

1. INTRODUCTION

Biodiversity is the foundation of society and economy, providing various ecosystem services to humanity (Georgina et al., 2012). However, global biodiversity loss has continued over the past 40 years, and its magnitude is decreasing only marginally (Tittensor et al., 2014).

In the United States, the first country to introduce an Environmental Impact Assessment (EIA), a No Net Loss (NNL) policy was adopted in 1990. NNL policy requires to compensate for adverse impacts of development projects with mechanisms such as biodiversity offsets banking. The subject of compensation is strictly limited to the residual impacts after having avoided and minimized adverse impacts to the ecosystem according to "mitigation hierarchy (avoidance, minimization, compensation)" (Tanaka et al., 2011). Since then, the U.S. has led to the adoption of NNL policies in other countries such as Germany and Australia (Tanaka et al., 2008).

From the 2000s, the concept of "no net loss" has begun to be adopted as one of the indices of corporate environmental goals. International Finance Corporation (IFC) performance standard 6 requires a conservation outcome even more robust than NNL for private development projects (IFC, 2012). More recently, the SDGs and Environment, Social, and Corporate Governance (ESG) investments have heightened interest in the corporate actions in environmental and social fields. Furthermore, an informal working group (IWG) was established in 2020 with aims to launch the Task Force on Nature-related Financial Disclosure (TNFD) in 2021. It is expected that corporate-led biodiversity conservation activities will become more active in the future.

Gyan et al. (2019) found that there were 66 companies with NNL goals as of 2016, but the detailed information such as the list of companies was not reported in the study. This paper provides an updated overview of NNL goal setting trend in the private sector and analyzes the corporate NNL goals in comparison with national NNL policies.

2. METHODS

2.1. The trend of corporate no net loss goals

We identified the companies which have NNL goals with a Google search for the combination of a keyword related to NNL such as "No Net Loss" or "Biodiversity Net Gain" and a keyword related to corporate environmental initiatives such as "CSR" or "Sustainability". From the review of basic company information and the details of NNL goals, we extracted four main components of corporate NNL goals.

2.2. Corporate no net loss goal and no net loss policy

We examined the existence of NNL policy in the countries where the headquarters of companies with NNL goals are located and determined the relationship between the existence of NNL policies in headquarters countries and the corporate NNL goals.

3. RESULTS

3.1. The trend of corporate no net loss goals

The results of the survey are shown in Table 1. It contains basic information about the company, including the company name, the formulation of the NNL goal, the year the NNL goal was published, the headquarters country, and the type of industry. Table 2 shows the four main components of NNL goal identified in this study: object of NNL, target action, adoption of mitigation hierarchy, and adoption of quantitative biodiversity assessment.

Table 1: Companies which have no net loss goal

Company	No Net Loss Goals	year	Nation	Industry	Target of NNL	Target Action	Mitigation Hierarchy	Biodiversity Assessment
Royal Dutch Shell plc	net positive impact	2003	Netherlands	Energy	Biodiversity	Development	○	○
Advanced Glazings Ltd	net positive impact on the environment	2005	Australia	Manufacturing	Environment	Manufacture		
Interface, Inc.	zero negative impact on the environment.	2006	USA	Manufacturing	Environment	Manufacture		
Balfour Beatty plc	Biodiversity Net Gain	2009	UK	Construction	Biodiversity	Development	○	○
Barrick Gold Corporation	zero net negative impact net neutral biodiversity impact	2009	Canada	Mining	Biodiversity	Development	○	
De Beers Group	no net loss of significant biodiversity	2009	UK	Mining	Biodiversity	Development	○	○
SONY	zero environmental footprint	2010	Japan	Manufacturing	Environment	Manufacture		
Teck Resources Limited	net positive impact on biodiversity	2010	Canada	Mining	Biodiversity	Development	○	○
Norsk Hydro ASA	no net loss of biodiversity	2011	Norway	Mining	Biodiversity	Development		
BRIDGESTONE	in balance with nature(Biodiversity no net loss)	2012	Japan	Manufacturing	Biodiversity	Manufacture		
PTTEP	no net loss for Biodiversity and Ecosystem Services (BES)	2013	Thailand	Energy	Biodiversity	Development	○	
Anglo Gold Ashanti Limited	no net loss of biodiversity	2014	South Africa	Mining	Biodiversity	Development	○	○
Barratt Developments plc	net gains for biodiversity	2014	UK	Construction	Biodiversity	Development	○	
Daiwa House Group	no net loss of green space	2014	Japan	Construction	Nature	Development		
Societe Generale	no net loss of biodiversity	2014	France	Financial	Biodiversity	Development	○	
TOYOTA MOTOR CORPORATION	Net Positive Impact	2015	Japan	Manufacturing	the Earth	Manufacture		
Thomson environmental consultants	Biodiversity Net Gain	2016	UK	Service	Biodiversity	Development	○	○
WSP Parsons Brinckerhoff	biodiversity net gain	2016	USA	Service	Biodiversity	Development	○	○
First Quantum Minerals	net positive impact on biodiversity	2017-2019	Canada	Mining	Biodiversity	Development		
Berkeley Group	net biodiversity gain	2018	UK	Construction	Biodiversity	Development	○	○
RPS group	Biodiversity Net Gain	2018	UK	Service	Biodiversity	Development	○	○
NTPC LTD.	no net loss of biodiversity	2018	India	Energy	Biodiversity	Development		○
Crestwood	no net loss of biodiversity	~2018	USA	Energy	Biodiversity	Development	○	○

