GREENHOUSE GAS EMISSION DISCLOSURE BY HIGH-PROFILE COMPANIES IN CHINA AND INDIA

An Undergraduate Thesis

Presented as Partial Fulfilment of the Requirements

to Obtain the Bachelor Degree in Accounting Department

MUHAMMAD SILKY FIRDAUS

Student Number: 16312255

DEPARTMENT OF ACCOUNTING

INTERNATIONAL PROGRAM

FACULTY OF ECONOMICS

UNIVERSITAS ISLAM INDONESIA

YOGYAKARTA

2020

GREENHOUSE GAS EMISSION DISCLOSURE BY HIGH-PROFILE COMPANIES IN CHINA AND INDIA

An Undergraduate Thesis

Presented as Partial Fulfilment of the Requirements

to Obtain the Bachelor Degree in Accounting Department

MUHAMMAD SILKY FIRDAUS

Student Number: 16312255

DEPARTMENT OF ACCOUNTING

INTERNATIONAL PROGRAM

FACULTY OF ECONOMICS

UNIVERSITAS ISLAM INDONESIA

YOGYAKARTA

2020

DECLARATION OF AUTHENTICITY

Herein I declare the originality of the thesis. I have not presented someone else's work to obtain my university degree, nor have I presented anyone else's words, ideas or expression without acknowledgement. All quotations are cited and listed in the bibliography of the thesis. If in the future this statement is proven to be false, I am willing to accept any sanction complying with the determined regulation or its consequence.

Yogyakarta, May 29th, 2020

Muhammad Silky Firdaus

ADVISORS' APPROVAL

GREENHOUSE GAS EMISSION DISCLOSURE BY HIGH-PROFILE COMPANIES IN CHINA AND INDIA

Written by:

MUHAMMAD SILKY FIRDAUS
Student Number: 16312255

Approved by

Content Advisor,

Fitra Roman Cahaya, S.E., M.Com., Ph.D., CSRS., CSRA June 1st, 2020

Language Advisor,

Ima Dyah Savitri, S.S., M.A. July 8th, 2020

EXAMINERS' APPROVAL

GREENHOUSE GAS EMISSION DISCLOSURE BY HIGH-PROFILE COMPANIES IN CHINA AND INDIA

A BACHELOR DEGREE THESIS

By:

MUHAMMAD SILKY FIRDAUS

Student Number: 16312255

Defended before the Board of Examiners
on July 29th , 2020 and Declared Acceptable

Board of Examiners

Examiner I

Fitra Roman Cahaya, S.E., M. Com., Ph. D., CSRS., CSRA July 29th, 2020

Examiner II

Mahmudi, Dr., S.E., M.Si. July 29th, 2020

Yogyakarta, August 19th , 2020
International Program
Faculty of Business and Economics
Universitas Islam Indonesia
Dean

(Prof. Jaka Sriyana, Dr., S.E., M.Si. Ph.D.)

UNIVERSITAS ISLAM INDONESIA

FAKULTAS EKONOMI

Gedung Prof. Dr. Ace Partadiredja
Ringroad Utara Condong Catur Depok
Sleman Yogyakarta 55283
T. (0274) 881546, 885376, 883087;
F. (0274) 882589
E. fe@uii.ac.id
W. fecon.uii.ac.id

YUDICIUM THESIS EXAMINATION
ACCOUNTING MAJOR
INTERNATIONAL PROGRAM, FACULTY OF BUSINESS AND ECONOMIC, UII

No.: 01/TE/IPFBE/VII/2020

Bismillahirrahmaanirrahim

Based on the results of the meeting held on **July 29, 2020**, the Thesis Examination Committee decides that :

Name : **MUHAMMAD SILKY FIRDAUS**
Student Number : **16312255**
Thesis Title : GREENHOUSE GAS EMISSION DISCLOSURE BY HIGH-PROFILE COMPANIES IN CHINA AND INDIA

1. **Passes** the thesis examination ~~**with/ without**~~ revision
2. ~~**Does not pass the thesis examination**~~

Grade in Letter : A

Content Advisor : Fitra Roman Cahaya, S.E., M.Com., Ph.D.

Board of Examiner — Signature

Team Leader : Mahmudi, Dr., S.E., M.Si., Ak., CMA.

Member : Fitra Roman Cahaya, S.E., M.Com., Ph.D.

Should any mistake is found related to the decision, the committee will revoke and revise the decision accordingly.

Yogyakarta, July 29, 2020

UNIVERSITAS ISLAM INDONESIA ★ YOGYAKARTA ★ FAKULTAS BISNIS DAN EKONOMIKA

Mahmudi, Dr., S.E., M.Si., Ak., CMA.
Head of Undergraduate Program in Accounting

Prof. Jaka Sriyana, S.E., M.Si., Ph.D.
Dean

Note :

1. As Soon as students pass the thesis/compre exams they have to applay for the completion the of the their study (if want to graduate) at the academic academics section of the FBE UII (see the procedure).
2. The date of study completion is not the date when students pass the thesis/comprehensive exams. Instead, it is the date when the faculty issues the letter of study completion.
3. Any failure to applay for a study completion after passing the thesis/comprehensive exams may require students to pay tuition fee that still due.

MOTTO AND DEDICATION

For indeed, with hardship [will be] ease. Indeed, with hardship [will be] ease. (QS Al-Insyirah: 5-6)

It always seems impossible until it's done

- Nelson Mandela -

This thesis is dedicated for my beloved parents, Zulfahmi and Nita Rifyaswati, my sisters, Alrienta Nur Aunillah, Islam, Indonesia, and Universitas Islam Indonesia.

ACKNOWLEDGEMENT

Bismillahirahmaanirahiim

Assalamualaikum Warahmatullahi Wabarakatuh

"All perfect praise is due to Allah, the Lord of the worlds. I bear witness that none is worthy of worship but Allah, alone with no partners. Moreover, I bear witness that Muhammad is His Messenger, may Allah exalt his mention." Alhamdulillah rabbil'alamin, the thesis which entitled "Greenhouse Gas Emission Disclosure by High-Profile Companies in China and India" as partial requirements to obtain the bachelor degree in Accounting Department, International Program, Faculty of Economics, Universitas Islam Indonesia is finally finished. I would like to present my gratitude and appreciation for those who have taken part and contributed to the preparation of this thesis. Hopefully, this thesis may bring benefits for the upcoming studies. Through this occasion, I would like to convey my gratitude to:

1. **Allah Subhanahu wa Ta'ala**, for Your blessings and mercy, for bestowing me this wonderful life and granting me the endless power so that I can finish this thesis on the best time.
2. **Muhammad shallallahu'alaihi wasallam**, as a paragon of virtue for Muslims, who had guided us from the darkness to the brightness from the ignorance to the intelligence.
3. My beloved mother **Nita Rifyaswati** and father **Zulfahmi**, who never give up to provide invaluable support, prayers, sacrifices and the most sincere love. Thank you for always encouraging me to cope up with my sadness

and failures. Nothing else can I say besides gratitude. This thesis will never be finished without your help and endless support.

4. My one and only beloved sister **Alrienta Nur Aunillah**, as the one who always sharing fun, laughter, joy and happiness. I feel so blessed for having you in my life.
5. **Mr. Fitra Roman Cahaya, S.E., M.Com., Ph.D., CSRS., CSRA**, as my content advisor who always gives me brilliant ideas, inspiration and motivation so this thesis can be more valuable. Thank you for your giving me your precious time, guidance, patience and kindness during the writing of this thesis.
6. **Mrs. Ima Dyah Savitri, S.S., M.A.**, as my language advisor, who has provided me helpful linguistic advices. Thank you for the time you have taken for me, so that this thesis can be written in accordance with the correct grammatical structure.
7. **Mr. Fathul Wahid, Prof. ST., M.Sc., Ph.D.**, as Rector of Universitas Islam Indonesia.
8. **Mr. Jaka Sriyana, Dr., SE., M.Si**., as Dean of Faculty of Economics.
9. **Mr. Mahmudi Dr., SE., M.Si**., as Head of Undergraduate Program in Accounting Department.
10. **Mrs. Ayu Chairina Laksmi S.E., M.App.Com., M.Res., Ak., Ph.D**, as Secretary of International Program Accounting Department.

11. **All lecturers of IP Accounting FE UII**, who had taught me valuable insight and knowledge. May Allah SWT bestow His blessing and repay all your kindness.
12. The International Program FE UII family, **Mrs. Alfi, Mr. Ahmad, Mr. Kusnoto, Mr. Kandri, Mr. Erwanto, Mrs. Ayu, Mrs. Wulan** and the rest that I could not mention one by one. The greatest thanks I can convey for always helping us during our years in college.
13. All of my friends from Accounting IP 2016, **Ica, Khalla, Arienda, Firna, Zahra, Rafsan, Rizky, Eky, Naufan, Habib, Dio, Afief, Adin, Reza, Astried, and Eigha**. Thank you for all memories and experience during my bachelor study. I always hope the best for all of you guys.
14. My best friends from High School, **The Express FC, Mumtaz, Dias, Izzul and Ali**. Thank you for all support, prayers and all of the great times. I will always look forward to meet you guys again.
15. My friends from PDD Countions 2017, **Dimas, Mbak Rosa, Mbak Atik and Mbak Silvia**. Thank you the unforgettable experience and always being affectionate. I always hope the best for you guys.
16. My friends from KKN, **Mas Tuti, Didi, Venti, Nadilah, Sofia, Yanti and Sherly**. Thank you for the ineffable one-month memories. I will never be able to forget the great times we have done together. See you on the top guys!

Finally, the author acknowledges that this thesis is still far from perfection, but hopefully this thesis may bring benefits for academic purposes, especially in

accounting. In addition, the author wants to say thank you to everyone who had not been mentioned above for helping the researchers in completing this thesis.

Wassalamualaikum Warahmatullahi Wabarakatuh

Muhammad Silky Firdaus

ABSTRACT

This research concentrated on the corporate disclosure regarding GHG emission activities. The main objective of this research was to understand the extent of GHG emission disclosure that was provided in annual report and sustainability report along with its driving factors. This research employed six predictor variables, namely business group, corporate governance, foreign association, state ownership, firm size and profitability with the underlying theory of coercive isomorphism. The samples were taken from 34 high-profile companies in total, operating in China and India for the year of 2016-2018. This research used content analysis (number of words) as the data collection method with *GRI 305: Emissions* as the guideline. The data was analysed through multiple regression model using *IBM Statistical SPSS 25* software. The results of this study suggested that business group and corporate governance positively influence the extent of GHG emission disclosure. Meanwhile, foreign association and state ownership were found to be insignificant. Therefore, this study suggested that coercive isomorphism partially explained the driving factors of corporate GHG emission disclosure.

Keywords: *GHG emission disclosure, coercive isomorphism, corporate social responsibility, business group, corporate governance, foreign association, state ownership*

ABSTRAK

Penelitian ini fokus pada pengungkapan perusahaan tentang kegiatan emisi GRK. Tujuan utama dari penelitian ini adalah untuk memahami sejauh mana pengungkapan emisi GRK yang disediakan dalam laporan tahunan dan laporan keberlanjutan bersama dengan faktor pendorongnya. Penelitian ini menggunakan enam variabel prediktor, yaitu kelompok bisnis, tata kelola perusahaan, asosiasi asing, kepemilikan negara, ukuran perusahaan dan profitabilitas dengan teori yang mendasari *coercive isomorphism*. Sampel diambil dari 34 perusahaan profil tinggi secara total, beroperasi di Cina dan India untuk tahun 2016-2018. Penelitian ini menggunakan analisis konten (jumlah kata) sebagai metode pengumpulan data dengan pedoman GRI 305: Emisi. Data dianalisis melalui model regresi berganda menggunakan software *IBM Statistical SPSS 25*. Hasil penelitian ini menunjukkan bahwa kelompok bisnis dan tata kelola perusahaan secara positif memengaruhi tingkat pengungkapan emisi GRK. Sementara itu, asosiasi asing dan kepemilikan negara ternyata tidak signifikan. Oleh karena itu, penelitian ini menunjukkan bahwa *coercive isomorphism* menjelaskan secara parsial faktor pendorong pengungkapan emisi GRK perusahaan.

Kata kunci: *pengungkapan emisi GRK, coercive isomorphism, tanggung jawab sosial perusahaan, kelompok bisnis, tata kelola perusahaan, asosiasi pihak asing, kepemilikan pemerintah*

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

1. 1. Background of the Study

In this era, technological developments have brought many impacts on all aspects of human activity, especially in the industrial field. This development makes industrial activities run more effectively and efficiently. Companies across the world are competing to create new innovations to gain competitive advantage in each industry sector. Notwithstanding, technological advances in industrial activities are not devoid from the negative effects caused. One of them is the huge amount of greenhouse gas emissions that are expected to cause climate crisis if not immediately coped.

In the recent decades, excessive greenhouse gas (GHG) emission has been a worldwide issue that needs to be concerned about. GRI 305 (2016) mentioned that greenhouse gases have been a primary contributor to global warming. Global warming is the extremely rapid increase in the average temperature of the Earth surface over the century (Riebeek, 2010). GRI 305 (2016) explained further that greenhouse gases cover Carbon dioxide (CO2), Methane (CH4), Nitrous oxide (N2O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulphur hexafluoride (SF6) and Nitrogen trifluoride (NF3). These gases are air pollutants which also have significant negative impacts on agriculture, ecosystems, and human and animal health. According to the Intergovernmental Panel on Climate Change (2013) on its Fifth Assessment Report, human influence has been the

dominant cause of global warming since the mid-20th century. As aforementioned, the largest human impact has been known as the emission of greenhouse gases, such as anthropogenic carbon dioxide which is resulted from fossil fuel combustion. This kind of activities since the era of Industrial Revolution (around 1750) have increased the atmospheric concentration of carbon dioxide, reaching the number of 45%, from 280 ppm in 1750 to 415 ppm in 2019 (Scripps Institution of Oceanography, 2019).

According to AirVisual (2018), top-ranked most polluted cities in Asia continent are dominated by two major countries, India and China. Of the worst 50 most polluted cities, 25 cities are in India and 22 cities are in China. The other three cities are in Pakistan and Bangladesh. As the effort, China has taken an active role addressed to the GHG emission problems. China is placed to help steer the movement against climate change after its involvement in the non-binding Copenhagen Accord back in 2009 and followed by its ratification of Paris Agreement in 2016. China has pledged to reduce its carbon emission per GDP, by 60 - 65% by 2030 compared to the levels of 2005. On the other hand, India has reached its total amount of GHG emission up to 3,202 $MtCO_2e$ by 2014 (6.55% of world total). According to WRI CAIT (2017), the energy sectors produced the highest percent of GHG emissions which accounted for 68.7% of total emissions. Followed by agriculture, industrial processes, land-use change and forestry, and waste which respectively emitting 19.6%, 6.0%, 3.8% and 1.9% of 2014 total emissions. Through its ratification on Paris Agreement in 2016, India also pledged to mitigate 33 - 35% of its emission intensity by 2030, compared to 2005 levels.

As stated previously, GHG emission issues have been widely referred to the industrial activities of companies principally which directly affect the environmental stability. Consequently, GHG emission issues have brought more attention on the importance of corporate social responsibility (CSR) reporting. As stated in Business Impact cited in Moir (2001), CSR is described as a fulfilment of all stakeholders' needs and not just shareholders' based on ethical basis. The term CSR has been connected to the development of corporate sustainability. Along with the studies, it is found that the key of corporate sustainability does not just depend on its economic performance but also on its surrounding system, including the local community, where the business processes operate (Hanifa and Cahaya, 2016). Companies are expected to create congruence with their surrounding neighbourhood in order to maintain corporate sustainability and communicate these activities in certain media such as annual reports, otherwise business threats would emerge. Accordingly, companies have to consider their performance not only in financial aspects, but also social and environmental aspects.

The tendency of CSR reporting did not only arise in developed countries, but emerging and developing countries are also encouraged to follow this trend (see Othman et al, 2011; Haji, 2013; Faisal et al, 2018; Halimah and Yanto, 2018). Numerous countries in the world have been considering the solution to reduce the emission of this anthropogenic greenhouse gases. According to World Resource Institute (2015), several countries like The United States, Canada, Japan, South Korea, and more have committed to participate in reducing GHG emission by

publishing mandatory policies for companies related to GHG disclosure. Hence, the development of proactive strategies toward the environmental issues is required for entities in response to the demands of stakeholders.

Effective adapted regulation about CSR, including GHG emissions, is expected to realize mitigation strategies. At the moment, the requirement status of CSR disclosure is largely voluntary across the nations (Kuzey and Uyar, 2017). Global Reporting Initiative (GRI) has set the standards of reporting including environmental standards, which GHG emission topic is one of them. In addition, Kuzey and Uyar (2017) stated that the presence of worldwide initiatives such as GRI has been gradually increasing the recognition and tendency to publish non-group sustainability reports.

