase intentions and pro-environmental purchase behaviour with reference to green products as well as between perceptions of green products and pro-environmental purchase behaviour (Achchuthan, Umanakenan, and Kajenthiran 2017). In another study, both theories were simultaneously applied to understand the waste management behaviour of students (Wu, Zhu, and Zhai 2022).

Yet another theory that tends to intersect with the VBN model and purports to explicate pro-environmental behaviour is the theory of moral development (see the next section). Summing up, the VBN model, whether applied individually or in conjunction with other models, is a viable tool for understanding pro-environmental behaviour among individuals, institutions, and social groups in the context of biodiversity loss and other forms of environmental degradation.

4. THE INTERSECTION POINTS BETWEEN THE VBN MODEL AND THEORY OF MORAL DEVELOPMENT

The values that individuals ascribe to certain acts, the beliefs that they nurture, and the norms that they abide by are shaped by their conception of right and wrong, and good and bad. The theory of moral development, proposed by Lawrence Kohlberg and extended by Carol Gilligan, examines the factors or circumstances that lead to an individual's ethical behaviour

(Zhang and Zhao 2017; Blum 1998). The theory ascertains whether an individual's act or a certain behaviour or attitude is right or wrong (from the social and legal point of view) and whether it is in conformity with existing values, mores, and rules. As per the assumptions of the VBN model, a morally developed individual would act to the benefit of the environment and would not do anything that would harm it. However, to identify the points of intersection between the VBN model and the theory of moral development, it is necessary to examine Immanuel Kant's conception of morality, reasoning, and the doctrine of rights. In fact, Kant's normative approach to the interplay of morality, reasoning, and the doctrine of rights goes back to the moral foundations of human rights and duties—although Kant himself refutes the idea that the principle of right (which is analytic in character according to him) is a derivative of the principle of morality (Willaschek 2009). Nevertheless, Kant's well-known work, *The Metaphysics of Morals,* might explain why people tend to behave in a moral and ethical way, having regard for the concept of right, which is itself based on practicality, externality, and formality (Jemberie 2017). Both in *The Metaphysics of Morals* and in the *Critique of Practical Reason*, Kant attempts to draw a distinction between legality and morality; legality simply requires external compliance with moral laws, whereas morality requires adherence to these moral laws for their own sake (Willaschek 2009). According to Kant, universal moral norms—and especially the categorical imperative (the supreme moral norm that determines what a person must do, irrespective of the circumstances)—are *apriori* in nature and regulate not only the understanding of one's rights but also the ethical actions of individuals. Kant's conception of morality is based on the means (the motive) and not the end (the consequences) (Obiagwu and Onuoha 2019). Kantian moral philosophy is deontological in nature; that is, the correctness (rightness or wrongness) of acts and behaviours depends not on their consequences but on whether they fulfil a duty (Obiagwu and Onuoha 2019). Kant, however, is oblivious to the incompatible and conflicting moral obligations arising from the categorical imperative (Timmermann 2013). Nevertheless, if we apply (for the sake of argument) Kant's logic regarding the interplay of moral obligations and the role of moral reasoning in determining environment-specific behaviour, we can conclude that anyone who is not tempted to destroy natural habitats and ecosystems will apply his or her pure practical reason to protect them (Timmermann 2013). Similarly, anyone who is morally obligated to protect the environment will apply their pure practical reason to use sustainable tourism products (from the perspective of adventure tourism) (Tölkes 2020). The moral obligation to act in an environmentally significant way may explain why adventure tourists exhibit environmentally friendly behaviour (Gupta and Sharma

2019). Thus, the moral obligation to behave pro-environmentally stems from individuals' awareness of the adverse consequences of unsustainable behaviour and their perceived ability to prevent environmental harm (Hiratsuka, Perlaviciute, and Steg 2018).

