

# Eubios Journal of Asian and International Bioethics



EJAIB Vol. 26 (2) March 2016

www.eubios.info ISSN 1173-2571

Official Journal of the Asian Bioethics Association (ABA)

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## Editorial: Ecological Health

This issue is lengthy, but includes only three papers, on the themes of (Ecological Health) and Biodiversity. Juichiro Tanabe explores the links between a Buddhist mind and sustainability. It takes up further on the theme of mindfulness that was discussed in a paper in the January issue with reference to educational outcomes. We could take a holistic view of health to include the appropriate relationships between human beings and the environment. A review of literature on ecohealth by Aryn Lisitza and Gregor Wolbring is an excellent starting point for anyone wanting to develop an understanding of the issue, and develop research or action programmes.

Md. Jobair Alam reviews the ethical approaches in biodiversity and environmental legislation in Bangladesh, in a paper that is a synopsis of his AUSN Masters in Bioethics and Global Public Health thesis. This is a critical analysis of how many laws and policies can be developed, implemented, monitored and reviewed in efforts to develop a practical framework for communities and nations to preserve biodiversity. The global rate of biodiversity loss is still accelerating and we need to assess our ethics, and laws, to attempt to slow this accelerating rate of biodiversity loss.

There are announcements of forthcoming training workshops, scholarships and conferences at the end of the issue. Happy reading.

- Darryl Macer

## A Buddhist philosophy of the human mind for a sustainable future

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### Abstract

Many of major problems facing us are human-caused. While social/global injustices, inter-group conflict, any form of violence to name a few are our targets to tackle in order to achieve a more peaceful and humane future, they are in reality caused and sustained through our own thoughts. Though external causes or factors cannot be ignored, an equally critical problem confronting us is an epistemological one – our way of knowing and understanding the world. As the shape of the global conditions relies on our mind-set, both individual and collective, it is imperative to make a critical analysis of the mindset that causes troubles facing us since the world changes when our thoughts and perspectives on the world change. This paper engages in a Buddhist philosophical analysis of human mind for a sustainable and peaceful future. Buddhism, since its foundation, has deepened the analysis of how the human mind itself turns into a root cause of conflict and violence and how it can be overcome. This research explores how this analysis of the human mind contributes to realizing a sustainable and peaceful future and promoting intercultural dialogue on ethics in our globalized time.

**Key words:** Buddhism, the conditioned mind, mindfulness, dialogue, peace, ethics

### 1. Introduction

Many of the major problems facing us are human-caused. While social/global injustices, inter-group conflict, any form of violence, to name a few are our targets to tackle to achieve more peaceful and humane future, they are in reality caused and sustained through our own thoughts. Though external causes or factors must not be omitted, an equally crucial problem confronting us is an epistemological one – our way of

knowing and understanding the world. As the shape of the global conditions relies on our mind-set, both individual and collective, it is imperative to make a critical analysis of mindset that causes troubles since the world changes when our thoughts and perspectives on the world change. This paper engages in a Buddhist philosophical analysis of human mind for a sustainable and peaceful future. Buddhism, since its foundation by the Buddha, Gautama, has deepened the analysis of how human mind itself turns into a root cause of conflict and violence and how it can be overcome. This research explores how this analysis of human mind contributes to realizing a sustainable and peaceful future.

## 2. Methodological considerations

As is well known, Buddhism is categorized into three major schools – Theravada, Mahayana, and Vajrayana. Each of these schools further has sub-schools that have respectively developed distinct teachings and traditions along with the shared objective, that is, uprooting suffering. It is beyond the scope of this paper to examine all of those schools in detail and to take up all their teachings to analyze their contributions to the achievement of sustainable future.

Therefore, the paper employs the following texts and teachings to develop the research: *Dhamapada*<sup>1</sup>, *Surangama-Sutra*<sup>2</sup>, Nagarjuna's *Seventy Stanzas on Emptiness*, *Catustava* or Four Hymns to Absolute Reality. However, it must be emphatically noted that although it embraces those texts and teachings to unfold the argument on sustainable future, what is discussed here is merely one of the possible ideas of a Buddhist approach to peace and sustainable future as other texts and teachings would lead us to develop ideas distinct from the one explored in this paper.

## 3. Foundational aim of Buddhism

The main focus of Buddhism is the human mind, which is stated in the *Dhamapada*: “*All experience is preceded by mind, led by mind, made by mind.*” (Fronsdall, 2005: 1). Furthermore, the *Surangama Sutra* states, “*The Tathagata has always said that all phenomena are manifestations of mind and that all causes and effects including (all things from) the world to its dust, take shape because of the mind*” (Luk, 2001: 16). These statements do not mean there are no objects outside our minds. Rather, they signify that “*the qualities of the things come into existence after the mind, are dependent upon mind and are made up of mind*” (Lai, 1977: 66). From a Buddhist view, the state

of the world around us is a reflection of the condition of our mind (Ramanan, 1978).

As the condition of our mind frames the state of the reality, the root cause of suffering or problem facing us is attributed to our mind as stated in the *Dhamapada*: “*Speak or act with a corrupted mind, and suffering follows as the wagon wheel follows the hoof of the ox*” (Fronsdall, 2005: 1). However, when we overcome the cause of suffering, we can achieve inner serenity and well-being: “*Speak or act with a peaceful mind, and happiness follows like a never-departing shadow*” (Fronsdall, 2005: 1). Thus, it becomes crucial to make a critical analysis of the nature of one's mind or the principles of epistemic function to deepen our understanding of an internal dynamics of suffering including conflict and violence: knowing, first of all, reality as a mind-construct, critically reflecting how the mind turns into the root cause of suffering and contemplating and enacting the way to resolve it constitute the core of Buddhism (Matsuo, 1981). And the Four Noble Truths doctrine assumes the central role in understanding and addressing human suffering in line with dynamics of human mind.

## 4. Analyzing the Four Noble Truths doctrine

The Four Noble Truths doctrine is the Buddha's first and foundational teaching (Geshe Tashi, 2005) and the doctrinal framework of every school of Buddhism (Yun, 2002). According to Pereira and Tiso, the Four Noble Truths are “*truths of pain, origin of pain, suppression of pain and the way to suppress pain*” (1988: 172).

The first noble truth states that from a Buddhist perspective, our life is basically filled with suffering and trouble (Rahula, 1974). However, this statement does not mean a pessimistic or a nihilistic view of reality. Rather, the acknowledgement of our reality being full of suffering leads us to a deeper and more profound question of “*What is the root cause of suffering?*” and this is the core of the second noble truth.

The second truth proposes the cause of suffering (Rubin, 2003). It derives from craving, that is, a mental state of attachment characterized as the tendency of mind to cling to certain specific objects or views (Burton, 2002). Besides craving, ignorance is seen as a fundamental cause of suffering (Cho, 2002). It is understood as our basic misapprehension of the nature of reality (Geshe Tashi, 2005) or lack of self-awareness and correct knowledge of reality (Cho, 2002). The basic feature of ignorance is that we tend to see things including human beings as having permanent, or fixed nature and cling to anything that reinforces our concept of permanence, pushing away those views that threaten it (Geshe Tashi, 2005). Further, craving and ignorance give rise to three mental defilements: greed, anger, and delusion (Olendzki, 2003). From a Buddhist view, the human mind itself is the locus wherein the gap between reality and the human hermeneutical reality represented in conceptual or linguistic rendering accompanied by desire takes place, which results in suffering (Park, 2008).

<sup>1</sup> *Dhamapada* is a collection of sayings of the Buddha.

<sup>2</sup> *Surangama Sutra* is a sutra in Mahayana Buddhism. Especially it has been influential in the Chinese Chan Buddhist school.

<sup>3</sup> Nagarjuna is one of the most important Buddhist philosophers, who lived between the second and third century. Chang (1971) states Nagarjuna is a founder and exponent of Madhyamaka philosophy that centers on sunyata (emptiness) doctrine to achieve liberation from suffering. Regarding the details of Nagarjuna's works and Madhyamaka philosophy, Murti's *The Central Philosophy of Buddhism: A Study of Madhyamika System* would be helpful.

The third truth claims human beings will be inspired to overcome suffering by knowing its root cause (Yun, 2002). What is emphasized here is suffering is neither everlasting nor beyond human reach: rather, since our own craving and ignorance cause us suffering, we can resolve suffering when we properly address those causes (Yun, 2002). As both the causes of suffering and liberation from suffering are two different states but are created by our minds (Park, 2008), the solution is within our minds.

The fourth truth shows the way to address suffering and achieve mental well-being and serenity, which is generally called the noble eightfold path (Rubin, 2003). It is: right view<sup>4</sup>, right thought<sup>5</sup>, right speech<sup>6</sup>, right action<sup>7</sup>, right livelihood<sup>8</sup>, right effort<sup>9</sup>, right mindfulness<sup>10</sup>, and right concentration<sup>11</sup> (Rahula, 1974). The gist of the fourth truth is that when we resolve our suffering, three angles – ethical conduct (right speech, right action, right livelihood, and right effort), mental discipline (right mindfulness and right concentration), and wisdom (right view and right thought) need to work together (Rahula, 1974). When wisdom – an insight into reality, that is, impermanence, interdependence, and empty nature or lack of fixed or unchanging nature, mental discipline – the ability to observe whatever object, view, standpoint we choose or build and to sharpen the level of awareness of our own internal dynamics, and ethical conduct – practicing a moral life with honesty, altruism, and compassion that takes into account others' feelings, perspectives, rights and well-beings as well as our own are well integrated (Geshe Tashi, 2005), we can break suffering and construct a positive and harmonious relationship.

##### 5. A Buddhist analysis of conflict dynamics

The practical implication of the Four Noble Truth doctrine is that the main cause of problems facing us is basically internal. Although external conditions or causes cannot be ignored, looking at them alone and seeing them as externally created blocks us from deepening the understanding of our problems: examining our own mind and its dynamics enables us to grab the inner cause of problems and to explore what

kinds of mind or mind-state we should achieve for peace. This section examines a conflict dynamics based upon the idea that conflict and violence of any kind begin with our thinking (Park, 2008).

At first, to develop an analysis of how our thinking becomes a root cause of conflict, the concept of "the conditioned mind" is proposed. The conditioned mind is characterized as mind shaped by the belief and form of truth that are conventionally accepted as valid and effective in the practical matters of social or cultural life-world (Wright, 1986). We inhabit socially constructed and historically evolved and succeeded life-worlds that form certain cultural patterns – identities, beliefs, values, norms and so on – as scaffolding for meaningful experience (Reysen and Katzarska-Miller, 2013). We build and accept certain frame of reference – certain pattern of worldviews, cultural values, political orientations and ideologies, religious doctrines, moral-ethical norms, and so on – to construct conceptually framed reality to lead a meaningful life (Mezirow, 2003). The conditioned mind is essential to make sense of reality and acquire ways to think, infer, behave, and interact with other people in a certain and supposed manner.

Furthermore, constructing a frame of reference is connected to an expression of our eagerness for psychological security in the face of the uncertainty of practical life (Gordon, 2006). According to Loy, security refers to "the conditions where we can live without care, where our life is not preoccupied without worrying about our life" (2002, p. 8) and that involves stabilizing ourselves by controlling and fixing the real with certain attributes (Mipham, 2002). Put differently, the fragility or instability of constructed views or presuppositions is seen as a threat to security. So getting ourselves conditioned by a particular frame of reference gives us a sense of security as it helps to understand reality in a stable and predictable manner.

However, the potential danger lurks within the establishment of socially patterned frame of reference. The fundamental problem with the conditioned mind lies in our propensity to absolutize any particular frame of reference as universal or complete (Gomez, 1976). Once we establish a specific frame of reference or discursive thought and cling to it as complete, it causes us to fix upon the real – objects, persons, group of people, events and so on – by various supposedly unchanging attributes (Chang, 1971). Forming the sedimented and habitual ways of seeing the real with fixed perspectives on what and how things are, or are not, restricts patterns of awareness and limits our intentional range and capacity for meaning-making commitments (Hershock, 2006).

When we build some particular thought and claim completeness for the perspective constructed, that causes us to be dogmatic, exclusive and intolerant of other views or thoughts (Ramanan, 1978). As fixed idea of identity becomes strong and extreme, we become exclusive of other identities or views of identity (Ramanan, 1978) and take extreme behaviors against those with different attributes of identity (Der-lan, 2006).

<sup>4</sup> Yun characterizes it as a correct view of reality, that is, mutual interdependence and ultimate empty nature (2002).

<sup>5</sup> It refers to a correct perception that our bodies will eventually decay and disappear and that our emotions and thoughts are temporal and impermanent (Yun, 2002).

<sup>6</sup> According to Rubin, it means speaking trustfully, sincerely, and compassionately (2003).

<sup>7</sup> It refers to refraining from needless killing, stealing, and sexual misconduct (Rubin, 2003).

<sup>8</sup> It means living a reasonable economic life, an altruistic life, and a harmonious communal life (Yun, 2002).

<sup>9</sup> It means correct diligence in developing wholesomeness that not yet arisen, increasing wholesomeness that has already arisen, and preventing unwholesomeness from arising (Yun, 2002).

<sup>10</sup> It signifies constant awareness of phenomena that are happening at present and careful recollection of phenomena that occurred in the past (Rubin, 2003).

<sup>11</sup> It refers to spiritual concentration and mental tranquility achieved through the act of meditation to recall the actions and thoughts in the past, perceive the dynamics of mind at present and cultivate goodwill and compassion (Rubin, 2003).

The extreme attachment to our own views can elapse into polarity or negation of other views, values, and ultimately of people who are different from us (Der-lan, 2006). Once the frame of reference is seen as complete, we are prone to feel threat, anger, or hatred to those with different frames of reference, which can provide us with a self-serving justification for discrimination or injustice and impede engagement in communication with those holding different or opposing views and perspectives (Der-lan, 2006).

What should be further discussed is the basic mode of thinking in conditioned state. Though becoming conditioned by social frame of reference is natural and essential to us, as Wade insightfully claims, it is fundamentally of a dualistic nature of thought (right/wrong, good/bad, black/white, to name a few) and divides the world into 'in-group' and 'out-group' (1996). Those people who exhibit dualistic thought are informed by the principle of the excluded middle (Nicolescu, 2006) or 'either-or' stance (Nagatomo, 2000). This 'either-or' logical stance in nature prioritizes one over the other by sharpening the dichotomous relationship between in-group and out-group, whereby an imbalanced attitude invested by extreme in-group self-interest and desire is favored and promoted (Nagatomo, 2000). Consequently, the subject, relying on the strong in-group ego-consciousness, becomes the generative factor for creating and cementing the discriminatory and oppositional relationship (Nagatomo, 2000).

Once we treat the other as something disconnected from us as a result of the establishment of conceptual boundary based on dualistic or dichotomous thought, it tends to become easier to propagate violence of any kind upon the other who is outside the constructed boundary, whether it is an individual or group of individuals (Hart et al, 2000). In dualistic logical and epistemological structures, we tend to project negative qualities upon the outside and see them objectively belonging to them (Wilber, 1993), which promotes a self-righteousness to make a discriminatory attitude for them. Furthermore, the mind in dualistic stance swings from extreme to extreme, and clings to dead-ends (Ramanan, 1978), whereby values, ideas or norms of our own group are not viewed as one of many alternatives, but the only right one: other possibilities are dimly conceived or denied as wrong or inferior (Wade, 1996).

Social conditionedness, though essential to us, in its dualistic or dichotomous nature, can cause us to exaggerate differences between people, creating supposedly firm boundaries between in-group and out-group (Waldron, 2003). And as those boundaries are fixated, we reify them into fixed entities segregating from one another by imputing intrinsic and insurmountable differences (Waldron, 2003). Consequently, interaction to construct a harmonious and constructive relationship is blocked. Whereas socially built distinction made by a frame of reference is a natural phenomenon, it also becomes the crux of the problem by its very nature (Wilber, 1993).

## **6. Examining a Buddhist conflict resolution**

### **6-1. Mindfulness**

As our absolutized conditioned minds become the root cause of conflict and violence, the core of Buddhist conflict resolution is to break the absolutized conditioned state. Once we become conditioned by certain thought or frame of reference, we tend to remain identified with it and kept imprisoned in the conditioned state, which constricts the purview of our thinking and knowing (Welwood, 2000). So the first step for conflict resolution is to disidentify ourselves from the conditionedness to make it conscious and reflect upon it to listen to and accommodate those with different frames of reference. And mindfulness is proposed as a practical method.

Mindfulness means disciplining our minds by focusing on a certain object of thought and be letting go of all thoughts and emotions, and observing whatever arises in consciousness (Kabat-Zinn, 1994). The engagement in mindfulness capacitates us to develop the abilities for moment-to-moment awareness of internal states such as feelings, emotions, thoughts, attitudes, and so on (Brantmeier, 2007). Instead of being controlled by our habitual behavioral patterns, emotions, and thoughts, we can turn the contents of our consciousness, thoughts, feelings and reaction into objects of reflection and analysis (Hart, 2001).

Through the practice of mindfulness, we cultivate a first-hand awareness and experience the social conditionedness of our thinking and knowing and become less identified with our habits of mind and standpoint (Gunnlaugson, 2007). Practicing mindful disengagement creates a space in our own minds for the development of enlarged awareness, attentiveness to broader dimensions of how mind can work by going beyond socially built presuppositions and sedimented habits of thinking and knowing (Hart, 2001). By objectifying the contents of our minds for reflection, we can temporarily mute external factors to discover the role of our mental and emotional habits in framing our perceptions of reality (Chappell, 1999). We come to realize the contents of reality depend not so much on what happens to us, but on what attitudes, understanding, feelings and reactions we give to those events (Chappell, 1999).

As we practice mindfulness, monitoring how our mind works and controlling emotions, we can reach a deeper and more profound intellectual insight into the nature of reality to address absolutized conditioned state that causes negative feelings and dogmatism (Daneth, 2006). The reason for transforming our view of conceptual thought that socially conditions us is that, since conceptual thought construction provides us with a sort of lens to view and organize our world and builds our lived experience, it becomes imperative to correct our misunderstanding of it when it causes us conflict and violence (Orr, 2014). Though exchanging information and opinions between/among those in conflict is important, more crucial is to change the foundational cognitive structure that affects how those

information and viewpoints are understood and given meaning (Zajonc, 2006) so that more positive and constructive values and perspectives beyond conflictual ones can be explored. Through contemplative practice that disidentifies ourselves from frames of reference socially conditioning us and creating 'in-group' and 'out-group' boundaries, we are awakened to the interdependent and interpenetrating nature of reality or conceptual thoughts that form our reality (Apffel-Marglin and Bush, 2005).

For instance, interdependent and interpenetrating nature of conceptual thought forming our reality is expounded by Nagarjuna: "*Without one there cannot be many and without many it is not possible to refer to one. Therefore, one and many arise dependently and such phenomena do not have sign of inherent existence.*" (Komito, 1987: 80) He also states that "*If there is existence, then is non-existence; if there is something long, similarly (there is) something short; and if there is non-existence, (there is) existence; therefore, both (existence and non-existence) are not existent.*" (Tola and Dragonetti, 1995: 128). He further states, "*Unity and multiplicity and past and future, etc., defilement and purification, correct and false – how can they exist per se?*" (Tola and Dragonetti, 1995: 128).

The realization of the dependent-originated nature of any conceptual or linguistic framework awakens us to understand that any form of symbolic knowledge shaping dichotomous human relations cannot be seen as existing outside of the purview of interdependency (Muller, 1998). This does not mean total erasure of difference or demise of all distinctions into an all-frozen sameness, but advocates a reformulation of dualistic thinking. What needs to be known here is that dualistic either-or thinking, though important in some circumstance, is "*only one product of the total functioning of the mind*" (Tart, 2000: 28). Being awakened to the interdependent and interpenetrating nature of symbolic or linguistic knowledge forming dichotomous relations, we can effect a perspectival shift from the dualistic stance to non-dualistic stance (Nagatomo, 2000), wherein prima facie opposing views are not seen as fixed pair of opposites, but as inter-relational constructs. When we transcend dualistic thinking, we become empowered to hold multiplex, complementary both/and dialectical thinking and to appreciate the opposite of a deep truth is another deep truth (Braud and Anderson, 1998).

## 6-2. Dual dimension of dialogue

Besides mindfulness, dialogue assumes a crucial role in conflict resolution. The main objective of dialogue is not just to share information but to uncover processes shaping us and the struggle we are having so that mutual respect and a sense of solidarity are to be aroused (Der-lan, 2006). Dialogue can be seen as an inter-subjective phenomenon, wherein those with distinct or even opposing perspectives promote mutual understanding and transformation.

However, from a mindfulness perspective, reflective dialogue with ourselves also needs to be

carried out while engaged in intersubjective dialogue with those in conflict. Mainly focusing on empowering individuals to control their mind-states and change perspectives, the practice of mindfulness transformation plays a critical role in creating mind-state to engage in a constructive dialogue with others. What must be addressed before and during dialogue is a reactive and impulsive interaction between/among those with distinct values, perspectives or frames of reference.

Mindful observation of our own mind-state slows down the stream of consciousness and suspends impulsive and automatic reaction in encountering different ideas, values or identities. Mindful suspension of habitual reaction facilitates the transition from being focally embedded with our thoughts and feelings to being free to witness them consciously, which leads us to a different self-sense and more complex and multi-faceted form and order of consciousness to appreciate distinct views and ideas (Gunnlaugson, 2007). The practice of internal observation exposes and deconstructs socially conditioned positions of belief, value, thought and frees us to notice and appreciate multiple perspectives and unexpected insights (Hart, 2004).

Dialogue requires openness to be challenged and transformed by encountering others' viewpoints and values as well as the willingness and ability to engage in active listening and understanding of them (Ferrer, 2002). Dialogue demands us to let ourselves be changed in our point of view, attitude, values, mode of thinking and this requires internal and reflective awareness of our own mind-state to free us from any fixed frame of reference (Hadot, 1995). The enhancement of reflective self-awareness keeps us out of the extreme attachment to a particular conditioned state and serves to loosen the power of habits of thought and make our minds a more hospitable place for openness to differences, diversity and creativity (Claxton, 2006). Learning to be less reified in the perspectives through mindful observation of our internal states, we can develop a different basis or relationship to our own mode of thinking and emotional processes (Gunnlaugson, 2007).

Further, the integrative expansion of experiential range as a result of the practice of mindfulness and perspectival shift enables us to engage interpersonal and intergroup interaction in a more extensive and inclusive manner (Firman and Gila, 2002). Recognizing an interdependent and interconnected nature of human relations leads us to approach the phenomenon of conflict from a perspective distinct from conventional dualistic or dichotomous logic. Normally, in conflict characterized as pursuit of incompatible or contradictory goals or clash of values, ideologies or perspectives (Ramsbotham et al, 2011), a dualistic or divisive way of thinking and perception predominates. However, with detachment from a fixed standpoint through mindfulness and perspectival change, the structure of conflict is grasped in the form of mutual interdependence and interpenetration (Park, 2008).

Understanding conflict as a phenomenon of mutual interdependence and interpenetration, we come to realize it is impossible to draw a complete line or picture that judges which party in the conflict is absolutely right or wrong (Park, 2008). They are closely interwoven on a fundamental dimension despite their conflictual and dichotomous relationship and clash of distinct values, perspectives, and seemingly incompatible or contradictory goals (Park, 2008). With a dualistic view of conflict transcended, violence against others is recognized as an act of violence against ourselves and is understood as an undesirable and unrealistic option or course of action to transform a conflictual situation (Brantmeier, 2007).

When interdependent and interpenetrating nature of conflict is realized and resort to force or violence is rejected as a solution, it becomes possible to transcend dualistic or dichotomous view of the pursuit of seemingly incompatible goals or clash of distinct values, perspectives or ideologies. The imposition of our own views, values or clinging to seek mutually incompatible or antithetical goals will lead us nowhere and end up in mutual loss. Rather, it becomes imperative to go beyond the pursuit of incompatible objectives to explore new values and goals that take both parties' needs into consideration (Braud and Anderson, 1998).

Mindful and reflective encounter with ourselves while facing others hones our capacity for constructive and productive dialogue with them to make new interpersonal and intergroup relationship possible (Hadot, 1995). From a Buddhist perspective, conflict resolution must begin with mutual self-critique and transformation in terms of expanding the way of thinking and knowing.

## **7. On a Buddhist peace**

How can peace be understood from the dynamics of conflict resolution that arises from self-reflection and the interior self-transformation? It is proposed as a non-dualistic peace based on the practice of multiple functions of mind – contemplative mind, a deep cognitive transformation framed by interdependent, interpenetrating understanding of reality including human relationships, and a compassionate mind – in a synergistic way.

As examined, one of the most powerful transformative methods is contemplative practice including mindfulness to cultivate a mind-state that is not imprisoned by an attachment to any particular view or frame of reference creating social/cultural boundaries (Bush, 2011). Each individual develops the capacity to transcend particular identities while simultaneously honoring them, to move between/among distinct worldviews, perspectives, frames of reference to create new ones with others in an interdependent and interpenetrating context (Zajonc, 2006), which inspires us to awaken to the ultimate undivided nature of human beings. The dynamics of peace arises from transcending the fixed ego-self, freeing ourselves for

others, realizing and enacting compassion (Coleman, 2006).

Compassion - an exercise of our courage to transcend a dualistic view of human relations to interdependent and interconnected one (Park, 2008) - is an acknowledgement of shared humanity and the commonalities in both suffering and aspiration among those with different identities (Pruitt and McCollum, 2010). It is a capacity to feel others' pain, sorrow, despair or suffering as our own, but at the same time an ability to have clear awareness of interdependent origination of phenomenon of any kind (Hoyt, 2014). A compassionate mind inspires the development of a quality of loving kindness, a universal and unselfish love that extends to ourselves to friends, family, and ultimately to all people including those we are in conflict with. It drives us to take action, care for, and serve others (Pruitt and McCollum, 2010).

Transcending the division between self and others and embracing their ultimate undivided relationship does not mean to deny uniqueness or individuality of identity whether it be individual or collective. Rather, it is a qualitative transformation of the way we view the nature of identity. Instead of seeing our identity as independent and fixed existence, we make a perspectival shift to understand it as the interdependent web of life with no any fixed nature (Loy, 1993). Realizing identity as an open and dynamic living system within a larger interdependent and interpenetrating system leads us to know an ultimate nondualistic relationship between us and others (Rothberg, 1992). We come to recognize that we cannot discriminate ourselves from the inter-relational web of life without damaging both others and ourselves (Loy, 1993).

Consequently, we become aware that our well-being and others' are inseparable: without considering and acting to promote others' peace, our own peace would be impossible (Vaughan, 2002). Nondualistic peace based on compassionate mind is to be understood as a transition from self-centered, dichotomous tensions of in-group and out-group processes to an all-inclusive state of awareness of our fundamental interdependence and interpenetration. The awareness drives us to make an effort to gratify basic needs of all, promote freedom, and justice for others as well as of our own and to resort to peaceful methods to manage differences constructively and creatively in the long run.

## **8. Implications for intercultural dialogue on ethics in the globalized era**

So far, conflict dynamics, its resolution and non-dualistic peace based on the practice of multiple functions of mind have been examined. What are their implications for intercultural dialogue on ethics in the globalized era?

Ethics can be understood as a theory or system of right action (Karlberg, 2010), which allows us to interact with each other and with the world virtuously. The crucial question that an ethical system of any kind

needs to address is how individual and group actions, needs and interests can be reconciled with the greater common good (Karlberg, 2010). The emergence of a variety of problems and challenges affecting the entire globe have expanded the boundaries of this question to include all of humanity (Karlberg, 2010).

Our age has shown increasing interdependence in many fields on a global scale. Humankind has evolved into being interdependent and interconnected in political and socioeconomic system (White, 2007). The world has become increasingly compressed into an interconnected and interpenetrating system in many dimensions and their global ramifications beyond borders cannot be avoided (White, 2004). We have a collective responsibility to address many common problems and challenges for co-creating a peaceful globe. We need to build new ethical norms across cultural lines to deal with shared problems (Evanoff, 2006). In other words, it has become increasingly imperative that those with different ethical frameworks construct new ethics according to the emerging globalized context.

Intercultural dialogue on ethics in the globalized era needs to be understood as a process, wherein those with different ethical frameworks keep unfolding new ethical norms in an interdependent context. One of the biggest problems in intercultural dialogue on ethics in the globalized era is that even if each social/cultural group or state tries to solve the common problems such as international conflict, global terrorism, environmental problems to name but a few, it will resolve none of them if each group sticks to its own ethical framework as absolute, rejecting to alter it according to changing global circumstances. Intercultural dialogue on ethics itself can become a root cause of conflict and worsen the relationship between different cultural groups. As Evanoff (2006) argues, the tendency to cling to our own ethical framework as universal or absolute occurs at relatively unreflective stages, which closes ourselves to different ethical frameworks. At the core of intercultural dialogue should lie reflective practices.