Certain previous literature has conducted analyses of the extent of GHG emission disclosures in various countries (see Luo et al, 2013; Luo. 2017). However, those studies, in most cases, concentrated on western nations, such as Australia (see Choi et al, 2013; Krishnamurti and Velayutham, 2018; Perera et al, 2019), Canada (see Wegener et al, 2018) and the United Kingdom (Chithambo and Tauringana (2014). In fact, there are several Asian countries considered to be highly air-polluted such as China and India. Therefore, this thesis attempts to fill the gap by examining the extent and determinants of GHG emission disclosure in China and India. The researchers believe that this study is going to contribute in the existing literature and provide more insights about the extent of GHG emission disclosures, a specific aspect of CSR reporting theme, in the two largest Asian countries. Furthermore, researchers are confident that this study is going to

fill the research gap about GHG emission disclosure based on the viewpoint of coercive isomorphism idea, as the number of prior studies is still limited.

1. 2. Problem Formulation

Based on the background of study, this research is conducted based on these following research questions:

1. To what extent is GHG emission reporting provided in China and India?
2. Is there any relationship between the business group and the extent of GHG emission disclosure?
3. Is there any relationship between the corporate governance and the extent of GHG emission disclosure?
4. Is there any relationship between the foreign association and the extent of GHG emission disclosure?
5. Is there any relationship between the state ownership and the extent of GHG emission disclosure?

1. 3. Research Objectives

Based on the background of study and problem formulation, this research is conducted in order to obtain empirical evidence about:

1. The extent of GHG emission reporting in China and India.
2. The relationship between the business group and the extent of GHG emission disclosure.
3. The relationship between the corporate governance and the extent of GHG emission disclosure.
4. The relationship between the foreign association and the extent of GHG emission disclosure.
5. The relationship between the state ownership and the extent of GHG emission disclosure.

1. 4. Research Contribution

1. 4. 1. Theoretical Contribution

The findings of this research is expected to provide theoretical benefits by contributing in the development of the existing accounting science and literature and provide more insights about the extent and factors of GHG emission disclosures, a specific aspect of CSR reporting theme, principally in the two largest Asian countries.

1. 4. 2. Practical Contribution

The findings of this research are expected to carry practical benefits to the related parties. The related parties include:

1. For researchers, it is expected to provide additional references for future researches and give contribution to GHG emissions literatures around the world.
2. For managements of corporation, it is expected to provide material consideration in making business decisions and increase motivation to perform corporate social responsibility matters, specifically regarding GHG emissions.
3. For the government, it is expected to create a basis in carrying out GHG mitigation strategies including in arrangement and publication of policies.
4. For public, it is expected to increase environmental awareness, specifically regarding to global warming.

1. 5. Writing System

The writing of this thesis consists of five chapters, explained further below:

CHAPTER I: INTRODUCTION

Chapter 1 is the introductory part of this thesis, which contains the research background, problem formulation, research objectives, research contribution and the writing system.

CHAPTER II: LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Chapter 2 consists of the review of previous literatures, the theoretical framework as the basis of GHG emission disclosure, hypotheses development and conceptual schema.

CHAPTER III: RESEARCH METHODOLOGY

Chapter 3 contains the population and samples of the analysis, the sampling technique, including the criteria of selection, research type, the description and measurement of each variable and the statistical methods of data analysis.

CHAPTER IV: DATA ANALYSIS AND DISCUSSION

Chapter 4 comprises the results of data analysis and the discussion regarding the descriptive and inferential statistic results along with the acceptance or rejection of research hypotheses based on the statistical results.

CHAPTER V: CONCLUSION AND RECOMMENDATION

Chapter 5 encompasses the conclusion, research implication, recommendations and research limitations.

CHAPTER II

LITERATURE REVIEW AND HYPOTHESIS FORMULATION

2. 1. Literature Review

Numerous worldwide CSR related studies, including GHG emissions, have been carried out and will continue to be updated. In this thesis, the researchers utilize several previous studies as the main references. Key papers in the social and environmental accounting literature are reviewed to indicate the research gap. These papers are from Choi et al (2013), Chu et al (2013), Chitambo and Taurigana (2014) and Faisal et al (2018).

Choi et al (2013) examined the extent and determinants of GHG emission disclosure by large Australian companies during 2006 - 2008, which was the year the Australian government promulgated a series of regulations regarding GHG emissions. The analysed determinants include industry, the level of carbon emissions, firm size, profitability, financial distress and corporate governance. To measure the extent of voluntary disclosure regarding climate change and carbon emissions, Choi et al (2013) established a checklist which based on the elements identified in the Information Request sheets by Carbon Disclosure Project (CDP). Choi et al (2013) found that during 2006-2008, in which the regulations were announced, the extent of disclosure was 42% and increased significantly to 67% by 2008. This finding is in line with legitimacy theory. In addition, they found that industry and firm size are strongly associated with the extent of GHG emission disclosures, while corporate governance is weakly associated. Besides,

they did not find any evidence regarding the influences of financial distress and profitability.

Chu et al (2013) investigated the factors driving GHG reporting by Chinese companies. This study analysed top 100 A-Shares companies listed in Shanghai Stock Exchange for the year of 2010. The level of carbon dioxide emission, profitability, overseas listing and government ownership were employed in this study as the determinants to be tested. Chu et al (2013) applied content analysis and found that 61% of top 100 A-Shares issuing companies disclosed their GHG emission information for 2010. Furthermore, there is an empirical evidence that the level of carbon dioxide emission positively associated with the extent of GHG emission disclosure, which is consistent with the concept of legitimacy theory. However, there are no empirical evidences that profitability and overseas listing have significant relationship with the extent of GHG emission disclosure. The last finding, state ownership is found to have negative relationship, which unexpectedly contradicts with the concept of legitimacy theory.

Chithambo and Tauringana (2014) investigated the relationship between company-specific factors and the extent of GHG emission disclosures in the United Kingdom. The study took the sample from 210 Financial Time Stock Exchange (FTSE) listed companies for the period of 2011. The tested factors include company size, gearing, profitability, liquidity, financial slack, capital expenditure, age and industry. The theories adopted encompass information asymmetry theories, namely signalling and agency theory, and social political theories, namely legitimacy and stakeholder theory. Chithambo and Tauringana

(2014) found and suggested that the extent of voluntary GHG emission disclosures by FTSE listed companies is still low, which only 38.5%. Furthermore, it is found that only company size, gearing and financial slack that are significantly associated with GHG disclosures and industry is showed to be partially associated.

Faisal et al (2018) examined the content and determinants of GHG emission disclosure in Indonesia. The study analysed 37 listed companies for the period of 2011 - 2014. The tested determinants encompass leverage, profitability, firm size, industry sector and government ownership. Adopted theories in this study are legitimacy theory, stakeholder theory and institutional theory. Using content analysis, Faisal et al (2018) found that the number of GHG emission reporting companies increased from 42.9% in 2011 to 49.1% in 2014. Furthermore, the study provided empirical evidences that leverage, profitability, firm size and industry sector are significantly associated with the extent of GHG emission disclosure. Meanwhile, there is no empirical evidence that government ownership is significantly associated.

It is distinctly shown that previous literature is predominantly concentrated on one specific country. This thesis attempts to fill the gap by examining two major Asian countries, China and India, simultaneously. Since there is diversity between the findings of previous studies, this thesis is expected to provide more comprehensive insights to this study field. In addition, this thesis employs the concept of coercive isomorphism, which is not used in the previous studies above, to provide broader insights about the factor and extent of GHG

emission disclosure. The next section will discuss the adopted theory, coercive isomorphism, and the proposed hypotheses.

2. 2. Theoretical Framework

2. 2. 1. Institutional Theory

In general, institutional theory explains how processes and mechanisms in the form of structures, schemes, rules and routines are set into controlling guidelines for social conduct (Ritzer, 2005). Faisal et al (2018) mentioned that institutional theory is a branch of legitimacy theory describing the institutional pressures exerted on the company. Institutional theory underlies the thought that organization must give assurance to the public and society of its legitimacy and worthiness of supports (Meyer and Rowan, 1977). Furthermore, Meyer and Rowan (1977) argued that under institutional pressures, organization tends to be isomorphic or similar to other organization. DiMaggio and Powell (1983) extended the concept of institutional isomorphism, which is divided into three variants; coercive, normative and mimetic isomorphism. This concept has been frequently employed to explain and describe organizational actions and decision making.

Concisely, coercive isomorphism is based on political and legitimacy matters, normative isomorphism associated with professionalism such as organizational ethics, and mimetic isomorphism derives from organizational uncertainty such as lack of technological understanding and goal ambiguity (DiMaggio and Powell, 1983). Meyer and Rowan (1977) also argued that

institutional isomorphism boosts the organizational success and sustainability. In order to particularly investigate the influences of stakeholders on organizational carbon emission disclosures, this research employs the idea of coercive variant of theory of institutional isomorphism.

2. 2. 2. Coercive Isomorphism

To delve deeper into the concept, DiMaggio and Powell (1983) explained that coercive isomorphism derives from both formal and informal parties which exert pressures and social expectations to the dependent organization. The form of direct response from the organization is organizational change. DiMaggio and Powell (1983) argued that the level to which an organization to change isomorphically to bear a resemblance to the organization which it depends the resources on is positively associated with the centralization of an organization's resource supply. In environmental cases, for instances, manufacturing companies adopt environmentally friendly technology in response to environmental regulations from the government, companies commence to concern regarding the impacts of business activities towards social and environmental conditions and the information disclosures in response to the stakeholders' demands.

2. 2. 3. Corporate Social Responsibility

According to Business Impact cited in Moir (2001), "CSR is the continuing commitment by business to behave ethically and contribute to

economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large". The scope of CSR encompasses two major aspects. The first is social aspect, which contains company's responsibility regarding the social condition within or around the business processes operation. Several prior studies related to the social aspects of CSR have been done throughout the recent years (see Cahaya et al, 2017; Fererro and Sanchez, 2017; Cahaya and Hervina, 2019). The second aspect is environmental aspect. This aspect embraces the company's responsibility towards living and non-living things that would be affected by the organizational activities. The environmental aspects of CSR also have been studied in the recent years around the world (see Faisal et al, 2018; Halimah and Yanto, 2018; Luo et al, 2019; Perera, Jubb and Gopalan, 2019).

2. 3. Hypotheses Development

2. 3. 1. Business Group

In this study, business group is classified as a company that fifty percent or more of the ownership structure belongs to other business organizations. Meanwhile, non-group companies are those with dominant ownership percentage held by other than business organizations. Referred to the theory of coercive isomorphism, it can logically be assumed that companies controlled by business group will be exerted more coercive pressures than non-group companies. However, Pahuja (2009) examined the

significance and found that business group does not substantially affect the extent of GHG emission disclosure. Due to this contradiction, this variable is measured to provide updated understanding about the relationship, therefore, this research proposes this following hypothesis.

H1: Companies in business group will disclose more GHG emission information than non-group companies

2. 3. 2. Corporate Governance

Logically, good quality of corporate governance is more likely to motivate the company to disclose more GHG emission information. The practice of corporate governance is likely to adapt the institutional frameworks such as political system, financial system and cultural system (Matten and Moon, 2008). In practice, the form of corporate governance in addressing the climate change is affected by pressures from external rules, norms and laws that lead companies to be homogenized in implementing certain organizational practices (DiMaggio and Powell, 1983; Galbreath, 2010). In the previous study, Choi et al (2013) examined this variable and argued that corporate governance is one of the key drivers for determining the extent of GHG emission disclosure. In a different topic, Kent and Zunker (2013) investigated the relationship between adoption of good corporate governance and the quantities of employee-related disclosure. They found that there is a positive relationship between those two variables. Accordingly, this variable is re-examined to identify whether it remains to be positively related

with the quantities of GHG emission disclosure. Consistent with the finding from Choi et al (2013) and Kent and Zunker (2013), the following hypothesis is proposed based on the adopted theory.

H2: Companies with better corporate governance will disclose more GHG emission information than other companies

2. 3. 3. Foreign Association

Rapid development of a country can increase the possibility of foreign investors to invest in that country. Multinational companies tend to receive more coercive pressures from domestic and global stakeholders and, therefore, more likely to disclose CSR related information (Tang and Li, 2009). However, some previous studies contradicted and found that there is no significant relationship between foreign association and the extent of GHG emission disclosure (Pahuja, 2009; Chu et al, 2013; Bose et al, 2018). Nevertheless, this research attempts to be consistent to the theory applied, therefore, this following hypothesis is proposed.

H3: Companies associated with foreign party will disclose more GHG emission information than domestic companies

2. 3. 4. State Ownership

The status of ownership can be considered as an affecting factor of GHG emission disclosure (Faisal et al, 2018). The presence of state ownership is expected to increase company's awareness over the corporate

social and environmental responsibility as company is forced by the government as the major shareholders. It is shown by numbers of previous studies which found the positive relationship between state ownership and the extent of GHG emission disclosure (Haji, 2013; Bose et al, 2018). However, Chu et al (2013) found the contrary, which state ownership negatively associated with the extent of GHG emission disclosure. Consistent with the finding from Bose et al (2018), therefore, this following hypothesis is proposed.

H4: State-owned companies will disclose more GHG emission information than private companies

2. 3. 5. Control Variables: Firm Size and Profitability

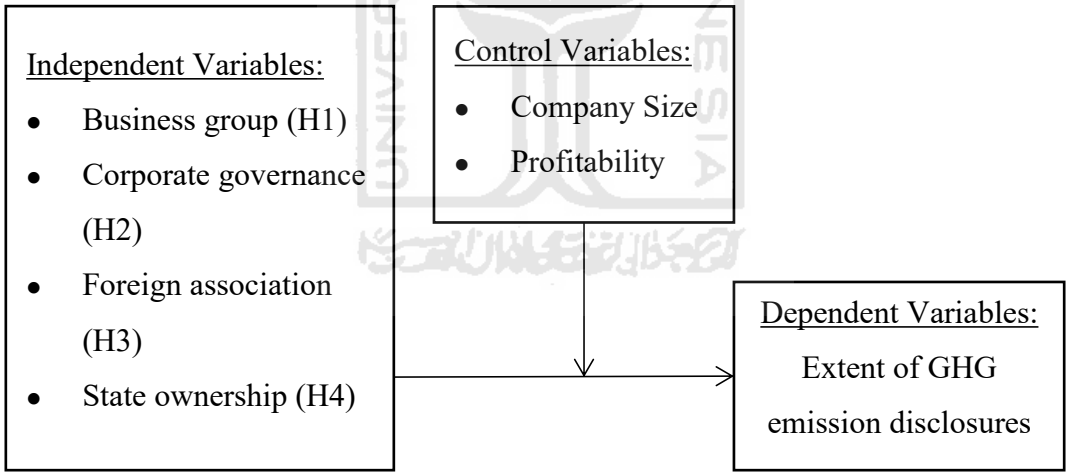
This thesis also employs firm size and profitability as the control variables. According to Cahaya (2011), inclusion of control variables provides supporting explanation to the relationship between dependent and independent variables. In this case, larger companies deal with more variety of business issues, involve greater number of stakeholders in their activities and face higher expectation regarding CSR practices including GHG emission disclosure (Faisal et al, 2018; Cahaya and Hervina, 2019). Consequently, they tend to disclose more information. On the other hand, profitable firms are able to disclose more environmental information because they are not financially restricted, unlike the unprofitable or less profitable firms that still struggle to reach their financial goals and improve their financial performances (Luo et al,

2013). Therefore, the inclusion of firm size and profitability as the control variables is expected to provide supporting explanation about the extent of GHG emission disclosure in China and India.

2. 4. Conceptual Schema

This thesis is conducted to examine the factors that influence the disclosures of GHG emissions in annual reports and sustainability reports in China and India. As described in the hypotheses' development section, four independent variables are tested along with two control variables. The conceptual schema portraying the entire set of dependent, independent and control variables in this thesis is presented in Figure 2.1.

Figure 2. 1. Conceptual Schema



CHAPTER III

RESEARCH METHODOLGY

3. 1. Population and Sample

Fraenkel et al (1990) defined population as a group of objects, people or events that are of concern to the researchers and will be used to generalize the results of their research. In this research, the population was public companies listed in Shanghai Stock Exchange and National Stock Exchange of India operating in high-profile industries such as forestry, mining, paper, oil and gas generating, chemicals, steel and other metals, electricity, gas, and water supply.

3. 2. Research Sample

Sample is a representative group or part taken from the population in which information is obtained (Fraenkel et al, 1990). In selecting the sample for this research, purposive sampling technique was applied. There were 17 companies each from China and India selected as the sample. The total number of the samples was 102 annual and sustainability reports from 34 companies with 3 years of analysis, 2016-2018. The sampling process was performed based on these following criteria:

1. Companies listed in Shanghai Stock Exchange and National Stock Exchange of India and uploading their annual reports or sustainability reports for the period of 2016-2018, presented in English.

2. High-profile or environmentally sensitive companies. Wang et al (2013) explained that the term “high-profile” encompasses these following types of industry: forestry, mining, paper, oil and gas generating, chemicals, steel and other metals, electricity, gas, and water supply.
3. Companies that disclose carbon emission-related information in their annual reports or sustainability reports.
4. Companies that provide information supporting the investigated variables.

