Accounting for Carbon Emission Trading: An Australian Perspective

A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy

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DECLARATION

I certify that except where due acknowledgement has been made, the work is that of the author alone; the work has not been submitted previously, in whole or in part, to qualify for any other academic award; the content of the thesis is the result of work which has been carried out since the official commencement date of the approved research program; any editorial work, paid or unpaid, carried out by a third party is acknowledged; and, ethics procedures and guidelines have been followed.

Tharatee Mookdee
October, 2013
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ABSTRACT

The emergence of market-based mechanisms to reduce greenhouse gas emissions presents a challenge for accountants who are now required to reflect the new economic given to carbon credits and related assets in the company accounts. Given the absence of formal accounting guidelines, carbon market participants (liable entities and carbon credit providers) around the world are able to select accounting practices and reporting methods based on individual judgment.

The main aim of this thesis is to explore current accounting practices (asset classification, sequent measurement and impairment testing) of Australian carbon credit providers. In addition to exploring the underlying reasons for specific accounting practices, this study also aims to uncover emerging normative views drawing on expert opinions. The study was conducted using case-study methodology and in-depth interviews, supported by archival data and secondary data. The study used institutional theory to interpret research interviews. In general, it was found that disclosures of related accounting information are incomparable due to the lack of formal benchmark guidelines. While the research results show accounting practices for carbon credits and related assets are in accordance with existing general accounting standards and conceptual frameworks, the preferred asset classification of carbon credits varies among the case site participants, according to specific market requirements and economic uncertainty. Applicable values and valuation methods differ from case site to case site due to the nature of each company’s business, internal operations and economic factors. Impairment testing conducted by each organisation requires reference price indices from various sources, but basically they are determined by the nature of assets and professionals. Revenue and expense recognition greatly relies on accounting estimation made by in-house, on-hand and external forestry professionals from government agencies and private bodies.

When trying to elicit an emerging normative viewpoint, the expert views indicate asset classification, valuation, impairment; revenue and expense recognition should be prepared conservatively, based on a true and fair view.

In conclusion, accounting policy makers and professional accountants in Australia need to address these issues to improve the quality of the accounting information in this area. Further research should focus on the implications and other developments of the carbon credit accounting practice.
## Abbreviation

<table>
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<th>Acronyms</th>
<th>Full Names</th>
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<tr>
<td>ACCUs</td>
<td>Australian Carbon Credit Units</td>
</tr>
<tr>
<td>AASB</td>
<td>Australian Accounting standard Board</td>
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<td>ASIC</td>
<td>Australian Securities and Investment Commission</td>
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<td>ACPs</td>
<td>Abatement Certificate Providers</td>
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<td>CDM</td>
<td>Clean Development Mechanism</td>
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<tr>
<td>CER</td>
<td>Certified Emission Reduction</td>
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<tr>
<td>CFI</td>
<td>Carbon Farming Initiatives</td>
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<tr>
<td>CPM</td>
<td>Carbon Price Mechanism</td>
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<tr>
<td>CPRS</td>
<td>Carbon Pollution Reduction Schemes</td>
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<tr>
<td>CO2</td>
<td>Carbon dioxide</td>
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<tr>
<td>DOIC</td>
<td>Domestic Offset Integrity Committee</td>
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<tr>
<td>DSA</td>
<td>Demand-Side Abatement</td>
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<tr>
<td>EPA</td>
<td>US Environmental Protection Agency</td>
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<tr>
<td>ERC</td>
<td>Emission Reduction Credit</td>
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<tr>
<td>EU ETS</td>
<td>European Union Emissions Trading Schemes</td>
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<tr>
<td>FERC</td>
<td>Federal Energy Regulatory Commission</td>
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<tr>
<td>FVTPL</td>
<td>Fair Value Through Profit and Loss</td>
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<tr>
<td>GGAS</td>
<td>New South Wales Greenhouse Gas Reduction Schemes</td>
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<tr>
<td>GHG</td>
<td>Greenhouse Gas</td>
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<tr>
<td>IAS</td>
<td>International Accounting Standard</td>
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<tr>
<td>IEA</td>
<td>International Energy Agency</td>
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<td>IETA</td>
<td>International Emission Trading Association</td>
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<td>IFRS</td>
<td>International Financial Reporting Standards</td>
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<td>IPCC</td>
<td>Intergovernmental Panel on Climate Change</td>
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<tr>
<td>JI</td>
<td>Joint Implementation</td>
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<tr>
<td>NAP</td>
<td>National Allocation Plan</td>
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<tr>
<td>NGACs</td>
<td>NSW Greenhouse Abatement Certificates</td>
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<td>NOX</td>
<td>Nitrogen oxide</td>
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<tr>
<td>NZ ETS</td>
<td>New Zealand Emission Trading Schemes</td>
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<tr>
<td>NZUs</td>
<td>New Zealand Units</td>
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<tr>
<td>OECD</td>
<td>Organization for Economic Cooperation and Development</td>
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<td>PSP</td>
<td>GHG Protocol for the U.S. Public Sector</td>
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<td>R&amp;D</td>
<td>Research and Development</td>
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<td>RGGI</td>
<td>Regional Greenhouse Gas Initiative</td>
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<td>RECs</td>
<td>Renewable Energy Certificates</td>
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<td>SGARAs</td>
<td>Self-Generating and Re-generating Assets</td>
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<td>SOX</td>
<td>Sulphur Dioxide</td>
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<tr>
<td>WBCSD</td>
<td>World Business Council for Sustainable Development</td>
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<tr>
<td>WRI</td>
<td>World Resource Institute</td>
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<td>UN</td>
<td>United Nations</td>
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Chapter 1
Introduction

1.1 Introduction

This research follows the financial accounting practices for carbon emissions trading in Australia. In particular, this thesis contributes to the literature with a focus on asset recognition and classification, subsequent measurement, impairment testing, revenue and expense recognition, accounting change, accounting policy disclosure practices. The case companies, therefore, were selected from market participants who have developed full steps of accounting practices covering all issues above. While the emerging accounting practices of the benchmark participants and carbon credit providers in both mandatory and voluntary markets from 2005-2012 were reviewed as potential participants, it was only the forest carbon credits providers who have been practicing full steps of accounting practices (asset classification, subsequent measurement and impairment testing). They were selected as case participants as depicted in Figure 1.1.

![Figure 1.1 Sample Selection Process](image)

However, case companies have a trading arm and qualified traders in house and on hand. At carbon emission trading market, all types of carbon credit\(^1\) are legally equal. Therefore, the origins of carbon credits, abatement location and sector coverage are not potential factors for this study.

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\(^1\) A carbon credit is a right to emit one tonne of carbon dioxide or another equivalent greenhouse gas to the atmosphere. The term carbon credits, carbon offsets, emission allowances (in Europe) and NSW Greenhouse Abatement Certificates, NGACs (in Australia) are interchangeable in this thesis.
This study contributes with in-depth details of the underlying reasons for varying accounting treatments have been sought by practitioners from these organisations.

The emission trading in this study includes sales of carbon credits, carbon planting contracts and other related assets available for sale. A key contribution of this study is an exploration of the factors that constitute emerging good accounting practice for carbon emission trading according to expert opinion.

This chapter is organised as follows: Section 1.2 outlines the rationales of the research. Section 1.3 presents Statement of Problem and section 1.4 and 1.5 present research questions and purposes of study. Scope of research is presented in Section 1.6. Section 1.7 provides the theoretical framework. Overview of research methodology and method is presented in section 1.8. Plan of study is presented in section 1.9

1.2 Rationale for the Research

Accounting is a global business language. Given the absence of formal guidelines for carbon emissions trading worldwide, market participants (liable entities and carbon credit providers) are allowed to select suitable accounting practice and reporting based on individual judgment. Also, emitters are allowed to be carbon credit providers or invest in forest carbon sinks. This opportunity potentially created the diversity of accounting practice. Given little is known about the full set of accounting approaches taken by forest offset providers (creators, sellers, traders) as depicted in Figure 1 Sample Selection Process, this research provides an analysis of 3 forest offset providers over a period of 7-8 years. The following paragraphs provide a background to the emergence of this market and the operation of new forms of assets.

Mainstream science on climate change advocates the cutting of global greenhouse gas emissions by 80 per cent. Various countries in the world have begun to respond to this challenge in a number of different ways, although a global solution remains elusive. A key initiative is the Kyoto Protocol, the United Nations Framework Convention on Climate Change (UNFCCC). All member countries, including Australia, have given a general commitment to reduce their greenhouse gas emissions. As a result, varying approaches to emission reduction have emerged globally. For example, projects in greener energy, lower-emission generation, energy consumption reduction, hydro power generation, landfill gas, methane avoidance, carbon sink and sequestration, etc. The carbon market around the world is presented in Appendix 1.
Large emitters, such as electricity generators, are now under pressure to reduce greenhouse gas emissions. They can either make an operational decision to reduce electricity consumption or invest in lower-emission technology, such as those described in the previous paragraph.

In response to government, customer or other stakeholder concerns, emitters may be mandated to offset emissions or they may elect to join the voluntary market and purchase offsets for reputational or strategic reasons (the background of the carbon emission trading market is presented in Appendix 1). For example, airlines offer their customers the potential to offset their carbon miles by participating in the voluntary carbon market.

**Figure 1.2 Australian Emissions Markets**

**Australian Emissions Market**
**From 2003-June 2012**

**Mandatory Market**
- New South Wales Greenhouse Gas Reduction Schemes (GGAS), IPART
- Abatement Certificate Providers (ACPs)
  - Lower-emission generation
  - Demand-side abatement (DSA)
- Forest Carbon Sequestration
- Liable entities (Buyers) include –
  - Electricity Generators in NSW, VIC, ACT such as Origin Energy, Earing Energy

**Voluntary Market**
- Greenhouse Friendly™ Program (GFP)
- The National Carbon Offset Standard (NOS)
- GreenPower™ RECs
- Corporate Social Responsibility and Marketing Purpose
- Sellers include those who perform
  - Renewable Energy
  - Energy Efficiency
  - Forestry: planting; conservation
- Buyers include:
  - Both liable and non-liable entities
  - Events (e.g., G8 Summit, 2006 World Cup football/soccer),
  - And individuals

As shown in Figure 1.2, on one side are the buyers (liable and non-liable emitters) and on the other side are the producers (carbon credit providers).