Thus, the categorical imperative in general, and Kant's moral theory in particular, cannot be the basis of his conception of right because his doctrine of right seemingly allows, or rather legitimizes, coercion. However, although Kant's ideation of the categorical imperative may suffer from structural and functional flaws, it nonetheless provides a much-needed inflection point in understanding how morality and ethics determine the normativity and operational effectiveness of ethical acts and behaviour, including environmentally significant behaviour. If we delve deeper, we can discern that our understanding of the goodness or badness of environmental mores and norms (in the given context) is shaped by our sense of reasoning, which is teleological or purposive. This further confirms that all of us reason about right or wrong in almost the same way, and hence, all of us categorize certain acts as moral and others as immoral. But why do so many people indulge in anti-environmental behaviour? The answer to this question may be found in the germane work of Hans Jonas, *The Imperative of Responsibility* (Berdinesen 2017), wherein Jonas builds on Kantian moral philosophy to include nature and future generations (interestingly, Kant only focuses on the relations between people) and develops a theoretical framework that explains how modern instruments of change (technologies) have the ability to devastate nature and thereby render human life barely possible in the future (Obiagwu and Onuoha 2019). Jonas's ethical framework extends the Kantian concept of the categorical imperative and is based on the principle of social responsibility (Obiagwu and Onuoha 2019). From the perspective of environmental jurisprudence, the framework calls for the use of the precautionary principle, which, among other things, advocates reversing threats to the environment and preventing catastrophes (especially man-made ones) to protect people from environmental harm (Obiagwu and Onuoha 2019). The key suggestions of the precautionary principle—which is itself based on the fore-caring or foresight principle (Pearce 2004)—are to (a) undertake protective action in view of uncertainty, (b) shift the onus to the promoters of an activity, (c) explore an extensive range of alternatives to actions that are possibly harmful, and (d) increase public participation in decision-making (Kriebel *et al.* 2001).

Having examined the moral and ethical frameworks of Kant and Jonas to determine whether these frameworks create a responsibility regime that fosters environmental protection, it becomes imperative to study Lon

Fuller's concept of internal morality. Fuller's internal morality is based on the principle of legality or the rule of law. Unlike Kant and Jonas, Fuller emphasizes that our moral foundations are based on prescribed rules and the observance of such rules by both the ruler and the ruled (Lovett 2015). Extending Fuller's views to the context of environmental law, it seems that a normless society cannot create moral obligations to protect existing ecosystems and prevent biodiversity loss.

The theory of moral development provides a reasonable explanation for why morally developed individuals are more conscious of the environment in which they live. Both Kohlberg's and Gilligan's works in this matter are significant. According to Kohlberg and Gilligan, moral development in these individuals determines how they understand rules and their operation and how they make socially relevant choices (Blum 1998). Kohlberg argues that impartiality forms the basis of morality, and moral development occurs at three levels—pre-conventional, conventional, and post-conventional—based on the individual's age, and with two stages at each level (Zhang and Zhao 2017). The last stage (Stage 6, at the post-conventional level) is the most critical, because at this stage, individuals aged 16+ years (as per Kohlberg's age-based classification) start internalizing the principles of justice, basing their moral reasoning on universal ethical principles. Further, Kohlberg states that movement across the stages is not a natural process and that a person moves from one stage to another only when they feel inadequate in dealing with a moral dilemma. According to Kohlberg, one's ability to morally reason is stage dependent. (Zhang and Zhao 2017). Overall, the stage theory of Kohlberg emphasizes the need for an ideation of justice while making choices. In contrast, Gilligan argues that a significant element of morality is the ethics of care and responsibility in interpersonal relationships. She further opines that morality is inextricably linked to emotion, action, and cognition and arises from direct connection and responsiveness between individuals (Blum 1998). Although Gilligan does not fundamentally draw away from either the stage theory or the justice-based morality of Kohlberg, her clear focus is on the ethics of care and altruism. She describes how the ethics of care is consolidated and shaped as a person moves from the pre-conventional to the conventional to the post-conventional level of morality. What is central to both Kohlberg's and Gilligan's ideations of morality are that the sense of right or wrong develops from childhood and that externalities play a significant role in shaping it. Therefore, any person who reaches the final stage of moral development will make moral choices that are not detrimental to others and the surrounding environment. However, the age-based classification that both Kohlberg and Gilligan adopted to reinforce the stage theory seems

inapt. That children may also exhibit pro-environmental behaviour—such as committing to the cause of biodiversity protection, preserving natural habitats, and fostering a healthful and balanced ecology—can be seen in the *Minors Oposa* case,[1] in which a group of children pleaded (through the environmental activist A Oposa) for the sustainable use of natural resources (especially the rainforests) in the Philippines. The children staked their claim by invoking Article 2, Section 16, of the Philippines Constitution, which imposes a non-derogable obligation on the state to protect and preserve the environment. The Supreme Court of the Philippines, in view of the principles of intergenerational equity and intergenerational responsibility, granted the plea, holding that the people of the Philippines are entitled to a healthy and balanced ecology. The above discussion indicates that morally developed individuals (which may also include children), because of their nuanced perception of right and wrong and good and bad, would make choices that are environmentally friendly, responsible, and conscientious.