3. 3. Research Type

The type of this research is mainly inferential research. This approach was applied to study a sample and infer the results to the population. High-profile companies were the main subjects of this research, as it was considered that their business activities inherently affected the natural environment. Samples from high-profile companies were analysed to understand their relationship to the quality of GHG emission disclosure based on their characteristics.

3. 4. Data Sources and Collection

This research employed quantitative data, namely secondary data in the form of evidence, records and reports compiled in published archives. Data about GHG emission disclosure was obtained through companies’ annual reports and sustainability reports. Data collection was undertaken by the documentation method was by tracing the selected annual report and the sustainability report as

the sample. These reports were obtainable through the official website of Shanghai Stock Exchange and National Stock Exchange of India

3. 5. Measurement of Dependent Variable

The dependent variable of this study was the extent of GHG emission disclosure. It was measured through content analysis, as which had been implemented in several previous studies (see Choi et al, 2013; Faisal et al, 2018; Luo et al, 2019; Perera et al, 2019). Table 3.1 presented the measurement technique used in prior studies.

Table 3. 1. Measurement Technique of GHG Emission Disclosure in Prior Studies

Research	Country	Disclosure Index	Measurement of GHG Emission Disclosure
Chu et al (2013)	China	Carbon disclosure project index developed by Choi et al (2010)	Content analysis: number of sentences
Faisal et al (2018)	Indonesia	Carbon disclosure project index developed by Choi et al (2013)	Content analysis: disclosure index
Perera et al (2019)	Australia	Disclosure index adopted from Clarkson et al (2008)	Content analysis: disclosure index
Hermawan et al	Indonesia	Carbon disclosure project index	Content analysis: disclosure index

(2018)		developed by Choi et al (2013)	

In this study, the extent of carbon emission disclosure of the company samples was measured by the number of words related to the subjects of analysis of emission disclosure contained in the annual report or sustainability report. To determine the subjects of analysis, GRI 305 was adopted as a disclosure checklist (see GRI 305, 2016). From eight standards set out, five GHG emission-related standards were selected as the basis for determining the subjects of analysis. These subjects of analysis are described further in Table 3.2.

Table 3. 2. GRI 305, Standards on Emissions

Subject of analysis	Item	Description
Direct (scope 1) GHG emissions	GRI 305-1	Emanate from sources that are held or managed by the company – for instances, emissions from combustion in owned or controlled boilers, furnaces, vehicles, and emissions from chemical output in owned or controlled process equipment.
Energy indirect (scope 2) GHG emissions	GRI 305-2	Emanate from the generation of purchased and consumed electricity by the company. Purchased electricity is defined as electricity that is paid for or otherwise carried into the organizational boundary.
Other indirect (scope 3)	GRI 305-3	Emanate as the consequence of the

GHG emissions		organizational activities but from sources that are not owned or controlled by the company. For instances, the extraction and production of purchased materials, the transportation of purchased fuels and the use of sold products and services.
GHG emissions intensity	GRI 305-4	GHG emissions intensity ratio which absolute GHG emissions as the numerator and organization-specific metric as the denominator
Reduction of GHG emissions	GRI 305-5	Reduction initiatives that were implemented in the reporting period, and that had the potential to contribute significantly to reductions.

Source: GRI 305: Emissions, (2016)

3. 6. Measurement of Independent Variables

This section described the independent variables employed in this study. There are four independent variables, namely business group, corporate governance, foreign association, and state ownership as summarized in Table 3.3.

Table 3. 3. Measurement Technique of Independent Variables

Independent Variable	Measurement	Type of Data
Business group	1 = company belong to business group 0 = otherwise	Categorical

Corporate governance	$CGQuality = \frac{Score\ Obtained}{9} 100\%$	Continuous
Foreign association	1 = presence of foreign-owned shares 0 = otherwise	Categorical
State ownership	1 = presence of government-owned shares 0 = otherwise	Categorical

3. 6. 1. Business Group

Business group is measured using dummy variable which score 1 is given to company that belongs to any business group which is indicated by the presence of total group's share portion above 50% and score 0 is for non-group firms. This variable is applied to investigate the significant difference of information disclosure between group companies and non-group companies (Pahuja, 2009).

Table 3. 4. Measurement Technique of Business Group in Prior Studies

Research	Country	Measurement of Business Group
Pahuja , 2009	India	Dichotomous variables 1 = company controlled by larger business group 0 = standalone company
Oh et al (2011)	South Korea	Percentage of institutional shares (divided into four types of institution)

Hermawan et al (2019)	Indonesia	Number of institutional shares divided by total outstanding shares

3. 6. 2. Corporate Governance

The measurement technique for corporate governance variable is presented in Table 3.5.

Table 3. 5. Measurement Technique of Corporate Governance in Prior Studies

Research	Country	Measurement of Corporate Governance
Kent and Zunker (2013)	Australia	Corporate governance score (sum of the dichotomous variables of nine corporate governance characteristics) 1 = fulfil the characteristic 0 = otherwise

Corporate governance is measured based on several predetermined indicators. Those indicators are adopted from the previous research by Kent and Zunker (2013). In their study, nine individual characteristics of good corporate governance were examined. Those relevant characteristics were size of the board of directors, board independence, duality of the role of board chair and chief executive officer, number of board meetings, identity of external auditor, presence of a social responsibility committee, an audit committee, a remuneration committee and a nomination committee (Kent and Zunker, 2013). Each item is weighted equally, therefore if companies meet all

nine requirements, the maximum score of 9 is granted. The obtained score, then, was divided to the total possible score (9) in order to result the percentage of good corporate governance quality. The percentage is functioned as the measurement value of corporate governance variable. Further explanation regarding the requirement of each corporate governance characteristic is listed in Table 3.6.

Table 3. 6. Variables for Constructing the Corporate Governance Score

Characteristic	Item	Requirement
Size of the board of directors	CG1	>5
Majority of board independent	CG2	>50%
Duality of the role of board chair and chief executive officer	CG3	No
Number of board meetings	CG4	>10
Identity of external auditor	CG5	Big 4
Presence of a social responsibility committee	CG6	Yes
Presence of an audit committee	CG7	Yes
Presence of a remuneration committee	CG8	Yes
Presence of a nomination committee	CG9	Yes

Source: Kent and Zunker (2013)

3. 6. 3. Foreign Association

Foreign association is related to companies which are managed and controlled by firm incorporated outside China and India. This condition is

indicated by the presence of foreign-owned shares in any portion. It has been considered that some countries especially developed countries have more confining rules about environmental disclosure and responsibility practices. Therefore, listed companies that have an association with foreign incorporation are expected to disclose more information (Pahuja, 2009; Chu et al, 2013). This variable was measured with dummy variable by giving score 1 to foreign associated companies and score 0 to non-foreign associated companies.

Table 3. 7. Measurement Technique of Foreign Association in Prior Studies

Research	Country	Measurement of Foreign Association
Pahuja (2009)	India	Dichotomous variables 1 = present of foreign shares above 50% 0 = otherwise
Oh et al (2011)	South Korea	Percentage of foreign shares
Cahaya et al (2017)	Indonesia	Dichotomous variables 1 = the company is a subsidiary of a foreign company 0 = otherwise
Sari et al (2020)	Four ASEAN countries: Indonesia, Thailand, Vietnam and The Philippines	Dichotomous variables 1 = present of foreign shares 0 = otherwise

3. 6. 4. State Ownership

State ownership is defined as a company whose the ownership structure partially or fully belongs to the state. Chu et al (2013) mentioned that companies owned by the government encounter larger level of pressure and expectation from the public. As a result, higher amount of corporate social information was reported by these companies in order to satisfy the public expectations. This variable was analysed using dummy variable by giving score 1 for companies that there is government-owned portion of shares in the ownership structure and 0 for companies that do not present government-ownership portion of shares.

Table 3. 8. Measurement Technique of State Ownership in Prior Studies

Research	Country	Measurement of State Ownership
Chu et al (2013)	China	Dichotomous variable 1 = State-owned enterprises 0 = private companies
Faisal et al (2018)	Indonesia	Dichotomous variable 1 = State-owned enterprises 0 = other firms
Hermawan et al (2018)	Indonesia	Dichotomous variable 1 = State-owned enterprises 0 = other firms
Sari et al (2020)	Four ASEAN countries: Indonesia, Thailand,	Dichotomous variable 1 = Present of

	Vietnam and The Philippines	government-owned shares 0 = Does not have government ownership

3. 7. Measurement of Control Variables

This study employed firm size and profitability as the control variables. The measurement technique is summarized in Table 3.9.

Table 3. 9. Measurement Technique of Control Variables

Control Variable	Measurement	Type of Data
Firm size	Total asset	Continuous
Profitability	Return on assets	Continuous

3. 7. 1. Firm Size

Larger firms were expected to disclose more environmental information than the smaller firms (Cahaya and Hervina, 2019). It is because larger companies are more likely to involve more numbers of stakeholders and face greater public expectations (Faisal et al, 2018). This variable was measured by the total assets of the company. Consistent with Chu et al (2013), the natural logarithm was employed to reduce the data skewness.

Table 3. 10. Measurement Technique of Firm Size in Prior Studies

Research	Country	Measurement of Firm Size
Othman et al (2011)	Malaysia	Total assets
Chu et al (2013)	China	Natural logarithm of total assets

Faisal et al (2018)	Indonesia	Natural logarithm of total assets
Hermawan et al (2018)	Indonesia	Natural logarithm of total assets
Sari et al (2020)	Four ASEAN countries: Indonesia, Thailand, Vietnam and The Philippines	Natural logarithm of total assets

3. 7. 2. Profitability

Profitability is determined as the ratio of net profit to net sales (ROA). It measures the ability of the company to turn each sale into profit. Profitability indicates whether the company manage its business successfully. ROA is generally measured with the following formula.

$$ROA = \frac{Net\ Income}{Average\ Total\ Assets}$$

Consistent with Chu et al (2013), ROA was then transformed into natural logarithm to reduce the skewness of the data. Higher profitability signified that the company was successful enough to manage and put its business into competitive market position which means require more information to be disclosed in order to satisfy its stakeholders (Pahuja, 2009). Therefore, high profit companies were expected to disclose more information regarding the GHG emission

Table 3. 11. Measurement Technique of Profitability in Prior Studies

Research	Country	Measurement of Profitability
Othman et al (2011)	Malaysia	Profit after tax divided by total assets
Chu et al (2013)	China	Natural logarithm of return on assets
Faisal et al (2018)	Indonesia	Ratio of total debt divided by total assets
Hermawan et al (2018)	Indonesia	Profit after tax divided by total assets

3. 8. Data Analysis Method

3. 8. 1. Descriptive Statistical Analysis

Descriptive statistic is a method applied in organizing quantitative data, that is purposed to generate well-ordered depiction in numerical form of the overall data. Descriptive statistical analysis presented an overview of data measured by the mean, standard deviation, variance, maximum, minimum, sum, range, kurtosis, and skewness distribution (Ghozali, 2018, p. 19). The function of descriptive statistical analysis is to provide the critical information that is initially indiscernible due to the massive data amount. The statistical functions utilized in this study consist of minimum, maximum, average, and standard deviation.

3. 8. 2. Classical Assumption Analysis

Analysis of classical assumption is purposed to determine the relation between variables. It is essential to carry out classical assumption analysis in prior to performing the regression analysis in order to confirm that the regression model has fulfilled certain assumptions. The classical assumption tests used in this analysis include normality test, multicollinearity test and heteroscedasticity test.

3. 8. 2. 1. Normality Test

Normality test functions to examine whether or not , in the regression model, the data is normally distributed. The normality of data is defined as the data spreads evenly so as it can represent the research population. Therefore, it is required to check the normality before performing the regression model. Normality test is executed through Kolmogorov-Smirnov Test, with the basis of determination as follow (Ghozali, 2018, p. 166):

- P-value > 0.05: data is normally distributed, therefore hypothesis can be accepted.
- P-value < 0.05: data is not normally distributed, therefore hypothesis is rejected.

3. 8. 2. 2. Multicollinearity Test

Multicollinearity test is applied to examine the relation among independent variables. A regression model should be free from correlation

among the independent variables, otherwise it could lead to biased regression model. Therefore, it is necessary to perform multicollinearity test in advance to the regression analysis. To determine whether the regression model is free from multicollinearity problem, it could be observed from the Variance Inflation Factor (VIF) and the tolerance value, under the benchmark as follows (Ghozali, 2018, p. 108):

- VIF < 10 and tolerance value > 10%, the data is free from multicollinearity problem.
- VIF > 10 and tolerance value < 10%, multicollinearity problem exists.

3. 8. 2. 3. Heteroscedasticity Test

Heteroscedasticity test is purposed to identify the differences of variance from the residuals of the conducted observation (Ghozali, 2018, p. 137). Homoscedasticity requires to be fulfilled in order to create a good regression model with trusted results. Homoscedasticity presents when all the residuals have a constant variance.

In this thesis, the heteroscedasticity is examined through Glejser test. The absence of heteroscedasticity can be determined when no independent variables appear to significantly influence the dependent variable in the value absolute residual. Statistically, homoscedasticity is fulfilled when the significance value is above 5%.

3. 8. 3. Multiple Regression Analysis

In this thesis, multiple regression analysis was performed to test the research hypotheses. The model was applied to explain the level of impact or contribution of the independent variables toward the dependent variable. In this case, multiple regression analysis was used to determine and predict the relationship between the independent variables (business group, corporate governance, foreign association, and state ownership) with the extent of GHG emission disclosure. The regression equation is presented as follows:

$$GHG = \alpha + \beta_1 BG + \beta_2 CG + \beta_3 FA + \beta_4 ST + \beta_5 SIZE + \beta_6 ROA + e$$

Note:

GHG	=	Greenhouse gas emission disclosure
α	=	Constant
BG	=	Business group
CG	=	Corporate governance
FA	=	Foreign association
ST	=	State ownership
SIZE	=	Firm size
ROA	=	Return on assets
$\beta_1 - \beta_6$	=	Coefficient of regression
e	=	Coefficient of error

3. 8. 3. 1. F-test

F-test is used to recognize the significance of the variables simultaneously. The level of significance used in this thesis is 5%. It implied that the result of F-test is significant when probability of significance value was below 5% (Ghozali, 2018, p. 179).

3. 8. 3. 2. Coefficient of Determination

The coefficient of determination represents the level of influence and contribution of the independent variables toward the dependent variable. In other words, coefficient of determination provides the information of the percentage of dependent variable that can be explained by the independent variables. This thesis refers to the value of adjusted R square in identifying the coefficient of determination. Adjusted R square is stated in value between 0 and 1 ($0 \leq R2 \leq 1$). The closer the value to 0, the lower the influence and contribution of the independent variables, and vice versa (Ghozali, 2018).

3. 8. 3. 3. T-test

T-test is used to explain how much each independent variable can individually influence the dependent variables. By the definition, t-test is used to determine whether the hypothesis is accepted, based on the predetermined level of significance. The significance level used in this thesis is 5%. Therefore, the basis of determination of hypothesis acceptance is stated as follow (Ghozali, 2018, p. 179):

- P-value > 0.05. There is a significance relationship between the independent and dependent variable, therefore hypothesis can be accepted.
- P-value < 0.05: There is no significance relationship between the independent and dependent variable, therefore hypothesis is rejected.

CHAPTER IV

DATA ANALYSIS AND DISCUSSION

4. 1. General Overview of Research Samples

Initially, 150 annual and sustainability reports over 25 companies from each country under 3 fiscal years were chosen as the samples for this study. Due to the unavailability of some companies' annual or sustainability reports, 102 report samples were eventually employed under 3 fiscal years. The reports were taken from 34 companies, where 17 companies were from China and India each. This section discussed the description and explanation of the results of descriptive statistic and classical assumption tests. This research also employed multiple regression to test the research hypotheses. The regression model was run by IBM SPSS Statistics 25 software. The further explanation is provided in the following sub-sections.

4. 2. Descriptive Statistic Results

Descriptive statistics were used in this analysis to present the information about the independent variables (business group, corporate governance, foreign association, and state ownership), control variables (firm size and profitability), and dependent variables (corporate GHG emission disclosures). Further discussion of the results of descriptive statistical analysis for independent and dependent variables is provided in the following sub-sections.

4. 2. 1. Descriptive Statistic Results for Independent Variables

In this study, independent variables were measured in the form of categorical and continuous variable. The categorical independent variables consisted of business group, foreign association, and state ownership, while corporate governance was the only continuous variable. For the categorical variable, the scoring system was dichotomous where a score of 1 is given as the presence of the variable was identified and a score of 0 is for the absence.

As the first, business group was the independent variable that explained the percentage of share of the parent company invested in the sample company. If a score of 1 is granted, it indicates that 50% or more of the sample company's shares are owned by the parent company.

