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The Environmental Management Accounting Control as a Practice

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Dedication

This thesis is dedicated to my beloved family

My wife Wiwin
My daughter Adel
My father Urip Setyono

This is for you…

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Abstract

As environmental challenges are growing, environmental engagement is becoming inevitable. The engagement itself takes many forms, e.g. environmental reporting, accounting innovations, and implementation of certain environmental management systems. As environmental engagements in accounting literature have existed since the 1970s, the knowledge that helps the undertaking of such environmental engagements is developing significantly. However, the deep process of engagements and the sense-making of these engagements still remain understudied. Moreover, most of the environmental engagements in practice are not substantial and losing their authenticity.

As substantial engagement depends on the actor and the relevant structure, this research aims to define substantial environmental engagement in the context of management accounting. Therefore, this study focuses on the research in environmental management accounting control (EMAC) as a practice informed by the practice theory and site ontology from Schatzki. This thesis research investigates two case studies: the plantation company (CP plantation) and the agrochemical company (CM manufacture). The study focuses on the key actors: the department or division managers, factory plant managers, and relevant section heads. The important findings are that EMAC practice is an integrated practice governed by the understandings that combine the management accounting control and environmental management knowledge, the rules, and teleoaffectivity. The substantial environmental engagement is not merely about the EMAC structures, it also lies upon the embeddedness of environmental value into daily doings and sayings of the key actors. The embeddedness of environmental value supports the key actors in normativising them in prioritising the hierarchical order of environmental and business ends.

This thesis provides a contribution to the existing literature in the environmental management accounting arena by providing empirical evidence to the prominent embedded environmental value in key actors' doings and sayings in the EMAC framework. By drawing upon Schatzki's practice theory and site ontology, this thesis provides theoretical contributions through unpacking the fundamental sense-making process of these key actors' doings and sayings.

Keywords: practice, environmental management accounting control, substantial engagement, embeddedness, doings and sayings

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List of Acronyms and Abbreviations

AOAC	Association of Official Agricultural Chemists
ASEAN	Association of Southeast Asian Nations
BIMAS	Stands for *Program Bimbingan Masyarakat* or Society Guidance Programme
Candal	Stands for *Perencanaan dan Pengendalian*Planning and Controlling section (*Perencanaan dan Pengendalian*) that exist in every department
CSR	Corporate Social Responsibility
CSEA	Corporate Social and Environmental Accountability
CM	CM is the anonym of the Agrichemical Manufacturer Company as the second case study (CM)
CP	CP is the anonym of the Coffee Plantation Company as the first case study (CP plantation)
EMA	Environmental Management Accounting
EMAC	Environmental Management Accounting Control
EMAS	Eco-Management and Auditing Schemes
EMS	Environmental Management System
ERM	Enterprise Risk Management
GCM	GCM is the anonym of the parent company of CM.
GDP	Gross Domestic Product
GMST	Global Mean Surface Temperature
GRI	Global Reporting Initiatives
HIS	Health Information System
HPLC	High-performance Liquid Chromatography
IPCC	Intergovernmental Panel on Climate Change
IPM	Integrated Pest Management
IR	Integrated Reporting
K3	Stands for *Keselamatan dan Kesehatan Kerja*, also known as occupational health and safety
Kementan	Stands for *Kementerian Pertanian Republik Indonesia* (Ministry of Agriculture of Republic of Indonesia)
MAC	Management Accounting Control
MCS	Management Control System
MDG	Millenium Development Goals
MMRP	Manufacturing and Material Resource Planning
OHSAS	Occupational Health and Safety Assessment Series
PPE	Personal protective Equipment
PSAK	Stands for *Pernyataan Standar Akuntansi Keuangan* (Financial Accounting Standard Statement)

QA	Quality Assurance team
Renstra	Stands for *Rencana Strategis* (Strategic Plan)
RKAP	Stands for *Rencana Kerja Anggaran Perusahaan* (Company working plan and budget)
RPJMN	Stands for *Rencana Pembangunan Jangka Panjang Menengah Nasional* or National Medium Long-term Development Plan
SBP	Sustainable Business Practice
SCA	Sustainable Competitive Advantage
SDG	Sustainable Development Goals
SER	Social and Environmental Reporting
SMT	Sustainability Management Tool
SNI	Stands for *Standar Nasional Indonesia* (Indonesian National Standard)
SPI	Stands for *Satuan Pengendalian Internal* (Internal Audit Team)
TBM	Stands for *Tanaman Belum Menghasilkan* which means the commodity plant that are not yet productive.
TM	Stands for *Tanaman Menghasilkan* which means the productive commodity plant.
VBM	Value-based Management
WWTP	Wastewater Treatment Plant

1. INTRODUCTION

1.1. Background of the Thesis

The growing sustainability accounting studies are prominent attempts to develop sustainability engagement knowledge. These cover social and environmental engagements in the accounting context. Meanwhile, management accounting research develops an understanding of the interrelations between organisations and key actors in managing the organisation on the basic managerial functions. These managerial functions are planning, organising, controlling/evaluating and decision-making activities (Pelz, 2019). The development of environmental management accounting (EMA) studies provides an explanation of the environmental engagements within the management accounting context. However, many of the existing environmental engagements lack substantiality and authenticity (Mahsud, Imanaka and Prussia, 2018). At the same time, relevant knowledge regarding the deep process of these engagements is limited.

1.1.1. Current environmental challenges

Currently, climate change is the greatest challenge in sustainable development. The global temperature rise, the warming ocean, the shrinking ice sheets, the glacial retreat, the decreased snow cover, the sea level rise, the declining Arctic sea ice, extreme environmental events, and the ocean acidification are shreds of evidence of the currently happening climate change (NASA Global Climate Change, accessed: 31st October 2020b). Amidst the aforementioned causes of climate change, for the CO2 emissions, global emissions have reached 146% of the pre-industrial level in 2017 or are equal to 405.5 parts per million (ppm) (United Nations, 2019). From 2017 to 2020,

the CO2 emission increased significantly from 405.5 ppm to 414 ppm. The industrial activities contributed significantly to the increase in the atmospheric CO2 level (NASA Global Climate Change, accessed: 31st October 2020a). The global mean surface temperature (GMST) increased by 1.5 to 2 degrees centigrade in the 2006 – 2015 decade, according to the Intergovernmental Panel on Climate Change (IPCC) (IPCC, 2018). The average anomaly of the global temperature was rising from 0.66 degree centigrade in 2009 to 0.99 degree centigrade in 2019 (NASA Global Climate Change, accessed: 31st October 2020c). In the ocean, the acidity of the ocean surface has increased by 30%, which was caused by the increasing CO2 emissions (NASA Global Climate Change, accessed: 31st October 2020b).

The IPCC states that these continuing situations could have a significant impact on the natural and human systems, which further influences the social and economic aspects of human life (IPCC, 2018). The climate-related disasters caused nearly US$ 3 trillion in economic losses as stated by the SDGs (Sustainable Development Goals) report. The SDGs report depicts these climate changes are a part of the interrelated global challenges with wide impacts on the socio-economic aspects of human beings, particularly in relation to food production and a risk to economic growth (United Nations, 2019; IPCC, 2018).

1.1.2. Business engagements to the environmental issues

With the above description of climate change, the business and accounting engagements towards environmental issues are prominent and inevitable. Therefore, the environmental engagements require comprehensive thinking (Whiteman, Walker and Perego, 2013) that could lead to substantial and authentic engagement.

Many of the business organisations attempt to be engaged with sustainability issues by developing and providing the corporate responsibility report that covers social and environmental issues as the most popular way of engagement Hörisch et al. (2015). Insofar, the Global Reporting Initiatives (GRI) is becoming the most dominant guidance for preparing such reporting. In some Latin American and Asian countries, the rate of corporate responsibility reporting is increasing, especially amidst the company with large revenues (75% for the N100 samples and 93% for the G250 ones in the year 2017)[i] as the implication of establishment and enforcement of some new regulations (KPMG, 2017).

Apart from reporting practice, the other engagements undertaken by organisations and companies includes implementation of certain environmental management systems (EMSs) (e.g. Balzarova and Castka, 2008; Iatridis and Kesidou, 2018; Testa et al., 2018; Yusoff et al., 2015), environment-related non-financial indicators (e.g. de Jong et al., 2014; Iatridis and Kesidou, 2018; Yusoff et al., 2015), undertaking corporate social responsibility (CSR) activities (e.g. Arjaliès and Mundy, 2013; Barnett, 2007; de Roeck and Delobbe, 2012) and doing the conservation activity (e.g. Cuckston, 2013, 2017, 2018). The most popular EMSs are the ISO 14001 and Eco-Management and Audit Scheme (EMAS) (Boiral et al., 2018; Erauskin-Tolosa et al., 2020). On the other hand, the benefits from implementing these systems and indicators are not automatic for many factors (e.g. the drivers of the implementation and the level of the internalisation of the EMS) that are influencing implementation as the interrelated factors (Erauskin-Tolosa et al., 2020).

1.1.3. The development of environmental management accounting literature

Management accounting sets a certain structure that is inherent in organisational activities and helps managers gain an understanding of their business (Swieringa and Weick, 1987). Management accounting is then defined as a structure that focuses on providing information for managers; it covers management works that include planning, directing, controlling, and decision-making (Seal et al., 2019).

The correlation between management accounting and management control systems (MCSs) brings an impact on defining the EMA. The management accounting control (MAC) is about the control system that is based on the management accounting structure. EMA itself is defined as an information-based accounting structure that fosters and enables an organisation's environmental stewardship role by governing accountable business practices. The environmental management accounting control (EMAC) can be defined as the control systems that are based on the EMA structure.

In the accounting literature, the accounting engagement of the environmental issues has been started since the 1970s (Parker, 2005, 2011; Murthy and Parisi, 2013). EMA studies have provided important insights and knowledge into the engagement activities- how the activities are undertaken and what factors incentivise the activities (e.g. Nagypál, 2014; Torugsa et al., 2013; Worthington et al., 2006). Some scholars have studied the innovations in accounting to cover 'the externalities' such as biodiversity (Jones, 1996, 2003), environmental impacts (Davies, 2014), and even the extinction threat (Atkins and Maroun, 2018).

Furthermore, the EMA studies have been developed to cover broader issues that are influencing the environmental engagements of corporations and organisations. Murthy and Parisi (2013) have explained that most of the EMA studies have discussed the relevant structures or systems, the involved agents and powerful parties, and the

relationship between them. Some EMA studies have investigated the integration between the MCSs and EMSs (e.g. Guenther et al., 2016; Lueg and Radlach, 2016) and have further examined its role in supporting the organisation's strategy formulation as a part of environmental awareness (e.g. Gond et al., 2012; Sundin and Brown, 2017; Wijethilake et al., 2017). These studies have also found that by studying the integration of the environmental aspect, the MCSs also depict prominence of integration in addressing the external arrangements or institutional pressures (Albareda, 2014; Wijethilake, Munir and Appuhami, 2017).

Some scholars have studied the drawbacks of certain environmental engagements such as environmental reporting (e.g. Liempd and Busch, 2013; Rimmel and Jonäll, 2013; Samkin, Schneider and Tappin, 2014) and provided critiques such as criticising accounting's governing role in certain environmental programmes (Tregidga, 2013). One of the significant drawbacks in environmental reporting is the absence of the intrinsic value of natural elements such as biodiversity (Samkin, Schneider and Tappin, 2014). These studies have provided the prominent insights that the environmental engagements require continuous improvements to overcome the drawbacks.

According to other studies that have investigated the factors incentivising the environmental engagements, legitimacy is the dominant factor that incentivises the actors in undertaking the engagements (see Bansal and Roth, 2000; Tilling and Tilt, 2010; de Roeck and Delobbe, 2012; Cordeiro and Tewari, 2015; Cormier and Magnan, 2015; Lehner, Harrer and Quast, 2019). The other factors influencing the engagements include the economic benefits that potentially emerge from the engagements (e.g. Archel et al., 2009; Cho and Patten, 2007; Haji and Anifowose, 2016; O'Donovan, 2002; Tilling and Tilt, 2010) and the actor's beliefs or awareness (e.g. Norris and

O'Dwyer, 2004; Bouten and Hoozée, 2013; Busco et al., 2017). However, the economic benefits as the motive to have environmental engagement might be problematic and lead to symbolic environmental engagement.

Although prominent knowledge about the way the environmental engagements are undertaken and the actors' role in the engagements and the factors influencing the engagements (including the factors that incentivises the engagements) are developed from the above studies, the deep process of the engagement activity itself is still limited. Mahsud, Imanaka and Prussia (2018) have explicated that the current business engagements towards sustainability, which include the social and environmental issues, lack authenticity. They have further stated that substantial engagements still need to be further studied.

Stoughton and Ludema (2012) and Bouten and Hoozée (2013) have explained that the deep concern from organisation members defines the success of the engagement towards new practices. The deep concern that is related to the internal motivation and awareness towards certain notions or values such as environmental value potentially defines the substantial engagements. In other words, the internalised environmental value is the prominent contributing factor to the actors' belief and awareness, which in turn define the practice.

Insofar, some studies focusing on the internalisation process of a certain new notion or system have depicted that the involvement of a daily basis process into consideration is prominent. For example, the internalisation process of the ISO 9000 system in Cai and Jun (2018) has depicted that the daily education, implementation, documentation, and auditing process are prominent in building employees' consciousness of the new system. In other studies, the subjective and inter-subjective understandings, actors' internalised mindset, belief, and awareness also play an

important role in the internalisation process (Ball and Craig, 2010; Egan and Tweedie, 2018; Coyte, 2019). These studies lead to the importance of seeing the internalisation process not as merely an implementation of new systems, but it is more about the sense-making of certain activities undertaken by the actors.

In management accounting studies such as studies by Ahrens and Chapman (2007), Nama and Lowe (2014), or Tekathen (2019), the management accounting is investigated from the lens of practice. These studies have examined the deep process of sense-making that underpins the management accounting practices by using the practice theory. In the context of EMA research, the researches focusing on the examination of the deep process of environmental engagement and its intelligibility are still understudied.

There are several practice theories that could be used to analyse the deep process of EMAC practice and its intelligibility. Bourdieu (1977) has stated that practice is guided by certain durable systems that act as structures, known as habitus. However, Bourdieu has rejected the idea of practice as a mechanical reaction of particular stimuli. To some extent, it makes the concept of habitus difficult to explain the phenomena of environmental engagements undertaken as the response of certain external pressures such as new regulations (see KPMG, 2017; Albareda, 2014; Wijethilake, Munir and Appuhami, 2017). The duality of the structuration theory from Giddens (1979, 1984), on the other hand, has explained that structure acts as both a medium and an outcome of reproduction of practice. Giddens' structuration theory has also a limitation in explaining the EMAC as a practice when the external structures that consist of social orders or regulations exist as the structures that are external to the agents who undertake the actions. Although Stones (2005) idea of strong structuration theory has attempted to refine the structuration theory by recognising the external structures, internal

structures, active agency, and outcomes of actions as the quadripartite cycle of structuration, this theory does not extensively explain the deep process of how the actors normativise the priority of environmental engagements amidst the other business activities. Laclau and Mouffe (1985, 2001) believe that every social practice is an articulation of certain discourses. The duality paradigm that this theory has could lead to the same problem as in the habitus notion from Bourdieu. This thesis research is using Schatzki's practice theory and site ontology (1996, 2002) under the dualism paradigm to accommodate the broader social orders and entities and arrangements such as governmental regulations, and the cultural and historical aspects as the prominent aspects that could influence the EMAC practice. Schatzki has stated that a practice comprises doings and sayings that are organised by a pool of understandings, a set of rules, and a teleoaffective structure.

1.2. Research aims, Research Objectives and Research Questions

By studying the EMAC as a practice, this thesis research aims to define substantial environmental engagement in the management accounting context. In more detail, this research aims to achieve the following objectives. First, this research wants to study how the key actors perform in the environmental management accounting control practices or activities amidst their daily activities in the investigated case studies. In relation to this, it is important to study the relevant implemented systems in the investigated case studies. The relevant implemented systems are including the MAC and EMS systems. This is important to understand how the internalised environmental value is permeated to the daily activities of the key actors. Second, this research also attempts to study the emerging environmental value from the relevant regulations and other arrangements of the industrial sector of the investigated cases. This is important

since external orders or arrangements also shape the key actors' practices. Third, this research would like to have an in-depth study of the interrelationship between the practice and the social orders in the studied industrial sector and the arrangements in both the studied case studies. In this part, how the practice intelligibility governs the practice in relation to those orders and arrangements will answer the EMAC practice as a substantial or just as superficial environmental engagement.

Therefore, to achieve the research aims and objectives, two research questions that would be addressed in this thesis research are developed. The first research question is:

"How the managers internalise environmental value within the implemented environmental management accounting control (EMAC)?"

This first research question is constructed based on the research gap from the literature review. Regarding how the research gap is constructed and leads to the formulation of the first question, will be elaborated in the following chapter 2. The second research question is:

"How the managers undertake the doing and saying in the EMAC framework in relation to their internalised environmental value?"

The second research question is constructed based on the theoretical framework that is elaborated in chapter 3. The second research question is important in analysing the empirical shreds of evidence that are gathered based on the first research question.

1.3. The Structure of the Thesis

The thesis consists of nine chapters. Chapter 1 is the introduction that consists of a brief explanation of the whole research, empirical facts, a summary of the EMA literature review, research aims, and objectives followed by the research questions and the thesis

structure. Chapter 2 is the literature review chapter that covers the literature in the context of sustainability, MAC practices, MAC environmental engagements that lead to the EMA and EMAC literature, and the EMA literature in Indonesia as the context of the study and the internalisation process. This chapter also includes an explanation of the constructed research gap. Chapter 3 contains the theoretical framework that discusses some theories of practice and the reasoning behind the choosing of Schatzki's practice theory and site ontology. A comparison of some practice theories is provided as well. Chapter 4 explains the philosophical stance and the research design that covers the research philosophical stance and the explanation of the chosen case studies, the data collection methods used, the data analysis, and the validity and reliability issues.

Chapters 5 to 6 are the empirical chapters that provide the explication of the empirical data from the context and the case studies. Chapter 5 discusses the Indonesian agriculture sector as the context and the emerged environmental value, which focuses on the elaboration of the interrelated agriculture regulations and policies and its relationship with geographical and environmental profiles as part of the entity's arrangements. Chapter 6 is a case study in a CP plantation. It contains a detailed and in-depth explanation of how the EMAC practices have been undertaken by the key actors in this company by following the supporting research questions. Chapter 7 is basically the same as chapter 6, but it is dedicated to a CM company, an agrochemical manufacturing company.

Chapter 8 is the discussion chapter. This discusses the empirical findings from the theoretical account. In this chapter, EMAC practices are analysed based on Schatzki's practice theory and site ontology. It also discusses the new insight that can be drawn from this research regarding EMAC practices. Chapter 9 is the concluding chapter that provides the final answers to the research questions, the explanations of

research contributions, the implications, and the research limitations. The explanation of research limitations drives the opening of future research opportunities in the EMA arena.

2. LITERATURE REVIEW

2.1. Introduction

This chapter discusses the body of literature in sustainability, environmental management accounting control and the internalisation process. The review provides the construction necessary for formulating the primary research question. The structure of this chapter is explained as follows. In the first section, literature in sustainability is discussed to review the development of the studies in this arena. The following section will describe the body of literature in environmental management accounting control. In this section, there will be two sub-sections. The first discusses literatures in management accounting control. How management accounting is defined in the management accounting research arena becomes the starting point. It also helps to define the position of this research. The second sub-section reviews the literature that discusses the embedding of environmental aspects in management accounting control as the manifestation of an organisation's environmental engagement. The third section is to explain the environmental management accounting research in the context of Indonesia. The fourth section is about the literature on the internalisation process. The next section explains the construction of the research gap, which is the prominent steppingstone for formulating the main research question. The last section is the chapter conclusion.

2.2. The Sustainability Notion

The problem of the earth's limit to growth in relation to people's consumption patterns that threatens the sustainability of humankind has been significantly indicated in the report by Meadows et al. (1972) for the Club of Rome's project. The analysis in

Meadows et.al. project was repeated several times in 1992 and in 2004 which provided the same conclusion (Gray, 2006a). A number of actions in relation to this environmental situation have emerged as efforts to find appropriate resolutions. The prominent notion in relation to answering the challenge of global threat towards sustainability was sustainable development, which comes from the Brundtland report in 1987. It was the result of the work of the World Commission on Environment and Development. The sustainable development was defined as the development to meet the present needs without compromising the ability of future generations to meet theirs (World Commission on Environment and Development, 1987). Based upon that notion, the United Nations developed the Millennium Development Goals (MDGs) and then Sustainable Development Goals (SDGs) that covered more comprehensive goals and targets in environmental, social and economic aspects. These aspects became the integrated, indivisible and balanced dimension of sustainable development (United Nations, 2015; United Nations Development Programme, accessed 6 June 2017).

Furthermore, Gray (1992) explains that sustainability refers basically to the limited 'carrying capacity' of the earth and its capability to renew itself. Hence, in an accounting context, sustainability actions should go beyond the anthropocentric perspective and put the environment in the centre of analysis. By referring to the work of Meadows et al. (1972), Gray (2006) further emphasises that business as usual is untenable. Hence, substantial engagement with sustainability actions as the true 'value creation' beyond conventional reporting is highly needed. To some extent, financial environmental information presentation is potentially creating ambiguity and does not always lead to substantial engagement, particularly if it is loosely coupled with the actual activities conducted by the organisation (Laine et al., 2017). For example, reporting on biodiversity and endangered species is potentially serving environmental

protection better. However, inconsistency in the format and quality of biodiversity reporting reduces the value of the reports (Adler, Mansi and Pandey, 2018). Pressures from stakeholders are successful in fostering biodiversity reporting practices by companies; however, substantial impacts are still absent and the reporting itself is bland (Adler et al., 2017). This is emphasising what Gray (2006) has indicated before, that substantive engagement is essential in responding to environmental issues.

Aras and Crowther (2009) explain that the sustainability discourse stands upon two assumptions: the first one is about the similarity of sustainability to sustainable development, and the second is related to the sustainable company as the one that incorporates social and environmental considerations into their strategic planning. Hence, the company's engagement with sustainability covers their effort in engaging with sustainable development and addressing social and environmental issues.

To date, there have been a number of literatures in the sustainability context that discuss the forms of the engagements and their related factors or impacts. There have been scholarly investigations that have discussed corporate social responsibility (CSR) and tried to define it, like Barnett (2007), and elaborate related aspects or impacts (Arjaliès and Mundy, 2013; de Roeck and Delobbe, 2012). Other studies have focused on control mechanisms implemented regarding sustainability engagement, like Durden (2008) and Norris and O'Dwyer (2004). On the other side, studies such as Iatridis and Kesidou (2018), Yusoff et al. (2015), Testa, Boiral et al. (2018) and Testa, Iraldo et al. (2018) explain the use of environmental management systems (EMSs) as instruments for implementation, whilst other studies focus on the utilisation of accounting tools and techniques (e.g. Davies, 2014; Houdet and Germaneau, 2014; Jones, 1996). The motivation for engagement also becomes the focus of scrutiny when studying sustainability (e.g. Bansal and Roth, 2000; Chelli, Durocher and Richard, 2014; Boiral,

2016; Diouf and Boiral, 2017). Murthy and Parisi (2013) indicate that apparently, a general shift in the debate towards environmental aspects has occurred. Further elaboration on this literature is in the next sections.

More specifically, Mahsud, Imanaka and Prussia (2018) state that the discourse of sustainable development has to some extent been corporatised in ways such as the development of a sustainable index. Moreover, using the defence industry as a case study, they demonstrate that there are conflicting values between a company's business objectives and the motives of sustainable business practices (SBPs) and sustainable competitive advantage (SCA) implementation. This situation is not fostering the implementation of the true value of sustainability, but it could facilitate the greenwashing actions from some problematic companies.

The debate regarding the prominent environmental protection is continuously growing. McShane et al. (2011) criticise the win-win approach by communicating projects and policies of conservations. They argue that the notion of a trade-off concept that brings diverse actors to common recognition could be an alternative to have a more substantial engagement with conservation. There could be more substantial engagement by deeply considering its underlying assumptions, the scale of the social and ecological impact, an understanding that respects co-evolution of natural and human history, along with its complex and legitimate trade-off perspective. Ferguson, Sales de Aguiar and Fearfull (2016) explicate that market liberalism has framed the logic of engaging with the climate change challenge. In many corporate reports on climate change, critics have been addressed to the authorities and any organisations involved.

In summary, the discussion of environmental issues in the literature of sustainability is growing. However, a contradicting phenomenon in environmental

engagements is also emerging. Therefore, it is crucial to carry out an in-depth study of the internalisation process of environmental value to the key actors in an organisation.

2.3. Environmental Engagements in Management Accounting Control Context

The literature review in this part is grouped into two. The first sub-section discusses the body of literature in the management accounting control (MAC) practice. The starting point is to define management accounting in the management accounting research arena, and this will be followed by the development of research in MAC. The second sub-section reviews the literature that discusses environmental engagement in the MAC research arena.

2.3.1. The management accounting control practice

Management accounting is related to the concern of supporting managers in performing managerial activities. Its setting is oriented towards internal purposes and it is used in planning, organising, controlling/evaluating and decision-making. For example, in the case of young, small companies, management accounting that supports managers in handling the company growth and providing financial information for external users is the management accounting practice that is mostly being implemented (Pelz, 2019). Therefore, unlike financial accounting, management accounting practice is not bound to a particular standard or rules.

Before defining management accounting, it is crucial to understand what accounting is. In an attempt to answer this fundamental question, Chabrak et al. (2019) investigated positivistic US accounting research. They argued that their findings demonstrated the fact that accounting research was dominated by the idea of realism or 'being neutral'. Their arguments stated that too much reliance on the idea of realism

could hinder accounting research from uncovering the behavioural or other social and environmental aspects of the accounting practice. Furthermore, they stated that current accounting "*tells more than an impoverished economic fable of corporate performance*" (p.1429). This study brings the notion of having broader aspects into consideration as the prominent element in defining accounting.

According to Hopper et al. (2009), issues in management accounting itself are mostly related to or lie within management accounting relations with the social, cultural and political context, whilst at the same time management accounting play a vital role in the development process in less developed countries. They argued that there were relatively more powerful parties that shaped and reshaped influencing factors that, in turn, frame the management accounting implemented in less developed countries. Hence, they further argued that future research in management accounting should foster an understanding to enable local choices to improve material conditions in management accounting implementation. In other words, the specific local context with its embedded features is prominent to take into consideration to enhance management accounting system contributions that are more beneficial to local development. This is the reason of having a broad management accounting definition in their research in the first place.

In the attempt to map management accounting research, scholars such as Ittner and Larcker (2001), Luft and Shields (2003), Shields (2015) and Guffey and Harp (2017) have investigated studies in this arena to identify gaps and propose future potential trajectories for further research. Moreover, these studies also shed light upon how management accounting should be defined.

Ittner and Larcker's (2001) study reviewed the empirical research in management accounting based upon the value-based management (VBM). They argued that a VBM

approach represents quite long-term management accounting research and practices. They found that apparently, many prior management accounting studies have had faith in economic value as the most prominent variable in fostering value-creation activities in a business. Moreover, based upon the survey of 148 senior level executives, they also found that the environmental performance was considered as the least importance in driving the long-term organisation success. In addition, the environmental performance also had relatively low measurement gap, which means the established performance was not so far different with the perceived importance.

Additionally, Ittner and Larcker's (2001) study that based upon the VBM concept was emphasising the notion of limited capability of economic theories in explaining the management accounting practices. The continuously changing business environment lead the companies to face crucial risks for bigger opportunities (Nishimura and Nishimura, 2007), which makes Ittner and Larcker's (2001) study did not fully capture the management accounting development that were engaging with social, cultural and political aspects based upon other than economic-based value approach such as VBM. However, they stressed the need for studying management accounting practices (and research settings) to understand better the role of management accounting and its purpose in an organisation with a theoretical viewpoint that goes beyond economic theories. They also indicated that the complex and sometimes paradoxical facts urge the need for a more in-depth approach in investigating the phenomena.

The most prominent finding from the mapping of management accounting research is the inconsistent empirical findings regarding cause and effect of the relationship between the management accounting techniques and the caused factors (Luft and Shields, 2003; Shields, 2015). It has made the establishment of the

management accounting more challenging. Therefore, the next management accounting study should open up to the broad array of social theories to engage with the breadth of the problems' spectrum in management accounting.

Guffey and Harp's (2017) research had almost the same findings. For the last 25 years in the *Journal of Management Accounting Research* publications, they found that economics was still the most used underlying discipline in management accounting research. In terms of method, they concluded that more methods should be employed to enhance managerial accounting knowledge.

Based on these meta-analysis studies of existing management accounting research, it is apparent that there is a lack of attention to profoundly investigating management accounting as a practice that supports managerial tasks in an organisation. As Luft and Shields (2003), Shields (2015) and Guffey and Harp (2017) underlined, the need to have a deeper understanding of management accounting practice.

On the other side, the mapping mentioned above of management accounting research also depicts the fact that both management accounting and management control systems correlate with one another (Ittner and Larcker, 2001; Guffey and Harp, 2017; Shields, 2015). It intertwines the research in both management accounting and management control systems to some extent. Moreover, as an organisation's minimum objective is to survive, as argued by Lowe and Chua (cited in Berry et al., 2005), organisational control becomes the essential concern. Hence, some scholars focus on control mechanisms in studying management accounting control (e.g. Ahrens and Chapman, 2007; Ashraf and Uddin, 2015; Cristofoli et al., 2010; Järvinen, 2016; Johanson et al., 2006; Sundin and Brown, 2017).

Studies of control mechanisms in the management accounting arena have identified behaviour, context and powerful parties as important factors that are shaping

the implementation of management accounting control in organisations (e.g. Ashraf and Uddin, 2015; Cristofoli et al., 2010; Järvinen, 2016; Reusen and Stouthuysen, 2017). In terms of context, the difference between the public and private sectors becomes prominent by differentiating the implemented control mechanisms, as depicted in Cristofoli et al. (2010). Furthermore, the interrelations between actors and the embedded paradigm also make significant contributions in shaping control mechanisms in the case of public services in three Italian cities in their study. However, the deep process of making sense behind the differentiated structure was not thoroughly explored.

Apart from the context factor, dominant or more powerful parties also have a great impact on the way control mechanisms need to be implemented (e.g. Agyemang and Broadbent, 2015; Ashraf and Uddin, 2015; Järvinen, 2016). Dominant or powerful parties lead to the adjustment or modification of management accounting control to resolve or compromise on conflicting objectives. When it comes to implementing changes in accounting practice, such as budgeting, the perception of the actor plays a key role. Nevertheless, there was still limited knowledge of how the actor's perception influenced the activities alongside with the other elements such as the existing structures.

Changes that are perceived as rational and sensible are more likely to take place rather than driven ones (Hyndman and Liguori, 2016). Also, imitating behaviour that exists in some companies contributes to the fitness of the implemented MCS and strategy, as depicted in Reusen and Stouthuysen's (2017) findings. These studies lead to the importance of key actors' intelligibility as a prominent variable or factor in elaborating on how a particular management accounting control mechanism is employed. Insofar, the above studies provide limited knowledge of the practice

intelligibility and its relationship with the existing structures. The interrelationship between the practice intelligibility and the structures can shape and reshape the practices undertaken by the actors.

On the other hand, scholars are also attempting to study the interrelationship between the MCS and the implemented strategy in companies. This kind of research pays attention to actors' perspectives (Bedford, Malmi and Sandelin, 2016), and the interdependence of the MCS as a package and firms' strategic contexts (Frigotto, Coller and Collini, 2013) and types of business as well (Acquaah, 2013). Interestingly, to some extent, the firm's strategy does not always determine the MCS practice choice and there are a lot of factors that are influencing the strategy formulation. Factors such as corporate culture, value and even identity (see Kastberg and Siverbo, 2016) as well as external socio-cultural factors are potential factors that could contribute to the interrelationship between the strategy and MCS practices. The above studies provide only limited insight regarding these matters. Therefore, more in-depth investigation at practice level has been identified as the trajectory of further study in this arena.

Although there are limited studies using the practice perspective, some scholars, such as Ahrens and Chapman (2007), Sawabe et al. (2010), Nama and Lowe (2014), Makrygiannakis and Jack (2016), Erhart et al. (2017), ter Bogt and Scapens (2019) and Tekathen (2019), have broadened the perspective in the management accounting research arena. In general, their investigations are attempting to uncover the kinds of doings in the management accounting and control context, alongside the contributing factors that are shaping those practices.

Scholars such as Ahrens and Chapman (2007), Nama and Lowe (2014) and Tekathen (2019) demonstrate in their studies that practice management accounting control consists of a bundle of practices and arrangements. This bundle is manifested

in daily activities such as menu design, fundraising, investment and risk management activities. Accounting becomes the situated functionality that contributes to the shape of the practice intelligibility. This management accounting control practice is intersecting or creating a mesh of practice along with other business or operational activities. In their studies, the 'general understandings' and 'teleoaffective structure' are closely related and mutually constitutive. However, although elements of practice organisation had been identified, any potential interconnection between the elements were not deeply investigated. Moreover, how the practices were hanging at the social orders that shape the arrangements at the industrial level were also not well explored. Discussions upon the aforementioned aspects are also prominent in explaining the deep process of practice in the management accounting context.

Apart from the situated functionality notion, the emotional aspect attached to a particular action also shapes actors' doings and sayings, such as in Sawabe et al. (2010). By studying the emotional aspect as an inseparable part of the process of constructing future vision and actions by key actors through accounting in Tie Bank, Sawabe et.al. gave the new insight about the role of emotions in shaping the accounting practice. Emotional aspect became the prominent element that shape the teleoaffective structure in the strategising process. However, Sawabe et.al. did not explained the value that underpin the emotions. The internalised value or belief could contribute in normativising the hierarchical order of Tie Bank's objectives.

Investigations of the agent and structure relationship have been conducted as another avenue in understanding the management accounting control practice. For example, Makrygiannakis and Jack (2016) focuses on management accounting change and uncovers how structures and in-situ agents relate to each other, which means that organisational agents are not isolated from broader social environments and the

changing environment influenced the procedures. Furthermore, Erhart et al. (2017) depicted that many relations in social settings, including in management accounting, are bidirectional, like the controller's involvement and the organisation's strategy formation approach. ter Bogt and Scapens (2019) empirically evident that various ways of implementing accounting changes are constituted by different forms of situated rationality. Nevertheless, the knowledge of the agent and structure relationship that influence what the agent do and say in management accounting context is still limited.

In summary, up to this point, the mapping of management accounting research has led to the conclusion that it is important to open up perspectives in defining management accounting. The too narrow and positivism-based management accounting definition tends to emphasise the technical definition only and limits its capability to cope with wider aspects of related issues and problems (Hopper et al., 2009; Shields, 2015). The conjunction between management accounting and MCSs in many studies underpins the conclusion mentioned above. However, some of those studies rely on the quantification of factors or variables in management accounting and MCSs alongside relationships among them (see Bedford et al., 2016; Reusen and Stouthuysen, 2017). This has led to a limited explanation of the broad perspective of management accounting practice.

On the other side, the use of a practice perspective helps to push the boundaries of the management accounting definition to cope with the relevant extensive issues. Although intelligibility has been deeply explicated in some studies (e.g. Ahrens and Chapman, 2007; Nama and Lowe, 2014), there is still limited explanation of how actors perceive or apprehend management accounting practice among other business activities. In some research, there are explanations about how external parties or dominant groups have shaped the management accounting in a company or

organisation, such as in Ashraf and Uddin (2015) and Järvinen (2016), but again, there is still limited explanation of how this kind of intentional relation has shaped the daily doings and sayings. If the context contributes to the shaping of a certain practice, then it should be essential to include intentional relations between an organisation's bundle of practice and arrangements with a broader context. It could be argued that it is important to study further how a broader context, such as the industrial sector, implicates the organisational level site. For example, how the public sector context implicates the arrangements in a service provider company level or how the government regulations regarding risk management implicate the enterprise risk management (ERM) practice in a divisional level could be researched.

2.3.2. Embedding the environmental issues to management accounting control

Baker and Schaltegger (2015) indicated that the sense-making process of the social and environmental engagements is prominent. Also, there are motives that incentivise the adoption or engagement towards environmental issues in management accounting, including coercive pressures from a regulatory perspective (Imtiaz Ferdous, Adams and Boyce, 2019).

Companies' engagement with the sustainability notion is inevitable. The engagement is manifested in many forms, such as conservations (e.g. Cuckston, 2013, 2017, 2018), corporate social responsibility (CSR) (e.g. Arjaliès and Mundy, 2013; Barnett, 2007; de Roeck and Delobbe, 2012), environmental management systems (EMSs) (e.g. Testa, Boiral, et al., 2018; Testa, Iraldo, et al., 2018), management control systems (MCSs) (e.g. Durden, 2008; Dutta et al., 2016), and even the utilisation of accounting tools (e.g. Davies, 2014; Houdet and Germaneau, 2014; M. J. Jones, 1996; Tregidga, 2013; Vesty et al., 2015), with various motives that incentivise it.

Environmental reporting is the media to disseminate the engagement to stakeholders (e.g. Tregidga, Milne and Kearins, 2014; Liempd and Busch, 2013).

The most common corporate or organisational engagement with environmental issues is through CSR activities. Barnett (2007) defines CSR as 'a discretionary allocation of corporate resources to improving social welfare that serves as a means of enhancing the relationship with key stakeholders' (p.801). A large body of literature investigating company engagement through CSR has provided several important empirical findings. CSR activities can to some extent have financial or economic impacts (e.g. Chang et al., 2018; Hasan et al., 2018; Malik and Kanwal, 2018) and therefore, certain control mechanisms play an important role in its implementation (Arjaliès and Mundy, 2013). From a strategic perspective, CSR has an impact on a company's attractiveness (Kim and Park, 2011) and gives a positive impression. On the other side, existing regulations that tend to normatively emphasise high compliance regarding CSR activities lead to a more hesitant and resistant engagement, as explicated by Lauesen (2014). Moreover, the already developed notion of the relationship between CSR and corporate financial performance potentially deviates the motivation of conducting CSR from the original sustainability incentive towards a business-oriented one (see Cho et al., 2018; Mahsud et al., 2018). However, these studies that focus upon the engagements through CSR and its relationship with financial impact that benefit the company, still lack of focus upon the sense-making of the CSR activities and how to make it substantial.

Control mechanism is one important factor in environmental or sustainability engagement. Business organisations had adopted arrangements through the interactions between corporate-level arrangements and the macro-level ones (Albareda, 2014). The relationships between the companies and government were also considered necessary

in addressing social issues such as human rights issue (McPhail and Adams, 2016). The knowledge of how the macro-level arrangements and the related authority influence the control mechanism in an organisation is absent in these studies. Hence, how the control mechanism is interacted with the broader arrangements should be further studied.

In other studies, the roles of both formal and informal controls in the engagement are emphasised. For example, in terms of social engagement issue, scholars such as Norris and O'Dwyer (2004) and Durden (2008) highlight the recruitment and selection processes as part of the control mechanism of the human resource to involve them in the engagement. Norris and O'Dwyer (2004) depict that a careful employee selection process is utilised to foster the building of a strong social concern and observance culture among employees and managers. Further, the induction process involves employees in the community's projects and becomes a way to internalise the value. In an almost similar vein, Durden (2008) in his case study describes that a company's recruitment policy to prioritise local unemployed young people is one way they can contribute to society as a thank you for their kindness in letting them use their resources. However, in Durden's investigation, the lack of clearly defined social responsibility goals becomes an obstacle in setting formal control in measuring and monitoring relevant activities.

Regarding the environmental issues, the integration of environmental aspects into existing MCSs becomes one alternative to address environmental issues (e.g. Henri and Journeault, 2010; Sundin and Brown, 2017; Wijethilake, Munir and Appuhami, 2017). This integration has become a medium to strategically respond to institutional pressures (Wijethilake, Munir and Appuhami, 2017). Sundin and Brown's (2017) research on a property company reveal that the integration of environmental objectives into the MCS

package through performance measures, costing and specific environmental management systems to some extent succeed in bonding and monitoring agents' behaviour to environmental engagement, even though some conflicts and trade-offs are inevitable.

By unpacking the Malmi and Brown (2008) MCS framework, studies such as Lueg and Radlach (2016) and Guenther et al. (2016) have elaborated the integration of environmental aspects to MCSs. Based on the Malmi and Brown framework, Lueg and Radlach (2016) conclude that to manage and evaluate sustainability, classic 'cybernetic' controls are still preferable. However, cybernetic control is not always capable of overcoming barriers of sustainable development implementation. Besides, environmental issues are the aspects that organisations prefer to deal with rather than social ones. In an almost similar vein, Guenther et al. (2016) unpack the Malmi and Brown (2008) MCS framework by integrating environmental management accounting (EMA), following the framework of Burritt et al. (2002). The study upon the integration of environmental aspect into control system is only focus upon the structure or one side of the coin, but it neglected the role of the actors that undertake their activities within the discussed control framework.

The implementation of certain EMSs, such as ISO 14001, is one way an organisation can address environmental issues. Balzarova and Castka (2008) depict that a company's environmental engagement starts and is defined by the 'translation process' of external environmental demand by an EMS team. The underlying process that covers essential aspects such as transformation, improvement, understanding and communication becomes the critical thing to maintain the engagement. Some scholarly investigations have uncovered prominent factors to consider in EMS implementation, such as the understanding of actors, external pressures (institutional or stakeholder) and

the internal motivation that triggers the engagement (e.g. Iatridis and Kesidou, 2018; Yusoff, Nordin and Yusoff, 2015; Testa, Boiral and Iraldo, 2018).

According to Gond et al. (2012), the integration process between MCSs and environmental issues involves several dimensions: first, technical integration which is about the practice of sustainability control within a broader MCS; second, organisational integration, regarding actors' roles and organisational structures; and third, cognitive integration, which concerns people's frameworks of thinking in regard to sustainability. The integration process presents a movement from diagnostic to interactive systems. The configuration of the use of diagnostic and interactive systems is designed in relation to an organisation's environmental awareness in relation to its strategy formulation.

Furthermore, as elaborated in Yusoff, Nordin and Yusoff's (2015) study, EMSs such as ISO 14001 provide the necessary structure to manage environmental impacts and performance of businesses in their effort to improve environmental accountability. Another example is an investigation that involves a semi-structured interview of environmental managers and management accountants in ten Spanish Eco-Management and Audit Schemes (EMASs) registered sites by Albelda Pérez et al. (2007). They found that engagement through a more sophisticated use of management accounting practices, including management control, leads to a solid environmental management system.

The above studies provided knowledge of the implementation of certain arrangements or orders that integrate the environmental aspects with the business ones. However, such arrangements or orders are also interconnected with the broader level of orders. To some extent, the interconnection between these orders with the broader-level ones were still not well investigated. In addition, the entities arrangements also

play important part in implementing certain systems. Thus, the deep process of how the interconnection is happening, and how the actors are engaged with it, is very important.

Besides the engagement above, some companies address environmental issues by utilising accounting tools or techniques. Internalising externality costs is the main notion in environmental engagement using accounting tools. The engagement towards environmental issues using various accounting tools is elaborated in a large body of literature. For example, the full-cost accounting (FCA) notion by Davies (2014) measures all the sustainability impacts of organisational activities in common monetary terms. Another engagement studied by Bebbington et al. (2007) uses sustainability assessment modelling (SAM) in UK and New Zealand companies that originated from FCA. This provides a mechanism to explore many possibilities and challenges in sustainability from a costs and benefits perspective. The natural inventories notion by M. J. Jones (1996, 2003) attempts to monetise the biodiversity of natural resources by using market values to support business decision-making. Furthermore, accounting technology also exists in offset mechanisms such as the biodiversity offset mechanism (e.g. Tregidga, 2013; Ferreira, 2017) and carbon accounting (e.g. Vesty, Telgenkamp and Roscoe, 2015). In addition, Feger and Mermet (2017) propose a concept that focuses on an evaluative information system for conservation (EISC) as the 'proto-accounting system' that facilitates ecological management. Dutta et al. (2016), meanwhile, provide a model based on a standard costing system that includes the costs of negative externalities resulting from input consumption by incorporating sustainability aspects into the cost variance analysis concept. The main challenge in the above innovations is about the quantification of the environmental aspects and valuing

it to some extent. This challenge could be problematic since the innovation is not about the substantial activity that must be undertaken by the actor.

On the other side, there are studies like R. Burritt and Schaltegger (2014) and Christ (2014) that investigate the adjustment in business processes, such as supply chains. They argue that environmental engagement through business processes like the supply chain mechanism is necessary to foster a more sustainable industry. The inclusion of environmental considerations in the strategic planning process (Christ, 2014) and the development of new performance measurement and new management approaches (Burritt and Schaltegger, 2014) are among the recommendations they provided to improve business processes for environmental engagement by utilising management accounting concepts.

An organisation's or corporate's social and environmental reporting (SER), with various templates or references, provides information about conducted engagement with related issues. Moreover, accounting and reporting practices potentially foster managers' or other business actors' aspirations and intentions regarding sustainability (Busco et al., 2018), which in time could lead to engagement towards sustainability issues. However, SER to some extent is 'inconstant' and 'multifunctional', which means it evolves through time to always be in congruence with organisational needs (Contrafatto, Costa and Pesci, 2019). Managers in charge for this kind of reporting play a prominent role in the institutionalisation process, which also faces challenges from both internal and external (including organisational) factors (Farooq and de Villiers, 2019).

A large body of literature discusses SER in many strands. Studies like Spence (2007) and Lodhia and Jacobs (2013) bring about empirical evidence of reporting practice. Spence (2007) studied the emerging discourse in the context of social and

environmental reporting (SER) and corporate social responsibility (CSR) in the UK by interviewing representatives of large commercial organisations. It is evident that most SER and CSR is articulated as business cases, which is considered as part of an organisation's strategy that in turn should provide benefits for that organisation. Further, Spence argues that the notion of three pillars in sustainability, economic, and environmental and social are conflicting to some extent, which leads to an attempt to balance actions in many ways. Lodhia and Jacobs (2013) elaborate in different ways on engaging with environmental issues by utilising the reports of two governmental departments. Their investigation focuses on the environmental reporting practices that turn out to be in contrast due to motives and actors as contributing factors. Environmental reporting is elaborated as the activity of preparing and determining what is disclosed in reports driven by the factors mentioned above. Other scholarly investigations have been conducted on integrated reporting (IR) practices from a discourse perspective (e.g. Haji and Hossain, 2016; Haji and Anifowose, 2016). The studies investigate a group of reports as a sample and it is evident that specific grammar and terms have been used to disclose corporate environmental engagements. On the other side, Gallhofer (2018) proposes developing corporate social responsibility reporting into corporate nature responsibility reporting, which is broader and more holistic in engaging with social and environmental issues.

Other scholarly investigations focus on the reporting of specific issues, such as biodiversity reporting (e.g. Liempd and Busch, 2013; Rimmel and Jonäll, 2013). Liempd and Busch (2013) and Samkin, Schneider and Tappin (2014) indicate that reports for a specific issue such as biodiversity are limited due to an absence of biodiversity intrinsic value. Further, the need of a reporting framework as a catalyst for biodiversity information disclosure is also explicated in the study by Rimmel and Jonäll

(2013). Apart from the measurement challenge in developing a biodiversity reporting framework, Samkin, Schneider and Tappin (2014) argue that the use of appropriate and proportionate narratives in an annual report to present biodiversity may impact information users' understanding of an organisation's concern in this particular issue. Moreover, Tregidga, Milne and Kearins (2014) provide evidence that the reporting practice could act as a device that depicts an organisation's position in the engagement with sustainability issues. As an organisation's position evolves, the way it presents its sustainability reporting is also changing, along with its narratives or discourse.

Apart from the notion of having biodiversity reporting, Atkins and Maroun (2018) develop the idea of extinction accounting. Developing the idea from biodiversity reporting, they propose to combine the anthropocentric and deep ecology perspective in creating a new accounting stream that urges companies to disclose any endangered species affected by their operations. However, the notion of extinction accounting still refers to the financial context, although qualitative and quantitative information could be deployed.

Bansal and Roth (2000) argue that competitiveness, legitimation and ecological responsibilities are factors that incentivise an organisation's engagement, hence the cost-relevant considerations playing the most important role. In addition, by drawing on the frameworks of Roberts in 2003, Schaltegger and Burritt (2018) elaborate the linkage between the ethical management version and the type of business case in terms of engagement through CSR. Four ethical management versions have been identified: self-seeking, defending the conventional business approach, self-aggrandisement and seeking grandiosity, striving for business excellence and developing business with stakeholder participation and collaboration. The ethical management versions correspond to the type of business case; those are reactionary protection of

conventional business cases, reputational, responsible, and collaborative business cases for sustainability, respectively.

Studies such as Boiral (2016), Diouf and Boiral (2017) and Haji and Hossain (2016) demonstrate that sustainability reporting is a form of engagement that hopefully provides long-term profitability by creating positive impressions. In their studies, they explicate that some were attempting to increase positive impressions of companies and cover negative ones through sustainability reporting, which to some extent potentially leads to the creation of a 'smokescreen' to possibly hide real substantial actions being performed (Boiral, 2016). In almost the same avenue, empirical evidence has been exhibited in some studies, such as de Jong et al. (2014), L. Cai et al. (2016) and Endrikat (2016), demonstrating that environmental engagement brings positive financial impact and improves risk management. Alawattage and Fernando (2017) in their study explain that the corporate social and environmental accountability (CSEA) of companies in a less-developed country (Sri Lanka) is more likely to be used as a textual strategy element of becoming global. However, there is still a significant lack of in-depth explanation about how the positive financial impact can be brought up to the surface. Most of the evidence provides quantitative proof of the financial impact for both the short and long term, but the process is still a matter of a black box.

Furthermore, in regard to the business perspective, Mahsud, Imanaka and Prussia (2018) argue that problems and contradictions with sustainability-value core business will potentially lead to superficial engagement towards sustainability. They base their evidence upon companies in the defence industry, which have many contradictions with the sustainability notion. Further, they argue that an authentic sustainability mindset has to be the underpinning foundation of the sustainability practice. In an almost similar vein, Cho et al. (2018) demonstrate that companies can put the

sustainability notion aside to prioritise more strategic objectives. By following the Mahsud et al. (2018) argument, pursuing the financial or competitiveness impact could hinder a company from the original spirit of environmental engagement from a manager's point of view. Their Foucauldian sense of discourse analysis leads to the conclusion that although the CSEA signifies cultural differences within a colonising framework, it has a limitation in addressing crucial sociocultural, political and environmental issues.

The second motive, according to Bansal and Roth (2000), is about legitimacy. A large body of literature, such as studies by Tilling and Tilt (2010), de Roeck and Delobbe (2012), Cordeiro and Tewari (2015), Cormier and Magnan (2015) and Lehner et al. (2019), has empirical evidence that refers to legitimacy as motivation for environmental engagement. Increasing legitimation can come from social and environmental reporting or disclosure (e.g. Cormier and Magnan, 2015; Tilling and Tilt, 2010) or CSR activities (e.g. Cordeiro and Tewari, 2015; de Roeck and Delobbe, 2012; Lehner et al., 2019). More specifically, Lehner et al. (2019) explicate that actors' social identity is strongly correlated to the legitimation strategy through environmental engagement. To some extent, there is an overlap between legitimacy and long-term profitability/economic motivations, as depicted in prior studies' findings.

Furthermore, for studies with a focus on legitimacy motives, scholars like Chelli et al. (2014) and Lee and Xiao (2018) provide different evidence explicating that environmental engagement is also driven by the avoidance of penalty or compensation payment for non-compliance and external pressure as a consequence of past poor environmental performance. Both cases potentially lead to non-substantive actions. Unfortunately, despite the engagement as an avoidance or reparative attempt, there is

a lack of elaboration regarding actors' understanding and awareness that could drive the next engagement.

The third motivation explained by Bansal and Roth (2000) is more related to the inner motivation that refers to actors' belief about 'the right thing to do'. Research such as Bouten and Hoozée (2013) and Busco et al. (2017) evidences that managers' and CEOs' commitment to environmental responsibility that is based upon their awareness could lead to more substantial environmental practices and reporting. Also, Chelli et al. (2019) demonstrate that for some companies environmental reporting is becoming their way to express environmental engagements, and this can shift to be more substantive by explicating more factual and substantive evidence and practical activities.

Both Lueg and Radlach (2016) and Guenther et al. (2016) clearly explain the integration of social and environmental issues in the MCS context. However, the motives that incentivise companies in engaging with environmental issues through MCSs may vary. In a broader sense, Deegan (2002) elaborates several reasons that could motivate engagement: compliance (to the legal, industrial or borrowing requirements and community expectations), economic rationality considerations, the belief in the accountability and responsibility to report, a threat to the organisations' legitimacy, to manage particular (powerful) stakeholders, to attract investment funds, to forestall efforts to introduce more onerous disclosure regulations or to win particular reporting awards. For the specific EMCS context, studies such as the ones by Wijethilake et al. (2017) and Sundin and Brown (2017) elaborate the motives of engagement that are based on external demands, such as investors, regulators or competitors that already engage with environmental issues. In other cases, motivation comes from within the company, such as Riccaboni and Luisa Leone (2010), Bouten

and Hoozée (2013) and Durden (2008). The various motives depicted in those studies lead to various results of engagement.

