BIODIVERSITY REPORTING IN INDIA: A VIEW FROM THE TOP

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Abstract

The purpose of this study is to explore the biodiversity reporting practices inside Indian companies. Biodiversity reporting studies across Indian companies are important because India has a wealth of biodiversity assets, that is, wildlife, flora, fauna, natural habitats, rare and endangered species and biological resources, and accounts for 7.8% of the global recorded species (Biological Diversity Act, the Biodiversity Rules, Andhra Pradesh Biodiversity Board, 2009). There are approximately 45,500 species of plants, 91,200 species of animals and 5,550 microbial species documented in India (National Biodiversity Authority, 2014). The International Union for the Conservation of Nature (IUCN) has listed 132 species of animals and plants in the Critically Endangered Category (Sudhi, 2012). To date, the literature omits to explore the biodiversity reporting practices inside Indian companies. Another important reason to conduct is this study is that India has alarming population levels; thus there is a huge demand for land, energy, and resources, which leads to massive biodiversity loss, deforestation, and habitat destruction. It is very likely that with the limited land mass and increasing population in India, several ecosystems, wildlife, flora and fauna will be/have been exploited, disturbed, and endangered. Given the high potential impact on biodiversity by industries, we are concerned that there is a dearth of biodiversity reporting studies within the Indian subcontinent. We concentrate on the largest companies (based on market capitalisation) because similar to Van Liempd and Busch (2013), we also expect that the largest companies have the greatest impact on biodiversity; therefore, they are expected to show more accountability to their stakeholders. Therefore it is worth exploring how Indian companies are engaging in biodiversity reporting practices (e.g. biodiversity conservation, biodiversity protection, habitat and ecosystem conservation); and whether these organisations are disclosing their impact(s) (both in quantity and quality) on biodiversity (such as wildlife, flora and fauna). Moreover, India has also been classified as one of 17 mega-diversity countries by The World Conservation Monitoring Centre which account for more than 70% of the planet's species (Williams, 2001). All these reasons make this study timely and important.

Keywords: Biodiversity Reporting, Market Capitalisation, Ecosystems

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1 Introduction

Biodiversity embraces 'the variety of life on Earth' and also includes varieties of crops and breeds of livestock, species of various flora and fauna, and variety of ecosystems such as those that occur in deserts, forests, wetlands, mountains, lakes, rivers, and agricultural landscapes (Convention on Biological Diversity, 2000). The United Nations General Assembly acknowledged the decade 2011-2020 to be 'the United Nations Decade on Biodiversity' (UN News Centre, 2011) because the '2010 Biodiversity Target' biodiversity target could not be achieved (Global Biodiversity Outlook, 2010). A wide range of multidisciplinary researchers, international frameworks, United Nations charters, government guidelines, and private bodies have demonstrated the urgency to implement biodiversity conservation practices (Cuckston, 2013; Chu et al., 2013; UNEP, 2014; IUCN, 2014).

Motivated by these critical issues and the lack of scholarly developments from developing countries, this exploratory paper is underpinned by two research questions:

Research question 1: What do top Indian companies (both public and private) report on biodiversity?

Research question 2: What are the differences between Indian public and private companies in biodiversity reporting and practices?

The rest of the paper is structured as follows: The next section examines biodiversity frameworks in India, and then we review the biodiversity literature in accounting. This is followed by the research methodology, findings and discussion, recommendations, future research and conclusion.

2 Biodiversity frameworks in India

In India in 1972, 'The Wild Life Protection Act' came into existence which 'provides the protection of wild animals, birds and plants and for matters connected therewith or ancillary or incidental thereto' (Wild Life Protection Act, 1972). After almost three decades, the Indian government presented the biodiversity conservation frameworks. In 2002, The Ministry of Environment and Forests (Government of India) passed 'The Biological Diversity Act', and in 2004, the 'Biodiversity Rules' were promulgated. The Biological Diversity Act 'primarily aims at giving effect for conservation and sustainable use of biodiversity, and facilitate access to biological resources and associated traditional knowledge, so as to ensure fair and equitable sharing of benefits arising out of their commercialisation' (National Biodiversity Authority, 2014).