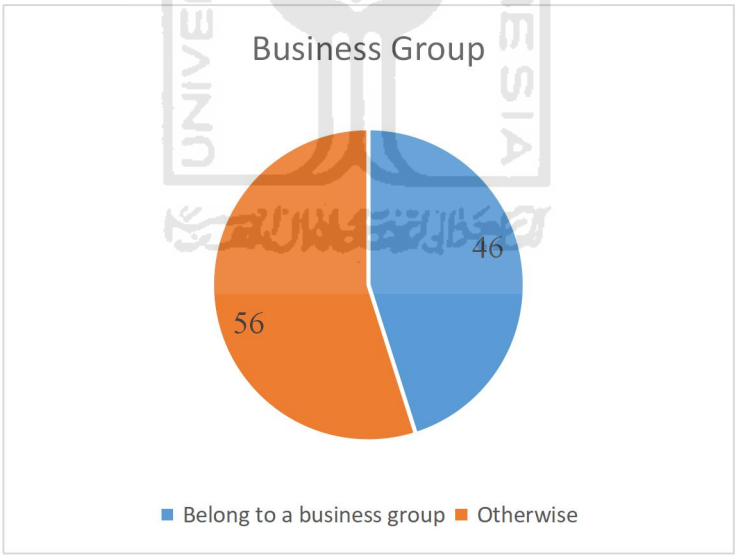


Figure 4. 1. Frequency Chart of Business Group Variable

According to Figure 4.1, out of 102 sample size in the duration of 3 fiscal years, 46 samples or 45.1% of total samples fulfilled the criteria while 56 samples or 54.9% did not meet the criteria. The further explanation about the descriptive statistic result of this variables were presented in Figure 4.2.

In Figure 4.2, it was depicted that in 2016, 14 out of 34 company samples were a subsidiary company or belonged to a business group. The number was compiled out of 10 companies from China and 4 companies from India. The number increased to 16 companies in 2017, where China maintained the same number and India increased into 6 companies. In 2018, the total number remained the same. However, the composition slightly transformed, where China decreased into 9 companies and India increased into 7 companies.

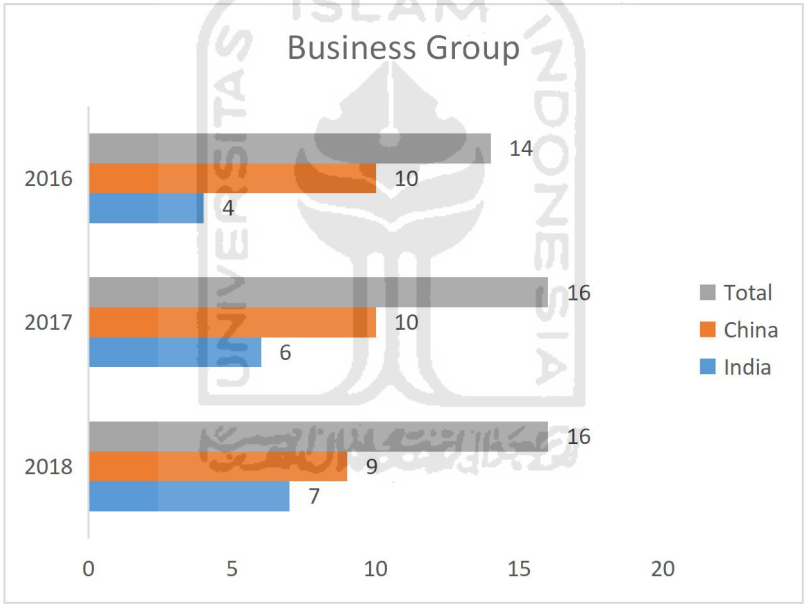


Figure 4. 2. Breakdown of Descriptive Statistic Result for Business Group

The second variable was corporate governance. This variable was applied to measure the quality of the corporate governance based on nine predetermined criteria. Therefore, the scoring of this variables was within the range of 0-9. From the scoring, the descriptive statistics used the index which derives from the ratio of the obtained score to the maximum score possible.

Table 4. 1. Descriptive Statistics for Corporate Governance

	N	Minimum	Maximum	Mean	Standard Deviation
Corporate Governance	102	55,56%	100,00%	70,0436%	9,08868%

Source: IBM Statistical SPSS 25 Output, 2020

Based on Table 4.1, it was found that the minimum index was 55.56%. However, it was also found that the maximum index was 100%, which indicated there was a company that completely satisfied all nine criteria of the good corporate governance checklists. This maximum index was achieved only by China Eastern Airline in 2018. On the average, the index of the sample companies was 70%. This number signified that the companies approximately fulfilled 6 out 9 good corporate governance criteria adopted from Kent and Zunker (2013).

The third variable was foreign association. Briefly, this variable explained whether there are foreign interventions in the business process, which was examined from number of shares invested by foreign companies regardless of the percentage. The overall result is presented in Figure 4.3.

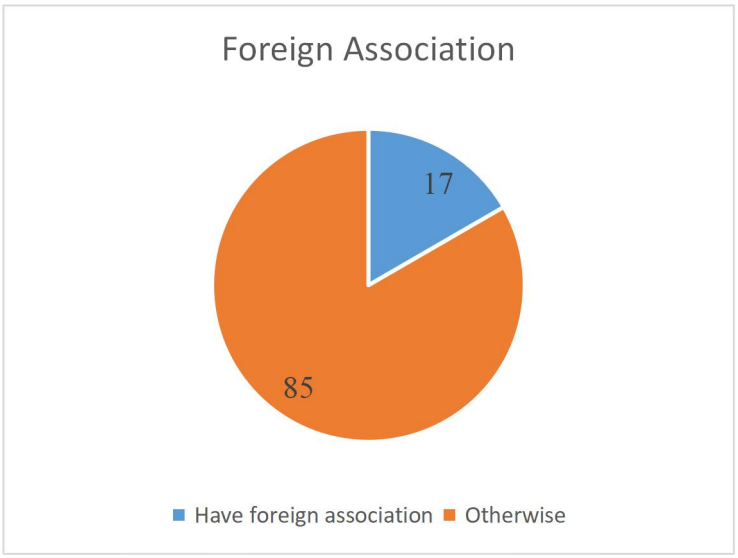


Figure 4. 3. Frequency Chart of Foreign Association Variable

According to Figure 4.3, there was a considerable gap between the number of foreign-associated and non-foreign-associated samples. From the total sample size (102 samples), 17 samples were identified to have foreign interventions in performing the business process, which was only 16.7% of the total sample. The other 83.3% were not identified to have foreign interventions. The further explanation of the result is provided in Figure 4.4.

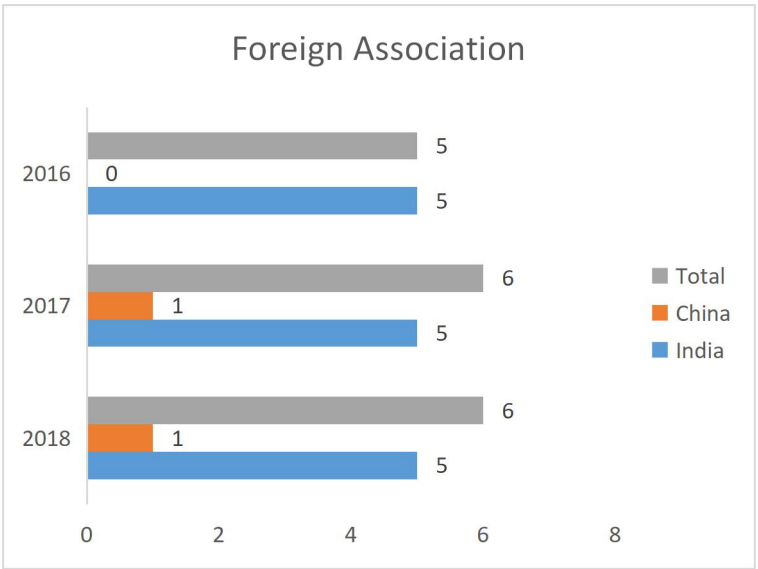


Figure 4. 4. Breakdown of Descriptive Statistic Result for Foreign Association

Figure 4.4 showed that in 2016, China was found to have no companies with foreign interventions. Meanwhile, India was identified to have 5 out of 17 companies that were associated with foreign corporations. In 2017, a company in China appeared to begin foreign intervention while India maintained the same number. The total companies associated with foreign parties was increased from 5 to 6. Apparently, this number remained the same in the following year.

State ownership was the last independent variable employed in this research. This variable described whether government is the part of corporate shareholders. Consequently, it was identified by the number of shares invested directly by the government, regardless of the portion. The descriptive statistic result is presented in Figure 4.5.

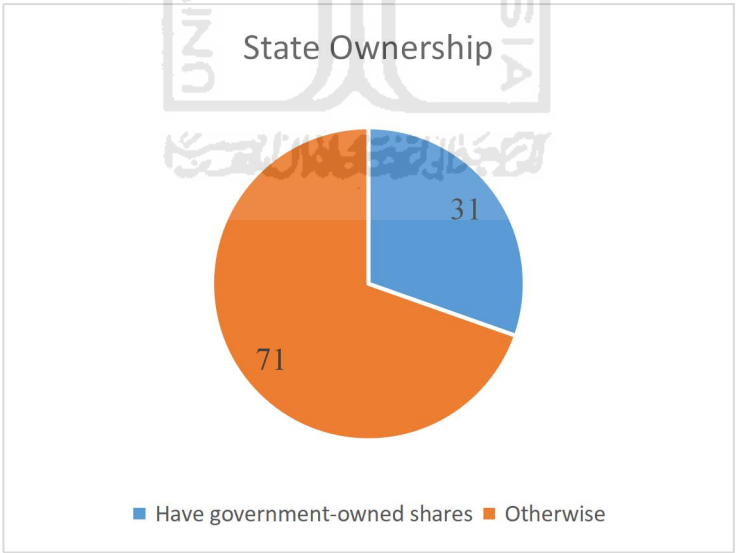


Figure 4. 5. Frequency Chart of Government Ownership Variable

According to Figure 4.5, it was discovered that 31 samples or 30.4% of total sample were involving government as the part of their shareholders. On the other hand, 71 samples or 69.6% of total sample were found to be lack

of government ownership in their shareholders' pattern. The deeper result is provided in Figure 4.6.

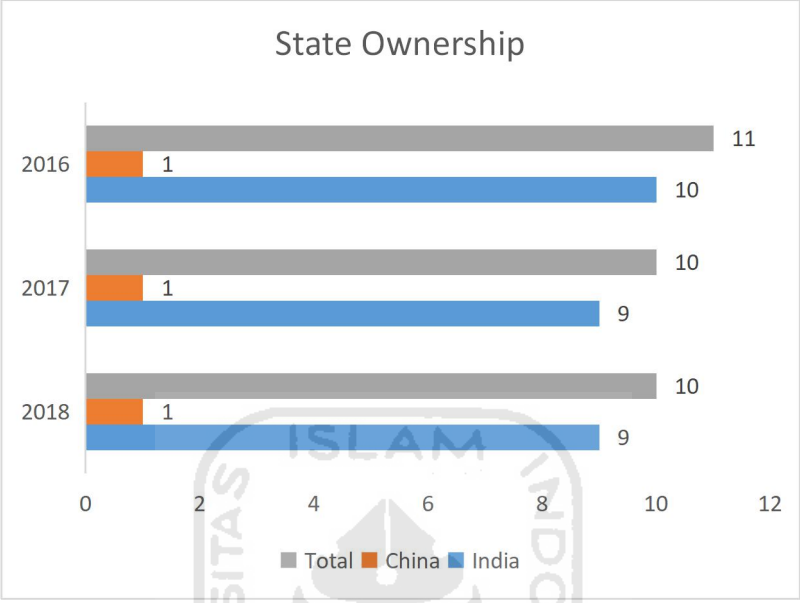


Figure 4. 6. Breakdown of Descriptive Statistic Result for State Ownership

Based on Figure 4.6, during 3 analysed fiscal years, China remained the same number of companies that involved government as the part of direct shareholder, which was only a single company out of 17 companies. Meanwhile, India had 11 companies with the government as their shareholders in 2016. However, in 2017 and 2018, India had a decrease into 10 companies with state-owned shares.

For the following part, the descriptive statistic results for the control variable is discussed.

4. 2. 2. Descriptive Statistic Results for Control Variables

In this study, firm size and corporate profitability were employed as the control variables. The data for these two variables were collected in form

of continuous data. Firm size was measured from the total assets of the company in US dollar, while profitability was measured from the ratio of net income or earning after tax to the total assets.

Table 4. 2. Descriptive Statistics for Firm Size

	N	Minimum	Maximum	Mean	Standard Deviation
Firm Size	102	59,227,899	373,839,284,200	30,500,198,005.97	62,885,081,735.99

Source: IBM Statistical SPSS 25 Output, 2020

According to Table 4.2, the total assets of sample companies were widely ranged. The smallest company sample had the firm size worth 59,227,899.00 USD. On the opposite, the biggest corporation sample had the value worth 373,839,284,200.00 USD. The average firm size was 30,500,198,005.97 USD. For further explanation, the breakdown by country is presented in Table 4.3.

Table 4. 3. Breakdown of Firm Size by Country

	N	Minimum	Maximum	Mean	Standard Deviation
China	51	78,178,176	373,839,284,200	50,733,028,701.53	83,421,508,128.09
India	51	59,227,899	49,471,399,724	10,269,076,193.26	13,923,525,347.82

Source: IBM Statistical SPSS 25 Output, 2020

Table 4.3 illustrates that there was a considerable gap of the average firm size between both countries. From the result, the valuation of Chinese companies were adding up to approximately 50,7 billions USD. Meanwhile, Indian companies were amounting to approximately 10,3 billions USD. Therefore, these two numbers directed to the finding that, on the average,

Chinese companies were larger compared to Indian companies. The difference of economic growth between these two countries was definitely significant. This also could be seen through the fact that China's GDP (Gross Domestic Product) was 4.86 greater than India by the year of 2018 (World Bank, 2019).

The result also denoted that the smallest firm size in China had the value worth 78,2 millions USD. This firm value belonged to China National Nuclear Power Corporation in 2018. However, the largest firm size was 373,8 billions USD. The company that was worth this value was PetroChina Company in 2018. Meanwhile, from India, the smallest firm size had the value worth 59,2 millions USD. It was from Indian company, Ador Welding for 2016-2017 fiscal year. The largest firm size was worth 49,5 billions USD, which belonged to Indian Oil Corporation for 2018-2019 fiscal year.

Table 4. 4. Descriptive Statistics for Profitability

	N	Minimum	Maximum	Mean	Standard Deviation
Profitability	102	-22.03%	22.59%	3.9222%	6.42958%

Source: IBM Statistical SPSS 25 Output, 2020

For the second control variable, Table 4.4 showed the result of the descriptive statistics for profitability. According to the table, the smallest profitability was -22.03%. It indicated that the company appeared to experience loss. It was an Indian company, Shree Renuka Sugar Company for 2017-2018 fiscal years. On the other side, the highest ratio was achieved by a Chinese company, Anhui Conch Cement Company Limited in 2018. The

mean of the profitability ratio was 3.92%. For further explanation, the breakdown by country is presented in Table 4.5.

Table 4. 5. Breakdown of Profitability by Country

	N	Minimum	Maximum	Mean	Standard Deviation
China	51	-20.17%	22.59%	2.90%	5.89%
India	51	-22.03%	14.46%	4.96%	6.77%

Source: IBM Statistical SPSS 25 Output, 2020

Based on Table 4.5, it is shown that the minimum profitability ratio from both countries was in negative percentage. It signified that from the analysis, both countries were found to have sample companies that experienced loss. Overall, China held the maximum profitability ratio and India held the minimum profitability ratio. However, the average profitability of Chinese and Indian companies was respectively 2.90% and 4.96%.

If specifically viewed from China, the lowest profitability ratio was -20.17%. This ratio was held by Sinopec Oilfield in 2016. Meanwhile, the highest profitability ratio was addressed to Anhui Conch Cement Industry in 2018. The average profitability ratio was 2.90%. Meanwhile in India, the company with the lowest profitability ratio was Shree Renuka Sugars for the fiscal year of 2017-2018 with the ratio of -22.03%. On the other side, the highest profitability ratio was 14.46%. There were two companies that reached the highest profitability, namely Indraprastha Gas Limited and Maruti Suzuki Corporation. Both were for 2016-2017 fiscal year. The average profitability ratio was 4.96%. The next section discusses the results of descriptive statistics for the dependent variable.

4. 2. 3. Descriptive Statistic Results for Dependent Variable

In this part, the descriptive statistics for the dependent variable denoted the varying number of words related to the greenhouse gas emission information disclosed by the corporations. The results including the mean, minimum, maximum, and the breakdown by country and by GRI indicator are presented in these following tables and charts.