Becoming critically reflective of our own cultural premise or foundation of ethical framework and understanding of problems based on the framework can lead to a transformative redefinition of the problems or problem posing (Mezirow, 1998). Enhancing critical reflection and awareness of differences leads us to recognize all ways of thinking and behaving are constructed, contextual and contingent and consequently to know alternative ways of thinking and behaving are available (Evanoff, 2006). While realizing no any cultural tradition offers a universal conception of ethics, intercultural dialogue with reflective practice can expand our views of how ethics can be conceived (Evanoff, 2006). This does not mean to abandon or reject ethical framework each culture has developed. Rather, reflective intercultural dialogue leads us to realize new global context requires us to transcend particular ethical contexts of respective cultures (Evanoff, 2004).

Transcending ethical frameworks of respective cultures through critical reflection in an interdependent and interconnected circumstance broadens the purview of our understanding of the problem facing us. While our perception of the global problems might be narrow and simplistic when we cling to our own ethical framework, reflective self-critique and dialogue with other cultural ethical norms can make our perception more comprehensive and more complex. An integrative approach to reflective intercultural dialogue based on the recognition of interdependent and interconnected reality of our globe allows us to construct ways of combining prima facie opposite ethical frameworks of respective cultures into a wider and more holistic framework to address common problems (Evanoff, 2006).

Critiquing existing ethical frameworks built by each culture is not easy. But when new forms of problems that require cooperation across cultures emerge, new ethical frameworks also need to be constructed that not only consider the distinct values, interests, and goals of the respective cultures but also are capable of resolving the common problems they face effectively and constructively (Evanoff, 2004). Reflective intercultural dialogue to see our own ethical norms as constructed and contingent can generate new, more comprehensive and integrative ethical frameworks in which new approaches to resolving global common problems might be proposed (Evanoff, 2004). To make intercultural dialogue on ethics viable and sustainable in our globalized era, it is essential to understand culturally conditioned and bound nature of ethical framework and to reframe our understanding of the problems we need to face and resolve in an interdependent and interconnected relation by becoming open to co-constructing more complex and holistic ethical frameworks.

## **9. Conclusion**

Expanding the purview of thinking and knowing by going beyond social/cultural conditioned state and enacting multiple functions of mind for a sustainable peace and intercultural dialogue on ethics is not easy. However, the profound complexity and uncertainty of our times facing several unprecedented global problems requires us to exercise our collective creativity to construct more holistic visions of order, new forms of action and appreciate and hold a variety of viewpoints in interdependence and mutual respect (O'Hara, 2005).

By liberating ourselves from social/cultural constraints through contemplative practice and reflective thought, we can open up our untapped potential to unfold new forms of imagination and holistic visions of future (Dabrowski, 1995). Then, political, social, economic, and environmental problems in which we perceive ourselves as being powerless to address can come to be appreciated as something that provides us with precious opportunities to develop more complex and holistic ways of thinking and knowing to redesign our social and global systems (White, 2007). With the

development of complex and holistic thinking that integrates seemingly different and/or even opposing views and perspectives, we engage in a critical and transformative dialogue with ourselves and our existing socio-cultural world and show empathy toward every human being in the larger social and global dimension to for a sustainable future.

Here, a core of sustainable future is enacting unity in diversity in addressing complex and multi-faceted common social and global problems. Diversity does not merely mean differences or different perspectives and ethical norms exist separately. Rather, touching diversity and differences makes the rise of complex and coordination-enriching interdependence (Hershock, 2012), whereby we experience difference and distinctiveness not as a threat or a subject for division but as an opportunity for mutual insight and inspiration to explore something new to all participants. Unity in diversity means that those with different or even opposing frames of reference engage in an exploratory, ongoing and ever-lasting process that explicates or unfolds new values and meanings to achieve and sustain their interdependent, mutually liberating and transformative relational dynamics. Achieving a sustainable globe by those with different social/cultural frames of reference and distinct thoughts, needs and interests is a hard challenge. However, the direction of the future of the world is always in our hands (White, 2004).

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## EcoHealth and Ethics: Where is the guidance?

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### Abstract

EcoHealth is an emerging field whose premise is to positively influence the health and wellbeing of humans, animals and ecosystems globally. Ethical concepts and theories are used to reason for certain actions influencing humans (e.g. bioethics), animals (animal ethics) and the environment (environmental ethics) globally. The purpose of this study was twofold; a) to determine how and to what extent the terms "ethic, ethics, ethical" and 41 other ethics terms including 20 ethical theories are used in the academic Ecohealth literature and b) to investigate the geography of EcoHealth academic article authorships. A total of n=648 academic articles were downloaded from four academic databases (EBSCO All, Scopus, Science Direct and Web of Science) that had the term "ecohealth" in the article title, article abstract, article keywords or in the journal title. A content analysis of the n=648 articles was performed using ATLAS-ti©, a qualitative analysis software. We found that only nine of the n=42 ethics keywords showed up in more than one percent of the 648 EcoHealth articles. Furthermore, we found that authors from n=70 countries from diverse geographical areas contributed to the n=648 EcoHealth academic articles. However, most of these contributions consisted of 1-3 articles whereby authors from the USA contributed 250 articles, which is equivalent to 38.5% of all the EcoHealth articles investigated. The majority of articles originated from the USA, Canada, Australia and Europe. Given that the field of EcoHealth is considered a global endeavor, it is problematic that the diversity of authorship is so limited geographically. Furthermore the lack of meaningful engagement with ethics terms and theories in the n=648 EcoHealth academic articles limits the global guidance on human-human, human-animal and human-environment relationships, which in

turn impedes progress on the goals that the EcoHealth field is trying to accomplish.

**Keywords:** ethics, EcoHealth, human-human ethics, human-animal ethics, environmental ethics

## 1. Introduction

### 1.1. *The Topic of EcoHealth*

EcoHealth is an emerging field [1-3] that seeks to “study [the] changes in the biological, physical, social, and economic environments and the relations of these changes to human health” [4]. The first conference of the International EcoHealth Association’s took place in 2006 [4]. EcoHealth as a field emerged as a comprehensive global endeavor, holding the premise to “improve the health and wellbeing of people, animals and ecosystems” [5]. In pursuing this premise, the field of EcoHealth relied initially on transdisciplinarity, participation, and equity as their three methodological pillars [6]. In 2012, Charron, an influential figure in the EcoHealth field, proposed to expand the three methodological pillars of the field to six principles: systems thinking, transdisciplinary research, participation, sustainability, gender and social equity, and finally, knowledge to action [7]. These six principles are still used to examine the complex linkages between society, animals, ecosystems and environments in order to understand and improve the health and wellbeing of humans, animals and environments at a global scale [7].

### 1.2. *The Topic of Ethics*

Ethics fields, theories and reasoning are used globally to guide the actions that influence humans, animals and the environment. Human ethics provides guidance on how to interact and relate with other human beings and communities by critically analyzing the “important values at stake, the rules and norms that are [used] to protect these values, the duties implied in social roles and positions that can foster these values and further these rules, and human virtues or capabilities that enable us to act accordingly” [8]. Human ethics influences every aspect of our lives and comes in many different forms including religious ethics, legal ethics, professional ethics, business ethics, healthcare ethics, bioethics, neuroethics, nanoethics and others [9]. The phrase “human ethics” generates 39,500 hit counts in Google Scholar™ [accessed on July 27<sup>th</sup> 2015].

Animal ethics is also a global endeavor used to guide how animals are raised and treated by humans (animal ethics philosophy), as well as to consider animal quality of life and how to improve animal use practices (animal welfare science) [10]. Animal ethics provides this guidance by questioning the old anthropocentric view of animals as tools, resources, machines or commodities for our own use and introducing the idea that animals are sentient and as such, they have intrinsic value and should be treated with respect [11]. The phrase “animal ethics” generated 113,000 hits in Google Scholar™, [accessed on July 27<sup>th</sup> 2015]. The field of animal ethics continues to make

strong arguments for animal rights, which seeks to provide animals with their most basic interests [12].

There are no rigorous borders between animals and humans that can be upheld or sustained according to Derrida, author of the “*The Animal*” [13]. Derrida argues that the subjugation of animals cannot be dissociated from questions of human ethics and rights [13]. In fact, the human and animal ethics discourses are interconnected and have been combined to create several different frameworks, one of which is the One Health framework. One Health recognizes that human health cannot be disaggregated from animal health, especially in the context of diseases transmitted between animals and humans known as zoonoses [14]. Current strategies to address these emerging diseases strongly reflect human interest and thus call into question both human and animal ethics [14].

Environmental ethics (73,200 hits in Google Scholar™ [accessed on July 27<sup>th</sup> 2015]), is used to guide how humans interact with, and affect, the environment [15]. This guidance includes consideration of the quality of the environment and the ability of the environment to provide ecological services and to sustain life [15]. Environmental ethics does this by consistently considering the “appropriate concern for, values in, and duties regarding the natural world” [15]. This consideration is employed through several different approaches such as land ethic, biocentrism, ecojustice and political ecology [15]. Environmental ethics has six levels of concern, including humans, animals, organisms, species, ecosystems and Earth, which further demonstrates an overlap between human and animal ethics as well as the added component of environmental ethics [15].

### 1.3. *Ethics within EcoHealth*

The field of EcoHealth examines human-human, human-animal and human-environment relationships in order to improve the health of humans, animals and the environment [7].

The 2014 annual EcoHealth conference singled out three themes as important for EcoHealth scholars to engage with: a) drivers of change to health, ecosystems and society: integrating understanding from global to local scales, b) innovations in theory, methods and practice and c) moving between research and action: mobilizing knowledge to benefit health, ecosystems, and society [16]. Ethical theories and reasoning can be useful in exploring the drivers of change to health in an equitable way, to reason what innovations are appropriate to employ, and to address knowledge-to-action barriers in an ethically sound way.

Charron’s 2012 paper “*EcoHealth Research in Practice: Innovative Applications of an Ecosystem Approach to Health*” outlines EcoHealth’s goal of employing innovative research in order to improve people’s interactions with the environment to achieve sustainable and equitable change in human health and well-being [7]. Charron claims that “ethical dimensions are emphasized in EcoHealth research and practice through integration of stakeholder perspectives and

participation, and through the research intent to ...make ethical, positive and lasting changes" [7].

Given the past and present ethics engagement in human-human, human-animal and human-environment relationships, as well as the views of the 2014 EcoHealth Conference and Charron in his "*EcoHealth Research in Practice: Innovative Applications of an Ecosystem Approach to Health*" paper, it is of interest to analyze how ethical fields, theories and reasoning are framed within the academic EcoHealth literature. To do this, we will analyze how ethics and 41 related terms or theories are covered in the academic EcoHealth literature. We will discuss the findings and implications of the portrayal of ethical reasoning and theories in the academic EcoHealth literature.

## 2. Methods

### 2.1. Data Source and Collection

Google Scholar™ was used to find the number of hits for each ethics discourse term or ethical theory when paired with each of the three types of ethics (human, animal, environmental) and the field of EcoHealth separately [accessed on July 27<sup>th</sup> 2015]. This analysis demonstrates how often human, animal, and environmental ethics mention, and perhaps engage with, ethics terms or ethical theories compared with how often the field of EcoHealth engages or employs these terms or theories.

A search was conducted for the term "ethic\*" in the journal title in four academic databases (EBSCO All (an umbrella database consisting of over 70 databases), Scopus, Science Direct and Web of Science). The articles generated from this search were then searched for the term "ecohealth" in the abstract (December, 01, 2015).

A total of n=648 academic articles were downloaded from May 5-7<sup>th</sup> 2015 from four academic databases (EBSCO All, Scopus, Science Direct and Web of Science) that had the term "ecohealth" in the article title, article abstract, article keywords or in the title of journal. These journal articles (n=648) were imported into ATLAS-ti7©, a qualitative analysis software, where they were analyzed to produce both quantitative and qualitative data.

### 2.2. Data Analysis

Once in an ATLAS-ti7© hermeneutic unit, we used the Family Manager function to separate the n=648 academic articles into two different families: "social" and "non-social". This distinction was based on whether the articles had the term "social" anywhere throughout the paper, which enabled us to analyze which papers had more social focal points compared with those that do not. In addition, we investigated whether there is an existing difference in the geographical origin of authors between the two sets of articles (Table 4).

The term "ethic\*" (the \* character is used in search queries in ATLAS-ti7©, it takes all results that match with the initial word before the \* regardless of the ending) was coded for using the Auto-Coding function within ATLAS-ti7©. The Auto-Coding function reveals

all the content in all the articles linked to the term and the number of times this term was found in the literature (hit counts). This process was repeated for n=22 ethics terms and n=20 ethics theories. The terms that we coded for were: value, harm, philosophy/philosophical, justice, moral\*, autonomy, humane, animal ethics, bioethics, dignity, ecocentrism, environmental ethics, anthropocentrism, care ethics, ecological ethics, virtue ethics, feminist ethics, human ethics, public health ethics, beneficence, maleficence. The following ethics theories were coded: Kant, Socialist, Egalitarian, Moral Relativism, Individual Relativism, Cultural Relativism, Psychological Hedonism, Psychological Altruism, Female Care Based Ethics, Virtue Theories, Samuel Pufendorf, Rights Theory, WD Ross, Consequentialism, Deontology, Utilitarianism, Preference Utilitarianism, Libertarian and Feminist Approach. The 42 terms were taken from Beauchamp and Childress' 1979 paper "*Principle of Biomedical Ethics*" [17] as well as encyclopedia or web sources [18-21]. Anthropocentrism and ecocentrism terms were used to explore different ways to relate to nature. To obtain quantitative data we examined in how many articles these n=42 terms were present and how often the terms were present in a given article (Tables 2 and 3). To obtain qualitative data for the terms that were present in the n=648 articles, we read the context in which these terms were mentioned in the articles.

### 2.3. Limitations

There are several limitations to our study. To start, only articles written in the English language were downloaded, meaning that the study has excluded different cultural viewpoints that could be present in academic literature that is written in other languages. In addition, limiting our study to English language articles may have led to an under-appreciation of the geographical origin of the authors who are engaging with the field of EcoHealth. Also, the articles we used were drawn from only four databases (EBSCO All, Scopus, Science Direct and Web of Science). The selectivity of the databases could have led to a biased collection of EcoHealth articles, which might not be a representative sample of the field of EcoHealth as a whole. Likewise, only articles that had the term "EcoHealth" in the article title, article abstract, article keyword or in the title of journal were downloaded. Other similar discourses and terms such as "ecological health" were not included and this too could have led to a selection bias related to the EcoHealth discourse [22]. The ethics keywords we chose are not considered a complete list representative of the entire field of ethics, however it does reflect a variety of visible ethics terms, fields and theories. Finally we only searched for journals with ethic\* in the title in only four databases (EBSCO All, Scopus, Science Direct and Web of Science) and as such our results cannot be generalized for all journals with ethic\* in the title.

*Table 1:* The number of hit counts for each ethics discourse term or theory when paired with the human, animal or environmental ethical sub-fields and the EcoHealth field, according to Google Scholar™ [accessed July 27<sup>th</sup> 2015].

Term	Sub Groups of Ethics Discourses			EcoHealth
	Human ethics	Animal Ethics	Environmental Ethics	
Value	25,100	63,100	47,900	6,480
Philosophy/philosophical	8,040 / 5,170	7,280 / 4,860	39,900 / 29,600	1,320 / 1,280
Harm	4,880	3,590	14,800	1,170
Justice	5,580	3,620	24,500	1,030
Moral*	7,000	5,580	32,600	621
Autonomy	4,040	1,630	10,700	387
Ethic*	2,690	2,030	18,100	222
Humane	1,170	3,520	4,430	200
Animal ethics	877	113,000	4,430	200
Environmental ethics	940	2,110	73,200	147
Dignity	2,470	1,290	6,710	136
Bioethics	855	1,860	5,980	96
Socialist	889	316	4,100	91
Kant	1,630	1,810	8,050	78
Egalitarian	784	423	3,540	74
Anthropocentrism	554	950	7,050	53
Utilitarianism	809	1,180	5,450	32
Human ethics	39,500	877	941	17
Public health ethics	36	76	348	17
Care ethics	126	36	747	13
Ecological ethics	206	181	2,730	13
Beneficence	515	305	1,350	13
Hedonism	262	151	928	13
Ecocentrism	149	175	2,370	12
Feminist Approach	97	63	325	12
Consequentialism	210	291	3,010	8
Deontology	243	287	1,390	6
ILbertarian	243	175	1,740	4
Psychological hedonism	8	6	40	4
Psychological altruism	10	4	27	4
Rights theory	116	317	955	4
Maleficence	163	117	385	4
Individual relativism	6	2	28	4
Virtue ethics	342	559	2,770	3
Cultural relativism	186	84	702	3
Feminist ethics	120	204	971	1
Samuel Pufendorf	10	17	64	1
WD Ross	63	92	294	1
Moral relativism	156	80	617	0
Female care based ethics	0	0	0	0
Virtue theories	16	18	132	0
Preference utilitarianism	47	127	318	0

### 3. Findings

#### 3.1. Google Scholar

In the first step we compared how often the n=42 ethics related terms were mentioned when paired with the phrases “animal ethics”, “environmental ethics”, “human ethics” and “EcoHealth” in the Google Scholar search.

*Table 1* reveals that the ethics keywords had greater hit counts when paired with human, animal or environmental ethics than with the term “ecohealth” in each case except for the terms “Psychological Altruism” and “Individual Relativism” (*Table 1*). “Female Care Based Ethics” was the only one of the ethics keywords (n=42) that had zero hit counts when paired with all

three ethics types and the term ecohealth (*Table 1*). In n=36 of n=42 cases, the three types of ethics had more than threefold the hit counts than “ecohealth” did when paired with the ethics keywords (n=42) (*Table 1*). In general, the ethics terms had much more coverage in the three types of ethics and term “ecohealth” than the ethical theories did (*Table 1*). For each ethics keyword, there were many more hit counts for environmental ethics, than there were for human ethics, animal ethics or the term “ecohealth” (*Table 1*). Therefore, each ethics discourse term, field or theory engages with human, animal and especially environmental ethics far more often than with the field of EcoHealth as reflected by the presence of the term “ecohealth” according to Google Scholar™ [accessed on July 27<sup>th</sup> 2015].

### 3.2 Mentioning of ecohealth in ethics journals

In a second step we searched for the term “ethic\*” in the journal title of four academic databases (EBSCO All, Scopus, Science Direct and Web of Science) generating n=122,320 article hits in EBSCO All, n=43,430 article hits in Scopus, n=1,479 article hits in Science Direct and n=10,026 in Web of Science and the presence of the term “ecohealth” in the abstracts of these articles. All four databases had zero article counts when searched for both the term “ethic\*” in the journal title and the term “ecohealth” in the article title, abstract, keyword (Scopus and Science Direct); topic (Web of Science) and abstract (EBSCO).

### 3.3 EcoHealth academic Literature

In the third step, we compared how often the n=42 ethics related terms were mentioned in the n=648 downloaded EcoHealth academic articles.

Table 2 and 3 reveal the following: the term “ethic\*” had n=195 hit counts in n=123 of the n=648 articles covered (Table 2). Of the n=22 ethics terms and n=20 ethics theories, there were only nine ethics terms, with hit counts ranging from n=17-2282, that were present in greater than or equal to six ( $\geq 1$  percent) of the n=648 articles covered. Only one of the n=20 ethics theories (Kant) was present in greater than or equal to six ( $\geq 1$  percent) of the n=648 articles covered. N=17 ethics theories were not mentioned.

From the nine keywords that are represented in more than one percent of the downloaded articles, only five of them are considered to have substantial coverage with hit counts greater than or equal to 100 and article counts greater than or equal to 50: “value” (n=2282, n=414), “harm” (n=656, n=195), “ethic\*” (n=195, n=123), “philosophylphilosophical” (n=174, n=78), “justice” (n=118, n=51).

### 3.4. Qualitative Analysis

#### 3.4.1 Value

Of the 42 keywords, the term “value” was most prevalent throughout the n=648 EcoHealth academic articles (n=2282 hit counts in n=414 articles). The phrase “value of” (n=277 hits) highlighted a number of values throughout the n=648 EcoHealth academic articles which included numerical or percentage values (n=46 hits) such as the value of PM<sub>10</sub> levels (65  $\mu\text{g}/\text{m}^3$ ), ecosystems or environments themselves and the conservation of their ecological services (n=10), the nutritional or economic value of several foods (n=7) including berries [23] and rice [24] and the value of ecosystem approaches to health (including EcoHealth & One Health) (n=6) in three articles [6, 25-28]. Also included under the phrase “value of” was networking and social connections (n=6) in four articles [25, 29-31], several animals and forms of wildlife for food or entertainment (n= 6) such as bats [32], birds [33, 34] and salmon [35], participatory research [36-38] community involvement (n=4) in one article [29], transdisciplinary research (n=3) in two articles [39, 40],

partnerships and collaboration (n=3) in three articles [25, 41, 42], conservation medicine (n=3) in two articles [43, 44] and Indigenous values including respect and reciprocity (n=2) in two articles [45, 46]. There were several other values such as science [47], a systems approach in exploring human response to threats [48], risk reductions for certain types of risk [49], a holistic understanding of interventions [50] and cultural notions of well-being [51] that were mentioned once or twice.

Table 2: The hit count and the article count for each ethics discourse term (by name in ATLAS-ti©) using ATLAS-ti© software

Term	Hit Counts (ATLAS-ti©)	Number of Articles (ATLAS-ti©) (n=648)
value	2282	414
harm	656	195
ethic*	195	123
philosophylphilosophical	174	78
justice	118	51
moral*	62	46
autonomy	31	13
humane	17	13
animal ethics	8	6
bioethics	8	5
dignity	4	3
ecocentrism	4	2
environmental ethics	3	2
anthropocentrism	1	1
care ethics	1	1
ecological ethics	1	1
virtue ethics	0	0
feminist ethics	0	0
public health ethics	0	0
human ethics	0	0
beneficence	0	0
maleficence	0	0

The n=648 EcoHealth academic articles used the phrase “value in” 34 times covering many aspects such as changing social value in community [23], EcoHealth’s value in integrating health [52], and net value in selected technologies [49, 53]. The n=648 EcoHealth academic articles perceived there to be “value from” n=22 times covering different cultural settings [54], intact ecosystems [55], wastes such as fertilizer [56], samples collected in certain seasons [57], p-values [58] and others. The coverage of “value” included “value chain[s]” n=25 times covering different types such as poultry or agricultural [34]. “Cultural value[s]” was mentioned n=20 times covering Indigenous cultural values [59], the cultural values of society reflected in ethics [45] and sociocultural values [23, 51, 60]. The phrase “indicator value[s]” was used n=19 times ranging from ecological [61] to bird [62] indicator values. “Economic value” were mentioned n=19 time covering livestock [63], berries [23] and environmental and health benefits [49] among others. “Stakeholder value” as a phrase was used (n=14), but only in one article, which indicated that stakeholder

values are used to increase planning, understanding and decision-making, and this is often translated into policy [64].

Aside from the terms mentioned above with greater than fifteen hits, there is little coverage of the following terms: human value (n=14), nutritional value (n=12), social value (n=12), intrinsic value (n=10), market value (n=9), commercial value (n=7), highly valued (n=7), ecological value (n=6), spiritual value (n=5), aesthetic value (n=5), health value (n=5), Western values (n=5), limited value (n=4), value-based (n=4), community values (n=4), risk value (n=4), personal values (n=4), collective value (n=3), property value (n=3), women value (n=2), future value (n=2), normative value (n=2), novel value (n=2), academic value (n=2), democratic value (n=1), traditional value (n=1), financial value (n=1), value-free (n=1), European value (n=1), global value (n=1), value diversity (n=1), quantifiable value (n=1), scientific value (n=1), diverse values (n=1), interdependent value (n=1), valued members of society (n=1), value of nature (n=1), shift in values (n=1) and fundamental value (n=1).

*Table 3:* The hit count and the article count for each ethical theory (by name in ATLAS-ti©) using ATLAS-ti© software

Term	Hit Counts (ATLAS-ti©)	Number of Articles (ATLAS-ti©)
Kant	21	14
Socialist	2	2
Egalitarian	1	1
Moral Relativism	0	0
Individual Relativism	0	0
Cultural Relativism	0	0
Psychological Hedonism	0	0
Psychological Altruism	0	0
Female Care Based Ethics	0	0
Virtue Theories	0	0
Samuel Pufendorf	0	0
Rights Theory	0	0
WD Ross	0	0
Consequentialism	0	0
Hedonism	0	0
Deontology	0	0
Utilitarianism	0	0
Preference Utilitarianism	0	0
Libertarian	0	0
Feminist Approach	0	0

### 3.4.2. Harm

The term “harm” had a high hit count in the academic EcoHealth literature (n=656), however there were a large number of false positives associated with this term. Terms such as pharmaceutical, pharmacology, pharmacists or harmony, harmonious, harmonizing and names such as Harmon and Sharma within the references sections accounted for 421 hit counts.

Of the other 235 hit counts that were in fact the term “harm\*”, there was a wide variety of coverage. The most common uses of the term harm was harmful products, organisms or occurrences, which were

natural, man-made or otherwise (n=139). Of the natural harm, algal blooms or toxins (n=21), pathogens (n=11), seafood or fish consumption (n=15), and environmental change, degradation or disasters (n=18) were commonly mentioned. Other natural harms included light exposure (UV) (n=3) in three articles [60, 65, 66], cyanobacteria (n=3) in two articles [65, 67], lead (n=3) in three articles [44, 68, 69] and mosquitos (n=2) in two articles [58, 70]. The human-made harms were most commonly pesticides (n=16) and (methyl) mercury (13), although chemicals [66, 71-74], urbanization [47], vehicles [75], industrial food production [74] and inappropriate use of technology [66] were among others mentioned as well. Other indirect harms included nutrient deficiencies in children [76], limited surveillance [77], the pace of human activity [66] and lack of environmental regulations [78].

The term harm also covered aspects that protect against, minimize or prevent harm (n=34) including precautionary measures [72, 79-81], the immune system [82], regulations and guidelines [47, 71, 83-85], sustainability [72, 86] and EcoHealth [79, 81, 87] among others. Harm was tied to vulnerability [88] and in turn, tied to vulnerability assessment [88]. “Hazard is the potential for harm” [47, 89], while adaptive capacity is the potential to cope with a hazard and reduce harm [82, 88]. Harm was also linked with risk [47, 83, 85] and risk assessments specifically after harm has occurred [85, 90]. Lastly, the academic EcoHealth literature briefly mentions that there are harmful [68], harmless [68] and “modern” practices [68] as well as thresholds of harm [72, 91] associated with these practices.

### 3.4.3. Ethic

The term “ethic\*” (n=195) was most frequently used to affirm ethics approval or to outline the ethical considerations or implications of the research (n=79). Research ethics approval (n=62) included approval for human participants (n=45), animal subjects (n=15) and use of Code of Research Ethics for Indigenous populations [45]. Ethical considerations (n=17) were employed in risk assessments or management [47], the exploitation of resources [47, 92], vaccines [77, 93], Inuit communities [94], and technology [93, 95, 96].

Beyond ethical approval and considerations, the academic EcoHealth literature examined ethical approaches or frameworks (n=9), which emphasized citizenship to land [97, 98], human responsibility for the global biosphere [99] and partnerships with the Indigenous [45]. The term “ethic\*” was used to talk about Leopold’s land ethic concept (n=6) [97, 100], which involves appropriate stewardship and maintenance of the land and is strongly related to the capacity of the environment [97]. Types of ethics emerged such as ethic of reciprocity [51] and ethic of place [48], which was similar to Leopold’s land ethic. “Ethic\*” was also used to talk about ethics concerning human-nature relationships [101], the protection of sensitive habitats [47], the exploitation of water resources by current generations [47], the technology of change [95, 96] and climate change [84]. Interestingly, Johnston et al. claimed that according to

aboriginals, social security benefits deplete work ethic [102]. Finally, the academic EcoHealth literature covered unethical practices (n=5), including Inuit research [36], harmful sampling in animals [103, 104], advertisement of benefits of illegal consumption of endangered species [105] and to reduce consumption of bush meat without alternative food [106]. There were 37 hit counts for the term “ethic\*” that were represented in the references of the articles, and were not considered meaningful.