Bracci and Maran (2013) explicate that in the accounting context, it is important to think that accounting systems and financial reporting act as privileged gateways to be involved in the environmental awareness of a firm. The framework of thinking in accounting, which refers to the valuation of activities or things, makes it possible to internalise externalities. This means that accounting makes it possible for an organisation to bear its economic, environmental impact. However, existing accounting regulations still cannot address the justification of internalising the 'cost of environmental externalities' due to the discourse of clarity, comparability, relevance, competence and fair representation of organisations' performance.

Due to the limitation above, the utilisation of accounting tools to address environmental issues such as biodiversity accounting becomes problematic. Despite the fact that existing accounting development is not sufficient to protect the biosphere for a long-term period, Feger and Mermet (2017) argue that in biodiversity accounting research there is still a lack of focus on addressing conservation issues and operationalising collective management of ecological systems. Moreover, accounting tools such as the offset mechanism (for example, see the Kasigau Corridor case in Cuckston's (2013) study) contains paradoxical findings, pursuing the betterment of environmental engagement through biodiversity conservation. However, at the same time, financial accounting calculation has the potential to alter human engagement with the environment radically. Nevertheless, the 'black box' of the offset mechanism along with the debatable product valuation reference brings a contra effect to engagement and could lead to what sincere environmentalists call a 'greenwashing' action. Tregidga (2013) also argues that the business actors' perception of the offset mechanism could

oversimplify the problem because of the implication of accounting rationalities and practices.

EMS and/or MCS utilisation in environmental engagement has the potential to lead to substantial engagement. However, this kind of engagement, like that using accounting tools and techniques, potentially creates a paradox due to the contrasting notions of environmental protection and economic benefits. It can be argued that in the literature in this arena there is still a lack of studies that deeply investigate the mechanism of how these structures can reshape people's doings and sayings and reframe their minds regarding environmental protection. Scholarly studies that focus too much on the implementation of performance or control indicators in the EMS or MCS do not explain how those indicators could redirect usual conservative business activities to become more environment-oriented ones, nor how those indicators could shape actors' behaviour and practice intelligibility. Moreover, too much focus on the implementation of EMS and its economic impacts only strengthens the competitiveness motive of environmental engagement and becomes an obstacle to shift to a more substantial motive. This also happens with literature that puts too much attention on CSR economic impacts. Feger and Mermet (2017) strongly recommend that more critical accounting research is required with a combination and establishment of theories related to organised actions and accountability systems that also cover social, organisational and political dimensions. In other words, environmental management accounting research needs to open up to a more critical philosophical stance in studying the phenomenon.

Also, regarding accounting engagement with environmental issues, Gallhofer et al. (2000) argue that it is essential to realise an organisation's responsibility towards nature. This responsibility leads to more responsible accounting engagement with more

awareness of the importance of the physical character of operations and not merely depending upon financial surrogates such as economic growth. Further, Adams and Larrinaga-González (2007) indicate both the critiques emerging from and those set upon prior social and environmental accounting research. They believe that 'managerial capture' in its context is essential in promoting significant changes in an organisation's social and environmental engagement that could lead to more significant changes in both practices and research. Furthermore, engagement with the sustainability notion involves practices. The practices are organised by a set of rules and other important instruments that are ‘distinct from’ and ‘differentially incorporated into’ participants’ minds (Schatzki, 2003). Further, what the participants or persons do in practice depends on his or her understanding of the situation and the motives (Schatzki, 1996). Therefore, it can be further argued that conducting an in-depth study about how environmental practice is conducted in a particular organisation by key actors corresponds to the identified 'managerial capture' of Adams and Larrinaga-González (2007).

In summary, most of environmental management accounting studies as elaborated above were dominated with the investigation of the implementation of environmental management system and the integration of environmental aspect into MAC system. From theoretical perspective, legitimacy theory is still the dominant theoretical framework used whilst MCS as a package is the mostly used one in these studies. It creates the gap that EMA studies with practice-oriented theories were still limited. More in-depth studies that stands upon non-positivism paradigm are needed to have better understanding about the EMA from the lens of activity of the actor with the knowledge of the sense-making process.

2.4. The Environmental Management Accounting Research in Indonesian context

In the introduction chapter, it is mentioned that this research is taking the case studies in the Indonesian context as the empirical evidences. From the environmental perspective, Indonesia has significant environmental aspects in terms of the biodiversity and the emission from the agriculture sector. On a worldwide scale, the World Bank has indicated that in 2018, there were a number of threatened species existing in Indonesia. There were 160 bird species, 166 fish species, 191 mammal species and 458 plant species (the World Bank, accessed 16th March 2020). From the emission aspect, the agriculture sector globally is the second contributor to the environmental impact after the energy industry with 18.4% of greenhouse gas emission. Despite the emission contribution per sector, total carbon dioxide (CO2) emission from Indonesia is rising from 366.84 tonnes in 2014 to 614.92 tonnes in 2018 (Ritchie, accessed 26th October 2020). Indonesia with the large agriculture territory also leads to significant emissions from its agriculture sector. Emission indicators, as shown in table 2, signify the environmental impact of the Indonesian agriculture sector. Hence, with the above reasons, it is prominent to review the development of EMA literatures in the Indonesian context.

Specifically for the agriculture sector, Gerssen-Gondelach, Wicke and Faaij (2017) explicate the impact of cultivation practices (e.g. fertilising, pest control and land management activities) on greenhouse gas emissions as a prominent indicator of environmental effect. Agriculture environmental impacts (especially unsustainable agriculture) become the driver of biodiversity loss and increased greenhouse gas effect (which the agriculture sector contributes 10% or up to 30% of total greenhouse gases) (Kastratović, 2019; United Nations, 2019).

Table 1 Percentage of Emissions from agriculture out of the total emissions on a worldwide scale

Shares of total		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
CH_4 emissions	Agriculture and related land use only	46	45	46	45	44	44	43	43	44	43	43
CH_4 emissions	Total	100	100	100	100	100	100	100	100	100	100	100
CO_2 emissions	Agriculture and related land use only	14	14	15	14	12	12	12	12	12	11	11
CO_2 emissions	Total	100	100	100	100	100	100	100	100	100	100	100
N_2O emissions	Agriculture and related land use only	74	74	75	75	75	74	74	74	75	74	74
N_2O emissions	Total	100	100	100	100	100	100	100	100	100	100	100

Source: Summarised from FAOSTAT, accessed 16th March 2020.
Note: Total emission includes the emissions from agriculture land use.

Table 2 Percentage of Indonesian agriculture emissions out of the total in south-east Asia

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
CH_4 emissions	27%	28%	43%	27%	37%	37%	36%	48%	50%	33%	33%
CO_2 emissions	78%	79%	83%	77%	78%	78%	77%	81%	82%	75%	75%
N_2O emissions	44%	47%	49%	45%	50%	50%	48%	52%	53%	48%	47%

Source: Summarised from FAOSTAT, accessed 16th March 2020.

Insofar, the studies about the environmental engagements from the accounting perspective with Indonesian context provided limited knowledge about the in-depth process of the corporate environmental engagements. The focus of the studies was mostly upon the disclosure practice and the environmental performance with factors that were affecting it. Empirically in the Indonesian context, the environmental disclosure helped to support the explanation of the firm market value and complemented accounting information (Sarumpaet, Nelwan and Dewi, 2017). However, the environmental disclosure itself did not affect the firm market value nor

mediate the financial and environmental performances upon the firm value (Deswanto and Siregar, 2018).

Apart from the disclosure practice, the environmental engagements were also undertaken by implementing EMA system, sustainable innovation strategy, green energy and technology. EMA studies with the Indonesian context depicted that these engagements brought significant impacts to the environmental and financial performances as well as the corporate competitive advantage (Solovida and Latan, 2017; Hariyati and Tjahjadi, 2015; Christine et al., 2019). However, by focusing upon the relationship between the environmental engagement with the corporate performances, these studies were lack of explanation about how the deep process of the discussed environmental engagements were undertaken.

On the other side, some studies have discussed the implementation of the environmental engagements. There are also factors that influence the quality of the engagements. For example, the green intellectual capital that corresponds to the environmental intellectual that played important role in improving the environmental performance (Sidik et al., 2019), the government role to trigger the increase of the disclosure practice (Deswanto and Siregar, 2018), the expectation of future benefits of the engagements that influenced the action to implement EMA system (Susanto and Meiryani, 2019) or the managers' interpretation of the eco-efficiency concept that played important role in the environmental engagement in an Indonesian cement manufacturer (Basuki, 2015). However, these studies were not clearly explaining the deep process of how the discussed factors influenced the environmental engagement and improve its quality. There are human mind aspects that influenced the practice, such as the intellectuality that supposed to influence actions to increase the performance that were not deeply investigated. The human interpretation upon certain

concept is influenced by many factors including the socio-cultural factors and educational background of the person himself/herself. The deep process of how the interpretation is shaped and reshaped by the external factors, including the government, and in turn it could influence the engagement is not well explained.

Regarding the theoretical framework, legitimacy theory is insofar dominated the above studies. The legitimacy theory provides the explanation of the motives of the environmental engagements. However, to understand the deep process of the environmental engagement requires broader theories. Asian countries (including Indonesia) are unique in terms of social, economic, political and it legal aspects (Arena, Liong and Vourvachis, 2018). The above studies dominated with economic consideration and lack of exploration about social, political and legal aspects. Based upon the above studies, there were human factor (Basuki, 2015; Susanto and Meiryani, 2019) and the structure factor such as the EMA system, the market and the government regulations (Sarumpaet, Nelwan and Dewi, 2017; Deswanto and Siregar, 2018). The social structures and social interactions are interrelated, between individuals and group at the level of social interaction (Archer, 1995). Hence, to understand the deep process of the environmental engagement activity, the future studies in Indonesian context need to be further investigate the in-depth process of the interrelationship between the human and the structure. The focus upon the human as the agent that undertake the activities and the making-sense of the activities is prominent to study the substantial environmental engagement practices.

2.5. The Internalisation Process

To foster substantial corporate or organisational environmental engagement, it is important to conduct an internalisation process of the environmental value or

sustainability notion. There has been a wide spectrum of perspectives regarding the internalisation of the environmental or sustainability notions.

In some literature, the internalisation process involves the implementation of a certain system. The internalisation process of a system such as ISO 9000 involves processes of education, implementation, documentation and auditing in daily basis (Cai and Jun, 2018). The shared understanding among a certain level of plays important role in the ISO 9000 practice, which further the ISO 9000 practice exists in the employees' and managers' consciousness. This means that one's understanding is then manifested in the business process activities. In addition, Lisi (2015) argued that the implementation of such system like environmental performance measurement (EPM) systems also facilitated the translation of a company's environmental motivation into performance.

The internalisation process factors such as understanding, more powerful actors, pressures and motivation influence the process. Regarding the understanding, Coyte (2019) explains that subjective and inter-subjective understandings are shaped and reshaped as a result of both interactions between actors and the utilisation of certain devices (in this case, the utilisation of certain performance indicators in MCSs) in conducting particular activities. In studying the accountants' contributions towards sustainability, Egan and Tweedie (2018) concluded that accountants' professional habitus has discouraged them from 'going beyond collecting numbers', although it was potentially malleable subject to capitals, time and the emerging discourse.

Apart from the understanding, Ball and Craig (2010) explicated that aspects such as interests and beliefs were prominent in the internalisation process with the historical aspect that also contributed to the framing process of key actors' minds regarding existing environmental issues to be addressed. However, further study is needed to see

the same logic in the private sector industry. It explicated the external pressure and internal motivation were contributed to the internalisation process that might lead to the symbolic implementation of new systems in companies. Further, internal motivation provided the force for a more substantive internalisation of the new systems and strengthen or improve the everyday operations and the organisation position in front of stakeholders (Iatridis and Kesidou, 2018). Key actor's view and beliefs such as the founder and senior managers have prominent role in influencing different responses to environmental issues through certain arrangements (Heggen, Sridharan and Subramaniam, 2018). Key actors' view of certain issues such as environmental issues define an organisation's belief or value that sets up the engagement at operational level and the embeddedness of the values to their daily activities. On the other side, Testa, Boiral et al. (2018) study upon environmental issue found that institutional pressures generally strengthen proactive practice internalisation (e.g. employee training, performance measurement, and internal audits) in various influences. External pressures from stakeholders can have positive influences on the companies to conduct corporate greening and improve their legitimacy, and also potentially lead to non-substantial engagement. However, by focusing upon institutional theoretical framework, the internalisation is only seen as the explanation of how certain organisation is 'adapting' to the external changes. Internalisation process should be more than that.

Furthermore, Interactions and communications are prominent in enabling organisational change. Masquefa, Gallhofer and Haslam (2017) stated that interactions and communications between research and development unit and accountants could enable micro-organisational change and led to the shifting roles.

Apart from the matter of understanding, ter Bogt and Scapens (2019) acknowledged that they believe that impacts are only upon imposed rules in certain organisations. Taken-for-granted assumptions that might contradict the notions from institutions were influencing the institutionalisation process. Their power of rejecting or accepting a certain notion in the institutionalisation process shapes the situated rationality. Thus, it means that it is prominent to further study the neglected matter of the relationship between the practice intelligibility and its constituted elements.

Up to this point, the literatures has depicted the importance of the agents or actors and his or her understanding, belief and value. These are the internal elements of the agents or actors that contribute to the internalisation process. This is why it is important to study the deep process of the internalisation process and its manifestations.

Furthermore, Chung and Parker (2008) elaborated that in the implementation of social and environmental management systems and control, the structures that governed the engagement was dialectical. Unsynchronised structure (unsynchronised financial control and reporting system and social and environmental initiatives) potentially marginalise the social and environmental engagement. It is evident that internalisation process is more than just implementation of certain systems.

By referring back to case studies conducted by Stoughton and Ludema (2012) and Bouten and Hoozée (2013) regarding the change in management accounting and sustainability practice, the deep concern within organisation members (particularly managers) defines the success of the engagement with new practices. The deep concern is shaped by several elements that are underpinning actors' activities or doings regarding engagement. This concern as an important element that could define the quality of engagement needs further study. This is the thing that defines the

environmental engagement practice, whether it becomes a substantial engagement or only a superficial one.

2.6. The Constructed Research Gap

The environmental issue is an inevitable challenge that all humankind must face. The world's limit to growth (Meadows et al., cited in Gray, 2006) should be well addressed and lead to change in the way people do business. Business as usual is no longer tenable (Gray, 2006b).

The first milestone in constructing the research gap is to understand sustainability engagements. Aras and Crowther's (2009) explanation of the sustainability discourse emphasises that there are social and environmental aspects that need to be well engaged with by business organisations. Organisations' engagement could be a focus on either social or environmental aspects of sustainability, or conducting discretionary activities to contribute to the betterment of social welfare, known as CSR (Barnett, 2007). Social aspect engagements involve human-resource-related policies such as recruitment and selection processes (Durden, 2008) or a human resource development programme such as the induction programme (Norris and O'Dwyer, 2004). Social engagement could also relate to organisational engagement of more global-scale issues. On the other side, environmental engagements include implementation of EMSs and utilisation of accounting technology, including offset mechanisms. There is also the offset mechanism such as in the study by Tregidga (2013) or other engagements that refer to internal business processes (e.g. Davies, 2014; Houdet and Germaneau, 2014; Jones, 1996). The reporting practice is the main communication media between organisations and their stakeholders or society such as what is depicted in many sustainability

reporting studies (e.g. Adams and McNicholas, 2007; Haji and Anifowose, 2016; Liempd and Busch, 2013; Rimmel and Jonäll, 2013).

According to Bansal and Roth (2000), the abovementioned engagements are incentivised by long-term profitability (e.g. Chelli et al., 2014; Islam and Deegan, 2008), legitimacy (e.g. Archel et al., 2009; Cho and Patten, 2007; Haji and Anifowose, 2016; O'Donovan, 2002; Tilling and Tilt, 2010) and ecological responsibility motivations (e.g. Bouten and Hoozée, 2013). Legitimation and long-term profitability or economic motivations still dominate and coexist in companies' engagement with environmental issues, whilst in fact, the internal motivation and awareness are influencing more substantial internalisation process.

However, the abovementioned studies on organisations' environmental engagement lack attention to the in-depth process of how key actors assimilate and internalise environmental values into their daily activities. It could be further argued that key actors play important roles in the engagement process. What key actors internalise regarding environmental issues will determine the doings and sayings concerning engagements. Hence, it is important to give more attention to the in-depth study of an organisation's engagement from a key actors' practice lens.

Referring to the Adams and Larrinaga-González (2007) argument, the following explanation elaborates the literature perspective significance of management accounting engagement with the environmental issues. Several literature studies, such as Ittner and Larcker (2001), Luft and Shields (2003) and Guffey and Harp (2017), describe economic orientation domination in management accounting research. Particularly in Ittner and Larcker (2001), it is evident that practitioners' perspectives of environmental issues relatively lack attention towards environmental indicators or performance measurements due to the high preference to the economic and market-

based ones. Moreover, far before that, Hines (1991) had warned that quantifying, valuing and reducing the environment into numbers only alienates people from nature. Therefore, it is not surprising that Murthy and Parisi (2013) demonstrate the finding that most social and environmental accounting (sustainability) research tends to focus on a general environmental or social area of research, with most of it discussing external reporting and accountability. They further indicate the lack of in-depth understanding of sustainability accounting in a real-life context that arises from existing studies, particularly the ones that focus on not-for-profit organisations and private small-medium enterprises. They argue that measurable and relatively easier to implement indicators become the attributes that make environmental issues more popular to be studied rather than social ones. Their arguments on this matter are consistent with Parker (2005) to some extent.

Although the call for more in-depth research has been stated by studies such as the abovementioned ones, not many have investigated how management accounting permeated into daily operational practice, such as Ahrens and Chapman (2007) and Nama and Lowe (2014). To understand how well the actor internalises the engagement with a particular issue, it is essential to investigate a particular phenomenon from the perspective of practice theories. Positivism and managerial approaches of environmental management accounting studies, such as Christ (2014), Ferreira et al., (2010) or R. Burritt and Schaltegger (2014), fail to provide necessary detailed findings that could improve engagement in daily practices. Case studies such as Sundin and Brown (2017) and Riccaboni and Luisa Leone (2010) have provided in-depth insight into the social and environmental engagement conducted by organisations; however, there is still a lack of explanation of the internalisation process into daily practices. It is apparent that the awareness of key actors could lead to a relatively significant

engagement, rather than merely compliance or another superficial one (see Bouten and Hoozée, 2013). Therefore, this phenomenon is consistent with Ahrens and Chapman (2006) and Lounsbury (2008) arguments regarding the importance of investigating 'how accounting infuses action'. This statement also leads to a call for in-depth study that investigates accounting practice as a manifestation of the internalisation process of certain value, by which Wilkinson and Kemmis (2015) evidence that changing practice needs more than just individual professional knowledge; it needs a change in practice architectures that support the practice.

On the other side, studies that focus on the internalisation process such as Cai and Jun (2018), Iatridis and Kesidou (2018) and Testa, Boiral et al. (2018) depict 'what has been captured by the actors' that leads to the quality of the engagement with a certain issue. Cai and Jun (2018), for example, provide evidence of how actors capture or internalise the value of ISO 9000 standards into their daily jobs. They also depict the emotional factors that contribute to the internalisation process. Iatridis and Kesidou (2018) and Testa, Boiral et al. (2018) describe how the external environment contributes to the shaping of actors' practice regarding the new system implemented. These studies demonstrate the importance of in-depth study regarding the interaction between key actors and the existing structure to assimilate and foster engagements. Hence, practice theory, which provides the framework to analyse how key actors' doings and sayings are continuously shaped and reshaped, is essential.

In sum, based on the practical significance of environmental issues to humanity and the above literature review, the constructed research gap is elaborated as follows. Insofar, studies of business organisation engagement with environmental issues have provided extensive evidence of how engagements are conducted. However, there is a lack of evidence that vividly describes the deep process of the engagement. On the

other side, management accounting research lacks empirical evidence, such as Ahrens and Chapman (2007), that focuses on how the management accounting notion permeates employees' and managers' daily activities. There is also a lack of empirical evidence that sheds light upon the deep process of environmental management accounting control (EMAC). Hence, the gap that needs to be addressed in this research is related to the internalisation of environmental value as a deep process in EMAC. With managers as key actors in the deep process, the first research question (the first RQ) constructed based upon this gap is research as follows:

"How the managers internalise environmental value within the implemented environmental management accounting control (EMAC)?"

2.7. Conclusion

In summary, as sustainability issues become inevitable, especially regarding environmental challenges, substantial organisation engagement is prominent. Management accounting in a broad sense also needs to engage with this issue to support organisations' management in exerting their functions. However, empirical evidence about the deep process of engagement from sustainability and environmental accounting studies is limited. Environmental engagement as a practice carried out by key actors in EMAC as the structure that facilitates the engagement and other business activities needs to be studied. Hence, two questions above, one derived from the gap in literatures and one driven by the practice theoretical framework, are constructed to be addressed in this research. Further, these questions are elaborated into supporting questions that will guide the research process, which are further explicated in the philosophical stance and research design chapter. As the deep process itself involves practices carried out by key actors, practice theory is considered as a suitable theoretical

framework that could be employed in this research. Ahrens and Chapman (2007) and other researchers such as Nama and Lowe (2014) and Tekathen (2019) use Schatzki's practice theory as their theoretical framework in studying management accounting from a practice perspective. Drawing from the gap above that key actors as agents have important roles in the deep process and EMAC as the structure facilitates environmental engagement, it is important to study the doings and sayings in EMAC as guided by Schatzki's practice theory. Hence, this thesis is going to study the EMAC practices conducted by key actors by drawing upon Schatzki's practice theory as the theoretical framework. The research question drawn based upon the theoretical framework will be formulated in the theoretical framework chapter (chapter 3).

3. THEORETICAL FRAMEWORK

3.1. Introduction

Accounting is not purely a technical phenomenon, but it is also part of a social phenomenon that is not static (Hopwood, 1987), which consists of intertwined social practices (Burchell, Clubb and Hopwood, 1985). Accounting practices are able to shape and reshape the understanding, the representation, and the way people react to particular events or processes, hence implicating the design and implementation of many management practices as well as constructing organisational order (Burchell et al., 1980). Therefore, as part of an organisation's practice, Feldman and Orlikowski (2011) argued that it is better to understand the phenomenon from a practice perspective since this could shed light on how the organisation works.

Since the constructed research gap has identified a lack of deep process of the sense-making of environmental engagement, this thesis research focuses upon EMAC practice phenomena undertaken by the key actors. From the theoretical perspective, the use of practice theory in the existing EMA literature is limited. In previous chapter 2, legitimation and institutional theories do not provide enough explanation of the deep process of the sense-making practice that is undertaken by the actor. Insofar, the institutional theory focuses upon an explanation of the similarity (isomorphism) and stability of organisational arrangements in a certain context (Greenwood and Hinings, 1996), which makes the theory less relevant in providing a theoretical framework to analyse the process of making sense of EMAC practices undertaken by key actors. On the other side, actor-network theory (ANT) that neglects the role of pre-existing social structures (Modell, 2019), will make it difficult to support the analysis of the sense-making process of the EMAC practices that are influenced by many social structures.

In this chapter, the first section reviews some practice theories. The purpose of the review is to elaborate on the position of the practice theory used amidst the other broadly used practice theories in accounting research by elaborating the strengths and weaknesses of each theory and the reasoning for choosing the selected theory. The first section is closely related to and supports the philosophical stance the research has taken. The second section discusses Theodore Schatzki's practice theory as the main theory employed to analyse the empirical findings in answering the research question. The third section of the chapter discusses the unpacking of Schatzki's practice theory in the environmental management accounting control context.

3.2. Theories on Practice

As the social world consists of practices, the study of practices and their influences on human coexistence is important in the social science arena. Reckwitz (2002) has explained the practice theory's position as part of a cultural theory. As the practice is at the centre of the social phenomenon, Schatzki (1997) has stated that practice theory becomes the most promising base for studying social phenomena.

However, differences exist among practice theorists, such as Bourdieu, Giddens, Latour, Stones and Laclau and Mouffee, regarding how the understanding is structured and the intelligibility articulated. Practice theory places the social phenomenon in 'practices' and makes 'practice' the smallest unit of social analysis. Hence, to answer the research question stated in chapter 2, it is necessary to briefly review the ontological question of practice. Furthermore, Feldman and Orlikowski have explained that the critical thing in practice theory is 'the relationship between specific instances of situated action and the social world, in which the action takes place' (2011, p.1, 241). In the following section, this thesis discusses the practice theory from Bourdieu,

Giddens, Laclau and Mouffe, and Stones to provide reasoning for the selection of the most relevant theory to answer the research question.

3.2.1. Bourdieu's practice theory – the concept of habitus

Bourdieu (1977) has presented the practice theory with the notion of habitus. According to Bourdieu, a practice is the result of habitus and a durable system that acts as the structure that guides the practice. Habitus acts as the principle of generation and structures the practice and representation and is the source of bodily movement or activity in a practice. It creates the practice that basically exists in the mind of the agent. Bourdieu states 'the mind is a metaphor of the world of objects, which is itself but an endless circle of mutually reflecting metaphors' (1977, p. 91). The agent's historical experiences and knowledge bring the objective structure that predominates them in carrying out practices and having interactions with other people. Bourdieu has rejected the notion of practice as a mechanical reaction to certain stimuli. Hence, those who conduct a practice have deliberate intention in their actions. The habitus structure creates a practice that tends to reproduce regularities inherent in its surroundings. According to Bourdieu, the agent is a producer and reproducer of objective meaning. The orchestration of habitus among agents creates a common-sense world that, in turn, makes the practice intelligible and foreseeable. The harmonisation of group habitus is also important to harmonise practices. Social discourse becomes an inseparable element that defines the relations between class, habitus, and organic individuality. One could master a practice through structural exercises provided in each society. In sum, habitus produces individual and collective practices that along with the timeline shape and reshape history.

The study by Goddard (2004) on the UK local government as the context provides a clear illustration of how the habitus of accountability is formed in public sector accounting practices in terms of budgeting processes. The involved parties' perception influenced by knowledge and experiences upon accountability determines the budgeting process and the harmonisation of interests among them. A group habitus is formed to achieve the harmonisation among them. On the other side, Hamilton and Ó HÓgartaigh (2009) have explicated that true and fair view (TFV) as part of the accounting 'ethos' that recycles accounting practices, has become a habitus among accountants, which emerges as the symbolic token of British regulators' claims to the legitimate language of external financial reporting. This habitus of TFV is internalised through accounting education and leads accounting practices and continuously shapes and reshapes the economical context, not only in the UK but in Europe as well.

3.2.2. Gidden's structuration theory

Besides the notion of habitus as the centre of practices, Giddens, in his structuration theory, has provided another perspective of how practices are constituted and should be studied. Giddens' structuration theory (ST) is based on the basic assumption of duality, which means that structure acts both as the medium and the outcome of the reproduction of practices. Englund and Gerdin (2014) have described that agents and structures represented are not set in two separate phenomena, but two sides of the same coin. Further, structures, according to Giddens (1979, 1984), refer to structuring properties, which are an organised set of rules and resources that make social practices possible and bind in time-space dimension in a social system. He has also elaborated that structure is not something 'external' to individuals, but more 'internal' as memory traces. Hence, agents always know about what they are doing on a discursive

consciousness level. Additionally, Giddens has also explained that intentions become the most important thing in understanding human actions, and therefore, it is essential to understand the capability that an agent has. Hence, agents as knowledgeable actors are continuously shaping and reshaping the social system across time and space through their actions and practices, which in the end creates human history.

The studies by Bernardi (2017) and Englund et al. (2015) are examples of researches that implement structuration theory from Giddens. The duality of the structure is illustrated in the accountability practice mediated by the Health Information System (HIS) in the health sector in Kenya and the interplay between strategising and accounting in a Swedish subsidiary of a large manufacturing company. The perception of accountability among actors (the persons who deal with information systems- the donor agency actors, governmental officers, and medical actors) influences the ways they practise in their routine jobs, putting the information system structure as the medium of shaping and reshaping the accountability practice and the result of social interaction. Also, the improvement in the use of accounting metrics as the medium of practising the strategy through accounting mechanisms as the structures enacts the internalisation of the predetermined corporate strategy among organisation members.

3.2.3. Stone's strong structuration theory

Stones (2005) has explicated that the structuration theory of Giddens receives a strong critique from Thompson, which stated that Giddens was not clearly and consistently provided enough account to the meaning of 'rules', which made it difficult to set 'structural identity'. Archer has also critiqued that Giddens has neglected the relations between structures and agents and ruled out the desirability and possibility to pay attention to the temporality of connection between structures and agents.

Stones (2005) notion of strong structuration theory attempts to refine the structuration theory by having a greater sense of ontology in situ to counteract the overly abstract of Giddens' structuration theory. It also recognises the external structures, internal structures, active agency, and outcomes of actions as the quadripartite cycle of structuration. The independent and irresistible causal forces provide the Giddens' absent explanation to the notion of agent's 'ability to do otherwise'.

In the accounting context, strong structuration theory views the phenomenon from the minds of the accountants and their manifestation of controls and artefacts (Jack, 2017). Specifically, in the management accounting context, Stones has given greater prominence to the spatial relationship and external structures, which is very important in studying management accounting practices, to explain struggles among different groups of actors (Coad, Jack and Kholeif, 2016). However, the strong structuration theory does not explain the way of the actor's response towards external pressures that reshape the sense-making behind the prioritising of certain actions amidst the other actions.

3.2.4. Laclau and Mouffee and the practice theories

Although discussions by Laclau and Mouffe (1985, 2001) are not focused upon practice theory but on politics, their way of thought in regard to the discourse position sheds light on the ontology of practice from a different perspective. Their thoughts, to some extent, promote the practice as a fundamental part of the social phenomenon (Schatzki, 1996). Laclau and Mouffe (1985, 2001) believe that every social practice is an articulation of certain discourse. Laclau and Mouffe state that it is impossible to separate the subjects or the actors of a practice and its structure. Laclau and Mouffe see

the social practice as a totality that results from articulatory practice, which is known as the discourse. They explain that any practice relating to establishing relations among elements is basically known as articulation, and this could modify the identity of the practice itself. Therefore, Laclau and Mouffe state that all identity is relational, and all relations have a necessary character. They reject the distinction between discursive and non-discursive practices; hence, every object is an object of discourse. In terms of subject, Laclau and Mouffe have stated that it cannot be the origin of social relations. The subject position is a discursive position, and it is open to any possible character of every discourse.

The study by Tregidga et al. (2014) regarding the identity of sustainable organisation among 365 publicly available corporate reports and the study by Laine and Vinnari (2017) on the struggle of the counter accountant's identity in the case of animal rights activism in the farming sector in Finland provide clear illustrations of how discourses shape the practices of people and organisations in society. The study of public corporate reports by Tregidga et al. has depicted how the identities of corporations transform over time through the reports they provide. They have argued that the transformation demonstrates the struggle of those corporations in maintaining their ‘right to speak’ within the debate of sustainability development and their role in it. In the study by Laine and Vinnari, the struggle in the case of animal rights activism depicts how the dominant social group exerts their power to keep their position in society. Both studies underline the notion that everything is about discourse; hence, practices are also shaped and reshaped by the discourse within the society.

3.2.5. The duality and dualism in practice theories

3.2.5.1. Duality in practice theory

Duality, as Giddens has explained, refers to the ontological view that 'structure' and 'agency' are inseparable. This means that structure is both the medium and the result of the reproduction of practices (Giddens, 1979). Under the duality paradigm, the agent and the structure are two sides of the same coin, which is denying that the structures in some cases are separate entities that could affect the agent's activities. Although the actors create rules and patterns through a series of interactions among them and the resources are used to support it, in some cases the rules and patterns are set to follow the resources condition at a particular time. For example, the rules and pattern in the automotive production process in a car manufacturing company are following the market demand, technology development and government regulations. The production pattern itself constructed from the agreement amidst the production manager and the other managers (e.g. the sales and the procurement managers). However, the invention of new battery technology that makes electric car production cheaper or the new establishment of government regulations regarding car emissions may affect the demand, which in turn will affect the production pattern. When managers are adjusting the relevant pattern (e.g. production and procurement patterns), it means they are reacting to external stimuli that comes from the outside of their mind. To some extent it against Bourdieu's notion of habitus (1977) that rejected the idea of practice as a reaction to particular stimuli and assumes that it is predominated with historical experience and knowledge in the mind of an agent.

Bernardi (2017) in her study in the health sector has depicted how the health information system (HIS) influences the emergence of accountability practices and their consequences for healthcare provision. The study takes the Kenya health sector

as the context. Under the duality paradigm, the study found that the HIS is mutually dependent on agents. In this case, the actors who are health workers, field managers, politicians, and even donor agencies, have their own intentions and beliefs that drive their actions and reactions towards the importance of the HIS and efforts in improving it as a stressed activity. However, although the HIS itself is mutually dependents on agents with their intentions and beliefs, the entities such as the IT and health infrastructures are not merely existing in the mind of the agents. Their practices might be affected by these entities' state of conditions which are outside the agents' mind.

3.2.5.2. Dualism in Schatzki's practice theory

Schatzki has underlined that practice is about doings and sayings that are organised by understandings, explicit rules, and teleoaffective structures. Further, Schatzki (2002) has also argued that to perform a certain practice, one requires objects or materials. Otherwise, it would be impossible to perform such a practice.

From Schatzki's perspective, the agent or the actor, the one who performs the doings and sayings, is separated from the structure the practices are hanging on. Furthermore, practice organisation, according to Schatzki (1996, 2002), consists of elements that involve agents and structures. Two elements that exist inside the minds of agents or actors are understanding and teleoaffective structure. Understanding is related to what an actor knows about particular doings and sayings whilst teleoaffective structure is about how an actor normativises a particular hierarchical order of ends or tasks. However, explicit rules as the other element of practice organisation or practice intelligibility are not something that only exists inside the mind of an actor or agent. In Ahrens and Chapman (2007), the organisational structure that puts a market planning manager as the person in charge of designing menus, food margin targets that need to

be achieved, and weekly business meetings constitute the elements that build the structure that exists in a restaurant. Whilst in Nama and Lowe (2014), an investment process and due diligence must be conducted by following particular rules and procedures that involve other people (investment committees). An enterprise risk management system (ERM) in Tekathen (2019) is also a structure that governs risk management practices. All of these elements do not merely exist in the mind of actors, these are continuously shaping and reshaping structure. Although the structure at some points could be altered, adjusted, or modified, it is not both a medium and a result of the reproduction of practices. The changes in practice organisation are recognised by Schatzki as 'reorganisation' or 'recomposition', which, on many occasions, responds to a change in entities (artefacts, organisms, and things). Further elaboration of Schatzki's practice theory and site ontology exists in the following section.

In summary, the above practice theories provide insights about how accounting can be seen from the lens of practice and its sense-making process. A summary table is provided to describe the comparisons of the theories. Up to this point, this thesis has argued that to study practice as part of social phenomena, one cannot neglect that it is constituted by human beings. It is also continuously shaped and reshaped or transformed by human beings or individuals. It is true, to some extent, that an individual's mind produces the practice and the social order that acts as the structure; however, one cannot ignore that existing materials arranged in a particular way bring an influence on the mind and to the practice as well. To some extent, the arrangement of materials provides the structure that leads the practice that individuals carry out (e.g. in the case of houses of a celestial industry in New Lebanon, illustrated in Schatzki (2002)). Individuals' minds that are shaped and reshaped through his or her historical experience as well as materials' arrangement have their contributions to producing and

transforming practice. Discourses that exist in social life also play their part in the process. Therefore, it is important to have a theoretical framework that provides a basic explanation of how these elements (individual minds, experience, material arrangement, and other social orders) along with the relationship among them, create a practice. The framework should provide the base for understanding those elements not as a totality, but as separate elements that equally contribute to the production of practice.

Table 3 Summary of practice theories

	Giddens' Structuration Theory	Bourdieu's Habitus Theory	Laclau and Mouffe's Theory	Stones' Strong-Structuration Theory	Schatzki's Practice Theory and Site Ontology
Paradigm	Duality	Duality	Duality	Dualism	Dualism
Main thoughts	Structure acts both as the medium and the outcome of the reproduction of practices.	A practice is the result of habitus, a durable system that acts as the structure that guides the practice.	Every social practice is an articulation of certain discourse.	Recognising the external structures, internal structures, active agency, and outcomes of actions as the quadripartite cycle of structuration.	A practice as 'a set of doings and sayings that is organised by a pool of understandings, a set of rules, and … a teleoaffective structure'

3.3. Schatzki's Practice Theory and Site Ontology

3.3.1. Practice theory

Schatzki (1996) has stated that 'a practice harbours an extensive tissue of sociality encompassing chains of action, directness towards others, physical connections among settings, and commonalities in as well as orchestration of understandings, rules, teleoaffectivity, and settings' (p.192). Actions comprise either bodily doings or sayings that someone carries out in specific circumstances, which express their behaviour (Schatzki, 1996). Hence, Schatzki has defined a practice as 'a set of doings and sayings that are organised by a pool of understandings, a set of rules, and … a teleoaffective

structure' (Schatzki, 2001, p. 58). What is expressed in behaviour, according to Schatzki, is the element in the practical intelligibility-determining states of affairs that is called mind.

Schatzki (1996) has claimed that everywhere in social ontology lies the possession of the mind and performance of the action. Every individual has a mind and performs actions that define their existence. Schatzki believes that the mind/action that is expressed through bodily activity becomes the centre of a practice. He interprets the body as the entity in which doings, sayings, and sensations are manifested, and it signifies its psychological states. The bodily activity is not only the doings and sayings but the behaviour as well, which refers to the manner in which the doings and sayings are carried out.

Further, Schatzki has explained that the mind becomes the underlying substance of functions and attributes labelled 'mental', and he refers to mental phenomena as the conditions of life. The conditions of life have four categories. The first is the condition of consciousness, such as seeing and hearing. The second category is emotion or mood, such as happiness, fear, or depression. The third category is a cognitive or intellectual condition, such as believing, doubting, and understanding. The fourth category is the action. The condition of life creates what lies inside the life, what is going on, and how things stand in life. The mind is presented in the experience of individuals through their bodily activities.

In terms of the body, Schatzki (1996) has stated that this is basically a manifesting body, which means that since the mental condition is continuously expressed through bodily activities, the body becomes the medium of its manifestation. For example, queuing while entering the underground tube is a manifestation of 'respect to others' in mind; it is the same thing while getting onto a train. However, to some extent, he has

explained that there could be differences between cognitive and mental conditions. This happens when the cognitive conditions of the individual are not immediately expressed due to the historical social position or biography that tells the individual to act differently. This is what Schatzki states as the signifying body. For example, in another context, someone might prefer not to queue in line to get onto the train; his/her experience instigates him/her not to do this because if s/he stands in line, s/he might miss the train; so s/he prefers fighting instead of queuing to get onto the train. Furthermore, he has explained that the performance of bodily actions could affect other actions as well, which makes the body an instrumental body. In sum, Schatzki has claimed that the mind is the expression of the body, and bodily activity is the appearance of the mind.

An expressive body is basically a social product, according to Schatzki (1996), since the production of bodily activities of individuals takes many paths in social interactions including education. Bodily doings and sayings that are expressed by the mind are basically reactions towards individual social interactions. This reactivity of an individual takes many forms, both in behaviour and action, and it will create a certain pattern of doings and sayings by following particular conditions. Further, Schatzki has explained that mind/action has four important features that characterise people regarding their participation in social practices.

The first feature is the conditions of life. Schatzki has stated that linguistic expressions and the reactions towards certain phenomena or persons are the expressions of people's understanding of a certain concept. The understanding of certain conditions entails specific behaviours that are characteristics. For example, an understanding of a lecturer about pedagogy is expressed through his or her doings and sayings in preparing teaching materials, teaching in class, in interactions with students,

and in doing evaluations. The understanding of the lecturer has led him/her to a specific behaviour as well, such as leading and democratic behaviour.

The second feature is the ability to describe, explain, and report one's condition to another. The familiarity of an individual towards certain circumstances or conditions, along with the understanding of related concepts, enables him/her to carry out this second feature. A lecturer, who is very familiar with the pedagogy and has a good understanding of the concept, will be able to describe teaching quality to other lecturers or pedagogy to evaluators or university leaders.

The third feature regards the ability to identify others' conditions. Having familiarity with the 'pattern of behaviour-in-circumstances' relating to a certain condition is essential to perceive others' mental conditions. This leads to the ability to infer them in certain situations. A senior lecturer will be able to identify the condition of a junior lecturer, and in a way, he or she can infer that the junior lecturer will require further training (and type of training he or she needs) to handle classes with bigger audiences.

The fourth feature is the possession of 'convictions' that remain tight and secure in the individual's life. For example, a senior lecturer has a conviction that teaching is not only about the transfer of knowledge, but also about shaping an individual. This conviction will lead his or her doings and sayings in teaching and having interactions with his or her students.

Schatzki (1996) has claimed that social practices mould expressive bodily activities; nevertheless, he warns that the social constitution of an individual does not simply accumulate expressive bodily activities, it also shapes and reshapes his or her expressive bodily activity including the mind/action. This happens because of an individual's identity that characterises his or her doings and sayings in social practices.

There are other social constitutions that, according to Schatzki, influence individuals; these are incitement, conception, delimitation, and sanctioning. These constitutions along with the production of bodily activities and their institutions, become the medium of moulding and transforming individuals' identities and bodily activities in their participation in social practices. Let us take a politician as an example. Political practice conducted by a politician is not only an expression of his or her condition of life as a politician, but it is continuously shaped and reshaped by constitutions from the party that he or she belongs to. The party's ideology, concepts, and programmes bring transformation to the politician as a human being and as a member of society. The understandings of which things have to be done and which things are forbidden delimit the politician's doings and sayings, as well as the sanctioning that he or she might have for trespassing the party's rules. Nevertheless, his or her identity as a person will also characterise the way he or she interacts with their constituents and other politicians. Schatzki (1996), in his notions of practice, has stated that it is a temporally unfolding and spatially dispersed nexus of doings and sayings (p. 89). People's actions are organised by organising factors that form what is called an organisation of practice. Moreover, the most important notion of practice, according to Schatzki, is the 'do-ing' or the actual activity, or what he has mentioned 'the energisation'. The 'do-ing' of practice is the centre of human existence. Teaching as a practice, for example, consists of preparing teaching materials, lecturing, and evaluation activity conducted for a term of period. As a practice, there is pedagogy knowledge as the base for the understanding, a standard for evaluating students, and some learning objectives that need to be achieved, both in soft skills and hard skills. These elements act as the organisation of teaching practice. However, the actual actions conducted by a lecturer will determine his or her existence in the academic society.

Based on the notion of practice above, Schatzki (1996) has categorised a spatio-temporal practice as one with dispersed and integrative practices. A dispersed practice is governed mainly by understandings and very rarely by rules and teleoaffective structures. The understanding that a person has in a dispersed practice is enough to specify what kind of doings and sayings he or she needs to perform. He has provided examples such as describing, questioning, or explaining, which are not tied to purposes and emotions. A person is able to conduct 'describing' for many purposes, and this could involve a variety of emotions. Describing what a car looks like can be conducted for the purpose of giving a lesson about automotive design to a group of engineering students or for the purpose of providing a critique as an automotive expert. Each purpose could involve different emotions. Despite various purposes, the person who conducts 'describing' understands the relevant doings and sayings he or she has to perform.

On the other hand, an integrative practice is one that involves the 'organisation' of practice. An integrative practice is not simply a group or an association of dispersed practices because a dispersed practice could be transformed into an integrative one. The organisation of practice consists of understandings, rules, and teleoaffective structures that link doings and sayings. The understandings help decide what makes sense for people to do, while the rules are explicit formulations that dictate specific actions for certain practices. Rules are conceived and introduced to bring about new or specific activities or to regulate existing ones. Teleoaffective structures refer to the range of acceptable or correct ends and tasks that need to be carried out for the related ends, beliefs, and even emotions from the point of view of participants in a practice, which is also known as 'normativity' (Schatzki, 1997, 1996, 2001). Schatzki has also claimed that a person's participation in an integrative practice defines his or her

coexistence with other people. Further, the practice organisation combination is differentially incorporated into participants' minds due to their training, experience, intelligence, power of observation, and status (Schatzki, 2005).

Regarding 'understanding' as one of the elements of practice organisation, Schatzki's (2002) clarification underlines essential things about the 'knowing how' of basic and non-basic actions. For a basic action such as listening to a sound or speaking with other people, the 'knowing how' is a 'motor- or perceptual-cognitive skill', whereas for a non-basic action, 'knowing how' is knowing which doings and sayings are capable of constituting the action in particular circumstances (p.78). In addition to this, two or more people are considered having the same understanding of a certain action when the doings and sayings performed by a person are considered by others as intelligibly the same action. In other words, the participants in a practice will have the same understanding of a particular action when they share the same knowledge and intelligibility of the doings and sayings relating to that action. Hence, Schatzki has rejected the notion that 'practical understanding', which refers to the abilities that pertain to the actions composing a practice, lies mainly with human behaviour in its finely-tuned sensitivity, such as in Bourdieu's habitus notion or Giddens' practical consciousness (Schatzki, 2002, p.78).

The study by O'Keeffe et al. (2015) has focused upon the phenomenon of the design evaluation process of the National Health Service (NHS) hospitals in the UK. In one of the data they depicted, there is a description of a senior surgeon complaining about a new office layout, of which he claims, 'he has never been consulted about the office space' (p. 422). The senior surgeon further explains his objection regarding the open-office plan since it is very important to keep privacy during interaction with patients. The knowledge he has about the medical job, about being a doctor as a

professional with duty and obligation to patients, and about the delicacy of medical issues that patients have provides the understanding needed to do the medical practice. The rules and codes of conduct to protect patients' interests regarding their medical issues become the set of rules and instructions on how doctors are supposed to do their job and interact with patients. In terms of the design evaluation of the NHS hospitals, the design quality project (DQP) with its instruments sets rules that need to be followed by consultants and other involved actors. The ethical values regarding patients' privacy lead to specific ends and beliefs of what is best for patients. Saving patients' psychological interests when a doctor needs to discuss delicate medical issues with them brings negative emotions including bad moods of doctors if they have to do their job in an open-office plan layout. All these things illustrate what the integrative practice of office design evaluation is in relation to the medical practice. An illustration based on the study of practices in the EDs in Australia by Manidis and Scheeres (2013) also provides the same logic. In this study, the understandings of doctors (junior and senior) and nurses (junior and senior) based on their medical knowledge, rules, and instructions implemented in the ED, and beliefs of the doctors and nurses including their emotions, constitute the medical practice in the EDs. Within these medical practices, there are actions that possibly overlap with dispersed practices. During interactions with patients, doctors and nurses hear and speak with them about their conditions or illnesses. However, hearing and speaking as dispersed practices will be conducted without specific ends. During the interaction with the patients, hearing is to gather information by which a doctor can make the best medical decision for the interests of the patients. Speaking as part of the medical practice entails that a doctor or nurse must be very careful when they need to deliver delicate issues regarding a patient's condition so that it will not trigger a worse condition.

Schatzki also believes that it is essential to delimit normativity (1996). Delimitations of normativity mainly concern the rules in an integrative practice. The first important thing is that causal connections among the participants in a practice must be regularised. This causal connection is important to form a chain of actions in specific ways within a practice to achieve ends. The second important thing in delimiting normativity is the boundaries of practices. This is important since, in many cases, some actions can be part of several practices. The boundaries help determine the context of actions to a certain practice. It is also important to take social spaces and history into account since these triggers the complexity of various practices as well. Questions that come from doctors and nurses regarding an allergy a patient might have or doctors' collecting information from patients even though nurses have already provided the necessary information as in the case study by Manidis and Scheeres (2013) are important to determine the next important medical steps to treat a patient. This delimits the normativity or what corrective action needs to be conducted before proceeding to the next medical steps. Designing an open-office layout could be the correct or normative action in designing an office for manufacture. However, it cannot be considered normative or the correct action in the context of a hospital office layout for doctors and other medical staff (O'Keeffe, Thomson and Dainty, 2015).

For the second element of practice organisation, which is rules, Schatzki (1996) has explained that rules, principles, instructions, and the like contain formulations when one participates in the practice. They provide specific guidelines about certain actions. The rules guide the actions whether they are particular ones in a specific situation, or in terms of enjoined actions as well.

One important element of practice organisation is the teleoaffective structure. The teleoaffectivity is a mix of teleology, which is an orientation towards ends, and

affectivity, which is how things matter (Schatzki, 1996, 2001). A practice involves activities in a teleological hierarchy, in which the hierarchy depicts the normativised priority of the ends of activities within a practice. The teleoaffective structure is indefinitely complex due to an indefinite variety of circumstances where the practice exists, due to the acceptability of various ends of a project, task, or the like, and because of the fact that the practice itself always becomes the subject of argument (Schatzki, 2002). The strive for a single-office plan in the O'Keeffe et al. (2015) study depicts a hierarchy of the objectives of hospital office design. The medical service provided for patients, which involves the importance of privacy protection of patients, is normatively positioned in a higher priority compared to an efficiency by maximising space utilisation. The protocols of the medical practice in emergency departments (EDs) depict the teleological hierarchy based on a cognitive understanding of medical knowledge that is possessed by doctors and nurses (Manidis and Scheeres, 2013). The affective element, which is the care for patients' privacy and medical conditions in both studies, provides the intelligibility for the strive towards single-plan office layout and patient treatment in the EDs in Australian hospitals.

3.3.2. Site ontology

Human beings determine their existence by participating in practices, both dispersed and integrative ones. By participating in a practice, a human being defines his or her existence not only to the other constituents of the practice but also to a wide range of participants from more various practices. For these reasons, Schatzki (2002) has stated that practice is basically a social phenomenon.

Further, Schatzki (2002) believes that social order is the arrangement of entities through which human existence becomes known. As an arrangement, social order has

social relation and dimension. The social relation and dimension set up the interaction or the relation between entities, both human and non-human. There are causal, spatial and intentionality relations and prefiguration that refer to how the world channels forthcoming activities. The dimension of arrangement gives or boosts the meaning and/or identity that emerges from the relations and interactions between entities. Social order expresses its existence in the doings and sayings that create a practice. Therefore, Schatzki has stated later on that social order is established in a practice (2002).

Within a practice as a social phenomenon, there are objects and materials that take part in it. Schatzki (2002) has argued that practice as a nexus of actions requires objects and materials otherwise it becomes impossible to perform actions. The existence of the order is just not to arrange objects, but there is a causal relationship between the two as well. For example, the purpose of financial reporting standards is not only to arrange the financial reporting practice across companies, but the standards exist because there are various financial reports provided by companies as objects. Schatzki has also recognised artefacts as both the ones that are created as artificial constructions, such as machines, computers and texts, and the ones that arise from the modification of 'nature', such as landscapes, cooked meat, and even re-engineered human body parts.

Schatzki has argued that if 'social' belongs to human coexistence, the social site can be defined as 'the site-specific to human coexistence'. The social site can take the form of context or wider social phenomena where human coexistence becomes some parts or perhaps the whole of the site (2002, p. 147). Schatzki has further explained that a social site does not always mean a spatial site, but it can include human activities as well, such as practices (2002). What drives the emergence of site ontology is the human coexistence that inherently occurs as part of a particular sort of context. Site ontologies,

according to Schatzki, are mainly inspired by Heidegger's notion of clearing or opening, which are interpreted as a space of intelligibility. The social site in Schatzki's perspective consists of a mesh of practices, which are organised human activities and material arrangements. This perspective refines the notion of human coexistence, which now inherently occurs as part of practice-arrangement bundles (Schatzki, 2005). When it comes to nature, Schatzki (2002) has argued, this is part of a social site as well.

According to Schatzki (2005), organisation is the result of the performance of actions in extant practices. There is a mesh of existing practices, a mix of old and new ones, that is altered to a certain degree. The organisation continues its existence via maintenance of its practices and arrangements. The mesh of practices in an organisation accommodates evolution and focused changes. Therefore, to comprehend an organisation, it is essential to identify the actions that compose it, the practice-arrangement bundles where those actions exist, and other webs of practice-arrangement bundles to which the net that composes the organisation is tied. This means that it is vital for studying an organisation to take into account material arrangements, which cover the way humans, artefacts, organisms, and things are ordered in it.