Table 4. 6. Descriptive Statistics for GHG Emission Disclosure

	N	Minimum	Maximum	Mean	Standard Deviation
GHG Disclosure	102	0	1242	342,92	302,244

Source: IBM Statistical SPSS 25 Output, 2020

Table 4.6 presented the result of measurement for dependent variable. The result indicated that the GHG emission disclosure widely varied. Content analysis method was employed for the dependent variable, which was performed by calculating the number of words that contain the information related to five items of GRI 305 (1 until 5). According to Table 4.6, the lowest number of words disclosed was 0. It indicated that during 2016-2018, not all companies disclosed the information about GHG emission. Some samples were found not to disclose any information at all. On the other side, the highest GHG emission disclosure consisted of 1242 words. The average of the number of words disclosed by the samples was 342 words. For the following table, the breakdown of GHG emission disclosure by country is presented.

Table 4. 7. Breakdown of GHG Emission Disclosure by Country

	N	Minimum	Maximum	Mean	Standard Deviation
China	51	0	1242	447.37	304.72
India	51	0	864	238.47	263.48

Source: IBM Statistical SPSS 25 Output, 2020

According to Table 4.7, China and India shared the same number of minimum words disclosed, namely zero. This number indicated that from both countries, some companies were still found not to disclose any GHG emission information at all. On the other side, the maximum number of words disclosed by the sample from Chinese companies was 1242 words. The company who disclosed this number was PetroChina Company in 2017. Meanwhile, the maximum number of words disclosed by Indian companies was 864 words. The company behind this number was National Thermal Power Corporation for 2018-2019 fiscal year. On the average, Chinese companies disclosed more information related to GHG emission disclosure in terms of number of words. By this finding, it indicated that China was environmentally more transparent compared to India. Furthermore, the breakdown of GHG Emission Disclosure by GRI Indicator is discussed next.

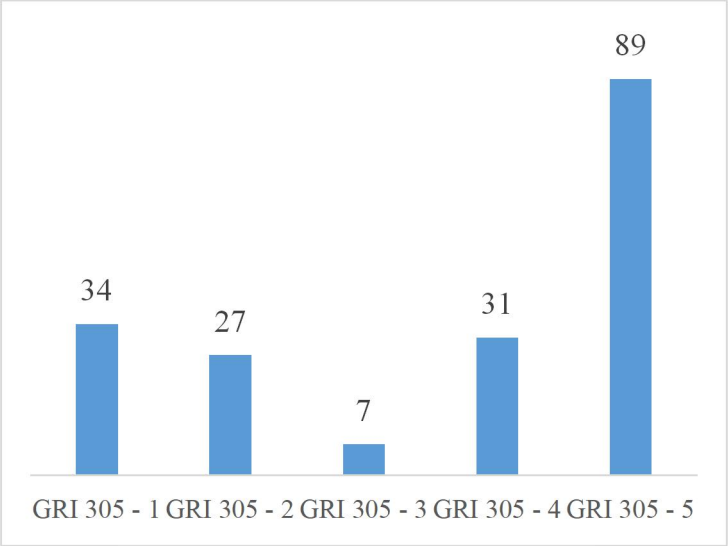


Figure 4. 7. Breakdown of GHG Emission Disclosure by GRI Indicator

According to Figure 4.7 this analysis found that GRI 305 - 5 was the most disclosed item among GRI 305 - 1 until 5. From the total sample of 102, 89 samples were found to disclose this item. Concisely, the contents of GRI 305 - 5 presented the information about the GHG emission reduced as a direct result from the reduction initiatives, in metric ton of CO2 equivalent (GRI 305, 2016). On the other hand, GRI 305 - 3 was the least disclosed item. From the analysis, only 7 samples were found to disclose this item. Briefly, this item described the GHG emissions discharged from other indirect sources (Scope 3).

Table 4. 8. Number of Words Disclosed per GRI 305 Items by Country

	GRI 305-1	GRI 305-2	GRI 305-3	GRI 305-4	GRI 305-5	Total
China	998	724	108	935	19792	22557
India	1276	888	452	505	9041	12162

Source: IBM Statistical SPSS 25 Output, 2020

As depicted by Table 4.8, both countries owned a similar pattern of the most disclosed until the least disclosed item of the analysed GRI 305 items. However, there was a huge difference of the number of words disclosed on GRI 305-5 from both countries which resulted in the significant difference of the total number of words. Information related to GRI 305-5 disclosed by China added up to 19,792 words, while by India added up to 9,041 words. These numbers indicated that China significantly disclosed more information related to the reduction of GHG emissions than India did. Therefore, the findings highlighted that China and India were alike in terms of the prioritized GHG emissions-related GRI 305 item disclosure. In terms of transparency, China was found to be more transparent in reporting GHG emission reduction initiatives and results.

4. 3. Classical Assumption Test

The classical assumption tests were carried out in order to examine the requirements before undertaking the regression analysis. In this part, the tests included normality test, multicollinearity test, and heteroscedasticity test. The results are presented and discussed in the following sub-sections.

4. 3. 1. Normality Test

The purpose of preforming the normality test before undertaking the regression analysis was to examine whether the residual variables have a normal distribution. This research performed the normality test by employing

One-Sample Kolmogorov-Smirnov Test. The presence of normal distribution of the residual variables were determined with the basis of Monte Carlo significance value (Ghozali, 2018). The normality is met if the value above the level 5 percent (0.05). The result is presented in the table below.

Table 4. 9. The Result of One-Sample Kolmogorov-Smirnov Test

			Unstandardized Residual
N			102
Normal Parameters[a,b]	Mean		,0000000
	Std. Deviation		216,87998167
Most Extreme Differences	Absolute		,148
	Positive		,148
	Negative		-,073
Test Statistic			,148
Asymp. Sig. (2-tailed)			,000[c]
Monte Carlo Sig. (2-tailed)	Sig.		,017[d]
	99% Confidence Interval	Lower Bound	,014
		Upper Bound	,021

Source: IBM Statistical SPSS 25 Output, 2020

Based on the result presented in Table 4.9, it is stated that the Monte Carlo significance value was 0.017. According to the basis, that value should be above 0.05 in order to determine that the residual variables are normally distributed. Therefore, the result indicated that the data was not normally distributed.

4. 3. 2. Variables Transformation for Classical Assumption Test

In the previous sub-section, the result for the normality test concluded that the data was not normally distributed. Accordingly, the data for continuous variables required to be transformed in purpose of creating new data series that meet the normal distribution as required before performing the regression analysis. The transformation method is corroborated based on two critical points. Firstly, the data appeared to be whether positively skewed (skewed to the left) or negatively skewed (skewed to the right). In this thesis, the data was initially positively skewed (see Figure 4.8.). Secondly, whether the variables held negative values or zero within. Consistent with Cahaya et al (2012) and Chu et al (2013), data for continuous variables, therefore, transformed into natural logarithm. However, since natural logarithm transformation could not be applied to negative values or zero, a constant was added to the variables in advance of the transformation applied. Afterwards, the result showed that the data was normally distributed (see Figure 4.9).

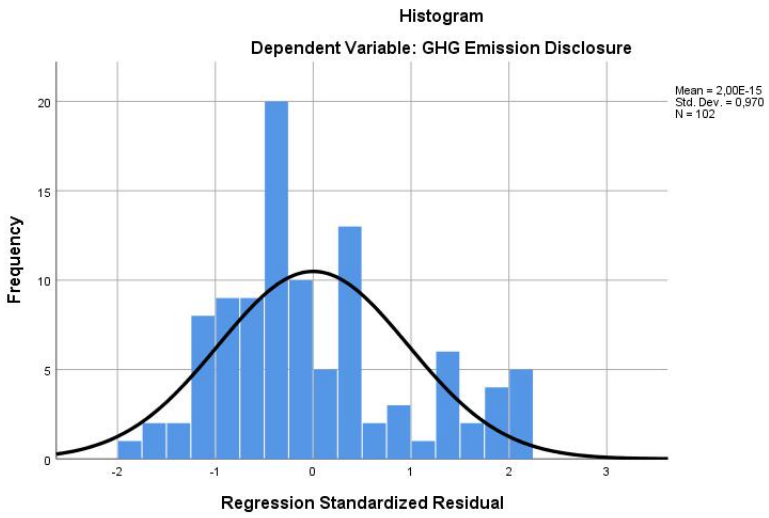


Figure 4. 8. Histogram Graph before Data Transformation

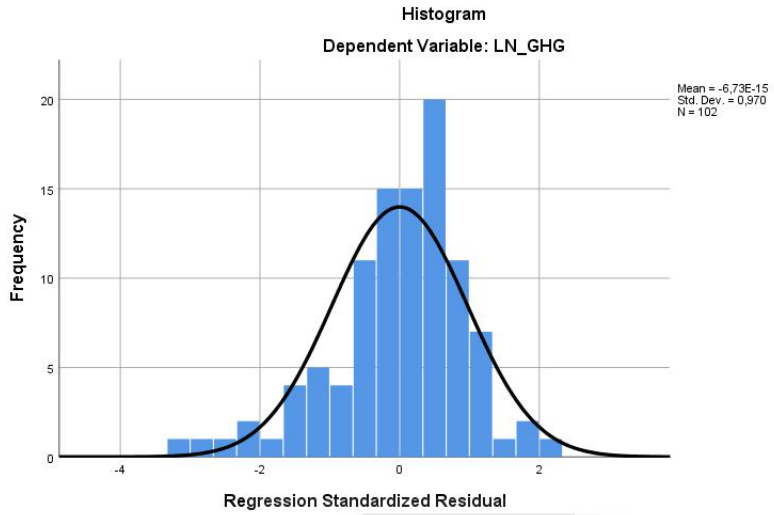


Figure 4. 9. Histogram Graph after Data Transformation

4. 3. 3. Result for Normality Test after Transformation

The result of One-Sample Kolmogorov-Smirnov Test after being logarithmically transformed, as presented in Table 4.10, inferred that the data had a normal distribution. The conclusion was taken based on the Monte Carlo significance value that assigned 0.365 which is greater than 0.05.

Table 4. 10. One-Sample K-S Test Result after Transformation

		Unstandardized Residual
N		102
Normal Parameters[a,b]	Mean	,0000000
	Std. Deviation	,89598863
Most Extreme Differences	Absolute	,089
	Positive	,070
	Negative	-,089
Test Statistic		,089
Asymp. Sig. (2-tailed)		,043[c]

Monte Carlo Sig. (2-tailed)	Sig.		,365[d]
	99% Confidence Interval	Lower Bound	,353
		Upper Bound	,378

Source: IBM Statistical SPSS 25 Output, 2020

4. 3. 4. Multicollinearity Test

Multicollinearity test was performed in order to examine whether there are correlations among independent variables employed in this thesis. The result for multicollinearity test is presented in Table 4.11.

Table 4. 11. Result for Multicollinearity Test

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-10,154	3,645		-2,785	,006		
	Business Group	,473	,219	,201	2,159	,033	,703	1,423
	Foreign Association	,284	,256	,091	1,111	,269	,922	1,085
	State Ownership	,337	,266	,133	1,269	,208	,560	1,784
	LN_CG	1,847	,951	,200	1,943	,055	,575	1,741
	LN_FirmSize	,298	,055	,499	5,395	,000	,716	1,397
	LN_ROA	,175	,102	,140	1,718	,089	,925	1,082

Source: IBM Statistical SPSS 25 Output, 2020

Table 4.11 showed that the result for multicollinearity test contained every variable with tolerance value greater than 0.10 and VIF less than 10. Therefore, it can be inferred that in this thesis, the regression model was free from multicollinearity problem.

4. 3. 5. Heteroscedasticity Test

In this thesis, Glejser Test was employed to examine the homoscedasticity. The benchmark of determination was alike with the previous tests where a variable is free from heteroscedatisticity matters if the significance value above 0.05. The result is presented in Table 4.12.

Table 4. 12. Result for Heteroscedasticity Test

	Sig.
(Constant)	,276
Business Group	,429
Foreign Association	,040
State Ownership	,924
LN_CG	,926
LN_FirmSize	,063
LN_ROA	,854

Source: IBM Statistical SPSS 25 Output, 2020

According to the table, it is denoted that 5 out 6 variables had the significance value above 0.05. Foreign association was the only variable that appeared to have significance value of 0.04. Therefore, the homoscedasticity was not met although the data have been logarithmically transformed. Nevertheless, for ungrouped data analysis, Tabachnick and Fidell (2013) argued that heteroscedasticity did not eliminate the validity of the analysis, however, it may attenuate it. Tabachnick and Fidell (2013) further stated that "the linear relationship between variables is captured by the analysis, but there is even more predictability if the heteroscedasticity is accounted for."

4. 4. Multiple Regression Result

The model for the multiple regression contained overall variable test (F-test), individual variable test (t-test), and coefficient of determination (adjusted R square). The result is simultaneously presented in the following table.

Table 4. 13. Multiple Regression Results

Variable	Coefficient	P-value
(Constant)	-10,154	,006
Business Group	,473	,033
Corporate Governance	1,847	,055
Foreign Association	,284	,269
State Ownership	,337	,208
Firm Size	,298	,000
Profitability	,175	,089
Model Summary		
Adjusted R square		,419
Regression Model		,000[b]

Source: IBM Statistical SPSS 25 Output, 2020

Table 4.13 indicated the p-value for F-test was 0.000. As this value was below 0.05, hence, it can be inferred that variables of business group, corporate governance, foreign association, government ownership, firm size, and profitability simultaneously influenced the extent of GHG emission disclosure in high-profile listed companies in China and India for 2016-2018.

The result for coefficient of determination test was asserted with the value of adjusted R square. Based on Table 4.13, the value for adjusted R square was 0.419 or 41.9%. This value described that 41.9% of the extent of

GHG emission disclosure could be explained by the variables employed in this thesis (business group, corporate governance, foreign association, government ownership, firm size, and profitability). The other 58.1% were influenced by the factors other than the examined variables.

Hypothesis one predicted the positive relationship between business group and the level of GHG emission disclosure. According to Table 4.13, the p-value for business group was 0.033 with the coefficient of 0.473. This number indicated that there was sufficient evidence regarding the positive relation between business group and the extent of GHG emission disclosure, as the p-value was lower than 5% and the coefficient indicated a positive value. Therefore, the first hypothesis (H1) is accepted.

Hypothesis two predicted that there is a positive relationship between corporate governance and the extent of GHG emission disclosure. The result of the analysis found that the p-value for corporate governance variable was 0.055 with the coefficient of 1.847. This value was between 5-10%, hence, indicating that there was sufficient evidence regarding the positive relation between the corporate governance quality and the level of GHG emission disclosure, although it was in the moderate level. Accordingly, the second hypothesis (H2) is supported under the significance level of 10%.

Hypothesis three predicted the positive relationship between foreign association and the level of GHG emission disclosure. Based on Table 4.13, foreign association was denoted to have p-value of 0.269. According to the benchmark of determination, there was no sufficient evidence to confirm that

foreign association influences the extent of GHG emission disclosure. Therefore, the third hypothesis (H3) is not supported.

Hypothesis four predicted that there is a positive relationship between state ownership and the extent of GHG emission disclosure. State ownership was shown to have p-value of 0.208. As p-value was higher than 5%, it indicated that the relation between state ownership and GHG emission disclosure was not met. Therefore, the fourth hypothesis (H4) is rejected.

Finally, it was depicted that the p-value and coefficient of firm size was respectively 0 and 0.295. As the p-value was lower than 0.05 and the coefficient indicates a positive value, hence, it signified that firm size positively influenced the extent of GHG emission disclosure. On the other hand, profitability was found to have p-value of 0.89. Therefore, profitability was indicated to be insignificant.

4. 5. Result Interpretation

As presented in the previous section, there were four hypotheses proposed in this thesis. To summarize the hypotheses testing results, Table 4.14 is referred.

Table 4. 14. Summary of Hypotheses Testing Result

Variable	Hypothesis	Description	Result
Business Group	H1	*Companies in business group will disclose more GHG emission information than non-group companies*	Accepted

Corporate Governance	H2	*Companies with better corporate governance will disclose more GHG emission information than other companies*	Accepted
Foreign Association	H3	*Companies associated with foreign party will disclose more GHG emission information than domestic companies*	Rejected
State Ownership	H4	*State-owned companies will disclose more GHG emission information than private companies*	Rejected

As presented in Table 4.14, the first and second hypothesis were found to be significant. From this result, thus, business group and corporate governance were considered to significantly influence the level of corporate GHG emission disclosure in China and India. On the other hand, the hypotheses related to the effect of foreign association and state ownership on GHG emission disclosure were not found to be significant, according to the results of the multiple regression analysis. The further explanation about the implication of the results is in the following section.

4. 5. 1. Business Group (H1)

Company controlled by larger business house is expected to disclose more information related to GHG emission. This thesis found that business group significantly influenced the extent of GHG emission disclosure. The possible explanation of this finding is because companies controlled by larger business house tend to have broader numbers of stakeholders. Management is required to disclose information that can satisfy the stakeholders of the company. Therefore, parent company exerts more pressures to disclose GHG emission information.

This finding is consistent with Oh et al (2011), which found that entities owned by institutions/organizations tend to disclose more information regarding CSR activities.