#### 3.4.4. Philosophy / philosophical

Of the 174 hit counts for the term “philosophy/philosophical”, 81 hits were false positives, the most common of which is the *Philosophical Transactions of the Royal Society* series in the reference sections of the articles. Of the other 93 hit counts, many articles used the term “philosophy/philosophical” to discuss the philosophical basis or foundation of several concepts or theories (n=6) including Leopold’s land ethic concept [97], the Settings Approach [107], evolution or cultural theories [108], sustainable land-based food production [35], and the concept of partnership [45, 107]. The academic EcoHealth literature covered how the field of philosophy has informed EcoHealth’s concept of health [25], and how community participation philosophy in particular had a place in the initial stages of the EcoHealth framework [68]. A pattern emerged whereby philosophy was being used as a synonym for approach (n=5), and as a result the term philosophy was used to talk about a top-down approach [59] and a holistic approach [109], among others. In addition, the term philosophy was used to refer to a branch of knowledge or thought (n=7), which included EcoHealth [36, 43, 99, 110], socio-ecological resilience [59], Western [102] and “Indian” thinking [47]. Lastly, there were some sub-discourses such as Chinese philosophy, which recognized that opposite forces complement each other [111], or scholastic philosophy that emphasized the Catholic dogma [112].

#### 3.4.5. Justice

The term “justice” was used throughout the n=648 EcoHealth academic articles (n=118), with environmental and social justice emerging as prominent themes in watershed management processes [113, 114] and across the EcoHealth literature [115]. Environmental justice was advocated for in one EcoHealth articles [68] and exercised by Leopold’s land health concept [97]. Environmental justice and EcoHealth thinking were combined to create a political ecology of human and environmental health to combat injustices [116]. Interestingly, environmental justice was recognized as a social determinant of health within the EcoHealth field [68], while social justice was considered a condition for health according to the Ottawa Charter for Health Promotion [87, 117] and a core element in the field of EcoHealth [27, 98, 118, 119].

Justice, as well as sustainability and equity, are said to affect health in the EcoHealth approach, which is in

part because all three link to transdisciplinary research [25, 27, 70, 118, 120]. According to Orozco, transdisciplinary practice requires commitment to social justice and citizenship [120]. In addition, Wahbe et al., claims that partnerships with groups, the Indigenous in particular, contributes to self-determination and the promotion of social justice [45]. In the academic EcoHealth literature social justice is viewed as dependent on the distribution of environmental and ecological resources (n=1) [87], valuable in the Settings Approach [107] and public health [9], but not generally reflected in public policy [47].

Certain articles pointed out past or ongoing injustices [116, 121-124] and the groups that face these injustices namely women [30, 125], the poor [78, 84] and minorities [44], which is well aligned with EcoHealth’s focus on inequities. Other articles looked at juvenile justice [126], international justice [127], the supreme court justice and subsequent environmental courts [128].

#### 3.4.6. Moral

The coverage of the term “moral\*” made up 15 of 62 hit counts, while the remaining 47 hit counts were false positives including humoral, femoral and several reference names such as Morales. The term “moral\*” was most frequently used to talk about the importance of having a moral compass [97] – moral responsibility or integrity – when dealing with land use and the natural resources control and conflict that results from ecosystem services management [81, 129]. Similar to this coverage was talk of reparation for the moral value of the environment, a concept termed “environmental security” [47]. Another use of the term stemmed from transdisciplinary practices within the EcoHealth field, which similar to the other ethics terms, relies on citizenship and the exploration of moral values [120]. The academic EcoHealth literature possessed certain unique and idealistic quotations associated with the term “moral\*”, the first of which is the idea that nature and human nature are themselves moral [47, 130], the second of which is what is termed the ‘Ideal Sphere of Existence’ (n=1), meaning all that individuals or the population holds as the best way to be [47]. Finally, the term “moral\*” was used negatively to identify moral hazards such as participant reimbursement in surveillance participation [131], or to look at the demoralization and moral injustice occurring around the issues of gender inequity [50] and state marginalization [116].

#### 3.4.7. Autonomy

Of the subset of articles which discussed autonomy (n=31), many mentioned factors that increase autonomy (n=7), such as the participant approach [125] and empowerment [132], but also natural and cultural resource management [102] and car ownership [47]. Some articles examined how the role of gender assumptions, processes and inequities affected people’s ability to make decisions regarding health and well-being (n=13) in three articles [125, 133, 134]. Other articles looked at autonomy as a part of the

overall health and well-being of both individuals [51] and ecological or environmental systems [135, 136]. Lastly, the invasion of land and policies and the resulting disease, depression and loss of connection with the land reduced the autonomy of Indigenous people according to the EcoHealth discourse content [102, 137].

#### 3.4.8. Kant

The coverage of Kant and Kantian theory was poor (n=21) throughout the literature, revealing the lack of conceptual or theoretical coverage in the field of EcoHealth. There was only one relevant quotation, which discussed the idealist view of Kantian Optimists' who believe that international law and human rights are crucial to the perception of security threats [47].

#### 3.4.9. Humane

The term "humane" was rarely used in the n=648 EcoHealth academic articles (n=17). The most common use of the term was to inform readers that subjects within the study had been humanely euthanized [138-142] and that the research was performed in a humane manner [143]. Two other articles separately discussed humane and wildlife conservation communities and humane means of reducing production [144, 145]. Several other articles (n=4) were false positive.

#### 3.4.10 Bioethics

The use of bioethics discourse (n=8) was not covered beyond ethics approval for research studies [146, 147] or the name of certain bioethics journals [37, 148, 149].

#### 3.4.11 Animal Ethics

The term "animal ethics" (n=8) was used only to affirm animal ethics approval within the field of EcoHealth [104, 139, 150-153].

#### 3.4.12 Dignity

The "quality of environment that permits a life of dignity"[79] is Daszak's meaningful quote from the Stockholm Conference (1972), which uses the term "dignity" (n=4) to emphasize the importance of the environment. However, it was one of only three relevant quotations in the academic EcoHealth literature. The other two quotations talk about the death of flowers and in turn the death of the flower's dignity, which in this case was a poetic illustration of the effects of climate change [154]. The coverage of the term "dignity" was minimal.

#### 3.4.13 Ecocentrism

According to the one relevant quotation in the coverage of the term "ecocentrism" (n=4), EcoHealth careerists make both ecocentrism and mitigating climate change strong focuses [111].

#### 3.4.14 Environmental Ethics

Despite being a main sub-type of ethics, "environmental ethics" (n=3) as a term connects directly to EcoHealth literature only in that it links to Leopold's concept of land ethic that was previously mentioned [97].

#### 3.4.15 Socialist

The term "Socialist" (n=2) was used to speak about socialist millworkers in early protests for civil rights [155] as well as the lack of resources for healthcare during the post-socialist transition period [156].

#### 3.4.16 Egalitarian

There was one quotation for the term "Egalitarian", which talks about the rapid economic growth that occurred in a relatively egalitarian social structure in Japan and the increase in life expectancy that resulted [99].

#### 3.4.17 Anthropocentrism

The coverage of the term "anthropocentrism" is limited to one quotation which says that anthropocentrism conflicts with sustainability, one of six principle pillars of the field of EcoHealth [157].

#### 3.4.18 Care Ethics

There was one quotation for the term "care ethics", which was a false positive employing the term "Healthcare ethics" [78].

#### 3.4.19 Ecological Ethics

The term "ecological ethics" had one quotation which stated that The International Association for Ecology and Health biennial conference has diverse topics ranging from ecological ethics to conservation medicine [158].

### 3.5. Geographical origin of authorship

Table 4 reveals that although there are authors from diverse geographical areas contributing to our sample of n=648 EcoHealth academic articles, most of these contributions consist of 1-3 articles for a given country. The USA contributed 38.5% to our n=648 articles, The second largest contributor was Australia, although it contributed more than four times less articles than the USA did (n=62). There were very few articles that contain the term "social", and of those that did, the geographical distribution of authorship across countries is quite different, with Canada being the top country (n=30).

### 4. Discussion

We found that despite extensive ethics engagement within the areas of human-human, human-animal and human-nature relationships in general, our findings generated from our sample of n=648 EcoHealth academic articles suggest that the EcoHealth field has not engaged extensively with ethics terms and theories and, if there is engagement, it is applied rather than conceptual. Furthermore, we found that although authors from over 70 countries contributed to the n=648 EcoHealth academic articles, most countries contributed only 1-3 articles in comparison to the USA who contributed 250 articles, which is equivalent to 38.5 percent of the sample of the n=648 EcoHealth academic articles we investigated.

#### 4.1. Lack of Coverage of ethical discourse terms and theories

We posit that the lack of conceptual engagement with ethics terms and theories in our sample of articles is



problematic. Existing ethics literature covering human-human, human-animal and human-nature indicates that ethics terms and ethical theories could be useful tools for the EcoHealth field. A good example is the term “care ethics”, which was only mentioned once as a false positive employing the term “healthcare ethics” [78]. According to the Encyclopedia of Philosophy, care ethics recognizes the significance of relationships and dependencies [159]. Care ethics seeks to motivate people to meet the needs of both others and ourselves, and to care for others who are vulnerable or dependent [159]. Care ethics has been used in human-human relationships [160, 161], human-animal relationships [162, 163] and human-environmental relationships [164] to bring about understanding and empathy for others and other forms of life. EcoHealth as a field seeks to examine how humans, animals and the environment interact and influence each other as a system and how these interactions affect the health of each of these dimensions [7]. If the field of EcoHealth engaged further with the term “care ethics”, perhaps EcoHealth could gain a better understanding of the relationships between humans, animals and the environment, and how to respect, care for and improve the health of each dimension simultaneously.

Table 4: Geographical origin of authors

Code	Social (n = articles of authors from a given country)	Non-social (n=articles of authors from a given country)
<b>Europe</b>		
Austria	0	0
Belgium	0	9
Cyprus	0	1
Czech Republic	0	1
Denmark	0	4
Finland	0	3
France	1	24
Germany	0	12
Greece	0	0
Grenada	0	1
Italy	0	8
Lithuania	0	0
Northern Ireland	0	1
Norway	0	2
Portugal	0	1
Poland	0	0
Romania	0	0
Slovenia	0	0
Spain	0	9
Sweden	1	7
Switzerland	4	15
The Netherlands	0	5
Turkey	0	0
UK	9	37
<b>North America</b>		
Canada	30	40
USA	23	227
<b>Asia</b>		
China	1	20
India	0	9
Indonesia	0	1
Japan	0	2
Korea	0	0
Lao People's Democratic Republic		4
Malaysia	1	1
Philippines	0	2
Singapore	1	3
Thailand	3	5

Taiwan	0	0
Vietnam	2	8
<b>Other</b>		
Argentina	0	7
Australia	11	51
Azerbaijan	0	1
Bangladesh	0	3
Benin	0	2
Belize	0	1
Bolivia	0	1
Botswana	0	1
Brazil	4	13
Cameron	0	1
Chad	0	2
Chile	0	3
Colombia	2	5
Cost Rica	1	3
Cuba	1	1
Democratic Republic of Congo	0	2
Ecuador	2	4
Ethiopia	0	1
Fiji Islands	0	1
Gabon	0	1
Ghana	0	2
Guatemala	0	2
Israel	0	2
Ivory Coast	1	4
Kenya	2	11
Kyrgyzstan	0	1
Lebanon	1	
Madagascar	0	1
Malawi	0	1
Mexico	3	8
Mongolia	0	1
Nepal	1	3
New Zealand	1	9
Pakistan	0	
Panama	0	4
Peru	2	
South Africa	1	7
Sri Lanka	0	1
Syria	0	
Tanzania	1	3
Tobago	0	1
Tunesia	0	1
Uganda	0	1
Venezuela	0	2
Zambia	0	1
Zimbabwe	0	2

The “Egalitarian” theory had one hit count in the EcoHealth literature, which talked about the rapid economic growth that occurred in the relatively egalitarian social structure in Japan [99]. Egalitarian theory emphasizes equality and equal treatment [165]. The term “Egalitarian” was used much more frequently in human (n=784), animal (n=423) and especially environmental (n=3,540) ethics than in the relation to “ecohealth” (n=74) in Google Scholar™ [accessed on July 27<sup>th</sup> 2015] (Table 1). Egalitarian theory is employed in human ethics to guide society to give equal rights and basic status for every individual as well as equal treatment across differences such as gender [166]. Animal ethics employs Egalitarian theory to argue that equality applies to every being that can have a well-being of his/her own, which includes sentient non-human animals [167]. Egalitarian environmental ethics is ecocentric because it maintains that “all organisms and entities in the ecosphere, as parts of the interrelated whole, are equal in intrinsic value” and have

an equal right to live [168]. As one of the main principles of EcoHealth, the field addresses unequal and unfair conditions that affect the health of disadvantaged groups including women [7]. The field of EcoHealth could make advancements towards gender and social equality across all humans, as well as foster a sense of equality across humans, animals and the environment if it engaged further with the “Egalitarian” theory.

The term “virtue ethics” is also used infrequently when paired with the term “ecohealth” (n= 3), as compared to human (n=342), animal (n=559) and environmental (n=2,770) ethics in Google Scholar™ [accessed on July 27<sup>th</sup> 2015] (Table 1). In addition, “virtue ethics” had zero hit counts in the academic EcoHealth literature (Table 2). As a field, virtue ethics does not give direct guidance to our actions, but rather, it focuses on having a virtuous character and being a moral agent, which will in turn lead to appropriate actions [169]. To situate virtue ethics, many view its emphasis on the role of virtues and moral character to be in contrast to the deontology’s adherence to duties and rules or consequentialism’s focus on the consequences of one’s actions [170]. This sub-field is important because humans have more power over animals, which drives humans to be indifferent or even to benefit from the harm that occurs to animals [169]. Virtue ethics brings forward the virtuous character in individuals, which leads them to avoid insensitive or abusive behaviour [169]. The external EcoHealth guideline documents consider animals and their health [7, 16], although it is largely an anthropocentric view of the consequences of the transmission of infectious diseases from animals to humans, similar to the field of OneHealth [7, 16]. If the field of EcoHealth engaged more with the keyword “virtue ethics”, this ethical sub-field could help to improve human-animal interactions beyond infectious diseases and avoid unnecessary harm to animals.

“Feminist ethics” was one of several terms that was employed often when paired with human (n=120), animal (n=204) and environmental (n=971) ethics, yet not when paired with “ecohealth” (n=1) according to Google Scholar™ [accessed on July 27<sup>th</sup> 2015] (Table 1). The term “feminist ethics” had zero hit counts within the academic EcoHealth literature (Table 2). According to Tong, feminist ethics “is an attempt to revise, reformulate, or rethink traditional ethics to the extent it depreciates or devalues women’s moral experience” [171]. Feminist ethics considers women’s interests and domestic role, male and female characteristic traits and the emphasis on male ethics of rules and rights rather than female ethics of relationships and responsibilities [171]. EcoHealth seeks to understand the reasons for gender inequality and seeks to minimize the inequalities and the consequences of these inequalities such as unfair health status [7]. If there was more engagement with the term “feminist ethics” in the EcoHealth discourse, then perhaps the EcoHealth field could improve its understanding of how relationship dynamics between males and females causes gender inequality

and how to avoid the consequences of such inequalities. In addition, feminist ethics has frequently been applied to environmental ethics (n=971) (Table 1), creating a sub-field called ecofeminists [172]. Ecofeminists claim that patriarchy has played a crucial role in “shaping the cultural categories (atomism, hierarchalism, dualism, and androcentrism) responsible for Western humanity’s domination of nature” [172], which leads to the exploitation of the environment for human benefit. This argument is of interest to EcoHealth, which focuses on ecological dimensions and its influence on human health, as well as “how people use or influence ecosystems, the implications for the quality of ecosystems, the provision of ecosystem services, and sustainability” [7]. Charron claims that ecosystems have intrinsic value, which is an ecocentric view that looks beyond the use of ecosystems for human benefit [7]. EcoHealth could continue to improve human health, while also improving human interaction with the environment and sustainability, if the field engaged further with the term “feminist ethics”.

The coverage of “autonomy” included ways to increase autonomy such as empowerment [132], ways that autonomy has been decreased [102, 137], and the role of gender assumptions and inequities in making health-related decisions [125, 133, 134]. However, the meaning of autonomy is unclear when looking at an ecosystem. Ecosystem autonomy is a concept used by some [173, 174] but is not engaged with within the EcoHealth literature yet.

Even if a term was mentioned frequently this did not ensure that the term was used in a conceptual or otherwise substantial fashion. “Ethic\*” for example as a term had 195 hit counts, which were widely dispersed across 123 articles in the EcoHealth literature (Table 2). The coverage for the term “ethic\*” was largely ethics approval or ethical considerations of the research (n=79). Beyond this, the coverage included several ethical approaches or frameworks [45, 97-99], Leopold’s land ethic concept [97, 100], ethics concerning human-nature relationships [47, 84, 101], technology [95, 96] and unethical practices [36, 103-106]. The field of ethics (moral philosophy) involves systematizing, defending and recommending concepts of right and wrong behavior, which can be used to govern individuals and groups [18]. The field of EcoHealth had coverage on certain moral principles that ought to govern humans’ behaviour concerning the environment [47, 84, 97, 100, 101], however the coverage was lacking in that it did not discuss why these principles were needed. In addition, despite talking about ethical issues and unethical practices involving humans and animals [36, 103-106], the field did not propose moral principles to guide those interactions between humans and animals. Finally, the literature touched on ethical concerns regarding technology [95, 96], which is linked to innovation, one of three main themes in the field of EcoHealth [16]. However, the literature did not engage with the moral principles needed in order to govern and guide new

innovation in the field. The EcoHealth field attempts to employ systems thinking, whereby humans, animals and the environment are all interconnected and influence each other and each other's health [4]. Ethics principles and theories are often employed to govern scientific and technological advancements and innovation products and processes. If the field conceptually engaged with the term "ethic\*" in a more meaningful way, it could outline moral rules and standards for guiding the treatment and interactions among humans and the technology they employ, of animals and the environment.

The term "justice" had 118 hit counts within 51 articles in the academic EcoHealth literature (Table 2). Justice was used mostly to talk about environmental and social justice, which were seen as core elements of human health [87, 117] and environmental health [97, 116]. Justice was employed in relation to certain aspects of EcoHealth including transdisciplinary research and the field of EcoHealth as a whole [115, 120]. Several injustices to vulnerable populations were also observed [116, 121-124]. The coverage of "justice" in the field of EcoHealth was relevant in that it addressed transdisciplinarity, sustainability, and the social equality principles of EcoHealth [4], although the coverage did not include animals. Animal justice considers how animals are raised and treated by humans and attempts to avoid abusive or unsafe animal practices [175]. Poor animal practices such as live bird markets not only affect the health of animals, but also the health of humans [14]. Similar to OneHealth, EcoHealth examines unsafe animal practices and the ill-health which it brings to both animals and humans, especially in the context of infectious diseases [14]. Current strategies to address these emerging diseases are anthropocentric as they strongly reflect human interest and thus do not consider animal justice [14]. The field of EcoHealth could address these human-animal interactions and the resulting health of both humans and animals in a more fair and considerate way if it engaged further with the concept of animal justice.

We posit that each of the 42 ethics terms and theories, if employed in the EcoHealth literature, would have differential impact within the EcoHealth discourse. For example innovation is a term often used within the EcoHealth literature. It is mentioned n=154 in the n=648 downloaded articles and 1,200 hits are obtained with the keyword combination of "ecohealth" and "innovation" in Google Scholar™. The 2014 annual EcoHealth conference mentions that there is a need for innovations in theory, methods and practice [16] and Charron's 2012 paper is called "*Ecohealth Research in Practice: Innovative Applications of an Ecosystem Approach to Health*" [7]. Ethical reasoning and ethics theories are often employed in innovation discourses [176-181]. The type of ethics theories and principles employed, for example, would lead to different conclusions around the boundaries of innovation and utility of a given innovation.

To give another example; an ethics of responsibility

is used by some to defend the deep ecology movement and to question the shallow ecology movement [182] whereby the deep ecology movement is seen as ecocentric and the shallow ecology movement is seen as anthropocentric [5]. Based on the premises of the deep ecology movement and the shallow ecology movement, these movements, if linked to the EcoHealth field, could impact the field in different ways [5]. The concept of ethics of responsibility is not engaged within the EcoHealth academic literature as demonstrated by the zero hit counts in Google scholar™. However, the ethics of responsibility might be an interesting one for EcoHealth scholars who are to engage with: a) drivers of change to health, ecosystems and society: integrating understanding from global to local scales, b) innovations in theory, methods and practice and c) moving between research and action: mobilizing knowledge to benefit health, ecosystems, and society [16].

Interestingly, in addition to the minimal coverage of ethical discourse terms and theories within the academic EcoHealth literature, the term "ecohealth" was also not present in the abstract of any article within the identified ethics journals, which suggests that the field of EcoHealth is not yet a main focus for ethical inquiry either.

#### 4. 2 Global EcoHealth

We posit further that a broader conceptual engagement with ethics terms and theories is also warranted given the global scope of the EcoHealth field [16]. The geographical origin of authors outlined in Table 4 highlights the global scope of the n=648 EcoHealth academic articles although, notably, the geographical origin of authorship is uneven and requires some improvements. EcoHealth was originally part of IDRC's international effort to link humans and ecosystems to improve health, and it remains part of a global effort to achieve healthier, more equitable and sustainable lives and livelihoods all over the world [7]. An implication of being a global community is that there is not always agreement on what each relevant group should adhere to on a global scale. Ethics terms and theories as well as ethics reasoning are not employed in the same way across different geographical regions. Ecuador for example added in 2008 "rights of nature" into its constitution [183-185]. This concept could have various impacts on EcoHealth at the conceptual and practical level. For example, the "rights of nature" could disfavor anthropocentrism, although this depends on how the "right of nature" is implemented. There are no articles from the academic EcoHealth literature that has engaged with this concept yet, including articles that had coverage on Ecuador or had authors from Ecuador.

Indeed numerous authors discuss the realization of a global ethics [9, 168, 186-197]. The EcoHealth field has not yet started to engage with the diverse use of ethics reasoning and ethic theories globally and the impact this might have on the global EcoHealth scope and vision. However, given its global scope and the globalization of many of the problems the EcoHealth

field tries to address, it might be useful to engage with the global ethics discourse.

## 5. Conclusion

The field of EcoHealth examines the complex linkages between society, animals, ecosystems and environments in order to understand and improve the health and wellbeing of people, animals and ecosystems [5, 7]. Ethical reasoning and theories are useful in guiding actions which influence humans, animals and the environment. As such, it would follow that ethical reasoning and theory are prevalent in the EcoHealth field. Based on our sample of n=648 articles our findings suggest that while the academic EcoHealth literature has applied certain ethics terms, it has not yet engaged fully with the conceptual aspects of ethics. This lack of meaningful engagement with ethics terms and theories is problematic because it limits the guidance on human-human, human-animal and human-environment relationships, which in turn impedes progress on the principles and goals that the EcoHealth field is trying to accomplish. In order to positively influence actions in service of the stated principles and goals, the field of EcoHealth could develop an EcoHealth ethics framework that conceptually guides how human-human, human-animal and human-environmental relationships should interact and relate to each other on a global scale.

## 6. Acknowledgements

We would like to acknowledge the support of the Wolpack. The authors declare no conflict of interest.

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# A Critical Assessment of the Ethical Approaches to Environmental Legislation in Bangladesh with an Emphasis on Biodiversity

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## Abstract

The conservation of biological diversity and the necessity of using biological resources sustainably became crucial within the socio-political milieu from the beginning of the 1990s when the global community began revisiting this issue following the adoption of the Convention on Biological Diversity (CBD). This was further augmented by the IUCN Guide that reminds parties to the CBD that in order to: i) institutionalize the development and implementation of the biodiversity strategy cycle; and ii) create an oversight mechanism, the National Biodiversity Strategy and Action Plan (NBSAP) needs to be anchored in legislation and policy. However, apart from these intricate legal paradigms, there are innate ethical frameworks of values and principles for policy options that have proven useful in combating the biodiversity challenges. Bangladesh has nearly a hundred laws that deal with numerous environment related issues including biodiversity. Additionally Bangladesh is also a party to the various international environmental instruments, including the CBD, albeit with certain reservations. The aim of this study is to investigate the extent to which the environmental legislation of Bangladesh coheres to the ethical approaches in addressing the issue of biodiversity, as well as to delve into examples of implementation. An interdisciplinary approach with legal and ethical analysis of biodiversity backed up by secondary data is used. In order to actualize the objective the study, after providing conceptual clarity on certain related issues such as ethical approaches to the environment, biodiversity and so forth, focuses on the legal framework for addressing environment and biodiversity in Bangladesh. The ethical approaches to environmental legislation and biodiversity in Bangladeshis thereafter critically appraised. The study argues and concludes that intrinsic reorientation is necessary in the way the government advocates before the environmental legislation of Bangladesh can be said to reverberate the demands of a general ethical approach to the environment and in particular to biodiversity.

**Key Words:** Ethics, Bioethics, Environmental Ethics, Environmental Legislation, Biodiversity

## 1. Introduction

Environmental considerations are integral to all aspects of life. Protection of the environment represents big challenges in terms of the size of the

problems faced and the solutions required.<sup>1</sup> These range from the seemingly intractable global problems to more local, but not less keenly felt, issues relating to things like conservation of biodiversity.<sup>2</sup>

Environmental law has a large and increasing role to play to combat the environmental degradation or to address particular environmental issue like, biodiversity. Environmental law is a key tool to manage the environment owing to its regulatory response to the inadequacies of the existing law. Common law that reflects environmentalism has two policy objectives, i) the protection and preservation of natural areas; and ii) the protection of public health from risks associated with involuntary exposures to pollutants and contaminants.<sup>3</sup>

Since, the environmental issues are interdependent and do not respect national boundaries,<sup>4</sup> environmental laws are found from international to national to local levels.<sup>5</sup> There are over five hundred multinational environmental treaties (Rai, et al. 2000). Bangladesh has nearly a hundred laws that deal with numerous environment related issues which include but are not confined to just biodiversity. Additionally, Bangladesh is also a party to the various international environmental instruments, including the *Convention on Biological Diversity* (CBD), albeit with certain reservations.<sup>6</sup>

The conservation of biological diversity and the necessity of using biological resources sustainably became crucial within the socio-political milieu from the beginning of the 1990s when the global community began revisiting this issue following the adoption of the CBD. This was further augmented by the IUCN Guide<sup>7</sup> that reminds parties to the CBD that in order to: i) institutionalize the development and implementation of the biodiversity strategy cycle; and ii) create an oversight mechanism, the National Biodiversity Strategy and Action Plan (NBSAP) needs to be anchored in legislation and policy. Bangladesh has complied with those requirements to some extent.<sup>8</sup>

However, apart from these intricate legal paradigms, there are innate ethical frameworks of values and principles for policy options that have proven useful in

<sup>1</sup> Stuart Bell, Donald McGillivray, Ole Pedersen, *Environmental Law*, Oxford University Press, 2013, p.3.

<sup>2</sup> Ibid.

<sup>3</sup> A Dan Tarlock, *The Future of Environmental Rule of Law Litigation* (2002) 19 *Pace Evnt L Rev* 575, 576-577.

<sup>4</sup> Domestic issues have international implications. See: *Equality Among Unequal in International Environmental Law*, Halvorssen, A .M. 1999, p.1. The *Stockholm Legal Principles, 1972*, principle 21 speaks that states to ensure the activities within their national jurisdiction or control do not cause damage to other states beyond national jurisdiction, principle 22 requires states to co-operate in the development of international environmental law, principle 24 calls for international organizations to play a co-ordinate, efficient and dynamic role.

<sup>5</sup> William J. Snape (III.), *Biodiversity and the Law*, Island Press, 1996, chapter, 14.

<sup>6</sup> For a total list of the International Instruments to which Bangladesh is a party, see Appendix II.

<sup>7</sup> Anne Becher. *Biodiversity: A Reference Handbook*, ABC-CLIO, 1998, pp. 163-185.

<sup>8</sup> Bangladesh Environmental Lawyers Association, *Research report on changing farming pattern in the hill areas of Bangladesh*, Dhaka, 2006, p. 5.



combating the biodiversity challenges.<sup>9</sup> More specifically, when conflict of interests over environmental and quality of life issues are at stake, ethical approaches may be useful in analyzing the implicit ethical positions assumed by the stakeholders and such an undertakings may further lead to grow the improved environmental policies that are needed for all species both people and nonhuman nature.<sup>10</sup> This study is centralized to assess the environmental legislation of Bangladesh through the lens of ethics.

The study mainly covers the environmental legislations of Bangladesh, but it is also extended to discuss the relevant policies as well. The main objective of the thesis is to evaluate the environmental legislation of Bangladesh and laws relating to biodiversity from an ethical perspective. Since the ethical approach to the environment and biodiversity has not been brought into scrutiny, the study aims to investigate the extent to which the environmental legislation of Bangladesh includes ethical approaches in addressing the issue of biodiversity, as well as to examine selected examples of implementation. The essential questions of this study in order to achieve the aims are:

- i. What is the legal framework for addressing environment and biodiversity in Bangladesh?
- ii. What are the ethical approaches inserted in the legislations that bear on the environment and biodiversity in Bangladesh?
- iii. What are the examples of implementation which testify to the ethical approaches in the arena of environment and biodiversity?