Note: Findings as of November 2020

Table 2: Four important viewpoints in no net loss

Object of No Net Loss	Are you aiming for NNL for what?
Target action	What kind of action among corporate activities do you mitigate the impact caused by?
Adoption of Mitigation Hierarchy	Do you follow avoidance and minimisation and offset when you plan for development?
Adoption of Biodiversity Assessment	Do you grasp the quantity and quality of biodiversity that is lost by development?

The following are the results of investigation on 23 companies that had set a NNL goal which was active as of November 2020. First, the earliest commitment was made in 2003, and the most recent one took place in 2018. These companies were headquartered in 11 countries: United States, U.K., India, Australia, Netherlands, Canada, Thailand, Japan, Norway, France, and the Republic of South Africa. The highest number of companies were in the mining industry, with six companies (Fig.1).

The companies also showed a variation in the four components of NNL goals. In terms of the object of NNL, there were 18 companies targeting biodiversity affected by development activities, three for the environment in general, and one company each for nature and earth (Fig.2). For the targeted activities, 18 companies targeted development activities that affect habitats, while the rest targeted activities related to manufacturing (Fig.3). For the application of mitigation hierarchy, 14 companies applied mitigation hierarchy of "avoidance, minimization, compensation." The remaining nine companies excluded compensation from their strategy and focused only on avoidance and reduction of adverse impacts (Fig.4). As for the introduction of quantitative biodiversity assessment, 11 companies have introduced it, and 12 have not yet introduced it (Fig. 5).

Figure 6 visualizes the change in the number of companies with NNL goals over time. It shows that an increasing number of companies are adopting no-net-loss goals, especially since 2008.

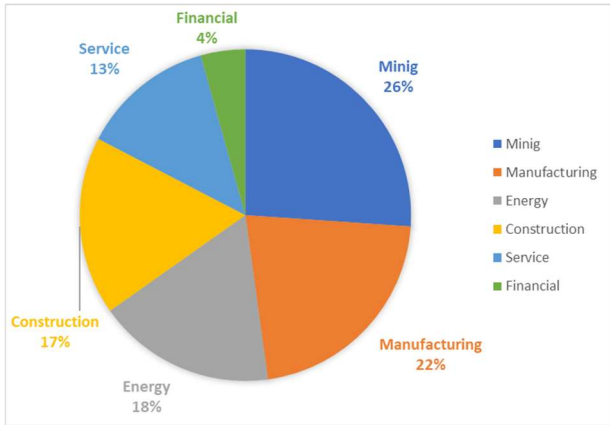


Figure 1: Ratio of industry of the companies

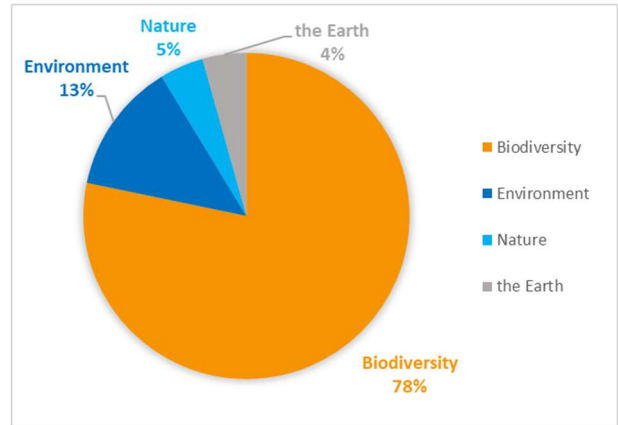


Figure 2: Ratio of object of corporate NNL.