By referring to the cases from the studies by O'Keeffe et al. (2015) and Manidis and Scheeres (2013), the Schatzki site ontology can be discussed as follows. In the case study by O'Keeffe et al. (2015), to understand an NHS hospital as an organisation as well as a social site, one needs to comprehend how the medical practice must be carried out by doctors, medical staff and non-medical staff, artefacts (medical equipment, computers, an office and its furniture, documents), and arrangements including the network that exists among departments. Medical practice organisation leads the way doctors and medical staff conduct their routine jobs and defines the necessary material

arrangements. Therefore, it becomes logical when doctors and medical staff refuse the open-plan office layout. However, when involved actors in the design evaluation process reach the most probable and acceptable alternative through a meeting, it is still not the ideal one, and some actions within the medical practice will be altered. Nevertheless, the changes are still focused on how to keep patients' interests as the priority. Interestingly, in the case study of Manidis and Scheeres (2013), an ED is considered as a site to develop 'knowing in action'. To understand this, they need to comprehend the medical practice in the ED and the human (patients, doctors, and nurses) and non-human (medical equipment) arrangements. Over time, a junior doctor gains new experiences, both in terms of medical knowledge and social interaction skills during interactions with senior nurses and patients, which in turn alters the way he or she carries out medical practices as a professional; no matter what changes are focused on the improvement of any necessary knowledge and skills to provide the best medical service for patients.

A summary and link of elements in the notions of practice theory and site ontology from Schatzki described to this point are demonstrated or illustrated in figure 1. A practice that consists of doings and sayings is organised by three elements: the understandings, the rules, and the teleoaffective structures. Bundles of practices have intentional relations with interconnected orders and form what Schatzki calls 'one gigantic, intricate and evolving mesh of practices and orders. The mesh of practices and orders cannot be separated from entities and arrangements that exist externally to it. The arrangements of entities consist of humans, artefacts, things, and organisms linked to the bundles of practices and orders. This creates interconnected elements of practice, order, and entity arrangements that hang on the site or context. As a spatio-

temporal phenomenon, historical (temporal) and spatial dimensions continuously shape and reshape these interconnected practices, orders, and entity arrangements.

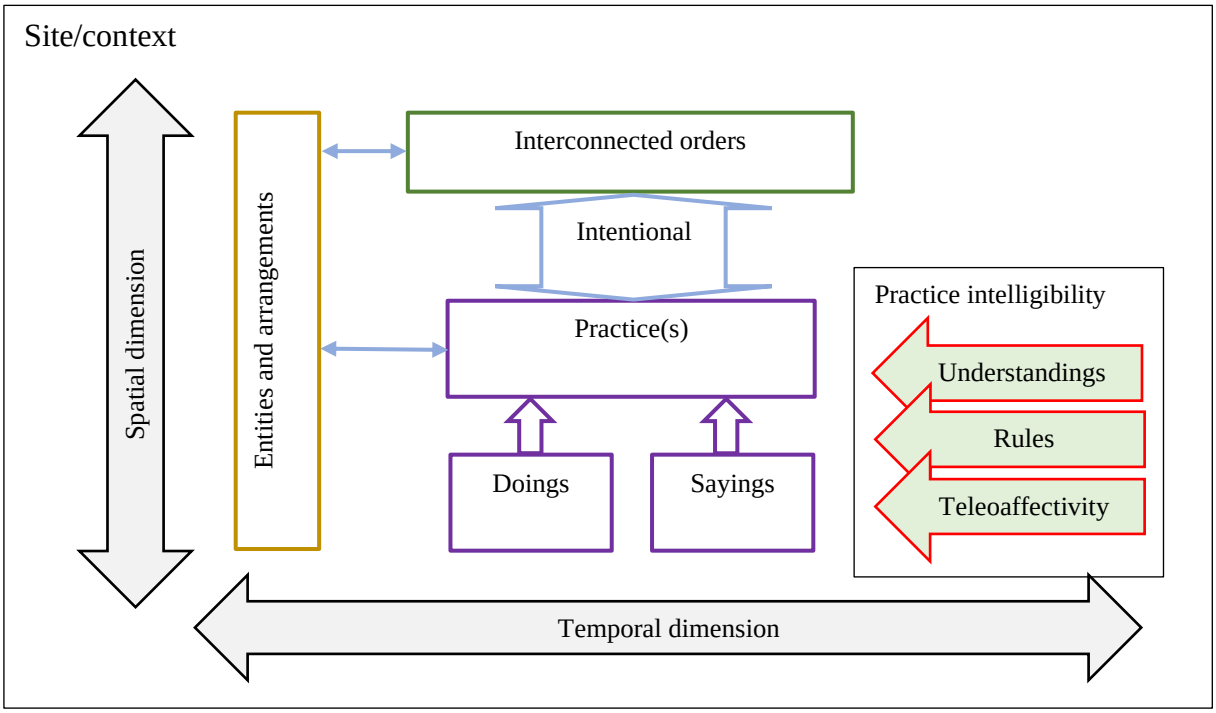

Figure 1 Schatzki's practice theory and site ontology

3.4. Unpacking Schatzki's Theory of Practice and Site Ontology in the EMAC Context

In unpacking Schatzki's practice theory and site ontology, defining management accounting is essential. Hopper et al. (2009) have explained that it is hard to address historical, social, political, and economic factors along with their consequences if the definition of management accounting as a system is too narrow. Further, as management accounting is focused on providing information for managers, management accounting systems should cover management works; The managerial works are planning, directing, controlling, and decision-making (Seal et al., 2019).

To unpack practice theory and site ontology, the use of examples from Ahrens and Chapman (2007), Stergiou et al. (2013), and Ashraf and Uddin (2015) are beneficial in defining the management accounting control context. The reason for using these examples is of the philosophical stance these studies have. Moreover, the concept

of MAC or the MCS is behavioural problem-oriented (Simons, 1995; Merchant and Van der Stede, 2007), which do not provide sufficient explanation on how a certain practice is internalised through structural inter-relation and its relationship with agents. The dynamic nature of the contingency-based MCS approach is also relatively less relevant to the research question in this study, as explicated in the previous chapter. To have a substantial change in environmental practices, key actors and other organisation members need to internalise the importance of environmental values and manifest these in their daily operational practices. Although the environmental condition of an organisation is never static, the internalised values have to stay in the minds of key actors and other organisation members and become their practical intelligibility in determining any necessary changes without sacrificing 'important matters'.

Ahrens and Chapman (2007) demonstrate that management accounting is not only a technology to support the implementation of the strategy. Their study depicts that management accounting knowledge is permeated into daily operational practice, such as menu and commercial agenda design, monitoring customer satisfaction, and many other things. Actors' understandings of management accounting processes facilitate these not only in decision-making in daily operational practices to meet an organisation's objectives, but also in controlling business processes as well. Management accounting knowledge also acts as a base for the set of standards and rules established in restaurants. Despite management control that is grounded upon the power of senior managers to set agendas, actors have awareness of a company's objectives, which provides them with the necessary teleoaffective structure. In their study, management accounting as a practice that manifests in management control promotes corporate efficiency, economic growth, and the accountability of daily operational activities. A second example is the study by Stergiou et al. (2013). They

depict that management accounting control in the large Greek company is shaped and reshaped mainly by the organisation's internal factors, such as key agents and organisational structure changes. From time to time, the key agents modify and transform the management accounting control to enhance its service in supporting them in strategic decision-making, such as the pricing policy and organisational control. The consequences of changes are well-considered by key agents. Hence, based on their critical realism lens analysis, MAC that is uniquely contextual based on an organisation's historical background acts as an important structure that is interrelated with other structures supporting the organisation's business. A third example is the study by Ashraf and Uddin (2015), which depicts the change in hegemony that influences management accounting control in an aviation organisation in Pakistan. In their study, management accounting control is utilised mainly to support decision-making in achieving operational effectiveness, particularly through a performance measurement system. They demonstrate that the changing regime in the organisation brings different economic emphasis to the utilisation of management accounting control that changes its role in supporting actors in decision-making. The changing regime alters management accounting control as a practice as well since key actors from different regimes have different understandings of how the civil aviation authority (CAA) business should be run based on meaningful objectives. Management accounting utilisation is based on the ideology of the regime of CAA key actors.

These examples underscore the Hopper et al. (2009) notion of management accounting systems that 'embrace process, structures, and information for organisational decisions, governance, control and accountability' (p. 470). Gray's argument (2006) on what he believes to be superficial and cosmetic adjustments regarding financial and sustainability reporting, and Adams and Larrinaga-González

(2007) critique of the lack of 'managerial capture' in environmental issues as a significant gap in SEA studies lead to the importance of management accounting in engaging with environmental issues. Hence, for this research, the definition of environmental management accounting refers to an information-based accounting structure that fosters and enables an organisation's environmental stewardship role by governing accountable business practices. This definition is broad enough as advised in Hopper et al. (2009). It embraces the environmental stewardship role as the core value and references environmental management accounting and accountable business practices.

In addition to the above explanation, Ahrens and Chapman (2007) see an MCS as a bundle of practices and material arrangements that are central in organising and bringing connections to members' diverse activities in securing the interests of internal and external stakeholders. MCSs help determine and bring about necessary activities throughout an organisation to achieve certain organisational ends. It can be argued that to form environmental management accounting control, it is important to embed environmental management accounting with MCSs. It means that practice organisation and material arrangements will be based on the environmental management accounting concept.

As a practice, according to Schatzki, environmental management accounting control will be organised by understandings, a set of rules, and teleoaffective structures. In terms of understanding, it is important for the actors (particularly key ones, such as mid-level managers who directly deal with organising operational activities) to have knowledge of the environmental stewardship role. Guidelines such as sustainable development goals (SDGs) from the United Nations provide a description of the role. SDGs are quite comprehensive and could be the umbrella of more operational

understanding. The SDGs cover several aspects, such as people, planet, prosperity, peace, and partnership. The most environmental-related aspect is the planet, which focuses on protection from planet degradation through sustainable consumption and production, sustainability in managing natural resources, and fostering actions on climate change (United Nations, 2015). The socialisation of the environmental stewardship role is essential to internalise the notion among the organisation members and brings to light what obligations towards nature are related to their daily activities. The understanding of the role should be able to be manifested in the doings and sayings of all organisation members and become the practical intelligibility in protecting the environment through their daily activities.

The second element of practice organisation is the rules. The EMAC practice must be organised based on a set of rules that foster the stewardship role. To be consistent with the above-mentioned definition, the rules should be clear in how accountable business practice should be performed. An accountable business practice should be seen from a multi-perspective lens to support the stewardship role. Guidelines that are operational in the organisational scale, such as ISO 14001, are beneficial in this context.

The third element that organises EMAC as a practice is the teleoaffective structure. In this context, this is about environmental protection as the end that needs to be achieved. Moreover, the awareness that business organisations have an obligation towards nature as they have already utilised natural resources can become an emotional bind that can give meaning to an organisation’s environmental objectives and normativise environmental engagement activities. Thus, the stewardship role of a business organisation is inevitable. Regarding this matter, Simons' notion of the belief system (1995) provides the basic value, purpose, and organisational direction that

defines an organisation. This organisation definition is communicated formally by managers to their subordinates or other employees. A belief system, according to Simons, is value-laden and inspirational. Although this research does not refer to the Simons' notion of levers of control that is a contingency-based approach, a belief system might play an important role as part of a teleoaffective structure of a practice. Therefore, the teleoaffective structure in this context would be the environmental perspective of companies' objectives and the environmental values they believe in.

Schatzki (2005) has claimed that the site of a practice is 'the site-specific to human coexistence', which can be the context of the wider social phenomena. In terms of the environment, the site of EMAC refers to a company's internal and external socio-environmental elements. Internal elements include environmental management accounting control 'know-how', artefact arrangement such as environmental management equipment, computers and office facilities, and network arrangement between departments in the implementation of environmental management accounting control.

By unpacking Schatzki's practice theory with the above explanation, the next step is formulating a theory-based research question as to the second RQ that needs to be addressed in this study. The second research question is:

'What do key actors do and say in an environmental management accounting control (EMAC) framework in relation to their internalised environmental values, and how?'

This second RQ will help theoretically analyse and understand the phenomenon being studied in this research.

3.5. Conclusion

In studying the social phenomenon, understanding practice is essential. However, practice itself is not constituted by the minds of individuals alone. The material arrangement and the social context contribute to the production and transformation of practice. Schatzki (1996, 2002) has claimed that practice is a nexus of doings and sayings organised by a practice organisation that consists of understandings, rules, and teleoaffective structures. He also claims that material arrangement and the context where the practice takes place are important and contribute to the constitution of practice. Schatzki's practice theory and site ontology to some extent provide the necessary theoretical framework that explain how the practice is constituted from the elements of agent's minds, experience, material arrangement, and other social orders along with the relationship among them.

Gray (2006) and Adams and Larrinaga-González (2007) have emphasised the importance of the management accounting role in the 'managerial capture' of environmental issues by business actors. Internalised environmental values foster more substantial engagement through daily business activities. Hence, positioning management accounting at the centre of engagement improves the stewardship role of a company towards nature and helps answer how environmental values can be internalised and lead to more substantial changes.

4. PHILOSOPHICAL STANCE AND RESEARCH DESIGN

4.1. Introduction

The philosophical stance in the research design defines how the social phenomenon will be investigated. It provides guidance in designing the appropriate methodology to answer the research question constructed. The purpose of this chapter is to explain the comprehensive design of this research including its philosophical stance. In the first section, the philosophical stance of this research is elaborated as the basis for the whole research design. The next section provides a detailed explanation of the research design. The chapter is then closed with a conclusion that states the philosophical position of this research in investigating the phenomenon.

4.2. Philosophical Stance of This Research

The design of this research is determined on the basis of its philosophical stance. The philosophical stance of this research directs the methodology to answer the research questions.

The undertaking of the MAC in a company lies upon the managers to set up structures that direct organisational practices and manage responses of organisational members (Ahrens and Chapman, 2007). Testa, Boiral, and Iraldo (2018) have further argued that the internalisation of environmental practice is not the same across organisations while implementing formal EMS, such as ISO 14001 and EMAS. They believe that engagement in such a way does not reflect internal behaviours of actors towards the environment. Mahsud, Imanaka, and Prussia (2018) have emphasised that substantial engagement also emerges from non-problematic core business processes.

Therefore, substantial environmental engagement is not necessarily manifested only in the implementation of the EMAC or other similar structures. It must involve the internalisation of environmental values into organisational practices. The implementation of such structures is utilised as an instrument of engagement, and it is not an end to a particular engagement task. What the real practices or doings and sayings of actors are determines substantial engagements.

Furthermore, accounting phenomena currently tend to be multi-perspective and multi-discipline as well as multi-paradigmatic (Lukka, 2010). Hence, being clear in the philosophical stance could help understand the phenomenon more comprehensively. In understanding a practice as a social phenomenon, one needs to discuss agency and structure positions. As this research draws upon Schatzki's practice theory and site ontology, it shares the same philosophical stance. Schatzki's social ontology exhibits humans transpiring their existence in a practice that consists of doings and sayings (Schatzki, 1996). The mesh of practices along with entity arrangements then constitutes the site or context (Schatzki, 2002).

Sharing the same ontological view with Schatzki has led this research to see the reality of environmental engagement existence in practices. Hence, this research studies practices and elements that constitute those practices focusing on the agents that undertake the practices and how these are related with the existing structure as separate elements. Furthermore, as Schatzki's views stand on a dualism assumption, the study of environmental practices in this research also does not collapse any related system (e.g. an environmental management system or a management accounting system) as a medium and result of the reproduction of the environmental engagement practice itself. Therefore, in studying the environmental engagement phenomenon, this research pays attention to agents or actors as a separate entity from the system that

becomes one element of guidance for conducting the practices. It is important to study the component elements of social systems (orders) and how they could influence people in practising environmental engagement. To some extent, this is like what Archer (1995) has stated regarding the importance of a dualism belief in analysing a social phenomenon although this research does not stand on Archer's theoretical framework.

According to Archer (1995), it is possible to identify a structure since it has irreducible enduring character with autonomous influence which exists before the occupancy of the agent. It is the situation that remain the same although the agent who occupy the position is changing. Once the agent has the position within the structure, s/he has the power to exert the action or modify it for particular intention. The dualism paradigm then has the main strength in explaining the various combination of the elements of practice within the cultural system and its relations to the socio-cultural interaction. Further, Archer also emphasises that the component elements of social system lead to the people action in the socio-cultural interaction. These are the prominent foundation in examining the EMAC as a practice.

4.3. Research Design

This thesis has questions that are driven by a gap in the literature and theoretical framework. The questions driven by the literature gap will guide the operationalisation of the research. The theory-based questions help the analysis and understanding of the phenomenon being studied.

In the literature review (chapter 2), it is explicated that the constructed research gap is about the limited knowledge on the EMAC from practice perspective. To do so, the focus is on what activities the key actors have conducted and what has been said. Since this thesis research is following Schatzki's practice theory and site ontology, the

dualism paradigm becomes the philosophical stance that underpins the whole research design. With a focus on the practice and standing upon the dualism paradigm, this research puts emphasis s on the key actors and not on the power of the structure. The targeted key actors and the criteria are elaborated in the next sub-section regarding the data collection.

4.3.1. Research design of the case study

This thesis has two research questions that are as follows:

First RQ:

'How the managers internalise environmental value within the implemented environmental management accounting control (EMAC)?'

Second RQ:

'How the managers undertake the doing and saying in the EMAC framework in relation to their internalised environmental value?'

The first research question is to guide the operationalisation of this research, which means data collection activity to gather up empirical evidence. The second research question is important in providing the theoretical guidelines in the analysis of all empirical findings.

To answer the above questions, it is important to use a case study approach as Easton (2010) has indicated that complex phenomena that are relatively clearly bounded, such as organisations or inter-organisational relationships, form a particularly suitable context for a case approach. Yin (2003) has also explained that the case study 'investigates a contemporary phenomenon within its real-life context, especially when the boundaries between the phenomenon and context are not clearly evident' (p.13).

The boundaries of the EMAC practice as the studied phenomenon and the agriculture sector as the context are also not always clear. As explained in the following empirical chapters, the practice phenomenon and the context are interrelated. Hence, to investigate it, the case study strategy provides the possibility to examine that phenomenon in its natural setting from the practitioner viewpoint. As this study focuses on an in-depth investigation of the EMAC practice phenomenon, a qualitative case study is chosen for this research.

Additionally, although Yin (2003) has explained that the pilot case study is important to refine the data collection plans, there is no pilot study taken in this research due to the limited timeframe and tight timetable for the interviews. Moreover, the operations of the plantation and the agrochemical company are relatively not complicated. However, to refine the data collection and to be part of the timetable arrangements with the companies where the case studies have been undertaken, continuous follow-up by having further interviews with the informants or participants is conducted, and more observations are made.

This research design follows Schatzki (2002) in studying key actors' practices in the EMAC framework. To explain doings and sayings and their relationship to a particular context or site, Schatzki uses case studies (the Shaker village of New Lebanon, New York, and contemporary day trading in a Nasdaq market). In this thesis research, the study has been conducted in two case studies- one in a plantation company and another in an agrochemical manufacturing company in the agriculture sector in Indonesia. The reasons for the use of these two case studies in this research are two points. The first case study considers the agriculture sector as the chosen sector, and the second one concerns Indonesia as a site where the research context takes place. The reasons are explicated in the following parts.

The first reason concerns the industrial sector in the agriculture context. Chandio et al. (2020) have explicated that the agriculture sector is prone to climate change risks that could have an impact on its productivity. Further, they conclude that the government and other authority agencies need to use relevant strategies to respond to the situation. In addition, the agriculture sector plays a prominent role in one of the Sustainable Development Goals (SDGs) to end hunger (United Nations, 2019). In the SDG framework, the agriculture development that fosters sustainable agriculture practice to increase productivity becomes a manifestation of the commitment of many related parties and governments to end hunger (United Nations, 2015).

Further, the agriculture sector is the second contributor to the environmental impact after the energy industry with 18.4% of greenhouse gas emission (Ritchie, accessed: 26th October 2020). The latest data, as shown in table 1, depict that emissions from agriculture on a worldwide scale are significant. The latest indicators from the World Bank indicate that the freshwater withdrawal by the agriculture sector from total withdrawal has increased from 65.46% in 2015 to 91.82% in 2016 (the World Bank, accessed: 16th March 2020). These data demonstrate the significance of the environmental impact on the agriculture sector that becomes the reason for having the agriculture sector as the context of this research.

Secondly, the reason for choosing Indonesia as the site context is related to its emission contribution and the significant amount of existing biodiversity as explicated in chapter 2 in the sub-section of the Indonesian context discussion. All the data presented underpins the reason for choosing Indonesia as the site context of the study.

This thesis research uses two case studies- one in a coffee plantation company and another in an agrochemical manufacturing company. Henceforth, the coffee plantation company will be known as CP plantation, and the agrochemical

manufacturing company will be recognised as the CM company. The first reason for choosing the case studies is that the plantation company represents a company with cultivation as the main business process in the agriculture sector, and the agrochemical company represents a supporting industry that provides important inputs for agriculture activity, which are fertiliser, pesticide, and herbicide products. As crop agriculture is mostly done by individual farmers (Kementerian Pertanian Republik Indonesia, 2016), the relatively organised environmental engagement would exist in a plantation company in the plantation sub-sector. As the coffee commodity is a strategic plantation commodity in Indonesia, as identified by the Ministry of Agriculture and explicated in their strategic plan[ii], one of the coffee plantation companies is chosen for this case study. The agrochemical company has been chosen because this firm has been established as a cooperation between two foreign companies with a state-owned enterprise in the agrochemical industry.

4.3.2. Data collection

Yin (2003) has explained that the data for case studies come from many sources, such as interviews, documentation, archival records, direct observation, participant-observation, and physical artefacts. In studying the practice, Schatzki (2002) elaborates on practices of key actors in the Shaker village, in terms of their doings and sayings in relation to the arrangements in the site. In describing practices in a medicinal herb business in the Shaker village of New Lebanon in New York, Schatzki uses secondary data from relevant articles and books that discuss the Shaker village in detail. The data taken from those references detail the actors, activities, sites, and arrangements. Detailed data collected about the actors cover the people doing certain tasks, their knowledge, social background, and the role that they have. For activities or practices,

Schatzki has gathered secondary data about who did what and for what reasons. Data describing the sites and arrangements have covered detailed information of the Shaker village and its social life, including its broader society. The data collected for the second case, which was a day trading in a Nasdaq market, is to some extent as the same as the Shaker village case is. All the illustrations above that exist in Schatzki's study (2002) are taken from secondary data and third-party descriptions (Nama and Lowe, 2014). Learning from Schatzki's case studies (2002), the most prominent factor in data collection to understand a practice is to use any data sources that provide information about actors' doings and sayings in a certain context as much detail as possible.

To maintain Schatzki's work-line in the two cases, and to ensure theoretical consistency as conducted by Nama and Lowe (2014) in their study, this research collects data by employing all kinds of methods such as interviews, observations, and documents' analysis to gather data about key actors' doings and sayings in an EMAC framework following Schatzki's practice theory. In this research, data collection is guided by the first RQ with four supporting questions. The supporting questions are the questions that guide the data collections in a step-by-step manner. The supporting questions that help operationalise the two main research questions have been explicated in table 4.

The first supporting research question is about daily environmental engagement. Questions include how key actors exert environmental practices in their daily activities and how the practice organisation or intelligibility shapes and reshapes the practices they exert. The answers to these questions provide a description of the doings and sayings of key actors and the embeddedness of environmental values to these practices. The second supporting research question is about existing environment-related regulations. This question is to study the interconnected orders in a broader context,

Table 4 The theoretical framework mapping and data collection method used

Research questions	Supporting research questions	Data collection methods used	Key concepts in the theoretical framework
First RQ: "How the managers internalise environmental value within the implemented environmental management accounting control (EMAC)?"	1. How do managers as key actors exert environmental practice in their daily activities? How does the practice organisation shape and reshape practices they exert?	• Semi-structured interviews • Documents' analysis • Observations	• Practice theory (the doings and sayings) • Elements of practice organisation
	2. What are the existing and implemented environment-related regulations or other regulations that have environmental consequences within the studied context?	• Documents' analysis	• Interconnected social orders
	3. What are the environmental management and management accounting control systems implemented? How do those systems relate/engage with the existing regulations as discussed in the second supporting question above?	• Semi-structured interviews • Documents' analysis • Observations	• Entity arrangements (entities include humans, artefacts, things and organisms)
Second RQ: "How the managers undertake the doings and sayings in the EMAC framework in relation to their internalised environmental value?"	4. How are the relations/links between managers' environmental practices and the related regulations discussed in the second supporting question, and between the practices and the internal organisation's systems implemented as discussed in the third supporting question? Why do such kinds of relations exist or are considered in shaping and reshaping a practice?	• Semi-structured interviews • Observations	• Intentional relations between practices and interconnected social orders • Links between practices and interconnected social orders with entities' arrangements

which have impacts on an organisation's environmental engagement. The third supporting research question is about the existing environmental management and MAC systems. Questions include what the existing environmental management and management accounting control systems are and how they relate/engage with existing regulations, as discussed in the second supporting question above. The fourth supporting research question is about the relations between EMAC practices, the

relevant regulations, and the existing systems. Questions include why such kinds of relations exist.

The above four supporting research questions are the basis for developing the checklist of semi-structured interview questions in appendix 1. The semi-structured interview questions in appendix 1 have been put to all the managers that are targeted as the informants in this research. This is important to have consistency in the data collection process. It is also important to triangulate the data from several managers across the departments in a company by having the same set of questions.

Since this research involves human interactions, ethical approval is one of the prominent requirements to maintain ethical conduct during the research and to protect collected data and other sensitive information during the fieldwork and identities of the participants or informants. This ethical approval has been obtained from the Essex Business School prior to any contact made with the companies intended to be studied.

After ethical approval is granted, contact with the key persons in both companies has been conducted to explain the intention for the research. The first contact is made informally. After the key persons have provided the green light to conduct the research, research proposals are prepared and sent to the companies to get formal approval and access to conduct the research. Research proposals have been sent to the persons in charge of this matter. In the CM company, the research proposal has been submitted through the general affairs staff, and access is granted by the human resources and general affairs department manager after getting approval from the board of directors. Whilst in CP plantation, the proposal has been submitted to the operational director, and access is granted by the chief executive officer (CEO).

4.3.2.1. The interviews

The interview is one of the data collection methods used in this research to gather information about what managers as key actors do and say in an EMAC framework and to study the existing structure to some extent. For the existing structure, in particular, the interview is not the only one data collection method employed in this research. Interviewing the managers as the key actors is important to obtain detailed information on their daily practices and why they perform these in a particular way. The detail about the interview is available in table 5.

Meeting with someone in charge or contact with a person in each company has taken place before the fieldwork and interviews have begun. The meeting has discussed the relevant issues, such as the scope of the research (including an explanation of the research in brief), the timetable of the fieldwork and interviews, the managers to be interviewed, the areas open for field observations (in the CM company, all onsite observations were prohibited), and the documents to be analysed. The data collection process has been conducted in four and a half months between 1st August 2018 and the middle of December 2018. After the first analysis, the follow-up fieldworks and interviews have been conducted within one month that started from the middle of July 2019 until the middle of August 2019. The follow-up has been important to add more data after the first data collection. The follow-up has been undertaken by having more interviews on the specific issues and more observations as well. The follow-up interviews have been conducted by having face-to-face interviews as usual and by email and by phone's text message correspondence. The follow-up through emails and phone's text messages has been made to gather more data regarding the profile of the plantation site and to confirm the historical data from the plantation company profile. The follow-up observation has been undertaken in the coffee plantation.

Table 5 The list of managers interviewed

Position	Code	Company	Date (dd/mm/yyyy) and duration of interview	
Housekeeping division manager	CP01	CP plantation	30/07/2018	55 minutes
Plantation division manager	CP02	CP plantation	1. 30/07/2018 2. 31/07/2018 3. 30/07/2019	1. 1 hour 12 minutes (1st interview) 2. 1 hour 36 minutes (2nd interview) 3. 34 minutes (joining the end-of-month meeting in plantation)
Production division manager	CP03	CP plantation	1. 06/08/2018 2. 07/08/2018 3. 09/07/2019	1. 1 hour 4 minutes (1st interview) 2. 50 minutes (2nd interview) 3. 2 hours 11 minutes (3rd interview)
Human resource manager	CP04	CP plantation	23/08/2018	55 minutes
Chief executive officer (CEO)	CP05	CP plantation	05/11/2018	1 hour 27 minutes
Operational director	CP06	CP plantation	1. 05/11/2018 2. 10/07/2019	1. 57 minutes (1st interview) 2. 1 hour 15 minutes (2nd interview)
Internal auditor manager/Finance department manager *)	CM01	CM company	1. 02/08/2018 2. 16/10/2018	1. 1 hour 32 minutes (1st interview as the internal auditor manager) 2. 46 minutes (2nd interview as the Finance department manager)
Procurement department manager	CM02	CM company	1. 09/08/2018 2. 26/07/2019	1. 1 hour 26 minutes (both are interviewed together) 2. 57 minutes (2nd interview with Production department manager)
Production department manager	CM03	CM company		
Research and development department manager	CM04	CM company	10/08/2018	1 hour 59 minutes
Marketing department manager	CM05	CM company	24/08/2018	1 hour 26 minutes (both are interviewed together)
Sales department manager	CM06	CM company		
Human resource and general affairs department manager	CM07	CM company	24/08/2018	1 hour 30 minutes
Quality assurance section head/Factory 2 and 3 manager *)	CM08	CM company	1. 24/08/2018 2. 29/10/2018	1. 1 hour (1st interview as the QA section head) 2. (the 2nd interview was undertaken with the other factory manager)
Research and development department staff	CM09	CM company	19/10/2018	37 minutes
Factory 1 manager	CM10	CM company	29/10/2018	1 hour 3 minutes (interview together with factory 2 and 3 manager and K3 section head)
Environment and K3+) section head	CM11	CM company		
Chief executive officer **)	CM12	CM company		Correspondence by email

Notes:

+) = K3 stands for *"Kesehatan dan keselamatan kerja"* (occupational health and safety)

* The person has been rotated to different positions during the fieldwork period.

** The correspondence with the CEO of the CM company has been made through emails.

For the interviews, table 5 exhibits the list of managers who have participated as informants during the study. The shortest interview duration is 37 minutes, and the longest one is 126 minutes. The shortest interview is with the Research and Development staff to confirm the information of the staff involvement in helping to prepare the departmental budget. In total, there are 22 interviews that consist of 11 interview records for CP plantation and 11 for the CM company. All interviews have taken place within the companies' sites, except for one interview with CP plantation production division manager. This interview has taken place in a café, which is a customer of CP plantation.

All interviews have been recorded and supported with necessary consent forms signed by the interviewees. The consent is important because the interviewee has the right to know that they are being researched and the nature of the research they are involved with (Silverman, 2010). The interview recordings have been transcribed by the researcher as one part of the whole data collection and analysis process. There is only one session of an interview that has gone unrecorded, which is the one with CP plantation operational director. At that time, after the recorded interview session, the operational director has explained the socio-historical background of the village where the company is located. The explanation from the operational director itself has provided important insights regarding the characteristics of the surrounding society that contributes to shaping the company's policies.

The code in table 5 above is basically the anonymity of the name or identity of the managers interviewed. Anonymity is important to keep the confidentiality of the interviewee's identity (Silverman, 2010). The identities or the names of the companies are also concealed and replaced with codes. CP plantation is the code for a plantation

company, and CM company is the code for an agrochemical manufacturing company. All the recorded interviews have been transcribed and processed using NVivo software.

The interview has been designed as a semi-structured one to make it possible to capture the original thinking of participants or interviewees on the issues being studied. This is the same as when Schatzki uses multiple articles and books to exemplify his theory. The use of semi-structured interviews in this research is intentionally used to bring the results similar to the results when Schatzki (2002) uses multiple articles or books. The interviews with all the managers and also the email correspondence with the CEO of the CM company have followed a checklist prepared for the semi-structured interviews (see appendix 1).

There are reasons why interviews have been conducted with department or division managers. As the primary research question is about managers' environmental practice, it is important to determine who these managers are and why they become central in this research. Pawson and Tilley (cited in Smith and Elger, 2014) have explained that there are 'practitioners' and 'subjects' that could act as informants. In this research, the 'practitioners' are those who have the expertise and knowledge to implement environmental management accounting control in an organisation. This means 'practitioners' must be the ones that have understanding and knowledge of environmental issues, management accounting control, and the organisation's policies relating to these matters. On the other hand, Pawson and Tilley have defined 'subjects' as those that 'are invariably in a good position to know the impact of policies designed to motivate them' (Smith and Elger, 2014, p. 121). Department and division managers that were targeted for interviews have a high enough position in conducting managerial actions with wider impacts, whilst at the same time, their positions are close enough to get in touch with daily operational problems including environmental issues. They are

the managers in the companies that meet the characteristics as explained above. Therefore, these department and division managers are the key actors in this research. These managers are the highest middle-level managers, which means they are responsible directly to the board of directors. Especially in the CM company, the managers interviewed under the production department include the factory managers and the environment and K3 section head. Although these factory managers and environment and K3 section head are under the production department manager; however, they have the capacity as explained in the above, and, therefore, they are part of the targeted key actors.

Employees, on the other hand, have practical knowledge about environmental engagement activities but they do not have the capacity to influence the policies following the daily operational problems. The employees are not in the position to make decisions; therefore, the employees are not considered the key actors.

The CEOs of both the companies have been interviewed because the CEO is also the member of the board of directors. The correspondence is also done by email, particularly with the CEO of CM company. The interviews with the CEOs are important to examine the commitment from the top management of the company towards the environmental engagements. The interviews are also important because the environmental value of the company is derived from the CEO as the ultimate leader of the company. The communication with the board of directors of the CM company was relatively more difficult, therefore, the correspondence was only available with the CEO. In the meantime, the operational director of CP plantation was relatively easier to contact, and also, unlike in CM company, the operational director was much more involved in the operational activities.

4.3.2.2. The document analysis

The document analysis has been conducted to study contexts and practice intelligibility. The study of context is conducted for studying the Indonesian agriculture sector and the company's level contexts. The document analysis is also used to study rules and other relevant arrangements of entities, which underpin the practice's intelligibility.

The study of the Indonesian agriculture sector context includes government official documents, laws, regulations relating to this sector, relevant articles or news, and statistical databases. The government official documents used are the national development plan and the strategic plan of the Ministry of Agriculture for the period of 2015–2019. The statistical database is collected from the official Indonesian Statistic Database, the World Bank database, and the FAO database (FAOSTAT). The statistical documents underpin the explication of the agriculture sector geographical profile and explain the arrangements of the existing entities whilst the official documents (including laws and regulations) and relevant news become the foundation of studying agriculture interrelated social orders. The social aspect of the agriculture sector also stands upon the official documents and relevant news.

Regarding the document analysis, both companies have not provided access to financial-related documents, such as budget or financial reporting, showing confidentiality reasons. The CM company's limited financial reporting has been accessed from its parent company's annual reports, which are publicly available. In addition, the CM company has granted access to its standard-operating procedures (SOPs) and minutes of green-talk/safety-talk meetings whilst CP plantation has granted access to both SOPs documents and company sites. There are 25 SOPs (see appendix

4) and 19 GT/ST minutes of meeting documents that have been studied during the fieldwork of the CM company.

Since limited filing administration exists in CP plantation, written and well-documented documents are also limited. The analysed documents are copies of the plantation legal documents, the company profile, its organisational structure, the company's vision and mission statements, and the company's rules. In addition, the study has also been conducted on some records relating to certain cultivation activities: the daily performance report, the plant census report, the fertiliser stock card, and the fertiliser control record (see appendix 2).

4.3.2.3. The onsite observation

For onsite observation, the CM company has not granted access for observations of facilities and production processes, showing confidentiality reasons. However, the company's official website provides detailed information about products, production facilities, and capacity.

All onsite observations in CP plantation have been conducted during working days. The observations have been made on cultivation practices in the plantation areas, receiving and weighing activities at the receiving site, coffee production process activities, plastic waste processing facilities, and other company facility maintenance activities. There were 11 visits to CP plantation and two informal visits as a guest or customer. During the visits as a guest or customer, informal observations regarding the agritourism activities have been made.

On the other hand, visits to the CM company were for interviews and analysing documents. Due to the CM company's location within an industrial estate, side by side with its parent company, access to its office and factory could only be made by

reporting to the main gate of the parent company. The visitors visiting the parent company and its subsidiaries are allowed with the condition of not taking any kind of picture or making video recordings of the facility for any reason. In total, there were 13 visits: ten for interviews and three for analysing documents.

4.3.3. Data analysis

In analysing all the collected data, this research follows the Schatzki (2002) framework of thinking in conceptualising the practices and related contexts or sites in the Shaker village medicinal herb industry and contemporary day trading in a Nasdaq market. To analyse practice data that are gathered or collected from the fieldwork, this research looks at the forms of doings and sayings (e.g. how managers prepare plans and budgets, and what plantation division managers do and say in directing their subordinates in the field to do cultivation practices) from the interviews, observations, and other related documents. The practice intelligibility that consists of understanding, explicit rules, and teleoaffectivity has also been analysed from the collected data by following the Schatzki framework of thinking. Entity arrangements (e.g. the plantation site arrangement and the supplier performance measurement) have been analysed from related documents, observations, and interviews as well. Analysing the empirical data in this research has basically discussed the empirical evidence from a theoretical account, which is guided by the second RQ.

Furthermore, as practices in plantation and agrochemical companies transpire in agriculture as a context, to analyse the context, this research analyses the interrelated regulations, laws, and government strategy for the agriculture sector. Also, data collected from relevant news and other articles, as well as publicly available databases regarding the entities in the agriculture sector (including natural beings) have been

analysed to study the agriculture sector context. At the company level, entity arrangement information has been analysed to study specific case contexts. In sum, the context in this research is analysed from the data of practices and entity arrangements. This follows Schatzki's explanation (2002, 2005) about what site or context is.

The operationalisation of the analysis is conducted through a coding process with the help of NVivo software. Overall, all the documents and interview transcriptions are coded by following the theoretical framework scheme elaborated in the theoretical framework discussion chapter. Hence, the analysis focuses on the EMAC practice in each case study (there are two case studies as mentioned earlier) alongside analysis of the contexts of study. The coding process is conducted by finding concepts from the data, followed by grouping these concepts into categories or themes. The coding process itself is closer to axial and open coding, as explicated in Bryman and Bell (2015). The process is similar to axial coding since the analysis also includes a study on the connection between categories or themes. For example, as the category of MAC practice is formed from concepts of planning/budgeting, governing and directing, and controlling and decision-making, the MAC practice category relationship with the environmental engagement category is also investigated. The relationship between the two categories would provide an explanation of how EMAC practices are conducted by actors. The coding process of the national and ministerial strategic plans is closer to the open coding process to capture environmental issues the government would like to emphasise. The open coding of government strategic plan is conducted to be open to possibilities of concepts that could have emerged (Corbin and Strauss, 2008) from containing messages the government would like to convey in regard to environmental issues in the agriculture sector.

In the official government strategic plan, both the national and ministerial strategic plans, the emerging concepts converge into these themes: increasing people's wealth, food and energy sovereignty and security, customer protection, and sustainable development. While coding the government regulations and laws, the process captures specific emerging concepts that lead to specific themes in certain government regulations or laws. The relationship among the themes in the government's strategic plans and regulations/laws has been investigated as part of the analysis of the interrelated social orders in the agriculture sector. Further analysis is conducted by analysing the connection between the interrelated themes of the government's strategic plans and regulations/laws, and geographical and environmental profiles of the Indonesian agriculture sector. Analysis of the connection mentioned earlier follows the theoretical framework that demonstrates a connection between social orders, and entities and their arrangements. It becomes an important part of analysing data of the agriculture sector as the industrial context of this thesis research.

Coding the interview transcriptions is conducted to study managers' doings and sayings in practising EMAC. The concepts emerge from the interview transcriptions and are then grouped based on MAC theory, environmental issues and values, and practice intelligibility. In the same strain, while analysing the agriculture sector context, the relationship among the categories is investigated. Study or investigation of relationship is essential in explaining how particular environmental issues and values are internalised within actors' MAC practices through shaping the practice intelligibility. For example, concepts of planning/budgeting, governing and directing, and controlling and decision-making are grouped together and result in a category of MAC practice. On the other side, concepts of conservation, cultivation practice, and pest control form the category of plantation environmental protection. The MAC

practice category has a relationship with the plantation environment protection category in the case of planning organic fertilising activities and rejecting the programmes or activities that potentially destroy the ecosystem in the plantation. The relationship between the categories mentioned above provides an explanation of how internalisation processes happen within certain case studies. Apart from the analysis of the practices, coding of the interview transcriptions is also conducted to capture concepts, categories, and themes that provide explanation of context at the company level. Coding is also carried out in research notes containing unrecorded interviews (there is one interview session with an operational director that went unrecorded due to confidentiality). The result is important in underpinning the explanation of CP plantation context.

In addition, coding of company rules is conducted to analyse the arrangement orders at the company level. The coding process is the same as for interview transcripts and government official documents. Further analysis is conducted on the relationship between the categories or themes that exist in company rules and categories or themes from the study of the agriculture sector context. The analysis of this relationship is essential for explaining the intentional relations between actors and the agricultural society and its interrelated orders. For example, the concept of updating company rules and improving environmental management facilities form the category of company environmental engagement in the CM company. This category has a relationship with the category of environmental protection in the government regulations of occupational health and safety. Another example is, in the case of considering alternative raw material procurement due to government policy to disallow the use of particular active ingredients, the category of MAC has a relationship with environmental engagement and customer protection (which exists in related government regulations).

In summary, the essential part of data analysis is the relationship between the categories or themes and the emerging concepts about environmental issues in governmental documents. The relationship between categories or themes provides an explanation of how practical intelligibility shapes managers' doings and sayings, and how environmental values are embedded in a practice. The relationship between categories at the company level and agriculture context level depicts the intentional relations between actors at the company level and the agriculture society.

4.3.4. Issues of validity and reliability

The subjectivity in a case study, particularly during the data collection, is indicated by Yin (2003). He has explained that it is important to specify the significant operational events that constitute the main problem as indicated in the research question. The use of multiple sources of evidence is important in this case study. The data collected from different methods are important to enhance the validity of the evidence regarding the environmental practice in the investigated organisation. The participants in the interviews are also chosen from several different operational areas, so the results can be cross-checked to maintain validity. The validity of the interview data is cross-checked with the observation and documents' analysis to enhance the validity.

In exemplifying his practice theory and site ontology by using two case studies of the Shaker village medicinal herb industry and contemporary day trading in a Nasdaq market, Schatzki (2002) has described the practices in detail to elaborate elements of practice and context. He has described the practice by elaborating on what actors are doing, how they use certain instruments, and why they do this in certain ways. Schatzki has described the site of the medicinal herb company in the Shaker village in detail, as well as also described how the mechanism of contemporary day

trading and its related practices explain the site arrangements and context. By doing this, Schatzki makes sure that information on practices and entity arrangements fit with the theory he tries to defend. In the same way, Nama and Lowe (2014), in their study, have demonstrated that a data-theory link is crucial.

As Schatzki (2002) has used data from several resources all coming from secondary data, in this research, multiple sources of evidence that are fit with Schatzki's practice theory elements come from different data collection methods. It is important to address the validity issue in this research. Interviews with department/division managers are to make sure that elements of doings and sayings along with their intelligibility are well-captured. In the case where doings and sayings are standardised (to a certain extent), as in the agrochemical company, interviews across department managers are important to make sure that practices conducted by managers are fit with the standards and to gather data about the substantial practice. At the same time, interviews across managers also bring the practice intelligibility up to the surface. Another way to capture the fitness of empirical evidence with the theory is cross-checking the data gathered from interviews and observations.

In general, maintaining trustworthiness is an important aspect to address the reliability issue of qualitative research (Bryman and Bell, 2015). Apart from ethical approval documents, all the data are well-organised and secure. This covers interview transcriptions, documented observations, signed consent letters from participants, and copies of company documents (for the plantation company only).

4.4. Conclusion

This thesis research focuses on the study of key actors' environmental practices in engaging with environmental issues through environmental management accounting

control. This research does not only focus on the practice based on Schatzki's practice theory and site ontology but also shares the same philosophical stance.

Philosophically, this research is designed to debate against the duality assumption in practice. By drawing upon Schatzki's practice theory and site ontology to study the environmental engagement practice, this study wants to debate that EMAC practices are not a duality-based phenomenon. The design of this research wants to emphasise that structure and practice in environmental engagement cannot be collapsed into one. Hence, the philosophical stance and design of this research would like to open a new path where both structure and agent are prominent in determining substantial environmental engagement practice.

On the operationalisation side, this study is designed to investigate substantial practices in environmental engagement through the EMAC in terms of studying key actors' doings and sayings and their intelligibility. Data collection from the empirical sites is designed to conduct an in-depth investigation of the substantial doings and sayings in the EMAC framework as the manifestation of environmental values key actors have internalised. The data collection process that emphasises the data–theory link ensures that the empirical findings provide answers from a theoretical account of the environmental engagement phenomenon. This is important to address the validity and reliability issues of this research.

5. INTERCONNECTED ORDERS IN THE INDONESIAN AGRICULTURE CONTEXT

5.1. Introduction

Schatzki (2002) has argued that the social site or the context is where the human coexistence inherently transpires. The social site or the context is fundamentally a mesh of practices and orders that are arranged as a nexus of practice-order bundles. This mesh is shaped and reshaped by the doings of both human and non-human entities, which further also means that nature has a contribution to the shaping and reshaping of the human's social life.

In addressing the main research question regarding the internalisation of environmental value through the managers' doings and sayings, the discussion of the domain of the social site focuses on the relevant arrangements or orders that maintain and transform the company's environmental engagement. As elucidated in Schatzki (2002), the arrangement in one medicinal herb business in the Shaker village is a part of broader arrangements in the Shaker community. Religious value the Shaker community believes in moulds and transforms the arrangements within the business. In other words, the nexus of orders in a particular medicinal herb business that becomes the site where the practices in that company are hanging, are also hanging upon broader nexus of arrangements.

The practices in the agricultural sector in Indonesia also hang upon the nexus of orders, which consist of government acts, regulations, ministry's strategic plan, and interconnected regulations that shape this sector. The doings and sayings of the actors in this sector such as farmers and the actors in the agrichemical industry is hanging upon the nexus of the aforementioned arrangements. Their practices hang upon both

the internal arrangements within the organisation and the broader arrangements outside the organisation. The internal organisation's arrangement itself also hangs upon the government acts and regulations and other relevant bodies' arrangements as the external nexus of orders. In this chapter, the focus is upon the discussion of the nexus of orders in the agricultural sector in Indonesia that would become the broad context of the following empirical and discussion chapters regarding the case studies.

The discussion of the context of the study has been structured into two big sections. The first section describes the Indonesian agricultural sector from a geographical perspective. In this section, the geographical profile of Indonesian agriculture is discussed. The discussion also explicates the potentials and threats from the social and environmental aspects. The agricultural geographical profile contributes to the arrangement of related social orders such as government regulations, policies, and programmes by putting the potentials and threats into account. The second section discusses the social orders and arrangements in the agricultural sector. The discussion in this section focuses on three areas: the government grand strategy, the social orders from the Ministry of Agriculture, and the emerging discourse. The government grand strategy and the following policies and programmes are related to each other to govern the practice of the actors in the agriculture sector, which are discussed in the following chapters 6 and 7. The discussion in this chapter is closed with a conclusion. The conclusion provides a brief explanation of why and how particular values are emerging from the nexus of orders, which are created based on several facts.

5.2. The Indonesian Agricultural Sector Profile

5.2.1. Geographical profile

In general, Indonesian holds an abundance of biodiversity richness in terms of 10% of known plant species, 12% of mammal species, and 17% of all known bird species (Rainforest Action Network, accessed: 12th August 2017). On the other side, the crop production index for Indonesia increased from 123.67 in the year 2010 to 139.84 in the year 2014 (World Bank, Accessed: 25th August 2017a). The study from Henstridge, Chiappe and Crawfurd (2013) has previously indicated that the economic performance increase in Indonesia, measured by the GDP (gross domestic product), provides a contradictory effect on the environment. Environmental degradation among other things through carbon dioxide emission indicates that Indonesia is among the 15 largest emitters of greenhouse gases. The agriculture sector contributes 0.13 GtCO2e (gigatons of carbon dioxide equivalent) of Indonesia's emission in the year 2005 alone. They have explained that the emission sources are water management practice for rice crops, artificial fertiliser application, and the burning of crop residues (ibid). These facts are in contrast to the reality that Indonesia is one of the top eight countries leading in sustainability reporting; according to Global Reporting Initiative (GRI), reporting rate was at 90% in 2015 due to the regulatory pressure (GRI, accessed: 7 April 2018).

Up to date, Indonesia has 570,000 square kilometres of agricultural land area that equals around 31.46% of the total land area in 2016 with the crop production index that keeps on increasing since the year 2007 up to 2016. In the last ten years, the crop production index has increased by more than 30%. However, at the same time, an increase in arable land was stopped since 2011. Based on the government documents, it is apparent that creating new arable land is a challenge that is not easy to be resolved.

Table 6 The agriculture areas in Indonesia

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Agricultural land (% of land area)	29.26	29.81	30.69	30.69	31.19	31.19	31.46	31.46	31.46	31.46
Agricultural land (1000 sq.km)	530	540	556	556	565	565	570	570	570	570
Arable land (% of land area)	12.14	12.53	13.03	13.03	12.97	12.97	12.97	12.97	12.97	12.97
Crop production index (2004-2006 = 100) *)	109.80	114.92	121.04	123.66	126.10	135.54	136.49	139.24	142.32	142.89
Permanent cropland (% of land area)	11.04	11.21	11.59	11.59	12.14	12.14	12.42	12.42	12.42	12.42

Source: Databank World Development Indicators, The World Bank, accessed: 29 April 2019.

*) The fodder crops are excluded from this crop production index

The crop production index, which shows the agricultural production for each year for all crops excluding the fodder crops, is increasing from time to time. The increasing crop production index that is not in correspondence with the increase in permanent cropland area as mentioned before, which means that the increased productivity is supported from the other agricultural input such as seeds, fertilisers, and other inputs.

From an economical perspective, the Indonesian agriculture sector contributes significantly to the economies. Since the year 2010, the Indonesian agricultural sector has surplus trading balance in value although the rice as the most important commodity, on the contrary, has deficit (see table 7).

The World Development Indicators have depicted that the Indonesian GDP has continuously increased from around US$ 640 billion in 2007 up to US$ 1,090 billion in 2017. The annual growth of GDP has moved in between 4.63% and 6.35%. Despite the fact that the agriculture sector contribution to the GDP has continuously decreased for the last five years, the sector excluding the forestry and fishery sub-sectors still has a higher contribution, which is around 9-10%, than the mining sector (see table 8).

These agriculture and mining sectors are the ones that are dominantly involving the extraction of natural resources as their main business.

Table 7 Agricultural Trade Balance Surplus/Deficit (in US$ 1,000,000)

	2010	2011	2012	2013	2014	2015	2016
Agricultural trade balance (total)	18,247,149.00	23,490,797.00	21,231,397.00	17,274,823.00	18,035,805.00	17,584,343.00	15,421,158.00
Rice	(360,333.00)	(1,512,327.00)	(944,437.00)	(244,809.00)	(387,418.00)	(350,972.00)	(530,978.00)

Source: Summarised from FAOSTAT, accessed: 27 August 2019

Table 8 The Indonesian GDP (at 2010 base)

	2014	**2015**	**2016**	**2017**	**2018**
Agriculture sector (excluding forestry and fishery sub-sectors)	880,389.50	906,805.50	936,356.90	969,773.90	1,005,440.80
Percentage	10.28%	10.10%	9.92%	9.78%	9.64%
Horticulture sub-sector	124,300.90	127,110.00	130,832.30	135,647.00	145,133.60
Percentage	1.45%	1.42%	1.39%	1.37%	1.39%
Plantation sub-sector	338,502.20	345,164.90	357,137.70	373,054.00	387,501.50
Percentage	3.95%	3.84%	3.79%	3.76%	3.72%
Mining sector	794,489.50	767,327.20	774,593.10	779,678.40	796,505.00
Percentage	9.28%	8.54%	8.21%	7.87%	7.64%
GDP	**8,564,866.60**	**8,982,517.10**	**9,434,613.40**	**9,912,703.60**	**10,425,316.30**

Source: Quarterly GDP at 2010 Constant market prices by industrial origin (summarised), BPS-Statistik Indonesia, accessed: 30 April 2019
*) in billion Rupiah

As explicated in the Ministry of Agriculture Strategic Plan (henceforth is *Renstra Kementan*)[iii], the ministry has identified potentials in the agriculture sector that are covering biodiversity and agroecosystem, agriculture land, technology, labour force, and agriculture market. The ministry realises that the existing biodiversity and agroecosystem has not been utilised optimally. The biodiversity and agro-ecosystem potential provide important support for food and other industries to maintain ecosystem sustainability. Along with the existing arable land and other potential areas such as peatland, these biodiversity factors can support the improvement of the productivity of the agriculture sector.