4.1. Beyond Intent: The Challenge of Path Dependencies and Lock-in

While the VBN model effectively explains how internal values and beliefs drive pro-environmental intentions, it is important to acknowledge that an individual's capacity to act on those intentions is often constrained by external, structural barriers that create "path dependencies" and "lock-ins". Path dependency is a concept from social science and economics; it suggests that past decisions or events constrain future choices, leading to the persistence of inefficient systems simply because of the legacy they have built. Environmental lock-in is a parallel concept applied to socio-environmental challenges; it describes how systems become locked into unsustainable practices. For instance, certain individuals may hold strong biospheric values and a personal norm of avoiding single-use plastics, but if the local infrastructure, markets, and social context do not provide viable alternatives, their pro-environmental intent is negated. This is a common challenge in Indian cities, where consumers—especially in the travel and hospitality sectors—may have no alternative other than single-use plastic bottles for accessing drinking water. The travel and hospitality industries are among the largest contributors to single-use plastic waste in India, as they serve millions of meals daily on planes, in trains, and in hotels. While some forward-thinking hotels, such as ITC Hotels and Araiya, have installed in-house water filtration and bottling plants to eliminate the need for plastic bottles, this practice is not yet universal. The lack of readily available, sustainable alternatives creates a practical barrier that can hinder

[1] *Oposa et al. v. Fulgencio S. Factoran, Jr. et al.*, 33 ILM 173 (1994).

environmentally conscious behaviour, regardless of a person's moral or ethical convictions.

This institutional and infrastructural lock-in demonstrates that relying solely on individual psychological change is insufficient. The environment is not just a space for exercising personal moral choices; it is a complex system shaped by economic, social, and institutional factors that must also be confronted. Without addressing these structural challenges, even the most deeply held pro-environmental values cannot translate into meaningful, widespread actions.

5. ADDRESSING BIODIVERSITY LOSS BY CRIMINALIZING ECOCIDE

One of the earliest attempts to criminalize ecocide was made by Richard A Falk in 1973 (Chiarini 2022), in response to the devastating ecological impact of the Indo-China war. Professor Falk argued that an International Convention on the Crime of Ecocide might provide a tangible solution to the problem of wilful destruction of the environment. Article 2 of the proposed convention defined ecocide as an act committed with the intention to destroy or disrupt (in whole or in part) a human ecosystem; such an act could be committed by using weapons of mass destruction, chemical herbicides, or techniques designed to control the weather (Chiarini 2022). Falk further insisted that attempted ecocide, incitement to ecocide, conspiring to commit ecocide, and complicity in ecocide should also be made punishable (Chiarini 2022). Some notable climatic events, and the growing concern over the loss of biodiversity, are now awakening non-Indigenous communities to this reality. One indication of how quickly the traditional landscape of environmentalism is shifting is this acknowledgement of the inseparability of humans from the biosphere in the broader public space of debate, dialogue, and conversation. What this means for the world's response to ecocide is that society should continue to embrace this conceptualization of humans as inextricably linked to different forms of biodiversity; then, one will have to take a side either for or against the destruction of the environment (Hamilton 2024).

It is time for India to recognize the offence of ecocide. From the Indian environmental perspective, the civil liability regime created under the common law and various environmental norms are not effective enough to address environmental harm in general and biodiversity loss in particular. On the contrary, only a strong criminal liability regime with stringent punishments will bring the offenders to book. The need for stringent laws is all the more urgent because the existing liability regime—under the

relevant provisions of the Water Act, 1974, Environment Protection Act, 1986, and Air Act, 1981—is apparently unable to punish those who promote, cause, or abet environmental destruction.