4. 5. 2. Corporate Governance (H2)

Good quality of corporate governance is expected to lead a company to disclose more GHG emission information. This thesis found that there was a significant relationship between corporate governance and GHG emission disclosure. The possible reason to explain this finding is because entity with good quality of corporate governance could boost the awareness not only for economic performance, but also environmental performance. Therefore, this study suggested that the better quality of corporate governance will result in the more transparent the entity in disclosing GHG information.

This finding appeared to be consistent with Choi et al (2013). He argued that corporate governance is one of the key factors for determining the level of corporate GHG emission disclosure.

4. 5. 3. Foreign Association (H3)

Company with foreign association is expected to disclose more GHG emission information. However, this thesis reported that the relationship between foreign association and GHG emission disclosure was found to be insignificant. The possible reason behind this finding is because foreign parties associated with the entity may not powerful enough to coerce to disclose GHG emission information. This argument is in accordance with DiMaggio and Powell (1983) which argued that an organization more likely to change isomorphically when the pressures exerted are from the organization which it depends for resources.

This finding is also consistent with several previous researches (Pahuja, 2009; Chu et al, 2013; Bose et al, 2018). Chu et al (2013) also mentioned the reason behind this insignificance might due to the newness of national regulations regarding greenhouse gas caused foreign parties need time to orient themselves with the regulations.

4. 5. 4. State Ownership (H4)

Entities with government-owned shares is expected to disclose more information related GHG emission. However, the relationship between state

ownership and GHG emission disclosure was found to be insignificant. The possible explanation for this result is that the pressure exerted by the government may not strongly force companies to disclose GHG emission information. Another possible explanation proposed by Chu et al, (2013) is because company with government-owned shares may not need to disclose the information of GHG emission due to state-owned enterprises are protected by the government. Therefore, the pressure of disclosing can alleviate for state-owned enterprises.

This finding is also consistent with Faisal et al (2018). Faisal et al (2018) added that environmental information disclosure for state-owned enterprises is performed not for fulfilling stakeholders' pressure, instead for compliance with government regulation.

4. 5. 5. Control Variables

Larger companies are predicted to perform more disclosure in terms of GHG emission due to higher public expectation. This study found that firm size was significantly associated with the extent of GHG emission disclosure, which explains that public pressures can effectively boost the motivation of the management to disclose GHG emission information.

Profitable companies are expected to disclose more information since they are not facing economical constraints. However, the finding in this study showed that profitability was insignificant to the extent of GHG emission reporting. Therefore, this study reported that good economic performance did

not always motivate the management to disclose more GHG emission information.

CHAPTER V

CONCLUSION

5. 1. Conclusion

This thesis is objected to analyse the extent of GHG emission disclosure and the key determining factors. The branch of institutional theory, coercive isomorphism, was adopted in this thesis to investigate the specific factors that influence the reporting of information related to GHG emission. This thesis analysed the relationship between business group, quality of corporate governance, foreign association and state ownership as the independent variables and the extent of GHG emission disclosure as the dependent variable. This thesis also employed two control variables to support the findings, namely firm size and profitability.

There were 17 listed high-profile or environmentally sensitive companies each from China and India which were chosen as the samples. The essential information related to this study was taken from annual reports and sustainability reports, for the period of 2016-2018. The extent of GHG emission disclosure was investigated based on *GRI 305: Emission* as the guideline. There were five out of eight items related to GHG emission disclosure investigated, namely GRI 305-1 until GRI 305-5. The method used in this thesis was content analysis. The researchers analysed the extent by looking to the number of words related to GHG information disclosed in the annual report or sustainability report. Multiple

regression analysis was employed to test the proposed hypotheses. The conclusion of the findings is summarized in Table 5.1.

Table 5. 1. Summary of Research Findings

Research Question	Result
To what extent is GHG emission reporting provided in China and India?	From 34 chosen samples with the analysed period during 2016-2018, this study found that the average of disclosed number of words was 342. The minimum number was 0 and the maximum number was 1242 words. The most disclosed item of *GRI 305: Emission* was GRI 305-5 and the least disclosed item was GRI 305-3.
Is there any relationship between the business group and the extent of GHG emission disclosure?	Yes, there is. The research result found that there was a positive relationship between the business group and the extent of GHG emission disclosure.
Is there any relationship between the corporate governance and the extent of GHG emission disclosure?	Yes, there is. The research result found that there was a positive relationship between the corporate governance and the extent of GHG emission disclosure.
Is there any relationship between the foreign association and the extent of	No, there is not. The research result found that there was no relationship

GHG emission disclosure?	between the foreign association and the extent of GHG emission disclosure.
Is there any relationship between the state ownership and the extent of GHG emission disclosure?	No, there is not. The research result found that there was no relationship between the state ownership and the extent of GHG emission disclosure.

In this study, there were two independent variables found to positively influence the extent of GHG emission disclosure. These two variables were business group and corporate governance. As the conclusion, this study suggested that coercive isomorphism partially explained the factors influencing the extent of GHG emission reporting.

Based on the descriptive statical findings, it is found that China, on average, disclosed 447 words related to GHG emission information. Meanwhile, India disclosed 238 words on average. By these findings, this study found that China was environmentally more transparent compared to India. Furthermore, it is also found that the pattern from the most to the least disclosed item of both countries was similar. Hence, the study concluded that China and India were alike in terms of the prioritization of GHG emissions-related GRI 305 item disclosures.

5. 2. Research Implication

As mentioned in the previous section, this study found that coercive isomorphism partially explained the determining factors of corporate GHG

emission reporting. Two out of four independent variables were proven to be significant.

The significant relationship between business group and the extent of GHG emission reporting signified that companies controlled by larger business house reported more information related of GHG emission than non-group companies. It indicated that larger business house tends to have power to encourage its subsidiary company to report its GHG emission information. It might come from the awareness of parent companies about the GHG emission reporting was higher, therefore, they tended to encourage their subsidiaries to perform the same way.

The significant relationship between corporate governance and the extent of GHG emission reporting signified that the better the quality of corporate governance, the higher awareness of GHG emission reporting. Company with good quality of corporate governance tended to be more aware about the stakeholders' expectation. Therefore, as sustainability reporting is also crucial to the stakeholders, the company disclosed GHG emission information in order to meet the satisfaction of the stakeholders.

The insignificance between foreign association and the extent of GHG emission disclosure indicated that foreign parties associated with the company did not have enough power to motivate the management to disclose GHG emission information. It may come from the fact that the associated foreign parties only held small portion of shares. Therefore, the awareness and initiative must initially

derive from the domestic role holders, as so they can exert more pressure to the companies to provide GHG emission reporting

The insignificance between state ownership and the extent of GHG emission disclosure denoted that government did not strictly encourage the companies to disclose GHG emission information. It may because the government did not strongly force the company or it was negligible for the government to force companies to disclose GHG emission information. Therefore, it is essential to instil awareness about green business operation, one of them starting from the government, as so companies can get more pressures to meet the government regulation and policy.

This thesis also found that firm size significantly influenced the extent of GHG emission disclosure. It indicated that the visibility of public eye effectively motivated the companies to disclose more information related to GHG emission. In other words, public pressures strongly impacted the management. The other control variable, profitability, was not found to be significant. It denoted that corporate economic performance did not always motivate the management to perform environmental responsibility.

5. 3. Research Limitation

This thesis was carried out not without its limitations. The limitations are presented as follow:

1. This thesis only employed limited number of samples due to the limitation of time and language. Several companies were found to disclose their information only in Mandarin or Hindi.
2. This thesis only relied on secondary data. The method used in this thesis only focused on the main text of annual or sustainability reports. However, information presented in diagram, picture and table was analysed in the same way as textual information.

5. 4. Recommendation

This thesis has several recommendations for future researchers, presented as follow:

1. Future researchers are expected to employ larger number of samples to generate the research findings that are able to represent the whole analysed country.
2. Future researchers are expected to conduct qualitative research to provide more insights about the factors determining the extent of GHG emission reporting. Researchers might analyse information presented in diagram, picture and table that would provide the theoretical development regarding GHG emission reporting.

REFERENCES

AirVisual. (2018). World most polluted citites 2018. Retrieved from https://www.airvisual.com/world-most-polluted-cities?continent=59af92b13e70001c1bd78e53&country=&state=&page=1&perPage=50&cities=

Bose, S., Khan, H. Z., Rashid, A., & Islam, S. (2017). What drives green banking disclosure? An institutional and corporate governance perspective. *Asia Pacific Journal of Management*, 35(2), 501–527.

Cahaya, F. R. (2011). *Labour Practices and Decent Work Disclosures in Indonesia* (Unpublished doctoral dissertation). Curtin University, Perth, Australia

Cahaya, F. R., & Hervina, R. (2019). Do human rights issues matter? An empirical analysis of Indonesian companies' reporting. *Social Responsibility Journal*, *15*(2), 226–243.

Cahaya, F. R., Porter, S. A., Tower, G., & Brown, A. (2012). Indonesia's low concern for labor issues. *Social responsibility journal*.

Cahaya, F. R., Porter, S., Tower, G., & Brown, A. (2017). Coercive pressures on occupational health and safety disclosures. *Journal of Accounting in Emerging Economies*, *7*(3), 318–336.

Chithambo, L., & Tauringana, V. (2014). Company specific determinants of greenhouse gases disclosures. *Journal of Applied Accounting Research*, 15(3), 323–338.

Choi, B. B., Lee, D., & Psaros, J. (2013). An analysis of Australian company carbon emission disclosures. *Pacific Accounting Review*, *25*(1), 58–79.

Chu, C. I., Chatterjee, B., & Brown, A. (2013). The current status of greenhouse gas reporting by Chinese companies: A test of legitimacy theory. *Managerial Auditing Journal*, *28*(2), 114–139.

DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American sociological review*, 147-160.

Faisal, F., Andiningtyas, E. D., Achmad, T., Haryanto, H., & Meiranto, W. (2018). The content and determinants of greenhouse gas emission disclosure: Evidence from Indonesian companies. *Corporate Social Responsibility and Environmental Management*, *25*(6), 1397–1406.

Fraenkel J.R., Wallen, N. E., & Hyun, H. H. (1990). *How to design and evaluate research in education*. USA: McGraw-Hill

Galbreath, J. (2010). Corporate governance practices that address climate change: An exploratory study. *Business Strategy and the Environment*, *19*(5), 335-350.

Ghozali, I. (2018). *Aplikasi analisis multivariate dengan program IBM SPSS 25*. Semarang: Badan Penerbit Universitas Diponegoro

Global Reporting Initiative (GRI) (2016), GRI 305 – Standards on Emissions

Haji, A. A. (2013). Corporate social responsibility disclosures over time: evidence from Malaysia. *Managerial Auditing Journal*, 28(7), 647–676.

Halimah, N. P., & Yanto, H. (2018). *Determinant of Carbon Emission Disclosure at Mining Companies Listed in Indonesia Stock Exchange*. *2018*(September 2016), 127–141.

Hanifa, A., & Cahaya, F. R. (2016). Ethical communication on society issues: a story from Indonesia. *Journal of Global Responsibility*, *7*(1), 39–55.

Hermawan, A., Aisyah, I. S., Gunardi, A., & Putri, W. Y. (2018). Going green: Determinants of carbon emission disclosure in manufacturing companies in Indonesia. *International Journal of Energy Economics and Policy*, *8*(1), 55-61.

IPCC. (2013). Summary for Policymakers. In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Retrieved from https://archive.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_SPM_FINAL.pdf

Kent, P., & Zunker, T. (2013). Attaining legitimacy by employee information in annual reports. *Accounting, Auditing and Accountability Journal*, *26*(7), 1072–1106.

Kılıç, M., & Kuzey, C. (2019). The effect of corporate governance on carbon emission disclosures: Evidence from Turkey. *International Journal of Climate Change Strategies and Management*, *11*(1), 35–53.

Krishnamurti, C., & Velayutham, E. (2018). The influence of board committee structures on voluntary disclosure of greenhouse gas emissions: Australian evidence. *Pacific Basin Finance Journal*, *50*(September 2017), 65–81.

Kuzey, C., & Uyar, A. (2017). Determinants of sustainability reporting and its impact on firm value: Evidence from the emerging market of Turkey. *Journal of Cleaner Production*, *143*, 27–39.

Liao, L., Luo, L., & Tang, Q. (2015). Gender diversity, board independence, environmental committee and greenhouse gas disclosure. *British Accounting Review*, *47*(4), 409–424.

Luo, L, Tang, Q., & Lan, Y. C. (2013). Comparison of propensity for carbon disclosure between developing and developed countries: A resource constraint perspective. *Accounting Research Journal*, *26*(1), 6–34.

Luo, W., Guo, X., Zhong, S., & Wang, J. (2019). *Environmental information disclosure quality , media attention and debt financing costs : Evidence from Chinese heavy polluting listed companies*. *231*, 268–277.

Martínez-Ferrero, J., & García-Sánchez, I. M. (2017). Coercive, normative and mimetic isomorphism as determinants of the voluntary assurance of sustainability reports. *International Business Review*, *26*(1), 102–118. https://doi.org/10.1016/j.ibusrev.2016.05.009

Matten, D., & Moon, J. (2008). "Implicit" and "explicit" CSR: A conceptual framework for a comparative understanding of corporate social responsibility. *Academy of management Review*, *33*(2), 404-424.

Meyer, J. W., & Rowan, B. (1977). Institutionalized Organizations: Formal Structure as Myth and Ceremony. *American Journal of Sociology*, *83*(2),

Moir, L. (2001). What do we mean by corporate social responsibility? *Corporate Governance: The International Journal of Business in Society*, *1*(2), 16–22.

Oh, W. Y., Chang, Y. K., & Martynov, A. (2011). The effect of ownership structure on corporate social responsibility: Empirical evidence from Korea. *Journal of business ethics*, *104*(2), 283-297.

Othman, S., Darus, F., & Arshad, R. (2011). The influence of coercive isomorphism on corporate social responsibility reporting and reputation. *Social Responsibility Journal*, *7*(1), 118–135.

Pahuja, S. (2009). Relationship between environmental disclosures and corporate characteristics: A study of large manufacturing companies in India. *Social Responsibility Journal*, *5*(2), 227–244.

Perera, L., Jubb, C., & Gopalan, S. (2019). A comparison of voluntary and mandated climate change-related disclosure. *Journal of Contemporary Accounting and Economics*, *15*(2), 243–266.

Riebeek, H. (2010). Global Warming. Retrieved from Nasa Earth Observatory Website: http://earthobservatory.nasa.gov/Features/GlobalWarming

Ritzer, G. (2005). *Encyclopedia of social theory*. USA: Sage Publication, Inc.

Sari, T. K., Cahaya, F. R., & Joseph, C. (2020). Coercive Pressures and Anti-corruption Reporting: The Case of ASEAN Countries. *Journal of Business Ethics*, 1-17.

Scripps Institution of Oceanography. (2019). Carbon Dioxide Concentration on Mauna Loa Observatory. Retrieved from https://scripps.ucsd.edu/programs/keelingcurve/wp-content/plugins/sio-bluemoon/graphs/co2_800k_zoom.png

Tabachnick, B. G., & Fidell, L. S. (2013). Using multivariate statistics: International edition. *Pearson2012*.

Tang, L., & Li, H. (2009). Corporate social responsibility communication of Chinese and global corporations in China. *Public Relations Review*, 35(3), 199–212.

Wang, J., Song, L., & Yao, S. (2013). The determinants of corporate social responsibility disclosure: Evidence from China. *Journal of Applied Business Research*, *29*(6), 1833–1847.

Wegener, M., Labelle, R., & Jerman, L. (2018). Unpacking carbon accounting numbers: A study of the commensurability and comparability of corporate greenhouse gas emission disclosures. *Journal of Cleaner Production*.