Specifically, for the plantation sub-sector, the tobacco and palm oil plantation are the ones with the highest yearly area growth. The ministry's research and development section has also developed many agriculture-related technologies in terms of agricultural machinery, quality seeds, and other biotechnology that support organic farming. The high population of Indonesia, to some extent, provides the advantages in terms of labour force market. Insofar, the ministry has identified 26.14 million households that make a living in the agriculture sector. However, the low interest of the young people towards the agriculture sector provides another challenge for the government in increasing productivity. On the other side, the increasing purchasing power of Indonesian people and the implementation of a single ASEAN (Association of Southeast Asian Nations) market have created more opportunities to expand the market for agriculture commodities.

However, based upon *Renstra Kementan*, the agriculture sector in Indonesia faces problems that could be clustered into two groups- the social aspect and the environmental aspect. These aspects are interrelated with one another as the results of historical practice and policies, and the consideration for the future development of the agriculture sector (Kementerian Pertanian Republik Indonesia, 2016).

5.2.2. The social aspect

As identified in the *Renstra Kementan*, the Ministry of Agriculture has recognised that the farmers do not have strong bargaining power, particularly in taking the advantage of economic opportunities such as access to financial resources or technological innovation. The existing farmers' group or farmers' cooperation institution has not been able to improve the bargaining power significantly. Moreover, there are not more than 35% of farmers who have the age below 45, according to the latest inter-census

agricultural survey in 2018 (BPS-Statistics Indonesia, 2018), and most of the farmers have a relatively low educational background. This situation leads to the ability of the farmers to accept and implement the new agricultural technology innovations or even to adapt to the incoming environmental issues that need to be well addressed. Furthermore, young generations in the labour market are more interested in working in the non-agriculture sector, such as in the factories and other service sectors. The relatively low value-added in terms of income and career development are the factors that trigger this problem. The high rate of urbanisation makes the situation worse in the agriculture labour market (Kementerian Pertanian Republik Indonesia, 2016; Biro Perencanaan Setretariat Jendral Kementerian Pertanian, 2013).

The other social aspects identified in the *Renstra Kementan* are about the related regulations that govern agriculture development. The regulations in the agriculture sector are important to regulate the utilisation of natural resources in agriculture and to protect the sector from the global agriculture market movement. Agriculture land conversion is one of the most serious challenges in the agriculture sector, which needs to be well addressed with proper and comprehensive government regulations. On the other side, the relevant regulations are also prominent in supporting the farmers to get access to the financial resources by governing the financial resource institution to adjust the risk and willingness to finance the agriculture business proposed by the farmer (Kementerian Pertanian Republik Indonesia, 2016).

The availability of agriculture land is related to social and environmental aspects. The government also pays attention to the rapid land conversion which reaches 100,000 hectares per year. Currently, the government programme in opening new agricultural land cannot replace the lands that are converted into other industrial purposes or into residential areas. Moreover, the weak legal standing upon the land ownership, to some

extent, creates another problem in the agriculture sector. Around 80% of agriculture land conversion has occurred upon the island of Java, which is the centre of national food production, according to the Ministry of Agriculture data. Economic consideration due to the relatively low value-added in the agriculture sector in comparison to the industrial and service sector is the main factor that triggers the agricultural land conversion. The increasing need for residential land and public facilities is also contributing to the uncontrollable land conversion. The regional autonomy policy makes the land conversion hard to control due to different regional and sectoral needs. Therefore, the government has established the Act[iv] to protect the sustainable agriculture land and strengthen the land reform agenda to give stronger legal standing of the land ownership to the farmers (Kementerian Pertanian Republik Indonesia, 2016).

From the historical perspective, the Indonesian government has established the land reform policy that is still running. The legal standing for the land reform policy is the act of the basic agrarian principle[v]. The government has established this policy with the expectation of meeting three folds of impact. These are economical, socio-political, and psychological impacts. The land reform wants to increase people's wealth by providing land ownership as one prominent aspect of increasing productivity and income. Land ownership is prominent for people living in rural areas since it provides much better legal standing to the people regarding land ownership that enables them to increase the utility of the land itself. Alongside this economic benefit, this policy has the intention to end the 'landlord' system with vast land ownership (the system that is more as colonial heritage system), fosters fairness and justice in land distribution, motivates the farmers or rural people, and ensure the better relationship between the landowner and workers. The main purpose is to foster fairness and justice to the people

in land ownership (Arba, 2018). Hence, this policy is considered in line with the government objective to improve the wealth of the rural people, mainly the farmers.

One principle in the land reform is the prohibition of an individual or a legal organisation to own land beyond a particular limit that has been set by the government[vi]. That individual or organisation (it could be a company as well) must render the excess land to the government, which then redistributes that particular land to the people in need. Private plantation company is also subject to comply with this land reform policy, meaning that they have to render some of their plantation areas to the government to be redistributed accordingly. By giving back the excess land to the government, the former owner of the redistributed land has the right to get financial compensation from the government. The land recipients have to meet the criteria the government has set in an ordinance. The land recipient can be the worker of the former landowner or the other farmer or farmworker that has only less than half of a hectare of land. Also, the recipient must be the one who lives in the same location or region with the redistributed land (Arba, 2018).

In the era before 1998, the land reform implementation has faced two major obstacles: the weak law enforcement and the limited understanding of the land reform. Moreover, the complex bureaucracy and inaccurate data of land ownership have made the ineffective execution of the land reform programme. Hence, strong commitment from the government followed by accurate data and strong law enforcement become the key elements in executing the land reform programme (Mungkasa, 2014). Today, the government still continues the policy as its part in strengthening and improving people's quality of life, prosperity and productivity, and sustainable development.

5.2.3. The environmental aspect

Agricultural land quality degradation is a serious environmental problem in this sector, which is mainly caused by the excessive use of non-organic chemical substances. In 1992, there were 18 million hectares of degraded agricultural land, and, in the following ten years, it doubled the amount (Kementerian Pertanian Republik Indonesia, 2016). One of the contributing factors is the previous policy during the New Order era that refers to the 'Green Revolution' in the agriculture sector. The green revolution was conducted to support the government in achieving the food self-sufficiency goal. However, this policy came with an impact on the environment (Fuglie, 2010).

The 'New Order' of the Suharto regime promoted the 'Green Revolution' programme that attempted to reach the goal of having national food security. Starting from the beginning of the 1970s, the government launched the programmes for an agricultural extension with the help of many agents that provided society guidance programme (BIMAS). They provided guidance to the farmers to boost their productivity. The goal was to attain food security, particularly in rice. The government support in any way made it possible to increase the farmers' productivity and have more than once of harvest per year for rice. At that time, the 'Green Revolution' was the moment when the government introduced the chemical fertilisers and pesticides to increase the yield significantly. This led to the use of massive non-organic fertilisers and super seeds (Subejo, accessed: 30 April 2019; Wicaksono et al., accessed: 30 April 2019) The 'New Order' administration policies included a large number of state subsidies, particularly upon the fertilisers, which was up to 50% of the actual cost (Fuglie, 2010). Further Fuglie depicted that the 'Green Revolution' succeeded and resulted in the average annual food crop growth rate at 4.5% between the 1961s and 1980s. The government used to foster the use of chemical fertilisers among the farmers

to increase their productivity. This particular policy led to the excessive usage of the chemical fertilisers that eventually created an impact on the quality of the agricultural land.

Another negative result of the 'Green Revolution' programme was the more resistant pests that damaged the crops. The introduction of pesticides during the 'Green Revolution' led the farmers' mindset that pesticide usage was good to prevent their crops from getting 'sick', and, therefore, they would expect better yields. This mindset led to the overuse of chemical pesticide practice among the farmers. But the fact is that the overuse not only developed the pest-resistance but also caused land degradation as well (Wicaksono et al., accessed: 30 April 2019). A further impact on the overuse of the chemical fertilisers and pesticides that caused land degradation was decreasing agricultural productivity. This situation might obstruct the attainment of food securities (Deny, accessed: 26 October 2018).

The next serious challenge in agricultural development is to anticipate climate change. Indonesia as indicated by Mayer, Ryan, and Aspinall (accessed: 30 April 2019) acts as both the source and victim of climate change with the flood possibility, drought, and unpredictable weather as the consequences that might occur. The most significant impact of climate change upon the agriculture sector is the water supply issue. Hence, the farmers must have particular knowledge to anticipate the situation and able to carry out necessary mitigation actions. For the government, the necessary infrastructures to guarantee the water supply become essential to be prioritised in the agricultural development in facing climate change (Winarto, Stigter and Ariefiansyah, accessed: 30 April 2019).

As the government has realised that the environmental condition is prone to extreme climate change with substantial impact on the agricultural yields, the Ministry

of Agriculture has stated the importance of the mitigation action as well as the ability to adapt to the extreme condition within *Renstra Kementan*. The government has planned an integrated information system to support the planting calendar conjoined with other programmes such as developing the technology for managing dry land, developing special quality seeds, and preparing the irrigations and other related infrastructures; these are among the mitigation efforts the government undertook. In addition, the improvement of human resource knowledge by establishing *"Sekolah Lapang Iklim"* (education for climate early warning system) has provided the necessary and relevant knowledge and skills in anticipating unpredictable and extreme weather condition (Kementerian Pertanian Republik Indonesia, 2016).

5.3. Relevant Social Orders and Arrangements as Context

Leimona et al. (2015) have explained that currently, the agricultural policies have captured the green agriculture notion and the necessary efforts in reducing environmental footprint. There are direct regulations and instruments that correct or create markets and information, advocacy, and voluntary approaches. Further, they have discussed that it is important the regulations should address the strengthening of environmental management function. Based on their study on the existing regulations, they have concluded that the data and standards across sector harmonisation under a unified management system are important to support the government in aiming at food self-sufficiency, food resilience, and food sovereignty.

5.3.1. Government grand strategy as relevant background

The existing Indonesian administration, under President Joko Widodo, based their policies and programmes upon the vision and mission that elaborated in the Medium-

term National Development Plan for the year 2015 – 2019 (*Rencana Pembangunan Jangka Panjang Menengah Nasional* or RPJMN 2015 – 2019). The RPJMN 2015 – 2019 has the Presidential decree as the legal standing. The relationship with the other regulations or ordinances has been discussed accordingly.

Within the RPJMN 2015 – 2019, the government has identified three core national problems. These are the decreasing government authority, the weakening of national economic foundations and the loss of identity and spreading intolerance amongst Indonesian people. The second problem is manifested in the poverty problem, the environmental degradation caused by over-exploitation, and high dependency on food, energy, finance, and technology.

During the 'green revolution', the use of fertilisers and pesticides was so intensive that it triggered degrading land quality (Mariyono, Kompas and Grafton, 2010; Fuglie, 2010). This old policy provided important lessons regarding the environmental protection, which led to the development in the agricultural technology to increase the productivity (Ada, Uccola and Uglie, 2011). Between 2007 and 2016, the fertiliser consumption increased quite significantly as illustrated in table 9 below.

Table 9 Fertilisers consumption in Indonesian agriculture

	2010	2011	2012	2013	2014	2015	2016
Fertiliser consumption (% of fertiliser production)	105.94	113.83	118.17	121.36	127.55	120.27	130.24
Fertiliser consumption (kilograms per hectare of arable land)	181.52	198.42	221.44	219.56	231.87	223.02	231.37

Source: Summarised from World Development Indicator, World Bank, accessed: 24 April 2019

Indonesian agriculture is also experiencing water shortage, particularly during the dry season. This is also part of the impact of climate change. Currently, the Ministry of Agriculture identified that the area of irrigated wetland in Indonesia decreased from around 4.82 million hectares in 2013 to around 4.75 million hectares in 2017 (Pusat

Data dan Sistem Informasi Pertanian, 2018). As mentioned earlier, Winarto, Stigter, and Ariefiansyah (accessed: 30 April 2019) also indicate that the shortage of water in conjunction with climate change has created problems in agriculture productivity.

Further, the government sees the lack of infrastructure, the need for strengthening and integration of primary and secondary economical sector, the need for regulation reform, the importance of technology literation, and limited development funding as the main challenges in executing the RPJMN in 2015 to 2019 period. Therefore, norms or values are set as the ground or basic values for the arranging policies and executing development.

The national development established by the Joko Widodo's administration is standing upon three norms or values as stipulated in the RPJMN 2015 – 2019. The first norm is the development for the improvement of people's quality of life. The second norm is about avoiding of creating further social gaps in enhancing people's prosperity and productivity. The second norm focuses on increasing the low-level people's productivity without putting limits to big [economic] players from their role as agents of change in the sustainable economy. The third norm is to prevent the development from destructive activities that decrease the environmental supports and disrupt the ecosystem balance, or in other words, it is about sustainable development. Furthermore, the national development plan in RPJMN 2015 – 2019 has been arranged by putting three dimensions into account. The first dimension is the human development dimension, which covers education, character building, and health. The second dimension is the development of strategic leading sectors. The leading strategic sectors' development is prioritising the food and energy sovereignty, forestry and maritime, and tourism and industrial sectors. The third dimension is about regional equality with the main focus on closing the social gaps between regions. The supportive

condition becomes the underpinning requirement that covers the law enforcement, security, political and democratic atmosphere, and good governance and bureaucracy reform.

Standing upon the aforementioned norms and dimensions, the government has arranged the national developments in the RPJMN 2015 – 2019 by following seven paths. The first path is about the improvement of the inclusive and sustainable economic growth. Sustainable economic growth is measured by strengthening the agriculture, fishing, mining, and manufacturing sectors along with enhancing information technology literacy and supporting the small and micro-enterprises. The second path is the improvement of management and the value-added of sustainable natural resources. Increasing agriculture productivity and areas is a prominent focus in the second path. The third path is the acceleration of infrastructure development to reach equal regional growth. The fourth path is improving the environment quality, disaster mitigation, and climate change response. The fifth path is strengthening the national development foundation through the betterment of the governance practice, and the country roles in the international forums. The sixth path is about the improvement of just human resource quality and people's wealth. Improving the quality of education is part of the sixth path in national development. The seventh path is about equality in regional development. In addition, several important targets have been set as a measurement for the implementation of policies and regulations. The targets are covering the macroeconomic aspect, human and social development, leading sector development, and other political, legal, and security or defence targets.

In the RPJMN 2015 – 2019, sustainable development has become the strategic element in the national development programmes. The government has attempted to align the national development with the global agenda for the environment such as the

attempt to achieve the SDG targets with keeping all the efforts to reach the previous MDG targets. Some of the SDG important agenda such as human development, access to clean water and sanitation, sustainable economic development, and environmental development in response to climate change are adopted in the national development agenda for the year 2015 – 2019. Particularly for the anticipation towards the climate change, which has become a prominent issue in the RPJMN 2015 – 2019, a Presidential Decree, number 61 in 2011, has been established to govern any governmental action to reduce the greenhouse gas effect and set a target of reducing the greenhouse gas emission by 26% in 2019 and increasing regional climate change resilience.

Although the current government has realised that strengthening the maritime sector is part of acknowledging the identity of Indonesia as the maritime country, the RPJMN 2015 – 2019 still puts the agriculture sector in a strategic position to support the government efforts in achieving the food sovereignty and resilience. The agriculture development that exists in the strategic plan for rural area development (*pembangunan desa dan kawasan pedesaan*) is based upon the sustainable development principle. RPJMN 2015 – 2019 also covers the necessary strategic action to prepare regulations to give access to the rural region in managing local natural resources including the forest area in a sustainable manner and to improve the relationship between the rural and urban areas in fostering economic development. All must be conducted to support the food resilience and natural disaster mitigation plan. The strengthening of the agriculture sector is one of the government strategies to foster sustainable economies, increasing value-added from the natural resource processing, environment quality improvement, and mitigation towards climate change.

In relation to the sustainable development principle that exists in RPJMN 2015 – 2019, Mariyono, Kompas, and Grafton (2010) have explicated that recent agriculture

policy reforms have appeared to be successful in reducing chemical use. After the 'green revolution', the government banned 57 brands of pesticides and eliminated the subsidies upon pesticide products to overcome the pest resistance. Instead, the government introduced integrated pest management (IPM) technology. Further, David and Ardiansyah (2017) explained that the organic farming system in Indonesia started with the principle that close to 'fairness' practice and welfare issues. Therefore, small-scale farmers have adopted the principle more easily. Apart from that principle, organic farming in Indonesia, according to David and Ardiansyah, is also referring to the ASEAN and other market demands upon the organic farming results. The government played a prominent role in fostering organic farming by providing educations about organic food consumption and by supporting certification bodies for organic agriculture products.

In detail, the government has established vital targets in RPJMN 2015 – 2019 regarding the agriculture sector development to support food sovereignty and resilience. Several commodities such as rice, corn, soya, and meat are determined to become the crucial commodities that make its productivity improvement vital. The government also prioritises the development of agriculture infrastructure development to increase agricultural productivity. The land conversion and optimisation, particularly to the less productive areas, are among the actions that the government would take to increase productivity. The other important actions that the government has planned are improving the farmers' access to both the financing resources and new technology, and the enhancement of other agricultural techniques such as quality seeds and sustainable farming method.

Hence, this thesis argues, the RPJMN 2015 – 2019 acknowledgement of the environmental degradation and the prominence of the agriculture sector as a part of the

national economic foundation leads to sustainability and environment protection as the main environmental values. Sustainable development is becoming an essential element as well as the basic value in national development. These values are the foundation for the building blocks in terms of policies and programmes to shape the practices in the agriculture sector towards more sustainable practice.

5.3.2. Relevant arrangements from the Ministry of Agriculture

As stated earlier that the agriculture sector is one of the strategic sectors in the national development in Indonesia. The details of the development policies in the agriculture sector have been explicated in the *Renstra Kementan* issued by the Ministry of Agriculture. Renstra Kementan was issued for the period of 2015 – 2019[vii].

Overall, the trajectory of strategy and policies in the Ministry of Agriculture focuses upon the acceleration of productivity improvement through agriculture resource optimisation, policy coordination for food diversification, region-based development with gender consideration and international cooperation, and the success of other supporting factors. In optimising the areas, law enforcement to constraint the land conversions, conservations, and opening new areas are some of the prominent efforts that the Ministry has undertaken. To maintain the land quality, the Ministry is fostering the development of land and water conservation technology, the wise usage of the fertilisers, and the implementation of sustainable cultivation practices. The targets for enhancing agriculture land areas have been illustrated in the following table 10.

In relation to the previous section explication regarding the agricultural sector profile and the above explanation about the government national development strategic plan, the Ministry of Agriculture establishes a regulation framework (Kementerian

Pertanian Republik Indonesia, 2016). The regulation framework will be the base to arrange the people, the activity, and the related business in the agriculture sector.

Table 10 Targets of agriculture land area enhancement, year 2015 - 2019

Area typology	2015	2016	2017	2018	2019	Total
Rice fields	23,000	200,600	243,100	266,700	266,600	1,000,000
Horticulture areas	5,000	10,000	10,000	10,000	10,000	45,000
People plantation areas	15,000	20,000	20,000	20,000	20,000	95,000
Animal husbandry areas	5,000	5,000	5,000	5,000	5,000	25,000
Total	65,000	165,000	285,000	315,000	335,000	1,165,000

Source: Summarised from the Strategic Plan of the Ministry of Agriculture

The framework covers five areas. The first area is the agriculture inputs which cover the genetic resource, production inputs (the seeds and fertilisers), agriculture infrastructure, areas, and machinery. In this area, there are two relevant acts that play an important role, particularly in governing the utilisation of genetic resources in food and agriculture and sustainable agriculture land protection[viii]. The use of any genetic resources has to follow the general guidance from the treaty on plant genetic resources for food and agriculture as the government has rectified it.

The second area is about cultivation practices. In this area, the related acts are governing how particular cultivation practice should be carried out. The acts also regulate a particular business model such as plantation and horticulture. The farmers' empowerment and the mitigation towards disaster have also two things that are being covered in these acts. The improvement of access to financial services and insurance is also part of the regulation in this area.

The third area concerns the post-harvest, production, and marketing of agricultural commodities. In this area, the regulations are ranging from directing the good harvesting, regulating the price of vital commodities, and even the tariffs for commodities with value-added. How the information about good harvesting and production as well as commodity storing are parts of the related regulations.

The fourth area is the supporting system. This area includes all necessary supports to carry out other policies and programmes in this sector. It means this area is covering the agricultural training and education system for the farmers and the ministry staff, the research and development and financing support, and the quarantine service.

The fifth or last area is the consumption and food supply. This area of regulation is more about the end of the pipe of the agriculture sector. The regulations in this area are fostering the improvement of the people's consumption quality and creating the correct market for local agriculture products. The regulations also pay serious attention to food quality and safety as an important customer protection action.

In this discussion, the focus is mainly upon the first and second areas which are specifically the ones that are related to the fertilisers and pesticides as agricultural inputs and cultivation practices for a particular commodity. This is consistent with the two case studies that have been discussed further in the following chapters 6 and 7.

5.3.2.1. Regulations and arrangements for fertilisers and pesticides

There are two acts that become the foundation for all the regulations and arrangements regarding fertilisers and pesticides. The acts or laws are about the crop cultivation system and consumer protection[ix]. One act or law about the crop cultivation system provides basic guidance regarding cultivation practice from many perspectives. This act sees the cultivation process from the holistic point of view by putting the elements of inputs, practice, harvesting, post-harvest, environmental impact, and the actors into account.

The crop cultivation system act explicates that the ultimate purpose of cultivation should fulfil the food need, providing supplies to other processing industries and exports, improving the farmers' wealth and fostering work expansion, and equal

opportunities. Within the act, the environmental-related keywords such as sustainable perspective, environmental protection, and conservation bring the message that the cultivation must be executed with the prominence of protecting the environment. In conjunction with this, other keywords such as conservation, integrated pest control, land clearance, and people's safety are strengthening the message of the inevitable demand for sustainable farming practice. Along with this message, developing the human resource, supervision upon fertilisers and quality standardisation indicates the government attention to improve the agricultural commodity quality, value-added, and competitiveness. On the other hand, the government intention to impose the system is explicated through the phrases related to control mechanisms such as the requirement to register the pesticides, the supervision upon the circulation of pesticides, the ban on particular pesticides, and a very detailed and extensive clausal for investigation and sanction.

The message and environmental value in the act for crop cultivation system are clear that the government ultimate goal in the agriculture sector cannot be compromised with the environment degradations. Sustainable practice must be the core value in agriculture development not only to protect the environment but also to ensure people's safety. The people's safety is the bridge between the two acts. The act for consumer protection brings the main message that the product quality conformance to the predetermined standard is essential. Hence, the government regulates the rights and the obligation of both parties, the producers and the consumers, to avoid any wrongdoing from both the parties in promoting, selling. rendering and receiving products. This act also regulates the body that is responsible for conducting consumer protection.

The derivatives from these acts or laws are regulations that provide more specific elaborations of the main message delivered. Currently, for the fertiliser, there are two

regulations defining its prominence as agricultural input to fertile the land and increase productivity, four regulations and one MoU (memorandum of understanding) between ministries to put the subsidised fertiliser as goods under special supervision, two regulations for directing the usage of fertiliser, four regulations for legalising the selling price and the cost of production, and two regulations for arranging its distribution. For the pesticide, there are two regulations that regulate its storing and circulation as goods under special supervision, one regulation for the requirement and procedures in registering the pesticide, and two regulations about the plant protection and pest control guidelines. All the aforementioned regulations have been summarised in table 11. There are two reasons why the fertilisers and pesticides are under special supervision; the first is regarding the subsidy programme for the fertilisers, and the second is because of the characteristics as toxic and dangerous materials.

Table 11 List of regulations relating to fertilisers and pesticides

Regulation type	**Number**	**Year**	**Regarding**
Government ordinance	7	1973	Supervision upon the circulation, storing and the use of pesticides
Government ordinance	6	1995	Plant protection
Ministerial of Agriculture decree	887/KPTS /OT.210/9 /1997	1997	Guidelines for controlling pests
Act	8	1999	Consumer protection
Government ordinance	25	2000	Government and provincial authorities as the autonomous region
Government ordinance	8	2001	Fertilisers for plant cultivation
Ministerial of Agriculture decree	237/Kpts/ OT.210/4/ 2003	2003	Guidelines for supervision upon procurement, distribution and the use of non-organic fertilisers
Ministerial of Agriculture decree	238/Kpts/ OT.210/4/ 2003	2003	Guidelines for the use of non-organic fertilisers
Ministerial of Agriculture decree	239/Kpts/ OT210/4/ 2003	2003	Supervision upon non-organic fertiliser's formula
Presidential ordinance	77	2005	Determination of subsidised fertiliser as the commodity under supervision
MoU		2006	Memorandum of Understanding regarding the implementation of supervision upon the procurement and distribution of subsidised fertilisers

Ministerial of Agriculture ordinance	40/Permentan/OT.140/4/2007	2007	Recommendation for the use of N, P and K fertilisers to the rice fields with specific location
Presidential ordinance	15	2011	Changes upon Presidential ordinance no.77/2005 regarding Determination of subsidised fertiliser as the commodity under supervision
Ministerial of Trade ordinance	15/M-DAG/PER/4/2013	2013	Procurement and distribution of subsidised fertilisers for agriculture sector
Ministerial of Industry ordinance	26/M-IND/PER/4/2013	2013	Implementation of Standar Nasional Indonesia (SNI - Indonesian National Standard) for non-organic fertilisers as mandatory
Act	7	2014	Trading
Ministerial of Industry ordinance	08/M-IND/PER/2/2014	2014	Implementation of Standar Nasional Indonesia (SNI - Indonesian National Standard) for non-organic complex fertilisers as mandatory
Ministerial of Agriculture ordinance	107/Permentan/SR.140/9/2014	2014	Pesticides supervision
Ministerial of Industry ordinance	106/M-IND/PER/11/2015	2015	Changes upon Ministerial of trade ordinance no. 26/M-IND/PER/4/2013 regarding Implementation of Standar Nasional Indonesia (SNI - Indonesian National Standard) for non-organic fertilisers as mandatory
Ministerial of Agriculture ordinance	36/PERMENTAN/SR/10/2017	2017	Registration of non-organic fertilisers
Ministerial of Agriculture ordinance	1	2019	Registration of organic fertilisers, natural fertilisers and soil recovery substance
Act	22	2019	Sustainable agriculture cultivation system
Ministerial of Agriculture ordinance	43	2019	Pesticides registration
Ministerial of Agriculture ordinance	1	2020	Allocation and determination of the highest retail price of subsidised fertilisers for agriculture sector for the fiscal year of 2020
Ministerial of Agriculture ordinance	10	2020	Changes upon Ministerial of Agriculture ordinance no. 1/2020 regarding Allocation and determination of the highest retail price of subsidised fertilisers for agriculture sector for the fiscal year of 2020

Source: Summarised from the regulations directory published by the Ministry of Agriculture (Kementerian Pertanian Republik Indonesia, 2020a; b)

The two regulations defining the fertiliser as prominent agricultural input basically explicate how the production, the distribution, and the quality can be well supervised. The purpose of these regulations is not merely related to the improvement of agricultural productivity, but for the environment protection as well. The

prominence of fertiliser role in increasing productivity leads to the subsidy programme to help the farmers to get their supplies easily. As an essential agriculture input that is being subsidised, its production, circulation, formula, and even the cost of production is subject to government regulations.

The maintenance of product quality is an essential part to guarantee the inputs and reaching the food security goals. The guidelines for the fertiliser usage is issued in ordinances for the farmers. The main purpose of the recommendations is to avoid irrational and excessive use of fertiliser that can lead to land degradation. This is an important lesson from the 'green revolution' during the New Order era that it influences the land quality negatively. The ordinances that contain guidelines for fertiliser usage are more technical rather than general guidelines.

The pesticide-related regulations on the other side, bear a clear message that as toxic and dangerous material, the use of pesticide must consider its environmental impact. The pest control or eradication must consider its environmental impact. The main message in the regulation about the pesticide is that the use of the substance should be well supervised and controlled because of its toxic and dangerous characteristics. The excessive use of pesticides during the 'green revolution' was the perfect lesson for correcting the paradigm of pest control.

As for the producer of fertilisers and pesticides, the agrichemical companies are also subject to comply with the fertiliser and pesticide related regulations mentioned above. All because it is apparent that the environmental impact of agrichemical manufacture is significant. Besides the aforementioned regulations, the agrichemical companies have to comply with several other regulations in relation to their production, quality control, risk management, and environmental management. First of all, the agrichemical company must comply with the acts that regulate occupational safety and

environmental protection and management[x]. The first act's main message is that the company with high accident risk must provide a system to ensure the safety of the employees in doing their work and hold the top management of the company responsible for this matter. At the same time, this act also provides the company management the authority they need to make sure that all the employees are following the instructions set for their health and safety. The other act that is prominent is about environmental protection and management. This act provides legal standing for the environment engagement conducted by the government agents and the people including the business actors. It brings consequences to the business actors which lead them to the obligation of having a particular system and facility to manage and protect the environment as the result of their business doings. The main message in this act is that all parties have the responsibility to maintain the environment capability to support decent and quality life. These two acts or laws, later on, become the ground for the environmental management system implemented in a company.

In addition to compliance with the aforementioned acts, the agrichemical companies are required to pay attention and comply with several government ordinances that regulate the operationalisation of the above issues. Two government ordinances are the ones that provide detailed arrangements of the occupational health and safety system and the technical aspect in handling the toxic and dangerous materials[xi]. Regarding the toxic and dangerous materials, there is also Ministerial ordinance from the Ministry of Environment that regulates the standard of the wastewater that can be disposed of by the manufacturers. Furthermore, regarding the existing regional autonomy, the standard of the wastewater can be adjusted to each regional condition. This has led to the establishment of a more specific ordinance in terms of wastewater standard[xii]. There are other regulations or ordinances that affect

agrichemical operations such as the one for human resource management and the one for transportation issues. These regulations and ordinances create nexus of orders that shape the environment engagement conducted by agrichemical companies.

In general, the existing regulations are emphasising and re-emphasising the significance of environmental protection in the agriculture business. Sustainability is an inseparable thing towards agricultural development. The reaching of vital goals of food sovereignty, resilience, and self-producing cannot be executed at the cost of environmental destruction.

5.3.2.2. Regulations and arrangements for the cultivation practice

To complement the aforementioned regulations, the Ministry of Agriculture has established several technical guidelines. Among many guidelines issued by the ministry, for crop cultivation, there is the guidance for good agricultural practice, and, for the plantation, there is the regulation for land preparation and management without burning. Both regulations are issued under the ministerial ordinance[xiii].

Within the ministry ordinance for good agriculture practice, the ministry put more attention to environmental protection and consumers' long-term safety and health. The established ordinance states the developing agricultural market needs to be well responded to gain advantage and support the government goals in the agriculture sector. The coexistence of environmental keywords such as environmental protection, conservation, reducing or avoiding chemical residuals and cultivation practices such as land preparation, fertilising activity, pest control, and harvesting activity in this ordinance are depicting the internalisation of environmental values to the agriculture practice. This ordinance emphasises the main message that sustainable farming practice

is the practice that is supposed to be implemented to grasp the new market opportunity, increasing farmer's wealth and sustainable agriculture business.

The ministry ordinance regarding plantation land preparation responds to many cases of forest fire caused as part of the land-clearing activity. This regulation forbids all the plantation companies to do the land clearance by burning. Moreover, the plantation companies are required to have a special unit to anticipate the fire risk or handle the fire disaster whenever it happens. The remains of the land clearance are biomass that can be used as organic fertiliser. The theme or message in this ordinance is about the prevention and the readiness of the plantation to anticipate fire risk. The details such as the team that is assigned for this task, the qualification of the team members, the responsibility of the team, and how they should anticipate, are vividly explicated.

Besides, the ministerial ordinances that regulate the agriculture inputs and cultivation practices, the directorates within the Ministry of Agriculture issue specific technical guidelines for the farmers. The technical guidelines are on handling impact of climate change and fire prevention, plantation conflicts and disturbance, and plantation pest control. There are also technical guidelines for sustainable plantation practices for special commodities such as coffee and cloves.

In particular for the plantation, the government has established the act relating to the plantation business process[xiv]. In this act, the government acknowledges that plantation business can be conducted by an individual or a company. If a company does the plantation business, it must be a legal one, and the plantation company is also subject to compliance with other related regulations. For example, if the company has the legal form as a *perseroan terbatas* (PT) or limited company (Ltd), it has to comply with the act or law that regulates the limited company (Ltd)[xv]. The plantation act

regulates the plantation business process comprehensively and brings the message to make a balance between pursuing economic benefits, social empowerment, and environmental protection. It has been expressed in the purpose of and the principles in conducting the plantation business. In addition, one specific issue in this act is for plantation operation upon the land under traditional law, the plantation company requires to have consent from the indigenous people through a thorough discussion before using the land.

5.3.3. The emerging environmental value in the context

In the previous section, the discussion about the relevant social orders and arrangement leads to the facts about the nexus of regulations and arrangements that set the context in the agriculture sector. The agriculture sector actor's coexistence is hanging upon the nexus of those discussed orders and other arrangements. In this section, the discussion is about the environmental value that emerges in that nexus and later on shapes and reshapes the actors' practices.

In the above discussion, the RPJMN becomes the main reference of the other derivative policies and programmes. The RPJMN 2015 – 2019 brings in the general values that are political sovereignty, economic independence and strong national personality based upon mutual cooperation. These values correspond to the three core problems identified; problem number two is about the weakening of the national economic foundation. The environmental degradation caused by excessive exploitations and explorations, and high dependency on the external parties for food, energy, and financial sectors are the two among many manifestations of weak national economic foundation.

Deforestation and inappropriate agricultural practices are contributing to agriculture land degradation. Erosion, landslide, and decreasing water supply are depicting degraded land quality (Quincieu, 2015). Moreover, Indonesia is highly vulnerable to climate change (Case, Ardiansyah and Spector, 2007). Further, Indonesia has two prominent roles in taking the impact and providing the resolution at the same time (Soesilo, accessed: 30 April 2019). Hence, the mitigation action and the serious effort in decreasing the carbon emission are the two actions that are vital in addressing climate change. Mitigation towards the climate change is not only by providing knowledge to the farmers but also building the water reservoirs and other relevant infrastructures such as dams as supporting infrastructures and part of the mitigation itself (Winarto, Stigter and Ariefiansyah, accessed: 30 April 2019; Ilhamsyah, accessed: 30 April 2019). The cultivation practice that is wiser in water consumption and agrichemical usage is also important to maintain the sustainability of the business itself.

Furthermore, as Burke (accessed: 27 April 2019) has indicated that agriculture is central to human survival, the government realises that the sector needs to be optimised regardless of the challenges it is facing. Therefore, the government wants to revitalise the primary sector in the economy, which is the agriculture sector. The government trajectory is that the primary sector could support and provide necessary supplies to the processing industry that creates significant value-added leading to a competitive advantage. In strengthening the primary sector, the government has realised that the weakness in the agriculture sector requires a holistic resolution. This is why the government brings a balanced value between the environment and socio-economic values. This thesis argues that the way the government fosters environmental protection in this RPJMN 2015 – 2019 is the way for maintaining the sustainability of agriculture

as one of the national economic foundations. The economic independence in terms of having food sovereignty and resilience as well as food sufficiency will not be achieved without sustainability practices in the agriculture business.

This thesis argues that the values within the RPJMN 2015 – 2019 correspond to the real conditions of the entities in the agriculture sector. The fact is that the problem in this sector is multidimensional, which means the environment is not the sole factor. The legal issue of agriculture land ownership, access to financial resources, and human resource quality are among the non-environmental factors that contribute to the problem in this sector. The national development is putting the mitigation towards climate change as the essential element as the response to the fact of the country's vulnerability to such a disaster. The sustainability practice, natural conservation, and ecosystem protection are the response to the current environmental degradation and the need for rehabilitation.

As the regulations discussed above are mostly established before the RPJMN 2015 – 2019, it can be considered consistent with the main reference as it has the same environmental values. Insofar, these regulations are still consistent in terms of the environmental values it has. The RPJMN 2015 – 2019 directs the sectoral programmes and policies established within the relevant period, together with the existing regulations. The RPJMN, regulations, policies, and programmes create nexus of orders and arrangements that become the site or the context of the environmental engagement of the companies in the agriculture sector.

5.4. Conclusion

The environmental values embedded in these regulations, policies, and programmes are part of the responses regarding the physical arrangements or conditions that exist

in the agriculture sector. The geographical conditions of the agriculture sector are the factor that triggers emerging of the environmental values based on the emerging awareness of the government as the party that holds the authority to create necessary arrangements.

The existing acts, regulations, and policies have existed for many years back. The messages in those orders regarding environmental protection are clear. The existing orders with the messages embedded in these have created nexus of orders that shape the practice in the agriculture sector. The environmental values delivered by the nexus of agricultural orders are the site where the actors' practices are hanging upon. Regardless of the law enforcement that becomes the other challenge in upholding the orders, the values within the orders are part of the bigger arrangements that correlate to a particular physical arrangement that is shaped and reshaped across the time. The agriculture nexus of orders correlates to the agricultural geographical conditions, and this geographical condition is also a part of the bigger site which is the national geographical, social, and economic site. In turn, it shapes and reshapes the micro-nexus of orders within the organisation in this sector via the message or values that the agriculture nexus of orders delivered.

6. ENVIRONMENTAL ENGAGEMENTS AND ENVIRONMENTAL MANAGEMENT ACCOUNTING CONTROL PRACTICE: A Coffee Plantation Case Study

6.1. Introduction

According to Schatzki (1996, 2002), practice is a set of doings and sayings that are organised by the understandings, the rules, and the teleoaffective structure. This chapter is about the elaboration of the nexus of doings and sayings by the managers while engaging in the environmental and management accounting issues in daily work of CP coffee plantation. Henceforth, the company of CP coffee plantation will be mentioned as CP plantation.

The unique situation in this coffee plantation is that as a private plantation company, currently, CP plantation management attempts revitalisation in step by step after getting suffered from the loss and mismanagement. The knowledge and experience are not the only aspects that shape the environmental and management accounting practices in CP plantation. The surrounding socio-environment of CP plantation along with the values the new chief executive officer (CEO) is trying to internalise also contributes to the shaping and reshaping of business and environmental practices in this company.

The discussion in this chapter has been organised in three main sections. The first section is the description of CP plantation. In this section, several aspects are discussed, which are the historical background, the company profile, the relevant social background, and the company rules and arrangements. These are the important aspects that shape and reshape the practice in the plantation. In the explication of these aspects, the specific site or context of the practices in CP plantation is also discussed further to provide an understanding of the structure where the practices are hanging upon. The

second section is discussing the management accounting control (MAC) practice. The MAC practice discussion follows the elements in the MAC itself, which consist of planning, directing and governing actions, and controlling and decision-making. The discussion is not only about how the MAC practice is exerted by the division managers but also how the environmental value is embedded in the practice that makes the environmental engagement as part of the daily business activities. The third section is especially dedicated to discussing the embeddedness of the environmental value to the MAC practice. In this section, it is explained how the knowledge, experience, rules, and the prioritisation of a particular task or project have made the environmental value attached to the MAC practice and shaped the accountability from both business and environmental perspectives. This chapter is closed by the conclusion section that summarises the empirical findings in CP plantation regarding the MAC practice and the attached environmental value.

6.2. CP Plantation

6.2.1. Historical background

Based upon the company historical documents, CP plantation was established in 1874 by a Dutch entrepreneur [HV] in the B regency in East Java province. Between 1942 and 1945, the Japanese colonial took over the plantation from the original owner. After the independence declaration on the 17th August 1945, the Indonesian government took over CP plantation from the Japanese colonial. HV came back to Indonesia in 1950 and ran the plantation again under the different company for one year before he left the plantation in ruin condition in September 1951. CP plantation was left by HV as the first owner without a clear handover to any parties in a completely destroyed condition due to the Indonesian-Dutch war in that period. Therefore, the Indonesian government

took over the plantation and ran it with a self-supporting approach by its former workers. During that time, CP plantation was under the supervision of the Central State Plantation agency. The original plantation site consists of two big areas, the plantation I and the plantation II, which later was recognised as one plantation.

In 1960, former foreman of CP plantation submitted a proposal to the Indonesian government to run the plantation under the company he established, named 'The Good Company' (TGC). In order for the government to grant the proposal, there were terms and conditions that TGC had to fulfil, which included paying a significant amount of money as mandatory fees to the government (the amount of the fees was explicated clearly in the government decision letter regarding the approval of the proposal). One prominent condition was that TGC had to prove that they had run and managed CP plantation before and were located in the same region. In addition to the terms and conditions, the government also made a condition that if a plantation permit is granted, then this company has the obligation to continue running and managing plantation for certain periods to come. The government finally granted TGC with plantation permit for twenty years. This plantation permit can be renewed periodically. This makes TGC as the company that has the legal standing in running and managing CP plantation. In 1998, the government granted a permanent permit for plantation cultivation business to TGC for running CP plantation. It is important to be noted from this process that TGC as the company that runs CP plantation has the permit to run the plantation cultivation business but does not have ownership over the land. According to the act of the agrarian principle, which has been elaborated in previous chapter 5, the government limits the land ownership by an individual or a legal organisation (including company). However, the government can issue a particular right to cultivate or exploit a particular area like CP plantation case.

From the overall area of CP plantation site, there were around 143 up to 144 hectares that had been used by the locals as the agricultural areas. Only 237.18 hectares were for the plantation cultivation since the very beginning. The areas that had been used by the locals for the agricultural areas were the areas that met the category of land reform object. Hence, after a very long process, in 1981, TGC gave back those areas to the government for redistribution to the locals.

DR as the founder of TGC acted as the CEO and managed the plantation from 1960 up to 1983 when he passed away. DR had three sons, HR, HD and UT. After DR passed away, the CEO position of TGC was passed to HR as the first son. Although HR was legally appointed as the new CEO, DR's wife played a key role in running the company. HR was legally the CEO of TGC from 1983 until the year 2000. In the year 2000, HR started a new political career as the Vice Regent of B. As he became the Vice Regent, HR had to surrender his position as the CEO of TGC. The HR position was then replaced by HD, the second son of DR. HD became the CEO of TGC from 2000 up to 2005. After HD finished his service at CEO in 2005, the position was passed to UT, the third son of DR. UT acted as the CEO of TGC from 2005 up to 2014. However, UT as CEO had never lived in B or visited the plantation intensively. Practically, during the period of UT as the CEO, the main control of CP plantation was handled by the plantation division manager [CP02] under the supervision of HD.

> *"… But Mr. UT as the CEO had never been in B. He managed the company remotely from Jakarta (his residence). … the company only used his name [for formality, meaning that UT is the CEO on the legal paper, but not 'de facto']. It was from 2005 up to 2014. So, at that time CP02 was practically the one who held full control. … although CP02 was still under HD control. Therefore, you can imagine the chaos of CP management at that time." [CP05 the current CEO]*

This situation got worse because of the mismanagement at that period. CP plantation was at the lowest point with significant financial difficulties.

"At that time, CP plantation was not managed well, the company was really at the lowest point. We were in arrears to pay tax for three years and in arrears to pay the employees' salaries for the last one year. Luckily, the employees were still loyal to our family. At that time, they harvested [the coffee and other commodities from the plantation] for their own needs." [CP05]

The declining performance of the company had led to the attempt to sell the plantation (it means handing over the right or permit for cultivation to the other parties) to potential buyer for almost 60 billion rupiah (more than three-million-pound sterling). However, HR son [CP05], or the DR grandson protested the plan to sell the plantation and stated that he would like to revitalise the plantation.

"In 2014, the family had the plan to sell the plantation. At that time, there was a potential buyer who bid for 60 billion rupiah (around three-million-pound sterling). But I objected to the plan because I have the attachment to the history [of the plantation]. …. Then I declared that I would take care of the plantation. …. Then, I began to take over [becomes the CEO of TGC] the plantation in 2014." [CP05]

In 2014, CP05 was appointed the new CEO of TGC, and he is still holding the position. The main mission of CP05 is to revitalise CP plantation. Developing agritourism is one strategy to create revenue in the short term, hence the company will have enough fund to run the plantation normally again.

In summary, the timeline of the company's historical journey has been explained in the following table 12. In this table, the important milestones are clearly illustrated. The journey CP has since the beginning is shaped and reshaped not only by company strategies but also by the external factors such as the sociocultural aspects.

6.2.2. The company site and profile

CP is located in the village of MA, within the regent of B, in East Java Indonesia. Today, the company occupies an area of 237.18 hectares. From that total of 237.18 hectares, only 206 hectares are for the plantation areas. The rest of the areas are used

for factory, offices, warehouses, and other general purposes including the roads and conservation area.

Table 12 Summary of the historical journey of CP plantation

Year (period)	**Notes (important milestones)**
1874	The Dutch established the CP plantation for the very first time. HV was the first owner.
1942 – 1945	The Japanese colonial took over the plantation from the Dutch.
17 August 1945	The Indonesia independence declaration; the time when the Indonesian government took over the plantation.
1945 – 1950	After the government took over, the plantation was managed as a self-supporting plantation.
1950 – 1951	HV came back to run the plantation for one year. The CP plantation then was left in a destroyed condition due to the independence war between Indonesia and the Dutch between 1945 and 1951.
1951 – 1959	The government took over the plantation again and ran it based upon a self-supporting approach under the Central State Plantation agency.
1960	The former foreman of CP proposed to the government to took over the plantation under the company named TGC.
1960 – 1983	After the government granted TGC the permit or right to cultivate, the TGC becomes the official company that holds the right to cultivate in CP plantation. CP plantation reached its peak performance and had a strong financial position in this era.
1980s	CP redistributed some of its areas to the locals to comply with the land reform policy. The redistributed areas were the areas that met the land reform object category.
1998	The reform era. During this year, the political turmoil caused a great loss.
1998 – 2014	CP continued to experience a loss due to mismanagement. This is because of the lack of focus by the former CEOs.
2014 – present time	In 2014, the current CEO was finally in charge and attempted to revitalise the company.

Source: Internal document of CP plantation

The location of CP is near an active volcano at the altitude of 400 – 650 metres above the sea level. The land type in CP plantation location is regosol type. The land topography shows that 16.5% of the area is plain or relatively flat, 12.4% sloping, 17.5% rather steep and the rest, which is 53.6%, is quite steep. The main commodities in this plantation are Robusta and Excelsa coffee, cloves, and horticulture. Location near an active volcano brings benefits to the CP, particularly to the land quality. The

volcanic materials from the eruption had made the land more fertile. For the area that is too steep or near the riverbank, CP arranges the areas for conservation purpose. To support that, CP cultivates the bamboo plants in those areas to maintain the groundwater, prevent the landslide, and the abrasion at the riverbank.

However, as a heritage plantation that had been operated since the Dutch colonialism, the land quality is continuously deteriorating. This land condition was explained by the plantation manager as follows.

> *"…when the soil was still young, it was far more fertile rather than today, plenty of humus; people have used the land for quite recent. Because, based on my experience, if one cultivates the same plant in the same area and position, the crop yield will not exceed the result from the first harvest. …"* [CP02 – plantation division manager].
>
> *"…on a virgin land, you can plant anything, and the yield will be outstanding."* [CP02]

The main commodities in CP's plantation are coffee and cloves. CP sells coffee as the final product not as green beans because of the low price of green beans. The CP coffee products are sold locally, especially distributed to the local café and shops. Small amounts of the coffee products are exported, while for the cloves, the buyer used to process it further to make cloves essential oil. The third contributor to the CP income is durian, which also acts as the intercrop plant.

Besides the plantation, CP also makes the plantation as the tourism object starting in 2014 to create more cash inflow as mentioned by CP05.

> *"The focus [for now] is to recover [from the loss]. That is why I develop the agritourism at the first place. It is the fastest way to create money. … The first time I came here, I have very limited knowledge about coffee plantation. But I have lots of experiences and knowledge about tourism. It will take much longer time to recover the plants."* [CP05]

The agritourism in CP plays a role as the cash generator and the media to promote the plantation and its commodities. This strategy corresponds to the main objective of revitalising the plantation and the fact of the bad financial condition due to the previous

mismanagement. The historical background of the plantation becomes an interesting point to attract visitors. In addition to this, the company also makes coffee processing as another interesting point and creates coffee education programmes for visitors by which CP can promote its coffee product. An area of kids' playground, a café and restaurant that provide local cuisine and cultural museum, and an inn with no more than 10 rooms have been built to support the tourism business along with the coffee education programme.

To complement the agritourism business in CP plantation, there are two shops within the CP plantation site. One shop is for selling souvenirs relating to the plantation and providing a thematic photo booth. The other shop is special for selling coffee products.

6.2.3. The relevant regional social background

The operational director [CP06] provides quite an interesting description of the sociological background of the village where CP is located. He explains the sociological background during the field observation. It was indicated from his gesture and the body language that the discussion should not be recorded. Therefore, the following elaboration of the sociological situation has been based on the observations and discussion notes that were taken. Consistency with the result of the interviews with other participants such as CP05 and CP02 is also found, which strengthens the story of the social background of CP plantation.

CP06 explains that the MA village is well-known as the village with quite a high crime rate, particularly in relation to illegal gambling. Many "*preman*" in B regency are originated from the MA village. The literal translation of "*preman*" is a thug or a criminal where in reality the term *"preman"* here is close to the people living as a

gangster. They usually control a particular area and illegally extort money from local businesses on security reasons. In many cases, *preman* plays a key role in keeping security but at a high price. Whenever the businesses do not pay the security contribution to *preman*, they become the villains who disturb the security of the businesses and of the community sometimes. This also happened in the case of CP plantation, especially during the Reform era in 1998 as explicated below.

During the fall of Soeharto's New Order regime in 1998, looting or plundering was rampant in many areas, spreading from the capital of Jakarta to many other cities and districts. In fact, according to CP05, the B regency was relatively safe from the riots and plundering although the coffee plantation, to some extent, became the target. It was not only by the *preman* but by the locals also, who started plundering. CP05 further explained that the private plantations that did not follow the government policy of redistributing the land as part of the land reform programme became the main target for looting.

> *"… some plantations didn't do it (the land redistribution – government land reform programme). … therefore, these plantations were severely attacked and plundered during the reform era (in 1998). We were relatively safe although the threat existed, it really existed."* [CP05]

One private plantation in B regency that had been heavily plundered was KN coffee plantation. Two main causes of plundering of the KN coffee plantation were that they didn't redistribute the land as part of the land reform programme and that the company belonged to a Chinese descent businessperson.

> *"Other plantations were destroyed, the KN plantation, in the southern area, was totally destroyed. The locals took over the plantation because they didn't do it (the land redistribution). Also, because it belongs to Chinese descent, not native."* [CP05]

CP's compliance with redistributing some areas to the locals as directed by the government contributed to the safety of the plantation from any riots and plundering in that period.

"We redistributed some of our lands to the locals, therefore, they think twice before looting the plantation." [CP05]

Nevertheless, the security or safety of the plantation did not come for free although CP had complied with the government land reform programme. At that time, CP had to hire the best *preman* in B to keep the plantation safe. At the moment, the cost of securing the plantation had cost CP not less than one billion rupiah in a year (or more than £50,000) to pay the *preman*. At that time, to secure the plantation from the attack, HD (the second son of DR the founder) was in charge.

"We employed 'preman' to secure the area. It cost us more than one billion rupiah (more than fifty-thousand-pound sterling). .... The situation (securing the area by employing preman) lasted for almost a year. The plantation was secured though, because we employed the most powerful 'preman' in B town. .... This situation has made our [financial] condition worse." [CP05]

The need to secure the plantation during this Reform time in 1998 had made the company's [financial] condition worse.

On the other side, the local society in the MA area has also a tough character that shapes their attitude. CP06 describes the characters of the locals by having an example of locals involving in an argument. In many cases, locals tend to choose to be close to a physical confrontation in promoting their ideas or wills. Show of physical force in defending or presenting an argument seemed to be the generally accepted practice among the locals. This also happens in the CP plantation whenever the workers (especially the field or plantation workers) want to communicate with CP's management team. Any unsatisfied feeling is expressed in physical-confrontation manner rather than having a discussion. This situation makes communication with workers very challenging. CP06 states that, to open communication with these people, one must understand the behaviour and the background of the people as well.

CP06 interpersonal skills and historical background (he used to be one of the '*preman*' as well) are prominent in building communication with the locals and the

workers. CP06 skills and historical background had helped him not only in opening communications with the employees, but also in managing the division managers and always encouraging them to act proactively in problem solving and overcoming the conflict between them.

> *"In some occasions, when the division managers asked me to have a meeting to resolve operational problems, I always asked them the roots of the problems. At the same time, when they were able to identify the roots of the problems, I would force them to think about the solutions as well and asked them to coordinate between them [division managers]. And I said to them: if I have to solve even for the simplest operational problems, then you will not develop your critical thinking."* [CP06]

The plantation division workers are mostly from the local area. His historical background not only equalises the 'terrain' of arguments but, on the other hand, it puts him into a higher position that enables him to control those people. His background makes him like in the same 'terrain' because he came from the same 'environment' and understands the way these people think. CP06 is in the same 'terrain' because he 'has been in their rank before'. However, at the same time, he also demonstrates a higher position by depicting the weakness of their 'old way in addressing problems'. CP06 demonstrates a higher position because he could show 'the changing way of thinking' and 'the changing way of addressing problems' which are more 'civilised and intellectual'. In this position, he acts not only as the company's guardian but also as the motivator for the employees (who are mostly locals) at the same time.