In coordination with these frameworks, the National Voluntary Guidelines on Social, Environmental and Economic Responsibilities of Business (2011) were developed by the Ministry of Corporate Affairs, Government of India. These guidelines contain nine principles, which briefly included biodiversity conservation and environment restoration issues. Principle six of the Guidelines states that 'environmental issues are interconnected at the local, regional and global levels which makes it imperative for businesses to address issues such as global warming, biodiversity conservation and climate change in a comprehensive and systematic manner' (p.24).

The Indian Government also launched the 'Guidelines on Corporate Social Responsibility and Sustainability for Central Public Sector Enterprises' [CPSEs] (2013). These guidelines focus on implementing corporate social responsibility (CSR) practices and contain a few sentences on biodiversity.

3 Biodiversity accounting: A review of the literature

Corporate reporting practices are an important indicator for organisations to evaluate where they are going, what they are doing and how they can enhance their future action (Ball and Bebbington, 2008; Bebbington et al., 2008).

It is legitimate to inquire about what organisations are doing to protect, conserve and manage biodiversity. Jones (1996) and Jones (2003) pitch a platform to explore biodiversity accounting and reporting. Siddiqui's (2013) case study in Bangladesh finds that Jones's natural inventory model is feasible in developing countries. Gray (2010) states that there are potential infinite states of sustainability, and it is important to examine how this can be implemented and made functional.

A public sector study (Wentzel et al., 2008) reviewed annual reports and other documents of six African companies that own or manage wildlife or parks. The study noted that companies are not disclosing their wildlife measurement, and there is a genuine lack of wildlife reporting practices. Rimmel and Jonall (2013) adopt a mixed method approach in exploring biodiversity reporting practices in Sweden. Their study finds that Swedish companies are minimally disclosing biodiversity and related information, and biodiversity reporting is a challenge for them. They also found that biodiversity reporting practices have significantly increased from 2006 to 2010. Similarly in Denmark, Van Liempd and Busch (2013) find that the top companies score poorly on biodiversity disclosures. The need for studies of biodiversity reporting practices is motivated by Jones and Solomon's work (2013, p. 670), which states that 'accounting for biodiversity impacts, by reporting on actions taken to enhance and protect biodiversity, organisations themselves will be spurred on to take further and more effective action to conserve, preserve and enhance the variety of species on Planet Earth'. In a similar vein, Cuckston (2013) challenges conventional accounting and traditional themes by emphasising that biodiversity conservation and its integration into financial statements should be a focus for organisations. Tregidga (2013) criticises accounting scholars for not highlighting biodiversity accounting and its seriousness. Extending the biodiversity reporting literature, the current study examines the biodiversity reporting practices of Indian companies; an area which is important but overlooked. 'The environmental dimension of sustainability concerns the organisation's impact on living and non-living natural systems, including land, air, water, biodiversity and ecosystems' (GRI, 2014). Biodiversity and wildlife reporting is an important aspect of environmental reporting (Jones, 1996). We find that biodiversity reporting studies are sporadic and emerging, unlike the more established environmental reporting studies. The question arises: How and why is the study of biodiversity reporting practices important? From an organisational perspective, operationalising biodiversity analysis and reporting practices is needed as a measure to respond to biodiversity loss, extinction of several species and habitat destruction challenges.