Globally, a movement to recognize ecocide as a crime is gaining momentum. Countries such as Vietnam, Russia, Kazakhstan, and France have already established laws with criminal sanctions for severe environmental damage; some even explicitly use the term "ecocide". The European Union's recent directive on environmental crime, which took effect in May 2024, requires member states to criminalize conduct "comparable to ecocide", with penalties including imprisonment up to 10 years. However, advocacy for criminalizing ecocide in India, which is particularly pertinent given the country's unique environmental policy landscape, is yet to gain traction.

In stark contrast, the Indian government has been purportedly moving in the opposite direction, seeking to decriminalize "minor" environmental offences—especially violations of the Air Act and the Environmental Protection Act—through the Jan Vishwas (Amendment of Provisions) Act, 2023. This law, aimed at promoting "ease of doing business", removed jail terms for environmental offences, which are now redressed through increased fines. In addition, Parliament recently decriminalized offences under the relevant provisions of the Water Act, rendering intentional environmental harm a mere civil offence punishable with hefty fines. The Parliament's decision to dilute criminal liability reflects skewed rights and justice trade-offs and the government's apparent disinclination to address environmental harm through criminal law. This paradox highlights a fundamental contrast: while the global community is escalating the legal response to environmental crime, India is de-escalating, prioritizing economic expediency over environmental deterrence. Critics argue that this change largely caters to corporate interests, as fines can be easily budgeted for, thereby removing the threat of individual criminal liability, which is the ultimate deterrent.

5.1. Legal and Procedural Challenges in Prosecuting Perpetrators of Ecocide

A successful ecocide law in India would need to address significant legal and procedural challenges that have historically plagued environmental prosecutions.

- **Proving *mens rea*:** The primary challenge in prosecuting environmental crimes is proving criminal intent (*mens rea*). While environmental destruction is often the result of intentional acts (e.g., discharging pollutants), the underlying motivation is almost always

financial profit, not a malicious desire to harm the environment. This makes it difficult to prove intent for serious penal offences. A viable solution is to adopt the "wantonness" or "recklessness" standard proposed by the Independent Expert Panel for the Legal Definition of Ecocide (Independent Expert Panel for the Legal Definition of Ecocide 2021). This approach would focus on a "reckless disregard for damage which would be clearly excessive" in relation to the anticipated social or economic benefits, aligning the law with the reality of corporate decision-making.

- **Establishing corporate criminal liability:** The difficulty of making corporate entities and their executives criminally liable is a persistent issue in prosecuting environmental harm. The Bhopal Gas Tragedy serves as a historical precedent, as the person responsible for the disaster was never brought to justice, resulting in widespread disappointment and a sense of institutional failure (Broughton 2005). The BHP Billiton dam collapse in Brazil is another illustrative case, where criminal charges against executives were suspended, reinforcing the perception that those at the top can escape accountability for their actions or negligence (Gonzales 2016).

- **Collective victimization:** Environmental crime often results in collective victimization, where the harm is diffuse, delayed, and not easily quantifiable in financial terms for individual victims. This makes it difficult for victims to identify themselves as such and seek redressal through traditional legal channels. A new ecocide law must be designed to address this issue by allowing public interest litigation and recognizing harm to the environment itself.

- **Risk of over-criminalization:** The potential for over-criminalization must be carefully considered. Ecocide law must be precisely defined to prevent it from being used against the poor and marginalized groups engaged in subsistence activities. It is essential that the law focuses on decision-makers at the topmost level—the corporate and state actors whose actions cause mass destruction—not on ordinary citizens.

The provisions of the Bhartiya Nyaya Sanhita, 2023 (hereinafter referred to as BNS), appear to ignore environmental offences. The only two provisions of the BNS that apparently assign liability for intentional interference with the natural environment are Sections 279 and 280; while Section 279 penalizes a person for polluting or fouling the water of a public spring or reservoir, Section 280 punishes people for making the atmosphere of a place noxious to health. Ecocide is yet to be classified as an offence in the

BNS. A new section, 280A, needs to be introduced in the BNS to include penalties for ecocide. The section could read as follows:

> Whoever knowingly and intentionally destroys or disrupts (in whole or in part) a human ecosystem or attempts, aids, abets, or assists the destruction or disruption (in whole or in part) of a human ecosystem shall be punished with imprisonment of either description for a term which may extend to seven years, or with fine which may extend to five lakh rupees, or with both.