An interdisciplinary approach with legal and ethical analysis of biodiversity backed up by secondary data is used. In order to actualize the objective the study, after providing conceptual clarity on certain related issues such as ethical approaches to the environment, biodiversity and so forth, focuses on the legal framework for addressing environment and biodiversity in Bangladesh. The ethical approaches to environmental legislation and biodiversity in Bangladeshis thereafter critically appraised. The study argues and concludes that intrinsic reorientation is necessary in the way the government advocates before the environmental legislation of Bangladesh can be said to reverberate the demands of a general ethical approach to the environment and in particular to biodiversity.

## 2. Conceptualizing Ethical Approaches to the Environment and Biodiversity

### 2.1 Genes, Species and Ecosystem

It is not unusual that sometimes the needs or desires of people conflict with an endangered species requires for survival.<sup>11</sup> When a conflict occurs, a debate about biodiversity unfolds. This debate is not a static one and the definition of biodiversity<sup>12</sup> and related concepts

have even changed over time. Currently the definition of biodiversity is frequently cited from the *Convention on Biodiversity* that states the term 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.”<sup>13</sup> *Species diversity* is only one part of biodiversity. The proper categorization of all the life on earth also requires the reorganization of the *genetic diversity* that exists within species as well as the diversity of entire habitats and *ecosystems*.<sup>14</sup>

The reasons for conserving biodiversity are essentially threefold.<sup>15</sup> *First*, biodiversity provides an actual and potential source of biological resources including food; *secondly*, it contributes to the maintenance of the biosphere in a condition which supports human and other life; and *thirdly*, biodiversity is worth maintaining for non-scientific reasons of ethical and aesthetic value.

### 2.2 Components of Biodiversity

There are many theories although the perspectives are similar in how things came to be the way they are. The diversity of life forms found, is estimated today between 10-100 million varieties with more than 1 million already identified.<sup>16</sup> Although the classification of life is a contentious issue because, i) each species is unique, ii) there is an ambiguity in micro-taxonomy classification system, and iii) ethical values are dependent on our learning and thinking of life and its manifestation, counts of species numbers which incorporate alternative definitions can return differences as high as 150 percent.<sup>17</sup>

The major components of biodiversity as listed by IPCC are ecosystem diversity, species diversity and genetic diversity. Ecosystem diversity relates to variety of habitats, biotic communities and ecological processes in the biosphere, and is considered as complex level of diversity. Species diversity is the most common level of diversity, and comprises the number of different species at a place. Genetic diversity refers to total genetic information contained in the genes of individuals of plants, animals and microorganisms. The accepted norms of classification of life used in fields of ecological thought are widely understood but not without some points of debate.<sup>24</sup>

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particular to the loss of species caused by human activities. Wilson's was the first of a number of books that have popularized the term 'biodiversity'. By 1992, Wilson was speculating that extinction rates might be between 27,000 and 100,000 species per year (280), although in recent times these alarming estimates have come under serious criticism, particularly in Bjorn Lomborg's *The Skeptical Environmentalist*. For details see, Maclaurin, James and Sterelny, *What Is Biodiversity?*, The University of Chicago Press, 2008, pp. 1-2.

<sup>13</sup> The *Convention on Biodiversity* (CBD), 1992, Art. 2. Available at: <https://www.cbd.int/doc/legal/cbd-en.pdf>, last accessed on 28 June 2015.

<sup>14</sup> See <https://www.ipcc.ch>, last accessed on 28 June 2015.

<sup>15</sup> Sands, Philippe, *Principles of International Environmental Law*, Cambridge University Press, 2<sup>nd</sup> edn, pp. 499-500.

<sup>16</sup> See for details, Wilson, Edward O., *The Diversity of Life*, Harvard University Press, 1992. pp.12-23.

<sup>17</sup> Hey, J., *Genes, Categories and Species: The Evolutionary and Cognitive Causes of the Species Problem*, Oxford University Press, 2001 p.34.

<sup>9</sup> Lawrence S. Hamilton, Helen F. Takeuchi, *Ethics, Religion And, Biodiversity: Relations Between Conservation and Cultural Values*, White Horse, 1993, at p. 193.

<sup>10</sup> Carolyn Merchant, Environmental Ethics and Political Conflict: A View from California, *Journal of Environmental Ethics*, Volume 12, Issue 1, Spring 1990, at pp. 45-68.

<sup>11</sup> Maczulak, Anne Elizabeth, *Biodiversity: Conserving Endangered Species*, New York, 2010, at p. 5.

<sup>12</sup> In 1992, Edward O. Wilson wrote the *Diversity of Life* the aim of which was to draw the attention to species loss and in

### 2.3 Measuring Biodiversity

Losses of biodiversity have accelerated over the last two centuries as a direct and indirect consequence of human population growth, unsustainable patterns of resource consumption and associated environmental changes.<sup>18</sup> Measuring biodiversity is needed because in absence of which it is not possible, i) to monitor changes in the abundance of biodiversity; ii) to formulate policy on biodiversity; and iii) to ensure the conservation of biodiversity.

On the other hand, it is also difficult to measure biodiversity for certain reasons, *inter alia*, interconnected nature of biodiversity and its ecosystems<sup>19</sup>, difficulty of collecting of all required field data, quantify the dynamics of biodiversity and so forth

### 2.4 Threats to Biodiversity

The expansion of the threat at recent time is wider than any time of the history i.e., the species go extinct. Indeed, the current debate is on how much greater the extinction rates are than the previous rate, with estimate usually ranging from less than 100 times to 1000 times greater, with some estimates like WHO<sup>20</sup>, as high as 10,000 times higher.

There are a variety of causes leading to the loss of biodiversity. Some causes are anthropogenic with direct ethical implications and other causes are not as a result of human activity.<sup>21</sup> The main dangers to biodiversity as a result of human activities worldwide are population growth and resource consumption, climate change and global warming, habitat conversion and urbanization, invasive alien species, over-exploitation of natural resources and environmental degradation.<sup>22</sup> To be further added in this connection, the five direct drivers of biodiversity loss as stipulated by the CBD are climate change, introduced species, nutrient loading, land use change, and overexploitation.

Habitat loss is one of the biggest threats to biodiversity. This is because some species need a large area for survival i.e., for food chain, seasonal migration from north to south or lowland to highland. If the habitat is disconnected then some species will not be able to migrate and not survive. Habitat loss has been identified as a major threat to 85% of all species described in the IUCN's red list and it affects 86% of all threatened birds, 86% of the threatened mammals assessed and 88% of the threatened amphibians.<sup>23</sup>

### 2.5. Ethical Approaches to the Environment and the Biodiversity

The development of the modern environmentalism has been accompanied by the resurgence of environmental ethics which seeks to explore the nature of the moral relationships that might be said to exist between humans and non-humans. According to

Bosworth et al. (2012): "*Understanding the categorical approach or view used as a basis for ethics is important in conceptualizing biodiversity and its accompanying factors and its relation to aspects of biodiversity and determinants of such a concept. Such an understanding begins with definitive issues and progresses to include the deeper complexities of the idea. This occurs as certain concepts associated with biodiversity, such as indices, measures and qualities; change related to the values contained within an approach for example, anthropocentrism. ...However, other approaches note differing qualities, indices and measures, which ultimately change the perception of what constitutes biodiversity and how it should be approached in policymaking.*"<sup>24</sup>

This paper refers readers to the full thesis for an analysis of the ethical approaches. Anthropocentrism places humans at the Centre in relation to nature and biodiversity. The Philosopher Mary Midgely explained the term anthropocentrism in the following terms: "*People have seen themselves as placed, not just at the relative centre of a particular life, but at the absolute, objective centre of everything. The centrality of man has been pretty steadily conceived...not as an illusion of perspective, imposed on us by our starting point, but as an objective fact, and indeed an essential fact, about the whole universe.*"<sup>25</sup>

Biocentrism is an ethical point of view that extends inherent value to all living beings.<sup>26</sup> It contends the inherent worth of all members of the biosphere and thus, stands in contrast to anthropocentrism which centers on the value of humans.<sup>27</sup>

Ecocentrism recognizes the intrinsic values of all living organisms and their natural environment regardless of their perceived usefulness or importance to human beings.

## 3. Biodiversity in Bangladesh

Bangladesh is one of the biodiversity rich countries in the world. Distinct physiographic characteristics, variations in hydrological and climatological conditions, and difference in the soil properties in Bangladesh contribute in developing diverse forms of ecosystems enriched with great diversity of flora and fauna. Thus, the major three elements of biodiversity i.e., ecosystem diversity, species diversity and genetic diversity are found in Bangladesh.

### 3.1. Forest Ecosystems

Tropical evergreen and semi evergreen hill forests, Tropical moist deciduous forests, Mangrove forest and Fresh water swamp forest constitutes the arena of Forest Ecosystem in Bangladesh.

Remnants of tropical evergreen and semi evergreen forests<sup>28</sup> extend over the eastern parts of the country

<sup>18</sup> See <https://royalsociety.org/policy/publications/2003/measuring-biodiversity/>

<sup>19</sup> Neem, S., Bunker, D., Hector, A., Loreau, M., and Perrings, C., *Biodiversity, Ecosystem Functioning and Human Wellbeing*. New York, Oxford University Press, 2008, pp. 45-67.

<sup>20</sup> World Health Organization, *Ecosystem and Human Wellbeing*, Geneva, WHO Press, 2005, at p.19.

<sup>21</sup> Supra note 23.

<sup>22</sup> See <http://www.biodiv.be/biodiversity/threats>.

<sup>23</sup> Why is biodiversity in crisis?. Online at [https://www.iucn.org/iyb/about/biodiversity\\_crisis/](https://www.iucn.org/iyb/about/biodiversity_crisis/).

<sup>24</sup> Supra note 23, p. 10.

<sup>25</sup> Midgely, M. (1994) '*The End of Anthropocentrism*', in R. Attfield (ed), *Philosophy and the Natural Environment* (Cambridge University Press, Cambridge) 17.

<sup>26</sup> Derr, Patrick George; Edward M. McNamara. *Case Studies in Environmental Ethics*. Rowman & Littlefield. 2003, p. 21.

<sup>27</sup> Encyclopedia Britannica, 2009.

<sup>28</sup> This covers an area of 670,000 hectares which is 4.54% of total landmass of the country and 44% of national forest land. The hill forests comprise of numerous plant as well as animal species; an estimated 2,259 species of angiosperm were reported from Chittagong region alone.

lying within the divisions of Chittagong and Sylhet. The central and northern districts of Bangladesh covering an area of 120,000<sup>29</sup> hectares, about 0.81% of total land area of the country and 7.8% of the country's forest land, are bestowed with Tropical Moist Deciduous Forests.<sup>30</sup> Sal (*Shorea robusta*) is the main species in these forests with 70 to 100 percent upper canopy coverage with association of other tree species. A recent forest inventory<sup>31</sup> estimated that about 3.75 million cubic meters of wood remain in the Sal forests. Once these forests were very rich in faunal diversity. Indian rhinoceros used to live here in the twentieth century. Only five species of globally threatened wildlife species presently occur in these heavily degraded and fragmented forests.

Mangrove forest is one of the primary features of the coastlines throughout the tropics and sub-tropics of the world and, "Sundarbans" mangroves in Bangladesh is one of the major important coastal habitats and a major component of the vegetative cover in the coastal region. The mangrove forest is very rich in biotic diversity supporting around 330 species of plants, as many as 400 species of fishes, about 40 species of shrimps and other crustaceans, 35 species of reptiles, over 270 species of birds, and 42 species of mammals.<sup>32</sup> The Sundarbans is the largest single remaining habitat of the famous and magnificent animal Royal Bengal Tiger (*Panthera tigris*) and estuarine crocodile (*Crocodylus porosus*). A large number of threatened and endangered species are still found in the Sundarbans mangrove areas, which are not available in other parts of the country.<sup>33</sup> Four cetacean species have been identified in the mangrove channels, including the endangered Ganges River Dolphin and Irrawaddy Dolphin. 139,700 hectares of forest land of Sundarbans is declared as World Heritage Site where three wildlife sanctuaries are located.<sup>34</sup> The forest inventory of 1998 reported that 12.26 million cubic meters of timber was standing. Sundori is the most important tree species in the Sundarbans. The Sundarban also offers high value non-timber forest products like Golpata, honey, wax, fish, and crabs.

Fresh water swamp forest consists of flood-tolerant evergreen trees. Depending on local conditions, particularly the extent of human disturbance, the luxuriance of the vegetation varies, from sparse low trees with undergrowth grasses, as at Rangchi and Rupnagar in TanguaHaor, to dense closed canopy with

poor undergrowth, as was at PashuaBeel in GurmarHaor, Tahirpur, Sunamganj District.<sup>35</sup>

### 3.2. Wetlands<sup>36</sup> Ecosystem

Bangladesh is a land of water and wetlands. Wetlands constitute more than fifty percent of the territory of the total country and play significant role in social and economic livelihood of the population. Wetlands can be of different types<sup>37</sup> based on their hydrological and ecological attributes. There is no recent assessment of wetland area in Bangladesh. However, National Water Resources Database<sup>38</sup> has estimated about 172,087 hectares of permanent wetlands (excluding rivers and estuary) in the country. Wetlands of Bangladesh are particularly rich in biodiversity; the number of aquatic macrophytes reaches more than 200 species.<sup>39</sup> Moreover, approximately 150 species of birds are found to be fully or partially wetland dependent. The Haor Basin of Sylhet and eastern Mymensingh have special biological significance. This area is recognized as a wetland ecosystem of international importance, especially for waterfowl habitats. These wetlands provide habitat for about 125 species of resident and migratory water birds as well as a diversity of aquatic and terrestrial plants, aquatic invertebrates, fish, mammals, amphibians and reptiles.<sup>40</sup> Not only the haors<sup>41</sup> but also the main river system provide vital habitat for a diverse fauna of freshwater turtles, the majority of which are now globally threatened.

### 3.3. Coastal and Marine Ecosystem

The coastline of Bangladesh<sup>42</sup> is 714 km long and can broadly be divided into three regions: the eastern region (Pacific type), the active delta of the central region, and the stable deltaic western region (Atlantic type). The biological resources of the Bay of Bengal not only comprise fishes but also include crustaceans, elasmobranchs, cetaceans, and highly significant habitats for wintering shorebirds. The coastal and pelagic waters of Bangladesh host a large diversity of cetaceans (dolphins, whales and porpoise), including

<sup>29</sup> FAO, *National Forest and Tree Resources Assessment 2005-2007*, Dhaka: Bangladesh, Forest Department, SPARRSO, 2007.

<sup>30</sup> There are three different belts of deciduous forests in the country – The largest belt is Madhupur Garh, Then the Garo hills and the third belt is located in the north-western part of the country.

<sup>31</sup> FAO, *National Forest and Tree Resources Assessment 2005-2007*, Dhaka: Bangladesh, Forest Department, SPARRSO, 2007.

<sup>32</sup> Hussain, K.Z. & Acharya, G. (eds.), *Mangroves of the Sundarbans*. Volume II : Bangladesh. IUCN, Bangkok, Thailand, 1994.

<sup>33</sup> Seidensticker, J., *Large Carnivores and the Consequences of Habitat Insularisation: Ecology and Conservation of Eigers in Indonesia and Bangladesh*, 1986, p.219.

<sup>34</sup> Sundarbans East, Sundarbans West and Sundarbans South.

<sup>35</sup> 4<sup>th</sup> National Report to the Convention on Biological Diversity, Ministry of Environment and Forest, Government of the People's Republic of Bangladesh, 2010.

<sup>36</sup> According to Ramsar Convention, wetlands are areas of marsh, fen, peat land or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters.

<sup>37</sup> Open water wetlands - Rivers, Estuarine and mangrove forest, Beels and haors, Inundable floodplains, Kaptai Lake; Closed water wetlands – Ponds, Baors, Brackish water farms.

<sup>38</sup> National Water Resources Database, Dhaka: Bangladesh, Water Resources Planning Organization, Government of Bangladesh, 1997.

<sup>39</sup> 4<sup>th</sup> National Report to the Convention on Biological Diversity, Ministry of Environment and Forest, Government of the People's Republic of Bangladesh, 2010.

<sup>40</sup> Ibid.

<sup>41</sup> A small reservoir of natural water in Bengali language is called "Haor".

<sup>42</sup> Bangladesh is situated at the head of the Bay of Bengal. The coast is characterized by a vast network of rivers (24,000 km in length) covering an area of 9,380 square kilometers, a large number of islands between channels, a submarine canyon (Swatch of No Ground), the funnel shaped part of the northern Bay of Bengal, huge amount of sediment transportation (annually about 2.4 x 10<sup>9</sup> m tons), low relief (1.2-4.5 m above mean sea level) and tropical cyclones.

eight globally threatened species. The highly productive tip of the Swatch of No Ground has been identified as a cetacean hotspot with a relatively high abundance of at least four small and one large cetacean species. The estuarine and coastal waters of Bangladesh have recently been discovered to host the world's largest population of the vulnerable Irrawaddy Dolphins.

### 3.4. Species Diversity

Bangladesh possesses rich species diversity particularly for angiosperms and avifauna. A total of 653 fish species are recorded, of which 251 are freshwater fishes belonging to 61 families and 402 are estuarine and marine fishes including sharks and rays. A total of 650 bird species have been reliably recorded in the country. The country is also inhabited by 34 amphibian and 154 reptile species. The mammalian species diversity in Bangladesh is represented by 121 species of mammals, however many of which are now endangered.<sup>43</sup>

In different phyla, some of the known species are - Cyanobacteria, Proteobacteria, Firmicutes, Actinobacteria, Bactroidetes (41 species under the phyla Firmicutes, 70 species under Actinobacteria and 1 species under Bactroidetes have so far been identified), Fungi (A total of 275 fungal species have been identified so far under 125 genera), Algae (1,988 species have been identified in Bangladesh)<sup>44</sup>, Bryophytes (248 species of bryophytes under 34 families)<sup>45</sup>, Pteridophytes or ferns, Gymnosperm, Angiosperm (in the recent publication<sup>46</sup> 3,611 under 198 families have been identified), Protozoa, Porifera, Cnidaria or Coelenterata, Ctenophora, Rotifera, Gastrotricha, Platyhelminthes, Nematoda, Mollusca, Echinodermata (There are five classes of living echinoderms. Four of these<sup>47</sup> are free living and are able to move freely), Arthropoda (1,270 species under 708 genera have so far been identified and described from Bangladesh<sup>48</sup>), Fish, Amphibians and reptiles, Birds (The national list of the birds includes as many as 650 species)<sup>49</sup>. Out of which, 620 species of birds have been recorded in recent years and can be asserted to be present today. Of these 620 species of birds, 143 are vagrant (occurring very irregularly or seen extremely rare) to Bangladesh, which left 477 regularly seen species.

### 3.5 Genetic Diversity

Bangladesh has rich genetic resources and diversity in most of its species. This is more evident of being center of origin for some important agricultural crops.

<sup>43</sup> 4<sup>th</sup> National Report to the Convention on Biological Diversity, Ministry of Environment and Forest, Government of the People's Republic of Bangladesh, 2010.

<sup>44</sup> See for details, Ahmed, Z. U., Begum, Z.N.T., Hassan, M.A., M. Khondker, Kabir, S.M.H., Ahmed, M., Ahmed, A.T.A., Rahman, A.K.A. and Haque, E. U. eds., 2007.; *Encyclopaedia of Flora and Fauna of Bangladesh*. Vol-3. Asiatic Society of Bangladesh, Dhaka, 2007.

<sup>45</sup> Ibid.

<sup>46</sup> Ibid.

<sup>47</sup> Asteroidea, Echinoidea, Ophiuroidea and Holothuroidea.

<sup>48</sup> See, above note 96, p. 204.

<sup>49</sup> Ahmed, Z.U., Begum, Z.N.T., Hassan, M.A., Khondker, M., Kabir, S.M.H., Ahmad, M., Ahmed, A.T.A., Rahman, A.K.A. and Haque, E.U. (Eds) 2008a. *Encyclopedia of Flora and Fauna of Bangladesh*, Vol. 6. Asiatic Society of Bangladesh, Dhaka, pp. 1- 408.

For example, the floodplain of Bangladesh is thought to be the centre of origin of cultivated rice. An estimated 10,000 rice cultivars have been developed in the country. Bangladesh Rice Research Institute (BRRI) has so far collected 5,978 varieties of rice germplasms from the country.<sup>50</sup> Most of the other cultivated crops have similar genetic diversity within themselves. This situation is also true for banana, mango and other local fruit species.

### 3.6 Protected Areas and Ecologically Critical Areas

Bangladesh has nineteen nationally designated protected areas. These include ten national parks, eight wildlife sanctuaries and one game reserve (all of which are forests). In 1997 UNESCO designated three wildlife sanctuaries of Sundarbans as "World Heritage Sites". Sundarbans along with TanguaHaor were designated "Ramsar sites" wetlands of international importance in 1992 and in 2000, respectively.<sup>51</sup>

The Department of Environment (DoE) has, so far, designated nine areas<sup>52</sup> significant for biological diversity as Ecologically Critical Areas (ECAs) in the country.<sup>53</sup> The Department of Environment in September 2009 has declared four rivers<sup>54</sup> and their banks as ECAs. These rivers surround the capital city Dhaka and perform as the lifeline of the city.

### 3.7. Threats to the Biodiversity and Adaptation of Different Strategies

Diversity of ecosystems and its rich floral and faunal resources have made Bangladesh and its ecosystems resilient to natural calamities. There are many threats that drive biodiversity loss, among which some are direct while the others are indirect. Direct threats include changes in land use, habitat destruction, introduction of invasive alien species and so forth. On the other hand, examples of indirect threats are the economic system and policies of the State; unsustainable exploitation of resources and weak management systems; gaps in spatial information; lack of public awareness. Other threats emanate from the effects of natural calamities. In addition, habitat loss is considered the single largest threat to biodiversity.

These days, biodiversity loss is considered a comprehensive global environmental challenge.<sup>55</sup> Protected areas of Bangladesh are prone to a range of threats. These multi-dimensional threat factors occur in the protected areas of Bangladesh, making the country's biodiversity conservation program fragile.

<sup>50</sup> *The Second Report on Plant Genetic Resources Developed for Food and Agriculture Bangladesh*, Bangladesh Agricultural Research Council, 2007.

<sup>51</sup> Sharif Ahmed Mukul, *Biodiversity Conservation Strategies in Bangladesh: The State of Protected Areas*, Dhaka, 2010.

<sup>52</sup> Sundarbans, Teknaf Peninsula, St. Martin's Island, Sonadia Island, HakalukiHaor, TanguaHaor, MarjatBaor, Jhenaidah, Gulshan-Baridhara Lake, Dhaka.

<sup>53</sup> Section 5 of the *Bangladesh Environment Conservation Act, 1995* says that if the Government is satisfied that an area is in an environmentally critical situation or is threatened to be in such situation, the Government may, by notification in the official Gazette, declare such area as an ecologically critical area.

<sup>54</sup> The Buriganga, Sitalakhya, Turag and Balu.

<sup>55</sup> Brashers JS, Arcese P, Sam MK (2004) *Bushmeat hunting, wildlife declines, and fish supply in West Africa*. Science 306:1180-1183; Cardinale BJ, Duffy JE, Gonzalez A et al (2012) *Biodiversity loss and its impact on humanity*. Nature 486:59-67.

Understanding the type, patterns, and extent of the threats is a crucial issue in controlling their magnitude.

#### 4. Legal Framework for Addressing Environment and Biodiversity in Bangladesh

##### 4.1 International Perspectives

The majority of the state's obligations relating to the environment and biodiversity stem from two main sources of public international law i.e., customary international law<sup>56</sup> and treaties.<sup>57</sup>

In this connection it is to be added that each state implements treaties and customary international law according to their own understanding of international law.<sup>58</sup> There are two main approaches to international law and each approach takes into consideration how international law relates to national law. The monist theory<sup>59</sup> asserts that there is one all-embracing legal order comprising international and national law; while the dualists<sup>60</sup> would view that there are two separate legal systems; international and national. At the same time, it is not unlikely that often, a state may have different approaches to treaties and to international customary law<sup>61</sup>. In Bangladesh, for example, treaties are regarded as part of a separate legal system that must be adopted and implemented by domestic laws in order for it to have any legal effect. Apart from that, states may rapidly introduce national legislation in order to manage environmental challenges that may come suddenly, since the development of international law may be a protracted process. However, customary international law almost automatically applies in Bangladesh.

Bangladesh recognizes the vital importance of participating in the global attempts to halt the process of environmental deterioration.<sup>62</sup> Bangladesh was actively involved in the proceedings of the UNCED, signed the Rio Declaration and endorsed Agenda 21. This reflects the strong commitment of Bangladesh towards promoting environmental management and sustainable development.<sup>63</sup> The priority areas of

concern in Bangladesh are disaster management; deforestation, including mangroves; biodiversity losses; water Pollution; land degradation; and air pollution.

As a member of international community and as one of the most environmentally vulnerable countries Bangladesh has become party to many of the ICTPs<sup>64</sup> on environment, *albeit with* certain reservations. Considering the socio-economic activities and the geographical location of the country, the most important ICTPs relating to the environment in general and biodiversity in particular regarding of which national laws are made can be identified as follows: *Convention on the Biodiversity (CBD)*,<sup>65</sup> *Ramsar Convention on Wetlands of International Importance, 1971* (amended in 1982 & 1987),<sup>66</sup> *Convention on the control of Wild Flora and Fauna (CITES), 1973*; *Basel Convention on the Control of Trans-boundary Movement of Hazardous Wastes and their Disposal, 1989*; <sup>67</sup> *International Convention for the Prevention of Pollution of the Sea by Oil, 1981* and so forth.<sup>68</sup>

With the advent of the CBD biodiversity is now considered to be "national patrimony of host countries and is under their sovereignty"<sup>69</sup> Based on the international law principle of common concern- which is both spatial<sup>70</sup> and temporal<sup>71</sup>, sovereignty in this sense however, is qualified and the qualification is that states are given a "responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment...of areas beyond their jurisdiction" (Article 3 of the CBD).<sup>72</sup> This is further strengthened by inserting the provision of 'benefit sharing' and ensuring the respect for indigenous rights over their traditional knowledge.

The *Ramsar Convention*, on the other hand, is the first global convention to address the grave issue of habitat loss.<sup>73</sup> The Ramsar Convention promotes "wise use"<sup>74</sup> of 1907 wetlands which is widely defined to include natural sites such as lakes, rivers, oases, estuaries, tidal flats, mangroves, as well as artificial sites such as reservoirs, fish ponds and rice paddies. Unlike CITES and other conventions that focus on the

<sup>56</sup> Customary International Law arises out of consistent state practice and a sense of obligation (*opinio juris sive necessitates*). They are binding on the states once the custom has been proven to exist. For details see Brian D. Lepard, *Customary International Law: A New Theory with Practical Applications*, Cambridge University Press, 2010.

<sup>57</sup> Legal obligations are only incurred when the state concerned ratifies the treaty. Treaty is defined as an international agreement concluded between States in written form and governed by international law, whether embodied in a single instrument or in two or more related instruments and whatever its particular designation. For details about treaty see the *Vienna Convention on the Law of the Treaties, 1969*.

<sup>58</sup> See for details Patricia W. Birnie & Alan E. Boyle, *International Law and Environment*, Clarendon Press, Oxford, 1992.

<sup>59</sup> James Crawford, *Brownlie's Principles of Public International Law*, OUP, Oxford, 2012, p.48.

<sup>60</sup> Gideon Boas, *Public International Law: Contemporary Principles and Perspectives*, Edward Elgar Publication, 2012, p.120.

<sup>61</sup> Bilderbeek, S., Wijgerde, A. and Van Schaik, N. 1992. *Biodiversity and International Law*. Amsterdam, IOS Press.

<sup>62</sup> Rahman, A.B.M.Z., 2003, Environmental Aspects of Energy Exploration in Bangladesh and the Role of EIA: the Role of Sunderbans, 24/3, *Bangladesh Institute of International and Strategic Studies Journal*, 390.

<sup>63</sup> *Bangladesh Country Profile*, Implementation of Agenda 21: Review of Progress Made since the United Nations Conference on Environment and Development, 1992. United Nations Department for Policy Coordination and Sustainable

Development. available at: <http://www.un.org/esa/earthsummit/bang-cp.htm>, last accessed on May 22, 2015.

<sup>64</sup> International Conventions, Treaties and Protocols.

<sup>65</sup> Ratified by Bangladesh on 3 May 1994.

<sup>66</sup> Bangladesh has become a party to this on 21 May 1992 after the Sundarban is declared as a Ramsar site.