There is rich literature which has investigated CSR practices in India (Sahay 2004; Raman, 2006; Sangle 2010; Gautam and Singh, 2010; Mishra and Suar, 2010; Arevalo and Aravind, 2011) but did not provided any systematic and scholarly evidence as to how corporations in India are engaging into biodiversity practices. Internationally, there are emerging and recent studies which attempt to understand biodiversity reporting practices (Siddiqui, 2013; Rimmel and Jonall, 2013; van Leimpd and Busch, 2013; Cuckston, 2013), but the current study is the first to understand biodiversity reporting practices across Indian companies. With regards to theoretical and scholarly developments, the biodiversity reporting practices in Indian companies face some fundamental drawbacks. First, there is a negligible scholarly literature that adds to the body of biodiversity reporting practices in India. As a result, it is difficult to analyse biodiversity reporting developments, trends and patterns inside Indian companies. Khan (2014) finds that there are several weaknesses at the socio-political and economic levels in the conservation of Kalimantan biodiversity (Indonesia). We speculate that there is a similar possibility in India at the organisational and governmental levels. Second, the lack of a mandatory biodiversity reporting national framework is a matter of grave concern and can be considered a potential reason for the limited biodiversity reporting in India. Addressing these limitations, this study closes the gap and presents a systematic picture of biodiversity reporting practices across top public and private sector organisations in India, where we expect there is the greatest impact and the most need for accountability to stakeholders (van Liempd and Busch, 2013). This study is underpinned by the legitimacy theory, that there is a 'social contract' between the organisation and society (Deegan, 2010) and organisations are under pressure from various angles (both internal and external) to legitimise and justify their actions (Deegan and Rankin, 1997; Brown and Deegan, 1998; Wilmshurst and Frost, 1999). In other words, organisations strive to legitimise their actions and activities according to the norms of the society which is changing not static (Deegan, 2010). The current study argues that Indian companies reporting on biodiversity is an outcome of various international and national calls to protect and conserve biodiversity. Their actions and voluntary disclosures act as a medium to build a genuine corporate image triangulating CSR objectives within the society.

4 Research methodology

This study uses a content analysis research method to understand biodiversity reporting and disclosure practices. Content analysis is a multidisciplinary research technique used to analyse textual information such as published literature, documents, archival data and annual reports. The technique focuses on the content, language, nature and meaning of the text (Budd et al., 1967). There is a general consensus within the business literature that the annual report is widely accepted and one of the most genuine documents produced by a company for public information (Gray et al., 1995; Deegan and Gordon, 1996; Campbell, 2000; Cowan and Deegan, 2011). Recently, companies have started producing separate sustainability reports and/or corporate social responsibility reports. Content analysis is widely used to address reporting practices inside organisations within the accounting literature (Gray et al., 1995; Milne and Adler, 1999; Adams et al., 1998; and Abeysekera, 2008).

4.1 Sample

The sample contains 10 biggest companies; the five public sector companies and the five private companies (on the basis of market capitalisation) listed on the Bombay Stock Exchange (BSE) for the year 2011-2012 (see Table 1). We did not want our sample to be biased with regard to industry/sector because the preservation and conservation of biodiversity is an ethical and moral responsibility; therefore, all organisations irrespective of their industry should accept the responsibility to preserve biodiversity. This feature makes this study different because, unlike some prior studies, we have not excluded clean industries (such as telecommunications and IT firms) from our sample for the reason mentioned above. This sample also gives us an opportunity to explore the biodiversity reporting practices of the largest companies in India. The companies in the sample belong to the S&P BSE Sensex, known as the barometer of the Indian capital markets. The S&P BSE Sensex represents large, well-established and financially sound companies across key sectors.[3] Furthermore, public sector companies in this study have *Maharatna* status. *Maharatna* is a *hindi* word meaning precious jewels.To be considered under *Maharatna*, public sector enterprises had to meet a few mandatory criteria,[4] such as annual turnover should be more than INR. 25,000 crore (approx. USD 4,045 million[5]) during the last three years, have an average annual net profit after tax of more than INR.5000 crore (approx. USD 809 million) during the last three years and a significant global presence/international operations. *Maharatna* represents the top level of public sector companies of India in terms of empowerment, expenditure, mergers, resources and acquisitions.

Table 1 lists the sample companies, their industries and ownership information.

For the companies listed in the sample, the sustainability reports for the year 2011-2012 were reviewed and analysed. If a company did not have a

[3] http://www.bseindia.com/indices/DispIndex.aspx?iname=BSE30&index_Code=16&page=B16FEF6B-3A5C-45B8-89F9-C79E884CC716

[4] Press Information Bureau, Government of India, 2009.

[5] 1INR=0.01618USD (on 16.06.2014)

sustainability report, then we analysed annual reports. All the companies included in the sample have their reports in English and the majority of the companies have a special section on biodiversity in their reports, where most of the information related to biodiversity issues is disclosed by these companies. To maintain consistency, the study did not consult media reports, media briefings and other online Web disclosures.