In mandatory market, the NSW Greenhouse Abatement Certificates (NGACs) or carbon credits could be created by performing the following activities:

- Low-emission operation/production for example in power stations, oil refineries etc. The participant
- Demand-Side Abatement (DSA) perform any activities that reduce energy consumption.
- Carbon sequestration\textsuperscript{2} is the process of capturing and removing Carbon Dioxide (CO\textsubscript{2}) from the atmosphere.

ACPs' customers could be investors or individuals who wish to offset their carbon footprints from their daily activities such as electricity consumption or air travelling as depicted in Figure 1.3 below. Under carbon planting contracts, customers are liable emitters who prefer to hedge against the uncertainty of carbon pricing, seeking a cheaper acquitting obligation or speculation. Non-liable entities may prefer to plant for corporate social responsibility campaigns and sustainability.

Given this is a relatively new and emerging global market, little is known of asset classification and subsequent measurement and impairment testing that underlies carbon credit trading. This study, therefore, aims to explore the current accounting practices of carbon credit providers who have taken three accounting steps: asset classification, subsequent measurement and impairment testing. The forest carbon credit providers were selected. Figure 1.3 outlines the major operating activities of forest offset providers.

\textbf{Figure 1.3 Forest Carbon Credit Providers’ Major Operating Activities.}

Veith et al. (2009) points out that emissions trading create long term financial consequences for firms. The statements of problem and research questions are discussed in the next section.

\textsuperscript{2} There are at least three potential means to keep CO\textsubscript{2} out of the atmosphere; Oceanic sequestration pumps the CO\textsubscript{2} into the deep ocean. CO\textsubscript{2} is soluble in the water; Geologic sequestration captures CO\textsubscript{2} from an industry, stationary, or energy related source (e.g. a power plant, a coal-to-syngas plant, a cement production plant) and buries or injects into the subsurface. Generally, CO\textsubscript{2} injection is used in enhanced oil and gas recovery; Terrestrial sequestration binds CO\textsubscript{2} in soil and vegetation near the earth’s surface, for example tree-planting and no-till farming (Daniels 2011).
1.3 Statement of Problem

The different actions taken by organisations to tackle global climate change and the emergence of carbon markets have accounting and reporting implications that deserve the research of accounting academics.

The absence of formal guidelines allows market participants to select suitable accounting practices and reporting based on individual judgment and from generally available principles. A number of different accounting approaches have been taken which potentially undermines the comparability of financial statements, giving further insight into the diversity of accounting practice, making it harder for stakeholders to make appropriate decisions.

With the absence of formal accounting guidelines, there is considerable variation in accounting practice. A lack of comparability and inconsistency of financial reporting of market participants means the requirements of the conceptual framework for financial reporting are not being met. Companies require formal guidelines from accounting standard setters.

1.4. Research Questions

The research questions are as follows:

1 How do the forest carbon credit providers in Australia account for carbon emissions trading and abatement certificates in their annual financial statements?

2 Why are the forest carbon credit providers motivated to choose a particular accounting method to report emissions trading activities and carbon credits in their annual accounts?

3 What constitutes the emerging good practices in accounting for carbon emissions trading drawing on experts’ opinions?

1.5. Purpose of the study

This thesis is organised based on three case studies. This thesis attempts to contribute to existing knowledge of carbon trading on two levels: (a) empirical and (b) theoretical. Firstly, it seeks to make an empirical contribution to the existing literature generally and the accounting literature specifically. Secondly, using institutional theory, this thesis also seeks to make a contribution at the theoretical level.

The purpose of the study is three-fold:
1. To determine the current financial accounting practices within the financial statements of forest carbon credit providers in Australia

2. To identify the underlying reasons that influence the choice of forest carbon credit providers on how to report relevant accounting information in financial statements.

3. To uncover emerging good practices (if any) in accounting for emissions trading drawing on expert opinion and extant practices.

The conceptual framework for this study is presented in Figure 1.4.

As shown in Figure 1.3, the study began with a thorough literature review on accounting for emissions trading. As found from the concepts such as asset recognition, applicable value, revenue and expense recognition, and their financial statement reporting associated with carbon emission trading, particularly in the Australian context, relevant company annual reports were collected (both soft and hard copies) from 2004 to 2012.

In the literature review process, the main International Guidelines that have been developed show attempts that have been made internationally by accounting standard setters and others to develop accounting guidelines, the various methods recommended, and the major concerns voiced for the quality of financial statement information.

All the carbon trading related policy statements and important issues disclosed by the companies themselves have been clearly documented and the practices reported by practitioners have also been carefully documented. Having reviewed all the annual reports and their contents, the practitioners involved in accounting for emissions trading were contacted to explore further evidence on their practices and issues associated with carbon emissions trading. The practitioners classifications of carbon related assets and liabilities, their choices and relevant professional justifications were raised and obtained through a series of interviews.

Based on these justifications, the researcher contacted the experts in the field of accounting for emissions trading to discover their views and critiques on the practitioners professional judgments and justifications for the classification of assets and liabilities. Through this process, the researcher was able to identify the emerging good practices in accounting for emissions trading.
1.6 Scope of Research

The study is concerned with financial accounting for emissions trading activities only. Other accounting issues from surrendering activities of liable entities as required by GGAS, Kyoto Protocol or other emission trading schemes are not addressed.

The term carbon credits, carbon offsets, emission allowances (in Europe) and NSW Greenhouse Abatement Certificates, NGACs (in Australia) are interchangeable in this thesis.

The focus is on asset recognition/classification of carbon credits, carbon sinks, NGACs accreditation, forestry right and carbon right. In addition, the potential applicable value, subsequent measurement and impairment testing of these assets are consequently addressed in this chapter. Also, this study includes revenue recognition from their major operating activities such as sales of carbon credit and provision of carbon planting services, financial statement reporting as well as disclosure.

Management accounting and earning management issues are not addressed. Issues relating to quantification of carbon dioxide, abatement auditing and reporting, emitter’s surrendering activities are also not addressed.

The term experts used in this study means the experts in financial reporting only. These experts will be able to form opinions on accounting treatments where no guidelines exist.

The study covers financial years from July 2004 - June 2012 inclusive while the Australia mandatory market was under Greenhouse Gas Reduction Schemes, the baseline and credit system.3

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3 Under baseline and credit system, emitters are rewarded carbon credits from their emission reduction.

1.7 Theoretical Framework

As found from the literature review, in the absence of formal accounting guidelines for carbon emission trading, management may adopt a particular accounting method for recognising valuing asset and impairment testing. Such accounting choices may be driven by a desire to report effectively and efficiently, but alternative drivers are possible. In attempting to uncover the drivers concerned, it is proposed to use the institutional theory Framework in this thesis which aims to explain why the form, characteristics and practices of organisations within the same field/conditions/pressures tend to become similar or dissimilar (DiMaggio & Powell 1983).

Institutional theory has two main dimensions: isomorphism and decoupling. Isomorphism consists of coercive factors which stem from political influence and organisation legitimacy via laws, rules, regulations and the accreditation process. Normative influences are associated with professional values. Mimetic factors concern the imitating behaviour of organisations in response to uncertainty. Decoupling, refers to the creation and maintenance of gaps between formal policies and actual organisational practices. This research will seek to understand whether carbon credit providers’ accounting practices are being influenced by isomorphic factors given there is no formal guidance in accounting for emissions trading. Furthermore, accounting choices by carbon credit providers may vary as a result of management choices and existing rules and regulations. It is argued that economic factors such as economic conditions, resource dependence, technology advancement and competition are also relevant to this study. Economic competition/condition as well as technology advancement improves management and financial accounting practice. These factors are highlighted in Chapter 3 Theoretical Frameworks. The diversity of accounting practice to date would affect comparability of their financial statements. Further influencing isomorphic tendencies within a rapidly growing new industry are management choices that align with broader community sentiment and perceptions that trees and forests are visible representations of carbon reduction. Figure 1.5 depicts possible factors that might affect manager’s accounting choices.

A complete discussion on institutional theory and economic factors is provided in Chapter 3 - Theoretical Framework.
1.8 Overview of Methodology and Methods

In this thesis 3 case studies are used to examine the research phenomena of interest. They are; one state enterprise and two listed companies who provide forest carbon credits and carbon planting services to non-liable and liable entities in the Australian carbon market.

Ontology is an attempt to understand the subjective reality of the practicing world. Epistemology is the philosophy focuses on how this social reality can be known and who can be a knower (Guba & Lincoln 2008; Hesse-Biber & Leavy 2011). An ontological position of this study is the carbon emission market and the diversity of accounting practices in absence of formal guidelines. Epistemologically, it is based on the replication of theory as against the generalisation of the social phenomena. The current accounting practices of carbon credit providers can be explored from annual reports and the review of literature. The underlying reasons for these practices can be explored from practitioners interviews. Emerging good practices can be explored by examining the experts justification and critique.
1.8.1 Research Methods

This study uses two research methods. These are: the archival data available from company website and ASIC’s database and; interviews with practitioners in the field and finally interviews with experts in the field of accounting for carbon emissions trading. The combination of these different methods forms a triangulation. Triangulation is one way to increase validity and strength and interpretative potential of study, decrease researcher biases, and provide multiple dimensional view.

1.8.2 Exploratory Case Study Research

To answer how and why questions as indicated in the previous section, Yin (2009) points out that case studies are the preferred strategy. An exploratory case study approach is therefore taken to better understand the accounting treatment of carbon emission credits in a newly emerging industry. Research data is collected through archival data of current accounting practice of Australian carbon credit providers from 2005-2012. Additionally, the study is seeking to describe accounting practices and then come to terms with summary of existing accounting issues. In the determination of the research methods; research objectives, the nature research questions, theory employed in the study, background of the researcher, and the impact of research participants are considered to be the important factors. Consequently, it seeks to explore underlying reasons of those accounting issues. A predetermined set of interview questions have been designed from literature review and the archival data.

This research, approved by RMIT’s Human Research Ethics Committee, involves case site interviews and subsequent follow up with experts in the field of financial accounting. Anonymity has been guaranteed, hence names and companies have been disguised. CFO delegates and senior accounting professionals of each company were invited to participate in interview sessions. The semi-structured interviews allow interviewees to raise further issues and construct more ideas during the conversation. To uncover emerging good practices (if any) draws on experts’ opinion, experts, were invited to participate in-depth-interview.

Experts included accounting scholars and auditors who are professionals and very experienced in financial reporting. The plan of study is presented in the next section.
1.9 Plan of Study

The focus of the thesis is on the financial accounting and reporting of carbon credit providers which, as we shall see, involves the creation and sale of carbon credits and the provision of a carbon planting service. In this thesis, financial accounting and reporting includes asset classification, subsequent measurement and impairment testing, revenue recognition, disclosure and accounting change.