Once the offence of ecocide is introduced in the BNS, issues relating to interpretation, the admissibility of evidence, the standard of proof required for conviction, and aggravating and mitigating factors may be examined and decided accordingly by the courts.

Environmentalists, climate activists, and advocates have argued, especially since the 1990s, that ecocide can be seen as accumulating a "biodiversity debt" that future generations must repay through (un)defined modes of climate action, mitigation, and adaptation. In the Indian context, introducing the offence of ecocide in our penal law system would serve as a powerful deterrent against widespread and overwhelming harm to flora and fauna.

According to a recent Thomson Reuters report, ecocide is considered an offence in 12 countries, and a few more countries are currently thinking of making it an offence (Gill and Enahoro 2021). Meanwhile, Mexico is discussing a law that would punish a perpetrator with imprisonment of up to 15 years and a fine of up to $90 per day (Fleming 2021). Such initiatives further strengthen the argument that introducing the offence of ecocide in penal law will make citizens, including the violators and polluters, aware of the consequences of harming the environment.

5.2. Beyond Deterrence: Law as a Statement of Societal Values

To link the moral/psychological sphere with the legal/regulatory one, we must look beyond the law's purely deterrent function. Legal scholars have extensively explored the *expressive* function of law, the idea that law communicates and shapes societal norms rather than simply controlling behaviour through sanctions. This suggests that a legal rule can influence behaviour even with minimal direct enforcement. A study on the introduction of lockdown measures in the United Kingdom during the COVID-19 pandemic provides compelling evidence of this function (Galbiati et al. 2021). This research shows that a legal mandate can "drastically change the perception of the norms regarding social distancing behaviours", suggesting that the law is a powerful informational tool that can shape what society considers acceptable behaviour.

The expressive function of the law can be understood through the example of a "pooper-scooper" law (Cooter 1998). This law makes a public statement that a behaviour is socially unacceptable. This legal expression empowers citizens to use informal social sanctions, for example, public ridicule, and can even activate self-sanctioning mechanisms, such as guilty feelings, thereby influencing behaviour without direct state enforcement.

5.3. Legal Moralism and the Evolution of Environmental Jurisprudence

The concept of legal moralism posits that a society's criminal code should reflect its most deeply held moral values. Applying this to environmental law, the criminalization of ecocide would serve as a powerful public declaration that the mass destruction of ecosystems is not merely a regulatory violation but also a grave moral wrong. It would also signal a significant shift from a purely anthropocentric legal framework—where environmental harms are prohibited only insofar as they affect humans—to an ecocentric approach that affirms the intrinsic value of nature itself.

This idea is rooted in Christopher Stone's seminal 1972 essay, "Should Trees Have Standing?", which argues that the law should recognize natural objects as having worth and dignity in their own right and as deserving of legal protections (Stone 1972). While American jurisprudence largely uses the legal fiction of fragmented human interests to protect nature, the law has yet to acknowledge that nature itself has protectable legal interests. Ecocide law, as a concept, would move towards this goal, aligning the legal framework with an evolving public consciousness that views humans as inseparable from the natural world.

5.4. The Feedback Loop: How the Law Reinforces the VBN Model

The criminalization of ecocide is the institutionalization of the VBN model's "personal norm". It is not a separate or parallel argument, but the logical and necessary conclusion of the moral and psychological journey described in the paper. The law takes a diffuse moral sentiment and codifies it, making it a public testament of what society values. This act of legal expression then retroactively reinforces the personal norms of individuals, making the VBN model more potent and ubiquitous. The law transforms a personal virtue into a collective, enforceable obligation.

By criminalizing ecocide, the law directly affects the causal chain of the VBN model in the following ways:

a. Strengthening biospheric values: The law validates nature, elevating it from a mere resource to an entity with inherent rights that should be protected for its own sake.

b. Clarifying beliefs and consequences: The criminalization of ecocide removes ambiguity by explicitly stating that mass environmental destruction is a punishable crime with severe, predictable consequences.

c. Reinforcing personal and social norms: By declaring ecocide a crime, the law creates a "new moral baseline whereby anything causing mass damage or destruction of natural ecosystems will become unacceptable." This generates self-sanctioning mechanisms (guilt) and social sanctions (shaming) against perpetrators.