To gather biodiversity-related information, the reports were also searched for the key terms related to biodiversity: forest, flora, fauna, water bodies, habitat, grasslands, wetlands, species, wildlife, marine life, ecosystem, afforestation, deforestation, biodiversity conservation, biodiversity protection, biodiversity enhancement, biodiversity awareness, biodiversity offset, ecology, IUCN, floral wealth, faunal wealth, biological corridors, biological preserves, biodiversity partners and biological projects.

5 Findings and Discussion

5.1 Biodiversity reporting by public sector companies

BHEL is one of the largest engineering and integrated power plant equipment manufacturers that produces a sustainability report. Biodiversity management is one of the points under ensuring sustainable development and refers to 'plantation of trees in manufacturing plants, Township and catchment areas (p. 25 of the sustainability report). They have a separate section for biodiversity (two-thirds of a page) that includes only limited disclosure (one paragraph and four pictures). BHEL do not describe the significant impacts of their activities on biodiversity, but give a little information on protecting habitats. They state, 'BHEL has undertaken afforestation activities such as tree plantation and development of green belt, resulting in development of approximately 47 lakh square mile (1 lakh = 100,000) of green coverage and plantation of around 30 Lakh trees in and around units'. They also talk about a specific project in Karnataka that 'involves planting of fruit-bearing trees in a complete patch of barren land and preserving these trees for birds and animals, thereby promoting species protection' (p. 34). In summary, BHEL identifies biodiversity as an issue, but provides only general information on their biodiversity activities.

Table 1. Sample companies

Ownership	Name of Company	Industry	Market cap (2012) (in Million INR)	Report used
Private	Bharti Airtel	Telecommunications - Service	1,283,186	Sustainability
Public	Bharat Heavy Electricals Limited (BHEL)	Infrastructure - General	629,400	Sustainability
Public	Coal India Ltd	Mining/Minerals	2,172,198	Annual report
Public	Gas Authority of India (GAIL)	Natural gas, drilling And Exploration	477,265	Sustainability
Private	Infosys	Technology and engineering	1,637,794	Sustainability
Private	Indian Tobacco Company (ITC)	Consumer goods	1,774,000	Sustainability
Public	National Thermal Power Corporation (NTPC)	Power - Generation/Distribution	1,341,949	Sustainability
Public	Oil and Natural Gas Corp (ONGC)	Oil Drilling And Exploration	2,295,866	Sustainability
Private	Reliance	Refineries	2,235,816	Sustainability
Private	Tata Consultancy Services (TCS)	Information technology	2,287,600	Sustainability

Coal India Ltd is the public sector coal-producing company, and so it is surprising that they do not have a sustainability report. The annual report describes that Coal's strategic vision is to grow by 'enhancement in productivity, competitiveness and profitability while meeting the growing demand for coal in the country in an environmentally and socially sustainable manner' (p. 18). In their SWOT analysis, one threat is that many of the coal reserves are under forest and tribal areas, making it difficult to obtain

clearances. Biodiversity does not get mentioned, and there is only a brief paragraph that discusses restoring degraded land and mined-out areas and a short section on tree planation/afforestation. The company states 'Coal India and its subsidiaries have planted 20.8 lakhs tree saplings during 2011-12 in the Coal fields under the tree plantation/afforestation programme. In total, subsidiaries of Coal India have planted around 76 million plants over a land area of over 33,000 ha (hectare) to date. It is interesting that they talk about conducting a number of research projects in the areas of environment and ecology, but they provide no details of projects. In summary, it is positive to see that they are working with research institutions. Coal India Ltd does not have a sustainability report, and overall their biodiversity reportings are minimal, which is very disappointing.