The social background of CP06 enables him to easily socialise and mingle with those people. His attempts gradually transform the mindset of the workers and the locals. He attempts to change the mindset not only by sayings but also by understanding the opponent's position and providing examples. In turn, he also tries to internalise the company's value; this way he changes physical confrontation-based argument towards more 'civilised and intellectual' manner of discussion. In his attempts, he focuses upon touching the people's emotion by making them realise that things have changed. He

tries to make them realise that the tough way of living is shifting from the 'physical approach' to a more 'civilised and intellectual one'. CP06 always reminds the people that their 'reputation' can be the advantage to gain 'trust'. This means that for many of the workers who are used to be *"preman"*, he asks them to let go their past as '*preman*' and make that as a foundation of their reputation and start to build the better way of life where the physical approach is no longer the way in making arguments in today's business. He admitted that it was a very hard effort which however he finally managed well.

With this kind of social characteristic in the area of CP, it is very important to keep the positive working atmosphere within the plantation and keep a good relationship with the locals. This is in line with the fact that most of the plantation workers are from the local area. Even though most of the workers had joined CP since a very long time and have a loyalty to the company, the role of the managers, as key actors, in 'handling' the workers are essential.

6.2.4. Arrangement of the company's rules or orders

To organise its business activities, CP arranges the organisation into four operational divisions and one security division. The security division is responsible for maintaining the security of the whole area and taking necessary actions to prevent any disturbance to the company and its visitors. The arrangement of those divisions has been described in the following figure 2 about the organisational structure of CP. Overall, CP employed 74 employees in total. Among them, there are four members of the board of directors (BoD) and seasonal or non-permanent workers for particular jobs. The number of seasonal workers fluctuates according to the kind of job and the coverage

area of the job, which is around 20 people. Most of the seasonal workers are for plantation jobs, especially for harvesting coffees and cloves.

In CP, the existing orders and arrangements consist of company rules, standard operating procedures (henceforth SOPs), and job descriptions. All are arranged according to the organisational structure as the framework for segregating duties and scope of work. However, currently, not all divisions have written and organised SOPs or job descriptions. Presently, the production division is in the process of restructuring its business process. During this process, the rearrangement of new SOPs and job descriptions of the production staff are taking place.

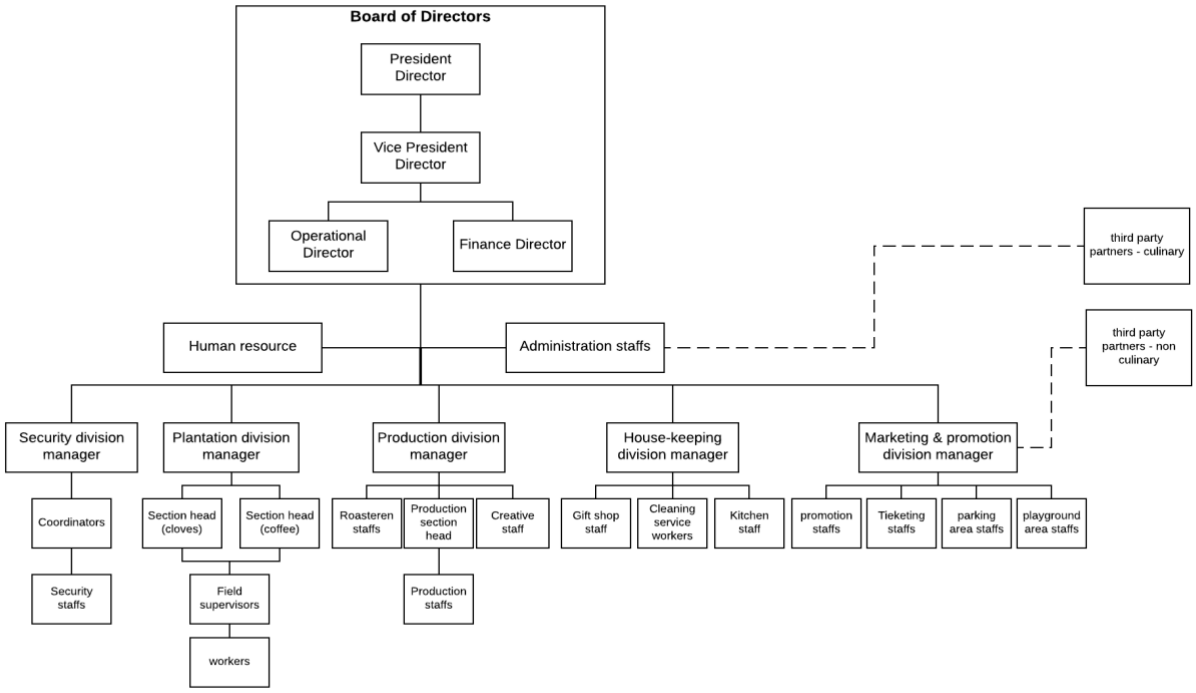

Figure 2 CP's organisational structure
Source: Internal data of CP plantation

6.2.4.1. Divisions within the organisational structure

The plantation division is the one that manages the whole coffee and other commodities' cultivations, starting from the nursery up to the harvesting process. The plantation division manager has two subordinates who are the section heads for the

coffee and the cloves. Each of them has to supervise field supervisors who have the responsibility based on the area coverage. Each field supervisor or foreman has several workers who do cultivation tasks. CP is practising the cultivation practices as part of the strategy towards the organic coffee cultivation. However, due to the financial condition of the company, some parts of the area are managed under the cooperation with the third or external partners. These parts are mostly for sugar cane and cassava plantations. By having cooperation with external partners, the shortage of workers in covering the area and the need for cash inflow have been designed to be resolved in a short period of time.

The production division is the division that processes the coffee crop yield into coffee finished products. This division is also responsible to market the coffee products and maintain a good relationship with all the customers of the coffee products. The production division is also responsible for harvesting and selling the cloves and other horticulture commodities and running the 'get plastic' facility. There are two methods in coffee production: the dry and the wet methods. The dry method is simply drying the cherries on a vast surface under the sun before the milling process. The wet method involves the fermentation process that consumes a lot of water and energy for drying the beans after the fermentation. Although CP has the facility to do the wet method, due to high operational costs of the facility and the selling price that does not compensate the wet method operational costs very well, CP chooses the dry method. The *'roasteren'* facility is for roasting the coffee beans before grinding the coffee into the final products. The CP plantation basically not only sells the coffee products originated from its internal plantation, but also provides coffees from other variants and other places as well. The CP plantation tries to fulfil the coffee market demand by providing wide variances of coffee from Indonesia. Therefore, the responsibility of the

production department is not only producing coffee from internal sources but also procuring and selling other Indonesian coffee variants as well.

The marketing and promotion division is focusing on the tourism business. This division is responsible for creating programmes to promote plantation and its products. The marketing and promotion division is also responsible for managing the cooperation with the external parties relating to the non-culinary business. Any tourism-related activities that involve external parties will be under the marketing and promotion division management with the CEO's approval and supervision. However, if it is regarding the culinary business, the administration staff will manage it under the CEO's approval and supervision. The agritourism in CP is focusing on promoting the plantation as a Dutch colonial heritage and the uniqueness of the local culture. The environmental protection becomes essential as the beauty of nature and the well managed and protected environment are the attractive points in the agritourism. Hence, environmental engagement is prominent for this line of business although this division does not have direct responsibility in conducting the engagement.

The housekeeping division is responsible for job maintenance in the offices and the tourism sites. They are also responsible for the cleanliness of the offices and tourism areas and running the inn. Even though the housekeeping division is responsible for job maintenance, it does not maintain the production facilities, which are managed by the production division.

6.2.4.2. Rules and standard operating procedures

Currently, the existing standard operating procedures (SOPs) and job descriptions have provided enough guidance to do a particular job, and a description of the responsibility is embedded in a particular position. However, the SOPs are not provided in detail.

Insofar, there are no specific work instructions that govern the activity in step-by-step guidance to complement the existing SOPs. Even, for the plantation division, there are no specific written work instructions that can guide the cultivation practice. On the other side, there is a specific standard or guidance from the Ministry of Agriculture for cultivation practice for both the coffee plants and the intercrop plants (this is related to the discussion of government regulations in previous chapter 5). There is an exception for marketing division where the SOPs and job descriptions are relatively more complete in comparison to other divisions. In general, there is a CEO's decision that describes each position's responsibility and job description.

There are two divisions with very limited orders or arrangements; those are the plantation and the housekeeping divisions. In both divisions, only the written and documented rule arranged by the company is the job description. It is elaborated in two forms the CEO's decision and separate files to be kept under each division. The job description explains the working hours in each division and the jobs for each position within each division. The description of the supervisor position covers both the supervisory and administrative works, such as checking, recording, and reporting the workers' attendance. For the workers, there are no specific instructions provided except for doing the jobs as what the field supervisor asked them to do and report the results to their superiors. This condition makes it difficult to gain standardised doings and work results. Therefore, the division manager's knowledge and supervisory activity become essential in directing a particular job.

In the marketing division, the existing SOPs are focusing on marketing to support the tourism sector in CP plantation. This is consistent with the fact that this division is focusing on the marketing of agritourism CP has. There are three standard operating procedures; these are for complaint handling, marketing and promotion activities, and

sales procedures. However, there is no particular procedure for marketing activities of the coffee or other plantation commodities, which becomes a part of the production division responsibility.

CP has articulated its vision and mission as the general guidelines for daily business activities. CP's vision is to become an agribusiness and agritourism company with unique characteristics and international competitiveness. A set of the company's missions to realise the vision were arranged as follows:

1. safeguarding, maintaining, managing, and developing the coffee plantation area as the manifestation of thanks to the Almighty God.
2. keeping the CP as the founder family heritage.
3. producing and marketing the plantation commodities domestically and internationally.
4. maintaining the plantation's wealth as a strength for developing agritourism.
5. preserving the nature and the environment that surround the plantation.
6. developing plantation workers' intellectuality and financially.
7. contributing to the improvement of the quality of life of the locals.
8. supporting the government programmes in the plantation sector.

The existing CP's environmental engagement is based upon this mission. This mission also brings corporate value that is internalised into the daily practice as discussed further in the later section of this chapter.

Overall the company vision depicts the top management perspective, which is also the owner of the TGC, regarding the CP plantation. The vision depicts the balanced value of the thankfulness aspect, the business continuity, and maintaining a good relationship with the socio-environmental aspects of the company. Although the

environmental value is not in the first order, however, protecting nature is very important in the cultivation.

Besides the plastic-waste processing in the 'Get Plastic' facility, CP also implements a particular policy to reduce plastic usage. CP05 has made a policy that no plastic bag is given in every sale of the company's products in the plantation area. This is part of the environmental value that CP05 would like to highlight as the company value. This matter is also confirmed during the observations.

6.3. The EMAC practices in CP plantation

In this discussion, the focus is on the environmental management accounting control (EMAC), which is based on the management accounting control practices (MAC) with the environmental value embedded in it. The environmental management accounting is an information-based accounting structure that fosters and enables the organisation's environmental stewardship role by governing accountable business practices. This definition is following Hopper et al. (2009) notion regarding the management accounting system. Hence, the discussion of the MAC practice in CP plantation covers several aspects in MAC, these are: the planning, the directing, the controlling, and the decision-making.

The environmental engagement in CP is about the environment protection in relation to the coffee cultivation and the plastic-waste processing. The environment engagement that is related to the coffee cultivation is embedded in the plantation division operations while the plastic-waste processing involves the production and housekeeping divisions. Therefore, the following discussion focuses on the MAC in three divisions- the plantation, production, and housekeeping divisions.

6.3.1. Planning

In general, the company has a budget to manage the financial aspects of all operations. The budget preparation involves all the division managers as stated by CP05 as the CEO. However, the division managers' involvement is basically conducted to gather ideas about the main activities proposed by each division manager.

> *"In preparing the budget, all division managers contribute to the budgeting process by providing necessary data and their thoughts about what is important for the next period programmes."* CM05]

The involvement is not in the form of integrating the division budgets into a comprehensive company budget. The contributions from the division managers are the identification of their divisions' requirements and their understanding of the situation affecting it. The division managers require to discuss the plan or programme for the year, and later on, the managers need to provide a proposal and present it to the BoD to get approval and necessary financial support before executing the programme. For the daily and routine operational expense budget, factors such as the inflation or price increase are considered. This is also confirmed by CP06 as the operational director.

Further, to have the necessary financial support during the period, the division managers are required to provide a proposal that specifies the activity, the purpose of the activity, the future prospect (particularly in terms of potential revenue or profit), and the financial support in detail of the proposed activity. Currently, there is no particular limitation or threshold regarding the amount of money to classify the financial support requirements. Insofar, there is no proposal needed from the division manager for routine expenses such as salaries and payment of utility bills. However, although harvesting coffee and cloves as the main and secondary commodities are considered routine activities, a proposal from the plantation division manager is required due to a significant amount of the financial support needed and the

involvement of temporary daily workers which require specific payment scheme. Regarding a proposal, it requires discussion and approval from the CEO and another director (in most cases, it is the operational director) before the execution. The division manager needs to present their proposal and discuss it with the BoD at a meeting. This matter will be elaborated further in the controlling and decision-making section.

All division managers in CP plantation prepare a plan as the reference in operating their division although presently there is no written and formal budget document available at the division level. In preparing the plan, previous performance and the particular pattern such as the quantity of previous year harvest, the amount of defected coffee cherries from the previous harvest, the amount of rainfall in the previous year, and the number of visitors during the peak season are the important factors considered by the division managers.

6.3.1.1. Planning in the plantation division

In the coffee cultivation, CP02 explained that there are two main tasks; these are the cultivation itself and the revitalisation of the plantation area. The first task is about the coffee cultivation, starts from the nursery stage up to the harvesting process.

> *"The [main] responsibility of the plantation division is undertaking the coffee cultivation that starts from the nursery stage up to the harvest process. we have our own nursery facility."* [CP02]

CP plantation has its own nursery facility for the coffee plants. The seeds are ready to be planted after around seven to nine months. After the seeds are ready, the next stage is planting the seeds to the blocks that have been prepared beforehand. The next stage is growing the coffee plants. The coffee plants become productive and ready for harvesting after two and a half years. The second task is about revitalisation. The revitalisation task is to regenerate the old and degraded coffee plants and replant the

vacant areas with coffee plants as the main commodity or with other commodity plants wherever the site is not suitable for coffee. It also includes the revitalisation of the areas that currently are under the cooperation with external parties for sugar canes. Moreover, the contracts are going to be expired in less than two years. Hence, the necessary preparation for the revitalisation programme is needed. In order to plan all of these things, CP02 relies on the census report that provides detailed information for each block.

The yearly plan and its elaboration to shorter-term period plan in the plantation division are based on the census report. CP02 explicated that the plantation division conducts the census twice a year, one is the mid-year census and the other one is the end of the year census. The census contains detailed information of each block in the whole plantation areas regarding the kind of plants, the number of each kind of plant, and the plant age and category (see appendix 2). There are two main plant categories- the TM (stands for *Tanaman Menghasilkan*, or the productive plants) and the TBM (stands for *Tanaman Belum Menghasilkan* or the plants that are not yet productive). Each of these categories has its sub-category based upon the age of the productivity of the plants. For example, sub-category TM1 is for the plants that have been harvested once, and sub-category TM2 for the ones that have been harvested twice, while sub-category TBM1 is for the not-yet productive plants that have been cultivated out of the nursery for one year. The census procedure is carried out by having a field observation conducted by the section heads with the help of the workers. The section heads are also responsible for preparing the census reports. The end of year census report is the main reference for CP02 to plan the following year activities while the mid-year census report is essential for evaluating the performance of the current year. The census reports provide the necessary information about the current status of the plants, by which it

enables CP02 to determine what kind of treatments are necessary for particular plants in particular blocks. Based upon this information, CP02 plans the yearly activities and the required resources including financial support. This plan is then elaborated into a monthly activity plan. The census also enables CP02 to predict the forthcoming harvest yield. The plan for revitalisation task also requires the census report support. Later on, whenever CP02 needs to execute his plan, for example, regarding the fertilising or harvesting, he requires to submit the proposal to get the necessary financial support.

Besides having the census reports, CP02 is also having regular fieldwork observation as both the practice of control and gaining a deeper knowledge of the factual condition to support his plans and decisions. The following illustration presents CP02 conducting daily fieldwork which is also related to the planning process for the revitalisation task.

> *[31st July 2018] In my second-day fieldwork at the CP plantation with CP02 as the plantation division manager, after visiting the clover-picking process, we joined CP06 [the operational director] to conduct routine field monitoring. The tour was following a special lane for the lorries. The tour was going deeper into the plantation to the areas that were managed under the cooperation with the external partners for sugar canes and sengon trees or Albizia chinensis. The field supervision at that time focused upon the sugar canes' harvest activity. Along the way to the harvesting location, both CP02 and CP06 were evaluating the condition of the blocks to be revitalised. Along the way to the sugar cane harvest location, CP02 and CP06 identified several blocks in the plantation that are potential to be revitalised. They did the discussion and the direct observation as well to get a much better understanding of the real conditions; so that the revitalisation plan can be better prepared. During this direct observation, CP02 and CP06 together identified the potential blocks that became the target for the revitalisation. For that, they also evaluated the terrain and the land condition and the consequences if those blocks are chosen for the revitalisation, particularly from the cost perspective. During the discussion and observation, CP02 provided a detailed explanation of the land condition and the current workload of the workers to CP06. Further, he also explained what should be prepared for revitalising those potential blocks.*

In the area of the plantation, environmental engagement is embedded within the coffee cultivation itself and the conservation in the non-plant areas. The engagement exists in the cultivation practice, and in the use of organic and non-organic fertilisers.

It means the engagement is embedded in the land preparation before planting the seeds, the nursery stage, the cultivation practice during the growing and the maintenance of the productive stage, the fertilising, and the pest control. The environmental engagement takes form as a cultivation practice for the use of organic fertilisers and not using pesticides to control the pests. In the areas that are not feasible to be used for coffee cultivation, conservation takes place mainly to prevent land erosion and maintain the groundwater.

Cultivation practice is conducted from the land preparation stage. In the nursery stage, the use of organic fertilisers is a prominent environmental engagement. The use of organic fertilisers in the nursery is dominant because, according to CP02, organic fertiliser is the best for growing the seeds in the nursery. Since the organic fertilisers are taken from the manures that are locally available for free, the only cost that CP02 incurs in the budget for this fertilising activity in the nursery would only be the workers' wages and the transportation cost in bringing the fertilisers to the nursery facility. The organic fertiliser is free because it comes from the employees' and locals' livestock manures. Almost all field workers are having cows or goats as their livestock.

> *"The organic fertilisers from the livestock manures are free. We collect it from the locals and from the workers' livestock. We also provide the shed for the workers to put their livestock in the plantation site, and in return, we get the manures as the fertilisers."* [CP02]

The company provides a free facility for any employee who has livestock. In return, they are asked to render the manure to the plantation to be used as fertiliser. This arrangement is the result of the CP's top management decision to foster mutual benefit between the company and the employees (most of them are locals). On the other hand, fertilising the TBM or TM is different. CP02 further states that fertilising the TBM and TM needs to be balanced in the usage of organic and non-organic fertilisers.

"The nutrition or the balance between the organic and non-organic fertilisers must exist. The organic fertiliser has the binding characteristic that holds the non-organic fertilisers and prevents it from being washed away. ... organic and non-organic needs must be equally fulfilled." [CP02]

Hence, in budgeting the fertilising activity in the land preparation stage or for TBM and TM coffee plants, CP02 includes the non-organic fertiliser procurement whenever it is low in stock. Nevertheless, CP02 knows that even-though fertilising TBM and TM requires non-organic fertilisers, the small dosage per tree keeps the labour cost low.

"If we take a look from the labour cost perspective only, the use of non-organic fertiliser is more efficient. It is far more efficient to use non-organic fertilisers. This is because, let say for the non-organic fertiliser, it only takes one tenth. So, let me say if we use the non-organic fertiliser, for the same length of time, one worker can do for 100 trees while he or she can only do for 10 trees if it is the organic fertiliser. This is because, for organic fertiliser, we need around 10 to 15 kg per tree, while, for non-organic fertiliser, we only need 200 grams per tree." [CP02]

Furthermore, in the coffee cultivation, the role of intercrop or shade plants is vital. The cultivation practice (*kultur teknis*) in CP becomes the main practice in the coffee cultivation.

"It has a vital role [the intercrop or shade plants]. The life of the coffee plants depends upon its shade or intercrop plants. If there is a problem with the fertilising, for example, as long as the intercrop plants are in good condition, then it doesn't matter [with the fertilising] if it is late." [CP02]

The cultivation practice or *kultur teknis* conducted in CP is referring to the guidance for good agriculture practices on coffee issued by the Ministry of Agriculture in 2014[xvi]. Although there is no legal obligation for CP to follow the practice nor there is a legal sanction for not following exactly what the guidance says, CP02 still conducts the cultivation practice because he believes that this is the best way to manage the coffee plantation from the technical and financial perspective. The intercrop plants in the coffee plantation act as the shade plants that regulate the amount of the sunlight and maintain the humidity of the areas. The intercrop plants also become the source of important nutrients for the coffee plants from its falling leaves. From the business

perspective, the intercrop plants are also important for area optimisation, therefore, CP chooses the intercrop plants that are also providing economic benefits, such as the cloves (*Syzygium aromaticum*), durian (*Durio zibethinus*), and sengon (*Albizia chinensis*) trees.

Overall, in planning, CP02 elaborates the plan into two plans- the activity plan and the proposal for financial support. Both must be synchronised, which means the financial support is prepared based upon the activity plan that has been prepared before. The proposal for financial support is required whenever a particular activity needs material financial support, such as fertilising, harvesting or revitalising the areas' activities.

For having the financial support, CP02 prepares the proposal that includes the detail of the activity or the job, the purpose of the job, the target, and the required resources. The required resources include the workforce (especially, the temporary workers), and other-related materials such as non-organic fertilisers or agricultural equipment. CP02 also needs to present a proposal before the BoD if there is a significant but routine work such as fertilising or harvesting. Fertilising and harvesting are significant in terms of financial support requirements; however, these are part of the routines. Hence, a proposal is still needed. A special project such as revitalisation or conservation is needed to be presented before the BoD. Although routine works, but with significant financial impact, fertilising and harvesting still need the proposal. Submitting a proposal to the BoD for every activity with material financial support is mandatory.

Insofar, CP02 claims that he makes a plan for every forthcoming period; however, he did not prepare a formal and well-documented yearly or monthly operating budget for his division. CP02 further explains that the unpredictable condition in the

plantation regarding the plants' condition and unpredictable weather make it difficult to formalise and document the plan and budget. In making the plan, CP02 states that the workers' salary and wages are the biggest portions of the plantation division operational costs. Therefore, in the plan he makes, he always specifies the job and the number of workers needed. If for some reasons, the temporary workers are required, CP02 will prepare a proposal for the particular job specifying what the job is, the length of time needed to do the particular job, the purpose, the number of extra workers needed (temporary workers), the amount of wages and other required resources. For fertilising plan, CP02 needs to check the fertiliser inventory status before proposing for procurement.

Since environmental engagement is embedded in the coffee cultivation practice, the planning process conducted by CP02 also includes the environmental value as well. In planning the fertilising activity, CP02 prioritises the use of organic or balanced fertiliser following the conditions of the plants; he applies this from his knowledge of the long-term impact on the soil quality and the need to increase the productivity of the plantation. CP02 explains that organic fertiliser is good for vegetative growth whilst the non-organic ones foster the generative growth of the plants. If he only prioritises the productivity increase, he would dominantly use the non-organic fertilisers for TBM. Besides, CP02 uses more cultivation practice rather than using fertilisers to increase productivity, on the basis of his knowledge of the environmental impact of using agrochemical products to the soil. Balancing the requirement to increase productivity and to maintain the already deteriorating land or soil quality in planning activity demonstrates the existence of the environmental value in the planning process.

Regarding the conservation, CP02 arranges this activity by considering the workload of his subordinates and the current works that his division must handle. CP02

cannot neglect the fact that he must prioritise the works upon the coffee and other commodity plants rather than maintaining the conservations. However, this conservation is part of his responsibility, and although it is not considered as routine, CP02 still continues to carry on this task as an important task.

In general, the planning in the plantation department is basically a management accounting information-based activity that has included or embedded environmental engagement. The plantation division manager [CP02] demonstrates the embeddedness of the environmental value through his choices among the alternatives of activities and the use of organic or at least balanced fertilisers. Whilst the company's financial condition is demanding a significant increase in productivity, balancing the cultivation practice is the effort to maintain the environment quality for long-term benefit and the need for efficiency to reach the desired financial performance.

6.3.1.2. Planning in the production division

As the production division manager, CP has the responsibility to manage the coffee production and the sales of the coffee products to the customers. In this matter, she has the responsibility to manage the production facility and the shop inside the CP plantation site. She is also responsible for maintaining the relationship with the external customers. Most of the customers are cafés and restaurants. Most of them are from the cities nearby, but some also come from other provinces. Besides the coffee production, CP03 is also responsible for operating the plastic waste processing facility that CP has as a grant from a non-profit organisation.

The planning in the production division begins with the sales forecast for all the coffee products. CP03 states that there are several factors that she considers in preparing the sales forecast. Those are the number of visitors to the plantation, the

development of the customers' business, and the harvest amount. In addition to this, she also puts customers' characteristics into consideration; therefore, she can provide the coffee products that are matched with the market preferences. She predicts the number of visitors by seeing the forthcoming holidays and evaluating the number of visitors in the previous year. By looking at this, she can forecast the sales during the peak season and prepare the inventory in advance.

> *"The planning that I do is to predict or forecast the sales quantity. I always anticipate the holidays, the new year eve and the eid Mubarak holidays. I usually increase the stock 3 to 4 times to anticipate the sales in that period. Apart from that, I also need to develop programmes to add new customers."* [CP03]

The other important factor is the harvest amount prediction from the plantation division. For the harvest amount, CP03 gets actual data from the production and plantation divisions. CP03 uses the previous year data she holds and the prediction from the plantation division to prepare the sales forecast. Hence, she can decide whether she needs to buy from the external parties to fulfil the demand or not. If external procurement is needed, she has to prepare the proposal for it. Regarding the sales price, she also monitors the market price to get a picture of the market condition and to set the sales price she is going to use in the plan.

> *"I know about setting the selling price. I calculate the cost of production. … I also compare prices [I set] for each customer and I also compare [our price] with competitors. If, for some reasons, the competitor has a lower price, I always check its quality first. …. Sometimes, I do the experiment by setting a certain price for a particular customer. If the customer doesn't protest, then we continue to use the price. If they protest, then I ask why. If my products are better, then I will try to explain to them [the reasons why I increased the price in comparison with the other competitors]."* [CP03]

In preparing the sales forecast, CP03 prepares it on a quarterly basis rather than on a yearly basis. Also, the same with CP02, she does not prepare a formal and well-documented plan or sales forecast. The reason is that it is hard for her to forecast the sales and the operational cost for the whole year due to unpredictable fluctuation of the sales. In other words, although CP03 realises the significance of a plan and forecast, to

her, thinking and understanding the reality is more important than a formal budget document. It is more about what she thinks and does rather than what she has documented.

Besides the sales forecast, as CP03 is also responsible for coffee product sales; she also prepares the plan for developing new products and the necessary investment to develop the shop in the plantation site. For this kind of investment plan, CP03 prepares a proposal specifying the investment job requirements, the resources and equipment required, the purpose, and the target related to the coffee product sales. If it is about product development, then the relevant strategy to market and sell the new product must be included as well. To some extent, the investment in the production equipment also requires CP03 to elaborate the strategy to "sell" the new facility as stated by CP06.

> *"In a particular case like buying a new roasting machine, we asked her [CP03] whether she would be able to sell the new machine. It doesn't mean selling the new machine literally, but how she can attract more visitors with this new machine. What kind of programme that she could create to attract more visitors by utilising this new machine? So, it [new roasting machine] is not only a new production facility, but it should be one attractive point to market [increase the visitors] the plantation as well."* [CP06]

About plastic waste processing, CP03 does not prepare a special plan for this. Instead, she has to manage his workers in a way that the main responsibility, the production, will not be disrupted. Therefore, on one occasion she had to decide to delay the plastic processing for the time being until all the production target was met. Currently, the operationalisation of the plastic processing facility is still not executed regularly due to limited workers in her division. However, she believes that, for the time being, it is not appropriate to propose recruiting more employees for her division due to the company's financial condition.

> *"Yes, I operate the facility [plastic processing]. But last time, I had the harvest timetable [that is very tight]. Therefore, I prioritise my worker for handling the*

harvest. … If I have to recruit more employees, it has a long-term impact. It will increase my operational cost. That is why I have to make prioritisation. I am not leaving it [plastic processing] behind. Soon after the harvest time, I will operate the facility again." [CP03]

In the production department, planning and budgeting is relatively more detached to the environmental value. CP03 prioritises her plan to focus on the production and sales of the coffee products rather than plastic waste processing. Referring to the main responsibility of the production department, what CP03 does in planning the activities in her department is demonstrating her priority to the financial performance of the company and relatively less attention to the environmental engagement. Besides, the production process itself does not create a significant environmental impact compared to plantation activities.

In sum, planning in the production department focuses upon coffee production to fulfil market demand. It follows the main responsibility to market the coffee products as the main commodity of CP. Insofar, in preparing the plans, CP03 has to consider both the fluctuation of market demand and the plantation capacity. It makes the planning in production as information-based activity although it is conducted without being properly documented.

6.3.1.3. Planning in the housekeeping division

The housekeeping division is responsible for all the cleaning and maintenance activities in the plantation, particularly in the tourism area. The maintenance includes maintenance of the lighting, the plumbing, and the buildings. The cleaning activity includes separating plastic waste from other wastes. The housekeeping division is also responsible for managing the inn within the plantation site and running the souvenir shop within the plantation.

The CP01 does not prepare a specific plan or budget for the forthcoming period. She only controls the operational cost of her division based on her experience. Most of the operational costs in this division are considered routine costs in relevance to the routine activities. Hence, CP03 has many roles in controlling the jobs under her division. The plan is the same as the plans of other division managers, the CP02 and CP03; this is not well-documented and formalised.

As CP01 is also responsible for managing the inn within the plantation site, she prepares a proposal every time she needs for new investment or buying a new facility or asset. Regarding the operationalisation of the souvenir shop, CP01 does not prepare a specific written plan or budget.

The additional task is that the housekeeping division helps the production division in the operation of the plastic waste processing facility. The task is to collect all the plastic waste and separate it from other wastes that are collected from the site. Insofar, this additional task is performed well and does not require a specific plan.

In overall, formalised and well-documented plan and budget documents are absent at the division level. The main reason for this is they believe that there is no use of keeping a formalised and documented plan or budget since it is frequently changing due to its changing factors. They believe that the doing of planning with considering all significant factors including the environmental one is more important rather than keeping the record of the plan.

6.3.2. Directing and governing the activities

The empirical evidence from CP plantation regarding the directing and governing activities (the organising activities) can be grouped into two groups. The first one is the

directions about the financial aspect, and the second one is the technical directions or organising activities.

The fact that the financial condition of the company is still not strong enough leads to the condition that providing financial support to the business activities could be challenging. Apart from the mandatory requirement to prepare an activity proposal to have financial support, this situation leads to the condition where the division managers in some cases are required to be able to manage their department in a particular way to survive and to be financially independent. For this matter, the directions come from CP06 as the operational director. CP06 stresses that the two divisions: the production and housekeeping divisions, are encouraged to be independent and able to manage their own cash flows.

> *"I told them [CP03 and CP01]: you must be 'creative' and be independent. You must be able to independently finance, at least your daily operational activities. You know that the company is still not strong enough. So, I gave them the advice [to be creative]. .... However, I still control them tightly. I have to know their cashflow, although I am not the person that they should directly report to about the cashflow."* [CP06]

The term 'independent' here means that they must be able to keep the business or the divisions' operations running since the existing proposal mechanism for having financial support takes a long time for the fund to be available. Therefore, with extremely careful consideration, CP06 provides the authority for two division managers, the production and the housekeeping division managers, to "have a freedom" in managing their petty cash. CP06 guides and monitors these two managers very closely. CP06 provides guidance on how to manage cash surplus from fees from external partners or discounts. He provides directions to these two managers regarding how to manage the "extra source of cash" in a way that does not violate the accountability principle. He suggests that the extra cash from the fees and discount can be used to finance the operational costs whenever the fund from the proposal has not

been available yet. This might be some kind of a "leeway" to finance urgent needs in the division's operation.

At the division level, the division managers do not provide directions to their subordinates in terms of the financial aspect. The hierarchy of authority in the CP plantation only provides access and authorises the financial issues to the division managers. The division managers are only providing directions to their subordinates in terms of technical guidance for the operational purpose.

In the plantation division, fertilising is also considered important in supporting the quality of the coffee plants besides the cultivation practice. As it is already explicated in the previous section regarding the balanced use of organic and non-organic fertilisers, CP02 further explains that the use of the fertilisers in CP is following the general standard issued by the Ministry of Agriculture. Insofar CP02 states that CP does not have its own specific standards for the use of fertilisers.

> *"We use general standard. …. The general standard is the one recommended by the directorate general regarding plantation; for example, for the plant at a particular age, the dosage of the fertilisers is this much, and at the other particular age, the dosage is that much. The composition of the fertilisers should consist of these components. We use that standard."* [CP02]

CP02 gives instructions on what to do regarding the use of organic fertilisers. The text below in quotation has been taken from one observation at the month-end meeting.

> *"After we finish with the site preparation, tomorrow we will begin with the fertilising. Tomorrow we will start the fertilising [using the organic fertilisers from manures] for two things: the papaya trees and the nursery. …. Please, apply different organic fertilisers for different purposes. For the nursery, please use the better organic fertiliser, the ones that are really mature. Please do not put the one from the goat's manure. Use only cow's manure for the nursery. For the papayas, you can mix both of it. We only have 20 days to apply the fertilisers, so think about the location where you should apply it. …. We need the fertiliser for at least 55,000 polybags [it means 55,000 trees in the nursery]."* [CP02]

This instruction is important not only from the technical perspective but also from the financial perspective as well. The clear instructions from CP02 followed by the on-

site fieldwork to monitor the execution of a particular job are vital in maintaining the harvest quality and the land quality for the long term. In other words, the clear instructions CP02 provides also serve environmental engagement as well.

The technical directions that CP02 provides to his subordinates or the field workers are mostly about how particular cultivation practice should be conducted. Hence, directing and governing activity is more related to environmental engagement. In other words, directions and organising activities that are provided by CP02 in regard to the cultivation practice are demonstrating the environmental value.

Although the conservation is not directly related to the coffee cultivation, however, the topography of the CP plantation makes, as explicated earlier in the company site section, the conservation prominent to environmental protection. The CEO [CP05] realises this and initiates the bamboo planting in those areas as the kind of conservation to prevent land erosion and preserve the groundwater source that is important for the plantation and the locals. CP05 also initiates the river cleaning action from plastic waste that involves mainly locals. As the river that runs through the plantation is important to the locals as the source of the water for many household purposes, CP05 initiated this river-cleaning action. In fact, many of the plastic waste found in the river also comes from households or domestic waste. Further, he also involves the local children to promote environmental awareness among them. For bamboo planting, the plantation division becomes the executor of the conservation action under CP02 supervision.

Since one of the business lines of CP plantation is about agritourism, plastic waste is the significant non-organic waste that needs to be well-managed. All the plastic waste is collected by the cleaning service workers under the housekeeping division. CP01 directs her subordinates to separate the waste from the overall areas into plastic

and non-plastic waste. The plastic waste is stored separately to be further processed in a facility called ‘Get Plastic’. This facility processes the plastic waste to become fuels. The facility was granted by the environmental non-profit organisation with the same name, ‘Get Plastic’. The facility is located in the production area and so does the warehouse to store all the collected plastic waste. According to CP01, the amount of plastic waste in every two weeks is around 15 kg on an average. That means more than a kilo of plastic waste per day on an average.

The facility is operated under the responsibility of the production division. CP03 explains that the main component of the ‘get plastic’ facility is the reactor that has a maximum capacity of 4 kg of plastic waste. The reactor can produce 4 litres of fuel from 4 kg of plastic waste. It is not a huge facility, but sufficient enough to process plastic waste from the whole tourism and office areas. Furthermore, she explains that the operation of the facility, to some extent, is not too complicated although she still faces problems. However, she always opens the communication with the sponsor organisation to consult any problem regarding operating the facility. Nevertheless, since there is a risk of explosion due to the flammable product (the fuels), she always emphasises to her workers the safety importance of operating the facility. Therefore, she instructs the employees to be always careful while operating the facility and keep spare parts clean to avoid explosion during the process, which is caused by clogging filters. On the other hand, she also explains the potential saving from the fuel cost for the operational purpose by having this facility.

Overall, the directing and governing activities that refer to the technical aspect demonstrate the embeddedness of the environmental value, whilst the ones that refer to the financial aspect show the opposite situation. The embeddedness is much because of the characteristics of the activities that are directly related to nature itself. Hence,

directions provided by CP02 consist of both; the way to do coffee cultivation and the way to have the environmental engagement.

6.3.3. Controlling and decision-making

In general, the controlling and decision-making process in CP plantation is transpired in the process of discussing a proposal and evaluating the implementation of the proposal. Firstly, there is a meeting that involves the directors (in most of the time CEO and the operational directors), and the division manager that has the proposal. The meeting does not include other division managers unless it is a proposal for a project that involves more than one division. If the proposal is approved by the CEO, the division manager can execute the activity and has the financial support they need. The approval includes the amount of financial support that is approved by the CEO. The approved financial support can be in full amount or the partial depending on the nature of the proposal, or it can be permission to find other financing alternatives such as external investors or bank loans. After the execution of the activity, evaluation and performance measurement are conducted by CP05. In the evaluation process, CP05 employs some measures; these are the timeliness of the execution of the work, the quality of the work, and its contribution to the achievement of the division's targets.

At the division level, the controlling and decision-making is focused on the routine activities and the special tasks according to the previously approved proposal. The controlling of activities covers both the technical and financial aspects. The following discussion is about the controlling and decision-making occurred at the division level.

6.3.3.1. Controlling and decision-making in the plantation division

As explicated in the planning discussion section, the main controlling and decision-making is in relation to the coffee cultivation and the revitalisation project. The controlling upon the cultivation practice conducted by CP02 covers all important activities; these are the fertilising, cultivation practice, pest control, and harvesting.

CP02 stated: *"the labour cost is dominant in this plantation compare to the other cost element".* Therefore, any control regarding the efficiency and effectiveness of the labour cost is considered the crucial control. CP02 conducts regular control by cross-checking the previous day performance and the on-site fieldwork. CP02 has the performance evaluation in the regular meeting with the field supervisors and his section heads and during the morning briefing before the workers start the day.

The following descriptions are taken from the observation notes from the morning briefings with all the workers. Two quotations were taken from the daily morning briefing to the workers before starting the day, and one was taken from the evaluation meeting at the end of the month after the morning briefing with all the workers. The month-end evaluation was only attended by the field supervisors and section head managers.

The first following quotation is to describe the situation in the morning when the workers were preparing for the works.

> *[31 July 2018, start at 5:30 am.] To begin with, the observation upon the plantation activities started at 5:30 am after joining of all the workers at the morning briefing. All the workers assembled in the main office at around 5:15 in the morning. All the workers must maintain the electronic attendance check that has face recognition. This is important to make sure that the right person is present and does the job.*

The attendance that was recorded by having the fingerprints and the face recognition records emphasise the importance of the labour cost. The above quotation depicts the

prominence of attendance record to both calculate the labour cost and avoid any potential dispute in relation to the wage payment.

The next following quotation is describing the routine briefing meeting before the plantation workers went to the site.

> *Daily routine briefing from CP02 [the plantation division manager] starts at 5:30 and lasts for about 10 minutes. The routine agenda is to assign the task to each group for the day. The task is based upon yesterday's performance and the target that they should accomplish that day. The tasks assigned to the workers are coordinated and supervised by the field supervisors. Each field supervisor is assigned to a particular block. Any unachieved target from the day before must be finished today and CP02 will explain why it should be that way. If there is a problem with yesterday's performance, and if it can be resolved quickly, CP02 provides the solution. If not, then the problem will be discussed further with the field supervisor after the morning briefing.*
> *After the briefing from CP02, the field supervisors pass on the tasks to the workers in their group while at the same time they also check their members to make sure that everyone is present. Then they go straight to their assigned block soon after all the checking things are alright.*

The above quotation demonstrates the evaluation and control upon daily cultivation works undertaken by CP02. At the same time, this quotation also depicts the knowledge and experience and communication skills that CP02 has in managing his subordinates. It complements the explanation of CP02 knowledge and experience and skills in governing and directing his subordinates in the previous section.

After morning briefing to all employees, the quotation below is to describe the situation and discuss what work that need to be undertaken later on. Specific instructions were also provided by CP02 to his subordinate.

> *[30 July 2019, start at 5:45 am.] The monthly meeting at the end of the month with the field supervisors and section heads discussed the performance of the land preparing activity for the papayas and coffee trees. CP02 evaluated the previous achievement and the target that needs to be achieved by the end of the day. CP02 then discussed the following month's works that need to be done. CP02 also updated the latest status of necessary supplies. This discussion was then followed by the instructions to do the fertilising activity, using the existing organic fertilisers. Specific instruction was given by CP02 on what kind of fertilisers to be used in the papaya field and the coffee nursery and how to apply it. CP02 provided instructions on what to do with the cloves trees in anticipation of the new rewarding policy for cloves pickers. He also reminded the field supervisor of the performance of the*

coffee harvesting and the agreed target and the company expectation in the plantation performance to support the tourism division. After providing evaluation and necessary instructions, CP02 gave the opportunity to his field supervisors to ask questions regarding important findings or any other things. Then one of the field supervisors asked him about the transportation of the organic fertilisers. He suggested an approach which is not only more practical but more efficient as well in terms of cost."

The aforementioned illustration is demonstrating the controlling practice that covers the environmental value (in the use of the organic fertilisers) and the predetermined operational targets that need to be achieved. The target was the amount of the harvest and the number of the plants to be fertilised (both the plants in the nursery and the ones in the plantation areas). The combination of both the use of the fertilisers and the achievement of particular targets is important not only for reaching the labour cost efficiency but also for preserving the soil quality for a long time.

In addition to the existing control upon the workers, currently, CP06 as the operational director has set up new regulations for tighter control upon the workers. The first regulation is about ensuring workers' attendance. Although the automatic check-clock with face recognition existed, CP02 ordered the plantation, production, and security divisions to make sure that the attending worker is the right person who should do the job. CP06 ordered the security staff to regularly check the workers in the field and take a record of the block they supervised, the kind of job carried out at a particular block, and the workers doing the jobs. It actually helps CP02 in supervising his subordinates as well. This new rule acts as the control to minimise the financial loss due to the potential fraudulent actions since labour cost is the most material operational cost in the plantation division.

The control of the workers through the automatic check-clock machine and CP02 evaluation upon the work performance are also important in calculating the wages, particularly for the temporary workers or the overtime money for the non-temporary

workers. Hence, after the morning briefing, CP02 always cross-checks his records of the daily activities covering the kind of jobs, the location of the particular job, the number of workers doing the job. and the name of the workers who do the job. Moreover, CP02 also cross-checks all the attendance and performance records with the result of his on-site supervision-based daily journal.

Based upon the coffee cultivation practice, the first prominent activity to control is the fertilising activity. For the fertilising activity, CP02 explained that one of his section head is assigned to keep the record of the fertiliser consumption. CP02 explained: *"I ask my section head to maintain two records to control the fertilisers. One is the [fertiliser] stock card, and the other is fertilisers control record. I only ask to maintain the record for the synthetic fertilisers due to its expensive price."* CP02 statement confirmed the implementation of tight control upon synthetic fertilisers as a prominent part of the cost efficiency. The fertilisers control record puts into accounts the following: fertilising activity date, the amount of the fertiliser consumption at that time, the type of fertiliser used, the number of plants being fertilised, and the given dosage per plant (see appendix 2). The records will be reconciled periodically to cross-check with the daily reporting that provides the actual daily performance. Furthermore, the fertiliser stock cards are also well maintained alongside the aforementioned fertiliser control record. The stock card is to record every goods inflow and outflow. CP02 controls the non-organic fertiliser consumption from the field supervision and has the periodical reconciliation between the existing records and the daily journal he has. The combination of the field observations and cross-checking records is important, which enables CP02 in identifying any mistake or wrongdoing in the fertilising activity.

Controlling the use of non-organic fertilisers is considered prominent due to its relatively high price and environmental impact. CP02 further explains that too many

non-organic fertilisers will bring negative impacts to soil quality in the long run although, for the short-term, it can boost up the generative growth of the plants, which means it can boost the productivity. Hence, the combination of high price and negative impact on the soil, if it is excessively used, becomes the reason why close monitoring upon fertilising activity is necessary. The following quotation is confirming the aforementioned explanation.

> *"The synthetic fertilisers are good to drive the generative growth, which means it is good to boost up the coffee productivity. However, it could also degrade the land quality, as what happen in this plantation. The accumulation of long-term impact [of synthetic fertilisers] has make this plantation land quality decreasing. …. We are not living for today; we want the plantation last in a long-time in the future. So, to not making the condition worse, I control the use of [fertilisers]. Besides, it is expensive."* [CP02].

In doing the close supervision upon the usage of non-organic fertilisers, his method in exerting the on-site supervision allows him to supervise the workers without being clearly noticed by them. This method also works in supervising the quality of the fertilising job conducted by the workers and in monitoring any potential of fraudulent attempts. From his experience, CP02 stated that once he caught one of the workers who was cheating in fertilising activity. The cheated worker was then summoned privately and punished by redoing the whole job he was responsible for. Although no financial punishment was given, redoing the job was very effective in this plantation context.

The second important main activity that requires close monitoring from CP02 is the cultivation practice. It is important in the coffee plantation as it not only helps regulate the surrounding environment of the coffee trees but also clean the weeds and control the pests. It is also useful in adapting to climate change as well. The cultivation practice approach focuses on the controlling of the cleanliness of the coffee plant location such as regulating the humidity and the shade from the intercrop plants, keeping the surrounding of the coffee plants clean from weeds and falling cherries from

the previous harvest, conducting on-time water buds pruning, and the likes. One practice that helps control or minimise the pest threat is cleaning the plantation areas from the coffee cherry harvest remains. The pest might infect the remaining cherry from the earlier harvest easily which, later on, could infect the plants and destroy the forthcoming harvest. Hence, CP02 supervises and controls this cultivation practice activity to maintain the quality of the plants and to make sure the efficiency and effectiveness of the workers' doings. In some cases, when the cultivation practice job faces a tight schedule or need to cover a vast area, temporary workers are required. The revitalisation tasks that also involve planting seeds, fertilising, and cultivation practice, are the activities that need large labour cost and good quality of work. That is why CP02 monitors the activities very closely. He supervises several blocks per day.

The following description is depicting CP02 doings and sayings in conducting on-site controlling. In the following description taken from one field observation, CP02 supervised the organic mulch preparation and cultivation practice (*kultur teknis*) for pest control activities conducted in some blocks. On that day, the main agenda was to continue the previous day's jobs; preparing the organic mulch and the cultivation practices in the blocks for pest control. The focus was on the blocks with TBM plants. During his supervision, he always opens up a two-way communication to the workers and field supervisor to confirm their doings and provide directions when necessary.

[31st July 2018] After supervising the cherry-picking process, CP02 continued the fieldwork to the blocks where the cultivation practices were conducted. In those blocks, several groups were conducting the cultivation practice by cleaning the weeds and putting that surrounding the coffee and the intercrop plants to get natural compost.
CP02: Have you clean the weeds? It seems there are still plenty of them…
Worker1: We did it. Here, check this one. This is the one that we had cleaned.
CP02: Which one?
Worker1: This one. Actually, we also did with others, see the marks?...
CP02: Alright… yes, you're right.
CP02: You have to 'clear the area' so it [the plant buds] can be easily seen.
CP02: See this plant buds?

Field supervisor: Yes, I see it.
CP02: If these don't grow well, we'll have to replace these.
Field supervisor: Okay…
CP02: Where the other plant buds?
Worker2: Well… some are gone.
Field supervisor: As long as these don't grow, then it means the plant buds are dead. If you can see the nodes, then these will grow.
CP02: Good...
Then CP02 provided further instructions on the plants that need extra attention in that block and on those plants that need to be replaced. He also mentioned that the cultivation practice at that block was important for the prevention of the rats' attack on the young plants. A brief discussion with the field supervisor took place to plan for deciding which blocks need to be maintained next.
CP02: You know, for the block B3 up to the block B10, we had cleaned the weeds, but at that time, it was just to minimise the rats' attack. That's why now the weeds have grown again. We must clean that after this.
Field supervisor: Agree…
[further conversation is about the plants condition and how to manage the intercrop plants anticipating the ensuing weather]

The organic mulch acts as organic fertiliser. It comes from the weeds-clearing activities and from the shade plants' leaves that fall and cover the soil around the plants. The remaining is then placed and arranged around the plants to let it decompose and fertilise the soil and also to regulate the soil humidity due to the changing weather.

In terms of controlling the cultivation practice, CP02 focuses on the way the workers perform. CP02 explains that this is important since the treatment during cultivation practice such as preparing the mulch, clearing the weeds, or reducing the leaves of the shade plants is vital for coffee cultivation. It moderates the surrounding environment of the coffee plants and keeps the productivity to the desired level. Moreover, CP02 explains that cultivation practice might support the plants' quality and productivity even with minimum use of fertilisers (especially, the non-organic ones). This practice is also important to control or prevent the coffee from the pest attack. Due to the importance of the job and the required quality of the job itself, doings and sayings by CP in conducting the daily supervision and field observation are considered prominent from both financial and technical perspectives.

As a plantation, the need for water is also significant although there is no specific watering activity for the coffee plants in the plantation area. CP02 explains that it is very hard to do the watering for all the plants, especially, during the dry season. He emphasises that the cultivation practice is more effective and efficient in maintaining the humidity and the water requirement for all the plants. For this reason, the rainfall measurement is crucial and must be conducted periodically. CP02 does periodical close monitoring upon the rain gauge, which helps him decide what kind of treatment is needed at the surrounding of the coffee trees and the intercrop plants. By deciding what kind of treatment is important in the weather, CP02 plans and controls the labour cost efficiency.

Regarding the pest control as the third prominent activity to control, CP02 states that the significant pest in the coffee cultivation is the insect attack to the coffee cherries. The insect is *Hypothenemus hampei*, the locals used to call it as "*bubuk buah kopi*". CP02 explains that the solution to this threat is implementing cultivation practice (*kultur teknis*) rather than using insecticides for its ineffectiveness as explicated above. The attack always exists in every harvest, therefore, further action to follow up the cultivation practice is necessary. The infected cherries need to be processed separately by boiling it in water to avoid further infection to the rest of the uninfected cherries. The experience shows that if the infection rate is below 10%, it is considered normal.

Therefore, besides cultivation practice in the field, CP02 always gives an order to the coffee cherry pickers to follow the stages of cherry picking properly and keep the surrounding environment clean from the falling cherries. The unpicked falling cherries are the medium for the insects to breed and attack the healthy cherries. He orders that all the falling cherries and the infected ones are well boiled to kill the insects and prevent it to spread to the rest of the healthy cherries.

The other pest threat in CP plantation is squirrel. It does not attack the coffee cherries, but it attacks the durian which is the third revenue contributor to this plantation. For sometimes, the number of squirrels is quite significant. One day, there was an idea of having a squirrel-hunting contest. The idea came from the marketing division manager at that time. At the same time, the marketing manager thought it could attract more visitors. The manager argued that the contest would bring two benefits: attracting visitors and solving the squirrel problem. However, when the proposal was submitted to CP05 as the CEO, he had decided not to grant this proposal. His awareness about the natural food chain reminds him that, even the squirrels are considered pests, the hunting of the squirrels is not the correct solution. He realises that it is not right to hunt and kill it because it might affect the environment. He decides to reject the proposal of the squirrel-hunting contest and let the situation as it is although CP knows the consequence of his decision that he might not be able to maximise profit from the durian commodity.

> *"Then I think, no, it is not right, let's not do this. It doesn't matter anymore. How many squirrels are there compared to the durian that we can harvest? It doesn't matter anymore. … This is part of a food chain in nature. … We can't just kill it just to save a few. It doesn't matter anymore. Let's consider it as our contribution to nature; we still have plenty to sell."* [CP05]

The fourth important main activity to control is the harvesting activity. Since the harvesting in CP plantation carried out in four rounds, the controlling on this activity also covers all of these four rounds. CP02 controls the activity based upon the data from the census report and the fieldwork observation. During the harvesting, CP02 controls the activity and makes sure that all coffee cherries are collected, and the plantation areas are clean from the falling coffee cherries at the end of the harvesting process. This is also a part of the practice to control the pest without using pesticides as explicated earlier. In controlling the harvest result, he also makes comparison and

evaluates the current result with the previous year's performance. Therefore, if there is a decrease in the harvest performance for a particular result, CP02 determines the necessary action to increase it for the next period.