The study adopts a positive approach in explaining why carbon credit providers adopt particular accounting practices in their annual accounts. Also, a normative approach is adopted with expert opinions sought on appropriate ways of financial reporting by carbon sequestration firms. However, some emitters are currently owners of forest carbon credits and forest carbon sinks. It is expected that the research outcomes will be useful for both emitters and carbon credits providers.

The remaining chapters of this thesis are organised as follows.

Chapter 2 contains a literature review on accounting for emission trading, including withdrawn guidelines, existing general accounting standards, active related guidelines, and prior surveys in Europe. The discussion encompasses the main International Guidelines that have been developed, showing attempts that have been made internationally by accounting standard setters and others to develop accounting guidelines, the various methods recommended, and the major concerns voiced for the quality of financial statement information. The chapter also includes findings from surveys of actual accounting practices adopted by participants in emissions trading markets, which highlight key accounting issues and the diversity of accounting practices.

A literature review on institutional theory, including the theoretical framework, is presented in Chapter 3. The chapter also identifies and discusses the economic factors which may potentially affect ACP accounting choices.

Chapter 4 covers the research methodology and the methods used in the research. Research methods are based on semi-structured interviews, archival records, and secondary sources. The findings from the archival data are presented and analysed in Chapter 5 and interview outcomes are presented and analysed in Chapter 6.

Chapter 7 provides the conclusion of the thesis which demonstrates the main findings derived from interviews and comparisons with previous studies. Recommendations for a potential approach to accounting for carbon trading activity are presented, and the limitations of the research identified.
New knowledge derived from a unique case in Australia is also presented in this chapter. This is followed by limitations of the study, recommendations and scope of further research.
Chapter 2

International Accounting Guidelines for Emissions Trading and Accounting for Emissions Trading Literature

2.1 Introduction

Recently Raiborn and Massoud (2010, p.109) pointed out that: Regardless of whether one views cap and trade programs as beneficial or detrimental, the fact that emissions allowances can be traded indicates that they have an economic value. As such, several accounting issues are raised. This quote highlights the importance of allowances being given a value for trading purposes.

It can be argued that accounting professionals have a potentially pivotal role in providing improved financial information, and in generally quantifying and profiling the financial consequences of climate change (IETA-PwC 2007). As highlighted in Chapter 1, carbon emissions are the most prevalent of the greenhouse gases and are carefully monitored by governments and other stakeholders. Depending on jurisdictional legislations, polluting companies are now required to reduce their carbon emissions, become part of mandatory emissions trading schemes and/or can join voluntary schemes and purchase carbon credits to offset their emissions. The financial accounting recognition of carbon emissions (i.e. as alternative categories of assets or even as a liability to pollute) is now being debated in the literature (A4S 2006).

Accounting bodies (International Financial Reporting Interpretations Committee (IFRIC)) and Australian Urgent Issues Group (UIG), Australian Accounting Standard Board, under Common wealth corporation Law) previously provided some guidance on financial reporting for carbon credits (IFRIC 3). More recently this guidance was withdrawn because of criticism about the contradictory nature from the broader accounting fraternity. Contradictions arise from the debate between classifying carbon credits as intangible assets (IFRIC 3) versus the inventory classification proposed by the Emerging Issues Task Force (EITF). In addition, issues arise in relation to not only classification, but timing, valuation and other impacts on financial reports (IETA/Pwc 2007, Elfrink & Ellison 2009; Lovell et al. 2010)

Accounting is the global business language. It’s important to review related formal guidelines worldwide. The background jurisdiction and history of these guidelines are presented in Appendix 1. In addition, at the market, all types of carbon credit/emission allowance including
credits/allowances created from utilities sectors are equal. To better understand these problems, this chapter chronologically outlines and discusses guidelines and points of view from the following:

- Accounting bodies: International accounting standard setters (International Financial Reporting Interpretations Committee (IFRIC)); Australian Urgent Issues Group (UIG); and the Emerging Issues Task Force (EITF) under the broad umbrella Clean Air Act Amendment 1990.

While some of the agencies, listed above, are more interested in measurement and quantification of carbon emissions, they also contribute views on appropriate accounting treatment (see for example the overlap between FERC and EITF, which is detailed later in this chapter). The guidelines provided by the accounting bodies are mostly based on principles that include definitions as well as recognition guidelines of elements of financial statements, along with emissions accounting issues.

In addition, the academic literature on accounting for emissions trading is used to highlight different viewpoints on classification, timing, valuation and other impacts on financial reports. The literature review includes discussion papers and survey results (conducted by professional organizations) in order to understand the underlying reasons for current accounting practice and issues relating to this emerging field of accounting.

The chapter is divided into three parts as follows. A literature review comprising: accounting guidelines on accounting for carbon emissions trading (Section 2.2); accounting in practice (Section 2.3) and the issues that emerge from comparing the differences between guidelines and practice (Section 2.4).

2.2 International Guidelines on Accounting for Carbon Emissions Trading

The emerging consensus as seen in the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol on climate change and emissions markets has created accounting issues as an agenda for the standardization of accounting disclosures on carbon
emissions. The need to clearly and unambiguously communicate relevant financial information to users becomes necessary, and a clear understanding of accounting for carbon emissions trading schemes (ETS) is important. In this chapter the researcher begins by reviewing the recent accounting developments relating to emissions trading in the European Union (EU) and the United States of America (USA), since these countries were pioneers in history of the development of emissions trading, followed by Australia.

Emissions allowances give the holder the right to emit a certain amount of greenhouse gas (GHG) during the ordinary course of business. These emissions allowances may be obtained through an allocation from a regulatory body at no cost or at a cost that is less than fair value, through an auction process, or through an exchange (a purchase from other market participants such as a benchmark participant emitter, emission allowance/abatement certificate providers, brokers or aggregators). The following accounting guidelines therefore classify emissions allowances into two main groups: granted (allocated) or created emissions allowances and purchased emissions allowances. Discussion of these guidelines is based on the chronological order. The researcher commence with the accounting standard developed by EITF (in 2003) in response to the regulatory requirement for energy companies to reduce emissions. Discussion is followed with the IFRIC 3 accounting standard development (in 2004) and withdrawal one year later (in 2005). The review of accounting guidelines concludes with a discussion on AASB UIG 3 guidelines developed initially in response to IFRIC 3 (in 2005), which was also withdrawn shortly after IFRIC 3. For the reasons mentioned above, practitioners no longer have any accounting standards guidelines to follow and IFRS has also removed further development of accounting guidelines from their agenda.

2.2.1 The Emerging Issues Task Force s EITF Issue 03-14, Participants Accounting for Emissions Allowances (the US-based guidelines)

Under the broad umbrella Clean Air Act Amendment 1990, the US Federal Energy Regulatory Commission put legislation in place to initially reduce acid rain (sulphur dioxide), followed by other greenhouse gas emissions. In 2003, the Emerging Issues Task Force (EITF) addressed emissions accounting issues in the EITF Issue 03-14, Participants Accounting for Emissions Allowances under a Cap and Trade program. Utilities and other related energy companies used this guidance to account for their emissions quota allocated. This guidance is based on the requirement of the US Federal Energy Regulatory Commission s Uniform System of Accounts, and is aimed at providing financial reporting for the quantified emissions units. The key points of this guidance are:

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4 The cap and trade program is an emissions control program where the government imposes the limit (or cap) of emissions to emitters and allows them to trade unused portions of these caps.
• Emissions allowances are reported at historical cost and are classified as inventory. Purchased allowances are recorded at their exchange price, while those received (granted) from the US Environmental Protection agency (EPA) are recorded as no charge and have a zero basis.
• The weighted-average cost method is required, and calculations should be performed monthly based on actual data or reasonable estimates.
• Periodic expense is recognized based on the historical cost of allowances needed to satisfy actual emissions of sulphur dioxide during the period (Fornaro et al, 2009).

In relation to the notion that emissions allowances should be treated as assets, the EITF considered the following four views in their deliberations:

(1) Emissions allowances are intangible assets as defined by the Statement of Financial Accounting Standard (SFAS) No. 142, Goodwill and Other Intangible Assets, because they lack physical substance.
(2) The allowances are financial assets because markets for emissions trading provide evidence that allowances are readily convertible to cash. Deloitte & Touche LLP (Deloitte) and PricewaterhouseCoopers LLP (PwC) agreed with this view despite the fact that emissions allowances do not meet the definition of a financial asset under SFAS 140, Transfers and Servicing of Financial Assets and Extinguishments of Liabilities.
(3) Emissions allowances are inventory as they are the necessary costs incurred to comply with environmental regulations and emissions reduction schemes; as noted, this categorisation was adopted by the EITF.
(4) The nature of the asset depends on the intended use of the emissions allowances by the entity, with it being treated as an intangible asset or inventory if used for operational purposes, and as a financial asset if used for trading purposes (Deloitte 2007).

However, some EITF members were concerned with the compatibility of FERC’s requirements and other areas of US GAAP, which might cause certain accounting anomalies. In the US, a large percentage of emissions allowances are allocated by the Environmental Protection Agency (EPA), a government agency, on a zero cost basis. FERC guidelines can distort the economic reality of liable US companies (Forano et al. 2009).
2.2.2 IFRIC 3 Emissions Rights

In December 2004, the International Financial Reporting Interpretation Committee (IFRIC) issued IFRIC 3 Emissions Rights, but it was withdrawn by the International Accounting Standards Board (IASB) the following year. The rationale for its withdrawal is discussed later in this section.

The key points of this guidance were:

- Emissions allowances are considered intangible assets under IAS 38 Intangible Assets, which permits a revaluation method where shareholders’ equity is reported when fair value increases, and the excess of revaluation surplus in the profit and loss statement is recognized when fair value decreases (revaluation model).
- Moreover, IAS 38 also permits the historical cost model as the other accounting choice. Entities can carry the intangibles at cost or at fair value to the extent that there is an active allowance market.
- Allowances purchased are recorded at cost. Allowances or certificates received from a government body are recorded at no cost or for less than fair value and reported at fair value when received.
- The difference between price paid and the fair value of allowances received from the government is initially reported as deferred income. This difference is recognized as revenue over the compliance period, no matter whether they are held or sold (follow IAS 20 Accounting for Government Grants and Disclosure of Government Assistance).
- No permission to offset assets and liabilities (right of set-off) related to emissions.
- Follow the guidance in IAS 37 Provisions, Contingent Liabilities and Contingent Assets in order to recognize liabilities and expenses.