GAIL is a natural gas company that does have a sustainability report and GAIL's sustainable development policy specifically refers to biodiversity, and there is over half a page on biodiversity in the report. The chairman's report also mentions environmental initiatives that include planting a green belt around their operations. GAIL's report states that none of their operations are close to protected areas and, 'While planning pipeline routes, we analyse options that have lower impact on ecology and environment' (p. 59). GAIL mandates all its OIC's (Officer in charge) to provide a declaration on clearance of their individual locations on presence/emergence of biodiversity hotspots' and 'have initiated biodiversity management activities across work centres in Usar, Pata and Samakhiali. To boost vegetation growth in the area, our employees made a resolution to plant around 10,000 saplings in 2009 and 7,500 saplings in 2011. Within the periphery of our control, green belt area spans over 17.2 million square meters, which is approximately 41% of our total land holdings–much beyond regulatory requirements' (p. 60). GAIL's report provides a good example of how future plans can be discussed: 'Project Dharohar is a step towards partaking in the 'National Mission for Preservation of Ecological Balance and Maintenance of Bio-diversity' (p. 60). They are also one of the few companies to talk about wildlife preservation through supporting the Mobile Veterinary Services units for the 'Save the Tiger' project in Malenad-Mysore Tiger conservation area, and wildlife sanctuaries of Manas National Park, along with construction of a Field Research Centre at Melinahuluwathi, Bhadra Wild Reserve (implemented through Centre for Wildlife Studies, Bangalore)' (pp. 58-59). At the end of the report, they provide tables with some Key Performance Indicators (KPIs) for environmental performance, but there is nothing to indicate how biodiversity performance has been achieved or the trend over time. It is good to see that GAIL provides some information on their activities in protecting or restoring habitats, including future plans and about their involvement in research activities. They are also one of the few companies to provide details on wildlife conservation and endangered species.

NTPC is a public sector power-generation and distribution company. NTPC's sustainability report devotes two pages (pp. 64-65) to biodiversity reporting–this is the most space given to biodiversity by companies in the sample. The company's sustainable development policy includes 'biodiversity conservation by following the practices of protecting, conserving and restoring ecosystems' (p. 15); the environment is seen as a high risk for the company (p. 17); and the chairman's report talks about dedicated sustainable development projects, including biodiversity conservation. NTPC's report refers that their operations do not have any significant impact on biodiversity areas, but then they give three examples where their operations could have an impact: the Gangetic dolphins in the Ganga river, the Okhla Bird Sanctuary (adjacent to Kahalgaon Station) and the Asola Bhatti Wildlife Sanctuary. NTPC could provide more information here. The company does not specifically talk about the impacts of their activities on these areas, except that 'due care is being taken to minimise impact of our operations on these dolphins' (p. 64-65). The report states the company created a lush green environment at Rihand, but give do further details of what they have done. They also refer to a Post Operational Assessment Impact Assessment study by satellite that confirmed no adverse impact of their operations, without any further detail. They also refer to a range of actions (e.g. moving operations away from biodiverse-rich areas), but with no other information. They also report that NPTC gives a special thrust to afforestation and green belt development at all their projects, and so far, 'more than 19 million trees have been planted, including more than 15 varieties of native trees, covering vast tracts of land in and around NTPC projects.' NTPC also won three environmental awards in 2011-12. NTPC provides good information on environmental KPIs over the past three years, but there is no reporting on biodiversity performance.

ONGC is an oil and gas exploration and production company. ONGC's sustainability report uses the term 'stewarding biodiversity' as one of its five environmental management issues, and it does include one page on biodiversity (including two pictures) (p. 42). Biodiversity is briefly mentioned in the sustainable development policy and in the chairman's report. ONGC specifically mentions that they are planting species of bamboo to ensure biodiversity in the Himalayas. The company states, 'in 2008-2009 [ONGC] embarked on a long-term collaboration project to nurture and enrich the upper Himalayan ecosystem by large scale plantation of the Ringal (Hill Bamboo) over an area of 730 hectares at a total project cost of INR 40 million'. They are also protecting coastal biodiversity sites and have commenced a three-year project planting mangroves

'that aims to plant 600,000 samplings and 1,200,000 propagules and seeds over an area of 240 hectares, protecting sea water ingress around Ankleshwar and Hazaira based installations'. ONGC talks about past and future actions, but not biodiversity strategies . They are also one of the few companies to mention wildlife and that their projects provide sustenance for the Himalayan musk deer. What is also interesting is that they are working with a range of stakeholders on these biodiversity projects that include providing some livelihood opportunities for the local community. In summary, ONCG does provide some detail in reporting on their biodiversity conservation in the coastal regions and in the Himalayas. This is their third sustainability report, and this experience may explain why they provide more information on biodiversity (one page) than many other companies.