CP02 also controls the harvesting activity closely to make sure the efficiency of their works because, sometimes, temporary workers are needed a particular wage scheme. If temporary workers are needed, they will be paid based on daily performance. Each day these workers have to meet a particular target, and at the end of the day when they render the harvest to the production, their wages are determined on the basis of the weight of the harvest. But CP02 realises that this scheme has a risk as people work very hard to meet or exceed the targeted weight at the cost of neglecting the quality of the work. This is the reason that CP02 has tighter control during the harvesting time. The following description depicts how CP02 keeps control over the cherry-picking activity during the harvest time, which is also important to prevent the pest attack.

> *[31 July 2018] Since this period is within the coffee harvesting period, CP02 started the routine fieldwork by checking the coffee cherry-picking process. At that moment, CP02 started with the block located at the closest to the children's playground. He observed and supervised the process while having a chat with the workers. Having conversations with the workers during their work is the thing CP02 did to supervise and build a relationship with them. At the moment, CP02 and I also discussed the cherry-picking process. He explained to me about the criteria of the coffee cherries that are ready to pick and the process; Three to four times annually they go for cherry-picking process. At the same time, he reminded the workers of cleaning the surrounding of the plants from the falling cherries since it might trigger the pest known as 'bubuk buah' or Hypothenemus hampei. He pointed out several areas that were still not clear from the falling cherries. At that time the field supervisor was also present and agreed to remind the workers of the matter.*

CP02 believes that by having a good relation and communication with the workers, he can control the work more effectively. On the other side, by having a good relation and communication, he can also motivate the workers to meet or even exceed

the target more easily. If there is a particular company policy that the workers need to know, good communication also makes the message delivery easier.

Another important control point regarding the harvesting activity is in the receiving area of the production where all the plantation workers render the harvest to the production division. CP06 also establishes a new rule that requires the crucial weighing process to be testified by both the production and the plantation divisions' staff. This new rule is crucial; therefore, CP06 ordered the implementation of new regulations to assure a more reliable and accountable process. As all the harvest must be weighed before it can be accepted to the warehouse, the new regulation requires the weighing process to be conducted by the production staff under the security staff supervision.

On the other hand, what CP02 did to take control of the conservation area is not as organised as controlling other plant-able areas. The conservation areas are still considered prominent and contributing to environmental protection in terms of preventing land erosion and preserving groundwater. However, field observation is still conducted to monitor the conservation areas whether a particular treatment is needed. CP02 focus on the plant-able areas is logical due to limited workers in handling the works and the company's financial condition.

In brief, the controlling and decision-making practices in the plantation division are part of MAC that covers the financial, operational, and environmental factors. Controlling and making-decisions in the plantation cannot rely upon financial perspective only, but also the long-term impact upon the social and environmental perspective. It becomes the embedded factors in the MAC in this division.

6.3.3.2. Controlling and decision-making in the production division

The controlling in the production department is more focused on the sales of the coffee products and the production process itself. It is related to the responsibility and targets that CP03 has to meet as the production division manager. The main target that CP03 has to achieve is about the coffee production output target. Insofar, CP03 performance shows that the production target has always been achieved. The other target is regarding the revenue from the coffee product sales. However, this sales revenue target has not been set as primary or mandatory target for CP03 yet.

For the time being, the sales of coffee products are the top priority that CP03 has to control. Therefore, CP03 controls selling price by regularly checking and comparing the sales price of her products with the market. Making a benchmark with the competitors is one of the ways CP03 controls the selling price of her products. Based upon the regular checking of the market price and the benchmark with the competitors, CP03 decides whether she will increase or decrease her product sale price.

In correlation to this coffee product selling activity, CP03 holds full control upon the receivables collection as well. CP03 distributes the invoices to the customers and collect the receivables all by herself. However, she always maintains a good record regarding the invoices with the headquarters. Hence, the headquarters still has control over the sales and the collected receivables.

> *"Insofar, the payments from the cafés and restaurants are good. The worst is they just need to pay the last two invoices. Otherwise, all are fine. …. For collection, I do it by myself. My people are handling the delivery, but for collection, it is only me. I distribute the invoices, and I also do the collection. I send them letters for collection two weeks after I give them invoices. …. The headquarters give me invoices, and I keep these [until the day I distribute these to the customers]. …. I report all the money from collections, the uncollected invoices, and the unpaid ones from the suppliers."* [CP03]

Moreover, the selling price she sets for the coffee products must have the approval from the BoD.

CP03 also reviews the market and her customers periodically. Therefore, she controls the procurement of the coffee products that originated from external suppliers. Insofar, there are no particular performance measures to monitor the suppliers' performance. The judgement of the suppliers' performance depends upon CP03 monitoring and evaluation.

Regarding the coffee production, the control starts at the receiving site where the coffee cherries from the plantation division are rendered during the harvest time. The control upon the receiving process is supervising the weighing process and recording the result. The weighing result that has been approved by both the production and plantation divisions is the recorded amount of raw materials received from the plantation division. During the production, CP03 monitors the quality of the products and the arrangement or schedules roasting after the drying process. This is from the requirement to fulfil the customers' demand and the product stock status. During the operation, she is supported by her section head for the production. Unlike in the plantation division, the production costs of the coffee products are dominated by the raw material prices rather than the labour cost or the other operational costs. Therefore, according to CP03, monitoring the raw material prices, particularly the ones from the external suppliers, is the most prominent in monitoring the production cost.

On the other side, her concern about the operational cost, which is dominated by the labour cost, has led her to prioritise the production rather than operating the plastic-processing facility as explicated above in the planning section. This kind of trade-off decision is also triggered by her awareness of the company's financial condition. CP03 realises that recruiting more employees has a long-term impact upon her operational costs. Controlling practice conducted by CP03 as the production manager is more about controlling the sales and marketing of coffee products, which in fact is her main

responsibility. The controlling on the production process is not complicated since the coffee product production process is just following the recipe for each product variant. Moreover, the production process itself does not have dangerous emission or pollution that needs special attention and treatment. Even some of the coffee-processing waste can be processed by the plantation division into organic fertiliser. Hence, this condition drives CP03 in setting the priority of her daily works in running the production division.

In sum, controlling and decision-making process in the production department is more focused upon coffee product sales. The limited capacity of the plantation division to supply the raw materials and the market demand lead to the fact that the coffee production in CP is for processing both the coffee from the internal plantation and the ones from external suppliers. The controlling and decision-making in this division tends to follow the profit centre principle.

6.3.3.3. Controlling and decision-making in the housekeeping division

As the main responsibility of the housekeeping division is about the maintenance, the cleaning service, running the inn, and the souvenir shop, the controlling and decision-making that CP01 does is more routine activity oriented. CP01 controls the jobs of her subordinates in most of the time. Other than this, she also monitors the facility regularly and has the maintenance activity as well, particularly for the inn facility.

In addition, insofar CP01 has the responsibility to develop the inn and the tourism site facilities to make it more marketable. However, there is no particular performance measurement regarding this responsibility. Nevertheless, CP01 is required to manage and arrange any relevant procurement activities to support this responsibility. In her daily activities, CP01 then monitors the maintenance of the facility and also arranges the development of the inn and tourism facilities as required by the BoD.

Being concerned about the operational cost of the housekeeping division, CP01 mainly monitors the routine expenses upon the cleaning service and other maintenance supplies.

> *"I monitor and control the expenses every day. For example, the cleaning materials must be kept for two to three-day usage. So, if my people run out of cleaning stuff quite quickly, they must have explanations about this; maybe, this happens because of the holiday season, or there is any event. …. For the peak season, I allow spending more [using more cleaning stuff]. I do the control by myself."* [CP01]

CP01 also tries to efficiently handle the labour cost by optimising the distribution of the works of her subordinates and controls its execution and avoids overtime. This is her primary practice in controlling the operations of the housekeeping division and maintaining the efficiency of the workers.

For the utilities, CP01 controls the usage mainly by controlling the facilities. CP01 monitors any breakdown regarding the electricity or the plumbing facility. This is the way she maintains the efficiency of the utility costs. Especially for water usage, CP01 controls the water pipes and the plumbing periodically to prevent water loss. She also controls the water pump of the deep wells periodically to make sure that the water supply will continue to exist. CP01 does not monitor and evaluate the volume of usage based on the cost since the whole plantation uses the groundwater extracted through deep wells.

For time being, CP01 has to manage the cash inflows from the inn to finance those expenses as described in the following quotation.

> *"I have to be able to manage the cashflow that I have generated from the inn. If I have to wait from the headquarter, it will take long time. But they [CP05 and CP06] have already know about this."* [CP01]

Hence, the housekeeping division is supposed to be more independent in the long run. The top management tries to make the housekeeping division as the same as the production division, which is more financially independent and able to create revenues from the inn and the souvenir shop. Insofar, CP01 works together with the marketing

division to market the inn. Currently, the inn uses to accommodate the visitors joining the events or programmes from the marketing division if they need to stay overnight at the plantation site. CP01 prepares the monthly report as the accountability to report the cash inflow from the inn and souvenir shop and its usage to finance the operational costs in her division. Her report is supplemented with the evidence such as invoices and receipts.

The housekeeping division is almost in the same situation as the production division is. The environmental engagement in this division is not as close as in the plantation division. The CP01 responsibility and environmental knowledge contribute to the limitation of environmental engagement in this division. Moreover, the routine activities with almost stable resource consumption make CP01 doings and sayings in controlling activities more experienced-based rather than plan-based controlling activity.

The controlling and decision-making in the housekeeping does not have the complexity as the ones in the plantation and production divisions. However, this division has the same treatment as the production division which tends to be a profit centre in the long run. The environmental engagement in this division is nothing more than about supporting plastic waste management by separating the collected plastic waste from other wastes collected in the plantation areas. The scope of responsibility and the nature of the housekeeping division operations contribute to the relatively less significant environmental engagement in this division in comparison with the plantation and production divisions.

6.4. Conclusion

The social background, the environmental issue, and the challenge of financially revitalising the company have created a particular nexus where all the practices in CP are hanging. The social and historical background has shaped the division managers as the key actors in running the business.

Manager's experience that was shaped and reshaped by the local value and the culture contributes to the way practices were undertaken. The communication style, the historical background and the closeness relationship between the locals and the plantation shaped the managers in undertaking the planning, governing and directing, and controlling daily business activities in the plantation. The communication style of CP06 to the managers and other employees and CP02 to the field workers are the manifestation of their knowledge and experience in facing the local way in building communications. The way CP06 tried to change the mindset of the workers (see in the historical background section above) is depicting that CP06 put the historical background of both the workers and the locals into accounts. CP06 believes that this approach is effective in gradually changing their mindset. On the other side, the way CP02 communicate with his subordinates, especially when they made mistakes, is depicting his concern of being firm in controlling but keeping a good relationship with them, especially considering the fact that most of them are locals as he is.

The environmental engagement that exists in the CP plantation is shaped mainly by the characteristic of the division operation and the knowledge of the managers. The division that is heavily related to the environment in its operation, which in the CP plantation case is the plantation division has more environmental engagement than that of the other divisions. The engagement itself is intertwined with the main operations of the plantation division. The knowledge of the plantation division manager has

catalysed the engagement into part of the daily activities. Apart from the characteristics of the divisions, the socio-cultural aspects also shape the undertaking of the environmental engagements. The conservation at the riverbank areas and the introduction of ‘get plastic’ programme to plastic waste were undertaken to keep the river clean for the interest of both the plantation and the locals.

Insofar, the EMAC practices in CP plantation exists in the corporate and division levels but with a specific condition. At the corporate level, the EMAC practices exist in the controlling and decision-making practice when a decision regarding a particular activity proposal is submitted. Any proposal with a long-term negative impact on the environment would be rejected. Unfortunately, the EMAC practices do not always exist at the division level due to the characteristics of the division operations and the manager’s environmental knowledge. The EMAC practices exist in the planning/budgeting, directing and governing, and controlling and decision-making activities in the plantation division. In the other divisions, the EMAC practices are very limited.

7. ENVIRONMENTAL ENGAGEMENT AND ENVIRONMENTAL MANAGEMENT ACCOUNTING CONTROL PRACTICE: The Agrichemical Manufacture Case Study

7.1. Introduction

In this chapter, the discussion has elaborated on the environmental and management accounting practice in CM, the agrichemical company. The discussion has shed the light on the same meaning of practices, the environmental and management accounting follows, in quite a different context. It is apparent through the discussion that different sites lead to different doings and sayings because of different social orders and arrangements as the structures where those practices are hanging upon although, to some extent, the ultimate objective that gives meaning to those practices could be the same.

The discussion in this chapter has been organised as follows: the first section is about the company profile. In this section, a brief description of the company's business and products is discussed. The following section discusses the existing rules and arrangements in CM. These rules and arrangements are the main guidelines that govern the operational activities in CM. The rules and arrangements are supported by the working instructions which contain the confidential information of the product specifications and step-by-step process of production. External social orders such as government regulations heavily influence these rules and arrangements. In this section, the relevant rules and arrangements are limited to the ones about the management accounting control (MAC) practices and other standard operating procedures (SOPs) that are related to environmental engagement. The third section discusses the MAC practice for each of the elements that are planning, directing and governing activities,

and controlling and decision-making. In this section, how particular environmental value is embedded in particular practice is elaborated. The fourth section discusses the embeddedness of the environmental value in the MAC practices. This discussion is based on the description of practices in the previous section. The discussion focuses on the role of practice organisation in shaping the embeddedness of the value to the practice. This chapter is then closed with the conclusion that summarises the empirical findings and discussion of the MAC practice in CM.

7.2. CM agrichemical manufacture profile

CM is the agrichemical company, which is also the subsidiary of a state-owned company known as GCM; it has a significant contribution to maintaining the fertiliser and pesticide supplies. CM's business characteristic and relationship with its parent company have led it to become the subject to any government regulations that administer the fertiliser and pesticide production and distribution. The government has a set of tight regulations on both fertilisers and pesticides due to their important role as agricultural inputs and the characteristic of the substance as toxic and hazardous materials. The set of regulations involves several governmental institutions, which were elaborated in the previous chapter 5.

CM is one of the agrichemical manufacturers in Indonesia; it was established 42 years ago in 1977 as a subsidiary of GCM, a state-owned company in the same industrial sector. CM is a joint venture between GCM, the major shareholder, and two other Japanese multinational companies. The products are ranging from production to solving threats from pests, weeds, rodents, and the like (e.g. pesticides, herbicides, and rodenticides) and fertilisers. For the fertilisers, CM only produces the bio-fertiliser products to avoid direct competition with its parent company's products. CM has 12

units of production facility located in three factory sites. The production capacity is detailed in the table 13 below. All of these three manufacturing facilities are located in a vast industrial estate in East Java. The location of CM's facilities is very close to its parent company which is considered a giant state-owned agrichemical company in the area.

Table 13 CM production capacity

No.	Facility	Capacity
1	Liquid pesticides	24,550 KL
2	Granule pesticides	18,200 MT
3	Powder pesticides	4,000 MT
4	Flowable pesticide	1,500 KL
5	Solid pesticide	1,900 MT
6	Bio-liquid products	660 KL
7	Bio-granule products	7,680 MT

Source: Corporate official website

Therefore, as a start, CM's environmental impact is relatively lower mainly in comparison with its parent company, the GCM, as explained by the production manager [CM03].

> *"We are located in an industrial estate. We are within the vast area of GCM. There is no complaint yet [regarding environmental issue]. We are small here. Our impact is outnumbered if compared with big companies such as GCM, our parent company."* [CM03]

However, the environmental issue is still considered paramount in CM as well as the safety issue.

The competition in agrichemical products is tight. CM's CEO explains that until today, with a 15% market share, CM holds the fifth position in the pesticide market in Indonesia after the giants such as Syngenta, Corteva, Bayer and Nufarm. Based upon the statement from the CM01 and internal document, the company revenue for the last five years is in between 650 billion up to 910 billion rupiahs per year (it is around £34 million up to £47 million per year) as shown in the following table 14.

Table 14 CM revenue per year (in million Rupiahs)

	2016	2017	2018	2019	2020*)
Revenue	650,000	700,000	750,000	830,000	910,000

Note: *) The unaudited data until the last of third quarter of year 2020.
Source: CM01 statement and CM's internal document

The company vision is to become the most trusted provider of pesticides and other production facilities of the agricultural industry. The company mission is to ennoble and increase the wealth of the farmers by providing high-quality pesticides and other products, to care with the environment, and prioritise the occupational health and safety. Along with the corporate vision and mission, CM established six corporate values that become the foundation of its business. These values are as follows:

1. integrity, which refers to the principle of honesty, synchronising words with deeds, behaving nobly, committing to the truths, voicing conscience, and obeying code of conduct.
2. innovation, which means always providing and developing new ideas using creative approaches in all sectors.
3. teamwork, which can be effectively achieved by having trust and respect for one another while maintaining a good relationship and cooperation. The best solutions come from good cooperation with all colleagues and customers.
4. transparency, meaning that fair and responsible openness may instil trust from stakeholders.
5. professionalism, which means striving constantly in achieving perfection, high quality, and superiority in making results and services.
6. safety focusing upon working safety and health, and also protecting the environment in every operational activity.

Currently, CM has a wide range of products that mostly belong to the pesticide group. The detail of the products as elaborated on CM's official website has been depicted in the following table 15.

Table 15 CM Products

Group of products	Number of product brand
Insecticides	30
Herbicides	22
Fungicides	11
Rodenticides	2
Fumigant	1
Moluscicide	1
Attractant	1
Liquid fertilisers	2
ZPT	2
Bio-fertilisers	7
Bio-fungicides	1
Probiotics	2

Source: CM's official website, accessed 26th February 2019

7.3. Rules and Arrangements in CM

To date, CM employs 170 employees; and mostly are the sales and marketing staff that are stationed across the country. The organisational structure as one of the arrangements in CM as depicted in figure 3 describes that there are two directorates that organise the whole company, the production directorate, and the finance directorate. The internal audit team and the quality assurance section are standing independently and answer directly to the president director.

To describe the CM's organisational structure clearly, the structure is divided into three parts: one figure for the directorate (figure 3) and two figures (figure 4 and 5) for the department levels. At the department level, the figures are consisting of department under the finance directorate and the production directorate.

Under the directorate of production, there are three departments. The organisational structure under this production directorate is shown in figure 4. The departments are as follows:

1. The production, environment, and occupational health and safety department henceforth is the production department. The occupational health and safety department hereinafter will be identified as K3 (stands for *Keselamatan dan Kesehatan Kerja*). This department is in charge of three plant facilities, the maintenance workshop, and the K3 unit. Like in other departments discussed later on, this department is supported by planning and controlling staff. The three factory facilities are located in two sites within the same industrial estate. Factory numbers 2 and 3 are located on the same site, which is vaster than the first original site where factory number 1 is located. Therefore, factory numbers 2 and 3 are under one factory manager. The main responsibility of the production department is to fulfil the sales plan requirement of products.

2. The procurement department. This department is in charge of all the procurement activities and the materials warehouse. This department's main responsibility is to maintain the supply of raw materials; hence smooth production process to fulfil the market demand can be achieved.

3. The research and development department, hereinafter to be known as the R and D department. The R and D department is responsible for conducting research for new product technology for five to ten years ahead and verifying any inventions both technically and marketably. Besides conducting research and verification upon new product technology, the R and D department is also responsible for registering new and existing products. Therefore, the department is supported by two units- the research unit and the product development and registration unit.

Meanwhile, under the directorate of finance, there are four departments shown as follows in figure 5:

1. The sales department. This department executes the marketing programmes that have been designed by the marketing department. The sales department manager is supported by regional managers and planning and controlling staff. Creating programmes and schemes to shorten the collection period also included the scope of the sales department's responsibility as well as arranging and controlling the credit limit given to the distributors.
2. The marketing department. The marketing department is responsible for creating marketing programmes for both new and old products. This responsibility includes creating promotional programmes, designing the product packaging, and labelling and pricing decision. The marketing department is also responsible for maintaining a good relationship with the farmers as the end customers of CM products.
3. The human resource and general affairs department henceforth is the HR department. The department's scope of responsibility includes human resources, training and education, maintaining general facilities (with the help of other units whenever necessary), legal, security, and secretarial affairs.
4. The finance administration department, hereinafter the finance department. Under the finance department, there are three areas that need to be well managed: the accounting and finance, the taxation and insurance, and the information technology affairs.

Later in table 16, the educational background and the tenure of the department managers have been depicted. All the managers are senior employees of CM company that have enough experiences in dealing with day-to-day problems.

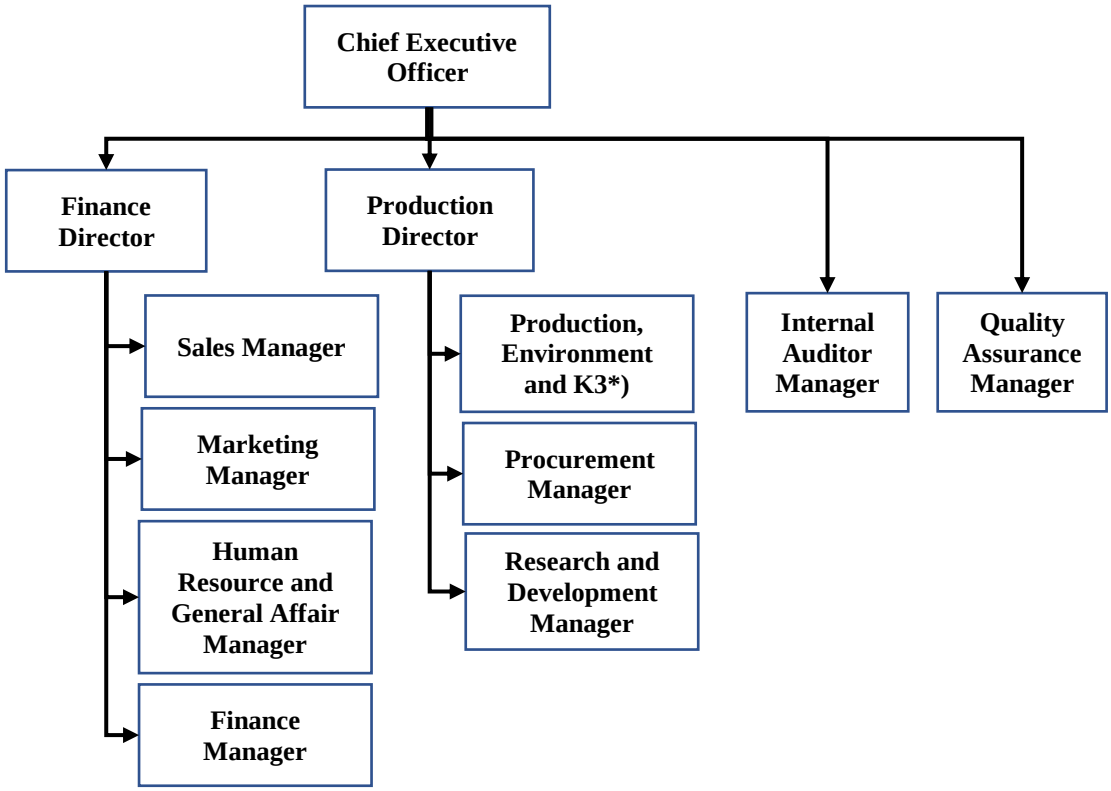

Figure 3 CM's organisational structure – Board of Directors and department managers at the Directorate level
Source: CM's internal document

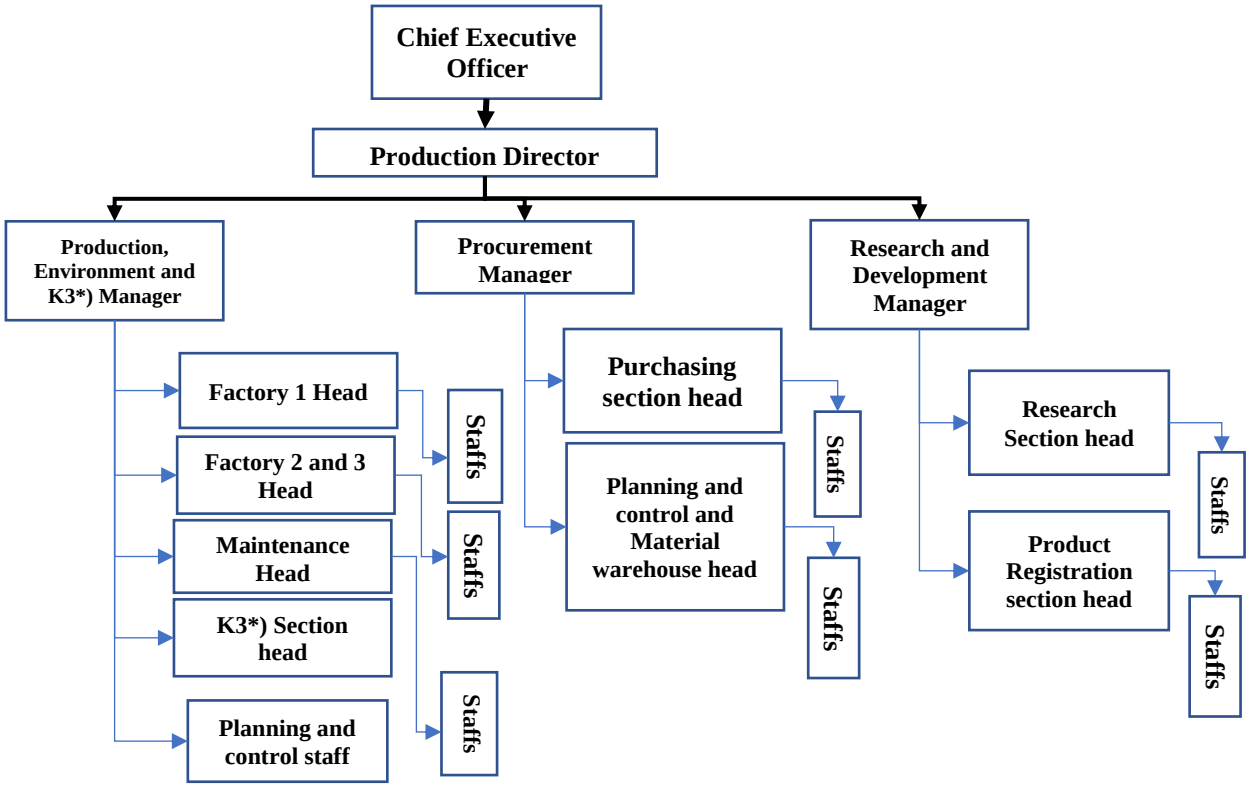

Figure 4 CM's organisational structure – Departments under Production directorate
Source: CM's internal document

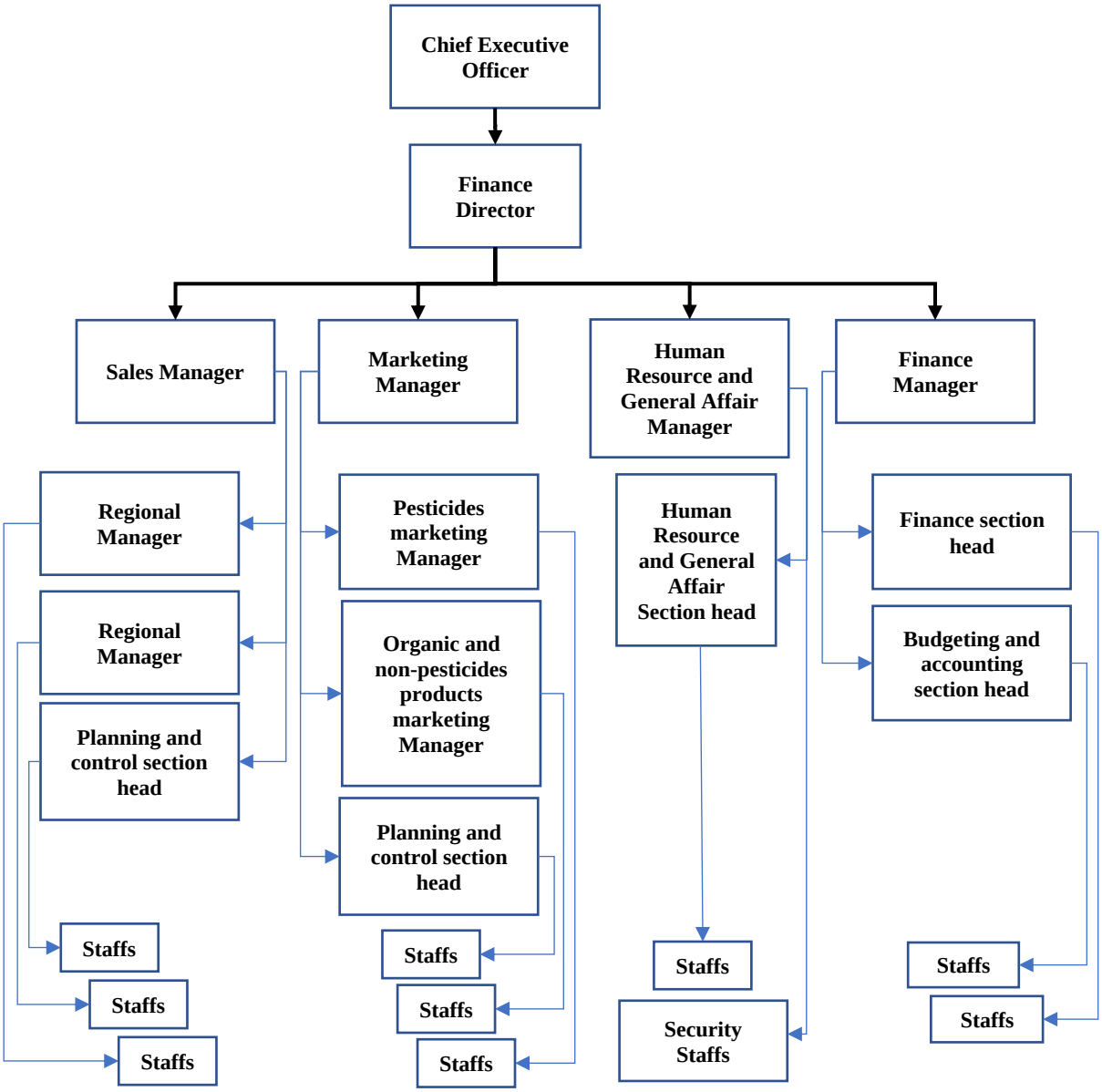

Figure 5 CM's organisational structure – Departments under Finance Directorate
Source: CM's internal document

Table 16 Educational background and the tenure of the department managers

Name (Code)	Position	Educational background	The first time joined CM
CM01	Internal audit manager/Finance administrative manager*)	Accounting	01/10/1999
CM02	Procurement manager	Accounting	01/10/1999
CM03	Production manager	Mechanical engineering	01/11/2006
CM04	R and D manager	Agricultural engineering	01/04/2004

CM05	Marketing manager	Agricultural engineering	01/07/1994
CM06	Sales manager	High school	25/10/1982
CM07	Human resource and general affairs manager (HR manager)	High school	01/03/1983
CM08	QA manager/Factory 2 and 3 manager*)	Chemical engineering	01/10/2005
CM10	Factory 1 manager	Chemical engineering	01/06/2008
CM11	Environment and K3 section head	Industrial management	01/01/2001

Source: CM's internal document
Notes: *) The first position is the position that the person has in the first interview. In the second interview, this person has been rotated to the second position.

There are two units that are not under the directorate of production nor finance; these are the internal audit and quality assurance units. Both units are separated from the two directorates to keep their position independent due to the characteristics of their responsibility in financial and non-financial aspects. The internal audit unit, hereinafter SPI (stands for *Satuan Pengendalian Internal*) is responsible for controlling the financial affairs including the financial reporting, implementation of the management system, and risks of the management system.

The quality assurance unit, hereinafter QA, is mainly responsible for the assurance of the materials and the products' quality and specifications. All raw materials must have approval from QA for the specification fitness before the procurement department purchases these from selected suppliers. The other responsibility of the R and D department is to formulate the new products.

As a subsidiary of a state-owned enterprise, CM business activities are run under the standardised procedures referring to the ISO implementation as regulated by the government (see the discussion on the government regulations in chapter 5). Environmental management and management accounting practices are governed by particular procedures that are regularly audited internally and externally. The accounting practices are following the Indonesian accounting standards, known as PSAK (stands for *Pernyataan Standar Akuntansi Keuangan* or Financial Accounting

Standard Statement) while the environmental engagement is part of the management system that covers two others. The integrated management system then covers the environmental engagement, risk management, and occupational health and safety issue. CM is implementing the ISO 9001 for quality, ISO 14000 for the environment and OHSAS (occupational health and safety assessment series). Among all the procedures in CM, there are several procedures that are closely related to the environmental and management accounting practices. Those relevant SOPs are mainly in the production and procurement departments. The discussion of the arrangements in management accounting and environmental engagement in the following subsection is conducted separately.

7.3.1. Management accounting related arrangements

The arrangement in management accounting is based upon the arrangement in an accounting context. The arrangement of management accounting practice covers the element of planning and controlling and decision-making.

As explicated by Internal Audit manager [CM01 – later in the second time of visit, he was assigned as the Finance Administration manager], the planning and budgeting process starts with the workshop or a meeting of the grand plan held by the parent company. The parent company has the meeting with all the subsidiaries to discuss the basic assumptions and the grand direction that the holdings would like to use. The meeting is held at the end of the first semester of the year or around the end of June. At this meeting, every subsidiary must also present its global plan which consists of pro forma financial reports. At this meeting, the approval will be given to the subsidiary global plan and assumption as it has been discussed and aligned with the ones belong to the parent company.

The approved CM global plan is then distributed to the department managers for further breakdown into a more detailed plan and budget. The minutes of meeting with the parent company are distributed to the department managers as well along with the approved global plan and budget. The breakdown of the global plan and budget starts with the sales plan from the sales department. The sales plan is elaborated into a shorter period and also based on the sales area. The marketing plan and budget are also elaborated further the same way as the sales plan. The sales area is set based on the potential yield or harvest, not merely based on the coverage area. Market competition and product characteristics are factors that are put into account in developing the sales plan or budget. The sales plan becomes the reference in setting the other budget such as the production and procurement budget. For the departments or units that do not derive their plan and budget directly from the sales plan such as R and D, human resources, and QA, their budget is based on their yearly programme or activity plan.

The elaboration of the plan and budget is also conducted by setting targets for department, unit, and even the group. After the department managers prepare the details of the plan and budget including the targets, the final plan and budget are then approved by the shareholders at a general meeting. This final plan and budget must be ready and approved in one month before the fiscal year ends (which is around late November). The overall company plan and budget are called RKAP (stands for *Rencana Kerja Anggaran Perusahaan* or company working plan and budget). Henceforth, the company plan and budget will be mentioned as RKAP. The RKAP is the main reference for the company operation during the following fiscal year.

The planning and budgeting process is initiated by the accounting team with support from the internal audit team in developing the working targets. In general, the targets are specified to each unit for both the financial and non-financial ones. For the

non-financial targets, especially for the units under the production directorate, the focus is on the quality, environmental and occupational health and safety aspects.

In terms of investment planning, the production department manager acts as the main actor who compiles and prepares the proposal relating to the production and environmental management facility to the board of directors (BoD). CM03 [the production department manager, henceforth the production manager] explains that every year before the RKAP is finalised, every unit under the production directorate has to submit their investment proposal. He prepares the investment list based on all the proposals from the units and discusses it with the BoD. The discussion involves the finance department in evaluating financial feasibility. Further, CM01 explains that any investment for replacing the existing facility will be considered as an urgent investment. This urgent investment is the top priority investment. The second priority of investment will be the one for the safety aspect of the operation. The last priority or the third one is the investment that has direct return impact such as increasing productivity.

The MAC is based on the achievement of the working targets. For sales performance, there is more frequent periodical performance evaluation. Further CM01 explains that CGM as the parent company has a special compartment or unit to control its subsidiaries' performance. The focus of controlling CM's performance is upon the financial, productivity, and administrative aspects. The financial aspect is measured by financial ratios. For the financial ratios, CM01 explains that liquidity ratios such as current ratio and cash ratio are the main focus upon CM financial performance. This is in line with the CEO statement regarding the importance of improving the collection period and solving the slow-moving receivables. For the productivity performance,

cost efficiency, particularly in raw material cost, is the most prominent. The administrative performance is measured from the timeliness of the reporting.

In sum, the planning and budgeting process in CM is well organised and aligned with its parent company. The process is consistently executed and becomes the main reference in carrying out the daily operational activities. The environmental aspect in the planning and budgeting exists as the non-financial targets that need to be met and as the prominent investment to fulfil the government regulations.

The controlling element of management accounting practice in CM involves the internal audit unit as the one who has the responsibility to monitor the financial performance. CM01 explains that the monitoring is conducted by evaluating the revenue target and the financial ratios that cover the liquidity, leverage, and profitability ratios. There are also other ratios such as the productivity ratios, and the timeliness of the financial report availability. Although CM is not a state-owned enterprise like its parent company; however, CM01 states that the standard achievement of those ratios is referring to the government regulation about the state-owned enterprise performance.

The other prominent control is in the production directorate. All the departments and units under the production directorate will have to attend the performance review meeting every month. As explained by CM03, the meeting is held at the end of the month and discusses the operational performance in the production directorate from all aspects; the quality, the environmental, and occupational health, and the safety aspects. Any problem in the production is thoroughly discussed, and alternative solutions are addressed. Currently, the performance review in the production directorate only discusses the non-financial performance since the department managers do not have the authority to link their operational indicators to the financial data.

7.3.2. Environmental related standard operating procedures

CM's environmental engagement is covering internal environmental management under the implemented EMS and external engagement through its organic products. As the EMS provides the guidelines for the environmental engagement in CM, all the doings and sayings regarding this matter are following what has been regulated in the standards. Doing things by the book is the most important in environmental engagement as well as in the health and safety issues. All the environment and safety practices are referring to the existing EMS as the main path in doing things in CM including doing business with the external parties.

In general, the environmental engagement related SOPs are also related to the EMAC practice. These SOPs govern the production process and planning, quality and non-conformity product controls, procedures in emergency situations, waste management, and control, safety control, and information and communication management (see appendix 4). Many of the SOPs, particularly regarding the safety and waste management and controls, are referring to the government regulations. Other SOPs like the production process are elaborated in detail in working instructions which contain confidential product formula.

The production process starts with production planning with the sales plan, inventory status, and safety stock status as the main reference. The main purpose of this SOP is to guarantee the timeliness of the production timetable in order to fulfil the market demand as elaborated in the sales plan. As stated in the SOPs for production, weekly manufacturing and material resource planning (MMRP) meeting is the crucial point in production planning. The meeting involves the sales, marketing, procurement, and production departments. The production planning is very important to synchronise the production timetable with the sales plan. Any problem regarding the raw material

supply, including the possibility of late delivery that affects the production timetable must be well communicated. After the production timetable is set, the production is executed based on the existing SOP and working instructions.

To guarantee the product quality, all the quality inspection activities must follow the SOP for quality inspection in the production area. Product technical specification is the reference for inspecting the quality of the products out of the production process. The SOP indicates three critical points for quality inspection; these are the point before inputting the raw materials into the mixing process, during the work in process, and at the end of the process (finished product). CM08 as the QA manager informs that the complexity of the production process also determines the points where samples for quality inspection must be taken. How the sample will be taken and how to do the quality tests are elaborated in the working instructions. CM08 explains that the working instructions in the QA unit can refer to the guidelines from Association of Official Agricultural Chemists or AOAC or Indonesian National Standard (known as SNI, *Standar Nasional Indonesia*). In addition, QA has also the authority to do quality inspection upon every raw material delivery from the supplier before it can be accepted and recorded in the raw material inventory.

For any non-conformity or defected product and material, it must be handled properly. If the defected products or materials are still feasible to be reprocessed, it must be reprocessed according to the existing working instructions. In the SOP for the defected products or materials handling, QA is the unit that has the authority to determine whether particular products or materials have defected or not. If it is regarding the defected products from the customers, QA has to validate whether the defected product is truly CM's product or not before deciding any action. If the defected product is not feasible for reprocessing, the demolition of the defected product

must follow the SOP for disposing of toxic and dangerous materials. In case, the non-conformity occurs among the delivered raw materials, the procurement department has the authority to deal with the supplier for return.

As the production process involves a lot of toxic and dangerous materials, there are several SOPs to regulate the handling of those substances. There are five SOPs implemented to guide waste handling, even in emergency situations (this includes how to handle accidents and narrowly avoided accidents). Emergency situations include natural disasters such as a flood. In case any accident happens in the waste treatment facilities, a special team must conduct a proper investigation to avoid the same accident in the future. The recommendation resulted from the investigation of the accident must be communicated to all relevant parties. The main purpose of the SOPs for waste handling is to guide the waste and toxic, and dangerous material handling in order to protect the environment as well as maintain occupational health and safety. SOPs for waste handling refer to several government regulations. To make all employees ready with any emergency that might occur, periodical training and simulation about an emergency situation is conducted. The detail of how the simulation should be held is elaborated in particular SOPs about the handling of emergency situations both in non-specific and specific areas.

The SOPs for the waste and toxic material handling are complemented with the SOPs for K3 and monitoring environmental performance. For the safety aspect, the SOP for identifying and labelling the toxic and dangerous materials (including waste) provides technical guidelines in securing and maintaining safety regarding those materials. In the SOP for the toxic and dangerous material signs, the technical specification of the sign and how it should be attached to those materials is elaborated in detail. Regarding the K3 for the employees, there are SOPs stating that all the

production workers should wear safety apparel and will get punishment if not maintain it properly. The SOPs also require the company to provide sufficient training for workers in extremely dangerous areas in production regarding K3 aspects and for using safety apparels properly. On the other side, the SOP for the environmental performance monitoring emphasises that the indicators are subject to the compliance with the government regulations. The indicators include electrical consumption, air pollution, noise level, radiation level, occupational illness, level of incidents, safety level, and compliance with regulations level.

To maintain communication between employees, there is a special SOP to foster internal communication between employees to keep environmental awareness. This SOP becomes the reference for having a periodical discussion forum known as Green-talk/Safety-talk, hereinafter GT/ST. In later discussion, GT/ST becomes the important media to internalise the environmental value among the employees. This SOP also covers the issue of communicating important environmental considerations to the external parties such as suppliers and visitors.

Regarding the purchasing activity, the SOP for procurement provides the detailed steps for issuing a purchase order and arranges levels of authority based on the monetary value of the purchase as well for the controlling purpose. Besides that, it also includes the requirement of other department involvement as the unit that has the initiative to buy materials, the procedures for negotiating with suppliers, and the procedures for receiving and inspecting the incoming materials. There are separate SOPs for domestic procurement and non-domestic procurement. The important feature in the non-domestic procurement SOP, which is an import activity, is that a particular mechanism is set to maintain the communication with suppliers “to keep the price as agreed in the negotiation” during the preparation of necessary documents and

authorisation. This is to guarantee that CM is not affected by the fluctuation of prices that potentially occur in importing materials.

Regarding the procurement SOP, the main purpose is to have the materials at the exact quality and quantity and delivered in a timely manner. Therefore, the specific SOP for supplier selection emphasises that the ability to meet the required specification and amount at the right time and price with high compliance with any environmental and safety regulations are the essential factors in selecting the suppliers. In addition to this, the ability to meet the specific material quality at the right amount in a timely manner leads CM02 as the procurement manager to prioritise the supplier's capacity rather than the price. In the SOP for supplier selection, a set of criteria is clearly stated along with the weight of each element within the criteria. Supplier's legal documentations are the top priority followed by the quality of the materials. The supplier's performance is regularly monitored under another SOP that depicts the criteria of the performance. The quality of the materials rendered, and the timeliness have acquired 60% of the overall performance evaluation with 30% each. The passing grade to maintain the status as a selected supplier is 75% of the overall score. The supplier performance evaluation is conducted once a year as stated in the SOP. This SOP also provides detailed evaluation criteria for each element, such as the quality conformance and timeliness of the delivery. Based upon all the details of the supplier performance evaluation, the environmental and K3 features are weighing 20% of the overall score.

As part of the ISO standardisation implementation and internalising the environmental values and the standards and procedures, regular meeting, mainly in the areas under the production department, is held. The contributors to the meeting are unit heads. The meeting or discussion forum known as GT/ST takes place at every unit in

CM. In the CM01's explanation, GT/ST is a discussion between the unit's leader or manager with their subordinates about how to address the environmental and safety issues within their daily activities. The discussion focuses on how to improve their daily activities in terms of the environmental impact and safety aspect.

Up to this point, there are three important things that can be summarised from the existing rules and arrangements in CM. Firstly, these rules and arrangements provide a very detailed guideline about how the environmental and management accounting practices should be conducted. Secondly, the inherent risks of the agrichemical manufacturer lead to the requirement to anchor many of the rules and arrangements towards government regulations. Thirdly, there are three inseparable aspects that exist in almost all the SOPs that need to be well-addressed; these are quality, environment, and K3 aspects.

7.4. Environmental Management Accounting Control Practice in CM

The EMAC practices in CM are based on the MAC and the environmental engagement practices under the framework of the environmental and safety management system (the ISO 14000 and OHSAS systems). The rules and arrangements become the basic guidelines in conducting the EMAC practices. As the rules and arrangements are following the external orders such as the government regulations and the accounting standards, the practice orientation insofar is more compliance oriented. The following discussion focuses upon what the managers do and say in the EMAC practices from the planning, directing and governing activities, and controlling and decision-making aspects.

Insofar, based on the fieldwork interviews and documents' analysis, there is no specific project that is still undergoing at the moment. The environmental engagement

is part of the routine activity and is managed under the production department. The main reason is that the production department is the one that has the highest environmental risk. Hence, the EMAC practice discussion in this section is mostly about the departments under the production directorate as the focus. Other units that are related to the environmental engagement will be included on the relevance basis to the environmental engagement issue.

7.4.1. Planning

The doings and sayings by the department managers in the development of plan and budget are basically following the arrangements in the management accounting practices. Good understanding of the business operation in combination with managerial experience has enabled the managers in developing the plan and budget for their departments, which in turn will be compiled together as the corporate plan and budget.

The planning and budgeting process in CM follow the master budget preparation process that usually exists in a manufacturing company. In this budgeting process, the internal audit team supports the accounting team by coordinating the setting of units working on programme and its elaboration into working targets. In this matter, CM01 as the internal audit manager guides the other unit manager in identifying the appropriate programme along with the procedures to achieve it. By providing the guidance, CM01 also ensures that all units' working programmes and targets are in accordance with the corporate global objective. CM01 explains that the target itself consists of financial targets (e.g., liquidity ratio, ROE, ROI and collection periods), operating targets (e.g., total output and total defected products) including the safety and environmental targets (e.g., electricity consumption, water consumption, air quality,

wastewater quality, number of work accidents, number of narrowly-avoided accident events) and administration target[xvii]. At the department and the factory or sub-department/section levels, the targets cover all these aspects, but for the working group level, the financial targets are absent.

> *"[Planning and budgeting] is started by the accounting team. When it comes to elaborate it into working targets, we coordinate the process. These are the corporate targets, then we ask: what is your programme to meet those targets. They have to state it in a working target. In around November or December [before the RKAP is finalised and approved in the shareholders' general meeting], we send them [the managers and section heads] memos to communicate with the corporate targets that will be their reference in making their own targets."* [CM01]

According to government regulation, the operational targets, which include the environmental targets, weigh only 15% of the total targets. However, the environmental as well as the safety targets are still prominent alongside the company's compliance with any environmental regulations.

For the environment and K3 section, the plan mainly focuses upon the routine monitoring activity. The monitoring activity follows the SOP for evaluating and measuring environmental and occupational health and safety performances. In addition, this section has also the responsibility to systematically and periodically update and map the gap between the government regulations and the existing environmental management facility that the company has under the coordination of CM03 as the production manager. The updating and mapping activities are conducted in cooperation with the legal staff from the HR department.

In order to support the other unit managers in developing their working targets as well as risks profile, CM01 enhances his knowledge and skill of his team members regarding the operational activities in CM. The guidance that CM01 provides to other managers is not just in the form of a manual book or the like; it might be a workshop where he can deliver the guidance to equip the managers with the necessary knowledge

and skills to identify the risks and find the way to mitigate them. The target setting for each unit that covers the financial, operational, and environmental targets demonstrates the attempts to internalise the environmental engagement as part of the daily activities in every unit.

For his internal audit unit, CM01 attempts to balance between the compliance purpose and the financial performance audit. This is because the scope of internal audit unit responsibility is not limited to the audit of financial reporting and performance; it also focuses upon compliance with the existing procedures. CM01 has also the responsibility as the key implementer of the management system.

As the whole planning and budgeting system starts with the sales budget, the sales manager [CM06] develops a detailed sales plan based on the productivity potential of each area. Each area has different productivity depending on many factors including the land quality and the agriculture infrastructure availability. For marketing, the marketing manager [CM05] develops a handbook of products containing all marketing strategy details. This handbook becomes a reference for the marketing staff to further develop a marketing programme for each product in each area.

The next budget that is directly affected by the sales plan is the production and material budget. CM03 states that direct material cost can reach 80% of the total production costs, whilst the conversion cost is only 20% of the total.

> *"From the product [cost], 80% is of material cost; 20% is of the overhead and other costs. …. Not much for profit; 5% profit [of the product cost] is good."* [CM03]

Therefore, the production and direct material budget is important to keep the competitiveness of the agrichemical products in the market. The breakdown of the production and material budget is with weekly period timeframe. Each week the three departments hold a weekly meeting to discuss the sales target, the production timetable, and related material requirements. The weekly meeting is between the sales,

production, and procurement departments. If there are problems, particularly in correlation with the materials' quality, then the QA team will be involved at the weekly meeting.

> *"There is a weekly meeting to decide the material requirement [based on the sales plan]. The meeting involves the production department, the procurement department, and sometimes the QA [quality assurance team]. …. It depends on the problems. If there is any problem with the material specification, the QA team will be invited."* [CM02 – the procurement department manager].

If all is set at the weekly meeting, CM02 prepares the procurement of the materials to guarantee the availability of the materials for on-time production. In this matter, CM02 also needs to consider the material inventory status to avoid overstock or shortage.

In planning the material procurement, CM02 pays more attention to the quality of the materials, which refers to the specification information from the supplier. The second priority is the capability of the supplier to provide the materials. The last priority is the price of the materials.

> *"The most important thing is the quality; secondly, we evaluate the supplier's capability to supply. …. Then after that [the capability to supply], it's about the price."* [CM02]

This is important to avoid any potential problems caused by the failure to meet the material specification. Problems with material specification could lead to the production delay and, in turn, could cause the failure in fulfilling the market demand. With high competition, this is the risk that is too costly to happen. Regarding the material specification, CM02 follows the recommendations from the QA and the government regulation reference. He further states that everything about the materials used for pesticide and fertiliser production is strictly regulated by the government.

On the other side, the cost of environmental management is immaterial, which is around 0.5 – 1% of the total production costs. However, although it is considered immaterial, CM management (especially CM03 as the production manager) pays full

attention to this environmental engagement. In the capital investment plan or budget, any investment plan that intends to maintain or enhance the environment protection facilities' capacity (e.g., the WWTP – wastewater treatment plant, and the temporary toxic and dangerous waste disposal facilities) is prioritised. CM01 explains that in planning the capital investment, the top priority is any investment needed to replace the existing facility. This kind of investment is categorised as an urgent investment as it is important to maintain the continuity of the operations. The second priority is an investment that is related to the environment and safety facilities whilst the last priority is the investment that gives a direct impact to the return improvement.

About the departments or units that do not derive their plan and budget directly from the sales plan such as R and D, HR, and QA, their budget is based on their yearly programme or activity plan. In the HR department, the manager explains that the budget is developed based on the previous year realisation. External factors such as economic condition and inflation are also well considered. In the QA unit, CM08 manager explains that planning for the consumables such as spare parts called column in HPLC (high-performance liquid chromatography) is the most challenging. This matter is closely related to the planned test activities in QA.

R and D department gets special treatment; their planning and budget is basically based on the product development proposal that is approved by the BoD. The R and D manager [CM04] explains that the yearly budget is prepared based on the requirements of the approved proposals that have been arranged in the R and D activity timetable. The arrangement of the project into a particular timetable is important for staff engagement to each project and preparing all the necessary materials. The budget also covers the operational cost of the R and D facility such as the greenhouse and the fieldwork testing. External factors such as inflation are also considered. Limited staff

in R and D and high cost of executing product development experiments make CM04 emphasise to his staff not inserting additional agenda to the already arranged timetable. He emphasises to his staff that if they have any notion or idea regarding the product development outside the agreed ones, they have to give him a strong argument with solid supporting data. Otherwise, CM04 has to reject any new and unscheduled initiatives to avoid the extra cost.