World Bank, World Development Indicators. (2019). GDP per capita (current US$). Retrieved from https://data.worldbank.org/indicator/NY.GDP.PCAP.CD

World Resources Institute. (2015). A global look at mandatory greenhouse gas reporting programs. Retrieved from https://www.wri.org/blog/2015/05/global-look-mandatory-greenhouse-gas-reporting-programs

APPENDICES

Appendix A

Sample Company Lists

China

No	Company
1	Air China Ltd.
2	Aluminum Corporation of China Ltd.
3	Anhui Conch Cement Company Ltd.
4	Baoshan Iron & Steel Company Ltd.
5	BBMG Corporation
6	China Aluminum International Engineering
7	China Coal Energy
8	China Eastern Airlines
9	China Molybdenum
10	China National Nuclear Corporation
11	China Shenhua Energy Company Ltd.
12	China Southern Airlines
13	Metallurgical Corporation of China
14	PetroChina Company
15	Sinopec Oilfield
16	Yanzhou Coal Mining Company
17	Zijin Mining

Sample Company Lists

India

No	Company
1	Adani Transmission Ltd.
2	Ador Welding
3	BEML Limited
4	Bharat Petroleum
5	Coal India
6	Deepak Fertilisers and Petrochemical Corporation
7	GAIL
8	Gujarat Gas Limited
9	Gujarat Mineral Development
10	Hindustan Copper
11	Hindustan Petroleum
12	Indian Oil Corporation
13	Indraprastha Gas Limited
14	Mangalore Refinery and Petrochemical Limited
15	Maruti Suzuki
16	National Thermal Power Corporation
17	Shree Renuka Sugars

Appendix B

Company Report Type

China

No	Company	Year	Type of Report
1	Air China Ltd.	2016	AR
		2017	AR
		2018	AR
2	Aluminum Corporation of China Ltd.	2016	AR
		2017	AR
		2018	AR
3	Anhui Conch Cement Company Ltd.	2016	SR
		2017	AR
		2018	AR
4	Baoshan Iron & Steel Company Ltd.	2016	AR
		2017	AR
		2018	AR
5	BBMG Corporation	2016	AR
		2017	AR
		2018	AR
6	China Aluminum International Engineering	2016	AR
		2017	AR

		2018	AR
7	China Coal Energy	2016	AR
		2017	AR
		2018	AR
8	China Eastern Airlines	2016	SR
		2017	SR
		2018	SR
9	China Molybdenum	2016	SR
		2017	SR
		2018	SR
10	China National Nuclear Corporation	2016	AR
		2017	AR
		2018	AR
11	China Shenhua Energy Company Ltd.	2016	SR
		2017	AR
		2018	AR
12	China Southern Airlines	2016	SR
		2017	SR
		2018	SR
13	Metallurgical Corporation of China	2016	SR
		2017	SR

		2018	AR
14	PetroChina Company	2016	SR
		2017	SR
		2018	SR
15	Sinopec Oilfield	2016	ESGR
		2017	ESGR
		2018	ESGR
16	Yanzhou Coal Mining Company	2016	AR
		2017	AR
		2018	AR
17	Zijin Mining	2016	ESGR
		2017	ESGR
		2018	ESGR

Company Report Type

India

No	Company	Year	Type of Report
1	Adani Transmission Ltd.	2016-17	AR
		2017-18	AR
		2018-19	AR
2	Ador Welding	2016-17	AR
		2017-18	AR
		2018-19	AR
3	BEML Limited	2016-17	AR
		2017-18	AR
		2018-19	AR
4	Bharat Petroleum	2016-17	SR
		2017-18	SR
		2018-19	SR
5	Coal India	2016-17	SR
		2017-18	SR
		2018-19	SR
6	Deepak Fertilisers and Petrochemical Corporation	2016-17	AR
		2017-18	AR

		2018-19	AR
7	GAIL	2016-17	SR
		2017-18	SR
		2018-19	SR
8	Gujarat Gas Limited	2016-17	AR
		2017-18	AR
		2018-19	AR
9	Gujarat Mineral Development	2016-17	AR
		2017-18	AR
		2018-19	AR
10	Hindustan Copper	2016-17	AR
		2017-18	AR
		2018-19	AR
11	Hindustan Petroleum	2016-17	SR
		2017-18	SR
		2018-19	SR
12	Indian Oil Corporation	2016-17	SR
		2017-18	SR
		2018-19	SR
13	Indraprastha Gas Limited	2016-17	AR
		2017-18	AR

		2018-19	AR
14	Mangalore Refinery and Petrochemical Limited	2016-17	AR
		2017-18	AR
		2018-19	AR
15	Maruti Suzuki	2016-17	AR
		2017-18	AR
		2018-19	AR
16	National Thermal Power Corporation	2016-17	AR
		2017-18	AR
		2018-19	AR
17	Shree Renuka Sugars	2016-17	AR
		2017-18	AR
		2018-19	AR

Appendix C

Data of GHG Emission Disclosure

China

No	Company	Year	GRI 305-1	GRI 305-2	GRI 305-3	GRI 305-4	GRI 305-5	Total
1	Air China Ltd.	2016	0	0	0	0	278	278
		2017	0	0	0	0	247	247
		2018	0	0	0	0	169	169
2	Aluminum Corporation of China Ltd.	2016	0	0	0	80	514	594
		2017	0	0	0	80	444	524
		2018	0	0	0	90	508	598
3	Anhui Conch Cement Company Ltd.	2016	0	0	0	0	129	129
		2017	0	0	0	0	544	544
		2018	0	0	0	0	215	215
4	Baoshan Iron & Steel Company Ltd.	2016	0	0	0	0	425	425
		2017	0	0	0	0	544	544
		2018	0	0	0	0	575	575
5	BBMG Corporation	2016	0	0	0	0	181	181
		2017	0	0	0	0	79	79
		2018	0	0	0	0	0	0
6	China Aluminum International Engineering	2016	0	0	0	0	662	662
		2017	5	0	0	10	164	179
		2018	10	0	0	12	166	188
7	China Coal Energy	2016	0	0	0	0	765	765
		2017	0	0	0	0	852	852
		2018	0	0	0	0	922	922
8	China Eastern Airlines	2016	6	0	0	0	453	459
		2017	7	0	0	0	684	691
		2018	7	0	0	12	1019	1038
9	China Molybdenum	2016	0	0	0	0	0	0
		2017	108	73	0	0	0	181
		2018	132	78	0	0	0	210
10	China National Nuclear Corporation	2016	33	31	35	138	72	309
		2017	36	34	35	165	96	366
		2018	39	37	38	147	71	332
11	China Shenhua Energy Company Ltd.	2016	0	0	0	0	484	484
		2017	0	0	0	0	135	394
		2018	0	0	0	0	401	401
12	China	2016	36	24	0	35	312	407

	Southern Airlines	2017	42	0	0	39	308	389
		2018	45	0	0	38	303	386
13	Metallurgical Corporation of China	2016	0	0	0	0	534	534
		2017	146	98	0	20	451	715
		2018	0	0	0	0	445	445
14	PetroChina Company	2016	0	0	0	0	1200	1200
		2017	0	0	0	0	1242	1242
		2018	0	0	0	0	1226	1226
15	Sinopec Oilfield	2016	0	0	0	0	86	86
		2017	142	142	0	28	202	514
		2018	124	124	0	28	267	543
16	Yanzhou Coal Mining Company	2016	0	0	0	0	72	72
		2017	0	0	0	0	74	74
		2018	0	0	0	0	180	180
17	Zijin Mining	2016	0	0	0	0	384	384
		2017	26	32	0	13	369	440
		2018	54	51	0	0	339	444

Data of GHG Emission Disclosure

India

No	Company	Year	GRI 305-1	GRI 305-2	GRI 305-3	GRI 305-4	GRI 305-5	Total
1	Adani Transmission Ltd.	2016-17	0	0	0	0	0	0
		2017-18	0	0	0	0	0	0
		2018-19	10	9	0	43	47	109
2	Ador Welding	2016-17	0	0	0	0	0	0
		2017-18	0	0	0	0	0	0
		2018-19	0	0	0	0	28	28
3	BEML Limited	2016-17	0	0	0	0	50	50
		2017-18	0	0	0	0	157	157
		2018-19	0	0	0	0	104	104
4	Bharat Petroleum	2016-17	82	165	0	19	195	461
		2017-18	97	159	120	23	284	683
		2018-19	181	80	167	27	372	827
5	Coal India	2016-17	0	0	0	0	154	154
		2017-18	0	0	0	0	49	49
		2018-19	0	0	0	0	0	0
6	Deepak Fertilisers and Petrochemical Corporation	2016-17	0	0	0	0	0	0
		2017-18	0	0	0	0	0	0
		2018-19	0	0	0	0	0	0
7	GAIL	2016-17	47	41	0	0	99	187
		2017-18	31	25	0	13	233	302
		2018-19	12	12	0	13	221	258
8	Gujarat Gas Limited	2016-17	0	0	0	0	43	43
		2017-18	0	0	0	0	261	261
		2018-19	0	0	0	0	242	242
9	Gujarat Mineral Development	2016-17	0	0	0	0	24	24
		2017-18	0	0	0	0	24	24
		2018-19	0	0	0	0	23	23
10	Hindustan Copper	2016-17	0	0	0	0	59	59
		2017-18	0	0	0	0	83	83
		2018-19	0	0	0	0	104	104
11	Hindustan Petroleum	2016-17	114	31	88	57	188	478
		2017-18	126	86	0	43	325	580
		2018-19	93	27	77	44	361	602
12	Indian Oil Corporation	2016-17	86	62	0	48	482	678
		2017-18	121	68	0	68	341	598
		2018-19	59	8	0	23	384	474

13	Indraprastha Gas Limited	2016-17	0	0	0	0	152	152
		2017-18	0	0	0	0	153	153
		2018-19	0	0	0	0	153	153
14	Mangalore Refinery and Petrochemical Limited	2016-17	0	0	0	0	132	132
		2017-18	0	0	0	0	164	164
		2018-19	0	0	0	0	125	125
15	Maruti Suzuki	2016-17	67	66	0	12	211	356
		2017-18	95	13	0	12	90	210
		2018-19	55	36	0	60	344	495
16	National Thermal Power Corporation	2016-17	0	0	0	0	832	832
		2017-18	0	0	0	0	793	793
		2018-19	0	0	0	0	864	864
17	Shree Renuka Sugars	2016-17	0	0	0	0	0	0
		2017-18	0	0	0	0	25	25
		2018-19	0	0	0	0	66	66

Appendix D

Data of Independent Variables

China

No	Company	Year	Business Group	Corporate Governance	Foreign Association	State Ownership
1	Air China Ltd.	2016	1	78%	0	0
		2017	1	78%	0	0
		2018	1	67%	0	0
2	Aluminum Corporation of China Ltd.	2016	0	89%	0	0
		2017	0	89%	0	0
		2018	0	89%	0	0
3	Anhui Conch Cement Company Ltd.	2016	0	67%	0	0
		2017	0	67%	0	0
		2018	0	67%	0	0
4	Baoshan Iron & Steel Company Ltd.	2016	1	67%	0	0
		2017	1	78%	0	0
		2018	1	67%	0	0
5	BBMG Corporation	2016	0	89%	0	1
		2017	0	67%	0	1
		2018	0	67%	0	1
6	China Aluminum International Engineering	2016	1	67%	0	0
		2017	1	56%	0	0
		2018	1	67%	0	0
7	China Coal Energy	2016	1	78%	0	0
		2017	1	78%	0	0
		2018	1	78%	0	0
8	China Eastern Airlines	2016	0	78%	0	0
		2017	0	89%	0	0
		2018	0	100%	0	0
9	China Molybdenum	2016	0	78%	0	0
		2017	0	78%	0	0
		2018	0	67%	0	0
10	China National Nuclear Corporation	2016	1	67%	0	0
		2017	1	67%	0	0
		2018	1	67%	0	0
11	China Shenhua Energy Company Ltd.	2016	1	78%	0	0
		2017	1	67%	0	0
		2018	1	78%	0	0
12	China	2016	0	78%	0	0

	Southern Airlines	2017	0	89%	1	0
		2018	0	89%	1	0
13	Metallurgical Corporation of China	2016	1	78%	0	0
		2017	1	67%	0	0
		2018	1	78%	0	0
14	PetroChina Company	2016	1	78%	0	0
		2017	1	78%	0	0
		2018	1	78%	0	0
15	Sinopec Oilfield	2016	1	67%	0	0
		2017	1	56%	0	0
		2018	1	67%	0	0
16	Yanzhou Coal Mining Company	2016	1	67%	0	0
		2017	1	67%	0	0
		2018	0	67%	0	0
17	Zijin Mining	2016	0	78%	0	0
		2017	0	78%	0	0
		2018	0	78%	0	0

Data of Independent Variables

India

No	Company	Year	Business Group	Corporate Governance	Foreign Association	State Ownership
1	Adani Transmission Ltd.	2016-17	1	66.67%	0	0
		2017-18	1	66.67%	0	0
		2018-19	1	77.78%	0	0
2	Ador Welding	2016-17	1	66.67%	0	0
		2017-18	1	66.67%	0	0
		2018-19	1	66.67%	0	0
3	BEML Limited	2016-17	0	55.56%	0	1
		2017-18	0	55.56%	0	1
		2018-19	0	55.56%	0	1
4	Bharat Petroleum	2016-17	0	66.67%	0	1
		2017-18	0	66.67%	0	1
		2018-19	0	66.67%	0	1
5	Coal India	2016-17	0	66.67%	0	1
		2017-18	0	66.67%	0	1
		2018-19	0	66.67%	0	1
6	Deepak Fertilisers and Petrochemical Corporation	2016-17	0	55.56%	0	0
		2017-18	0	66.67%	0	0
		2018-19	0	66.67%	0	0
7	GAIL	2016-17	0	66.67%	1	1
		2017-18	0	66.67%	1	1
		2018-19	0	66.67%	1	1
8	Gujarat Gas Limited	2016-17	0	66.67%	0	1
		2017-18	1	66.67%	0	1
		2018-19	1	77.78%	0	1
9	Gujarat Mineral Development	2016-17	0	55.56%	0	1
		2017-18	0	55.56%	0	1
		2018-19	0	55.56%	0	1
10	Hindustan Copper	2016-17	0	55.56%	0	1
		2017-18	0	55.56%	0	1
		2018-19	0	55.56%	0	1
11	Hindustan Petroleum	2016-17	0	55.56%	1	1
		2017-18	1	66.67%	1	0
		2018-19	1	66.67%	1	0
12	Indian Oil Corporation	2016-17	0	66.67%	0	1
		2017-18	0	66.67%	0	1
		2018-19	0	66.67%	0	1

13	Indraprastha Gas Limited	2016-17	0	66.67%	1	0
		2017-18	0	66.67%	1	0
		2018-19	0	66.67%	1	0
14	Mangalore Refinery and Petrochemical Limited	2016-17	1	66.67%	0	0
		2017-18	1	66.67%	0	0
		2018-19	1	66.67%	0	0
15	Maruti Suzuki	2016-17	1	77.78%	1	0
		2017-18	1	77.78%	1	0
		2018-19	1	77.78%	1	0
16	National Thermal Power Corporation	2016-17	0	66.67%	0	1
		2017-18	0	66.67%	0	1
		2018-19	0	66.67%	0	1
17	Shree Renuka Sugars	2016-17	0	66.67%	1	0
		2017-18	0	77.78%	1	0
		2018-19	1	77.78%	1	0

Appendix E

Data for Firm Size

China

No	Company	Year	Firm Size (in USD)
1	Air China Ltd.	2016	34,436,631,168.70
		2017	36,218,572,560.80
		2018	37,450,097,499.60
2	Aluminum Corporation of China Ltd.	2016	29,214,826,600.20
		2017	30,762,534,879.20
		2018	30,874,658,721.80
3	Anhui Conch Cement Company Ltd.	2016	16,832,320,397.70
		2017	18,773,315,314.50
		2018	22,985,428,002.40
4	Baoshan Iron & Steel Company Ltd.	2016	30,870,100,892.69
		2017	37,351,962,768.51
		2018	36,747,514,635.59
5	BBMG Corporation	2016	32,030,636,863.80
		2017	35,690,289,997.49
		2018	41,234,035,294.16
6	China Aluminum International Engineering	2016	6,543,413,231.00
		2017	6,973,951,523.00
		2018	7,536,062,394.50
7	China Coal Energy	2016	37,302,340,156.40
		2017	38,258,468,201.80
		2018	40,663,830,780.60
8	China Eastern Airlines	2016	32,284,838,700.00
		2017	34,961,216,800.00
		2018	36,390,780,500.00
9	China Molybdenum	2016	13,548,169,092.58
		2017	15,037,585,325.00
		2018	15,556,917,182.90
10	China National Nuclear Corporation	2016	101,394,944.00
		2017	93,233,920.00
		2018	78,178,176.00
11	China Shenhua Energy Company Ltd.	2016	88,643,247,300.00
		2017	87,855,227,400.00
		2018	90,932,916,200.00
12	China Southern Airlines	2016	30,807,935,400.00
		2017	33,616,956,600.00
		2018	37,956,061,300.00

13	Metallurgical Corporation of China	2016	58,020,459,534.80
		2017	63,718,667,243.80
		2018	67,461,365,069.10
14	PetroChina Company	2016	368,365,258,700.00
		2017	369,588,864,400.00
		2018	373,839,284,200.00
15	Sinopec Oilfield	2016	11,449,599,614.20
		2017	9,520,582,077.30
		2018	9,361,054,695.50
16	Yanzhou Coal Mining Company	2016	22,663,906,046.40
		2017	30,326,950,308.80
		2018	31,662,755,625.50
17	Zijin Mining	2016	13,712,760,529.81
		2017	13,727,756,007.64
		2018	17,349,549,000.52