<sup>67</sup> Bangladesh ratified this on 1 April 1993.

<sup>68</sup> For a Comprehensive List of ICTPs see the appendices.

<sup>69</sup> Laird, S.A. 2005. *The Convention on Biological Diversity: Changing Ethical and Legal Frameworks for Biodiversity Research and Prospecting*. <http://www.cbd.int/doc/articles/2002/-A-00394.pdf>

<sup>70</sup> The spatial aspect of common concern implies that there is "cooperation of all states on matters similarly important to... the whole of international community" (Secretariat of UNEP, 1991).

<sup>71</sup> The temporal aspect of common concern arises from "long-term implications of environmental challenges which affect rights & obligations not only of present but also of future generations" (Secretariat of UNEP, 1991).

<sup>72</sup> Principle 21 of the *Stockholm Declaration (1970)* which articulates the concept of limited sovereignty.

<sup>73</sup> Another habitat conserving convention is the World Heritage Convention which protects cultural and natural sites of universal values. The habitats protected by the World Heritage Convention include the Great Barrier Reef, the Everglades and the Olympic Rainforest.

<sup>74</sup> Encompasses both the conservation of biodiversity as well as the sustainable use of biodiversity.

protection of plant and animal life, the Ramsar Convention aims to protect the whole ecosystem of wetlands.<sup>75</sup> By extension, the Ramsar Convention protects living organisms that depend on those wetlands on the Ramsar list.<sup>76</sup>

The CITES provides a framework for its member states to implement national legislations in relation to the regulation of trading wild animals and plants specimens. It protects wildlife species that are endangered as well as those that are not endangered in order to "ensure the sustainability of trade... [and] to safeguard these resources for the future".

Apart from those, the *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal* is designed to protect biodiversity and human health by regulating pollution and wastes. *International Convention for the Prevention of Pollution of the Sea by Oil, 1981* aims to prevent the marine environment. By extension of a healthy ecosystem, these treaties help to protect biodiversity by preserving the lives of the living organisms within those ecosystems.

Another aspect of international environmental law having impact on local level framework development is international custom as mentioned earlier. One of the most prominent customs is the obligation of each state to not use or disallow the use of its territory in a way that would cause trans-boundary environmental damage.<sup>77</sup> Another matter is the use of resources that are shared between states, for example trans-boundary water systems. Here, it is customary that there be equitable use of such resources.

## 4.2 Constitution of the People's Republic of Bangladesh

The 1972 adopted Constitution of the People's Republic of Bangladesh contained no direct provision on environment or biodiversity either in the preamble or in the fundamental principles of state policy or in the fundamental rights but the judiciary is free to take account of them.<sup>78</sup> There are several scopes in this connection and some are already been tested. For example, *firstly*, the Supreme Court<sup>79</sup> in its several decisions has expanded the meaning of *fundamental right to life* as enunciated under articles 31<sup>80</sup> and 32<sup>81</sup> of the said constitution to include protection and

preservation of the ecology and right to have pollution free environment.<sup>82</sup> Under the current judicial set up the word "life" within the purview of the right to life is settled to provide a wider meaning<sup>83</sup> along with rules of precaution and prudence<sup>84</sup> for the environment on one hand and the biodiversity on the other. *Secondly*, the right to property<sup>85</sup>, another fundamental right, implies that an owner is entitled to the enjoyment of his property without the interference of any one even the Govt. But a balance between the individual ownership and the common interest is necessary to protect the ecology, which can be done by applying the article itself.<sup>86</sup> Here the Roman law<sup>87</sup> based public trust doctrine<sup>88</sup> may come into play as an useful method to protect natural resources which has been used in the Indian cases.<sup>89</sup> Under this doctrine certain resources

<sup>82</sup> The AD in *Dr. Mohiuddin Farooque vs. Bangladesh*, 49 (1997) DLR (AD) 1, stated "...articles 31 and 32 of our Constitution protect right to life as fundamental right. It encompasses within its ambit, the protection and preservation of environment, ecological balance free from pollution of air and water, sanitation without which life can hardly be enjoyed. Any act or omission contrary thereto will be violative of the said right to life." (Para-102, Chowdhury J.). The HCD in *Dr. Mohiuddin Farooque vs. Bangladesh* 48 DLR1996 (HCD) 438 stated that "right to life includes the enjoyment of pollution free water and air, improvement of public health by creating and sustaining conditions congenial to good health and ensuring quality of life consistent with human dignity."

<sup>83</sup> The word life is very significant as it covers all facets of human existence. The word life has not been defined in the Constitution but it does not mean nor can it be restricted only to the vegetative or animal life or mere existence from conception of death. Life includes such amenities and facilities that a person born in a free country is entitled to enjoy with dignity, legally and constitutionally, see: *Ms. Shehla Zia vs. WAPDA* PLD 1994 SC 693.

<sup>84</sup> The word life in the Constitution has not been used in a limited manner. A wider meaning should be given to enable a man not only to sustain life but to enjoy it. However there is a state of uncertainty and in such a situation the authorities should observe the rules of prudence and precaution. The rules of Prudence are to adopt such measure which may avert the so called danger if it occurs. The rule of precautionary policy is to first consider the welfare and safety of the human beings and the environment and then pick up a policy and execute the plan which is more suited to obviate the possible danger or may ensure safety.

<sup>85</sup> Article-42(1) states that, "...every citizen shall have the right to acquire, hold, transfer or otherwise dispose of property, and no property shall be compulsorily acquired, nationalized or requisitioned save by authority of law."

<sup>86</sup> As the article starts with the words "subject to restrictions imposed by law..."

<sup>87</sup> Roman law recognized the public trust doctrine whereby common properties such as rivers, seashore, forests, and the air were held by the Government in trust for free and unimpeded use of the public. These resources were either owned by no one (*res nullius*) or by everyone in common (*res communis*).

<sup>88</sup> In English law, the public trust doctrine is more or less the same but with an emphasis on certain such as navigation, commerce, and fishing are sought to be preserved for the public. Professor Joseph L. Sax imposes three restrictions on governmental authorities, a) the property subject to the trust must not only be used for a public purpose, but it must be held available for use by the general public; b) the property must be sold, even for a fair cash equivalent; c) the property must be maintained for particular types of uses, see: *Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*, Michigan Law Review, vol-68, part 1, p.473.

<sup>89</sup> The doctrine came up for consideration in the *Kamal Nath Case [M. C. Mehta vs Kamal Nath (1997) 1 SCC 388]*. Here rather an unusual situation has arisen. The flow of the river Beas was deliberately diverted because it used to flood Span Motels in the Kulu Manali valley in which a prominent

<sup>75</sup> Wetlands are ecological systems which support a variety of mammals, reptiles, amphibians, fish, birds and invertebrates. They also store plant genes such as wild rice, fruits, vegetables and herbs. Simply put, some have considered it as a "biological supermarket", see, Barbier, E.B., Acreman, M., and Knowler, D. 1997. *Economic Valuation of Wetlands*. [http://www.ramsar.org/pdf/lib/lib\\_valuation\\_e.pdf](http://www.ramsar.org/pdf/lib/lib_valuation_e.pdf).

<sup>76</sup> For the list see <http://www.ramsar.org/document/the-list-of-wetlands-of-international-importance-the-ramsar-list>.

<sup>77</sup> Brunnee, J. and Abouchar, J. and Ball, G. 1993. *Beyond Rio? The Evolution of International Environmental Law*. <http://www.accessmylibrary.com/article-1G1-14692031/beyond-rio-evolution-international.html>.

<sup>78</sup> *Mohiuddin Farooque vs. Bangladesh*, 49 (1997) DLR (AD) 1 and *Dr. Mohiuddin Farooque vs. Bangladesh*, 48 (1996) DLR (HCD) 438.

<sup>79</sup> The Supreme Court of Bangladesh as per article 94 of the Constitution is composed of two divisions: the Appellate Division (AD) and the High Court Division (HCD).

<sup>80</sup> Article-31 states that "... in particular no action detrimental to the life, liberty, body, reputation or property of any person shall be taken except in accordance with law."

<sup>81</sup> Article-32 says No person shall be deprived of life or personal liberty save in accordance with law.

i.e., sea, air, water, forests etc., are considered as of great importance and as so they are not subject to any personal use through private ownership rather the state is the trustee of them and the public are at large the beneficiary. The state as a trustee is under the legal duty to protect the natural resources and in this way this may help to protect the environment against article 42 of the Constitution.<sup>90</sup> Thirdly, the state is under the constitutional obligation<sup>91</sup> to halt the environmental degradation causing negative impacts on the human health<sup>92</sup> or which is against the well being of the people of the area concerned<sup>93</sup>. The community resources i.e., water tank, ponds, historical monuments are also important not only for the enrichment of national culture<sup>94</sup> or from the perspective of historical importance<sup>95</sup> rather they are important for the maintaining of ecological balance. In India the community resources are now been articulated by the Supreme Court for inclusion in the concept of environment, considering they all affect the quality and the enjoyment of life.<sup>96</sup>

However, it is not until in 2011 when the parliament made an amendment<sup>97</sup> to the said constitution and

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politician's family had a direct interests. The motel was also allotted protected forestland by the state government and had also encroached on protected forestland, which encroachment was subsequently regularized. The Supreme Court used in this case the said doctrine to restore the environment to its original condition. Briefly, the doctrine postulates that the public has a right to expect that certain lands and natural areas will retain their natural characteristics. Again in *Th. Majra Singh vs Indian Oil Corporation AIR (1999) J&K 81.* and *M. I. Builders Pvt. vs Radhey Sahu, AIR (1999) SC 2468* both cases the court made it clear that the state is under an obligation to see that lakes, forests, wildlife and environment are duly protected.

<sup>90</sup> For more about Public trust Doctrine see: *H. C. Dunning, "The Public Trust : A Fundamental doctrine of American Property Law" (1989).*

<sup>91</sup> Article-18(1) states, the state shall regard the raising of level of nutrition and the improvement of public health as among its primary duties and in particular shall adopt effective measures to prevent the consumption, except for medical purposes of for such purposes as may be prescribed by law, of alcoholic and other intoxicating drinks and of drugs which are injurious to health.

<sup>92</sup> In *Professor Nurul Islam vs Bangladesh 52 DLR (2000) HCD 413* a writ petition was issued calling upon the respondent as to why the respondent would not be directed to enact law for prohibition all forms of tobacco advertisement.

<sup>93</sup> In *Saleem Ullah vs Bangladesh 55 DLR (2003) 01* the court held that, the action of the respondent in covering the open space meant for park is without any lawful authority as the same is violative of fundamental right and detrimental to health and well-being of the people of the area.

<sup>94</sup> Article 23 of the Constitution states that, the state shall adopt measures to conserve the cultural traditions and heritage of the people, and so to foster and improve the national language, literature and the arts that all section of the people are afforded the opportunity to contribute towards and to participate in the enrichment of the national culture.

<sup>95</sup> Article 24 of the Constitution states that the state shall adopt the measures, for the protection against disfigurement, damage or removal of all monuments, objects or places of special artistic or historical importance or interest.

<sup>96</sup> *Hinch Lal Tiwari vs. Kamala Devi, (2001) 6 SCC 496:* The material resources of the community like forests, tanks, ponds, hillock, mountain etc, are nature's beauty. They maintain delicate ecological balance. They need to be protected for a proper and healthy environment which enables people to enjoy a quality life which is the essence of the guaranteed right under Article 21 of the Constitution.

<sup>97</sup> The Constitution (Fifteenth Amendment) Act, 2011 (Act XIV of 2011), section 12.

inserted a new provision<sup>98</sup> specifically deals with the environment and biodiversity issues. The new provision in Chapter-II, says: "*The State shall endeavor to protect and improve the environment and to preserve and safeguard the natural resources, bio-diversity, wetlands, forests and wild life for the present and future citizens*"<sup>99</sup>

To be mentioned further, although the latest amendment widened a constitutional scope for the preservation and safeguarding the environment and biodiversity, it is not judicially enforceable, other than applying them as principles of policy. However, according to Article 152 of the Bangladesh Constitution, policies are not the sources of judicially enforceable obligations rather they enjoy binding impact on the activities of the GOB agencies and thus, can greatly influence the shaping of national environmental regimes.

### 4.3. National Legislation

Most multilateral environmental agreements provide frameworks, as opposed to prescriptions, for states to legislate and govern within. This flexibility allows states to develop their own legislation based national framework addressing environment and biodiversity. Bangladesh has about a hundred laws that deal with various environment and biodiversity related issues.<sup>161A</sup>

However, among those the most pertinent laws bearing significant importance on the development of the legal regime of Bangladesh are mentioned below.

#### 4.3.1. The Environment Conservation Act 1995 (ECA)

The ECA is potentially the most powerful law for ensuring conservation and sustainable use of the biological resources of the country and protection of its environment. The ECA is designed to conserve the environment, improve environmental standards and control and mitigate environmental pollution. It has underscored its overriding effect over other inconsistent laws, established a Department of Environment empowered to intervene in almost all areas of environmental concerns, provided operational definition of important phrases like conservation, environment, eco-system, pollution etc. and prescribed punishment for various environmental offences. Section 5 of the Environment Conservation Act, 1995 offers scopes for *in situ* conservation by empowering the Government to declare areas as Ecologically Critical Area and take measures to protect the ecology of those areas provided that the Govt. is satisfied that the ecosystem of that area has reached or threatened to reach a 'critical state'.<sup>100</sup> In these ECAs, a ban has been imposed in general terms on some activities that include felling or extracting trees and forest; hunting and poaching of wild animals; catching or collection of

<sup>98</sup> The title of the Provision is Protection and Improvement of Environment and Biodiversity.

<sup>99</sup> Article 18A, the Constitution of the People's Republic of Bangladesh.

<sup>100</sup> In pursuance of the said Section, the Ministry of Environment and Forests, in a Notification dated 19 April '99 designated seven areas as ECAs. A Subsequent Notification dated 26-11-2001 declared the Gulshan-Baridhara Lake also an ECA.

<sup>161A</sup> For a list of the environment related laws of Bangladesh see appendix II.

snails, corals, turtles and other creatures, any activity that may threaten the habitat of flora and fauna; activities likely to destroy or alter the natural characteristics of soil and water; establishment of industries that may pollute soil, water, air and/or create noise pollution and other activities that may be harmful for the fish and other aquatic life.

#### 4.3.2. The Environment Court Act, 2010

The Environment Court Act 2000 was repealed by the Act of 2010.<sup>101</sup> The recent Act provides for the establishment of one or more Environment Courts,<sup>102</sup> primarily in every District of the country, with specific terms of references to deal with environmental offences. Further, it speaks about of establishing Special Magistrate Court at district level<sup>103</sup>. The special magistrate who sits in an special magistrate court would be from the rank of first class judicial magistrate or metropolitan magistrate. Under section 5(2) as the judge may deal with environmental offences exclusively or as an additional duty along with his normal function. Under section 9(1) the special magistrate can give imprisonment up to 5 year or can impose fine up to 5 lacs taka,

The suits in these courts could be initiated only by the DoE except if a private person succeeds in convincing the court that the DoE has not acted upon his grievance within 60 days of lodging a complaint. That failure even in relation to a reasonable complaint of a private citizen, however, could not lead to any civil or criminal responsibility for the DoE if it acted 'in good faith', a phrase not defined in the Act. It may encourage abuse of power and negligence, given the only remedy left for addressing any grievance against the DoE notice, order or direction is an appellate authority comprising the officers of the DoE/MoEF itself, the decision of which is final and can not be challenged in any court.

#### 4.3.3. The Building Construction Act, 1952

This Act provides for the prevention of haphazard construction of buildings and excavation of tanks and cutting and razing of hills without previous sanction of the authorized Officer. It allows cutting and razing of hills if the authorised officer is satisfied, among other things, that such acts shall not cause any serious damage to the hill or any silting of or obstruction to any drain, stream or river. In doing so, the Act disregards the fact that cutting and razing of any hill would invariably damage the ecosystem, natural habitats and topsoil and deplete the biodiversity. According to the public notification of the DoE dated 09/03/02, the maximum punishment for unauthorised cutting and razing of hill is 10 years' imprisonment with or without a maximum 10 lakh taka fine, whereas, under the Act of 1952, the maximum punishment for the same offence was 7 years' imprisonment with or without a fine.

#### 4.3.4. Play-ground, Open Space, Park and Natural Wetland of All City Areas Conservation Act, 2000

This Act provides for the protection of sports fields, open spaces, parks and natural wetlands by prohibiting any activities detrimental to them. It defined sport fields, open spaces and parks in relation to their inclusion in

the master plan of the concerned cities or in circulars or gazette notifications of the government and thus intends the exclusion of other areas from the protection offered by this Act. In contrast, it offers a wider and somewhat vague definition of "natural wetland" as any land either designated as river, canal, lake or wetland in the master plan of the concerned cities or declared as flood water area by the gazette notification of the government or *any land that holds rain water*. Given that there could hardly be any place in most of the cities of Bangladesh that cannot hold rainwater, this definition reflects a somewhat excessively precautionary response to indiscriminate land encroachment, urbanisation and expansion of real estate business.

#### 4.3.5. The Wildlife (Preservation) Order, 1973

The wildlife law provides for the protection of wildlife as well as the habitats. Considering this the Wildlife (Preservation) Order, 1973 defines various protected areas in the form of game reserve, national park and wildlife sanctuary and aims at preserving wildlife of those protected areas. The wildlife sanctuary regime also requires undisturbed breeding ground for the protection of wildlife as well as all natural resources in the sanctuary. The Act classified the wild animals as game and protected animals and listed them in the annexed schedules. While the game animals can be killed or hunted with permit, the protected animals are fully protected except for saving life, crops or livestock. However, by an executive order dated 18 June 1998, the Prime Minister's Office had prohibited hunting of all types of wild animals for the following five years. For according meaningfulness to this provision, this order should be renewed until the wild life population could be found, through credible survey and mapping, to have reached a viable and safe stage.

The animal species is also taken into consideration. Several laws could be found here. **Animal Slaughter (Restriction) and Meat Control Act, 1957** (amended by 1983 Ordinance) prohibits slaughtering of female animals below the age of specified years or female animal which is pregnant or in milk. **The East Pakistan Society for prevention of cruelty to animals Ordinance 1962** (amended in 2001) provides for the constitution of a society for the prevention of cruelty to domesticated or captured animals. The Society is responsible for exercising authorities under the **Cruelty to Animals Act of 1920** for preventing cruelty to animals and making arrangements for proper treatment and care of animals, and educating people for that purpose. Under the 1920 Act, cruelty to and ill treatment of animals are punishable offence. Cruelty includes unnecessary or cruel beating, overloading of animals and causing unnecessary pain and suffering to animals. **The Livestock Importation Act, 1898** (amended in 1973, '74) provides that the Government may, by Gazette Notifications restrict, or prohibit the importation of any livestock which may be liable to be affected by infectious or contagious disorder or disease. It may also make rules for detention, inspection, disinfection or destruction of any such livestock. **The Bengal Disease of Animals Act, 1944**, provides for the prevention of spread of contagious diseases amongst domesticated animals in Bangladesh by making provision for reporting contagious disease, segregating the infected animals, declaring infected

<sup>101</sup> Section 24 of Environment Court Act 2010.

<sup>102</sup> Section 4 of Environment Court Act, 2010.

<sup>103</sup> Section 5 of the Environment Court Act,2010.



area and prohibiting movement of animals into and out of such areas.

#### 4.3.6. The Forest Act, 1927

The Act empowers the Government to declare portions of its forest as Reserved or Protected and by doing that, it may take measures for *in situ* conservation of biological diversity. The government may also establish its control over portions of private forest by declaring them as controlled or vested forests and conversely, assign village communities to the management of portions of reserved forest. Any acts or omission detrimental to the natural resources of reserved and protected forests are prohibited and are punishable offences. Among them, the more serious ones include making fresh clearing of forest lands, removing timbers, setting fires, felling or otherwise damaging trees, clearing or breaking up any land for cultivation or any other purpose, hunting and poisoning water. The Act, however, allows any such work with permission of the Forest Officer, without clearly specifying what criteria have to be observed by the concerned officer in giving such permission. The Act also fails to establish any stringent regulatory regime for the protected forest areas or to provide for the establishment of surrounding buffer zones for more effective regulation of reserved and protected areas. It also fails to provide sufficient recognition for indigenous practices and techniques in forest conservation including sustainable methods of 'jum' cultivation. The Forest Act, 1927 was amended further in April 2000 to provide for establishment of social forestry involving local community participation in the management regime. By virtue of Section 26 (1A) and Section 32, the fisheries resources of the water bodies of any reserve or protected forest are protected from illegal fishing, poisoning of water and setting traps and snares. Coordination among different management regime (e.g. forestry, fisheries, land) established in various water bodies is needed for better and holistic conservation of aquatic species and their habitats.

#### 4.3.7. The Bangladesh Petroleum Act, 1974

Under section 6 of the Act, petroleum operation has to be carried out in a manner that does not interfere with navigation, fishing, conservation of resources of the sea and sea-bed and that takes into account factors connected with ecology and environment. It does not define the factors and the management elements a company should establish and maintain to discharge its obligations. Section 6(2) only specifies the safety measures to be undertaken that include proper disposal of waste and prevent the escape of drilling fluids.

#### 4.3.8. Protection and Conservation of Fish Act, 1950

The Act defines fish to cover a wide variety of aquatic species e.g. fish, amphibians, tortoises, turtles, frogs and explains 'fisheries' as any water body offering fish habitat. It empowers the government to make rules mostly for the protection of fishes by, for example, prohibiting and regulating the process, period and size of fishing, pollution and other activities detrimental to fish population and fisheries. The maximum punishment for violating such prohibitions, however, is only six months' imprisonment with a fine of maximum

1000 taka for first offence and double for subsequent offences.

#### 4.3.9. Marine Fisheries Ordinance, 1983

Limited fishing by non-mechanised local fishing vessels and local fishing using trawlers equipped with limited horsepower are allowed in specified zones under this Ordinance. No entry of foreign fishing vessels into the Bangladesh's waters would be allowed except with license. The Government may declare any area in the territorial waters as marine reserve and the EEZ of Bangladesh which require special protection and regeneration of the aquatic life (in 2000, a marine park was established under the Act). The Act does not provide for specific preventive or precautionary measures for protection and conservation of aquatic life.

#### 4.3.10. The Territorial Waters and Maritime Zones Act, 1974

Section 6 of this Act authorizes the Government to establish conservation zones in the sea adjacent to the territorial waters to maintain productivity of the living resources and to ensure their conservation. The objectives of the **Territorial Waters and Maritime Zones Rules, 1977** include fish conservation, productivity increase, maintenance of growth and protection of marine environment and of course, sustainable exploitation of fish resources. Penal provisions for violation of the rules are inadequate.

#### 4.3.11. The Embankment and Drainage Act, 1952

It empowers the engineers to conduct enquiries and consider whether or not any objection would be taken into cognizance in undertaking construction of embankments and sluices. While doing so, they are not obliged to undertake any multidisciplinary study to assess the environmental impact of such projects. Consequently, these projects, while considered potentially beneficial for flood control and food production, may adversely affect aquatic ecosystem and its productivity.

#### 4.3.12. The Agricultural Pesticide Ordinance, 1971

Under section 5, the Government can refuse the registration of those pesticides that are detrimental to vegetation, human or animal health. Adverse impact on the fisheries or aquatic organisms, which are very vulnerable in particular in the inundated flood plains and the surrounding habitats of agricultural lands, are not taken into account. The government, upon advice from Pesticide Technical Advisory Committee established under the Act, has banned certain pesticides, although no effective legal mechanism has been put in place to halt their illegal importation and sale under disguised names and labels.

#### 4.3.13. Court Decisions

The Judiciary when well prepared and informed of the rapidly expanding environmental law, plays a key mechanism for ensuring legal effectiveness of environmental law and institutional regimes for example, by providing access to the public and to the judicial procedures for the enforcement of the environmental rights. However, one of the main developments in this connection is the Public Interest Environmental Litigation (PIEL) that permits any citizen

who is concerned about the environment to come before the court and have his grievance mitigated which relates to the environment and environmental issues either directly or indirectly. Thus, the PIEL helps strengthen the national environmental legal regime.

The judiciary of Bangladesh has extended the constitutional requirements<sup>104</sup> of having the *locus standi* in case of public interest litigation in *Dr. Mohiuddin Farooque case*<sup>105</sup>. Now any person aggrieved includes any person other than an officious intervener or a wayfarer without any interest in the cause even the expression is not confined to individual affected persons only but it extends to the people in general, as a collective and consolidated personality. Where a common interest is involved and the applicant is one of them he is said to be aggrieved.<sup>106</sup> If an applicant bona fide espouses a public cause in the public interest he acquires the competency to claim a hearing from the court<sup>107</sup>. So the expression 'person aggrieved' means not only any person who is personally aggrieved but also one whose heart bleeds for the less fortunate fellow-beings for a wrong done by the Govt. or a local authority in not fulfilling its constitutional or statutory obligations. It does not, however extend to a person who is an interloper and interferes with things which do not concern him.<sup>108</sup> This approach is in keeping with the constitutional principles that are being evolved in the recent times in different countries of the world in order to ensure social and economic justice.<sup>109</sup>

<sup>104</sup> Article 44(1) of the Constitution states, *The right to move the High Court Division in accordance with clause (1) of article 102, for the enforcement of the rights conferred by this part is guaranteed.* So the pertinent situation to move the HCD under article 102 is that when the right under part-III is violated. Now the broader significance of article-31 & 32 covers anything that threatens the fundamental right to life and if it/they did so then a person is said to be aggrieved and can move to the HCD.

Article-102 states, the HCD on the application of any person aggrieved, may give such directions or orders to any person or authority, including any person performing any function in connection with the affairs of the Republic, as may be appropriate for the enforcement of any of the fundamental rights conferred by part-III of this Constitution.

<sup>105</sup> In *Dr. Mohiuddin Farooque vs. Bangladesh* 49 DLR 1997 (AD) 1 the court observed, The expression 'any person aggrieved' approximates the test of or if the same is capsulized, amounts to, what is broadly called "sufficient interest". Any person other than an officious intervener or a wayfarer without any interest in the case beyond the interest of the general people of the country having sufficient interest in the matter in dispute is qualified to be a person aggrieved and can maintain an action for judicial redress of public injury arising from breach of some public duty or for violation of the constitutional provision or the law and seek enforcement of such public duty and observance of such constitutional or legal provision. [Per A. T. M. Afzal, C. J.;

<sup>106</sup> In *Parvin Akhter vs. Rajdhani Unuayan Katripakha* 18 BLD HCD 116 case the petitioner had moved the application for her personal interest as well as for the interest of all the residents of The Gulshan Model Town who are, in fact, enjoying the greeneries and the Gulshan lake with its environmental facilities. Since it relates to common interest of all the persons of the Gulshan Model Town area, the petitioner is an aggrieved person and has got *locus standi* to file the writ petition.

<sup>107</sup> In 49 DLR 1997 (AD) 1, Para 48 & 51 Per Mustafa Kamal, J.

<sup>108</sup> In 49 DLR 1997 (AD) 1, para 98 Per B. B. Roy Choudhury, J.

<sup>109</sup> Public Interest Litigation is not in the nature of adversary litigation. When the Courts entertain public interest litigation, it does not do so in a caviling spirit or in a confrontational mood or with a view to tilting at executive authority or seeking to

The real test of 'sufficient interest' on the other hand, essentially depends on the co-relation between the matter brought before the court and the person who is bringing it. Now the view of the court is that when a person approaches to the court for redress of a public wrong or public injury, though he may not have any personal interest, must be deemed to have 'sufficient interest' in the matter if he acts bona fide and not for his personal gain or private profits or for any oblique considerations.

The evolving trends of covering the PIEL is wide, for example a person who is not the riparian owner but interested in protecting the lives of the people is said to have *locus standi*,<sup>110</sup> one who applies against the decision which has the adverse effects on human health is considered to have such<sup>111</sup>, even the citizen who have apprehension of being negatively affected by the construction of grid station<sup>112</sup>.

#### 4.4. The Constitutional and Judicial Responses in addressing Environment and Biodiversity in South Asian Countries

In order to address the global problem of environmental hazards and also to conserve the biodiversity, the initiatives of South Asia region are noticeable. Majority countries of this region have already set their respective national constitution in this regard and most importantly, the judiciaries are also playing a significant role in combating the environmental turmoil. The following discussion will depict a comparative picture of this.

##### 4.4.1 Constitutional Frameworks

A constitution is the supreme law of the states. In addition, it works as guidance in the governance of the states, fixes the rights and duties of the states and citizens. From the mid-1940s, the constitutions started to include the 3<sup>rd</sup> generation rights, i.e. environmental rights. In 1988, Professor Krier wrote a thought-provoking article, in which he asked: What can be more fundamental than the environment? Why is this not

usurp it, but its attempts is only to ensure observance of social and economic rescue programmes. The court is thus merely assisting in the realization of the Constitutional objectives. [*Bondhu Mukti Morcha vs. Union of India* AIR 1984 SC 802].