With the issuance of IFRIC 3 in 2004, the IASB followed Wambsganss and Sanford's (1996) view that the emissions, in general, be recognised at market value (Bebbington & Larrinaga-Gonzalez 2008). Some critics of the approach argued that Wambsganss and Sanford (1996)’s view failed to substantiate their assertion that markets could function more efficiently relative to the cost of pollution if emissions costs were recognized in balance sheets and income statements, since these emissions allowances reflect only the cost of the permission to pollute not an economic cost of pollution (Gibson 1996).

The European Financial Reporting Advisory Group (EFRAG) was concerned about the effect of the application of IFRIC 3 because it did not, in its view, represent economic reality; nor did it meet the criteria of understandability, relevance, reliability and comparability required of financial
statements needed for economic decision-making. Moreover, IFRIC’s interpretation was constrained by the interplay of existing standards (IAS 38, IAS 20 and IAS 37). Where entities had not acquired or sold emissions allowances, applying IFRIC 3 created a measurement mismatch whereby some items were measured at cost (IAS 38 and IAS 20) while others were measured at fair value. It also created a reporting mismatch since some gains and losses were recognized in the income statement (IAS 20 and IAS 37) and some were recognized in equity (IAS 38). Adding their voice to those of the critics, Krupova’ and Černy’ (2007) noted that allowances were recognized when they were obtained, whereas the liability was recognized over the time it was incurred, thus there was a timing mismatch; this caused volatility in the operating result, even if the entity did not sell granted allowances at all. Furthermore, the measurement of allowances did not reflect market price. In addition, due to the measurement and reporting mismatches, IFRIC 3 failed the tests of relevance and reliability according to the IASB framework as well as the regulations of the European Parliament and Council (Moore 2010). IFRIC 3 also attracted complaints from companies that its application would force the former into showing a distorted performance in their annual and interim financial statements (Cook 2009).

Given its concerns, EFRAG recommended that the EU Commission not endorse IFRIC 3 (EFRAG, 2005). Although the standard was subsequently withdrawn, the overall effect of its application still exists even though the compliance period is over (IETA/PwC 2007). Moreover, the withdrawal of IFRIC 3 means that there is an absence of an accounting discourse with regards to emissions trading; this is evidence of a critical situation (Moore 2010)

2.2.3 Australian Accounting Standards Board’s UIG 3 Emissions rights and Renewable energy certificate

In 2005, the Australian Accounting Standards Board (AASB) issued an Urgent Issues Group 3 (UIG 3) Emissions rights and Renewable energy certificate corresponding to IFRIC 3; this was withdrawn several months after the demise of IFRIC 3. This interpretation dealt with how to account for a cap and trade emissions rights scheme. It identified the features of emissions trading schemes, the options of participants to meet the scheme’s requirements, the scope of interpretation, relevant accounting issues and their consensus.

The key issues of this interpretation are as follows:

- Purchased allowances and allowances issued by the government are intangible assets that shall be accounted for in accordance with AASB 138. Allowances that are issued for less than fair value shall be measured initially at their fair value.
• Where allowances are issued for less than fair value, the difference is a government grant that is within the scope of AASB 120 *Accounting for Government Grants and Disclosure of Government Assistance*. The grant shall be recognised initially as deferred income in the balance sheet and systematically recognised in deferred income over the compliance period for which the allowances were issued, regardless of whether the allowances are held or sold.

• A liability is recognised when there is an obligation to deliver allowances equal to emissions that have been made. This liability is a provision within the scope of AASB 137 *Provisions, Contingent Liabilities and Contingent Assets*.

• A reduction in the cash flows expected to be generated by certain assets due to the requirements of emissions trading schemes requires those assets to be tested for impairment in accordance with AASB 136 *Impairment of Assets* (UIG 2005).

The AASB decided to withdraw this standard subsequent to IFRIC 3’s withdrawal, with no justification provided. In addition, the existing Greenhouse Gas Abatement Scheme at that time did not suit the existing standards; it was not meaningful and only represented half the guidelines. Greenhouse Gas Abatement Scheme is a baseline and credit scheme. UIG and IFRIC 3 did not cover created abatement certificates in the Australian emissions market. Table 2.1 summarises the three withdrawn guidelines.
Table 2.1 Summary of the withdrawn guidelines

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</thead>
<tbody>
<tr>
<td>Granted credits</td>
<td>Asset type</td>
<td>Inventory</td>
<td>Intangible assets (IAS 38 Intangible Assets)</td>
<td>Intangible assets (AASB 138 Intangible Assets)</td>
</tr>
<tr>
<td></td>
<td>Initial recognition</td>
<td>Historical cost/zero basis</td>
<td>Fair value</td>
<td>Fair value</td>
</tr>
<tr>
<td></td>
<td>Revaluation</td>
<td>No</td>
<td>Permit (Effects stockholder's equity and P&amp;L)</td>
<td>Permit (Effects stockholder's equity and P&amp;L)</td>
</tr>
<tr>
<td></td>
<td>When allowances issued are less than the fair value of allowances received</td>
<td>N/A</td>
<td>Follow IAS 20 Accounting for Government Grants and Disclosure of Government Assistance regardless of whether the allowances are held or sold</td>
<td>Follow AASB 120 Accounting for Government Grants and Disclosure of Government Assistance regardless of whether the allowances are held or sold</td>
</tr>
<tr>
<td></td>
<td>Permission to offset assets and liabilities</td>
<td>N/A</td>
<td>No</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Recognition of liabilities for actual emissions</td>
<td>N/A</td>
<td>Follow IAS 37 Provisions, Contingent Liabilities and Contingent Assets</td>
<td>Follow AASB 37 Provisions, Contingent Liabilities and Contingent Assets</td>
</tr>
<tr>
<td></td>
<td>Recognition of expense for actual emission</td>
<td>Based on the historical cost of allowances needed to satisfy actual emissions</td>
<td>Follow IAS 37 Provisions, Contingent Liabilities and Contingent Assets</td>
<td>Follow impairment testing in accordance with AASB 136 Impairment of Assets</td>
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<td></td>
<td>Cost method</td>
<td>Weighted-average</td>
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<td>N/A</td>
</tr>
<tr>
<td>Purchased credits</td>
<td>Asset type</td>
<td>Other investment</td>
<td>Intangible Assets (IAS 38 Intangible Assets)</td>
<td>Intangible Assets (AASB 138 Intangible Assets)</td>
</tr>
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<td></td>
<td>Initial recognition</td>
<td>Exchange price</td>
<td>Purchased price (FV)</td>
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<td>Revaluation</td>
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<td>Permit (Effects stockholder's equity and P&amp;L)</td>
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<tr>
<td></td>
<td>Permission to offset assets and liabilities</td>
<td>N/A</td>
<td>No</td>
<td>N/A</td>
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<tr>
<td></td>
<td>Recognition of liabilities for actual emissions</td>
<td>N/A</td>
<td>Follow IAS 37 Provisions, Contingent Liabilities and Contingent Assets</td>
<td>Follow AASB 37 Provisions, Contingent Liabilities and Contingent Assets</td>
</tr>
<tr>
<td></td>
<td>Recognition of expense for actual emission</td>
<td>Based on the historical cost of allowances needed to satisfy actual emissions</td>
<td>Follow IAS 37 Provisions, Contingent Liabilities and Contingent Assets</td>
<td>Follow impairment testing in accordance with AASB 136 Impairment of Assets</td>
</tr>
<tr>
<td></td>
<td>Cost method</td>
<td>Weighted-average</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

However, Puxty (1983) suggests that as a basis for standard-setting, a regulatory agency must determine a balance between organizational and individual needs rather than initially focusing on decision-usefulness. Given legislation in each country is diverse; an internationally recognised
accounting standard would provide some uniformity (Bebbington & Larrinaga-Gonzalez 2008; Balatbat & Wang 2010).

2.2.4 Other International Guidelines for Abatement certificates (Emission Allowance) created by US Utility Sectors (the US-based guideline)

(i) The Federal Energy Regulatory Commission’s Uniform System of Accounts

The need for accounting guidance in the US grew out of the sulphur dioxide emissions trading scheme which commenced in 1995 (Bebbington & Larrinaga-Gonzalez 2008; Johnston et al. 2008; Mackenzie 2009). Since 1993, the Federal Energy Regulatory Commission (FERC), as a regulator of energy utilities, has required US electric public utilities and licensees, natural gas pipeline companies, oil pipeline companies, and centralized service companies within its jurisdiction to maintain their books and records in accordance with the Commission’s Uniform System of Accounts (USofA). The USofA consists of account descriptions, instructions, accounting definitions and Account Codes that are useful in understanding the information reported in the Annual and Quarterly Report Form (FERC 2010). As of June 2010, the USofA is the only accounting guideline for GHG emissions within generally accepted accounting principles (US GAAP) and FERC is the only organization that has issued emissions allowances accounting guidelines. Some EU ETS participants have currently adopted this guideline as well (Veith et al. 2009)

The key points covered in these guidelines are:

- Public utilities owning emissions allowances, other than those acquired for speculative purposes, shall account for such allowances at cost in the Allowance Inventory account or the Allowances Withheld account, as appropriate.
- Allowances acquired for speculative purposes and identified as such in contemporaneous records at the time of purchase shall be accounted for in the Other Investments (Assets) account.
- When purchased allowances become eligible for use in different years, and the allocation of the purchase cost cannot be determined by fair value; the purchase cost allocated to allowances of each vintage shall then be determined through the use of a present-value based measurement. The interest rate used in the present-value measurement shall be the utility’s incremental borrowing rate, in the month, in which the allowances are acquired, for a loan with a term similar to the period that it will hold the allowances and in an amount equal to the purchase price.
The underlying records supporting the Allowance Inventory account and the Allowances Withheld account shall be maintained by providing sufficient detail in order to show the number of allowances and the related cost by vintage year.

Issuances from inventory include the Allowances Inventory account and Allowances Withheld account, which should be accounted for on a vintage basis using a monthly weighted-average method of cost determination. The cost of eligible allowances not used in the current year should be transferred to the vintage for the following year.

The Allowance Inventory account should be credited and allowances (unremitted account,) debited so that the cost of the allowances to be remitted for the year is charged to monthly expenses based on each month's emissions. This may, in certain circumstances, require an allocation of the cost of an allowance between months on a fractional basis.