In summary, the planning and budgeting in CM is established as a routine and essential activity before starting a period. The developed plan and budget will be the reference in running all the business activity in CM. Important internal and external factors are included by the managers in developing the plan and budget. In addition to this, in particular points such as material procurement, product development, or production process, there are strict government regulations alongside the existing SOPs that the managers have to follow and that shape their plan and budget. The environmental aspect of planning and budgeting relies upon the unit's target setting, the activity plan in the environment and K3 section, and the capital investment plan.

7.4.2. Directing and governing activities

Since CM has implemented an integrated management system that covers all necessary aspects of the operation, it means CM has completed SOPs for almost all operational activities. Especially in departments and units under the production directorate, the SOPs are also complemented with working instructions that provide more detailed guidance of doing things. In this subsection, the discussion is more focused upon the production area since the EMAC practices as well as environmental engagement are more apparent.

In the production department, CM03, as the production department manager, is mainly concerned about the productivity and the efficiency of the material usage and the utilities in the production. As the materials have the biggest portion of the production cost according to CM03, he further explains that material usage efficiency is paramount. One significant case is about the mixing process. In the mixing process, some amounts of the mixed materials are attached to the mixing machine and creating some kinds of crust. This crust used to be discarded as solid waste although it has the same specification as the other mixing results. Hence, CM03 orders to reprocess the crust into the mixing process. Since the crust has the same composition with the final product, then reprocessing the crust will not affect the quality of the product whatsoever. Instead, this action can increase the efficiency of material usage and decrease the amount of waste at the same time. This way CM03 resolves the challenge to reduce the waste by improving the process.

On other occasions, to increase employees' awareness of the risk of environmental accidents, what CM03 does and says are asking his subordinates to pay attention to the production facility for faulty potentiality to avoid the further risk that could create more waste.

> *"For the environment, decrease waste. And it must be an inherent part of the [employee's] routine, you don't need a special programme for that. It has to be part of the routine. So, it is a matter of behaviour. Let say, what can we do to decrease the waste? If there is something wrong with the machine, for example filling machine, that could spill out, then [he orders his subordinates] stop [the filling process]and fix it first. If it spills, then it means we have to tackle the spill, and it means more waste."* [CM03]

CM03 always attempts to make the environmental engagement inherent in his subordinates' routine production activity through his orders and directions to the employees.

To internalise the values to the employees and as a part of the ISO standard requirement, there is a forum to discuss and disseminate knowledge about this issue (see appendix 4). The forum is known as green-talk/safety-talk (henceforth GT/ST). For the production department, the analyses from the minutes of meetings of GT/ST in plants 1, 2, and 3 sites for the last twelve months describe that maintaining the cleanliness of the area and the production facility is the main concern in every discussion. This is because the cleanliness leads to environmental protection from any hazardous and toxic substances within the waste. By conducting the cleaning activity properly, the waste from the cleaning activity can be well processed to protect the environment, and, at the same time, it could increase the occupational health and safety quality. Therefore, cleaning activity also needs to be properly conducted. For example, in one of the GT/ST in plant 1, it is emphasised about how to clean product spill properly and the importance of the disposal of the instrument used to clean the spill. The disposal must follow the rule of disposing of hazardous and toxic substances. The cleanliness of the production facility is also important to maintain product quality. For example, the GT/ST discussion in plants 2 and 3 in June 2018 emphasises the importance of the cleanliness of the fermentation tank to maintain product quality.

The second important issue in the GT/ST discussion in the production is regarding the use of personal protective equipment (PPE). The use of PPE is important to minimise the occupational accident. The discussion emphasises the use of PPE, especially in high-risk production areas such as the sterilisation facility, the granular production facility, and during the facility maintenance process. The discussion also provides knowledge about how to use PPE properly and how to do maintenance.

To complement the aforementioned GT/ST, the human resources department has also an important role in supporting environmental practice in terms of providing

necessary knowledge and skills. As its manager, CM07 approves all the necessary training and knowledge development requested by any unit that needs such kind of environmental and safety training provided by credible training institutions. In the case where no such training is available, she asks her staff to customise the necessary training based on the requirements of the related unit.

Further about the safety and environmental issues, CM11, as the head of the K3 unit, creates the system for continuous monitor and also maps the regulations update. He also maintains a good network with the external environmental surveyors to help him update the latest regulations or environmental technology knowledge. He also opens constant communication and coordination with the legal staff regarding this matter to anticipate any legal obligation regarding the latest regulation requirement.

There are two units that require compliance with the rules and arrangements and at the same time need to have creative thinking. These units are the R and D department and QA unit.

Providing directions and governing activities also means creating a supportive-working environment such as in the R and D department. CM04, as its manager, attempts to create a working environment that fosters creativity in developing new product innovation and have good discipline. In doing so, he fosters his staff to take initiatives and urges them to seek for reliable references in finding new ideas and solutions. He provides challenges to his staff by giving them multi-dimensional problems. At the same time, he also maintains open communication with his staff and colleagues. However, in terms of creating the main theme for product development, CM04 still dominates the process. He believes that centralised theme is necessary to provide clear trajectories to product development. Hence, he asks his staff to creatively follow up on the main theme he set to get the best solutions. Whenever possible, he

orders his members to do the fieldwork along with the marketing team and have interactions with customers to get inputs regarding the existing products. Therefore, as the R and D staff, they will be able to see the products from the customers' perspective.

> *"I asked them to have a field trip sometimes to provide product's technical support to the marketing team, get in touch with the farmers, go to the kiosks, have interaction with the users, so they can understand the problem."* [CM04]

This situation is confirmed by one of his staff during one interview in the R and D department.

> *"There is always a possibility for the staff here to speak out their new ideas or knowledge, then we can discuss it together. We have our idea; the other units have their ideas too, and so forth. We always have a discussion [forum] for this. .... He always fosters us to do this. .... Although we have our own idea, we have to discuss it to make sure that it follows the existing rules. .... There is always communication between us. .... and approval [from our manager] as well."* [CM09, the R and D staff]

Moreover, as the R and D manager, CM04 also attempts to internalise an important value in pesticide development, which is killing is not the only way to control the pests. What CM04 does is to give his staff new insight into how to develop the new organic products.

> *"At the same time, I give them an understanding that killing is not the only way of controlling the pests. ... The philosophy is, do not have the intention to kill but to control within particular non-detrimental boundaries. If we can make the pests unable to eat, that is enough, don't kill these, they will go away automatically. We don't have to kill the pests. I give them this philosophy, so they have a wider concept in pest controlling; that killing is not the only way. I hope, by having this, they will have [a new] framework for innovation. ... so, they will have a more innovative method in developing [new] products."* [CM04]

The value CM04 attempted to internalise is very important to develop more environment-friendly pesticide products. This is the prominent value in environmental engagement through product development.

In summary, despite the fact that the existing SOPs and working instructions are complete, the managers' directions and governing activities are still a prominent part of the activity arrangement. The directions are not only about emphasising compliance

with the existing rules, but also with internalising ideas and improving the quality of the work. The internalisation of particular environmental value by the managers is not only by shaping the behaviour through training and discussion forum but also by giving the staff a new insight into doing things such as product development.

7.4.3. Controlling and decision-making

7.4.3.1. Controlling the unit's compliance with the rules

In the implementation of the management system, the internal audit unit plays an important role in monitoring the financial aspect of the business and making sure that all units comply with the system accordingly. As the SOPs are developed by the units, CM01 guides the units in developing it to make sure that the developed SOPs are in line with the corporate values and objectives.

> *"We [refers to CM01] acknowledge and approve the proposed daily activities of the units, whether it suits with the agreed procedures [between the unit's manager and CM01 as the management representative]. …. The procedure itself must in line with the grand objective of the company, therefore, each unit develops a yearly working target that covers the quality, environment, and K3 aspects. It all will be aligned with the RKAP."* [CM01]

This is the way CM01 monitors the units' compliance with the existing rules and SOPs. This is a part of his responsibilities regarding the implementation of the ISO standards and risk management.

About the risk management, CM01 explains that the existing company policy requires CM to submit monthly risk management report to the parent company. CM01 monitors the units' risk management through both the report and field audit. Frequently, CM01 and his team have to respond to the questions from the units regarding how to tackle the risk properly according to the grand policy of the company. Hence, CM01 has arranged a workshop to help the unit managers in developing their risk profile and necessary relevant mitigation actions.

7.4.3.2. Controlling and decision-making in the production context

Controlling in production areas is more likely as a routine job which is executing the production according to the production plan and the relatively unchanged existing SOPs or working instructions. Other than that, the production controlling, and decision-making are closely related to the arrangement of the human resources to optimise their productivity.

> *"We just execute [the plan] the SOP that is almost unchanged; what we do is just fulfil the sales demand. …. It's more like routine and not so many changes. …. It is important to manage the people to make sure the daily activities go well. We already have the guidelines [SOP]. One thing is to make sure that all the people will follow the guidelines [SOP]."* [CM08 as the Plants 2 and 3 manager]

Moreover, the unit managers are also required to improve efficiency as well as productivity. In doing so, the unit managers have to find innovative ways among the routine and strict SOPs. The monitoring of the workers' doings and making decisions on the workers' arrangements are the managers' doings to address this matter.

> *"There are moments or opportunities for efficiency [improvements] and innovation; the top management has fostered that matter as well. We do that in between our routine works. We always try to find the way for better [production] process or perhaps we can modify the production facility. …. Mostly [our innovation or modification] is to increase the capacity. To save the materials and energy, or even to the environmental impact. …. [For the workers' arrangement]."* [CM08 as the Plants 2 and 3 manager]

For direct labour, the equal opportunity of working is very important since it brings a direct impact to their earnings. Hence, this can also impact their productivity and working motivation. Therefore, factory managers need to consider the high and low season in the production timetable in order to optimise the labour. In particular, for the temporary workers, the factory managers have to make sure that every worker has an equal opportunity to work during the low season.

> *"We have a moral obligation towards those workers [temporary workers]. …. We have to 'humanise' them by creating equal opportunity. That is the biggest*

challenge. …. Particularly during the low season. … therefore, those workers could earn some money and have a job." [CM10, the plant 1 manager]

Furthermore, about the efficiency of the utility costs, CM03 focuses upon resource consumption such as materials, water, and energy. The controlling upon the utility efficiency is also a prominent practice conducted by CM03 and his factory and section managers to be engaged with environmental issues. As all have been recorded and monitored through the individual's and unit's working targets, what CM03 has to do is to monitor through the achievement of those relevant targets. Besides the aforementioned doings of CM03 to improve the material usage efficiency by reprocessing the crusts, CM03 also pays good attention to monitor the composition of the materials used. According to him, the inaccurate composition of the materials, to some extent, also brings an impact to efficiency. CM03 further emphasises that the material efficiency can only be achieved by synergising with the other department. This is because the material quality influences the accuracy of the material usage according to the existing BoM (bill of materials).

"We can't do it [material efficiency] by ourselves. We coordinate with QA and procurement as well. As you see, the production is following BoM. It is all by the standard. That's what we do. But, in some cases, even though we followed the BoM already, but still the finished goods do not meet the standard quality. …. As suggested by QA, to address that problem, we have to add more material A and B and so on. This means a higher consumption, based on the standard, that is a loss. But the truth is we have followed the standard. The fact is that, in many times, the raw materials have substandard quality, mostly the ones that come from China. …. Even the quantity in many cases is not the same as stated in the packaging." [CM03]

Based upon the aforementioned problem, CM02, as the procurement department manager, puts some priority on selecting and evaluating the suppliers. The top priority is the quality of the materials, followed by the supplier's capacity or their ability to supply in the long run as the second priority. The quality of the material means the fitness to the predetermined specification. The price becomes the third priority in selecting the suppliers. This priority is important to guarantee a smooth production

process according to the timetable although one indicator in the MAC in procurement includes the price variance.

> *"My primary concern is the quality, if it has been passed then, secondly, we will see their supplying capability. …. Then [after that, probably we will consider] the price."* [CM02]

Any problem with the purchased materials, CM02 will communicate to the suppliers directly to arrange for a return or compensation. In fact, all suppliers must follow a particular selection process that considers the environmental aspect. To be selected, the candidate supplier must render samples to be tested by quality assurance. The selected suppliers must comply with the safety and environmental protection requirements as regulated in the SOP. This compliance will be periodically evaluated and closely supervised by CM02. In addition to this, CM02 states that all of his actions are to comply with the procedures and standards in the existing system.

The supplier selection criteria and performance indicators include environmental requirement compliance (see appendix 3). By following the SOPs in selecting and monitoring supplier's performance, CM02 is engaged with the environmental issues in his routine activity. The other engagement conducted by CM02 is monitoring the environmental and safety requirement in the material handling that must follow the established SOPs. However, the existing criteria and supplier's performance indicator put bigger attention upon the need to support the production continuity and supplier's legality. Nevertheless, since the government has a clear regulation upon the materials that are allowed to be used in the agrichemical production where CM02 only needs to refer to the regulations, then it makes sense that the significant focus is on the continuity and legality issues.

Although many problems arise from the materials purchased from China suppliers, nevertheless CM02 continues to import the raw materials mostly from China

due to some particular reasons. Despite the competitive price and quality that the suppliers offer, CM02 states that the China suppliers' response to every complaint is relatively quicker in comparison with the suppliers from other countries such as India. Another fact is that the supplier from China is the only one that provides the required raw materials as explained by CM03.

> *"China has the necessary natural resources for this [active ingredients for the agrichemical products]. …. The soil used for producing the active ingredients in China has a specific chemical characteristic."* [CM03]

Insofar, all the suppliers are subject to evaluation every six months. The evaluation takes several non-financial aspects into account; these are the on-time delivery, the specification suitability, the quantity rendered, and the environmental and safety aspects.

On the subject of the R and D department and its activities, CM04 holds full responsibility for the department's operational costs. Hence, it is prominent to manage the timetable of each project the R and D has to optimise the resource usage and staff's productivity. The timetable arrangement itself is very tight due to the fact that testing a prototype can take a long time as well as register a new product.

> *"I handle all the financial issues. I ask all my subordinates, the unit leaders, that I must have all the updates about financial information. I demand that there is only one control regarding the financial matters or activities that use labourers. …. Some of the colleagues who are used to be field staff need to be controlled because I believe that the ideas must have centralised theme. If not, it will disperse the energy, …. 'Don't come up with a new idea when the agreement has been set up, it will disrupt the execution. …. If you want to insert your new idea, give me a convincing argument in your FS [feasibility study] because we have agreed upon all things. Do not come up with a sudden idea without knowing the impact, and suddenly you want to insert it. It can disrupt the budget and staff distribution.'"* [CM04, the R and D manager]

CM04 is controlling the activity timetable and execution tightly as a control of the operating costs that occur in his department. The activity timetable that is prepared on the basis of the target of testing becomes the reference in controlling the execution of the planned activities. Currently, the top management targets the R and D to develop

new technology that will be manifested in new product development for the next five to ten years. The disruption to the predetermined and agreed timetable could impact the increase of the operational costs of the R and D department. Therefore, CM04 emphasises that any disruption to the timetable due to the emerging of new ideas must be supported with very strong arguments. Otherwise, it could lead to inefficiency and uncontrolled costs. However, it will be a different story if the disruption comes from top management. If this is the case, then CM04 will have a discussion with the top management to propose additional funding or rearranging the agreed priority.

> *"If we have a programme that can be skipped, then it [referring to the additional activity from the top management that disrupts the original plan] will replace the original one. But if it is impossible [due to tight budget], we will propose for additional funding. …. Have a discussion with the BoD, asking for additional funding. If we have discussed it with the BoD, the finance department will support us."* [CM04]

Further, in terms of monitoring the realisation of the budget, the R and D manager asks for the progress report from the finance department. The progress report will be the reference for further cross-checking with the actual records in the R and D.

For the QA unit, CM08 explains that the high-priced consumable supplies are the ones that dominate the operational cost in his unit. Therefore, as the manager, he controls the usage of this kind of supplies such as HPLC (high-performance liquid chromatography) spare parts to control the operational cost in his department. He further explains that HPLC spare parts called the 'column' is quite expensive and easily worn out. These spare parts also play a vital role in testing the material's quality or specification. He then makes the arrangement for testing the job carried out by his staff using the HPLC. He orders his staff to not overuse the HPLC. To avoid the overuse of the machine, he asks his staff to use one 'column' just to test one type of active ingredient. By this method, the 'column' will not be easily worn out, and the operational cost can be well controlled.

In the production context, not all of the waste can be internally processed by the existing facility. The existing facility insofar can only process liquid waste, not solid waste. Under the government regulations, it is the company obligation to find the legalised third party that is able to process the waste that the company could not process. CM03 explains that, in this case, CM has appointed a particular waste management company to handle all the waste that CM cannot process.

> *"... if we can't process it, we will hand it over to [third party]."* [CM01]
> *"We have to process the waste ourselves or by involving the third party. We have the facility to process liquid waste. .... The wastewater treatment plant or WWTP. However, we can't process the solid waste and do not have other external places, therefore we have [third party] to handle it."* [CM03]

Hence, CM03 always asks his subordinates to minimise the waste by improving the process. His principle in minimising the waste is by tackling the source of the waste. This means that the activities that potentially create waste must closely be monitored. Every month, the production director has a performance review meeting, involving all the units under the production directorate. In this performance review, all the indicators – productivity, efficiency, environmental, and health and safety indicators, are reviewed. Any unit head or manager must be held accountable for any indicator within his area of authority that falls out of the predetermined standard.

On the other side, besides updating the new regulations and helping CM03 in mapping the gap, CM11 conducts periodic self-monitoring of all the environmental indicators by field observations and collecting reports from all other units. He monitors not only wastewater and other solid waste management, but also the ambient air as well.

> *"[My responsibility] It's about managing all the waste, the domestic waste, hazardous and toxic waste, environmental management, water waste treatment from domestic and production area, all must be properly processed. .... All will be processed in the facility based on the [particular] quality standard, the output [of the facility] must meet with the standard. .... My current programmes are regarding*

the wastewater treatment plant, including at least its monthly analysis result. For the ambient air, it [the analysis] will be once every six months." [CM11]

Based upon the periodical report and field observation towards indicators, CM11 prepares waste balance analysis (it is like a mass balance analysis but specific for waste). This is important for him to analyse the condition and to decide any necessary follow-up action. As a result of the analysis, he proposes recommendations for future improvement in waste management.

CM03 states that, the K3 unit has the responsibility to prepare the necessary system to handle the safety and environmental issue. However, each unit has its own responsibility to address these issues earlier in their area.

"K3 unit is actually not the executor for K3 and environmental issues on a daily basis, but their main responsibility is to create the system. …. For example, last year in 2018, there were two new regulations from different ministries. …. The latest regulation is emphasising the human resource perspective. [The environmental staff] must be the certified ones. And he or she does not have to be CM11's subordinates because he is not the direct executor [in the environment engagement]." [CM03]

It is true that the WWTP in the company is managed and run by K3 unit. However, CM03 realises that this is only the end-of-pipe treatment. He believes that to minimise the environmental impact, environmental engagement must be executed as part of the daily unit's activities. This explains what CM03 means by minimising the environmental impact of the process.

In relation to the aforementioned explanation, the waste treatment also occurs in areas that do not produce waste in a significant amount such as the R and D department and the quality assurance (QA) section. In the product testing activity, the leftovers of the tested products must be properly disposed of as directed in the existing procedures. The staff of these units only need to follow the procedures. In addition to this, to avoid higher potential risk relating to the dangerous and toxic substances, CM04 forbids his

staff to maintain buffer stocks of highly toxic and dangerous substances although, to some extent, it sacrifices the efficiency in doing the testing jobs in R and D.

> *"For the hazardous materials, we [meaning he orders his staff] only request based upon the required quantity and we don't keep any buffer stock for it. Yes, it becomes more impractical, but it is a good saver."* [CM04]

Based upon the aforementioned discussion, CM's board of directors has a good commitment to providing the facilities needed to manage the environmental impact and improve its performance.

> *"Continue to upgrade [the environment management facility], and it needs money. … We will propose it to the top management and see how they will decide this matter. They have a commitment to addressing this matter because it is about complying with the rules."* [CM03]

This is in conformance with the CEO statement regarding the developing environmental issues, which she believes that the issues are inevitable, and CM must be able to anticipate. Continuous effort in engaging with this environmental issue is essential.

7.4.3.3. Controlling and decision-making in non-production context

As stated by the CEO, despite controlling the cost efficiency, controlling receivables is also part of the management accounting practice with high priority. The sales manager [CM06] explains that, to avoid uncollected receivables, he monitors the outstanding receivables that are due. In this case, CM06 explains that the control mechanism is to evaluate and select distributors on the basis of their good and poor performances. The distributor with good performance deserves opening another purchase order and having a reward if a particular sales target is reached. In contrast, opening a new purchase order is highly controlled or even forbidden for distributors with poor performance. Notification letters are issued for the overdue invoices to remind the distributors of the payment that they have to make.

In addition to this, CM06, as the sales manager, has the authority to set up the ceiling or upper limit of the credit given to particular distributors based on their historical performance. Although strict approval from the BoD is unnecessary in this matter of credit ceiling, CM06 needs to discuss it with the top management before making a decision. On a particular occasion, CM06 has to decide special exceptions when certain sales targets need to be achieved. When this situation appears, CM06 prepares alternative actions including a special reward scheme for selected distributors or even disregards the overdue receivables. For this matter, CM06 has to discuss it with the BoD before making such a decision.

> *"It is a proposal. Sometimes in a certain condition, the BoD suggests we need more revenue [increase], therefore, I report that we have overdue [distributors with overdue], so what to do? They always ask me back: then what do you think [about the distributor track record and performance]? Is it good? It means they put it upon me again. Then, for the sake of increasing revenue…. But again, this is a rare case."* [CM06]

In the case of uncollected receivable, the internal audit manager [CM01] will monitor it closely. CM01 will then handle it and work together with CM06 to find the best solutions.

CM06 controls the customers or the distributors by ranking them in a particular grade based upon their performance. To control the collection of the receivables, CM06 only releases a delivery order that has clear or at least good collection performance. Any delivery order that comes from the distributor's purchase order with long-overdue credit performance is retained until they make payment for the arrear invoices. If there is a problem in the collection of the receivables, the internal audit manager will be involved in sorting out the problems.

One important fact about the pesticide market is that it is actually a completely free competition market. It is not only a free market but a tight competition as well. The high competition in the pesticide market leads to the condition where the CM

company cannot ask for particular collateral to back up the receivables. In other words, the CM company releases a huge number of products with high values to the customers (the distributors or even the retailers) without any collateral back up except the trust.

> *"I say that the risk in this business is high, and it is [just based upon] trust. Trust the distributors. We sell so many tons of our products that worth billions [rupiah] without any collateral. So, if we have to face the long overdue receivables, and, to some points, we have to let it go, then that is the risk. We can't give our customers credit and ask for collaterals. No way. It is the common practice in the [specific] pesticide market. If we ask for collaterals, the customers will leave us behind. …. It is completely different from fertiliser market. This is because fertilisers are the things the farmer cannot leave behind, it is very vital. Every time the farmers start their cultivation, they will need fertilisers. In contrast to this, they only need pesticides when the pests attack their farm."* [CM06]

On the other side, CM06 also tries to build a good relationship with these distributors to monitor and improve their performance. High competition between pesticide manufacturers also makes the relationship a prominent factor in winning the competition.

On the subject of the marketing department, the control is focused upon the execution of the marketing programmes as stated in the handbook (see the previous sub-section about planning). To get the financial support for the marketing programme execution, a proposal must be prepared by the marketing staff and submitted between 20th and 25th of each month. CM05 controls implementation of these programmes with the help of the area managers and *candal* (stands for *perencanaan dan pengendalian* or the planning and control section) in his department. The control of the programmes is also conducted by evaluating the report of the implementation which must contain the photographs of the execution of the programmes. The control of the marketing programme implementation and the fund used also occurs at the quarterly meeting between the marketing and sales departments. The meeting basically discusses the mismatch between executed programmes and actual sales. At the meeting, CM05 and CM06 crosscheck the marketing programme with the actual sales revenue performance

for a certain period or even for a different time period. There is also a different situational fact that is the impact of the marketing programme takes a longer time to be effective due to the planting season timetable. In other words, the farming cycle in each area has to be put into consideration in the evaluation process.

Insofar, the controlling and decision-making in the non-production departments are more focused upon the ordinary MAC practices. For the departments under the production directorate, the environmental value embeddedness in the controlling and decision-making processes are more apparent. However, overall, the controlling process is guided by the indicators and targets that are governed by the existing SOPs.

7.5. Conclusion

As the activities in CM are mainly referring to the existing SOPs, the environmental engagement tends to be following the sets of rules and SOPs. Compliance with the rules becomes the most prominent factor in the manager's doings and sayings in CM. Environmental engagement becomes an integrated part of the company operation. The embeddedness of environmental value exists as the environmental indicators or targets that must be achieved by all units in CM. However, continuous internalisation of the environmental value to the lower-level employees is conducted.

The rules in environmental engagement contribute significantly to standardising the doings and sayings in addressing environmental issues. The standardised doings and sayings are very important in a complex environment such as in the agrichemical manufacture. Standardised practice also makes the engagement measurable; hence it can easily be monitored in the MAC context.

The business characteristics contribute to the shaping of the practices as well. The understanding of the managers about what must be done in response to the

characteristics is also shaped by their knowledge. The educational background of the managers is enough to make them aware that their business process bears a high environmental risk. This also explains their response to every update relating to the governmental regulations.

The environmental value the managers embrace and believe in gives a particular meaning to their doings and sayings. The order and advice they give to direct their subordinates are driven by the environmental value that emerges as the awareness of their position within the society. This value coexists with the interest of protecting business continuity. These factors also shape the prioritisation of any tasks or investment in CM.

8. THEORETICAL DISCUSSION

8.1. Introduction

After the explications of the empirical findings from two case studies, it comes to the discussion of the empirical findings from the theoretical point of view. The discussion in the following first section is mainly from Schatzki's practice theoretical account. The first section discusses the intelligibility of the environmental engagement practised by the managers in both the case studies as the key actors. As the starting milestone, the explication of the site or the context covers both the agriculture sector as the broader site and each of the company or organisation as the level site or context. It also covers the explication of the entities and arrangements that are related to the environmental management accounting doings and sayings. The next discussion is organised based upon the elements of the practice intelligibility. There will be a thorough discussion about the elements of the practice intelligibility of environmental management accounting control (EMAC). After discussing the EMAC practice intelligibility, the following section is the discussion of the research insights. The section explains about the new insights that are useful in understanding the deep process of the environmental engagement and the interrelationship between the actor that undertake the engagement and the structure. The closing section of this chapter is the conclusion that emphasises the essential empirical findings position from the theoretical perspective.

8.2. Empirical Findings in Theoretical Account

The following explanation elaborates on EMAC , which is constituted from doings and sayings on three elements of practice organisation (Schatzki, 1996, 2002). The doings and sayings have intentional relations with the interconnected orders in the

agriculture sectors and within the organisational level as the site or context of the practice. As indicated by Kaur and Lodhia (2018), intentional relations with society could help shape the organisation's environmental engagement. Furthermore, the EMAC practice relates to the existing entities and arrangements. EMAC is then a practice that comprises doings and sayings that are organised by the actors' understanding of the management accounting control (MAC) and environmental management, the explicit rules about the MAC and environmental control and the teleoaffective structure on the environmental engagement. The following discussion will elaborate on how these Schatzki's practice organisation is shaping the EMAC practice from the empirical perspective. Hence, how the managers (as the key actors) internalise particular environmental value within the MAC can be addressed.

8.2.1. The interconnected orders, the entities and the arrangements

One crucial entity in the agriculture sector is the people. The people refer to the actors who act as players in this sector, such as the farmers, the investors in the agriculture or plantation sector, the people from the supporting industry like the agrochemical companies, the government agents who set the regulations for this sector, and the society that constitutes the market of the agricultural products.

Furthermore, agriculture infrastructure also becomes a prominent entity in the agriculture sector. The agriculture infrastructure provides the necessary support for the business practices in this sector. Apart from the infrastructure, the agricultural ecological system, the biodiversity, and the geographical condition of the agriculture areas including its climate characteristic are what Schatzki (2002) called 'the natural beings', which are part of the entities in the agriculture sector.

In the agriculture sector, the related infrastructure, the natural beings in this sector, and the nexus of agriculture people form or create the nexus of arrangements that constitute the related social orders. The discussion on the agriculture sector context from the geographical and social profiles, the government regulations, and strategy in developing this sector demonstrates that the agriculture sector's social life is coupled with its natural beings. The natural agriculture beings are organised, modified, altered, and improved by the human practices.

The social orders in the agriculture sector comprise government regulations, laws, and government policies or strategies that are specifically established for this sector and bring specific messages and values to the agriculture sector development. In the previous chapter about the agriculture sector context (chapter 5), the government established regulations, laws and policies following certain strategy to achieve the predetermined goals. For example, the goals to increase the people's wealth led the establishment of "green revolution policies" to significantly increased the agricultural productivity. Relevant policies such as the one in relation to subsidised pesticides and synthetic fertilisers were established to achieve the goal. When the negative impacts to the environment emerged, new sets of regulations and policies were established to keep the agriculture development on track to reach the goal, but with better engagement towards the current environmental challenges. In the updated government regulations and policies, the betterment of the people's wealth is still the ultimate goal, but the customers and environmental protection become the next ultimate goals to complement the first goal. The changes or the updates in these regulations or orders were following the changes of the natural beings in the agriculture sector.

Apart from the regulations and laws and other arrangements as explained above, the historical practices were also socially construct and internalise as the established

environmental knowledge to some points. For example, the cultivation practice that was undertaken in the CP plantation was also influenced or shaped by the experience of the plantation manager. The cultivation practice was undertaken by treating the shade plants and regulating the humidity around the coffee tree to adjust with the climate change, undertaking the cleaning activity after the harvest to avoid the pest attack and the use of organic fertilisers. The plantation manager has this knowledge based upon his experience of more than two decades serving the plantation. The cultivation practice which is part of the environmental knowledge had been internalised within the manager's mind and influenced his practices to some points.

However, the above knowledge is not the only element that drives the plantation manager's practices. The current entities condition was also contributing to the way he conducted his jobs. For example, the use of balance fertilisers is the practice that he undertook to answer the need of the company to revitalise the plantation as fast as possible without sacrificing the environment. The use of balance fertilisers will increase the productivity and minimise the land degradation impact.

The varying degree of entities' condition contributes to the setting of arrangements in the social orders to reach a certain fitness between the conditions and the arrangements. The arrangements of the social orders also need to be formulated to meet the goals of the agriculture sector development as mentioned earlier. Some examples in the agriculture sector development policies regarding the infrastructure (e.g., some areas require more agriculture infrastructures as the irrigation and the water reservoir facilities), which are set based upon the area's specific condition, or the specific regional regulation about the particular environmental standard are demonstrating the area-based policies. The aforementioned examples elucidate the spatial dimension of the agriculture entities and their arrangements. The regulations,

laws, and government policies and strategies are associated with the spatial dimension of the agriculture entities and arrangements.

All the entities' arrangements and their interconnection with the social orders constitute the site or context of the agriculture sector. Further, the actors' intentional relationship with the interrelated social orders in the agriculture sector contributes to the way they transpire their coexistence within this context through their doings and sayings. For example, when the actors from the agrochemical manufacturer conduct the production process by following the related government regulations upon the allowed materials for fertiliser and pesticide products, they are transpiring their coexistence in the particular agricultural social life. Another example is the key actor's action to follow the guidelines from the government to conduct good cultivation practices, which transpires his or her coexistence in the agriculture sector.

As all human activities bring impact to the environment, it is important to protect nature from destruction. Environmental engagement becomes an essential activity that must be conducted by all business actors. The social orders in the agriculture sector are also providing necessary arrangements to protect the natural beings in this sector. The social orders regarding necessary environmental engagements are coupled with the condition of natural beings in the agriculture sector and its impact on the people. The regulations that banned certain active ingredients for pesticide or herbicide products are based on the degrading land quality because of the excessive use of these substances in the past. The government put these regulations to protect the land quality and to maintain its productivity. It is the same as well when the government provides the regulations of the good cultivation practice and the guidance for the farmers to use the synthetic agrochemicals wisely. Despite that the actors' engagement to the environmental issues are based on particular practical intelligibility, their practices are

having intentional relations to the existing agricultural social orders up to some extent since they are part of the agricultural social life. The above illustrations are also elucidating the temporal dimension of the agriculture entities and arrangements. The arrangements consider the conditions of natural beings arising out of the past policies and practices that degraded nature's quality.

8.2.2. The understanding

Schatzki (1996) has stated that understanding something means that the one has both the knowledge and the ability to identify, explain, and conduct the thing. When it comes to the integrative practice such as the EMAC practice, which means the practice comprises more than one understanding. Knowing how to do the EMAC practice means that one must understand planning and budgeting, directing and governing activities, and controlling and decision-making as a set of information-based accounting practices that are internalising or embedding the values of the sustainability practice which relates to the betterment of the people's wealth in the agriculture sector without degrading the existing natural beings. It is related to sustainable farming practice and the use of more environmental-friendly agrochemical products. Embedding the environmental value means considering the environmental aspect in every MAC practice and doing the practice accordingly.

The empirical discussions have evidence that the knowing of doings and sayings in balancing the business interests and environmental protection is the foundation of the understanding of the EMAC practice. The various degree of knowledge about the main operational activities, the environmental impacts or environmental management knowledge, and the working experience are associated with the embeddedness of the environmental value in the MAC practice and the daily operational activities.

As the EMAC practices are based upon the MAC practice, planning and budgeting become the starting point of the whole practices. As an information-based practice (see Jack and Kholeif, 2008), the activity of collecting relevant information is important, which puts into account the alternative of future operational activities that have the smallest environmental impacts or risks. Considering the future operational activities, which are necessary for the particular unit's operation with the least environmental impact, demonstrates the embeddedness of environmental value in the planning and budgeting practices. For example, in the agrochemical manufacturing company, the capital budgeting for the enhancement of environmental management facility has to comply with the latest environmental standards established by the authority, or the target setting for the indicators that cover the financial (e.g., liquidity ratio, ROI, ROE), operational (e.g., output quantity, no-conformity products) and environmental indicators (e.g., electricity consumption, air pollution, wastewater quality). In another case in the plantation company, the examples are about the planning for cultivation practices that use balanced organic and chemical fertilisers, the rejection of activity proposals that potentially damage the plantation's ecological system, or planning the revitalisation of the plantation and the conservation projects that consider the urgency level based on the financial and environmental conditions.

To some extent, embedding the environmental value in planning and budgeting also involves making decisions on new activities that are not conducted yet but potentially having a significant environmental impact. For example, in a manufacturing company, it exists in the decision of investing in the enhancement of environmental management facilities ignoring the development of the utterly brand-new product; and, in a plantation company, it exists in the decision of not having a promotional programme that is highly potential to disrupting the ecological system of the plantation.

This kind of embeddedness in planning and budgeting is also essential in the engagement with environmental issues.

Embedding the environmental value in the execution of the planned activities means putting into account the environmental impact on organising operational activities since all operational activities are having an environmental impact. Therefore, the structure as well as the actors' understanding contributes to the embeddedness of environmental value to directing and governing practice. Providing directions or organising the activities in a certain way that creates less environmental impact means attaching the environmental value to organising the operational activities. For example, in a plantation company, there are no rules or directions about how to conduct the fertilising activity. Hence, the manager's directions are more based on the knowledge that the manager has. When the actors have both fertilising and environmental knowledge, the instructions on using more organic fertilisers would give a minimum negative impact to the environment and benefit the plantation operations in the long run. In a manufacturing company, for example, the direction to improve the material usage efficiency by reprocessing certain kinds of waste from the mixing process would impact both the increasing material efficiency and the reducing amount of waste. In this manufacturing company case, the directions given to reprocess the waste are not deviating from the existing procedures. In the end, the directing and governing practice is more about the actors' doings and sayings to make sure that the process of executing the operational activities are following the existing set of rules and/or run under the particular conceptual framework. In other words, it seems it prefigures controlling and decision-making practices.

As a follow-up practice from the directing and governing practice, managers' focus upon the compliance of their subordinates with the existing rules or standards or

the given directions and the outcome of the operational activities are depicting the knowledge about monitoring and evaluating the situation. For example, in the plantation company, the monitoring activities on the execution of fertilising or harvesting activities are the doings and sayings regarding monitoring. In this case, the manager's knowledge is contributing more to the monitoring activity due to limited rules and standards. The other example is from the manufacturing company; the monitoring of the production process and the environmental indicators are depicting the monitoring activities that are based upon the existing working instructions or procedures. The periodical performance review meeting is also about monitoring operational activities. The periodical performance review that is also discussing the targets (e.g., production output, material and labour efficiency, and environmental and safety performance targets) and achievement progress, demonstrates the doings and sayings in evaluating the outcomes of the conducted operational activities. This practice of reviewing or evaluating targets (e.g., the harvest yield target, the plant status, and the covered area regarding particular cultivation jobs) also exists in the plantation company. In this way, the actors can focus upon the execution of the operational activities that significantly contribute to business performance.

The managers' practice in monitoring and evaluating is not limited to the main operational activities only, but also creating an impact on the environment. In the manufacturing company, the targets that consist of financial (e.g., liquidity ratio, ROI – return on investment, and ROE – return on equity) and environmental. (e.g., electricity consumption, water consumption, waste-water quality, and air pollution) indicators demonstrate the relatively more structured engagement with environmental issues. Moreover, the use of these indicators in making decisions by managers is showing the embeddedness of the environmental value in the managers' doings and

sayings. Also, it helps managers in making more environmentally concerned decisions. However, at the same time, it does not mean that the absence of environmental standards or indicators would negatively impact the actors' engagement with environmental issues. For example, the limited rules or standards in the plantation company do not limit the managers' monitoring, evaluating, and decision-making practices in embedding with the environmental value. In monitoring the cultivation practice (e.g., in fertilising and pest control) and evaluating the activity proposal (e.g., the proposal of promoting plantation by having squirrel-hunting contest), the key actors put the environmental impact into account and shape their decisions accordingly.

The above-mentioned evidence illustrates that the understanding of controlling and making decisions is not only supported by the understanding of the rules and standards but also supported by the understanding of the environmental knowledge and experience, and the understanding of the natural beings. It also means that the historical experiences are socially constructed and internalised to established new understanding or knowledge. When the key actors in the plantation company direct the cultivation activity or evaluate it and take a decision to reject the proposal of the squirrel-hunting contest, the practices are based on the environmental knowledge, the experience, and the understanding of the natural beings. The managers' environmental knowledge provides an understanding of the environmental impact of the activity. The managers' knowledge about the natural being entities provides an understanding of how to control the cultivation activities and the rejection of the proposal that is highly potential to damaging the plantation's ecological system. It also depends on the knowledge of the natural being entities of the plantation site. Hence, the controlling and decision-making practice in the EMAC context emphasises how the environmental value shapes the way

the actors or managers do and say in monitoring, evaluating, and making decisions centring business operations and performances.

The empirical discussions have evidence that, in the EMAC context, the knowledge of the primary process and its environmental impacts in various degrees contribute to the understanding of the planning and budgeting practices. Hence, not all of the planning and budgeting practices have the same degree of environmental value embeddedness. For example, the planning and budgeting for the sale of the agrochemicals or particular plantation commodities might not be proper in embedding the environmental value as the sales are profoundly affected by the market. In this matter, the activities in the sales department and the managers' knowledge shape the relatively low embeddedness of environmental value in the sales budget. On the other side, the planning and budgeting for production activities relatively have high embeddedness of environmental value as the planned activities have relatively high environmental impacts. Here, the production activity that has a significant environmental impact in conjunction with the managers' knowledge that shapes the relatively high environmental value embeddedness. In another case, like in the plantation company, the same condition is apparent in the planning and budgeting for the cultivation activities. In the plantation company, cultivation activities have relatively high impacts on the plantation's natural entities' condition (e.g., soil quality, the ecological system quality, and the geographical condition). Therefore, planning and budgeting cultivation activities are embedding more environmental value. The managers' knowledge and experience also support the embeddedness of environmental value.

In summary, the understanding of the EMAC practices comes from the understanding of MAC practices with the embedded environmental value. The

embeddedness of the environmental value means collapsing the value with the underlying knowledge that strengthens the managers' MAC practices; for example, coupling the environmental knowledge and the production process knowledge or the cultivation practice knowledge is associated with the understanding of the related set of orders or rules. This coupled knowledge then underpins the doings and sayings in the MAC practice. Understanding the environmental value also means knowing the environmental impact of the activity on the natural beings. For example, understanding the value of organic farming means understanding the impact of the organic farming activity upon the plantation's natural beings' condition, or understanding the environmental and safety value in a manufacturing company means understanding the environmental consequences of the operational activities to the surrounding society and their environment. Also, at this point, the understanding seems like socially constructed and internalised to establish the environmental knowledge, but it is influenced by elements outside of the actors (e.g. the entities, the natural beings, and the external arrangements or regulations) that are not falling within the actor's control as well.

8.2.3. The explicit rules

Schatzki (1996, 2002) has explained that rules refer to explicit formulations or principles or guidance. It contains instructions and directions in performing a particular action. The explicit rules related to EMAC practices provide the instructions and directions that link to the actors' doings and saying in engaging with the environmental issues. Since the EMAC practices are based upon the MAC practices that are embedding the environmental value, the explicit rules comprise rules in the accounting practices and the environmental engagement activities.

The explicit rules in accounting practices refer to the existing implemented accounting standards. For example, the Indonesian companies are following the PSAKs (stands for *Pernyataan Standar Akuntansi Keuangan* or the Financial Accounting Standard) that refer to the IFRS accounting standards. Apart from the accounting standards that standardise the accounting practices among actors, there are also accounting policies that complement the existing accounting standards, for example, the company policy regarding the receivables and managing the risk of the uncollected ones, or even the policy of petty cash management to support the operational continuity.

Apart from the explicit rules about accounting practices, the EMAC practices also follow the rules of conducting environmental engagement. These explicit rules provide the guidance and instruction of how the environmental management activity should be conducted under specific frameworks (e.g., under the ISO 14000 or OHSAS frameworks). For example, the standard operating procedures for handling dangerous materials provide necessary instructions on how the handling should be conducted to avoid the risk of environmental damage or accidents. The standard for monitoring and evaluating the environmental performance provides instructions on how to monitor the waste management operations and emphasise the essential indicators in monitoring the process and evaluate the results. The criteria to select, monitor, and evaluate the suppliers provide the instructions of essential factors that are needed to be considered in managing the suppliers.

The rules here are not only the written and documented standard operating procedures, but also the directions that are given by the key actors or the managers. For example, in the plantation company, the explicit rules come in the form of direct orders from the manager during the morning briefing before starting the cultivation activities,

or the given directions during the field observation by the manager. The limited rules or unwritten and undocumented rules and standards do not mean that the explicit rules are absent. Moreover, it is what Schatzki (2002) meant by rules as explicit principles, formulations, or instructions that direct people to perform specific actions, in this case, the cultivation actions. The oral directions provided by the manager link with the workers' doings and sayings in carrying the cultivation practices. In addition, as the directions are referring to the government regulations about the standard of good cultivation practice, it means that the people's doings and sayings in the cultivation are referring to the same rules across the nations.

Furthermore, it is also evident in the manufacturing company that the existing rules and standards are having an intentional relationship with the agriculture sector social orders. Through the intentional relationship between the company rules and standards with the government regulations and law (see appendix 4), the company's key actors are engaging the environmental value that is emerging in the agriculture sector context. Whilst in the plantation company, although the existing company rules and standards are still limited, the manager is following particular government regulations as the standard of cultivation practice in his company. It is the intentional relation that shapes the environmental engagement conducted in the plantation as part of the cultivation practice. Hence, it is apparent that the explicit rules as an intentional relationship with the agricultural social order, which can be manifested in the company rules or as direct adoption, such as the one that exists in the plantation company, are one way to internalise the emerging environmental value. However, as compliance with the government regulations by manufacturing company is mandatory to some extent, the intentional relation in the manufacturing company is also more about legitimising the business coexistence.

In summary, consistent with Schatzki's (2002) notion regarding explicit rules, the existing rules and standards that regulate the way the operational activities and environmental engagement are conducted. At the same time, it also normativises the environmental engagement within the daily operational activities.

8.2.4. The teleoaffective structure or the teleoaffectivity

Schatzki (2002) explains that teleoaffectivity is "a range of normativised and hierarchically ordered ends, projects and tasks, to varying degrees allied with normativised emotions and even moods" (p. 80). Teleoaffectivity is the property of the practice and not equivalent to collectively willed ends and projects such as a general will or the we-intentions of a group.

The different orientations upon the environmental engagement between companies shape different normativised hierarchical orders of the engagement amidst other operational activities. The different orientations exist because the environmental impacts of the operational activities are varying across sites or context. Moreover, the orientation itself reflects the balanced focus upon the business interests and is engaged with environmental issues. It leads to different kinds of engagements.

In the agrochemical manufacturing company, the orientation of the environmental engagement is to counter with the negative impacts that emerge from the production process and the products itself. Therefore, the environmental engagement related doings and sayings become part of the routine activities that recur from time to time (e.g., environmental targets that exist in every unit along with the other operational targets, routine monitoring activity of the environmental indicators from all the production and non-production units). Also, the significant potential environmental risks make compliance towards the regulations essential. For example,

the routine gap mapping in the government-related regulations to maintain the environmental management facilities such as the WWTP (wastewater treatment plant) and the temporary disposal facility to comply with the latest standard demonstrate the recurring activities in engaging with the latest regulations. The recurring environmental management activities alongside the understanding of the environmental impact have shaped the normativised hierarchical order of the environmental management tasks among the other operational tasks. For example, fixing the production facility (e.g., mixing or filling facility) whenever problems emerge before continuing to the next batch of productions becomes a routine that has two impacts: reducing the non-conformity products and reducing the environmental impact by avoiding more spillover or waste. In this manner, the environmental management task priority is continuously adjusted in accordance with the internal factors (e.g., the facility conditions and the employees' knowledge and awareness) and the external factors (e.g., the establishment of new government regulations).

On the other side, whenever the orientation is about the maintaining of long-term benefits from the natural being entities in a particular site, the environmental engagement is more about preserving or protecting the environment as the essential natural being arrangements. For example, in the plantation company, the purpose of balanced fertiliser use (proportional use of the organic and chemical fertilisers, and in a particular case, the organic fertilisers are dominant, particularly in the nursery stage) is to maintain the soil quality for a long time. The implementation of cultivation practice instead of using pesticides to control the pest and mitigate it from climate unpredictability has two folds of benefits: for the sustainability of the plantation site and increasing the cost-efficiency. Other examples are the avoidance of any promotional activities that potentially damage the ecological system, conducting

conservation activity (especially in the non-productive or non-plantable areas), and processing the plastic waste. The understanding of the environmental impacts also contributes to the normativised hierarchical order of environmental tasks.

Furthermore, it is also apparent that the orientation of the environmental management task does not always rest upon the financial consideration as the sole factor that defines the normativised hierarchy of environmental engagement amidst other operational activities. One example is the avoidance of having an activity that potentially damages the plantation ecological system over the potential profit that the company could have from the event. This is an evolving effect of the key actors' doings after having the understanding of the plantation's natural being entity conditions that require the revitalisation after extensive historical utilisation.

Overall, the teleoaffective structure of the environmental engagement is conditionally shaped by the orientation of environmental engagement in association with the understanding of environmental impacts of the operational activities. It evolves according to the dynamic changes upon the entities' conditions in the agricultural social orders.

Schatzki (2002) has stated that "it is important to emphasise that the organisation of practice describes the practice's frontiers: a doing or saying belongs to a given practice if it expresses components of that practice's organisation" (p. 87). Based on the above explanation of empirical findings in the theoretical account, the EMAC practice organisation stands upon the MAC practice organisation that is embedding the environmental value. The embeddedness of the environmental value itself is not always tied to the particular environmental management system (e.g., the ISO 14000). However, it is more as how the environmental value shapes the planning/budgeting, organising and controlling, and decision-making in a more environmentally considered

or oriented one, which means leading the routine operational activities into the ones that have less negative environmental impacts. The table 17 below summarises the findings from both case studies and describe the similarities and differences that occurred.

Table 17 Summary of the findings of two case studies

Similarities	**CP plantation**	**CM agrichemical**
Sector of industry	Both are related to the agriculture sector	
EMAC practice	Both are embedding the environmental value to the MAC practices (planning, directing/governing, evaluating and controlling).	
Top management commitment	The CEO of both companies are having a good commitment to environmental value.	
Differences	**CP plantation**	**CM agrichemical**
Specific sub-sector	Plantation sub-sector	Agrichemical manufacturing
Actor's environmental knowledge	Limited to the plantation division manager that based mainly upon experience and coffee cultivation training.	The managers have better environmental knowledge due to their educational background.
Structure/orders/rules		
- in relation to the environmental management	No specific and standardised environmental management is implemented	The company implements ISO14001 and OHSAS
- in relation to the routine business SOP	There are limited SOPs that are existed.	There are detail SOP under the ISO 9000 for each department. Also, the company has followed the accounting standards known to Indonesia
Teleoaffective structure	Protect the environment for a long-run benefit	Protect the environment and comply to the government regulations
External structure	Although both are subjects to regulations in agriculture sector, but CP plantation face relatively less regulations.	Due to the characteristics of the manufacturing process and products, CM face more and tighter regulations.

Apart from the above explanation, this research also empirically explains the dualism of the environmental engagements in the two case studies. The empirical findings demonstrate that basically the structures are separate elements from the actor's mind. The interconnection between the understanding, the rules and the teleoaffectivity does not mean that these elements are merging into one element of intelligibility. The understandings are the knowledge and experience that exist within the actor's mind. The rules to some extent also the production of actor's mind (e.g. the rules in relation

to occupational health and safety in CM manufacture, or the rules for undertaking the fertilising activity in CP plantation), but it also influenced by the entities that are outside the actor's mind and not under the actor's control. Factors such as the plantation site condition, the waste-water treatment facility that needs improvement, the nexus of government regulations and other entities and arrangements are the external factors that trigger the actor to make priorities and normativise it amidst the other goals or objectives. The findings from both case studies depict the dualism and not duality of the environmental engagement through the EMAC practice. The elements of EMAC practical intelligibility are interconnected one to another but are not collapsing into one element of intelligibility. To summarise the above discussion, figure 4 and figure 5 illustrate the practical theoretical account of the EMAC practice.

8.3. Research Insights

This research gives prominent insights into environmental engagement under the EMAC framework. The insights provide a new perspective in studying environmental management accounting (EMA) based upon the two case studies by seeing the relationship between key actors as agents and structure. Furthermore, it could help define the substantial environmental engagement in the EMA research.