This feedback loop elevates environmental protection from a matter of personal choice to a public responsibility, aligning legal and moral frameworks in a way that is essential for creating a stable society and economy.

6. CONCLUSION

The main argument that resonates across the essay is that individuals, institutions, and social groups that value the environment will not intentionally cause environmental harm (even if they are unable to reverse the harm). On the contrary, those who do not will engage in environmentally harmful behaviour, thereby violating basic environmental norms and safeguards. To discourage environmentally harmful behaviour, a well-ordered criminal liability regime should be created. This will help resolve the environmental problems facing India and reverse biodiversity loss. Such a regime would not only act as a deterrent against causing environmental harm but also help generate a sense of social responsibility that promotes environmentally friendly behaviour. This liability regime will align with the postulates of moral environmentalism, which play a critical role in fostering a care- and fairness-based morality, creating points of interaction with political liberalism to consolidate the jurisprudence on pro-environmental actions (Milfont, Davies, and Wilson 2019).

There is also a felt need to generate awareness about the negative effects of biodiversity loss; this might lead to an enhanced ascription of social responsibility, which would morally obligate people (who would otherwise tend to harm the environment) to take recourse to pro-environmental action (Riepe *et al.* 2021).

The rapid biodiversity depletion in India can be attributed to a lack of pro-environmental values, beliefs, and norms. Only a few empirical studies have been conducted on environmental degradation in countries such as India (Canlas, Karpudewan, and Khan 2022). Environmentalists in the country are yet to apply the VBN model to understand biodiversity loss and the

possible way forward. If individuals, institutions, and social groups do not attune themselves to changing environmental needs, biodiversity loss is likely to increase exponentially. Therefore, individuals, institutions, and social groups should have an adequate understanding of environmental norms and mores. It is also necessary to employ the VBN framework to assess the causes and effects of biodiversity loss. Further, there is an urgent need for long-term research and studies on the vulnerability of the biosphere to climate change, especially in the biomes of the north-eastern, central, and north-western parts of India, in dry forests, and in territories with low soil water content and freshwater and marine ecosystems (Bhatt, Das, and Shanker 2018). Such detailed studies would facilitate adaptation to natural calamities, help tackle the adverse effects of climate change, and create awareness among local and vulnerable communities so that they can preserve the ecosystems they rely upon for their basic livelihoods, health, and well-being.

The criminalization of ecocide is not just a deterrent; it is a moral instrument that can codify and reinforce the values and norms of a society that has evolved to realize its duty to nature and future generations. The principle of intergenerational equity, which is gaining traction in societies worldwide, provides the ultimate ethical and legal justification for holding the present generation accountable for its actions.

The 2030 Agenda for Sustainable Development, an outcome of the 2015 Paris Agreement, reiterated the need to preserve and protect biodiversity. The Paris Agreement significantly contributed to the climate change regime by incorporating a cluster of 17 Sustainable Development Goals (SDGs) that are intended to be achieved by 2030. Of special importance is SDG 15: "Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss."

Fundamentally, since an active global accord on climate change—the Paris Agreement—is in place today, the central focus must be on controlling anthropogenic activities, especially in light of the projection that climate change is likely to increase global temperatures by 3.2°C (above pre-industrial levels) and affect the distribution of nearly half the species in the world—49% of insects, 26% of vertebrates, and 44% of plants (Price, Warren, and Forstenhäusler 2024). Therefore, the two models discussed in this paper have even greater relevance for regulating human activities to prevent environmental harm that leads to biodiversity loss. While we strive to implement laws, policies, and regulations to advance SDG 15 and safeguard our ecosystems and the rich biodiversity reserves in India, we must also consider anthropogenic factors and educate the citizenry about

their significance. This will essentially give us better outcomes in the form of environmental conservation measures and community engagement for the protection of biodiversity. In sum, to attain the SDGs, particularly SDG 15, reverse biodiversity loss in India, and ensure long-term climate resilience, a multidisciplinary approach that combines cutting-edge technology with traditional knowledge should be adopted (Behera *et al.* 2024).

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