Data for Firm Size

India

No	Company	Year	Firm Size (in USD)
1	Adani Transmission Ltd.	2016-17	2,007,493,102
		2017-18	2,705,497,582
		2018-19	5,003,258,630
2	Ador Welding	2016-17	59,227,899
		2017-18	67,454,649
		2018-19	67,523,597
3	BEML Limited	2016-17	739,827,757
		2017-18	734,224,463
		2018-19	785,441,513
4	Bharat Petroleum	2016-17	17,093,816,942
		2017-18	18,869,901,752
		2018-19	21,456,990,546
5	Coal India	2016-17	18,189,558,929
		2017-18	19,977,954,091
		2018-19	20,797,040,661
6	Deepak Fertilisers and Petrochemical Corporation	2016-17	739,156,454
		2017-18	1,095,561,782
		2018-19	1,115,329,487
7	GAIL	2016-17	9,279,628,269
		2017-18	9,611,059,738
		2018-19	10,719,439,580
8	Gujarat Gas Limited	2016-17	999,025,180
		2017-18	1,043,900,926
		2018-19	1,121,584,951
9	Gujarat Mineral Development	2016-17	802,509,434
		2017-18	849,787,751
		2018-19	815,889,342
10	Hindustan Copper	2016-17	497,160,805
		2017-18	450,565,527
		2018-19	518,719,936
11	Hindustan Petroleum	2016-17	12,585,993,568
		2017-18	14,051,563,225
		2018-19	16,807,385,012
12	Indian Oil Corporation	2016-17	42,867,014,968
		2017-18	43,991,943,897
		2018-19	49,471,399,724

13	Indraprastha Gas Limited	2016-17	657,046,234
		2017-18	798,616,849
		2018-19	968,921,543
14	Mangalore Refinery and Petrochemical Limited	2016-17	5,145,986,318
		2017-18	5,006,660,744
		2018-19	5,134,472,315
15	Maruti Suzuki	2016-17	8,142,210,350
		2017-18	9,440,924,280
		2018-19	10,023,895,290
16	National Thermal Power Corporation	2016-17	38,939,536,312
		2017-18	40,772,330,852
		2018-19	45,580,546,559
17	Shree Renuka Sugars	2016-17	2,045,757,675
		2017-18	1,567,303,528
		2018-19	1,508,845,339

Appendix F

Data for Profitability

China

No	Company	Year	Return on Assets
1	Air China Ltd.	2016	3.55%
		2017	3.76%
		2018	3.43%
2	Aluminum Corporation of China Ltd.	2016	0.66%
		2017	1.21%
		2018	0.74%
3	Anhui Conch Cement Company Ltd.	2016	8.36%
		2017	14.22%
		2018	22.59%
4	Baoshan Iron & Steel Company Ltd.	2016	4.90%
		2017	9.19%
		2018	9.66%
5	BBMG Corporation	2016	1.59%
		2017	1.34%
		2018	1.71%
6	China Aluminum International Engineering	2016	3.55%
		2017	1.91%
		2018	1.14%
7	China Coal Energy	2016	1.08%
		2017	2.31%
		2018	2.89%
8	China Eastern Airlines	2016	2.44%
		2017	3.11%
		2018	1.26%
9	China Molybdenum	2016	1.71%
		2017	3.87%
		2018	5.18%
10	China National Nuclear Corporation	2016	-4.02%
		2017	0.04%
		2018	4.24%
11	China Shenhua Energy Company Ltd.	2016	5.63%
		2017	9.95%
		2018	9.31%
12	China Southern Airlines	2016	3.05%
		2017	3.29%
		2018	1.44%

13	Metallurgical Corporation of China	2016	1.66%
		2017	1.69%
		2018	1.77%
14	PetroChina Company	2016	1.23%
		2017	1.53%
		2018	2.99%
15	Sinopec Oilfield	2016	-20.17%
		2017	-15.51%
		2018	0.39%
16	Yanzhou Coal Mining Company	2016	1.30%
		2017	4.97%
		2018	5.61%
17	Zijin Mining	2016	1.95%
		2017	3.64%
		2018	4.63%

Data for Profitability

India

No	Company	Year	Profitability
1	Adani Transmission Ltd.	2016-17	3.39%
		2017-18	7.60%
		2018-19	2.27%
2	Ador Welding	2016-17	4.88%
		2017-18	4.31%
		2018-19	5.53%
3	BEML Limited	2016-17	1.80%
		2017-18	2.77%
		2018-19	1.26%
4	Bharat Petroleum	2016-17	8.72%
		2017-18	8.13%
		2018-19	6.23%
5	Coal India	2016-17	7.98%
		2017-18	5.51%
		2018-19	7.89%
6	Deepak Fertilisers and Petrochemical Corporation	2016-17	3.77%
		2017-18	2.35%
		2018-19	1.03%
7	GAIL	2016-17	5.70%
		2017-18	7.83%
		2018-19	9.58%
8	Gujarat Gas Limited	2016-17	3.46%
		2017-18	4.39%
		2018-19	5.85%
9	Gujarat Mineral Development	2016-17	6.33%
		2017-18	6.51%
		2018-19	4.22%
10	Hindustan Copper	2016-17	1.95%
		2017-18	2.77%
		2018-19	4.40%
11	Hindustan Petroleum	2016-17	10.25%
		2017-18	8.05%
		2018-19	6.24%
12	Indian Oil Corporation	2016-17	7.45%
		2017-18	7.60%
		2018-19	5.35%

13	Indraprastha Gas Limited	2016-17	14.46%
		2017-18	14.16%
		2018-19	13.62%
14	Mangalore Refinery and Petrochemical Limited	2016-17	10.03%
		2017-18	5.55%
		2018-19	1.07%
15	Maruti Suzuki	2016-17	14.46%
		2017-18	13.08%
		2018-19	11.96%
16	National Thermal Power Corporation	2016-17	4.31%
		2017-18	3.98%
		2018-19	4.04%
17	Shree Renuka Sugars	2016-17	-7.96%
		2017-18	-22.03%
		2018-19	-21.16%

Appendix G

SPSS Output

Descriptive Statistic for Continuous Variables

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Corporate Gov. Index	102	55,56%	100,00%	70,0436%	9,08868%
Firm Size (in USD)	102	59227899,00	373839284200,00	30501052447,3984	62884664256,57661
ROA	102	-22,03%	22,59%	3,9222%	6,42958%
GHG Emission Disclosure	102	0	1242	342,92	302,244
Valid N (listwise)	102				

Descriptive Statistic for Categorical Variables

Statistics

		Business Group	Foreign Association	State Ownership	Corporate Governance
N	Valid	102	102	102	102
	Missing	0	0	0	0

Frequency Table

Business Group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	56	54,9	54,9	54,9
	1	46	45,1	45,1	100,0
	Total	102	100,0	100,0	

Foreign Association

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	85	83,3	83,3	83,3
	1	17	16,7	16,7	100,0
	Total	102	100,0	100,0	

State Ownership

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	71	69,6	69,6	69,6
	1	31	30,4	30,4	100,0
	Total	102	100,0	100,0	

Corporate Governance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5	13	12,7	12,7	12,7
	6	54	52,9	52,9	65,7
	7	27	26,5	26,5	92,2
	8	7	6,9	6,9	99,0
	9	1	1,0	1,0	100,0
	Total	102	100,0	100,0	

Normality Test by Komolgorov-Smirnov Test

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		102
Normal Parameters[a,b]	Mean	,0000000
	Std. Deviation	216,87998167
Most Extreme Differences	Absolute	,148
	Positive	,148
	Negative	-,073
Test Statistic		,148
Asymp. Sig. (2-tailed)		,000[c]

Monte Carlo Sig. (2-tailed)	Sig.		,017[d]
	99% Confidence Interval	Lower Bound	,014
		Upper Bound	,021

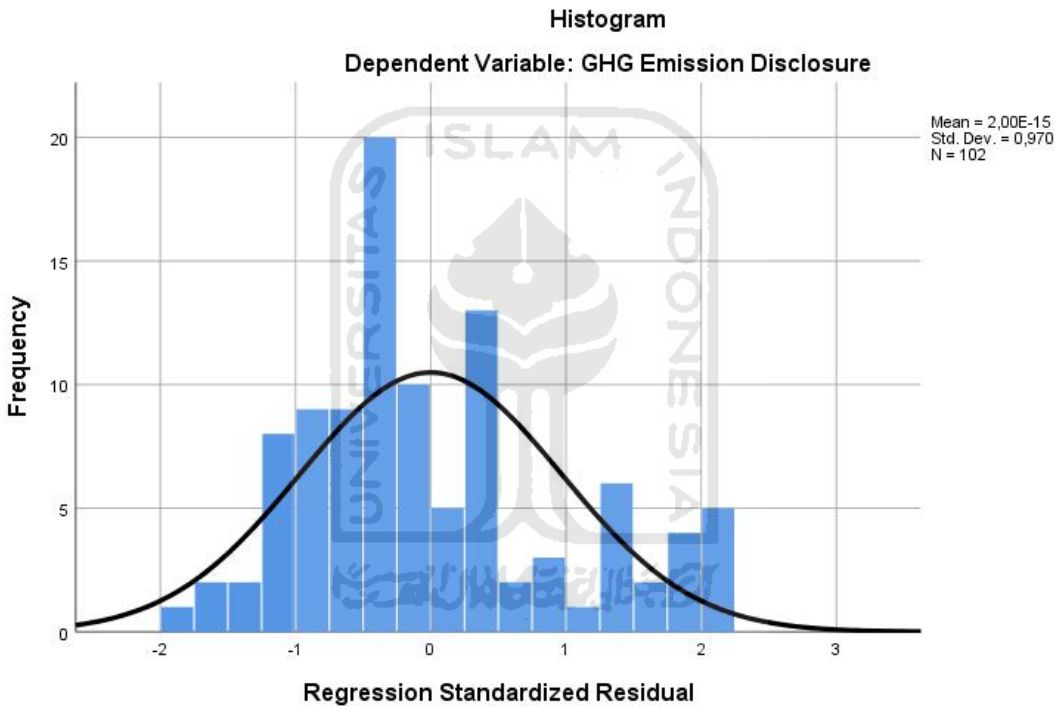
a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

d. Based on 10000 sampled tables with starting seed 2000000.

Histogram Graph before Data Transformation



Normality Test by Komolgorov-Smirnov Test after Data Transformation

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		102
Normal Parameters[a,b]	Mean	,0000000
	Std. Deviation	,89598863
Most Extreme Differences	Absolute	,089
	Positive	,070

	Negative		-,089
Test Statistic			,089
Asymp. Sig. (2-tailed)			,043[c]
Monte Carlo Sig. (2-tailed)	Sig.		,365[d]
	99% Confidence Interval	Lower Bound	,353
		Upper Bound	,378

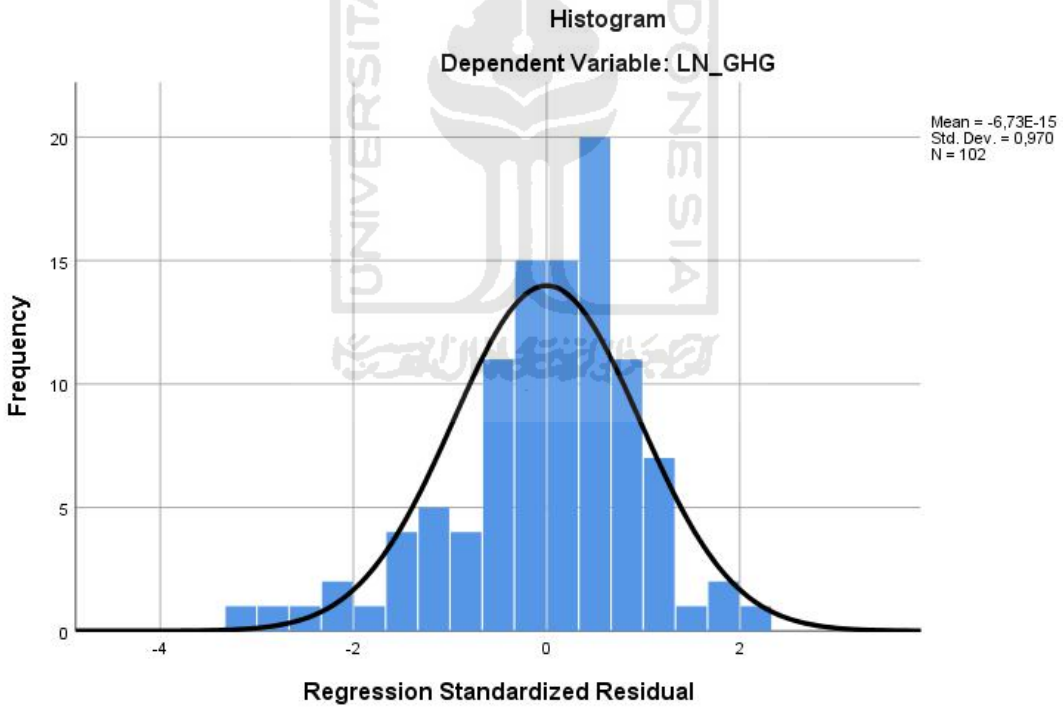
a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

d. Based on 10000 sampled tables with starting seed 1314643744.

Histogram Graph after Data Transformation



Statistical Result for Multicollinearity Test

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	-10,154	3,645		-2,785	,006		
	Business Group	,473	,219	,201	2,159	,033	,703	1,423
	Foreign Association	,284	,256	,091	1,111	,269	,922	1,085
	State Ownership	,337	,266	,133	1,269	,208	,560	1,784
	LN_CG	1,847	,951	,200	1,943	,055	,575	1,741
	LN_FirmSize	,298	,055	,499	5,395	,000	,716	1,397
	LN_ROA	,175	,102	,140	1,718	,089	,925	1,082

a. Dependent Variable: LN_GHG

Statistical Result for Heteroscedasticity Test

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	2,433	2,219		1,096	,276		
	Business Group	-,106	,133	-,093	-,793	,429	,703	1,423
	Foreign Association	-,324	,156	-,212	-2,080	,040	,922	1,085
	State Ownership	-,015	,162	-,012	-,096	,924	,560	1,784
	LN_CG	-,054	,579	-,012	-,094	,926	,575	1,741
	LN_FirmSize	-,063	,034	-,218	-1,884	,063	,716	1,397
	LN_ROA	,011	,062	,019	,185	,854	,925	1,082

a. Dependent Variable: ABS_RES

The Coefficient of Determination (R^2) Test Results

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,647[a]	,419	,382	,92385

a. Predictors: (Constant), LN_ROA, Business Group, LN_FirmSize, Foreign Association, LN_CG, State Ownership

b. Dependent Variable: LN_GHG

F-test Result

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	58,474	6	9,746	11,419	,000[b]
	Residual	81,082	95	,853		
	Total	139,557	101			

a. Dependent Variable: LN_GHG

b. Predictors: (Constant), LN_ROA, Business Group, LN_FirmSize, Foreign Association, LN_CG, State Ownership

T-test Result

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-10,154	3,645		-2,785	,006
	Business Group	,473	,219	,201	2,159	,033
	Foreign Association	,284	,256	,091	1,111	,269
	State Ownership	,337	,266	,133	1,269	,208
	LN_CG	1,847	,951	,200	1,943	,055
	LN_FirmSize	,298	,055	,499	5,395	,000
	LN_ROA	,175	,102	,140	1,718	,089

a. Dependent Variable: LN_GHG

Appendix H

Data Verification

In advance of performing the statistical analysis, one student of accounting major was requested to verify the reliability of the collected data in which the data was obtained from annual reports and sustainability reports. Three steps of data verification was conducted to ensure the accuracy of the data. These steps consisted of (1) verification and re-extraction of dependent variable (the extent of GHG emission disclosure) and (2) verification and re-extraction of independent (business group, corporate governance, foreign association and state ownership) and control variables (firm size and profitability). The tolerated level of error was agreed at 10% level.

Step One: Verification and Re-extraction of Dependent Variable

Step One was carried out to verify the reliability of the dependent variable, namely the extent of GHG emission disclosure, which was measured though the number of words that represent the information related to GHG emissions. The student was requested to independently recalculate the number of words representing the GHG emission disclosure in five *GRI 305: Emissions* categories (GRI 305-1, GRI 305-2, GRI 303-3, GRI 304-4 and GRI 305-5) from randomly selected 10 annual reports, which represented 10% of the sample size. In total, 50 data points were recalculated. The recalculation was then compared to the researchers' results. There were four out 50 data points found to be slightly

different. Those mistakes were overall a miscalculation. Therefore, in the first step, the level of accuracy was as much as 92%. The mistaken inputs were then corrected and justified.

Step Two: Verification and Re-extraction of Independent and Control Variables

On the second step, the same student was requested to independently re-extract all data points regarding the independent and control variables from those 10 reports (10% of sample size). In total, there were 15 items to be extracted consisting of the presence of share portion above 50% held by business groups, nine individual corporate governance items (refer to Table 3.6), the presence of foreign-held shares, the presence of government-owned shares, base year's total assets, total assets one year before and base year's net income. The results of this verification were then compared to the data taken by the researchers. It was found that there were no mistakes as the data taken by the researchers was the same as the one taken by the reviewer. Therefore, in the second step, the level of accuracy was found to be as much as 100%.

Summary

The verification of data was conducted in two steps, divided based on the type of variable. The verification of data revealed that, in total, the level of accuracy was as much as 98% (four mistaken data points out of 200). Based on

the agreed level of error of 10%, the data set was concluded to be reliable. Further, the data analyses could be carried out.