5.2 Biodiversity reporting by private sector companies

Bharti Airtel is a private telecommunications company. This is the company's first sustainability report, although they have been working on sustainability projects over the past 16 years. They provide no information on biodiversity. They provide one picture with a caption that mentions they conduct environmental campaigns and tree planting (p. 25). The only other reference to trees is this: 'The initiative of sending e-bills over the last 3 years has helped us convert 2.42 million postpaid customers to the e-billing mode. This directly translates to saving 80,000 trees from being cut'. In summary, this is their first sustainability report, but the lack of reporting on biodiversity is disappointing.

Infosys' operations include business consulting, technology, engineering and outsourcing services. The company states, 'We are committed to improving the biodiversity in and around our campuses, and promoting species diversity (fauna and flora)' (p. 36). Report states that the operations are at 'approved sites' and the operations have no impact on biodiversity areas and also provide some information on protecting habitats: 'We work towards ensuring the integrity of natural habitats, plant native species of trees, and conserve flora and fauna in the region. We have conducted a baseline tree diversity analysis and we now have about 226,000 trees across our campuses with varying number of tree species on each campus. We are going to plant representative samples of endangered flora. This year, we were able to plant endangered tree species from the Western Ghats in our Mangalore campus' (p.36). In addition, they refer to a biodiversity strategy to ensure minimal impact of their operations on the environment. ITC is a diversified company that operates in consumer goods, hotels, paperboards and packaging, and agribusiness. The chairman's report recognises biodiversity issues; however, the sustainability report only has three sentences under the biodiversity section. ITC says they have no impact on biodiversity and so they have nothing to report. They report on several programmes that are farmer-oriented programmes, including a social forestry programme for planting pulpwood (24,195 hectares in 1321 villages), agro-forestry projects, and a soil and moisture conservation programme. In addition, they are 'piloting a biodiversity conservation project in Khammam district under which about 50,000 seedlings of native tree species were planted and a plot for in-site conservation of biodiversity developed. This plot is spread across 2.75 hectares and has a floral population of 35 different species' (p. 79). They also state that new projects are required to have environmental impact assessments. One reason for the reporting on farmer-oriented programmes could be the fast-moving goods sector is reliant on farmers.

Reliance has refineries and the company's sustainability report says that 'sustainability is ingrained in the way RIL functions' (p.30). The chairman reports that they have been planting mangroves in coastal areas and creating and maintaining green belts and gardens around their manufacturing sites. Reliance's sustainability report states that '11 of our manufacturing divisions are located either in declared industrial development areas or environmentally non-sensitive areas', but go on later to state, 'managing biodiversity in our areas of operation, including those located in environmentally sensitive zones' (p. 50), and then they only briefly mention that they have pipelines over protected mudflats. So they seem to have an impact here, but they provide no details of the location and size of these areas. They do not disclose the significant impacts of their operations on biodiversity, but provide some general comments. Again, they do not give details of habitats protected, except to say, 'In FY 2011-12, we planted more than 2 million saplings, with an average survival rate of 80%' (p.50). They talk in general about strategy and discuss some current actions 'including planting mangroves over 50 hectares of land' (p.50) during the year, but they do not talk about future plans. They provide no list for IUCN red list species. They are involved in some interesting initiatives on biodiversity: Through a unique partnership with Ministry of Environment and Forests, Government of India and Gujarat Ecological Commission, we are involved in setting up the National Centre for Marine Biodiversity (NCMB)– India's first Centre of Excellence for the study of India's coastal biodiversity at Jamnagar' (p. 49). In summary, Reliance's involvement with setting up the national biodiversity centre is very interesting. However, it is hard to see why Reliance provide only limited disclosures on biodiversity. It is also hard to understand why they report the 11 divisions that are *not* in the sensitive zones, while not disclosing the operational areas that are in sensitive zones.