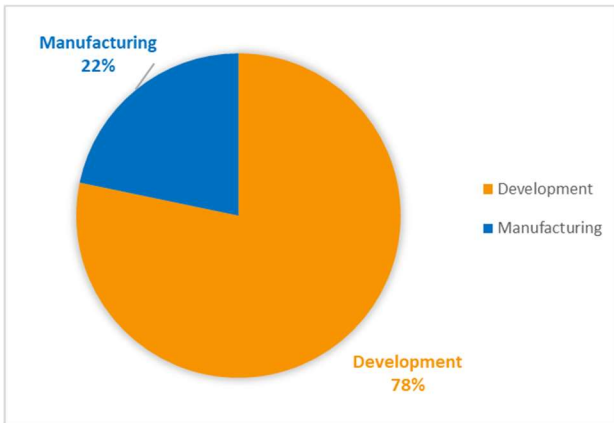


Figure 3: Ratio of Target action of corporate NNL

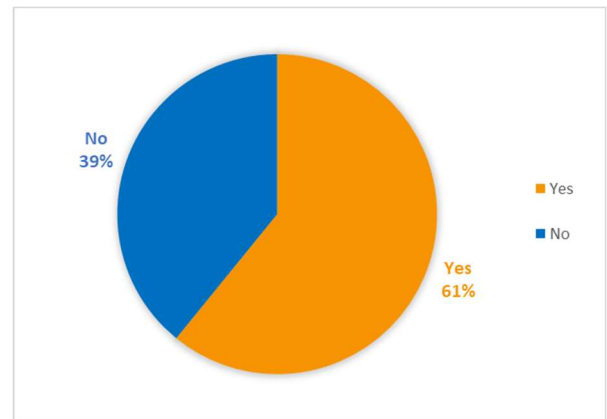


Figure 4: Ratio of application of mitigation hierarchy of corporate NNL

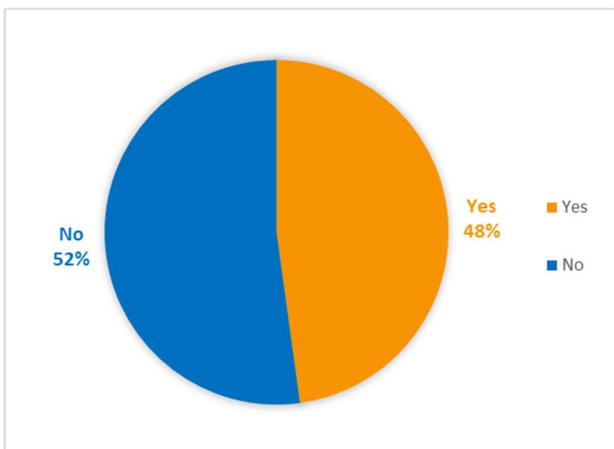


Figure 5: Ratio of application of biodiversity with NNL goals over time



Figure 6: Growth in number of companies assessment of corporate NNL

3.2. Corporate no net loss goals and no net loss policy

It was found that out of 11 headquarters countries (the U.S., the U.K., India, Australia, the Netherlands, Canada, Thailand, Japan, Norway, France, and the Republic of South Africa), 7 countries (the U.S., the U.K., Australia, the Netherlands, Canada, France, and the Republic of South Africa) have implemented NNL policies (Table 3). 16 out of 23 companies were headquartered in countries with NNL policies.

Table 3: Whether the countries have NNL policy.

Country of headquarter	Whether countries have NNL policy
Australia	○
Canada	○
France	○
India	
Japan	
Norway	
South Africa	○
Thailands	
the Netherlands	○
UK	○
USA	○

4. DISCUSSION

In this study, we confirmed that 23 companies from 11 countries had a no-net-loss goal as of November 2020. Also, the four key components of a NNL goal were identified as “object of NNL,” “target action,” “adoption of mitigation hierarchy,” and “adoption of quantitative biodiversity assessment.” The companies’ approach to these components varied in terms of the similarity to those of the NNL policy originated in the United States. While 80% of the companies adopted a similar approach for the first two components, only around half of the companies did so for the latter two items. The results for the latter two items suggest that a phased and systematic mitigation planning has not been adopted and that scientific evidence may be lacking in corporate biodiversity actions. Furthermore, Tanaka and Isoyama (2011) revealed that the original NNL policy covered only wetlands, but the scope was later expanded to include other areas besides wetlands and became biodiversity. Such a history of NNL development and the current status of companies’ approach to the first two components imply that NNL has come to be used in areas other than biodiversity.

Seventy percent of the 23 companies have NNL policies in place in the countries where they are headquartered (seven countries). Since these policies are legally binding, the same countries should have similar results. However, our findings show that the NNL adoption status of companies vary within the same countries. It indicates that there were differences in the information disclosed by companies from one company to another. Thus, an interview survey would be preferred to obtain more detailed information in further research. It is also thought that there are some differences in the NNL policies across countries, and that it is necessary to clarify these differences in the future.

Changes in the number of companies with NNL goals over time has shown an increasing trend, and the number of companies with NNL goals is expected to continue to increase. As more companies adopt NNL goals, it is concerned that NNL may gradually lose its meaning (i.e., no-net-loss wash).

From the fact that 16 of the 23 companies in this study were headquartered in countries with NNL policies, it can be inferred that companies located in countries with NNL policies in place are more likely to set NNL goals because the relevant technologies and guidelines are more established.

When companies set NNL goals, it is important to quantitatively understand the negative impact on biodiversity through clarifying the objects of NNL and actions to be taken for NNL, making a one-to-one correspondence between the objects and mitigation methods, as well as introducing quantitative biodiversity assessment such as mitigation hierarchy and HEP even in cases where no-net-loss cannot be achieved.

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