First, this thesis research gives the insight from a practice perspective to the environmental engagement, which is about what the key actors do and say in engaging with the environmental challenges. The practice theory perspective provides the new insight about the deep process of the environmental engagements that were undertaken

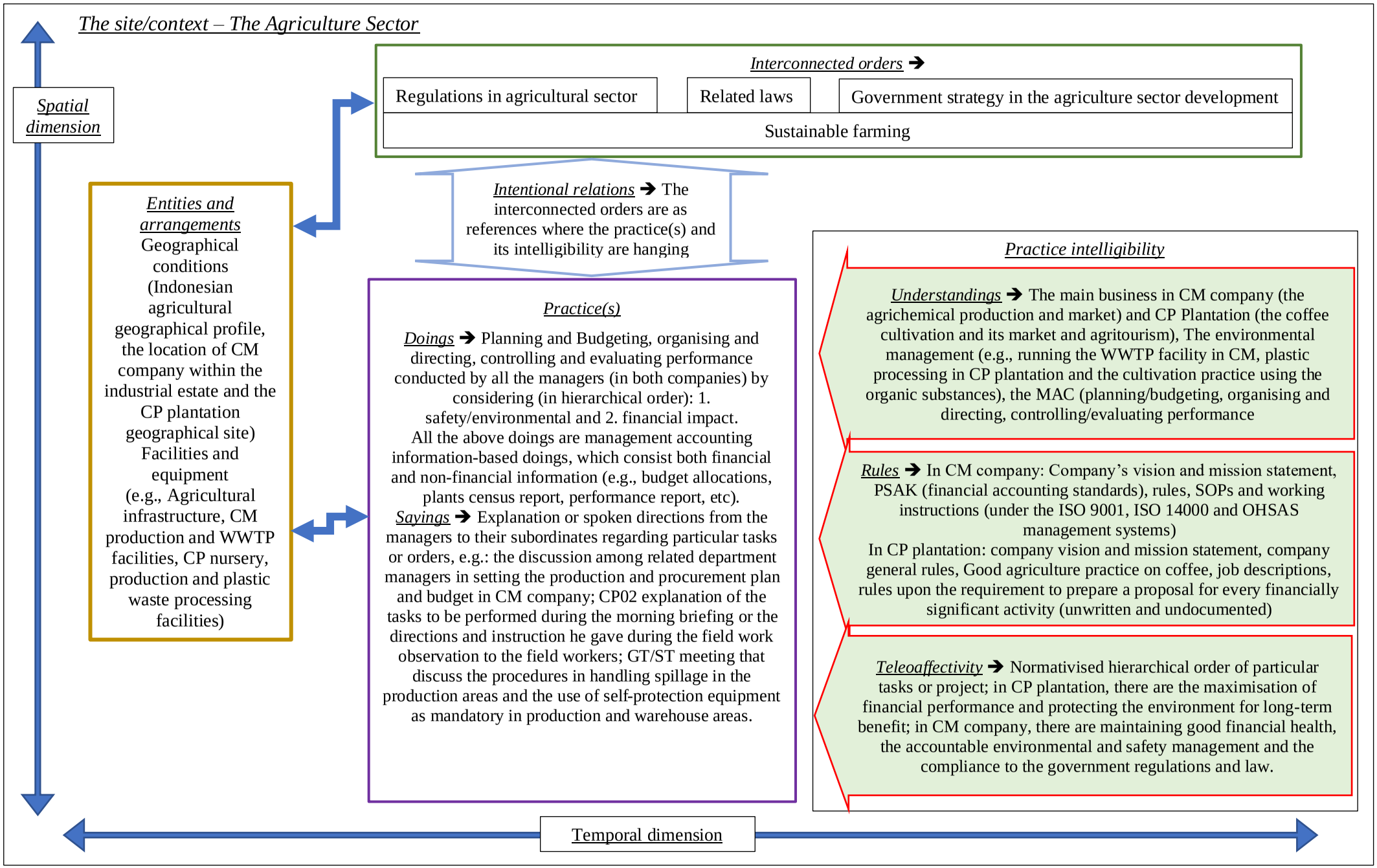

Figure 6 Practical theoretical account of the environmental management accounting control practice

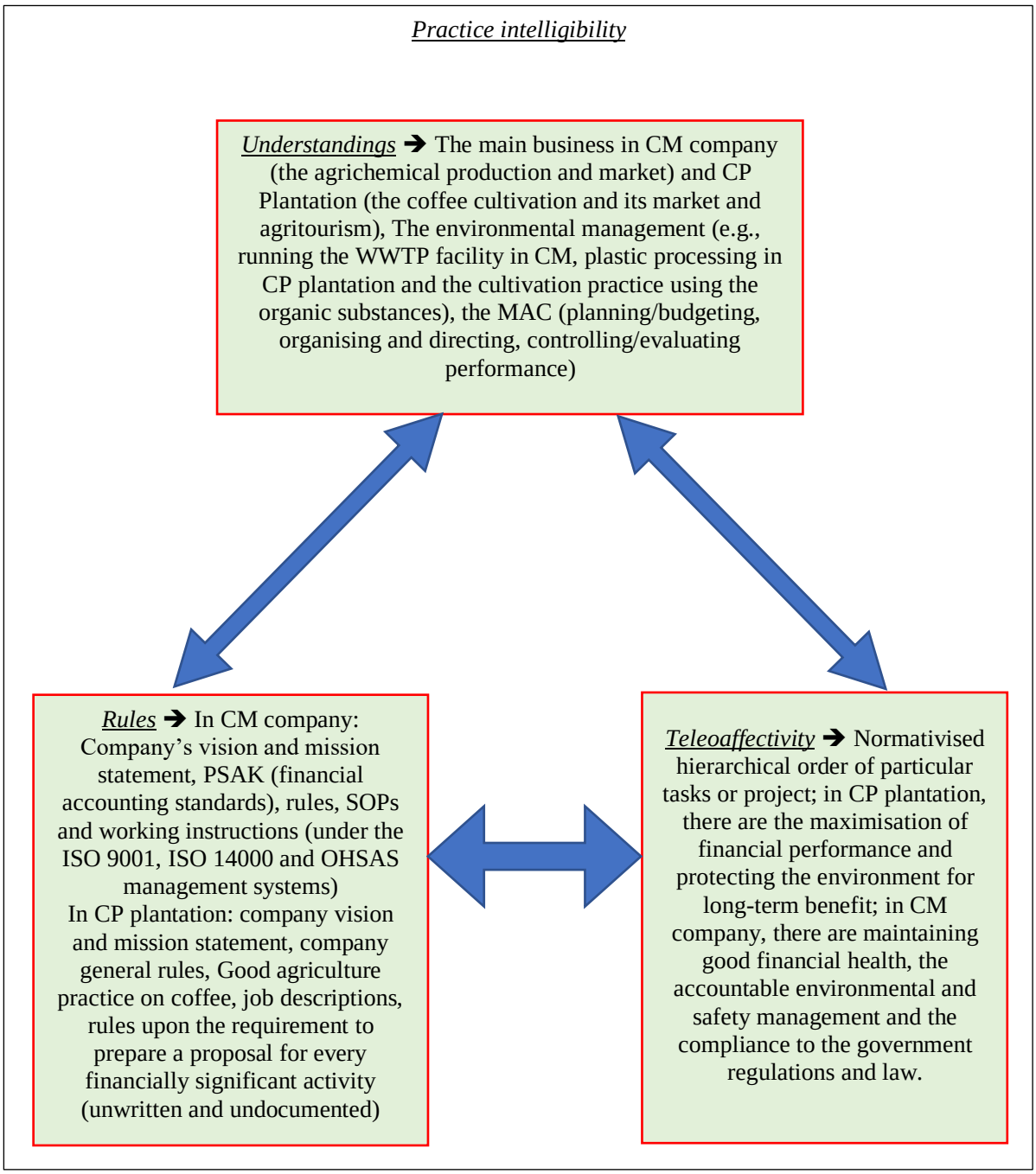

Figure 7 The Interrelations between Practice Intelligibility Elements

by the key actors in both of the case studies. The deep process of the environmental engagements also depicts the interconnection between the key actors who undertook the engagements and the existing structures and entities (e.g. what the production manager in CM did in mapping the gap between the company's latest updated environmental facility and the updated government regulations, or what the plantation

division manager did in increasing productivity and maintaining the land quality by using balance fertilisers).

The EMS (environmental management system) acts as the structure that facilitates or provides help to guide the actors' doings and sayings. It is true that key actors' doings and sayings are underpinned by practice organisation that consists of three elements: understanding (in this case is the combination of the environmental literacy and management accounting knowledge), explicit rules (implemented EMAC system such as ISO 14000, and accounting standards), and teleoaffective structure. However, the engagement itself lies upon the key actors' doings and sayings because these are the factors that could bring direct impacts to the environment. What key actors do and say could change, improve, or modify the entities' arrangements (including natural beings), by which environmental protection or preservation could be realised. The two case studies demonstrate that even with a simple structure, environmental engagement could still have a significant impact on environmental protection. The prominent role of the existing structures (both EMS and management accounting system – MAS structures) provides the guidelines in conducting the engagement.

Secondly, the research gives insight into defining substantial environmental engagement. The use of Schatzki's theory of practice with its practice organisation or intelligibility concept has uncovered the embeddedness of environmental value to the daily managerial tasks. It helps define the substantive environmental engagement as well as the internalised environmental value by the key actors or managers. Routine managerial tasks cover the basic managerial activities; these are: planning and budgeting, organising and directing/governing, and evaluating and making decisions. The embeddedness of environmental value into those basic managerial activities means conducting the activities by taking environmental consideration into account. It can be

manifested in how the manager is normativising certain priority of environmental aspect in certain hierarchical order, which depicts the embeddedness of environmental value, for example, prioritising ecological protection over the promotional benefit in deciding certain opportunity of a marketing programme or prioritising environmental safety over the maximisation of working hours in handling toxic and dangerous materials. This research also provides important insights into how the key actors make all the embeddedness of environmental value meaningful to the daily managerial activities as part of the deep process of environmental engagement.

8.4. Conclusion

From the theoretical account, the empirical findings depict the deep process of the environmental engagement and the interrelationship between the actors who undertook the engagement and the existing structures. The deep process of the environmental engagement can be seen from important elements, those are: the interconnected orders and the environmental practice and the elements of practice intelligibility that make sense the practices.

The first important thing in the empirical findings is the environmental engagements that are coexist with the daily business practices. The Schatzki's practice theory provide the necessary theoretical framework to analyse the make sense of the practices and understand the internalised environmental value in these practices. The internalised value determined the degree of environmental value embeddedness to the daily business activities.

The second important thing is the nexus of social orders and arrangements set the context for the EMAC practice. The making sense of the EMAC practices is also related to these orders and arrangements. There are intentional relationships between

the EMAC practices and the social orders or arrangements. The EMAC practices are also interrelated with the entities, including the nature beings.

The third important thing is about the elements of practice organisation. The understanding that underpin the EMAC practice is comprise of the environmental and MAC knowledge. The rules are the orders that provide the structure for the EMAC practices. The teleoaffectivity is about normativising the environmental ends or objectives amidst the other business objectives. Although these elements of practice organisation are interconnected, but these elements never collapse as one element. On the other side, the historical practice also internalised as the understanding about managing the business and protecting the environment.

Overall, this research also provides prominent insights into studying environmental engagement. Empirical findings from the two case studies have demonstrated that the deep process of environmental engagement through EMAC lies upon the key actors' doings and sayings. Key actors' EMAC literacy, the implemented environmental and management accounting control structure, environmental belief and the normativised hierarchical order of tasks or ends are factors that make sense the environmental value embeddedness to daily managerial tasks, but not the engagement itself. Hence, from a practice point of view, a deep process of environmental engagement must be investigated comprehensively from the actors' doings and sayings and its underlying intelligibility.

9. CONCLUSION

9.1. Introduction

As environmental engagement becomes inevitable for business organisations, authentic and substantial practices are essential parts of organisation's social and environmental accountability. Substantial engagement refers to the situated doings and sayings within the EMAC framework, which are conducted by the key actors and bring about a substantial impact on addressing environmental issues. The internalised environmental value would be embedded in the key actors' EMAC doings and sayings.

This thesis study brings about empirical evidence from the two case studies in the Indonesian agriculture sector. The case studies are on an agrochemical manufacturing company and a coffee plantation company, which represent as the supplier (the agrichemical manufacturer) and the customer (the plantation).

As one of the strategic sectors, the existing arrangements in agriculture sector covers the social, economic and environmental aspects. The sustainable farming and climate change mitigation themes are prominent in the development of the agriculture sector which also put the response towards the climate change and degrading environment challenges.

As elaborated in chapter 6, the environmental engagement in the plantation is embedded to the coffee cultivation practice as the main operation. Although it has relatively low inherent environmental risk in comparison to the manufacturing company, the environmental value is prominent due to the main business that is harvesting benefits from nature. The internalised environmental value in this plantation company is about the importance of environmental protection as a vital effort to maintain long-term benefits for the company. Additionally, the agritourism that the

plantation company has had contributed minimum environmental impact. On the other side, the simple EMAC structures have the embedded environmental value, especially in relation to the cultivation guidelines.

Additionally, with as the environmental engagement is mainly embedded in coffee cultivation activities, the plantation division manager's doing and saying in planning, organising, directing, controlling, and making decisions were aiming both the targeted productivity and minimum environmental impacts. It influenced the way he normativise the hierarchical priority of these two ends by balancing between the two. The commitment from the CEO support the plantation manager in protecting the environment when critical decision needs to be made.

On the other side, the agrichemical company is inherently having a high environmental risk due to its characteristics. These factors also lead to the intentional relations with the existing interrelated orders and arrangements. Hence, the agrichemical company in this study is also supported with complete and sophisticated EMAC structure to support the business and environmental activities. The occupational health and safety and the environmental protection are the internalised primary environmental value in the agrichemical company. Almost all of the undertaken activities in this company were heavily following the characteristics of the business process and the context.

An interesting finding is that, in both the case studies, it is apparent that substantial environmental engagement is not necessarily correlated with the implementation of certain environmental management systems. This finding shows evidence that what key actors' do and say is more important in defining what substantial environmental engagement is. Furthermore, how the engagement is embedded in the daily operational activity also defines the substantial environmental

engagement and represents the internalised environmental value of the key actors. The above explanation gives this research several prominent insights that define environmental engagement from key actors' doings and sayings. The embeddedness of environmental value to the daily managerial tasks becomes the prominent indicator to study the key actors' internalised environmental value.

Based upon both case studies, it is apparent that as a practice, EMAC originates from MAC doings and sayings that internalise or embed the environmental value. It means that the value is attached to planning and budgeting, organising and directing, controlling, and decision-making activities. As an integrated practice, EMAC practice intelligibility comprises of understanding MAC and environmental knowledge, explicit rules that put environmental consideration into account, and teleoaffective structure that normativise the environmental engagement as a prominent end in the hierarchical order of business objectives. All these three elements of EMAC practice intelligibility are interconnected but never collapse into one element. EMAC as a practice has a spatial and temporal dimension since the doings and sayings are interconnected to the surrounding entities and arrangements that could change from time to time. All these doings and sayings are intentionally related to the broader nexus of orders and arrangements in the agriculture sector.

Therefore, the EMAC practices can be defined as the doings and sayings based upon the management accounting structure with the embedded environmental value to underpin the decision-making, governance, control, and accountability that bring balanced benefit to the organisation and the other stakeholders. This definition has followed the broad sense of thinking as appeared in the research by Hopper et al. (2009) and informed by Schatzki's theoretical account with the emphasis on the embeddedness of the environmental value in daily business activities.

This research contributes to environmental management accounting literature by providing new insights into the environmental engagement that lies upon the key actors' doings and sayings. This is important since the debate about the accounting engagement, insofar, is contesting the notions of engaging through the improvement of the internal structures (e.g., EMS implementation, integrating environmental issues in MCS), improvement or innovations in communicating the engagement through new kind of reporting (e.g., biodiversity reporting), new accounting technology innovations (e.g. natural inventory, extinction accounting) or the engagement through activities of serving the broader stakeholders' interest such as CSR activities. For the broader sustainability context, this research also provides the new insight of what the substantial sustainability engagement is about. On the other side, this research contributes to the study of management accounting as practice (e.g., Ahrens and Chapman, 2007; Nama and Lowe, 2014) by expanding the environmental issue to the management accounting practice arena. The use of Schatzki's practice theory is the theoretical contribution of this research in environmental management accounting arena.

Finally, the answers of the two main research questions (RQ) in this research can be elaborated in the following. The first research question is: *"How the managers internalise environmental value within the implemented environmental management accounting control (EMAC)?"* This first research question is supported with three supporting research questions that basically asking about the how the key actors do the environmental and daily activities, the interconnected social orders or arrangements in the agriculture sector, and the systems that were being implemented in both case studies as elaborated in the above. The answer of first RQ is that yes, the managers internalise the environmental value within the implemented EMAC framework. However, the

degree of the internalised environmental value could be different among them due to the characteristics of the jobs and responsibility and the educational background that they have, which also includes the historical experiences. In doing so, they relied their practices upon the knowledge and experiences, by following the rules and normativise the environmental priority as a part of the business objectives or targets that are necessary to be achieved. This mechanism is always adapting to the changes in the external social orders or arrangements and in the entities' changes (including the changes in nature beings). In this research, the changes in agriculture sector regulations would bring impacts to the way the agriculture business process is undertaken. These changes would affect the environmental practices conducted in agriculture sector. Hence, the environmental practice is relatively updated from time to time. However, although the structures can and potentially influence the practice, but its roles are mainly as the supporting structure of the practice itself, including the MAC systems.

The second RQ is: *"How the key actors undertake the doing and saying in the EMAC framework in relation to their internalised environmental value?"* This is the question that guide the analysis of the empirical findings based upon the Schatzki's practice theory and site ontology. The environmental practices undertaken by the investigated key actors were analysed based upon the what the managers have done and said in facing the environmental challenges. Manager plays important role in internalising the environmental value during planning and budgeting up to the controlling and evaluation. Managers and factory manager play important role in upholding the environmental value along the MAC practices. Furthermore, relationship between the managers' doings and sayings and the social orders of agriculture sector depicts not only how the practices in organisational level relate to the broader structure,

but also investigating the factors that motivate or incentivise the managers' EMAC practices.

9.2. Contribution to Literatures

This research provides several contributions to the literature of EMA research. First contribution is related to the practice perspective. Insofar, there are limited EMA studies that used practice theories such as in Georg and Justesen (2017), Egan and Tweedie (2018) and Gomez-conde, Lunkes and Rosa (2019). However, the existing EMA studies did not provide in-depth explanation of how the practice intelligibility, especially in about the making-sense of normativising the hierarchical priority of environmental ends amidst the other business ends, was shaped and reshaped by the social orders and entities that were separately existed and not merely as reproduction of the actor's mind.

Secondly, by focusing upon the EMA practice intelligibility, this research contributes to EMA debate by providing in-depth explanation of how environmental value had been internalised through its embeddedness in everyday operational activities. The embedded environmental value acts as the manifestation of internalised value by the key actors.

Thirdly, in terms of the internalisation process, there are studies such as Cai and Jun (2018), Iatridis and Kesidou (2018), and Testa, Boiral, et al. (2018) that discuss the internalisation process through the implementation of particular environmental management accounting system (i.e. ISO 14001). However, the debate is more focusing upon the implementation of certain systems and there is still a lack of studies that investigating the internalisation of environmental value in the daily doings and sayings. This thesis research provides the empirical evidence and explanation of how

the key actors internalise the environmental value in their daily job responsibility. This internalisation of value to the daily doings and sayings is also shaped and reshaped by the key actors' attachment to nature as an inner factor and other factors.

This research also contributes to the literature by providing the necessary explication about how the key actors intentionally relate the nexus of interconnected orders and, in turn, shape and reshape their environmental management accounting doings and sayings. The empirical evidence depicted that the interconnected government regulations and laws in the agriculture sector provide the structures that become the context where the EMAC practices are hanging. Insofar, studies such as Jollands, Akroyd and Sawabe (2018), Heggen, Sridharan and Subramaniam (2018) and Bayne, Purchase and Tarca (2019) had focused upon the role of external pressures (e.g. government, regulations and certain powerful outside the organisation) in shaping environmental engagement. However, the focus upon the process of intentional relation between the managers' practice and this nexus of orders is still limited.

9.3. Theoretical Contribution

By drawing upon Schatzki's practice theory, this research unpacks the environmental engagement phenomenon under the EMAC framework into fundamental doings and sayings conducted by the key actors. The use of Schatzki's practice theory also enables the study to uncover the factors or elements that build the EMAC practice organisation. Studying the elements of EMAC practice organisation or EMAC practice intelligibility means investigating deeper the 'making-sense' process behind key actors' doings and sayings in managerial tasks and the environmental value embeddedness. In other words, using Schatzki's theory of practice will also uncover the internalised environmental value by the key actors and the impacts it has on the EMAC practices.

Furthermore, by using Schatzki's site ontology, this research contributes to the EMA debate by depicting the interrelationship between what the key actors do and say and the related social orders. By drawing upon site ontology, this research contributes to explaining how EMAC practices conducted by the key actors are having an intentional relationship with the context from the company to the industrial sector level. How environmental values that emerge in the certain industrial sectors (in this case the agriculture sector) are internalised by the key actors and influence the EMAC practice intelligibility can be explained in this thesis research by combining the theory of practice and site ontology from Schatzki.

This research also demonstrates that there are interconnections between the elements of practice organisation as elaborated in the previous discussion chapter (chapter 8). This confirms that "the distinctiveness of different practices lies in the distinctiveness of the package of doings and sayings plus organisation that each has: a particular set of doings and sayings expressing a particular array of cross-referencing and interconnected abilities, rules, teleoaffectivities, and understandings" (Schatzki, 2002, p. 87). However, the interconnection does not collapse the elements into one. The understanding of the EMAC practices based on the understanding of the MAC practices and the environmental knowledge could lead to the modification, improvement, or adjustment of the related explicit rules. For example, the updating of the SOP for monitoring the environmental performance could be updated in accordance with the environmental knowledge enhancement or the knowing of the updated government regulations. Another example, the increasing experience in handling the housekeeping and production divisions has led the establishment of new rules that provide the autonomy to manage the petty cash. The explicit rules can also influence the normativised priority of certain environmental tasks. For example, updated

company rules in terms of adopting new environmental standards have shifted normativised priority of the improvement of the environmental management facility. The normativised priority of environmental engagement also contributes to shaping the understanding of the EMAC practices. The enhancement of the staff's environmental knowledge and the periodical meeting to increase the employees' safety and environmental awareness are the demonstration of the teleoaffective structure that shapes the understanding of the EMAC practices.

Briefly, to investigate the internalise environmental value by the key actors that drive the environmental engagement in the context of MAC, the practice theory is more relevant in explaining the phenomenon. The practice intelligibility drives the engagement conducted by the key actors with the internalised environmental value. Furthermore, the internalised value is the factor that drives the key actors in normativising the hierarchical order of the environmental engagement among the other tasks and the allied emotion related to it. From the theoretical account, it concludes that considering the environmental engagement within the EMAC framework as an integrative practice that is informed by the management accounting and environmental knowledge is prominent.

9.4. Implications

This research has practical implications in practising environmental engagement. Conceptualising substantial environmental engagement can be done by defining the doings and sayings that are essential in addressing the environmental issues, and, at the same time, those are parts of daily operational activities. This is about the embeddedness of environmental engagement to the daily operations to make it substantial. Hence, environmental management accounting system implementation

only acts as the structure that supports the doings and sayings. Furthermore, integration between environmental and management accounting aspects in the environmental engagement practice intelligibility elements could foster the shaping and reshaping the engagement towards a more substantial and authentic one.

In addition, this research has also an empirical implication that the findings, to some extent, could also be further analysed from different perspectives. The findings of key actors' doings and sayings in this research open the possibility to see environmental engagement practice by using other practice theories. The empirical evidence of key actors' practice that is, to some extent, influenced by historical background aspect and society values opens the possibility to further study the environmental engagement practice as socially constructed practice. Another fact that experience also shapes the knowledge of certain key actors and shapes their practice could also lead to investigate the phenomenon based upon Bourdieu's habitus theory. By having more environmental management accounting studies that use practice theories, the understanding of environmental engagement practice would be richer and could foster more authentic environmental engagement. This research implicates the future environmental management accounting study, by which it opens the new path in investigating and debating the phenomenon as a practice.

In the broad sustainability context, this research brings important implication, that the sustainability engagement is about how to internalise the value or notion of sustainability into the daily activity. The empirical findings have depicted that even among two companies with different structure or system support, the environmental engagement could end up the same. The way the key actors normativise the environmental ends is matter in creating substantial environmental engagement. When (Murthy and Parisi, 2013) depicted that environmental issues were more studied

compare to social issues, this research also brings implication to the research with focus upon social matters. The corporate engagement towards the social matters will determine by the embeddedness of social-related values to the daily operational activities, regardless the structures that are prepared or implemented to support the engagement.

In the end, to substantially engage with sustainability means that the what the key actor's do and say in their daily activities are considering the potential impacts to the future benefits from both aspects: the societal and environmental aspects. The relevant structures are needed, but what is done and said are more important. Hence, to study the substantial sustainable engagement, it is necessary to analyse the phenomenon from this practice perspective.

9.5. Limitation and future research opportunity

However, this study has time and space limitations that cannot be put aside. Time limitation has made the study focus only upon the company's EMAC practice and its intelligibility. Limited time has led to the limitation of the key actors being investigated, which excludes the key actors from the related government agencies and other stakeholders (e.g., surrounding society, business partners). Time limitation also limits the study of the interrelated orders and teleoaffective structure. The interrelated orders are limited to only the ones in the agriculture sector whilst the teleoaffective structure focuses upon the management accounting aspect in decision-making and prioritising certain related tasks. These limitations bring about opportunities for further research. Further research could involve more key actors from different backgrounds. Studying the key actors from the companies, government agencies, and stakeholders would help bring new insights into the EMAC practices. Further studies could also

broaden the investigation upon the interrelated orders by studying the regulations and acts across different industrial sectors. In other words, further studies can be focus upon the power of the structure or the system upon the practices carried out by the key actors. This would bring new insights into how the inter-industrial context shapes the EMAC practices. Further study could also investigate the teleoaffective structure in more depth with multi-disciplines to enrich the knowledge of how the EMAC practice teleoaffectivity shapes the environmental engagement.

The other limitation of this study is about space. This study focuses upon two companies in the agriculture sector; one is the agrochemical company that represents the supporting company to the sector, and the other one is a plantation company that represents the main player in the sector. Both companies have been taken in the context of the Indonesian agriculture sector. These chosen case studies limit the understanding of the EMAC practices across different industrial sectors and regions. Further study could expand the investigation to other industrial sectors. It could be conducted by having more manufacturing companies in the agrochemical industry or more plantation companies. Further studies could also be conducted across the sectors that have various environmental challenges (e.g., case studies from agriculture and mining sectors, or case studies on marine industries). Expanding the investigation across the regions in Indonesia or other countries is also beneficial. Expanding the studies across the industrial sectors or regions would bring new insights into the EMAC practices in different contexts or sites. It could help enhance the understanding of the substantial doings and sayings in the EMAC practices.

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Appendix 1 Semi-structured Interview

The interview will attempt to get information of the environmental practices that govern by the environmental management accounting control. The environmental management accounting control is defined as the information-based accounting structure that foster and enable the organisation's environmental stewardship role by governing accountable business practices. The internalised environmental values will be manifested not only in the particular environmental practices, but to the other operational practices as well. Based on practice theory from Schatzki (1996), the practice is conducted based on the one's understanding of practicing, the rules about the related practice and the teleoaffective structure. The below questions will investigate the aforementioned practice organisation that will provide the answer of the internalised environmental values within the key actors. The practice organisation that will be investigate through semi-structured interview will be the understanding and teleoaffective structure elements. The rule element will be investigated mainly from the documents analysis upon operational procedures, rules and policies.

The checklist of semi-structured interview questions will refer to the table 2 in the methodological chapter (chapter four). The followings are the elaboration of the table 2 into more detail checklist of semi-structured questions. The checklists are organised based on the supporting research questions. Each supporting research questions will have specific checklist.

Checklist 1. First supporting research question

Supporting research question	**Key concept in the theoretical framework**	**The list of questions as guideline for semi-structured interview**	**Participants**
How does the key actors exert the environmental practice in their daily activities?	Practice theory (the doings and sayings)	1. Tell me about your daily activities? 2. What are your responsibilities? 3. What is the scope of your authorities? 4. Tell me about your daily activities that related to the environment?	1. operational managers 2. accounting manager 3. operational staffs 4. board of director members

		5. How do you conduct the planning, coordinating, control and evaluation processes (including the performance evaluation)?	1. operational managers 2. accounting managers 3. board of director members
How does the practice organisation shape and reshape the practice they exerted?	The practice organisation	The understandings 6. What do you know about the environmental issues at the moment that is existing in the industry? 7. What do you know about the environmental issues in broader scale? 8. Do you have environmental knowledge that could support your daily activity? 9. What do you know about the management accounting control system? 10. How does the existing management accounting control system support your daily activities? 11. How do you direct your subordinate and evaluate their engagement with the environmental issues? How do you conduct this in the corridor of the existing management accounting control system?	1. operational managers 2. accounting manager 3. operational staffs (except for number 11 question) 4. board of director members
		The rules 12. Do you know about the environmental regulations that this organisation has to comply? 13. Do you have knowledge about the environmental management system such as ISO 14001, the GRI reporting, etc? 14. What do you know about the implemented internal environmental rules in this organisation? 15. Do you familiar with the management accounting control system that rules the operational activities from the financial perspective? 16. Do your decisions must consider the financial aspect? How important that financial aspect in your decision?	1. operational managers 2. accounting manager 3. operational staffs (except question no. 16) 4. board of director members

		The teleoaffectivity 17. Tell me your opinion upon the existing environmental issues? 18. Tell me what you think about the notion of environmental protection? 19. What do you think about the contribution that this organisation has to provide to protect the environment? Should every organisation include the environmental protection as part of its mission? Why? 20. How about the contribution of your particular department in these environmental issues? 21. Tell me your opinion regarding the regulations from the government or the other authorities about the environmental matters? 22. Insofar, tell me what you think about the existing environmental management accounting control system? Do you think that it supports your main operational activities? Do you think that this organisation has high commitment to the environmental protection? Why? 23. How do you foster your subordinates to engage with the environmental issues? Do you consider this matter in evaluating their performance? 24. What do you think the challenge in engaging with the existing environmental issues?	1. operational managers 2. accounting manager 3. operational staffs 4. board of director members

Note: The second supporting research question employs the documents analysis method, therefore, the detail checklist will be included in the checklist for the documents that will be obtained.

Checklist 2. Third supporting research question

Supporting research question	**Key concept in the theoretical framework**	**The list of questions as guideline for semi-structured interview**	**Participants**
What are the environmental management and management accounting control systems implemented?	Entities arrangements 1. humans' arrangements 2. artefacts arrangements 3. things arrangements 4. organisms' arrangements	There will be no interview for this section. The data are relevant documents.	-

How do those systems relate/engage with the existing regulations?	Entities arrangements 1. humans' arrangements 2. artefacts arrangements 3. things arrangements 4. organisms' arrangements	1. What do you think regarding the organisational structure that this organisation has and its capacity to engage with the environmental issues? 2. What do you think about the sufficiency of the environmental management facilities that this organisation has? 3. Do you think that the facilities and the system that this organisation implement to engage with the environmental issues has meet its environmental commitment? 4. What do you think about the economic benefit that this environmental management facilities have provided? 5. What do you think about the role of the implemented management accounting control system in governing the existing environmental practice? 6. Does this organisation have the facility to maintain the employees environmental and management accounting related knowledges? Do you familiar with this facility?	1. operational managers 2. operational staffs 3. accounting manager 4. board of director members
		7. Tell me about how the environmental management facilities in this organisation works? 8. Does it have the required maintenance to make it work in optimum way? 9. What is the challenge in running the environmental management facilities that this organisation has?	1. operational staffs 2. operational managers

Checklist 3. Fourth supporting research question

Supporting research question	**Key concept in the theoretical framework**	**The list of questions as guideline for semi-structured interview**	**Participants**
How are the relations/links between the managers' environmental practice and the related regulations?	Intentional relations between practice and interconnected social orders	1. What do you think about fitness of the environmental practice with the external regulations? 2. What do you think about the future possibility of the existing environmental practice in keeping up with the development of environmental discourse?	1. operational managers 2. accounting manager 3. board of director members

		3. Do you think the existing practice has reflected the organisation commitment to the compliance of any environmental related regulations?	
How are the relations/links between the practice and the internal organisation's systems implemented?	Link between the entities' arrangements and practice	4. What do you think about the existing environmental practice and condition of facilities that the organisation have? 5. What do you think of the contribution of management accounting control in supporting the environmental practice? 6. What do you think about the existing environmental management accounting control in supporting the environmental practice in keeping up with the development of environmental discourse?	1. operational managers 2. accounting manager 3. board of director members
		7. What do you think about the capacity of the existing environmental management accounting control in governing the environmental practice? 8. Does the environmental management accounting control contribute significantly to shaping and reshaping the environmental practice? 9. What do you think of the environmental facilities arrangements from the management accounting control lens?	1. accounting manager 2. operational managers
Why do such kind of relations are existed or being considered in shaping and reshaping the practice?	Links between both the practice and interconnected social orders with the entities' arrangements	10. What do you think regarding the organisational structure that this organisation has and its capacity to engage with the environmental issues? 11. What do you think about the sufficiency of the environmental management facilities that this organisation has? 12. Do you think that the facilities and the system that this organisation implement to engage with the environmental issues has meet its environmental commitment? 13. What do you think about the economic benefit that this environmental management facilities have provided?	1. operational managers 2. accounting manager 3. board of director members
		14. Tell me about how the environmental management facilities in this organisation works?	1. operational staffs 2. operational managers

		15. Does it have the required maintenance to make it work in optimum way? 16. What is the challenge in running the environmental management facilities that this organisation has?	

Appendix 2 Important Records in the Plantation Division – CP plantation

The following documents are three documented reports and one fertilisers control record which are used as the basis for the MAC practices. The daily performance report contains the data of the workers performance in one particular working day. All the reports are prepared by the sub-division manager and then validated by CP02 as the plantation division manager. Due to the data confidentiality, the following tables are only describing the template of the documents.

The Daily Performance Report

Date	**The Block Number**	**The Kind of Work**	**Number of the workers**	**Quantity**
….	….	….	…. (full time) ….. (part-timer)	….

Source: Internal CP plantation document, summarised.

The Census reports

Plant Census "CP Plantation"
Date of the census: ……

The Block Number	**The Plant**	**Age of the plant/category**	**Quantity (Total for each kind of plant)**	**Quantity (productive)**	**Quantity (TBM – non-productive)**
…..	..(name of the plant)..	….	….	….	….

Prepared by Validated by

(sub-division manager) (plantation division manager)

Source: Internal CP plantation document, summarised

The fertiliser Stock card

"CP Plantation"
Fertiliser "XYZ" Stock Card

Date	Notes	Incoming quantity	Outgoing quantity	Balance
…..	.....	….	….	….

Prepared by

(sub-division manager)

Validated by

(plantation division manager)

Source: Internal CP Plantation document, summarised

Fertiliser control record

Date of application	The Block number	The Plant Age	Quantity of the Plant being Fertilised	The Name/Kind of Fertiliser	Dosage per Plant
….	….	…. Years old	….	….	….

Source: Internal CP Plantation document, summarised

Appendix 3 CM Supplier Management – Supporting performance measurement

The following criteria are summarised from the supplier selection and evaluation procedure number P-02-04 (seventh revision, dated at 4th January 2018). The purpose of the procedure is to have selected and evaluated material and technical service suppliers that can guarantee the availability of the supplies at the right quantity, quality and time, which also comply to all environmental and safety requirements.

The criteria for domestic supplier selection are shown in the following table:

Number	Criteria	Maximum Score
1 *	Deed establishment	15
2 *	Letter of business permit	15
3 *	Company registration	15
4 *	Tax registration number	15
5	Bank reference	5
6	Certificate of analysis	5
7	Quality system	5
8	Material quality	10
9	The ability to fulfil environmental requirement	5
10	The ability to fulfil the health and safety requirement	5
11	The ability to supply according to CM company order	5

Notes: The * indicates that it is a mandatory requirement. However, the whole requirements are integrated as one set of criteria for selecting the domestic suppliers.

The criteria for non-domestic supplier selection are shown in the following table:

Number	Criteria	Maximum Score
1 *	Deed establishment	15
2 *	Letter of business permit	15
3 *	Company registration	15
4 *	Tax registration number	15
5	Bank reference	15
6	Organisational structure	5
7	The latest Financial Statement	10
8	The ability to fulfil environmental requirement	5
9	The ability to fulfil the health and safety requirement	5

Notes: The * indicates that it is a mandatory requirement. However, the whole requirements are integrated as one set of criteria for selecting the domestic suppliers.

Every supplier that pass the above selection criteria will be included in the list of selected suppliers. Their performance will be evaluated once every year. The criteria of evaluating the suppliers are as follows:

The criteria of evaluating the material suppliers (domestic and non-domestic)

Number	Criteria	Maximum Score
1	Timeliness of materials delivery	30
2	The quality fitness of the delivered material specification to the offer	30
3	The quantity fitness of the delivered material to the purchase order	20
4	The actual fulfilment of environmental requirement	10
5	The actual fulfilment of the health and safety requirement	10

The criteria of evaluating the technical service suppliers

Number	Criteria	Maximum Score
1	Timeliness	30
2	The quality of the works	30
3	Completeness of the working equipment	20
4	The actual fulfilment of environmental requirement	10
5	The actual fulfilment of the health and safety requirement	10

The related documents regarding the selection, monitoring and evaluating suppliers are as follows:

Supplier selection form

CM company
[address]

Domestic Supplier Selection Form

Supplier: [the company name of the supplier candidate]

Number	Criteria	Weigh (%)	Score
1 *	Deed establishment	15	
2 *	Letter of business permit	15	
3 *	Company registration	15	
4 *	Tax registration number	15	
5	Bank reference	5	
6	Certificate of analysis	5	
7	Quality system	5	
8	Material quality	10	
9	The ability to fulfil environmental requirement	5	
10	The ability to fulfil the health and safety requirement	5	
11	The ability to supply according to CM company order	5	
	Total	100	

Conclusion:
……..

Approved by
(Procurement Department Manager)

CM company
[address]

Non-domestic Supplier Selection Form

Supplier: [the company name of the supplier candidate]

Number	Criteria	Weigh (%)	Score
1 *	Deed establishment	15	
2 *	Letter of business permit	15	
3 *	Company registration	15	
4 *	Tax registration number	15	
5	Bank reference	15	
6	Organisational structure	5	
7	The latest Financial Statement	10	
8	The ability to fulfil environmental requirement	5	
9	The ability to fulfil the health and safety requirement	5	
	Total	100	

Conclusion:
……..

Approved by
(Procurement Department Manager)

Supplier evaluation form

CM company
[address]

Material Supplier (Domestic/Non-domestic) Evaluation Form

Supplier: [the company name of the supplier]

No.	Criteria	Delivery				Total Score	Average score	Final score
		1st	2nd	…..	(last)			
	Purchase order no.							
	Purchase order date							
1	Timeliness of materials delivery					30		
2	The quality fitness of the delivered material specification to the offer					30		
3	The quantity fitness of the delivered material to the purchase order					20		
4	The actual fulfilment of environmental requirement					10		
5	The actual fulfilment of the health and safety requirement					10		
	Total							

Notes:
A = 90 – 100 (excellent)
B = 75 – 89 (good)
C = 60 – 74 (pass)
D < 60 (poor)

Approved by
(Procurement Department Manager)

CM company
[address]

Technical Service Supplier Evaluation Form

Supplier: [the company name of the supplier]

No.	Criteria	Work				Total Score	Average score	Final score
		1st	2nd	…..	(last)			
	Purchase order no.							
	Purchase order date							
1	Timeliness					30		
2	The quality of the work					30		
3	The completeness of working equipment					20		
4	The actual fulfilment of environmental requirement					10		
5	The actual fulfilment of the health and safety requirement					10		
	Total							

Notes:
A = 90 – 100 (excellent)
B = 70 – 89 (good)
C = 50 – 69 (pass)
D < 50 (poor)

Approved by
(Procurement Department Manager)

The guideline for scoring the performance of materials suppliers (both domestic and non-domestic suppliers) are as follows:

1. Timeliness of the delivery

	point
The materials arrived before the deadline of the delivery date	30
The materials arrived in 1 day after the deadline of the delivery date	25
The materials arrived in 2 days after the deadline of the delivery date	20
The materials arrived in more than 2 days after the deadline of the delivery date	15

2. The fitness of the delivered material specification

	point
The quality of materials arrived are 100% fit with the specification for total delivered quantity	30
The quality of materials arrived are 90 - <100% fit with the specification for total delivered quantity	25
The quality of materials arrived are 80 - <90% fit with the specification for total delivered quantity	20
The quality of materials arrived are 70 - <80% fit with the specification for total delivered quantity	15

3. The correct quantity of the delivered material

	point
The quantity of materials arrived are 100% fit with the purchase order	20
The quantity of materials arrived are 90 - <100% fit with the purchase order	15
The quantity of materials arrived are 80 - <90% fit with the purchase order	10
The quantity of materials arrived are 70 - <80% fit with the purchase order	5

4. The fulfilment of the environmental requirement

	point
100% fulfilment of the environmental requirement	10
90 - <100% fulfilment of the environmental requirement	8
80 - <90% fulfilment of the environmental requirement	6
< 80% fulfilment of the environmental requirement	4

5. The fulfilment of the health and safety requirement

	point
100% fulfilment of the health and safety requirement	10
90 - <100% fulfilment of the health and safety requirement	8
80 - <90% fulfilment of the health and safety requirement	6
< 80% fulfilment of the health and safety requirement	4

The guideline for scoring the performance of technical service suppliers are as follows:

1. The timeliness

	point
The work finished before the deadline	30
The work finished in 1 day after the deadline	25
The work finished in 2 days after the deadline	20
The work finished in more than 2 days after the deadline	15

2. The quality of the works

	point
The quality of work finished is excellent	30
The quality of work finished is good	25
The quality of work finished is fair	20
The quality of work finished is poor	15

3. The completeness of the equipment

	point
The work equipment is complete and in good condition (minimum 90%)	20
The work equipment is complete and in condition between 80% - <90%	15
The work equipment is less complete and in condition between 70% - <80%	10
The work equipment is less complete and in condition < 70%	5

4. The fulfilment of environmental requirement

	point
100% fulfilment of the environmental requirement	10
90 - <100% fulfilment of the environmental requirement	8
80 - <90% fulfilment of the environmental requirement	6
< 80% fulfilment of the environmental requirement	4

5. The fulfilment of health and safety requirement

	point
100% fulfilment of the health and safety requirement	10
90 - <100% fulfilment of the health and safety requirement	8
80 - <90% fulfilment of the health and safety requirement	6
< 80% fulfilment of the health and safety requirement	4

Appendix 4 Summary of the EMAC relevant SOPs at CM

The list of CM company Standard Operating Procedures that are Related or Relevant to the EMAC Practices

No.	Standard Operating Procedures	SOP number	Date (latest update)	Key Issues	Government Regulations Reference
1	Pesticide production procedure	P-04-01 (5th revision)	12th January 2018	It emphasises upon the requirement to follow the working instruction for each pesticide product.	
2	Organic products production procedure	P-04-03 (3rd revision)	12th January 2018	It emphasises upon the requirement to follow the working instruction for each organic product.	
3	Controlling procedure for non-conformity – pesticides product	P-04-04 (3rd revision)	12th January 2018	The non-conformity products in this procedure is covering the finished good from CM company and materials from suppliers. Reprocessing is allowed to certain extent. QA section role is important to define the non-conformity products.	
4	Controlling procedure for non-conformity – organic product	P-04-06 (2nd revision)	15th January 2018	The non-conformity products in this procedure is covering the finished good from CM company and materials from suppliers. Reprocessing is allowed to certain extent. QA section role is important to define the non-conformity products.	
5	Emergency preparedness and response procedure	P-04-07 (6th revision)	3rd July 2017	Any emergency situation must be followed up with proper investigation, evaluation and recommendation to avoid it from happening in the future. The emergency situation is also including the natural disaster. Periodic drill must be conducted under the environment and health and safety section head and production department manager.	Act no. 1/1970 Government regulation no. 50/2012 Regent decree no.25/1996 (All about occupational health and safety)
6	Procedure for consultation, communication and participation	P-04-08 (4th revision)	22nd January 2017	This procedure is facilitating efforts to increase the employees' awareness of the importance of environmental management. The GT/ST meeting is based upon this procedure.	

7	Procedure for monitoring and measuring environmental performance and occupational health and safety	P-04-09 (3rd revision)	3rd August 2018	The indicators used are following the government regulations and company's policies. The indicators are including (but not limited to): electrical consumption, level of incidents, noise level, air pollution, illness caused by the work, etc. The measuring and monitoring must be conducted on yearly basis.	Act no. 1/1970 (about occupational health and safety)
8	Procedure for waste handling	P-04-11 (6th revision)	24th May 2018	This procedure is covering the solid and liquid waste, especially the ones that are included in the list of toxic and dangerous materials.	Act no. 32/2009 Government regulation no.101/2014 Minister of Environment regulation no.5/2014 Governor regulation no.72/2013 (all about the environment protection and the handling of toxic and dangerous materials)
9	Guidelines for occupational health and safety signs & symbols	P-04-12 (3rd revision)	14th June 2017	It explains the meaning of the symbols and where it should be placed.	
10	Self-protection equipment usage procedure	P-04-14 (2nd revision)	14th June 2017	It regulates about how to use the equipment properly as a mandatory in certain areas	
11	Working permit system procedure	P-04-15 (4th revision)	14th June 2017	It is about the procedure of granting access to a risky job. The access is only granted whenever the job safety analysis documents is available.	
12	Investigation and reporting procedures	P-04-16 (2nd revision)	17th March 2014	This procedure is to tackle the working accident event or the near-miss of working accident event.	President decree no.22/1993
13	Procedure for disseminating the occupational health and safety information	P-04-18 (2nd revision)	27th September 2016	Alongside with the SOP number P-04-08, it becomes the foundation of GT/ST meeting activity. It is the part of the internalisation process.	
14	Procedure for emergency preparedness and response in the temporary toxic and dangerous waste disposal facility	P-04-20 (1st revision)	15th January 2018	This procedure is basically the same as the aforementioned P-04-07 (6th revision), but this procedure is special for the temporary toxic and dangerous waste disposal facility.	Act no.1/1970 Minister of Labour regulation no. PER-50/MEN/2012 Regent decree no.25/1996

					ISO 14001 (2015), article 8.2 OHSAS 18001 (2007) article 4.4.1
15	Procedure for quality inspection in production	P-04-21 (1st revision)	22nd January 2018	This is the procedure to guarantee the quality of the products. The QA section plays the key role in this process.	
16	Procedure for waste handling in the temporary waste disposal facility	P-04-22 (2nd revision)	24th May 2018	This procedure requires the separation of toxic and dangerous waste with the non-toxic and dangerous one. This procedure also requires the company to have certified external party to process the toxic and dangerous waste whenever CM company facility cannot process it.	Government regulation no.101/2014 and no. 74/2001 Minister of Environment regulation no.14/2013 Environmental Impact Management agency decree no. KEP-01/BAPEDAL/09/1995 (All about the handling of toxic and dangerous waste/materials)
17	Procedure for managing the wastewater treatment plant (WWTP) facility	P-04-24 (3rd revision)	24th May 2018	This procedure is about how to run the facility and the requirement of the periodic monitoring of the wastewater quality standard at the end-of-pipe point (the point before the disposal to the main drain line in the industrial estate).	Act no. 7/2004 Government regulation no.20/1990 Minister of Environment regulation no.5/2014 Governor regulation no.72/2013 (All about water resources and the water pollution prevention actions)
18	Production planning procedure	P-04-26 (2nd revision)	27th December 2017	This procedure governs how the production planning must be conducted and the involvement of the other related departments (sales and procurement departments). Special attention is given to the mixing and packaging capacity.	

19	Procedure for controlling the toxic and dangerous material and waste symbols	P-04-27	12th January 2018	This procedure regulates the use and the disposal of unused/used symbols.	Government regulation no. 101/2014 Minister of Environment regulation no. PER-03/MENLH/2008 and no. 14/2013 (about the procurement of the symbols and the guideline of its use)
20	Procedure for traffic management system in the production area	P-04-25	6th June 2017	This procedure is to make sure the transportation safety and efficiency in handling the materials inside the production area.	Act no.1/1970 Minister of Labour regulation no. 50/MEN/2012 Government regulations no. 26/1985, no. 43/1993 and 44/1993 (all about road and traffic regulations)
21	Domestic procurement procedure	P-02-01 (2nd revision)	5th January 2018	In this procedure, there are segregation of authorities regarding the procurement activity based upon the value of the purchase.	
22	Non-domestic procurement procedure	P-02-02 (4th revision)	5th January 2018	This is almost the same procedure, but special for importing materials activity.	
23	Technical service procurement procedure	P-02-03 (5th revision)	29th January 2018	This is almost the same procedure, but special for purchasing the technical service.	
24	Supplier selection and evaluation procedure	P-02-04 (7th revision)	4th January 2018	This procedure provides the detail guidelines about how to select the supplier and monitor their performance. All the necessary criteria are existing in this procedure. The template for the selection and evaluation forms are also existed in this procedure.	
25	Procedure for handling the non-conformity materials in the material warehouse	P-02-06 (1st revision)	22nd January 2018	This procedure is special to handle the non-conformity material in the material warehouse.	

[i] The N100 in the KPMG survey refers to a global sample of 4,900 companies from 49 countries. These companies include the top 100 companies in terms of revenue. The G250, on the other hand, refers to the world's 250 largest companies by revenue based on Fortune 500 ranking in 2016 (KPMG, 2017).

[ii] The strategic plan of the Ministry of Agriculture is established under the ministerial regulation number 19/Permentan/HK.140/4/2015. It has been revised with ministerial regulation number 9/Permentan/RC.020/3/2016 in 2016.

[iii] The strategic plan of the Ministry of Agriculture of Indonesian Republic is issued under Ministerial regulation number 09/Permentan/RC.020/3/2016.

[iv] The Act number 41/2009 is about the protection of sustainable food agriculture land. This act is established to protect the land availability for sustainable farming, the farmer land ownership, and ecological balance. It also fosters agriculture revitalisation and the achievement of essential goals of food independence, security, and sovereignty. In turn, the act will catalyse the people's wealth by securing jobs opportunity in the agriculture sector.

[v] Act number 5 in 1960 (UU nomor 5/1960) is about the basic agrarian principle. This act or law becomes the legal standing of the other government regulations that govern the land reform until today. At least there are five regulations such as government ordinance and presidential and ministerial decrees that regulate the implementation of the UU nomor 5/1960. The basic agrarian principle states that government has the full power to arrange the lands, which means they have the full authority to determine the allotment of land and arrange the legal relationship between people and the land, water, and space areas (including the legal actions that the people can do upon those objects). The government will prioritise the use of the land, water, and space for the people's wealth. The execution and further detail of the arrangements will be exerted by the local government by considering each area's characteristic. In making the arrangements upon the land, water, and space, the priority follows the following purposes: 1. For the country purposes; 2. For the religious purposes; 3. For the society's well-being centre; 4. For increasing the agriculture productivity; and 5. For the industrial, transmigration, and mining purposes. Above all, the government will conduct anything to circumvent any private land ownership monopoly practice. Hence, the government strictly regulates the maximum land area allowed for private ownership (including the ownership by any kind of legal organisation or company).

[vi] The government establishes government regulation in lieu of law (Undang-undang nomor 56/Prp tahun 1960) to regulate the limitation of land ownership by an individual or a legal organisation. This regulation becomes the reference in executing the land redistribution programme as part of the land reform policy.

[vii] The Ministry of Agriculture set a strategic plan for the agriculture sector development under the Ministerial regulation number 19/Permentan/HK.140/4/2015. It has been revised with Ministerial Regulation number 9/Permentan/RC.020/3/2016 in 2016.

[viii] The Acts relating to the agriculture inputs are Act number 4 in 2006 (UU nomor 4/2006) about the ratification of an international treaty on plant genetic resources for food and agriculture, and Act number 41 in 2009 (UU no 41/2009) about the Sustainable agricultural land protection.

[ix] There are two acts that become the foundations for the other regulations for the fertilisers and pesticides. The first act is act number 12 in 1992 (Undang-undang nomor 12/1992) about the crop cultivation system. The second act is act number 8 in 1999 (Undang-undang nomor 8/1999) about consumers' protection.

[x] The act number 1 in 1970 is the law that regulates occupational safety in companies or workplaces with high accident risks. This act explicates in detail what kind of work environment is considered risky. By looking at the criteria, almost all kinds of work environment are included. Act number 32 in 2009 is to regulate the environment protection and management. In its consideration, the degrading environment that has a significant impact upon the quality of life is part of the government concern despite the need to revise the older act, which is act number 23 in 1997.

[xi] The government ordinance number 50 in 2012 is about the SMK3 that stands for *sistem manajemen keselamatan dan kesehatan kerja* or occupational health and safety management system. This ordinance is closely related to the OHSAS standardisation that has been implemented in many companies along with the implementation of the other ISO standards. The government ordinance number 101 in 2014 is about the handling of toxic and dangerous materials. This ordinance is based upon the aforementioned act number 32 in 2009. This ordinance is also closely related to the implementation of ISO 14000 for environment management.

[xii] The standard of wastewater can be varied region to region and industry to industry. This is because each region has its own environmental characteristic as well as socio-economic interest that, to some extent, make the head of the region issue a particular ordinance to regulate this matter. The ministerial ordinance that becomes the reference is the ministerial ordinance number 5 in 2014 from the Ministry of Environment.

[xiii] The Minister of Agriculture issued two ordinances for crop cultivation and the plantation. The ordinance for the crop cultivation is number 48/Permentan/OT.140/10/2006 about the good agriculture practice while the one for plantation is number 5/Permentan/KB.410/1/2018 regarding the plantation land clearance and management without burning. For the coffee plantation, in particular, the ministry also established the ordinance number 49/Permentan/OT.140/4/2014 regarding the good agriculture practices on coffee.

[xiv] The current act about the plantation is Act number 39 in 2014. This Act replaced the previous act for plantation in 2004 (Act number 18/2004).

[xv] In Indonesia, the act or law for a limited company is the act number 40 in 2007. In this act, all aspects of limited company business are covered, including its social and environmental responsibility.

[xvi] The Good Agriculture Practice on coffee is regulated in the Ministry of Agriculture regulation number 49/Permentan/OT.140/4/2014.

[xvii] The targets implemented in CM refer to the Minister of State-owned Enterprise regulation number KEP-100/MBU/2002 that regulates the indicators of the State-owned enterprise health. As a subsidiary of a state-owned enterprise (it holds 60% of the company share as depicted in the company profile), CM compliance with this regulation is mandatory.