In any period in which actual emissions exceed the amount allowable based on eligible allowances owned, the utility shall estimate the cost to acquire the additional allowances needed and charge the Allowances Inventory account with the estimated cost. This estimated cost of future allowance acquisitions should be credited to the Allowances Inventory account and charged to the Allowance account in the same accounting period as the related charge to the Allowances Inventory account. Should the actual cost of these allowances differ from the estimated cost, the differences should be recognized in the then-current period's inventory issuance cost.

Gains on dispositions of allowances, other than allowances held for speculative purposes, shall be accounted for by uncertainty levels as to the regulatory treatment.

Losses on disposition of allowances that qualify as regulatory assets shall be charged directly to the Other Regulatory Assets account. All other losses shall be charged to the Losses from Disposition of Allowances account. Gains or losses on disposition of allowances held for speculative purposes shall be recognized in the Miscellaneous Non-operating Income or Other Deductions account, as appropriate (FERC 2010).

It is noted that the FERC guidelines clearly separate emissions allowances into 2 categories: created allowances inventory (allowances withheld) and purchased allowances for sale (speculation purposes). Created allowances are termed Allowances Inventory, implying that FERC recommends the adoption of inventory accounting and considers emission allowances as inventory. Purchased allowances for speculative purposes are considered other investments, which could be both short- and long-term. These guidelines also provide principles for the recognition of expense by actual emissions and the estimated cost of allowances needed for surrendering in that period; this recognition is in line with the matching principle. Furthermore,
the issued/created allowances are accounted for on a vintage basis, thus monthly revaluation is required.

Gains or losses on disposition of allowances other than allowances held for speculative purposes are accounted for as follows:

- If there is uncertainty in regulatory treatment, the gain on Regulatory Liabilities of allowances is deferred in the Other Regulatory Liabilities pending account.
- In addition, if there is certainty as to the existence of these regulatory liabilities, gains will be subsequently recognized as income when this liability is satisfied.
- Other gains are credited to Gain on disposition of Allowances account.
- Losses are charged to Other Regulatory Assets if these losses qualify as regulatory assets.
- Other losses are charged to Losses from Disposition of Allowances account.

For allowances held for speculative purposes, gains or losses on disposition of these allowances are charged to Miscellaneous Non-operating Income/Other Deductions account as appropriate.

In summary, these guidelines cover the whole accounting treatment for emissions allowances created by the utility sector, but not for future or forward contracts.


A number of guidelines have been issued by non-accounting bodies to assist financial report preparers. These include the Greenhouse Gas Protocol, A Corporate Accounting and Reporting Standard, (the protocol) issued jointly by the World Resources Institute (WRI – a US-based environmental non-government organisation) and the World Business Council for Sustainable Development (WBCSD), a Geneva-based coalition of international companies. The protocol is an international accounting guideline which has been adopted and accepted widely around the globe by businesses, non-government organisations (NGOs), and government greenhouse gas programs since its promulgation in 2001, for quantifying and managing GHG emissions. According to WRI, many organizations and government greenhouse gas programs use the standard as a basis for their accounting and reporting systems.

This protocol provides GHG accounting principles for financial accounting and reporting. These principles are intended to underpin and guide GHG accounting and reporting to ensure that the greenhouse gas inventory constitutes a faithful, true, and fair account of a company’s GHG emissions. In this guideline, the principles are derived in part from the generally accepted
accounting principles of Relevance, Completeness, Consistency, Transparency and Accuracy. The protocol also identifies five business goals as providing the rationale for compiling a GHG inventory: managing GHG risks and identifying emissions reduction opportunities; public reporting and participation in voluntary GHG programs; participation in mandatory reporting programs; participation in GHG markets; and recognition for early voluntary action. The Greenhouse Gas Protocol, A Corporate Accounting and Reporting Standard, therefore, has been designed as a comprehensive GHG accounting and reporting framework to provide information capable of serving business goals relating to emissions reduction and reporting (WRI 2004). Different data sets are required for different business goals. The protocol also provides guidelines for the setting of organizational and operational boundaries, the scope of emissions, tracking GHG emissions over time, identifying and calculating GHG emissions, managing inventory quality, verification of GHG emissions, setting of GHG emissions targets, as well as GHG sources and activities along the value chain and the scope of emissions for various industries.

The GHG Protocol proposes two methods for a company to consolidate GHG emissions; these are the equity share approach and the control approach. The equity share approach allows a company to calculate GHG emissions from its operations, based on its share of interest/equity. The control approach, on the other hand, allows a company to recognize 100% of the GHG emissions from operations over which it has control. Control, however, can be defined in either financial or operational terms (WRI 2004).

The protocol also enables businesses to report information from global operations in a way that presents a clear picture of GHG risks and reduction opportunities, while facilitating understanding and comparison with similar reports.

The protocol provides a managerial focus in Chapters 3-6 by providing a guideline for quantification of GHGs rather than their monetary measure. However, a few sections of the protocol also take a financial accounting perspective, opining that future financial accounting standards may treat GHG emissions as liabilities, and emissions allowances/credits as assets. In response to a company's joint operation with subsidiaries, associate companies and related parties, the protocol recommends that assets and liabilities that the company creates should apply to the same consolidation rules that are used in financial reporting. The equity share and financial control approaches align GHG accounting with financial accounting (WRI 2004). This approach would aid measurement and reporting in monetary units.
Federal Greenhouse Gas Accounting and Reporting Guidance

The US Federal Greenhouse Gas Accounting and Reporting Guidance, released in October 2010, is the latest set of guidelines issued by an environmental government agency. These guidelines originated by Executive Order (E.O.) 13514 signed by President Obama to make the reduction of GHG emissions a priority for Federal agencies. Intended as a stand-alone document, it follows the basic guidelines found in the GHG Protocol for the U.S. Public Sector (PSP), as described in the previous section.

Under the guidelines, Federal US agencies were required to establish and report a comprehensive inventory of fiscal year 2010 absolute emissions by the end of January 2011, and thereafter to report the inventory of the preceding fiscal year annually to the Council of Environmental Quality (CEQ). The Guidance is accompanied by a separate technical support document that provides detailed information on inventory reporting requirements, distinguishing between reporting and reduction. Similar to the GHG protocol discussed earlier in Section 2.2.4, this guideline provides information on: how to set organizational and operational boundaries; the scope of emissions; sequestration and emissions from land use, agriculture, and biogenic sources, renewable energy and carbon offsetting; reporting GHG emissions; and verification and validation of GHG emissions. As in the case of the original GHG protocol and the PSP, the primary emphasis of this Guidance is managerial accounting rather than financial accounting.

In addition to the above protocol, a tailored guidance for the public sector was released by the WRI in October 2010: The Greenhouse Gas Protocol for the U.S. Public Sector: Interpreting the Corporate Standard for U.S. Public Sector Organizations (PSP). The PSP aims to offer flexibility to its public sector report preparers by establishing certain core principles and quantifying methodologies that ensure relevance, completeness, consistency, transparency, and accuracy of GHG inventory. Its content is compatible with the original protocol; the only significant difference relates to its focus on the public sector.

In addition to the original protocol and the public sector protocol, the GHG Protocol for Project Accounting was released in 2005. The project protocol reveals its managerial focus in Chapter 5-11, with guidelines for quantification of GHGs rather than their monetary measurement this is the same as the GHG Protocol, A Corporate Accounting and Reporting Standard. This protocol aims to provide a credible and transparent approach for quantifying and reporting GHG reductions from GHG projects, and enhances reliability of project accounting. It also aims to provide a platform for harmonization among different project-based GHG initiatives and programs. This protocol addresses the principles of relevance, completeness, consistency, transparency and accuracy as
does the original protocol, but it adds the principle of conservativeness. The project protocol recommends the use of conservative assumptions, values and procedures when uncertainty is high, in order to ensure an accurate estimation of emissions reduction. In addition, the project protocol focuses on different business goals, policy and the regulatory context since it is written for project developers, administrators or designers of initiatives, systems and programs that incorporate GHG projects. Indeed, it was designed for third-party verifiers for such programs and projects. This protocol is supplemented with sector-specific guidance, GHG project typology and GHG calculation tools for different activities such as mobile combustion, stationary combustion, pipe and paper mills, wood product manufacturing, cement, refrigeration and air-conditioning equipment, forest management, agriculture tillage, and land-filled gas projects.

As described in Section ii, the WRI and WBCSD’s Greenhouse Gas Protocol, a Corporate Accounting and Reporting Standard, is a widely accepted and adopted international accounting guideline that provides the accounting framework for nearly every greenhouse gas standard and program in the world. This protocol identifies five business goals as reasons for compiling a GHG inventory, and provides guidelines for organizations to define their goals clearly. The protocol also provides managerial accounting guidelines in quantifying and managing GHG emissions, such as the setting of organizational and operational boundaries, tracking GHG emissions over time, and identifying and calculating GHG emissions. As indicated in Section 2.2.2, there are also tailored guidelines such as the PSP and the Federal Greenhouse Gas Accounting and Reporting Guidance patterned on the principles and concepts of the WRI and WBCSD protocol, with no significant differences.

The protocol, PSP and Federal Greenhouse Gas Accounting and Reporting Guidance, all of which have a management accounting focus, share the same definition of organizational boundary and operational boundary:

**Organizational boundary:** The boundaries that determine the operations owned or controlled by the reporting organization, depending on the consolidation approach taken (equity or control approach).

**Operational boundary:** The boundaries that determine the direct and indirect emissions associated with operations owned or controlled by the reporting organization. This assessment allows an organization to establish which operations and sources cause direct and indirect emissions, and to decide which indirect emissions to include that are consequences of its operations (WRI 2010).

In conclusion, only US-based guidelines provide detailed instructions in quantifying and managing GHG emissions based on these boundaries. These instructions assist entities in avoiding uncertainty regarding the accuracy of the emission volumes and provide useful information to management about those volumes.
2.3 Emissions Trading Accounting Practices

2.3.1 Surveys of Accounting Practices Adopted by Participants in ETS Markets

The EU ETS, in particular, has created a number of issues that have accounting ramifications such as the free allocation and purchase of certificates, the due date for surrendering not coinciding with the fiscal year end of regulated emitters' financial reporting, holding and trading gains/losses, and a number of others (Veith at al. 2009).

In the absence of formal guidelines on accounting for carbon emissions trading, financial report preparers have been able to draw on existing accounting standards based on a conceptual framework, on interpretations and analyses by experts, and/or on their own knowledge and experience in reporting on carbon emissions trading. It is hardly surprising that, in practice, accounting for emissions allowances has been found to lack consistency (Elfrink & Ellison 2009).