<sup>110</sup> In *M. C. Mehta vs. Union Of India* AIR 1988 SC 1115 the petitioner had filed writ petition for prevention of nuisance caused by the pollution of the river Ganga. And the court entertained this as a public interest litigation. See for more about PIEL in the following cases *Union Carbide Corporation vs Union of India* AIR 1992 SC 248 ; *Charam Lal Sahu vs. Union of India* AIR 1990 SC 1480 ; *S. P. Gururaja vs. The Executive Member, Karnataka Industrial areas Development Board* AIR 1998 Karnataka 223 ; *State of Himachal Pradesh vs. Ganesh Wood Products* AIR 1996 SC 149 ; *Citizen & Inhabitants of Municipal Ward No. 15, Gwalior vs. Municipal Corporation, Gwalior (Maintenance of sanitation )* AIR 1997 M. P. 33.

<sup>111</sup> In *Advocate Prokash Mone Sharma vs. His Majesty's Govt. Cabinet of Ministers* [WP No.2539 1994] it has been held that the petitioner cannot be said not to have *locus standi* since the writ in questions, the basis for the import of the DDT which has adverse effects on human health. Under the Constitution of Nepal the protection of the Health of the people and conservation of environment are the responsibility of His Majesty's government. The Govt. has failed in this regard and acted against the constitutional right of general public by importing 100 metric tons of DDT from Indonesia. The Ministry of Health cancelled the Importation order.

<sup>112</sup> In *Ms. Shehla Zia vs. WAPDA* PLD 1994 SC 693.

recognized constitutionally?<sup>113</sup> Thus, currently, most of the South Asian countries Constitutions, like other written constitutions of elsewhere, are found incorporating provisions which bear provisions on the environment and biodiversity.

#### **(a) The Constitution of Bangladesh**

To the global call for the protection of environment and biodiversity, Bangladesh, with limited resources and technologies, responded with enactments of various laws and making policies. There are around 205 laws, regulations and rules in Bangladesh<sup>114</sup> which deal with environment and bio-diversity. Bangladesh Constitution neither in the fundamental rights nor in the preamble speaks about any right to healthy and clean environment, however, under fifteenth amendment in the state policies, inserted a provision regarding environment and biodiversity as stated earlier.

#### **(b) The Constitution of India**

Four years after Stockholm Conference, In 1976, 42<sup>nd</sup> amendment to the Constitution was passed and the provisions relating to the protection of environment for the first time were incorporated by adding a new provision article 48-A in the Chapter, Directive Principles of State Policy according to which the State shall Endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country. Further, article 51A (g) inserted by the same amendment states "it shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures". The two articles clearly determine the state and the citizens' duties to protect and improve environment and to preserve bio-diversity. Though the first one is directive in nature, the second one imposes fundamental duties upon state and citizen's to protect and preserve environment and bio-diversity.

#### **(C) The Constitution of Nepal**

Article 35 of the Constitution of Nepal incorporates the right to Clean Environment. This very Article is under part 3 which deals with Fundamental Rights and Duties and is judicially enforceable. Issues of climate change, global warming, environment rights, protection and right utilization of resources are important issues globally as well as locally, and it is especially crucial for Nepal and is included within under article 55(g) that also covers the protection of environment and bio-diversity.<sup>115</sup>

#### **(d) The Constitution of Pakistan**

There is no specific provision in the Constitution which deals with the environment and bio-diversity however; there are some laws such as, Pakistan Environmental Protection Act, 1979 which deal with the environment and bio-diversity. The redresses of grievance is covered under the constitutional provisions specifically by Articles 9, 14, and 199 as the judiciary expanded the interpretation of 'right to life' to include right to healthy environment, and there are volume of

cases which expounded right to life as right to clean and healthy environment.

#### **(e) The Constitution of Bhutan**

The Constitution under article 5 states that every Bhutanese is a trustee of the Kingdom's natural resources and environment for the benefit of the present and future generations and declares that it is the fundamental duty of every citizen to contribute to the protection, conservation, and prevention of all forms of ecological degradation including noise, visual and physical pollution. This Article authorizes the adoption and support of environment friendly practices and policies. The Government itself is under the promise to protect, conserve and improve the environment and safeguard the biodiversity of the country; prevent pollution and ecological degradation; secure ecologically balanced sustainable development while promoting justifiable economic and social development; and ensure a safe and healthy environment. To this end, it promises that a minimum of 60 percent of Bhutan's total land shall be maintained as forest for all time. Moreover Article 8 speaks about the fundamental duties of the citizens regarding the protection of environment and bio-diversity.

#### **(f) The Constitution of Maldives**

The constitution of Maldives speaks about the environment and biodiversity under articles 22, 23(d) (f), 67(h). Article 22 states about state responsibility to protect natural environment, biodiversity, resources and beauty of the country for the benefit of present and future generations. Article 23(d) lay down that every citizen has the right to enjoy a healthy and ecologically balanced environment. Article 67(h) states that the exercise and enjoyment of fundamental rights and freedoms is inseparable from the performance of responsibilities and duties, and it is the responsibility of every citizen to preserve and protect the natural environment, biodiversity, resources and beauty of the country and to abstain from all forms of pollution and ecological degradation. All these provisions are judicially enforceable and justifiable as these come under the fundamental rights and freedom chapter of the Constitution.

#### **(g) The Constitution of Sri Lanka**

Article 27(14) as a directive principles of state policy incorporates state's duties to protect, preserve and improve the environment for the benefit of the community. Apart from that article 28(f)<sup>116</sup> states about the duties of the citizen of Sri Lanka to preserve the nature and conserve its richness. To be added that these are not judicially enforceable under article 29 of the Constitution<sup>117</sup>.

#### **(h) The Constitution of Afghanistan**

Article 15 is the single article that speaks about the environment. Under this article the state is obliged to adopt necessary measures for safeguarding forests and the environment. Therefore, among all the South Asian countries constitutions, the Constitution of Maldives is the most notable one to give better protection to the environment and bio-diversity and all

<sup>113</sup> The Environment, the Constitution and the Coupling Fallacy: 32 Michigan Law Quadrangle Notes 35, 1988.

<sup>114</sup> Farooque, Mohiuddin and Hasan, S. Rizwana, Laws Regulating Environment in Bangladesh, 2<sup>nd</sup> edn, 2004 (BELA).

<sup>115</sup> 55(g) Policies related to protection, promotion and utilization of natural resources.

<sup>116</sup> Fundamental duties Chapter.

<sup>117</sup> Article 29 states that the provisions of this Chapter do not confer or impose legal rights or obligations, and are not enforceable in any court or tribunal. No question of inconsistency with such provisions shall be raised in any court or tribunal.

the provisions concerning environment and bio-diversity are judicially justifiable. Compared to the environmental provisions of Maldives, Nepal, Bhutan and India, the Constitution of Bangladesh is not so proactive and supportive for environmental and bio-diversity protection, however, the judiciary with the help of laws dealing with environment and bio-diversity is marching ahead to include the 'right to clean and healthy environment' in the 'right to life' which is judicially enforceable under article 102 of the Constitution read with article 44.

#### 4.4.2 The Framework developed by the Judiciary

The judiciary plays a significant role in protecting the environment and biodiversity. Since, the judiciary is regarded as the guarantor and protector of the constitution<sup>118</sup>, thus, the judiciary is the first to come for implementing the constitutional provisions. The judicial activism of the South Asian Countries, although noticeable in this regard, their role found is different given the socio-economic and political contexts of respective countries.

Within the judicial hierarchy, Bangladesh has established three distinct environment courts by the Environment Courts Act, 2010. The Court has no *sou motu* power to take a case directly from aggrieved individual<sup>119</sup> relating to environment although citizens are free to go to the higher judiciary i.e., the Supreme Court for environmental remedies under the coverage of PIL<sup>120</sup>. Judicial activism contributes to proper implementation of environmental laws and allows the vast majority of the backward section access to the justice system. As a result of progressive interpretation by the judiciary of Bangladesh, 'right to environment' has received express legal recognition<sup>121</sup> and in this regard some of the instances of Bangladesh Judiciary are mentioned earlier.

The Indian Supreme Court, on the other hand, through judicial activism pioneered in the field of environmental jurisprudence and recognized some doctrines which are even not recognized in international law. Under the constitutional setup the legal positions of Article 51(A)-(g) and 48-A although directive in nature is often been interpreted by the Indian courts as legally binding. Moreover, these provisions have been used by the courts to justify and develop 'right to environment' as part of 'right to life' under article 21. Hereinafter, an enterprise has been taken to depict a robust environmental jurisprudence in domestic sphere with the help of international law. For example, in the *Kanpur Tanneries Case*<sup>122</sup> the Supreme Court comprehensively cited the Stockholm Declarations and firmed the erstwhile nascent fundamental right to

environment in India. The court in this case preferred the right to 'environment' over 'employment' and 'revenue generation'. During this period the Rio Declarations, 1992 was also cited in the Law Society of India case.<sup>123</sup> Apart from that, in providing environmental justice, the Indian Supreme Court has widened the scope of certain principles and doctrines such as precautionary principle<sup>124</sup>; polluter pays principle<sup>125</sup>, and public trust doctrine<sup>126</sup> to protect environment and bio-diversity from further degradation.

The Judiciary of Pakistan, coming to the next, for the first time through the famous *Shehla Zia case*<sup>127</sup> created scope for the right to clean environment within the meaning of right to life. It further held that although "life" is not defined in the Constitution, it could not be given a restrictive meaning of vegetative or animal life only; rather, it includes all such amenities and facilities which a person born in a free country is entitled to enjoy with dignity, legally and constitutionally. *Shehla Zia case* bears great importance and as it set the voyage of all future PIL in Pakistan for environmental jurisprudence. To be mentioned further, that the Pakistani Court acted rigorously to develop environmental jurisprudence in the 1990s but after 2007 there is dearth of environmental jurisprudence from the part of the Pakistani court and a disjointed effort is noticeable<sup>128</sup>.

The judiciary of Sri Lanka is also playing a noteworthy and praiseworthy role in protecting environment and bio-diversity through innovative environmental jurisprudence although there is no specific provision regarding to this in their constitution. However, the judiciary is providing environmental justice taking articles 12 and 126 of the Constitution into consideration. Moreover, the judiciary is applying the international conventions related to environment to ensure environmental justice. Indeed, The Sri Lankan Supreme Court is giving proper and effective treatment to the principle of "Sustainable Development" bringing under this doctrine the precautionary principle. In the case of *Bulankulama Vs The Secretary, Ministry of Industrial Development*<sup>129</sup> the court held that the

<sup>123</sup> *Law Society of India v. Fertilizer & Chemical Travancore Ltd.* AIR 1994 Ker. 308.

<sup>124</sup> *Vellore Citizens' Welfare Forum v. Union of India* (1996) 5 SCC 647 : AIR 1996 SC 2715 Unanimous Judgment delivered on August 28, 1996; by a three judges bench of the Supreme Court of India; *F.B. Taraporwala v. Bayer India Ltd.* (1996) 6 SCC 58, 61 (Para 4); *M.C. Mehta (Badkal and Surajkund Lakes Matter v. Union of India* (1997) 3 SCC 715, 718-20. (Para 8 & 10); *Suo Motu Proceeding In Re : Delhi Transport Development* (1998) 9 SCC 250; 251. Justice Kuldip Singh (Joint order of the Div. bench) applied the precautionary principle as part of sustainable development to establish a legal duty of the state government to control the vehicular pollution in Delhi); *S Jagannath, v. Union of India* (1997) 2 SCC 87, 143-46 (Para 47); *M.C. Mehta v. Kamal Nath* (1997) 1 SCC 388, 413-414 (para 37 & 38); *M.C. Mehta (Calcutta Tanneries' Matter) v. Union of India* (1997) 2 SCC 411, 429-430 (Para 18 & 19); *M.C. Mehta (Taj Trapezium Matter) v. Union of India* (1997) 2 SCC 353, 382-83. (Para 32).

<sup>125</sup> *Indian Council for Enviro-Legal Action v. Union of India* (Bichhri village industrial pollution case), Supreme Court of India, Judgement of 13 February 1996, 1996 (3) SCC 212.

<sup>126</sup> *M.C. Mehta v. Kamal Nath*, Supreme Court of India, Judgement of 13 December 1996, 1997 (1) SCC 388

<sup>127</sup> *Shehla Zia and Others vs. WAPDA* (1994 PLD SC 693).

<sup>128</sup> *Ibid.* pp.24, 25.

<sup>129</sup> (2000) 3 Sri L.R. 43.

<sup>118</sup> Where the Judicial Supremacy exists.

<sup>119</sup> The Environment Court Act 2000 sec. 5, as amended by the Environment Court (Amendment) Act 2002.

<sup>120</sup> Susan Casey-Lefkowitz, J. William Futrell, Jay Austin and Susan Bass, 'The Evolving Role of Citizens in Environmental Enforcement', *National Environmental Enforcement Journal*, 1996, Vol. 11, No. 5, 1996, pp. 40-50.

<sup>121</sup> See, Justice Mainur Reza Chowdhury, 'Legal and Institutional Framework in Promoting Environmental Management' in Bangladesh, available at [http://www.unep.org/law/Symposium/Documents/Country\\_papers/Bangladesh.doc](http://www.unep.org/law/Symposium/Documents/Country_papers/Bangladesh.doc).

<sup>122</sup> *M.C. Mehta, v. Union of India* AIR 1988 SC 1037. See Para 4 (pp. 1038-1040) for detailed discussion of Stockholm Declarations by Justice Venkataramiah.

phosphate mining must be in a sustainable way and for the first time in this case the court referred to international environmental instruments including the Stockholm Declaration on the Human Environment 1972 and the Rio Declaration on the Environment and Development 1992.

The judiciary of Nepal, on the other hand, does not face any hassles in providing environmental justice as article 35 of the constitution incorporated the right to clean environment which is a fundamental right. The Supreme Judiciary has already provided certain notable verdicts in the cases of Advocate Bharat Mani Gautam

v. Secretariat, Council of Ministers-  
Mandamus <sup>130</sup>, Yogi Narahari Nath  
v. the then Prime Minister Grijija  
Prasad Koirala <sup>131</sup>, Midevlal Upadhyay v. Buddilal  
Gubhaju. <sup>132</sup>

Thus, the right to environment is not a constitutional right in India, Bangladesh, Pakistan, Sri Lanka and Afghanistan; nonetheless the judiciaries developed a mechanism to interpret right to life to include right to environment in various decisions rendered by the courts. However this right is, with judicial enforceability, protected in the Constitutions of Maldives, Bhutan and Nepal which are better in status than the constitutional articulation of Bangladesh.

However, the acceptance of the obligations under the international environmental legal regime emanated from the related treaties and customs coupled with the Constitutional provisions of Bangladesh, statutes and case laws made it imperative that in Bangladesh a well-developed legal framework exists to address the environment and biodiversity like many other South Asian countries.

## 5. Assessing Ethical Approaches to Environmental Legislation and Biodiversity in Bangladesh

### 5.1 Assessing Ethical Approaches to Environmental Legislation and Biodiversity in Bangladesh

At the beginning of the twentieth century, many of the ideas that had culminated in anthropocentric outlooks became implicitly or explicitly accepted by most of the world's dominant cultures.<sup>133</sup> From there it was a small step for them to be entered into the legal and policy setting, both internationally and nationally. In other words, all environmentally related actions were to be done primarily for the good of humanity, whether in terms of conservation and/or the prevention of pollution.<sup>134</sup> The environment was to be protected for the instrumental value to humanity. Later on, the debate arose for not considering the value of other living beings and thus, another view, namely, the

biocentric approach became popular. It was further augmented by getting the attention of not only the value of living organisms but also their natural environment and therefore, another new approach i.e., ecocentrism anchored in the national, regional and international legal regimes.

#### 5.1.1 International Perspectives

As mentioned earlier, Bangladesh is a party to many of the International Instruments that bear provisions on or relating to the protection of the environment and also to the conserve the biodiversity. A critical analysis of those instruments certifies that, the need to consider the universality and applicability of the ethical principles is intertwined to their very foundation. Although, it is also found at the same time that all those instruments do not hold the same ethical approach and even sometime arguably a mixed approach. However, irrespective of the approach they contained, they have a profound significance in shaping the international ethical framework for the conservation of the environment. Some of the relevant instruments can be cited here as examples.

The Convention Concerning the Protection of the World Cultural and Natural Heritage, 1972, states in the preamble that "...parts of the cultural or natural heritage are of outstanding interest and therefore need to be preserved as part of the world heritage of mankind as a whole". The Convention thus, introduces the concept of a 'common heritage of humankind' into environmental law which is argued as a concept of universal value of environmental law.

The 1972 Declaration of the UN Conference on the Human Environment reflected its anthropocentric basis in its very title. Additionally, the declaration emphasized that 'of all things in the world, people are the most precious'. The 1980 World Conservation Strategy, which advocated sustainable development, defined development as 'the application of human, financial, living and non-living resources to satisfy human needs and to improve the quality of human life.'<sup>135</sup> In 1980, the first *Brandt report*, North-South: A Program for Survival, defined development as leading to the 'self-fulfillment' of 'full human potential'.<sup>136</sup> The anthropocentric approach appears in a number of international environmental documents and texts in the designation of nature as resource, rather than attributing it an intrinsic value of its own accord.<sup>137</sup>

The CBD, on the other hand, confirms the intrinsic value of biodiversity and ecosystems both in the preamble and throughout the document notably, under article 6, 8 and 9.<sup>138</sup> This means that all species and the environment should be respected and preserved in accordance with their own rights, and not owing to the value to humans. Indeed, the CBD contains a perspective on the relationship between humans and the environment and its values that might be more

<sup>130</sup> Recognizes the right to live.

<sup>131</sup> N K P 2053 Ak1 P 3 dii 6127 )(N. K. P. 2053 Ank 1 P. 3 decision no. 612 held that the government do not have absolute right for taking decision regarding destroying natural, religious and heritage property.

<sup>132</sup> single Bench, Nepal Pradhan Nyayalaya, sadhak Number 47, Decision on 2010, shrawan 14 B.S, In Nepalese judiciary, this is the first noted case where the the environmental conservation was seen with serious concern.in this case the court gave punishment for persons involved in illegal hunting of river fishes.

<sup>133</sup> Alexander Gillespie, *International Environmental Law, Policy, and Ethics*, Oxford, 2014, at p. 10.

<sup>134</sup> Ibid.

<sup>135</sup> See IUCN (1980) World Conservation Strategy, paras 4 & 5; 'conservation, like development is for people'. Reprinted in Ruster, B. and Simma, B. (eds), 1983, *International Protection of the Environment*, New York, Vol. XIII, at p. 427.

<sup>136</sup> Brnadt Commission, North-South: A Program for Survival (Pan Books. London. 1980, at p. 223.

<sup>137</sup> Alexander Gillespie, *International Environmental Law, Policy, and Ethics*, Oxford, 2014, at p.12.

<sup>138</sup> Rai, J.S. et al., *Universalism and Ethical Values for the Environment*, UNESCO Bangkok, 2010, at p. 26.

universally accepted by the variety of world views across the world. The CBD also emphasizes the dependence of humans on functioning ecosystems and our need to protect them for the benefit of future generations, but the language it uses is arguably less anthropocentric and contains more elements of biocentrism, and even ecocentrism. It is also stated that: "... the strong focus of the CBD on the role of functioning ecosystems as a key factor in maintaining or restoring biological diversity is in itself rather ecocentric; instead of appointing the human as the custodian of other species, the human is considered an integral part of a larger and inherently complex system of biotic and abiotic elements, and the survival of this system is dependent on the dynamic relationship between all its separate parts" (Rai, J. S. et al., 2010)

Apart from those, the CBD has taken into consideration certain other ethical issues, like, firstly, the need to include non-state actors in the process of preserving biodiversity; secondly, the vulnerable position of indigenous people and local communities living within endangered ecosystems; thirdly, value of local traditions and indigenous knowledge and the need to make use of these resources to achieve the goals of the convention. And therefore, the CBD has become one of the best examples of human-nature relationship in the arena of environment and biodiversity.

Thus, in the arena of international environmental legal regimes a mixed picture of different ethical approaches are found. Although previously, this picture was dominated by the anthropocentric approach, currently the biocentric and ecocentric approaches are getting more attention with the backdrop of severe environmental degradation and the loss of biodiversity. This shift has a positive influence, perhaps impact on the development of the regional and national legislations everywhere in the world, including in Bangladesh.

### 5.1.2 National Perspectives

Bangladesh adopted its first constitution in 1972 and in that constitution there was no specific provisions regarding either to the environment or to the biodiversity. However, a Writ Petition is brought in the High Court Division of the Supreme Court of Bangladesh for the first time in 1994 by a group of environmental lawyers called the Bangladesh Environmental Lawyers Association (BELA) regarding to the environment pollution and court took the cognizance on the basis of wide interpretation of the meaning of right to life as mentioned under article 32. Latter on the same is extended by a series of cases as mentioned earlier by Dr. *Mohiuddin Farooque*, an environmental lawyer. Thus, although the primary constitution was anthropocentric so far as the environment is concerned, the judiciary intervened and created a scope of ecocentrism and even biocentricism. In several decisions aftermath, the judiciary made valuable verdicts, implying the value and significance of the non-human being and natural environment.

However, very recently in 2011 a new provision through the 15th amendment was added to the constitution that considers the taking of endeavors by the state to protect and improve the environment and to preserve and safeguard the natural resources, biodiversity, wetlands, forests and wild life for the *present*

*and future citizen*.<sup>139</sup> Therefore, the latest constitutional provision regarded the natural resources, etc., as a piece of property or estate inherited by one generation from its predecessor and imposed a duty upon the state as a trustee to preserve and safeguard for the generation to come. Indeed, the provisions insist that all activities in or around those resources should respect the interests of future generations, especially in making decisions that affect whether, when and how the region's resources are to be used, exploited, developed and distributed.<sup>140</sup> Therefore, the provision recognizes the inherent worth of all members of the biosphere and the natural environment but not as an intrinsic value either of the non-human being or the nature but because of the necessity of human being, which evidences the presence of anthropocentricism approach in the constitution.

Apart from the constitutional provisions, the general laws made by the parliament relating to environment and biodiversity are predominantly based on anthropocentric approaches. Although a mixed approach of anthropocentricism, biocentric and ecocentric could be found in some laws like, the Bangladesh Environment Conservation Act, 1995. However, very recently a change is noticed, which is to recognize the value of the environment and biodiversity for their inherent worth in different laws, for instance playgrounds, open space, park and natural wetland of all city areas conservation Act, 2000 and their interpretation.

## 5.2 Assessing Ethical Approaches in Development Plan and Policy: Some Instances

### 5.2.1 Agriculture

Biodiversity and agriculture are strongly interrelated. Biodiversity is critical for agriculture and agriculture can also contribute to the conservation and sustainable use of biodiversity. Maintenance of the biodiversity is essential for the sustainable production of food and other agricultural products and the benefits these provide to humanity, including food security, nutrition and livelihoods.<sup>141</sup>

Agricultural biodiversity is the base upon which agricultural production has been built.<sup>142</sup> Genetic diversity of agricultural biodiversity provides species with the ability to adapt to changing environment and evolve, by increasing their tolerance to frost, high temperature, drought and water-logging, as well as their resistance to particular diseases, pests and parasites for example. This is particularly important regarding climate change.<sup>143</sup> It also performs ecosystem services which are essential to human survival, such as soil and water conservation, maintenance of soil fertility and biota, and pollination.<sup>144</sup>

During the last decades, worldwide biodiversity has been lost at an unprecedented rate in all the ecosystems, including agro-ecosystems.

<sup>139</sup> Article 18A, the Constitution of the People's Republic of Bangladesh.

<sup>140</sup> This is like the common heritage of humankind. See for details Damato, A and Kirsten Engel (1995), pp. 29-30.

<sup>141</sup> <https://www.cbd.int/agro/whatstheproblem.shtml>.

<sup>142</sup> Joseph Cooper, Leslie Lipper, David , *Agricultural Biodiversity and Biotechnology in Economic Development*, Springer, 2006, at p. ix.

<sup>143</sup> COP decision V/5.

<sup>144</sup> <https://www.cbd.int/agro/whatstheproblem.shtml>.

Homogenization of agricultural production systems, mainly due to intensification of agricultural systems coupled with specialization by plant and animal breeders is one of the greatest causes of agricultural biodiversity loss.<sup>145</sup> According to the FAO, it is estimated that about three-quarters of the genetic diversity found in agricultural crops has been lost over the last century.

The economy of Bangladesh is primarily dependent on agriculture. About 84 percent of the total population live in rural areas and are directly or indirectly engaged in a wide range of agricultural activities. Agriculture contributes about 32 percent to the country's GDP<sup>146</sup>, about 23 percent of which is contributed by the crop sector alone. About 63 percent of the labor force is employed in agriculture with about 57 percent being employed in the crop sector.<sup>147</sup>

The primary goal of the National Agriculture Policy of Bangladesh is to modernize and diversify the crop sector, in other words the entire agricultural system, through initiation and implementation of a well-organized and well-coordinated development plan. There are different tools set in the plan which are conflicting to the ethical issues, like bringing an increasing area for agriculture. But what will happen in that case to the local people or the species live in those locations? What is the alternative set up for their livelihood? Those are the questions that remain unaddressed.

### 5.2.2 Economics

Economic instruments play an increasingly important role in shaping environment, health and safety regulation. Economists can influence environmental policy in several ways. One is by advocating the use of particular tools for achieving better environment outcomes through research, teaching and outreach to policy makers. Another is by analyzing the benefits and costs of regulations and standards, which may demonstrate the inefficiencies of the foals themselves. The third way is by analyzing how decisions are made by examining the political economy of environmental regulation.<sup>148</sup> But the intricate relationship between economics and environment is not out of debate, perhaps the debate becomes intense when the relationship is measured by the lens of ethics. We can read that: *"The fact that environmental concerns are assigned economic costs and benefits raises important ethical questions of the way in which humans interact with their natural environment. When nations assign a monetary value to environmental damage, they place an economic value on environmental change for example, carbon trading programs. Economics can also predict individual choices and alternatives. The economic view also supposes that prices can be "signals" for individual preferences and needs. Following this, it can be argued that economic value is a kind of ethical value*

<sup>145</sup> It happens through genetic erosion and the increasing levels of genetic vulnerability of specialized crops and livestock.

<sup>146</sup> Agriculture sector is the single largest contributor to GDP.

<sup>147</sup> <http://www.sdnbd.org/sdi/issues/agriculture/national-policy/introduction.htm>.

<sup>148</sup> <http://belfercenter.hks.harvard.edu/files/The%20Impact%20of%20Economics%20on%20Environmental%20Policy%20-%20E-99-01.pdf>.

*system that signals what is valued by individuals. If biodiversity is valued, a high cost can be attached to it."*

The ecological degradation although can be compensated by monetary terms but the question is does it really compensate or is it possible to compensate? Apart from the compensation to humans whose livelihoods have been affected, how are ecologies compensated? Indeed, although the greater biodiversity exists in the ecologies of the poor countries, they have less capacity to make economic decisions.<sup>149</sup> Therefore, economic forces have influence in how the global ecology is preserved.

In contrast, some economic tools can protect biodiversity. For example, by assigning high economic costs to activities producing carbon emissions, an economic system can signal a change in behavior towards those activities.<sup>150</sup> When economics can signal human values, individuals can indeed make choices in favor of environmental conservation. The economic tool can be a deterrent to biodiversity loss.

Although, both economists and environmentalists can find sustainable strategies for biodiversity management, Baumgartner suggests,<sup>151</sup> states make decisions based on the cost-benefit analysis of environmental damage without taking into account the actual loss happen to biodiversity. The economic view is not necessarily incompatible with ethical views, and economic decisions are a kind of ethical choice. Economic growth does not need to hinder the biodiversity, as environmentally conducive policies can be negotiated with economic policies.

However, it is not very uncommon that the developing countries frequently fail to consider the environmental concern within the economic policy i.e., the national economic policy of Bangladesh.<sup>152</sup> It has been found through a thorough analysis of the concerned economic policy of Bangladesh along with the sixth five year plan that the environmental policy is undertaken without any linkage to the conservation of biodiversity either directly or indirectly.

### 5.2.3. Tourism

Around the world, ecotourism has been hailed very recently as a panacea; a way to fund conservation and scientific research, protect fragile and pristine ecosystems, benefit rural communities, enhance ecological and cultural sensitivity, educating the tourists, and some claim, build world peace.<sup>153</sup> The ecotourism concept as an alternative tourism policy is based on the reason that the social-economic, environmental and political coordination must exist to ensure sustainable development.<sup>154</sup>

<sup>149</sup> Mendelsohn, R., Dinar, A., and Williams, L. 2006. *Environment and Development Economics*. Cambridge, Cambridge University Press. Vol. 11, pp. 159-78.