Tata Consultancy Services is an IT consultancy firm with global operations. TCS provides the most

information on biodiversity of all the private companies. It also provides more information on total numbers of flora and fauna on their campuses than is not provided by any other company in the sample. The chairman talks in general about sustainability issues, and later in the report states that, 'biodiversity conservation as an integral part of its environment philosophy' (p. 79). TCS says that a few of their facilities have relatively higher biodiversity value but provide no information on the location, size and whether the land is owned or leased. What is interesting is that they mention that there are '221 plant species belonging to 135 genera and 106 families' (p.79). The establishment of ecosystem from a degraded, barren and shrubby land to a green habitat is evident through appearance of a variety of fauna in the campus. The faunal wealth is represented by 53 species belonging to 45 genera and 39 families. 26 species of birds were recorded along with 15 species of butterflies, 6 species of mammals and 5 species of reptiles' (p. 79). TCS do not describe their significant activities and their significant impact on biodiversity in critical areas. The report describes in some detail how they have enhanced biodiversity in the Kalinga park campus (e.g. 104 plant species), and states that a case study of the 'Marine Turtle Conservation program in 2011 and 2012 was instrumental in protecting a total number of 54 (23 and 31 nests during 2011 and 2012 respectively) nests and breeding population of female turtles was protected' (p. 79) TCS does provide information on current plans, but not future plans and strategies . None of the species are on the IUCN red list of species . In summary, it is good to see that TCS provides general information on the numbers and types of flora and fauna (but not on specific species). The increased reporting on flora and fauna may be because this is TCS's sixth sustainability report. They have also been involved in some environmental campaigns, and two of their international offices have won environmental awards.

5.3 Biodiversity reporting: highlights and key issues

This section discusses our findings for research question 1: What do top Indian companies (both public and private) in India report on biodiversity? There are a number of highlights in the biodiversity disclosures made by India's top public and private organisations. The companies predominantly disclose tree planting and other afforestation activities as their main focus of biodiversity practices. However, there is very little reporting on wildlife, especially endangered species, and habitat protection. Wildlife receives little attention in most reports. Findings of this study accords with the literature that biodiversity reporting's inside African companies (Wentzel et al., 2008) and in Sweden (Rimmel and Jonall, 2013) are emerging, minimal and requires robust disclosure practices. The current study confirms that there is a genuine lack of wildlife reporting practices inside Indian companies (both public and private)

Our study also finds that the the companies do not provide a comprehensive list of species (IUCN listed and other) in and around campuses. While there are models available (e.g. Jones, 1996, 2003; Siddiqui, 2013), none of the companies are using any models for reporting actual performance data or trends, similar to the top companies in Denmark (van Liempd and Busch, 2013). Two companies mention their role in promoting biodiversity research (Coal and GAIL), and Reliance discusses setting up the Centre of Excellence for Marine Biodiversity. Some companies talk about their plantings to protect habitats, while others also talk about current action plans. The companies talk about future plans (ONGC, Coal, NTPC, GAIL), and two companies describe their biodiversity strategies (Infosys, Reliance). Coal India Ltd (a public sector mining company) reported negligent information on biodiversity practices.

However, it would be misleading to rely on the companies' self-ratings on biodiversity disclosures, because of the limited disclosures in the sustainability reports. Companies state there are some impact of operations on biodiversity, but they provide no detail (how and what). The companies did not provide any information on the location and size of land owned or leased in or around these areas and do not disclose the operational areas that are in sensitive zones. It is disappointing that companies are providing only minimal disclosures on biodiversity and do not focus on critical biodiversity issues such as impact on biodiversity, biodiversity assessment, and long term biodiversity goals. The limited nature of biodiversity reporting practices in Indian companies is consistent with prior studies in Denmark and Sweden, which found that biodiversity disclosures are minimal and tend to provide general information (Rimmel and Jonall, 2013; van Liempd and Busch, 2013).

We conclude that biodiversity reporting in India is in its early stages. While there is a lack of specific biodiversity performance measures being reported, several Indian companies have provided KPIs for environmental measures and some have shown the trends over a three-year period. Genuine reporting on biodiversity disclosures should be balanced, which means they should highlight both the positive and negative performance (Adams, 2004). It is disappointing to note that the Indian companies are not reporting on their negative impacts on biodiversity (as van Liempd and Busch, 2013, found in Denmark).