Several studies have explored the financial reporting practices of ETS participants. In 2007, the International Emissions Trading Association (IETA)\(^5\) and PricewaterhouseCoopers (PwC) conducted a European-wide survey of accounting approaches used by 26 major organisations significantly affected by the EU ETS and the Kyoto Protocol. This survey aimed to present a synopsis of the accounting approaches adopted and to understand the key themes and issues arising in the absence of specific accounting guidelines. The survey findings, with its key issues based on International Financial Reporting Standards (IFRS), are summarised below and presented in full in Appendix 1.

They reveal the uncertainty and diversity of the accounting practices of the 26 European companies concerned:

- Only a small number of respondents continued to use the withdrawn *IFRIC 3 Emissions Rights* as their accounting policy.
- The most common approach identified was initial recognition of granted allowances at nil value as intangible fixed assets in the balance sheet. Purchased allowances were recognised in the same way. These granted/purchased allowances were not subsequently amortized or depreciated, neither were they re-valued subsequent to initial receipt and purchase.
- Where granted allowances were initially recorded at fair value and deferred income was recognized, half of the respondents released deferred income to the income statement in line with the emissions produced in that period. A third of them released deferred

\(^5\) IETA is an independent, non-profit organisation dedicated to the establishment of effective systems for businesses to trade in greenhouse gas emissions.
income to the revenue line, a third to the cost of sales and the remainder to some other line.

- In valuing obligations associated with the production of emissions, most respondents based this on the carrying value of those allowances already granted (which may be nil) and purchased, with the balance of the obligation valued at the prevailing market price.
- Where granted allowances initially recorded at nil value were sold, the gain on disposal was recognized immediately as a credit to the income statement.
- Most respondents recognized the sales of allowances within cost of sales (netting sales proceeds against cost of sales effectively represents a reduction of the cost of compliance with the EU ETS).
- Forward contracts for purchased/granted allowances are deemed to be within the scope of IAS 39 Financial Instruments: Recognition and Measurement, which applies to contracts for buying or selling a non-financial item; these contracts can be settled net in cash or another financial instrument or by exchanging financial instruments. Contracts to buy or sell EU emissions allowances could be examples of such contracts.
- Forward contracts are fair valued through income statements.
- Nearly half of all respondents reported under accounting standards other than just IFRS, with most also reporting under US GAAP.

In addition, in 2010 the Association of Chartered Certified Accountants (ACCA)\(^6\), working in partnership with IETA, conducted a survey of the financial statements of the largest GHG emitters in the EU ETS (26 companies) in order to establish a baseline understanding of current accounting practices. It also aimed to uncover opinions on how to resolve the absence of accounting guidance for emissions allowances as well as to explore the theoretical implications of the research findings. This was followed by telephone interviews with accountants at five of these companies to explore in detail, the reasons for the firms’ accounting practices.

The findings are summarized below:

- There is considerable diversity in accounting practices for EU ETS emissions allowances.
- Most companies are not following IFRIC 3.
- Some elements of IFRIC 3 appear to have influenced accounting practices adopted, with 11 of the 26 companies treating emissions allowances as intangible assets.

\(^6\) The ACCA is a UK-based global body for professional accountants.
A third of these assets are mostly assigned a nil value in company accounts, reflecting the fact that in Phase 1 and 2 of the EU ETS, allowances have predominantly been allocated at no charge.

Only a small number of companies follow the withdrawn IFRIC 3 guidance by accounting for emissions allowances initially at fair value (that is, at market price), with the difference between fair value and cost recognised as a governmental grant (deferred income) on the balance sheet.

Most companies do not disclose any information on amortisation/depreciation, and half the surveyed companies fail to disclose data on the revaluation of emissions allowances.

Most of the surveyed companies account for their obligations by following a cost with balance at market value approach.

Lovell et al. (2010) interviews with accountants show that the main reason for the diverse approaches is because of the absence of international accounting guidelines. That is, they have the ability to choose among differing accounting practices.

The accountants also raised an issue of more fundamental uncertainty about what type of thing an emissions allowance is: is it a financial instrument, a property right, part of the production process, a compliance instrument, or something else? (Lovell et al. 2010)

In addition, Lovell et al. (2010) found that 95% of emissions allowances that have been allocated to date free-of-charge in Phase 2 of the EU ETS implementation, have resulted in accounting practices where allowances are typically shown in accounts at nil value (on the basis of their cost).

Research exploring the underlying reasons for accounting policy choices regarding carbon emissions by market participants is very limited. Only this survey, conducted by Lovell, et al. (2010), has uncovered such underlying reasons.

We believe that the European Community [SIC] has to define, to clearly define, the nature of the emission [allowance]. Because, in my opinion, the standard setter [does not have a] duty to identify what is a legal point of view or a tax point of view. They are not legal setters. But the accounting approach cannot arise before the identification of the legal nature. (Head of accounting principles and standards, large European energy company), Lovell et al. (2010).

From this quote, it is clear that the interviewee would like the European Community to define emission allowances taking a legal and taxation perspective. Without this support accountants would, therefore, be unable to develop good accounting practices.
In Phase 3 of the implementation (2013-2020), more auctions of allowances are forecast, as described in Chapter 1 of this thesis. Lovell et al. (2010) believe that an increase in auctions will have a knock-on effect on accounting practices.

Turning now to the US situation, accounting issues relating to past and current usage of emissions allowances have been identified broadly by Elfrink and Ellison (2009) as:

- Asset Valuation and Classification: Inventory, Intangible Assets, Marketable Securities and Investment
- Effects on the Income Statement: Expensing
- Reporting of Liabilities
- Recognition of Government Grants
- Appropriateness in Re-valuation of Related Assets and Liabilities
- Accounting for Sales of Participants
- Effects on the Statement of Cash Flows

The issues identified by Elfrink and Ellison (2009) can be seen in US surveys on accounting practices related to emissions allowances. In a 2010 survey of US public registrants with revenues between $1 billion and $100 billion for annual filings occurring between 1 February 2009 and 13 September 2009, it was found that 29 companies disclosed an accounting policy related to emissions credits or allowances in the notes to their financial statements. Almost forty per cent of them recognised emissions allowances as intangible assets, one third as inventory and less than one fifth as regulatory assets/liabilities and other (Ernst & Young 2010). The surveys' findings could be strengthened by the conduct of a longitudinal study.

A survey conducted by the Financial Accounting Standards Board (FASB) suggests that most US entities generally account for emissions allowances in a manner similar to that required by FERC regulation. The majority of companies currently classify emissions allowances held as either intangible assets and/or inventory, although there were other classifications entertained such as financial assets in the initial draft of EITF 03-14 (Deloitte 2009).

In the US cap-and-trade program, emissions allowances each have a vintage year designation indicating the first year an allowance may be used. A surplus of allowances in this year can be carried forward to accommodate future demand. Allowances with the same vintage year are exchangeable and can be remitted from any source; a shortfall in the current year may be covered by emissions allowances from a new emissions reduction project from the next year. Thus, there is
a diversity in practices regarding liability and gain recognition in US emissions markets (Ernst&Young 2010).

In UK, Balatbat and Wang (2010) used the data from the first phase of the UK EU ETS to examine the current state of financial reporting of carbon emissions permits in the cap-and-trade scheme prior to the release of accounting standards or authoritative guidance. The annual reports of 159 UK entities exposed to EU ETS were examined to reveal 21 entities providing voluntary disclosures of their accounting policies on carbon emissions allowances. Content analysis revealed that among small disclosing firms, numerous accounting policies were adopted with respect to accounting for the allocation, purchase and sale of emissions allowances and the recognition of carbon emissions liabilities. Those disclosing accounting policies were not comparable.

The key issues were as follows:

- More than half of the sample entities classified emissions permits as assets (intangible asset and inventory).
- Valuation bases for emission permits were either nil cost or fair value.
- Allocated emissions permits were identifiable non-monetary assets without physical substance that met the definition of IAS38 *Intangible Assets*.
- Nearly half of the sample entities did not disclose their accounting policy on the sale and purchase of emissions allowances. Those entities that disclosed reported emissions permits in response to the Carbon Disclosure Project.\(^7\)
- There were some ambiguous disclosures in regards to carbon emissions permits.

The following findings are consistent with those of the 2007 survey conducted by PwC and IETA:

- Larger entities considered the transactions on carbon emissions permits to be immaterial.
- The energy sector was well-represented in the sample, followed by the electricity and material sectors.
- 95\% of sample entities were audited by the Big 4 audit firms.

It is noted that the above study focused on the emitters perspective and used voluntarily disclosed secondary data. Again, there were no in-depth interviews conducted to establish the underlying reasons why sample entities chose particular accounting policies. In addition, the study identified

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\(^7\) The Carbon Disclosure Project (CDP) works with 3,000 of the largest corporations in the world to help them ensure that an effective carbon emissions/reductions strategy is made integral to their business.
the basic characteristics of sample entities such as size and auditing companies as factors to analyse their accounting policy disclosure.

Steenkamp et al. (2011) examined 18 liable European entities who disclosed their accounting practices in their annual accounts. The key findings are as follows:

- 61.11% of sample companies did not disclose policy in recognition of their granted allowances, while one-third of them initially recognized granted allowances as intangible assets.
- 61.11% of sample companies did not disclose policy in recognition of their purchased allowances, while the rest of them initially recognized purchased allowances as intangible assets.
- 72.22% of sample entities valued granted allowances at nil value, the rest valued them at market and fair value.
- 38.88% of sample companies valued purchased allowances at nil value, 22.22% of these liable entities valued them at market and fair value.
- 33.33% of liable entities recognized granted emissions allowances in correspondence with the Government Grant account, and 5.55% in correspondence with Provision and Liabilities account.
- 33.33% of liable entities recognized purchased emissions allowances in correspondence with Provision and Liabilities account.

Also, this study examined secondary data and there were no underlying reasons for these accounting practices. The other survey conducted in Europe was carried out by Warwick and Ng (2012).

Warwick and Ng (2012) surveyed accounting practices from 47 liable emitters according to EU ETS. The key issues are as follows:

- The most common initial recognition for granted allowances is intangible asset (55.3%) while more than one-third of the sample companies did not disclose their practices.
- The most common applicable value for granted allowances are nil value (38.3%), fair value (21.3%) and nominal value (6.4%).
- The most common initial recognition of purchased allowances is not prevailing explicitly but the most common valuation is at cost.
- 80.8% did not disclose subsequent measurement of both granted and purchased allowances.
- The most common recognition of obligation is provision/liability (78.7%) and expense (4.3%).
It is clear that this study was conducted using secondary data, as the underlying reasons for these accounting practices were not available.