<sup>150</sup> Refer to ECCAP WG7 report for a discussion of the ethics of emission trading.

<sup>151</sup> Baumgartner, S. 2007. *The Insurance Value of Biodiversity in the Provision of Ecosystem Services*, Vol.2, No.1, pp.87-127.

<sup>152</sup> The National Economic Council (NEC) is the highest economic policy-making body.

<sup>153</sup> Martha Honey, *Ecotourism and Sustainable Development: Who Owns Paradise?*, Island Press, 1999, at, p. 4.

<sup>154</sup> Supra note 25, at p. 72.

On the global level, the United Nations World Tourism Organization (UNWTO) General Assembly meeting in 1999 approved the Global Code of Ethics for Tourism<sup>155</sup> and Article 3 of this significant instrument states that that all the stakeholders involved in the tourism sector should seek to safeguard the natural environment and strive towards sustainable growth.<sup>156</sup> Apart from that the *Quebec Declaration on Ecotourism, 2002*<sup>157</sup> highlights the role of government especially, in tourism policy, to conserve the natural heritage and biodiversity. As ecotourism is dependent upon natural resources, those two instruments<sup>158</sup> will serve as a guideline and also an obligation for the governments to consider biodiversity conservation in their tourism policy making process, especially in regard to ecotourism.<sup>159</sup>

In a national level ecotourism policy, on the other hand, in order to i) ensure sustainable ecotourism; and ii) avoid the conversion of ecotourism to a mass tourism, it is argued that ecotourism must be guided by environmental ethics. The tourism policy as a quasi-legal instrument has an important role in shaping sustainable development within a more non-anthropocentric worldview and respectful to the intrinsic value of species and ecosystems framework. In this regard we can read:

*“Within a national and regional context in the tourism policy making process, legal directives, cultural principles, social inclusion, biodiversity conservation and national interests have to be coordinated and consistent. Environmental ethics is one perspective that needs to be taken into consideration. Ecotourism projects that are not sufficiently informed or guided by environmental ethics are easily being transformed into just another type of mass tourism where nature is confined to small reserves and/or treated as a commodity to be bought and sold. Therefore, it is necessary to strike a balance among national, sub-national and local-sector interests and choose the respective instruments to stimulate genuine changes in human behavior, making tourists fully aware of their actions’ immediate impacts on environment, but also on the well-being and survival of local communities.”* (Bosworth et al., 2011)

Tourism was recognized as an industry in Bangladesh in 1999.<sup>160</sup> The Ministry of Civil Aviation and Tourism is responsible for developing tourism infrastructure in order to popularize tourist products of Bangladesh. The major functions of this ministry include formulation and implementation of laws, policies and guidelines relating to civil aviation and tourism. The ultimate objective is to contribute to the national economy through creation of

employment and facilitating international trade and commerce.<sup>161</sup> In the *Sixth Five Year Plan (SFYP)*, the goal has been set up to enhance contribution of Tourism sub sector in the GDP from 0.69 to 2 percent. Ministry of Civil Aviation and Tourism has formulated *Bangladesh Tourism Policy 2010* to realize this target.

The *Bangladesh Parjatan (tourism) Corporation*<sup>162</sup> classifies tourism into six different types: Tourism, Business, Office, Study, Religion, Service and Other purpose. According to statistics reported by Bangladesh Tourism Board, in 2009 majority of foreign visitors came to Bangladesh for tourism purposes (i.e. 46%) which were closely followed by business tourism (41.8%).

The government has several active policies and laws for the tourism sector, namely the *Bangladesh Tourism Board Act*, the *Tourism Policy 2010*, the Medium Term Budget Framework (MTBF) and the Perspective Plan 2021. These policies and legislations have been promulgated to develop and promote the tourism sector. However, among the different objectives some notable objectives consistent with ecotourism and environmental ethics although distinctly are, for example, i) to create general awareness regarding tourism protection, development and exploration; ii) to execute responsible tourism through creation of some helping hand on behalf of government like as personal sector, local people, local admin, NGO, women federation, media; iii) to create a tourism friendly environment in Bangladesh and to market its tourism potential in both domestic and foreign nations; iv) to research on tourism industry and local knowledge, to survey international markets and to analyze the data.

However, the current tourism policy of Bangladesh is basically anthropocentric in nature as the ultimate objective are to contribute to the national economy through creation of employment and facilitating international trade and commerce. In fact, the policy was finalized without taking the wide impact of ecotourism on the rural community into consideration. Another important criterion advocated by Lai and Nepal (2006) suggested that tourism policy needs to consider the tourism area life cycle (TALC).<sup>163</sup> This is also absent in the tourism policy of Bangladesh.

The community-based ecotourism approach advocated by Gurung and Seeland<sup>164</sup> proposes establishing an appropriate policy framework that emphasizes on community based ecotourism, where local communities would be able to manage micro-facilities like Eco lodges and Eco resorts in

<sup>155</sup> For further informational regarding the Quebec Declaration on Ecotourism, refer to <http://www.gdrc.org/uem/eco-tour/Final-Report-WES-Eng.pdf>

<sup>156</sup> Further information about the tariff <http://www.tourism.gov.bt/plan-your-trip/travel-requirements>

<sup>157</sup> Definition of ecotourism by the international ecotourism society. “Responsible travel to natural areas that conserves the environment and improves the welfare of local people.”

<sup>158</sup> The UNWTO Global Code of Ethics and the Quebec Declaration.

<sup>159</sup> Above Note 214, at p. 81.

<sup>160</sup> [http://www.plancomm.gov.bd/wp-content/uploads/2015/02/5\\_Prospect-and-Strategy-for-Tourism-Development.pdf](http://www.plancomm.gov.bd/wp-content/uploads/2015/02/5_Prospect-and-Strategy-for-Tourism-Development.pdf)

<sup>161</sup> [http://www.mof.gov.bd/en/budget/13\\_14/gender\\_budget/en/39%20Chapter%2042\\_53\\_Civil%20%20Aviation\\_English.pdf](http://www.mof.gov.bd/en/budget/13_14/gender_budget/en/39%20Chapter%2042_53_Civil%20%20Aviation_English.pdf)

<sup>162</sup> A statutory Public Corporation working independently for the tourism sector.

<sup>163</sup> Tourism area life cycle (TALC) is measured by tourist number and time line. It involves a six-stage evolution of tourism, namely exploration, involvement, development, consolidation, stagnation and post-stagnation. The last stage of post-stagnation contains decline, rejuvenation or stabilization. This model is aimed to assess and measure a tourism destination’s development (Butler, 1980). For details see, Butler, R.W. 1998. The Concept of a Tourist Area Cycle of Evolution: Implications for Management of Resources. *Canadian Geographer*. Vol.24, pp. 5-12.

<sup>164</sup> Gurung, B. D. and Seeland, K. 2008. Ecotourism in Bhutan: Extending its Benefits to Rural Communities. *Annals of Tourism Research*. Vol.35, No.2, pp. 489-508.



particular. As indicated in the principles, successful ecotourism should be comprised of three fundamental elements; i.e., preservation of nature, education of tourists, and ensuring there are benefits to local people. This community based ecotourism can be found to some extent in Bangladesh but in practice those local people do not have any power in this field.

Bangladesh is a country filled with natural wonders and untouched reserves and home to a variety of unique and magnificent creatures. With hills, valleys, forests, beaches, lakes and rivers, ecotourism in Bangladesh is ideal.<sup>165</sup> Indeed, Bangladesh boasts to having the world's biggest mangrove forest ecosystem, expansive pristine beach, impressive Hilly Districts.<sup>166</sup> Certainly with these vital ecosystems contribute greatly to Bangladesh's ecotourism potential if it is well managed according to the principles of long-term sustainability. Thus, Bangladesh needs to find out a well-developed policy that would take into account the nature itself and the associated ethical consideration in order to ensure a sustainable policy outcome for the days to come.

#### 5.2.4 Sustainability

The protection of the environment although became a critical issue during the 1970s, and became a universal concerns in the following decade and sustainable development a common goal.<sup>167</sup> It also became apparent that the earth's natural resources were not inexhaustible and further action was required<sup>168</sup> for example, the initiative that covers the *intergenerational equity*.<sup>169</sup> Thus, subsequently, the Brundtland Report, 1987<sup>170</sup> defined sustainable development as development that meets "*the needs of the present without compromising the ability of the future generations to meet their own needs.*" The Convention on Biological Diversity (CBD) later on, widened a partnership for the preservation of the environment in a sustainable manner.

However, working towards sustainability through a common partnership is very difficult as all states are at varying levels of development. Therefore, in an unceasing process of formulation, the international community has adopted a significant number of principles of international environmental laws<sup>171</sup> as an expression of the ideals of the international community<sup>172</sup>, like the *common but differentiated responsibility*. Principle 7 of the Rio Declaration 1992 describes the said principle as:

*States shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem. In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.*

Developing countries in these situations under the auspices of this principle can implement the sustainable policies and strategies with a condition that the developed countries will bear the ensuing costs.<sup>173</sup> In working towards sustainability, governmental policy must take into consideration the economic, social and environmental factors of each particular context.<sup>174</sup> Apart from that the ethical consideration is important to add.

Bangladesh, for example, has several policies regarding biodiversity in accordance with their obligations under the CBD; one of which is the national Plan for Sustainable Biodiversity Conservation and Utilization with the aim of reducing biodiversity loss and protecting the components of biodiversity. The plan encourages research on biodiversity in order to raise its economic value and has in place mechanisms that will equally distribute benefits those results from the development on biodiversity. Indeed, the plan protects traditional knowledge, associated with the conservation and sustainable use of biodiversity.

In line with this view the *Ministry of Environment and Forests*, Bangladesh prepared 'the National Biodiversity Strategy and Action Plan(NBSAP)' in 2004.<sup>175</sup> The NBSAP of Bangladesh provides a framework for conservation, sustainable use and sharing the benefits of biodiversity of the country. A major focus of the NBSAP is the need for cross-sectoral linkages, reflecting the fact that in Bangladesh, more so than most other countries, biodiversity conservation is closely interwoven with social and economic development. The major objectives of the NBSAP are to: i) conserve, and restore the biodiversity of the country for well-being of the present and future generations; ii) ensure that long-term food, water, health and nutritional securities of the people are met through conservation of biological diversity; iii) maintain and to improve environmental stability for ecosystems; iv) ensure preservation of the unique biological heritage of the nation for the benefit of the present and future generations; v) guarantee the safe passage and conservation of globally endangered migratory species, especially birds and mammals in the country; and vi) stop introduction of invasive alien species, genetically modified organisms and living modified organisms.

Thus, from the NBSAP of Bangladesh it is clear that

<sup>165</sup> <http://www.banladesh.com/ecotourism/>.

<sup>166</sup> Khagrachari, Rangamati and Bandarban.

<sup>167</sup> Supra note 25. p. 76.

<sup>168</sup> Neil Sampson, Dwight Hair, American Forestry Association. *Ural Resources for the 21st Century*, Island Press, 1990, p. 305.

<sup>169</sup> It says about the needs to preserve natural resources and the nature for the benefit of future generation

<sup>170</sup> This report was and remains crucial in the sense that it explains how economic development and environment preservation can coexist in the development process.

<sup>171</sup> Liaquat A. Siddiqui, the Legal Status of the Emerging Principles of International Environmental law, the Dhaka University Studies, Part F, Vol. IX(I), 1998, at p. 43.

<sup>172</sup> Anita Margrethe Halvorsen, Equality among Unequals in International Environmental Law: Differential Treatment for Developing Countries, Western Press, 1999, at p. 17.

<sup>173</sup> Rudolf Dolzer, Global Environmental Issues: The Genuine Area of Globalization, 1999, at p. 160.

<sup>174</sup> Hammond A., et al. 1995. *Environmental Indicators: a systematic approach to measuring and reporting on environmental policy performance in the context of sustainable development*. World Resources Institute. Available at [http://pdf.wri.org/environmental\\_indicators\\_bw.pdf](http://pdf.wri.org/environmental_indicators_bw.pdf)

<sup>175</sup> Available at: <http://www.indiaenvironmentportal.org.in/files/file/NBSAP%2>

the Government has already embarked on taking some initiatives towards the conservation of biodiversity which is based on ecocentric approach that seeks to recognize the intrinsic values of all living organisms and their natural environment regardless of their perceived usefulness or importance to human beings.

Therefore, a thorough analysis of the legal frameworks of Bangladesh relating to the environment and conservation of biodiversity made it evident that the frameworks developed particularly in the 1970s and 1980s were dominated by the anthropocentric approach that provided the basis for most of the justifications for when the natural world is exploited. Historically, this has meant that even in Bangladesh that the natural world will only be conserved on account of the instrumental values attributed to it by humans rather than being protected because of its own inherent value. However, with the passage of time other justifications i.e., religious, aesthetic, cultural, recreational, economic that work on the idea of preserving the environment developed. These intellectual mindsets lead to the emergence of other ethical approaches i.e., biocentric, ecocentric that evaluate other living beings and the natural environment. Thus, the legal framework of Bangladesh particularly after the 2000s is influenced by those two approaches which is visible in different national laws, policies even the judicial interpretations.

## 6. The National Environmental Policy Regime of Bangladesh with an Emphasis on Biodiversity

### 6.1. Policy as an Instrument

A policy is a deliberate system of principles to guide decisions and achieve rational outcomes.<sup>176</sup> It may also refer to the process of making important organizational decisions, including the identification of different alternatives such as programs or spending priorities, and choosing among them on the basis of the impact they might have. Policies can assist in both subjective and objective decision making.<sup>177</sup> The term may apply to government, private sector organizations and groups, as well as individuals alike. Thus, the national policies embody legal standards of the respective countries. To be noted further, the policy of any country may be influenced by different socio-economic and political factors and also by ethical factors. Thus, the making of policy, its effectiveness and outcomes are dependent on many things. But unlike the rules of law, the standards that the policies contain are more general than commitments and they do not specify particular actions. Policies are guidelines for the ministries and other government bodies and they may lay the foundation for future legal developments,<sup>178</sup> but they also may be adopted by the private sector and different communities. Some local governments also enact policies.

The importance of policies in strengthening the environmental regime is recognized in a number of important international instruments including the 1980

*World Conservation Strategy*<sup>179</sup> and the 1991 *Brundtland Report*.<sup>180</sup> Paragraph 14 of Chapter 8 of *Agenda 21*, the non-binding action plan for a global partnership for sustainable development, underscored, i) the necessity of formulation of national policies<sup>181</sup>; as well as ii) enactment of laws for environmental protection and sustainable development.<sup>182</sup>

The importance of adoption of policies has special importance and impacts in countries like Bangladesh where the pace of legal development is comparatively slower than in the developed world.<sup>183</sup> Although, according to Article 152 of the Bangladesh Constitution, policies are not the sources of judicially enforceable obligations,<sup>184</sup> they enjoy binding impact on the activities of the GoB agencies and therefore, can greatly influence the shaping of national environmental regimes.<sup>185</sup>

The environmental policies of Bangladesh have been mostly formulated in the post-Rio era like many other countries.<sup>186</sup> Among them, the *Environment Policy of 1992* focuses solely on the environmental issues while other policies like the *Forestry Policy of 1994* and *Land Use Policy of 2001* address sectorial aspects of sustainable development. Besides these, other notable policies relating to the natural resource management and biodiversity conservation regimes in Bangladesh include the *Fisheries Policy of 1998*, *National Agriculture Policy of 1999*, *Livestock Development Policy of 1992*, *National Water Policy of 1999*, *Industry Policy of 1999*, *Energy Policy of 1996*, *Export Policy of 1997-2002* and *National Science and Technology Policy, 2011*.

This part analyses the contents of the national policies of Bangladesh to the extent they are related to natural resource management issues in order to examine their efficiency in addressing the needs for conservation and sustainable use of biological resources. It also discusses the necessity of developing the legal rules in the light of the policy directives concerning environmental issues like biodiversity.

### 6.2. National Environment Policy, 1992 (NEP)

According to Paragraph 1.2 of the National Environment Policy (NEP), the adoption of an integrated Environmental Policy was thought to be imperative in view of the "geographic location of Bangladesh, the gradual degradation of its environment and lack of appropriate technology, sustainable management techniques and processes for the

<sup>179</sup> Shawkat Alam. *Routledge Handbook of International Environmental Law*. Routledge, 2013. at p. 212.

<sup>180</sup> Professor Klaus Bosselmann, *The Principle of Sustainability: Transforming Law and Governance*, Ashgate Publishing, Ltd., 2013, p. 34.

<sup>181</sup> Dan Sitarz, *Agenda 21: The Earth Summit Strategy to Save Our Planet*, EarthPress, 1993, p. 84.

<sup>182</sup> Jamie Benidickson, Ben Boer, Antonio Herman Benjamin, Karen Morro (ed). *Environmental Law and Sustainability after Rio*, Edward Elgar Publishing, 2011, p. 24.

<sup>183</sup> Michael Mann. *South Asia's Modern History: Thematic Perspectives*, Routledge, 2014, pp.105-116

<sup>184</sup> Article 152 defines the term 'law' which does not cover policy within its purview.

<sup>185</sup> Farooque, M., 1997, *The Bangladesh Biodiversity Legal and Institutional Profile*. Bangladesh, 1997, p. 12.

<sup>186</sup> Jorge E. Vinales, *The Rio Declaration on Environment and Development: A Commentary*, Oxford University Press, 2014, at p. 126.

<sup>176</sup> E. Veduna. *Public Policy and Program Evaluation*, Transaction Publishers, UK, 2009. at p. 269.

<sup>177</sup> <http://svdnev.edu.au/legal/policy/what/index.shtml>.

<sup>178</sup> Qerim Qerimi, *Development in International Law: A Policy-Oriented Inquiry*, Martinus Nijhoff Publishers, 2012, pp. 11-102.

exploitation of resources". Thus, it is obvious that the central theme of the NEP was environmental protection, and biodiversity issues are addressed there to the extent they are related with that theme.

The NEP embraces a number of sectors including agriculture, industry, health, energy, water, land, forest, fisheries, marine, transport, housing, population, education and science. In its Part 4, it emphasizes the need for amending the existing laws and regulations, formulating new laws and implementing the same for protection of environment, conservation of natural resources and control of environmental pollution. The ambitious goal of the NEP is also manifested in its recommendation for ratifying "all concerned international laws/ conventions and protocols." It assigned the Ministry of Environment and Forests (MoEF) with the responsibility of co-coordinating the implementation of the policies and provides for the establishment of a high level National Environment Committee (NEC) with the head of the Government as its chairperson to provide overall direction for implementation of the policies.

The NEP provides for a few conservation-specific measures for different sectors. As regards the housing and urbanization sector, existence of water bodies in the cities is recommended for maintaining environmental and ecosystem balance in the urban areas. As regards the education sector, dissemination of environmental knowledge and information is the policy guideline for improving the level of public awareness of the importance of environmental protection and sustainable use of natural resources. The sectors regarding which the environmental policies are more comprehensive are discussed below.

**a. Agriculture:** Among the policy guidelines in agriculture sector, the more specific one encourages the use of natural fertilizers and insecticides instead of agro-chemicals and artificial materials. In view of the widespread use of the chemicals and artificial materials in Bangladesh and their adverse impact on the long-term fertility and organic properties of the soil as well as on biodiversity, a more effective guideline could have been made for the gradual phasing-out of these materials.

**b. Industry:** Undertaking EIA for all new industries, adoption of corrective measures for polluting industries, imposing ban on establishment of industries that would produce pollutant goods and development of environmentally sound technology are recommended goals in this sector. The shortcomings include absence of provision for EIA for the whole life cycle of a project, environmental management system and disposal of industrial wastage.

**c. Energy and Fuel:** Reduction of the use of biomass energy, exploration of alternative energy sources, undertaking precautionary measures against potentially harmful use of nuclear energy and nuclear radiation, conservation of forest fuel and development of improved energy saving technology are recommended options for the sector. However, the NEP fails to specify the need for examining the potentials of alternatives like solar or wind energy and for ensuring the sustainable use of the gas resources.<sup>187</sup> It demands EIA only before implementing

projects for extraction of fuel, not at every stage of the life cycle of the gas related project. For biodiversity conservation, the policy must specify that the EIA components should include assessment of potential impact on biological resources and the authority to be entrusted with NBA should share the monitoring responsibility.

**d. Water:** Environmentally sound management is suggested in the utilization and development of water resources, construction of irrigation network and embankments and dredging of watercourses. The recommendations also include measures against river pollution and EIA before undertaking water resource development and flood control projects.

**e. Land:** Activities that cause or result in land erosion, salinity and alkalinity and loss of soil fertility are prohibited. Compatible land use systems for different ecosystems and environmentally sound management of newly accreted land are recommended.

**f. Forest, Wildlife and Bio-diversity:** Conservation and expansion of forest zones and conservation of wildlife, biodiversity and wetlands are identified as priority areas for action. However, how to deal with them for the conservation in a priority basis is not mentioned in the policy. Indeed, the policy fails to address the issue of biodiversity conservation with other related arenas of environment on which it is dependent indirectly.

**g. Fisheries and Livestock:** Conservation of fisheries and livestock, mangrove forest and others ecosystems and prevention of activities that diminish the wetlands and natural habitats for fishes are the basic policy objectives for this sector. The need for an inter-ministerial co-ordination is underscored by requiring evaluation of the existing projects on water development, flood control and irrigation in order to minimize their adverse impact on fish growth and their habitats. The policy fails to address the needs for establishing conservation zones and mitigating the problems caused by the already introduced alien invasive species.

**h. Coastal and Marine Environment:** Coastal and marine eco-systems are identified as potential areas for intervention, where all internal and external polluting activities should be stopped. Fishing in coastal and marine environment within regeneration limits is recommended. Policy guidelines, however, fail to address the polluting impact of ship-breaking industry.

**i. Transport and Communication:** The policy objectives are to ensure that the transport and communication systems do not pollute the environment. The policy guideline, however, does not define what would be the threshold for determining pollution of environment and what specific measures should be undertaken to establish and maintain environment friendly transport and transport system.<sup>188</sup>

The Environment Policy of 1992 provides for a number of purely environmental principles like the precautionary measures and EIAs. It appears to have addressed the conservation needs in various sectors particularly of forest, wildlife, biodiversity and fisheries. But excepting the provisions for EIA, discouraging certain activities, and inter-ministerial coordination, the

<sup>187</sup> This is emphasized in the latest draft of the National Environment Policy, 2013.

<sup>188</sup> This was later covered both by the Bangladesh Environment Conservation Act, 1995 and the Bangladesh Environment Conservation Rules, 1997.

NEP does not elaborate the measures needed for integrated efforts for conservation and sustainable use of biological resources. It also fails to address some other related issues that warrant consideration for conservation and sustainable use of natural resources. For example: use of chemical fertilizer and insecticide is discouraged in the NEP, without suggesting measures for gradual phasing out of these materials and discouraging hybrid agriculture. Again, the agriculture, forest, fisheries and livestock policies have recommended introducing alien species for increased production without considering its potential harmful impact on endemic species, habitats and ecosystems.

The NEP is silent about the needs for identification of biological resources and establishing mechanism for conserving the varieties of those resources. It almost completely ignores the issues related to genetic resources. It does not address issues related to access to genetic resources and equitable sharing of related benefits, Genetically Modified Organisms (GMO), intellectual property rights (IPR), watershed management and trans boundary environmental problems.

With some modifications, the Environment Policy, however, could graduate to the level of a good foundation for initiating further conservation efforts in Bangladesh. It underscores the need for more proactive measures by suggesting immediate action to amend the existing laws and make new laws to protect the environment, conserve natural resources and control environmental pollution. It has also emphasized the needs for ratification of international conventions, treaties and protocols, without properly spelling out their importance in ensuring sustainable use of the biological and other natural resources though.

In this regard, it is also mentionable that the MoEF of the GoB has published the Draft NEP in 2013 and solicited public opinion. The Draft NEP 2013 is a revision of the NEP 1992 in the context of the new reality of climate change.<sup>189</sup> The NEP 2013 also outlines a more up to date understanding of the extent and magnitude of environmental degradation that has become a fact of life in the world in general, and in Bangladesh in particular covering the problems of population growth, illiteracy, lack of awareness and healthcare services, limitation of arable land, unplanned development and urbanization and industrialization as the major impediments of the conservation of the environment and biodiversity.

### **6.3 Sector-specific Policies**

#### **6.3.1 Livestock Development Policy, 1992**

The basic goal of the Livestock Policy is to identify the impediments to the development of livestock and to determine the strategies for its development. Some of its objectives are controversial. The policy encourages the introduction of alien species of grasses like 'napier' to meet the demand of fodder. But it has not considered the impact of such species on the environment and biodiversity. It has also encouraged in-breeding of local varieties with foreign varieties of cattle like the Holsteins and the Friesians to improve the quality of the livestock and milk production of the country without underscoring the needs for examining the

consequences of the in-breeding practices.

The policy recognizes that introduction of bio-gas in rural areas as an alternative source of fuel energy will reduce pressure on forest reserves and homestead forests. But it fails to reflect the importance of the excreta of the cattle population that provides the soil with nutrients and moisture holding capacity.

#### **6.3.2 Forestry Policy, 1994**

The Forestry Policy of 1994 is the modified and amended version of the previous forestry policy of 1979, in line with the proposals and suggestions of the Draft Forestry Master Plan. The instruments that are taken into account in formulating the policy include "Decisions and recommendations taken in different international conferences and conventions, particularly, the envisaged programmes on forestation cited in the Agenda of the Earth Summit held in Brazil, 1992."

The Forestry Policy aims to conserve the existing forest areas and bring about 20% of the country's land area under the afforestation programme and increase the protected areas by 10% of the reserve forest land by the year 2015 through the co-ordinated efforts of GO-NGOs and active participation of the people. It also provides for encouraging private initiatives, eco-tourism, massive media campaign, strengthening of the Forest Department, strengthening educational, training and research organizations. In order to achieve this goal, the policy recommends for amendments of the existing laws, rules and regulations relating to the forestry sector and for creation of new laws, rules and regulation.

Like the environmental policy, the Forestry Policy fails to take into account the threat of introduction of alien invasive species to the forestry resource management. While providing for biodiversity of the existing forests, it focuses on conserving only "the remaining natural habitat of birds and animals", leaving aside the needs for restoring the habitats already lost or damaged.

#### **6.3.3 National Energy Policy, 1996**

The National Energy Policy (NEP) touches upon various issues of energy exploration, production and utilization. Its goals and objectives include using energy for sustainable economic growth, meeting energy demand of various regions and different groups of users, sustainable operation of energy utilities, ensuring environmentally sound energy development programmes, causing minimum damage to the environment and to encourage public and private sector participation in the development and management of the energy sector.

These policy guidelines look more like mission statements and fail to indicate how its objectives should have to be achieved. The NEP provides for implementing laws, rules and policies formulated by the Government in this regard and amending the existing laws and rules to implement the policy, wherever necessary. But it falls short of identifying the areas of law which need to be modified and has hardly addressed the question of strengthening the existing institutional regime.

<sup>189</sup> <http://opinion.bdnews24.com/2013/10/07/national-environment-policy-promises-need-to-follow-with-action/>

Considering the importance of the institutional aspects in implementing the NEP, Chapter 7 of the policy deals with five different components of the energy sectors: Non-Renewable Energy Policy, Petroleum Policy, Rural and Renewable Energy Policy, Power Policy and Rural Electrification Policy. Among them, the first two policies are more important for the purpose of this study. The Non-Renewable Energy Policy recommends, among other things, for determining actual field potentials of the developed gas fields, actual recoverable reserve of discovered gas/oil fields, reduction of imbalance in energy consumption by developing energy supply in the western zone of the country, pricing all forms of non-renewable energy at their economic cost of supply, reducing system loss and making EIA an integral part of any new energy development project.

#### 6.3.4 Fisheries Policy, 1998

Biodiversity conservation and environment protection in developing fishery resources are among the main objectives of the policy. In order to achieve these objectives, inland open water fishery, inland close water aquaculture and its management, shrimp culture in the coastal area and marine fishery resources are identified as areas for immediate action.

The Fisheries Policy recommends for bringing the *jalmahals* (wetlands) under the Fisheries and Livestock Ministry. The intended purpose is to resolve the problems of their overexploitation by the lessees under the current short-term leasing system that is regulated by the Ministry of Land (MoL). The Fisheries Policy, however, does not explain what alternative measures the Fisheries and Livestock Ministry should undertake to promote more sustainable utilization of the fisheries sector.