5.4 Differences between public and private companies in biodiversity reporting and practices

This section addresses the second research question: What are the differences between public and private companies in biodiversity reporting and practices? This study notes few differences between the public

sector and private sector organisations in their biodiversity practices and reporting. Out of five public sector companies, three companies (ONGC, BHEL, NTPC) refer to biodiversity in their environmental philosophy. Contrary to this, only one privately owned company (TCS) has mentioned biodiversity in its environment philosophy. Three public sector companies (ONGC, NTPC, GAIL) have disclosed their biodiversity philosophy, while none of the privately owned companies have specifically mentioned their biodiversity philosophy. This provides evidence that biodiversity is a priority for public companies. Four out of five public sector companies (ONGC, BHEL, NTPC, GAIL) have a separate section on biodiversity; similar to this, four companies (Infosys, ITC, Reliance and TCS) have a separate section on biodiversity in the report. Two public sector companies (ONGC and GAIL) have disclosures related to wildlife preservation (ONGC-Himalayan Musk Deer and GAIL-Save the tiger project), whereas except for TCS (Marine Turtle Conservation Programme) none of the private sector companies have disclosed their active involvement in wildlife conservation. The quality and quantity of biodiversity disclosures by 'less polluting' private companies (Bharti Airtel and Tata Consultancy Services) are motivating. However, this trend is not seen in Coal India Limited (a public mining company). We expect that public sector companies would have more detailed disclosures because these are government owned companies and it is expected from them to the best performers.

The companies reported their operations had no or little impact on high biodiversity or protected areas. It is disappointing that when there possibly is an impact, companies do not report on the size and location of the areas. Similarly, there is no detail given on the impact of activities, products or services on or near biodiversity hotspots. The reporting on the IUCN list species is non-existent across the public and private companies.

6 Recommendations

This study has several important implications. First, the study highlights that there is an urgency to implement and enforce biodiversity measures on Indian companies in the public and private sectors. It is important to recognise which companies (both public and private) are operating in the biodiversity zones and what steps they are taking to conserve biodiversity. Those companies who are predominantly operating in biodiversity zones should be robust in their biodiversity reporting of the impacts of their activities, and what initiatives they are undertaking to protect and restore ecosystems. While we can state that most of the top companies in India are reporting on biodiversity, their biodiversity disclosures should be more comprehensive, multifaceted and motivating, and should be supplemented with performance measures, targets and trends. We recommend that government and other monitoring bodies should put more pressure on the companies to ensure biodiversity protection and enhancement. While there are biodiversity guidelines in India, the lack of mandatory enforcement on companies to address and report on biodiversity impacts is a matter of grave concern, as India is recognised as a mega-diverse country. We state that lack of mandatory biodiversity reporting frameworks in India will exacerbate the environmental adversities.

Companies need to provide information on the operational sites and their location near protected areas or high biodiversity sites, whether land is owned or leased, etc. They should also disclose the number of IUCN red list species and reflect consistency in reporting on compliance–if there is no impact it should be recorded as 'not applicable' rather than 'fully comply'.

No companies in the sample had performance measures and targets so that they can measure their biodiversity performance for the current year, and over time. It is important to identify any trends and to highlight the positives and negatives in company performance on biodiversity. For example, Nokia and ABB are two (out of 27) Swedish companies that have reported on biodiversity indicators for four years or more (Rimmel and Jonall, 2013). Some of the Indian companies are already reporting on environmental performance measures, so this experience can be built on in developing biodiversity measures.

The goal of corporate environmental reporting practices is not to determine winners and losers among companies, but to encourage practitioners and academics to provide meaningful biodiversity disclosures to address environmental concerns. This study recommends that Indian companies should increase their disclosures on biodiversity performance, particularly management of hazardous waste, biodiversity threats in the community and protection of endangered species. Also, companies should adopt detailed and multi-layered reporting practices.

7 Future research and conclusion

Future studies may like to further broaden the area. There exists a huge potential for scholars to understand biodiversity strategy and to integrate this into a company's vision and mission in India. In the future, studies may like to examine the barriers, both social and financial, to operationalising biodiversity practices. Another area could be a case study-based analysis of companies to gain an understanding of the biodiversity qualitative disclosures and narration in the annual reports. Environmental accounting scholars may like to study the reasons for the low biodiversity practices in India and how they can be enhanced. The current study provides a strong base for future studies to disintegrate and address broad biodiversity practices down to the levels inside organisations.

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