The summary of surveys conducted in European Emission Trading Schemes (cap-and-trade program) is as follows:
Table 2.2 The summary of surveys conducted under EU ETS

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Emissions trading schemes</td>
<td>EU ETS</td>
<td>EU ETS</td>
<td>UK EU ETS</td>
<td>UK EU ETS</td>
<td>EU ETS</td>
</tr>
<tr>
<td>Number of companies</td>
<td>26</td>
<td>26</td>
<td>21</td>
<td>18</td>
<td>47</td>
</tr>
<tr>
<td>Percentage of companies that apply the withdrawn IFRIC 3</td>
<td>14%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Most common initial recognition of granted allowances</td>
<td>65% intangible assets</td>
<td>42% intangible assets</td>
<td>intangible assets 32% (2005), 24% (2006), 43% (2007)</td>
<td>Intangible assets (33.33%), Financial instrument (5.55%), Not disclosed (61.11%)</td>
<td>Intangible assets (55.3%), Inventory (6.4%), Not disclosed (36.2%)</td>
</tr>
<tr>
<td>Applicable value</td>
<td>76% at nil value</td>
<td>31% at nil value</td>
<td>32% (2005), 24% (2006), 43% (2007)</td>
<td>Nil (72.33%), Market &amp; fair value (27.77%)</td>
<td>Nil (38.3%), Fair value (21.3%), Nominal value (6.4%)</td>
</tr>
<tr>
<td>Subsequent measurement/revaluation</td>
<td>86% no subsequent measurements</td>
<td>69% no disclosure</td>
<td>N/A</td>
<td>N/A</td>
<td>Not disclosed (80.8%), Cost (4.3%)</td>
</tr>
<tr>
<td>The release of deferred income</td>
<td>50% in line with emissions produced</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Where to release deferred income</td>
<td>Revenue 33%, Cost of sales (33%), Other (34%)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Recognition of sales</td>
<td>54% a reduction of the cost of sales</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Most common initial recognition of purchased allowances</td>
<td>58% intangible assets</td>
<td>42% intangible assets</td>
<td>Intangible assets 21% (2005), 24% (2006), 29% (2007)</td>
<td>Intangible assets (38.88%), Not disclosed (61.11%)</td>
<td>N/A</td>
</tr>
<tr>
<td>Applicable value</td>
<td>Cost</td>
<td>Cost</td>
<td>Cost</td>
<td>Cost (38.88%), Market &amp; fair value (22.22%)</td>
<td>Cost (59.6%)</td>
</tr>
<tr>
<td>Subsequent measurement/revaluation</td>
<td>86% no revaluations</td>
<td>50% no disclosure</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Measurement of obligation</td>
<td>47% at prevail market price</td>
<td>58% at prevail market price</td>
<td>Net liability approach 63% (2005), 62% (2006), 62% (2007)</td>
<td>N/A</td>
<td>Provision/liability (78.7%), Expense (4.3%)</td>
</tr>
<tr>
<td>Scope of forward contracts</td>
<td>53% deemed to be IAS 39 financial instruments</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Forward contracts valuation</td>
<td>46% fair value through PL</td>
<td>15% Contract price</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>
It is clear that the complexity of accounting for emissions trading is attributed to the unclear purpose, from the emitter’s perspective, in holding carbon credits or emissions allowances. Liable entities in Europe under a cap-and-trade program could hold their granted and purchased allowances either for surrendering or for sale. Liable entities in Australia under GGAS can hold created carbon credits and purchased carbon credits either for sale or for surrendering. However, similarly to the survey result, Warwick and Ng (2012), KPMG’s recommendations support the idea that liable entities should recognize assets in correspondence with provision or liability (KPMG 2012). In addition, there is no created emissions allowance under the European Emission Trading Scheme. All emissions allowances are not the main products of each entity, they are the by-products. Thus, these surveys uncover the facts that there was no subsequent measurement or revaluation of these emissions allowances, and consequently disclosure of impairment testing prevailed (IETA/PWC 2007; Lovell et al. 2010; Balatbat & Wang 2010; Steenkamp et al. 2011; Warick & Ng 2012).

In order to determine which model should be applied for emissions allowances, many entities consider how emissions allowances have been used previously, their prospective intent and the accounting ramifications of each model (Deloitte 2009). In the Australian context, it is conceivable that ACPs who are benchmark participants might want to utilize different accounting models for different sources of abatement certificates – for example, treating abatement certificates held for surrendering as intangible assets and those held for sale as inventory. Supporters term this approach a ‘hybrid’ one that requires further evaluation such as operational, organizational boundary and compliance consistency (Deloitte 2009). Accounting issues derived from the review of literature are discussed in the next section.

### 2.4 Accounting Issues

As highlighted above, there appear to be inconsistencies in practice, in accounting literature and in discussion papers produced by international accounting standard-setters, that emission allowances held should be categorised as *assets*. Differences in opinion arise mainly in relation to asset type and to the applicable accounting value (Deloitte 2009). This section of the chapter describes and discusses accounting issues in emissions trading markets based on existing international accounting Conceptual Frameworks and Generally Accepted Accounting Principles.
2.4.1 Accounting Principles for Emissions Allowances/Abatement Certificates

As noted above, the accounting guidelines for emissions allowances are based on existing principles for financial reporting such as 'true and fair view' and 'faithful representation'. There are currently no formal accounting standards for carbon emissions trading. This section will describe key issues from conceptual frameworks promulgated by international accounting bodies.

The first conceptual framework is the IASB and the AASB's framework for preparation and presentation of financial statements. According to the IASB's (AASB) conceptual framework, introduced in April 2001, financial statements are prepared to meet the common needs of users and also to show the results of the stewardship/accountability of management for the resources entrusted to them. The accrual basis of accounting and the going concern concept underpin this conceptual framework and are as relevant to ACPs as to other areas of industry, since they are all required to conform to these concepts. The IASB conceptual framework identifies four principal characteristics that make the information provided in financial statements useful to users: understandability, relevance, reliability and comparability. The framework also requires that the benefits derived from information should exceed the cost of providing it.

These requirements apply equally to carbon sequestration firms for whom abatement certificates created are their main product. The focus of the professional and academic literature has been on the polluting entities and the way they purchase and trade carbon credits and abatement certificates. But what about the recognition of abatement certificates for those companies where carbon sequestration is their main production output? There is minimal guidance for carbon sequestration firms.

As described in Section 2.2.4, the WRI and WBCSD *Greenhouse Gas Protocol* is the only set of GHG accounting guidelines that applies specific principles and qualitative characteristics to GHG accounting, requiring that the GHG inventory figure is a faithful, true and fair representation of a company's GHG emissions. This approach is designed to enhance the quality of the GHG information of participating organizations. However, the protocol adopts a managerial accounting perspective by focusing on the measurement of physical emissions activities and emissions allowances.

Further accounting guidelines attempt to align corporate practices with underlying implied principles associated with accounting for carbon emissions. For example, in the US, FERC's Uniform System of Accounts and EITF Issue 03-14, described in Sections 2.2.1 and 2.2.4, conform to FASB's Concept Statement No.8 *Conceptual Framework for Financial Reporting*. This concept statement is a coherent system designed to interrelate objectives and fundamental concepts in
prescribing the function, the nature and the limits of financial accounting and reporting that is expected to lead to consistent practice. The qualitative characteristics help to guide choices regarding recognition and measurement in financial reporting for all industries.

Under FASB’s Concepts Statement No.8, the fundamental qualitative characteristics of useful financial information are relevance and faithful representation. In addition, concepts of comparability, verifiability, timeliness, and understandability enhance these qualitative characteristics of relevant and faithfully represented information. This Concepts Statement underlines guidance on financial accounting practices for all types of business and public sector entities, not only benchmark participants in emissions schemes.

There is some overlap in the concepts identified in the accounting principles of the GHG protocol and that of the Financial Accounting Standards Board. The GHG protocol does not explicitly define faithfulness but the FASB defines faithful representation as meaning that financial information must represent what it purports to represent. Completeness, neutrality and freedom from errors are three characteristics of FASB’s faithful representation.

The GHG protocol and its tailored guidance for the public sector (PSP) define relevance of information as useful information that both external and internal report users need for decision-making purposes. The protocol clearly maintains that the selection of an appropriate inventory boundary from emissions activities is an important aspect of relevance in emissions reporting and trading. On the other hand, FASB defines relevance more broadly as capable of making a difference in the decisions made by users. FASB defines relevant information as information that has predictive and confirmatory value; the GHG protocol is silent on this issue.

In 2008, the FASB and the IASB released a jointly-developed exposure draft on the conceptual framework for financial reporting. At the time of writing, a joint conceptual framework is awaited. Based on the exposure draft, it is likely that the conceptual framework will encompass four principle qualitative characteristics of decision-useful financial reporting information: relevance, faithful representation, comparability (including consistency), and understandability. It should be noted that the scope of useful financial information and qualitative characteristics of this joint conceptual framework are similar to those of FASB’s own conceptual framework.

A more recent initiative is collaboration between the IASB and the FASB in developing comprehensive guidance on accounting for emissions trading schemes; an exposure draft is planned for mid-2011. As at February 2013, the exposure draft had not yet been issued.
Emissions and emissions reduction reporting are required by different environmental regulatory bodies under different schemes. This information might involve a technical, scientific or quantitative measurement and analysis in that discourse community. The relevance, completeness, consistency, transparency and accuracy of its measurement and analysis are area that are developing and improving. On the other hand, financial statements are prepared for the public, presented in monetary units and need to meet the common needs of users as well as regulators.

Many accounting standard-setters have defined the objective of general purpose financial reporting. The FASB, for example, believe its objective is to provide useful financial information about the reporting entity to existing and potential investors, lenders, and other creditors in making decisions about the entity. These decisions include: providing resources; buying, selling, or holding equity and debt instruments; and providing or settling loans and other forms of credit.

According to the AASB’s SAC 2, general purpose financial reporting is a means of communicating relevant and reliable information about a reporting entity to users. Users’ needs depend, in turn, on the activities of the reporting entities and the decisions users make about them.

In addition, the IASB and FASB Exposure Draft of Conceptual Framework (2010, p. 9) defines the objective as:

> The objective of general purpose financial reporting is to provide financial information about the reporting entity that is useful in making decisions about providing resources to the entity and in assessing whether the management and the governing board of that entity have made efficient and effective use of the resources provided. The reporting entity concept is intended to further this objective.