The Fisheries Policy reflects the need for stopping the release of untreated effluents from the industries into the water bodies by describing it as a criminal offence. It encourages the exploration of export market for turtles and some other aquatic species without sufficiently stressing the needs for related biodiversity obligations.

#### 6.3.5 National Agriculture Policy, 1999

The National Agriculture Policy, 1999, takes a narrow approach to define agriculture by focusing on "crop production and marketing together with minor irrigation, seeds, fertilizer and agricultural credit". It aims to ensure, *inter alia*, sustainable agricultural production system, preservation and development of land productivity, preservation of crop biodiversity, introduction of new technology, increased use of organic manure, integrated pest management system, efficient irrigation system, diversification of crops and establishment of agro-processing and agro-based industries. It also emphasizes on the need for updating the agricultural system in the light of the agreements on agriculture under the WTO, SAFTA and other international treaties.

Some of the policy objectives, however, appear to have been formulated without understanding of the related issues comprehensively. For example, while explaining the need for crop diversification, specific emphasis is put only on traditional crops, i.e., rice, wheat and maize. In order to augment rice production,

the agriculture policy encourages increased use of hybrid seeds that may entail higher inputs of chemical fertilizers, insecticides and pesticides and consequential damage to the fisheries and water quality. The policy itself recognizes that 'chemical fertilizers and pesticides used for increased crop production' may lead to 'environmental pollution', but does not explain how increased use of hybrid seeds would not involve increased use of chemical fertilizers and pesticides as well. The Agriculture Policy is also silent about the need for assessing the impact of the use of agro-chemicals on soil, water bodies, fisheries and overall biodiversity.

#### 6.3.6 National Water Policy, 1999

The promulgation of the National Water Policy in 1999 was a response to the long felt needs for government directives and guidelines for the management, regulation and utilization of the water resources of the country. The Water Policy aims to ensure efficient and equitable management of water resources, proper harnessing and development of surface and ground water, availability of water to all concerned and institutional capacity building for water resource management. It has also addressed issues like river basin management, water rights and allocation, public and private investment, water supply and sanitation and water need for agriculture, industry, fisheries, wildlife, navigation, hydropower, recreation, environment, preservation of wetlands etc.

The goals of the Water Policy include "protection of natural environment" and chapter 4.12 titled "water for the environment" lists a number of tasks for the water management agencies and related natural resource department. These include, i) adhere to formal EIA process as set out in EIA guidelines and manuals for water sector projects; ii) ensure adequate upland flow in water channels to preserve the coastal estuary ecosystem; iii) stop the filling of publicly-owned water bodies in urban area; iv) take necessary steps to remove all existing unauthorized encroachment on rivers and watercourses and stop unplanned construction on riverbanks; v) enforce the "polluter pay" principles in the development of regulatory guidelines for all regulatory actions designed to protect public health and the environment.

The Water Policy, however, fails to address the issues like consequence of trans-boundary water disputes, watershed management and sustainable practice for pricing of water utilities. It also fails to identify the needs for modifications of related civil laws.

#### 6.3.7 National Industry Policy, 1999

Environmentally sound industrialization is among the various objectives of the National Industry Policy, 1999. No specific guideline is given for sustainable extraction and utilisation of raw materials for different industries. The Policy also falls short of addressing important issues like the release of harmful effluents into the open water bodies or environmental management systems.

#### 6.3.8 National Land Use Policy, 2001

One of the objectives of the Land Use Policy is to introduce a 'zoning' system in order to ensure the best use of land in different parts of the country according to their local geological differences and to control the

unplanned expansion of residential, commercial and industrial constructions. While explaining this, the policy provides that areas already defined and recognized as forests, hills and hillocks, marshlands and special garden areas should not be urbanized, constructed upon or utilized for commercial purposes without proper authorization of the concerned authority. This authorization process must incorporate stringent accountability mechanism to avoid its misuse.

Other objectives of the Land Use Policy are to protect natural forest areas, prevent river erosion and to prevent the destruction of hills and hillocks. The Land Use Policy, in this regard, put emphasis on the implementation of other relevant policies as well, for example, *firstly*, it provides that "...it is also necessary at the same time to ensure the preservation of present forest areas. It can be hoped that the total situation will improve if the Environmental Policy, 1992 and the National Forest Policy 1994 are properly implemented" and *secondly*, while noticing the present extensive tendency of transforming dried up water lands into agricultural lands during the dry months, the policy provides that attempts should be made to harmonize the implementation of the National Agriculture Policy with that of the National Fisheries Policy in order to increase and develop both food and fisheries production simultaneously. The policy, however, fails to stress that this harmonization should be aimed for achieving conservation objectives as well.

A National Conservation Strategy is still awaiting approval of the Government, which might facilitate to effectuate the environment-related provisions of the policies. The initiative for preparing an important document called the National Biodiversity Strategic Action Plan taken in January 2003 and completed in June 2004.<sup>190</sup> Furthermore, although many of the policies underscore the importance of amendment of existing laws and formulation of new laws, only a very few like the ECA of 1995 and ECR of 1997 could be found that post-date the policies.

The policies are not always convenient for implementation either. Some provisions of the Fisheries Policy contradict that of the Land or Industrial Policy; the Environmental Policy does not conform to the narrow objectives of the Export Policies and so on. The Agriculture Policy puts emphasis on increased irrigation from surface water sources viz. *khals (canals)*, *beels (wetlands)* and rivers, without considering its impact on navigational as well as non-navigational use of the surface water. This contradicts the interest of other water-based sectors like the fisheries and forestry.

Under the Environment Policy, the Ministry of Environment and Forest is assigned with the responsibility of implementing the policies concerning protection of forest, wildlife and biodiversity, whereas many forestlands and resources having wildlife are actually beyond their jurisdiction. It is imperative to make a coordinated and integrated effort to prioritize the areas of relevant legal and policy reform for facilitating wise and sustainable use of the biological resources of Bangladesh.

## 7. Concluding Remarks

Biodiversity is too valuable to lose.<sup>191</sup> The values and use of biodiversity i.e., species, genetic and ecosystem diversity to human society is not confined to only one arena. It is regarded, considering its wide applicability and significance as the *sine qua non* for the existence of human life as well as for the support of human livelihoods. Smith,<sup>192</sup> a classical economist, stated that 'the origin of all wealth came from the bosom of earth', implying the existence of great bondage between economics and the earth's resource, especially biodiversity.<sup>193</sup> The social value of biodiversity can also not be denied, although it tends to vary because the social value of biodiversity in reality refers to the manner in which bio-resources are used or abused and not actually estimated in terms of their 'worth' to society.<sup>194</sup> Indeed, biodiversity not only provides an actual and potential source of biological resources but also contributes to the maintenance of the biosphere in a condition that supports human and other life. Sands<sup>195</sup> also opined as mentioned earlier, biodiversity is worth maintaining for non-scientific reasons of ethical and aesthetic value too.

However, in spite of the immense importance, currently biodiversity is under greater threat. The threats come from a multitude of sources. Tropical deforestation is readily cited as the main source, although serious threats are also posed by the destruction of temperate forests, wetland and coral reefs.<sup>196</sup> Human activities, both direct i.e., hunting, collection, persecution, and indirect i.e., habitat destruction and modification contribute to the destruction of nature and the loss of biodiversity.<sup>197</sup> Even, new modes of threats are adding every day to the existing modes and although the modes are not similar but the consequence is the same which is the gradual loss of biodiversity. As the problem concerning biodiversity is growing greater with the passage of time, the conservation of biological diversity is considered as one of the most urgent issues at present time.

The conservation of biodiversity, for those reasons requires- i) a comprehensive approach for regulation of a broad range of human activities; and ii) a greater regulatory challenges to international to national to local law than any other environmental issues. Indeed, the conservation of biodiversity illustrates clearly the range of difficulties which exist in developing and applying rules of international law to resources which do not respect national boundaries. Hence, corollary to the international environmental legal regime the national legal regime becomes relevant and important.

Apart from the international and national legal regime, the intricate relationship between ethics and biodiversity, on the other hand is important when it

<sup>191</sup> Donald S. Maier, What's So Good About Biodiversity?: A Call for Better Reasoning About Nature's Value, Springer Science & Business Media, May 23, 2012, p. 2.

<sup>192</sup> Smith, Adam, Wealth of Nations-An Inquiry into the Nature and Cause of Wealth of Nations, Strahan and Cadell, UK, 1776, p. 17.

<sup>193</sup> K V Krishnamurthy, Textbook of Biodiversity, Science Publishers, 2003, p. 67.

<sup>194</sup> Ibid.

<sup>195</sup> Philippe Sands, Principles of International Environmental Law, Cambridge University Press, UK, 2<sup>nd</sup> Edition, pp. 499-500.

<sup>196</sup> Ibid, p. 499.

<sup>197</sup> Ibid.

<sup>190</sup> See the full doc at: <http://www.indiaenvironmentportal.org.in/files/file/NBSAP%20bangladesh.pdf>.

makes us consider the immensity and complexity of the dynamics of life balanced through the mutual reliance and dependency that all species share.<sup>198</sup> This also essentially draws more attention, because, the costs of destruction of biodiversity are not purely ecological, and extend to economic, medical and agricultural losses, but have profound moral and aesthetic implications also affecting our ethical and aesthetic values. In this regard it is worth to mention that there is also a debate on whether values are to be considered 'ethical judgments or equivalence measures'<sup>199</sup>, i.e., whether values are statements of principle or a reflection of social opportunity costs.<sup>200</sup> Ethical judgments influence people's preferences and therefore, can be 'translated into a willingness to commit resources to biodiversity conservation'.<sup>201</sup> Equivalence measures of value that are needed to fix the desirable level of conservation are the 'opportunities foregone in committing resources to conservation.' Equivalence measures of value in reality are not blind to ethical judgments<sup>202</sup> and *vice versa*.

International law, however, on the other hand, for the conservation of biodiversity is relatively well developed.<sup>203</sup> This is because by a chronological analysis it is found that although the early development of international environmental law that continued up to the creation of the United Nations in 1945 was ad hoc, sporadic, limited in scope and less efficient, it developed enormously gradually. Thus, the second phase that continued up to the Stockholm Declaration came with some more strong outcomes like, the Antarctic Treaty of 1959, 1968 African Nature Convention for wildlife conservation, the Ramsar Convention 1972, and certain UN Resolutions i.e., ECOSOC resolution of 1947 having direct effects on the environment protection. The third phase i.e., from Stockholm to Rio, for the first time declared very specifically on the Environment and Development issue. The Rio Declaration along with some other international instruments like the CBD in the international arena particularly from early 1990s to present time therefore, notably contributed to the erection of globally sustainable environmental regime.

The national legal framework of Bangladesh have developed moderately in recent decades. This framework articulates that the conservation of biodiversity has a particular important symbolic value which raises issues about the balance to be struck between the conservation of nature and the conduct of human behavior; and the role of law must, ultimately,

be limited to reflecting the values which humans ascribe to other forms of life.

Some of the notable national development that has occurred in parallel are, *firstly*, the preparation of a National Conservation Strategy (NCS) in line with the World Conservation Strategy; *secondly*, the preparation of a National Environment Management Action Plan (NEMAP)<sup>204</sup> identifying the key environmental issues and actions required to halt or reduce the rate of environmental degradation, to improve the natural and man-made environment, to conserve habitats and biodiversity, to promote sustainable development, and to improve qualitative indicators of human life; *thirdly*, the preparation of a National Phase Out Plan of Ozone Depleting Substances, which is currently being implemented with assistance from the Montreal Multilateral Fund. Indeed, Bangladesh has developed Draft Environmental Quality Standards (EQS) for (a) water pollution; (b) air pollution; (c) noise pollution; (d) sewage pollution; and (e) industrial pollution with an object of ensuring better environment and biodiversity.

However, in contrast to the purely legal consideration, the ethical approaches i.e., biocentrism and ecocentrism being the recent addition to the environmental regime could not be clearly found in the environmental regime of Bangladesh, like many other developing countries. The international environmental regime although made an exception in this regard very recently by emphasizing on the biocentric and ecocentric approaches. The constitutional provision of Bangladesh particularly the latest provision on the environment as inserted in 2011 is based on anthropocentric approach that emphasizes on the human person and regards environment as a distinct object. The same view is reflected within other national legislations, like the Bangladesh Environment Conservation Act, 1995 or even the Environment Court Act, 2010. Another two approaches as covered by this study as mentioned earlier- the biocentric approach that recognizes the intrinsic value of all living beings, and the ecocentrism that recognizes the intrinsic values of all living organisms and their natural environment regardless of their perceived usefulness or importance to human beings are currently being taken into consideration by the judiciary of Bangladesh in deciding various environment and biodiversity related issues.

Thus, the environmental regime of Bangladesh is predominantly influenced by anthropocentric approach although after the Rio Declaration and Agenda 21 which contains the global partnership for sustainable development, the legal development in this field started a turn from an anthropocentric vision to biocentric and ecocentric approaches, so far as the court decisions are concerned which are regarded as 'precedent' and have binding effects in Bangladesh. Although his shift is evident in tourism policy, environmental movements, sustainability and economic policy and in many other policies, the national legislations are outside of the ambit of this shifting. But, in practical aspects, those approaches are not holistic rather detached, disorganized and in fact, those are not meant for neither by the legislators nor by the policy makers.

However, the ethical approaches have already been proved as effective tools for the protection and

<sup>198</sup> Bosworth, A. et al. Ethics and Biodiversity, Working Group 16 Report, Ethics and Climate Change in Asia and the Pacific (ECCAP) Project, UNESCO, Bangkok, 2011, p. 84.

<sup>199</sup> UNEP, Global Biodiversity Assessment, Cambridge University Press, 1995, p. 18

<sup>200</sup> Turner, R.K. and Pearce, D.E., Sustainable Economic Development: Economic and Ethical Principles (1993): In Barbier, E.B. (Ed.), Economics and Ecology, Chapman & Hall, London, at pp. 177-194.

<sup>201</sup> Peacock, W.J. Molecular biology and genetic resources In: Brown, A.H.D., Frankel, O.H., Marshall, D.R. and Williams, J.T. (Eds.). The Use of Plant Genetic Resources, Cambridge University Press, 1989, at pp. 355-376.

<sup>202</sup> UNEP, Global Biodiversity Assessment, Cambridge University Press, 1995, at p. 23.

<sup>203</sup> Philippe Sands, Principles of International Environmental Law, Chapter 2, pp. 26-30, Cambridge University Press, UK, 2<sup>nd</sup> Edition.

<sup>204</sup> The NEMAP is the first initiative towards the preparation of a National Agenda 21.

preservation of the environment and biodiversity by not only recognizing the intrinsic value of the biodiversity and the natural environment but also by educating people and also by awarding their obligations. Therefore, those approaches seen in the international community should also be inserted in a meaningful way in the national laws, policies and other regulatory regime of the environment and biodiversity of Bangladesh. Indeed, those ethical approaches i.e., biocentricism and ecocentrism can be inserted not only in the environmental laws of Bangladesh but also in the relevant policies having environmental impacts. This can be done either directly or indirectly. If it is a direct insertion i.e., express insertion in the text of the law it may come to have a direct impact, and if it is an indirect one i.e., insertion of the philosophical view, it may come to have an indirect impact on the environment and biodiversity, or at least will bear some educative value.

Thus, in conclusion after the critical assessment of the environmental legal legislation perhaps, the environmental regime of Bangladesh that comprises mainly, the Constitution, national legislations and the court decisions it can be said that the ethical approaches i.e., biocentricism and ecocentrism are not inserted either directly or indirectly in Bangladesh although the approach of anthropocentrism is noticeable. In this backdrop the intrinsic values of the environment and biodiversity issues are neither getting any recognition nor within the consideration of the people that could lead to protect and conserve the environment and biodiversity for all the times be it for the interest of people or not. Thus, considering the significance of biocentricism and ecocentrism the environmental legislations of Bangladesh need to take into account of them. And, if it is, then it can be said that the environmental legislation of Bangladesh coheres to the demands of a general ethical approach to the environment and in particular to biodiversity. The sooner this is done, it is better.

## 8. Acknowledgements

I would express my deepest gratitude to my esteem mentor as well as the supervisor of the present study Prof. Darryl Macer. I also thank Prof. Dr. M. Selvanayagan, Loyola College, India and Prof. Dr. Nazrul Islam, Dhaka University, among many other colleagues, who gave me valuable advice and guidance in the entire process of the work.

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## 10. Appendices (Available in on-line edition)

### Appendix I: List of Biodiversity Related Laws in Bangladesh Laws to be administered by the DoE

- The Bangladesh Environment Conservation Act 1995 (Act No. 1 of 1995)/ amendment 2000 (Act No.XII of 2000) and 2002(Act No.IX of 2002)/ Gezette Notifications/ Orders/Circular.
- The Environment Conservation Rules 1997, Under Sec. 20 of ECA (S. R.O No-197Act/97)/ Corrective Notifications 2002
- The Environment Court Act 2010 (Act No. LVI of 2010)
- The Open Space, Gardens and Wetlands Protection Act 2000. (Act 36 of 2000)
- Brick Kiln (Control) Act 1989 (Act No. VIII of 1989), Amendment 1992 (XXII of 1992) and 2001(Act No.XVII of 2001)/
- Building Construction Act, 1952/ Rules 1996

### Fish and Fisheries

- The Protection and Conservation of Fish Act 1950 (Bengal Act XVIII of 1950), The East Bengal Pro. and Cons. of Fish (Amend.) Act 1963/ The E.B.P.C of Fish (Amend.) Ord. '70 /The E.B.P.C.F (Amend.) Ord. 1982, Amendment 1995 (Act No.IX of '95). Amendment 2002
- The Protection and Conservation of Fish Rules 1985 (S.R.O No. 442-L/85), Under Section 3 of Fish Act 1950, amendment/notifications
- The Government Fisheries (Protection) Ordinance 1959 (Ordinance No. XXIV of 1959). Act 2001 (Third Amendment) Act 2001. (Act No. XLVIII of 2001).
- The Private Fisheries Protection Act 1889 (Bengal Act II of 1889 ), Amendment in 1998
- The Marine Fisheries Ordinance 1983. (Ordinance No. XXXV of 1983)/ Rules 1983 (No.S.R.O 349-L/83), Framed under Section 55 of MF Ordinance 1983. (amendment 84/85?)

### Forest and Forestries

- The Forest Act 1927 (Act No. XVI of 1927)/ amnd 1990/ 2000/2002(?)/notifications
- Sundarbans Act 1905 (1 of 1905)/ executive orders (Repealed)
- The Private Forests Ordinance 1959 (Ordinance No. XXXIV of 1959) 3<sup>rd</sup> Amendment Act, 2001 (Act No. XLVIII of 2001)
- The Attia Forest (Protection) Ordinance 1982 (Ordinance No. XXXIII of 1982)/ amendment 1989
- The Sylhet Forest Transit Rules, 1951 (and other transit rules)
- The Chittagong and Chittagong Hill Tracts Reserved Forest Fire Protection Rules, 1958

### Land

- Land Management (Water body) Manual 1990.
- The Public Parks Act 1904 (Act No. II of 1904)
- Land Customs Act 1924 (XIX of 1924) Repealed
- Land Acquisition Act 1894 (I of 1894) Repealed
- The Acquisition of Wasteland Act 1950 (Bengal ActNo. XIX of 1950), Amendment (2<sup>nd</sup> Amendment) Act, 2000 (Act No. XXXX of 2000).
- The Culturable Waste Land (Utilization ) Ordinance 1959.(E.P.O No. XIII of 1959), (3<sup>rd</sup> Amendment Act), 2001 (Act No. XLVIII of 2001).

### Water

- The Water Resources Planning Act 1992/Water Resources (Amendment) Act 1992 (XI of 1992)
- The Tanks Improvements Act 1939 (Bengal Act No. XV of 1939 )/ Ordinance 1986 (III of 1986)
- Water Hyacinth Act 1936 (XIII of 1936), Bengal Act (Amendment) (IV of 1941)
- The Territorial Water and Maritime Zones Act 1974 (XXVI of 1974)/ Rules 1977 (S.R.O No.26 -L/78), Framed under section 9 of 1974 Act.
- The Ground Water Management Ordinance 1985 (Ordinance No. XXVII of 1985)
- The Canals Act 1864 (Bengal Act V of 1864)

- The Bangladesh Irrigation Water Rate Amendment Act 1990 (XXXIV of 1990)
- Water Supply and Sewerage Authority Act 1996 (VI of 1996) (Amendment, XXVII of 1992) (Second Amendment, XLIX of 1998)

#### **Agriculture/Irrigation**

- Food Grains Supply (Prevention of prejudicial Activities) Ordinance 1979 (XXVI of 1979)
- The Agricultural Produce Markets Regulation Act 1964, (Act No. IX of 1964)
- The Shrimp Cultivation Taxation Act 1992, (Act No. LIII of 1992) / Rules' 1993 (Rules framed under Section 9 of Shrimp Cultivation Taxation Act 1992)
- The Irrigation Act 1876 (Bengal Act III of 1876)
- The Agricultural and Sanitary Improvement Act 1920 (Bengal Act VI of 1920)
- The Destructive Insects and Pest Act 1914 (Act No. II of 1914), Amendment 1939 (III of 1939) Amendment 1988 (VI of 1938 )
- Agricultural Pest Ordinance 1962 (Ordinance No. VI of 1962)/Ordinance 1971 (II of 1971)/ (Amendment) Ordinance 1983 (XXV of 1983)/Agricultural Pesticides (Amendment) Act 1980 (V of 1980)
- The Embankment and Drainage Act 1952 (Act No. 1 of 1953)
- The Seeds Ordinance 1977 (XXXIII of 1977)/ Amendment Act 1997. (Act No. XIII of 1997)
- Jute (Amendment) Ordinance 1983 (XVI of 1983)
- Tea (Amendment) Ordinance 1986 ( Ordinance No. XV of 1986)
- Cotton Act 1957 (XXXVIII of 1957)
- Agricultural Census Act 1958 (XLI of 1958)/ (Amendment) Ordinance 1983 (XXII of 1983)
- Fertiliser (Control) Order 1995?

#### **Wildlife/Livestock**

- Bangladesh Wildlife Preservation Order 1973 (P.O. No. 23 of 1973)/ Bangladesh Wild Life (Preservation) (Amendment) Act 1974 (XVII of 1974)/ EO 1998, 2003
- Elephants Preservation Act 1879/ Wild Birds and Animals Protection Act'1912/ Bengal Rhinoceros Preservation Act 1932 All Repealed
- The Animals Slaughter (Restriction) and Meat Control Act'1957 (E.P. Act VIII of 1957) (Amendment) 1983
- The Society for the Prevention of Cruelty to Animals (Amendment) Act 2001
- The Cruelty to Animals Act 1920 (Bengal Act No. 1 of 1920)
- The Live Stock Importation Act 1898 (IX of 1898)
- The Bengal Diseases of Animals Act 1944 (Bengal Act VI of 1944)
- The Cattle Trespass Act 1871 (Act No. I of 1871) (Bengal Amendment Act IV of 1947)/The Cattle (Prevention of Trespass) (Amendment) Act 2001 (Act No. XLVIII of 2001)

#### **Energy/Nuclear laws**

- The Bangladesh Institute of Nuclear Agriculture Ordinance 1984 ( Ord. II )
- The Bangladesh Atomic Energy Commission Order 1973 (ord. XV)
- Paromanabik Nirapatta o Bikiron Niyontron Ain, 1993 (XXI)
- Draft Acts (The Biodiversity and Community Knowledge Protection Act and Plant Varieties Act)
- Bangladesh Petroleum Act 1974 (LXIX of 1974)
- The Bangladesh Petroleum (Amendment) Ordinance 1976 (LIV of 1976)
- Miners and Minerals (Regulation and Development) Act 1967 (II of 1968) Repealed.
- Mines an Mineral Resources (Control and Development) Act 1992 (XXXIX of 1992)

#### **Others**

- The Agricultural Produce (Grading and Marketing) Act 1937 (Act No. 1 of 1937)
- The Prevention of Interference with Aids to Navigable Water Ways (Amendment) Act'2001
- The Removal of Wrecks and Obstructions in Inland Navigable Water Ways Rules, 1973
- Oil seeds Committee Act 1946 (IX of 1946)

- Sea Customs Act 1878 (VIII of 1878) (Amendment) (XXXIV of 1957) Repealed

#### **Local Government/ Municipality**

- Barisal City Corporation Act, 2001 (Act No. XI of 2001)/ Rajshahi , 1987, Amendment 1999,
- Sylhet , 2001/ Chittagong Ordinance, 1982./ Dhaka, Ordinance, 1983/ Khulna Ordinance, 1984/ Khulna (Amend) Act 1992./ The Paurashava Ordinance, 1977, The Paurashava (Amendment) Act, 1989, Amendment 1990, 1992.
- The Chittagong Hill Tracts Development Board (Amendment) Act 1980 (Act No. X of 1980). (Amendment) Ordinance 1983 (XLIV of 1983), Amendment Ordinance 1984 (IX of 1984)

#### **Institutions**

- The Live Stock Research Institute (Amendment) Act 1996 (IX of 1996)
- The Bangladesh Fisheries Development Corporation Act 1973 (Act No. XXII of 1973)
- The Water Resources Planning Organization Act 1992 (XII of 1992)
- Bangladesh Water Development Board Act 2000 (Act No. XXVI of 2000)
- Bangladesh Water and Power Development Board (Amendment) Act 2001 (Act No. XXV of 2001)
- THE Bangladesh Agricultural Research Council Act 1996. (Act No. 7 of 1996)
- The Bangladesh Agricultural Research Institute Act 1996 (Act No. XIV of 1996)
- The Bangladesh Agricultural Development Corporation Ordinance 1961 (E.P. Ordinance No. XXXVII of 1961)/ amnd 1975
- The Bangladesh Institute of Nuclear Agricultural (Amendment) Act 1996 (Act No. IV of 1996)
- Bangladesh Jute Corporation Act 1973 (XXVII of 1973)/(Amendment) Act'1975 ??
- The Jute Research Institute Act 1974 (Act No. XIII of 1974)/ Amendment Ordinance 1983, Amendment 1996 (VIII of 1996)
- The Bangladesh Rice research Institute Act 1973 (Amendment) 1996, (Act No. X of 1973)
- The Bangladesh Sugarcane Research Institute Act 1996 (XI of 1996) (Amendment ) 2002.
- The Fisheries Research institute (Amendment) Act 1996 (Act No. X of 1996)
- The Bangladesh Fisheries Development Corporation (Amendment) Ordinance 1984 (O.No. XXIV of 1984)
- The Forest Industries Development Corporation Ordinance 1959 (Ordinance No. LXVII of 1959) Amendment 2001
- The Bangladesh Veterinary Practitioners Ordinance 1982 (XXX of 1982)
- The Bangladesh Oil and Gas Development Corporation (Amendment) Act 1966 (XV of 1966)??
- The Bangladesh Oil , Gas and Minerals Corporation (Amendment) Act 1989 (XI of 1989)
- The Bangladesh Petroleum Corporation (Amendment) Act 1990 (XXXII of 1990)
- Bangladesh Water and Power Development Board (Amendment) Act 1990 (XXXIII of 1990)??
- The River Research Institute Act 1990 (LIII of 1990)
- The Food (Special Courts) (Amendment) Act 1956 (Act No. X of 1956)
- Malaria Eradication Board (Amendment) Ordinance 1965 (L of 1965) Repealed
- The Prevention of Malaria (Special provisions) Ordinance 1978 (IV of 1978)
- Forest Industries Development Corporation Rules 1965
- Tea Plantations Labour (Amendment) Act 2001 (XIVIII of 2001)
- Bangladesh Unani and Ayurvedic Practitioners Ordinance 1983 (XXXII of 1983)
- Statute of the Indo-Bangladesh Joint Rivers Commission 1972

#### **Appendix II: List of conventions on biodiversity issues to which Bangladesh is a party**

- Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and Their Disposal, 1989
- Cartagena Protocol on Biosafety, 2000


- Convention Concerning the Protection of the World Cultural and Natural Heritage, 1972
- Convention on Biological Diversity, 1992
- Convention on International Trade in Endangered Species of Wild Fauna and Flora, 1973
- Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention), 1971
- Indigenous and Tribal Population Convention, 1957
- International Convention for the Prevention of Pollution of the Sea by Oil, 1954
- International Convention for the Protection of Plant Genetic Resources for Food and Agriculture, 1999 (?)
- International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, 1969
- International Convention to Combat Desertification, 1994
- International Plant Protection Convention, 1951
- Plant Protection Agreement for the South East Asia and Pacific Region, 1956
- United Nation Convention on the Law of the Sea, 1982
- United Nations Framework Convention on Climate Change, 1992 and Kyoto Protocol, 1997 (ratified by Bd Ratified by Bangladesh on 15 April 1994)
- Vienna Convention for the Protection of the Ozone Layer, 1985, Montreal Protocol, 1990

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