As indicated in the IASB/FASB (2010) conceptual framework, the objective of general purpose financial reporting is to provide useful financial information to users, with the relevance and reliability of such financial information contributing to their decision making. Other than management and shareholders, the existing and potential users of financial information include investors, lenders and other creditors making decisions about the entity. However, a number of governmental agencies require financial statements from entities, and their accounting requirements may differ in certain respects. Staubs (2000) maintains that customers of a firm engage in a larger monetary volume of transactions than any other parties, therefore, these customers could definitely benefit from insight into the firm’s position and operations. Suppliers of a firm are usually short-term creditors and would like to know a firm’s financial position, as would employees. These users of financial information, their roles and related theories are discussed more fully in Chapter 3.

A 1959 survey of accountants’ opinions on financial reporting revealed from the American Institute of Certified Public Accountants (AICPA) annual publication, *Accounting Trend and Technique,*
provides significant evidence of accountants' commitment to adopting a 'proprietors' view rather than a 'general purpose' view in preparing financial statements (Staubus 1959). Carbon emission trading is an emerging market. There are no formal accounting guidelines in this area. In addition, regular measurement of carbon emission reduction (i.e. reduced electricity consumption) is generally conducted by other non-accounting professionals. In the case of a 'proprietor' view the measurement aligns with expert opinion in environmental science or forestry, rather than a regulated accounting measurement. Given the proprietors of carbon credit provider organisations, such as forestry companies, are generally forestry experts, the accountant must rely on information disseminated to them from their field measurements. This risk is that accountants in carbon credit provider organizations might adopt a 'proprietors' view rather than a 'general purpose' view.

Regarding the role of accountants, Dartnell (2007) argues that the accounting profession cannot tailor financial statements to precisely suit each group. Although retail investors have the greatest interest in using other, additional types of information such as market share, customer satisfaction and product innovation (Cohen et al. 2011), accounting bodies have adopted a decision-usefulness approach to financial reporting based on investors and creditors' perspectives concerning finance, economics, accounting, investment and statistics. Scott (2011) argued that:

The role of the accountant is to supply useful information in this regard, and not necessarily to make direct predictions about current and future firm value. To the extent that it facilitates investor predictions of future firm performance, historical cost-based information can be useful even though it does not directly reveal values.

Investors in businesses include owners and creditors. In not-for-profit entities, the investor may be a citizen, a donor, a taxpayer or a patron. In Australia, carbon credit providers take the legal form of listed companies, public sector entities, private companies and partnerships. Investors in Australian emissions markets may include creditors, citizens, donors, taxpayers and patrons.

However, Laughlin and Puxty (1981) recognise that there is a fine line between accounting compliance reporting and disclosure of proprietary information, where the latter can be detrimental as it discloses organisational strategies that would otherwise remain concealed to competitors.

As indicated in Chapter 1, and in the previous section, carbon sequestration organisations represent only one group of ACPs that create abatement certificates as their main product. In addition they are the only organisations that fully practice the complete accounting cycle—asset classification, subsequent measurement and impairment testing. The Australian emissions market has not yet proved to be a complex or fully active market. The production of useful information for various groups may or may not improve their welfare. In contrast, the financial reporting of ACPs who
produce abatement certificates as a by-product is directed at their main business rather than at the GGAS. However, Puxty (1983) suggests that as a basis for standard-setting, a regulatory agency must determine a balance between organizational and individual needs rather than initially focusing on decision-usefulness.

Moreover, Lennard (2007) points out that stewardship and decision-usefulness are parallel objectives with different emphases that should therefore be defined as separate objectives. Stewardship contributes an important dimension to financial reporting which should be reflected by a specific acknowledgement in the objectives of financial reporting. Lennard (2007) suggests that stewardship should be characterized as the provision of information that provides a foundation for a constructive dialogue between management and shareholders.

Different participants/groups of ACPs might have different information needs for control and compliance purposes, while different groups of users might have different needs for decision-making purposes. The various views, including experts' opinions on accounting for carbon emissions trading, are explored in Chapter 6.

2.4.2 Asset Classification and Recognition

The development of carbon markets worldwide has given rise to many accounting issues, including asset recognition and measurement. As we saw earlier, empirical results suggest that the US capital market assigns a positive price to an electricity utility’s bank of SO2 emissions allowances, consistent with the argument that the market deems emissions allowances to have an asset value (Johnston et al. 2008). This section seeks to address some of the common accounting convergences and differences when defining or classifying emissions allowances or abatement certificates.

2.4.2.1 Carbon credits/Emissions Allowances/Abatement Certificates

As cited in Raiborn and Massoud (2010), the FASB and IASB have jointly agreed on the following working definition of an asset:

An asset is a present economic resource to which, through an enforceable right or other means, the entity has access or can limit the access of others.

Emissions allowances or abatement certificates held are a present economic resource that can be accessed by the entity concerned; at the same time, that entity can restrict access to the resource. An emissions allowance also provides value to the receiving entity by giving it the legal right to produce emissions or to sell that right to another party (Raiborn & Massoud 2010). It is noted that this definition focuses on the accessibility of assets.
According to the IASB and AASB’s Conceptual Framework for financial Reporting 2010, asset definition is:

An asset is a resource controlled by the entity as a result of past events and from which future economic benefits are expected to flow to the entity. (p27)

In addition, an asset should be recognized in the financial position statement only when it is probable that the future economic benefits embodied in the asset will eventuate, and when its cost or other value can be measured reliably. Abatement certificates are the result of the past plantation of carbon credit providers and they can expect future economic benefits from these.

Australian carbon credit providers, in the Australian context (baseline and credit domestic schemes from 2003-June 2012) and in the carbon sequestration business, creates abatement for both wholesale and retail sale. Thus, it could be expected that the future economic benefits of emission trading would flow on to carbon credit providers. Related costing and financial reporting therefore represent only their abatement business operation as well.

As noted above, an asset can be and has been defined in different ways by different entities and even by the same entity over time. Assuming that abatement certificates satisfy the criteria for asset definition, this leads to the question of what type of asset is involved. This issue is explored below.

(i) Inventory

The WRI/WBCSD GHG protocol defines emissions allowances as GHG inventory, while the US FERC’s USofA classifies them as allowances inventory and also gives a choice for the entity concerned to recognize them as allowances held if appropriate. Under the USofA, emissions allowances acquired for speculative purposes are defined as other investments. Based on the requirements of FERC, the EITF defines emissions allowances as inventory. Although all US accounting government bodies view them in this way, the definitions of inventory are diverse.

According to Accounting Research Bulletin (ARB) No.43, Chapter 48 Inventory Pricing, inventory is a tangible personal property held for sale in the ordinary course of business, or tangible personal properties in the process of production for such sale, or tangible assets that are currently consumed in production. It is noted that in the Australian emissions market, almost all ACPs create abatement certificates as by-products derived from emissions reduction or energy consumption reduction. Only carbon sequestration entities create carbon credits in their ordinary course of

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8 In 2004, ARB No. 43 Chapter 4 is amended by SFAS No.151 Inventory Cost, to clarify the accounting for abnormal amounts of idle facility expense, freight, handling costs and wasted material (spoilage).
business; they hold these carbon credits for sale. They are not liable entities, thus the purpose of their holding carbon credits is crystal clear.

Several definitions of inventory form US protocol focus on inventory quantification rather than on the measurement of the associated monetary unit:

- a quantified list of an organization’s GHG emissions and sources (WRI and WBCSD protocol).
- Inventory is a quantified compilation of an organization’s GHG emissions and sources. (Greenhouse Gas Protocol for the US Public Sector (PSP).
- Inventory is a comprehensive and quantified accounting of an agency’s GHG emissions and sources. (Federal Greenhouse Gas Accounting and Reporting Guidance).

In the Australian context, one group of ACPs provide low-emission generation of electricity (including co-generation) or improvements in the emission intensity of existing activities. The electricity generators might consider emissions allowances a major element in the generation process (Deloitte 2009). Their abatement activity, therefore, might be classified as inventory under inventory standards since there are no formal accounting guidelines in emissions trading. In addition, for ACPs who provide carbon sequestration, emissions allowances are tangible personal property held for sale in the ordinary course of business. Therefore, emissions allowances or abatement activities from carbon sequestration meet the definition of inventory.

However, Deloitte (2009) points out that the inventory model which requires entities to recognize emissions allowances as inventory is supported by a famous 1993 accounting guideline from the FERC, Uniform System of Accounts. The US Securities Exchange Commission (Ministers) states that they will not object to the inventory treatment, if applied consistently (Deloitte 2007). In addition, Haller (2009) and Hamidi-Ravari (2012) suggested the inventory model as a possibility as well.

Moreover, the IAS 2 Inventory also provides guidelines for determining the cost of inventories. Inventories under these guidelines include assets held for sale in the ordinary course of business (finished goods), assets in the production process for sale in the ordinary course of business (work in process), and materials and supplies that are consumed in production (raw materials). However, almost all abatement certificates created under Australian GGAS are not an asset in an ordinary course of business; rather, they are by-products. Although electricity generators can held for sale or for future surrendering, management’s judgement and a company’s policy could be changed during the compliance period. The forest carbon credits are main products of forest carbon credit providers.
They are produced and held for sale. If carbon credits are inventories, they are required to be stated at the lower of cost and net realisable value (NRV) under IAS 2 Inventory.

Conversely, the WRI/WBSCD, the FERC and the EITF required purchased emissions allowances (greenhouse gas inventory) to be reported at historical cost or exchange price. Only USofA, FERC (1993) and EITF Issue 03-14 (2003) specifically identified the weighted-average cost method for monthly valuation and periodic expense recognition. However, these US-based guidelines (WRI/WBSCD, USofA, FERC) are designed for emissions allowances created by utility sectors not the carbon sequestration sector.

As indicated in Chapter 1, abatement certificates are the outcome of SGARAs or biological assets (via tree plantation, carbon sequestration), but their lack of physical substance is an important character that differentiates them from other non-living assets or agriculture produce. This lack is similar to intangible assets. The next section, therefore, discusses related literature on intangible assets.

(ii) Intangible assets

A second accounting issue addressed by many interested parties is whether emissions allowances are intangible assets. As described in Section 2.2.2, IFRIC 3 Emissions Rights defined its emissions allowances under IAS 38 Intangible Assets. Related issues on applicable value and other recognitions will be addressed in the following section. This section considers various definitions of intangible assets.

IAS 38 defines an intangible asset as an identifiable non-monetary asset without physical substance. This definition requires an intangible asset to be identifiable to distinguish it from goodwill. In addition, an intangible asset shall be recognised when it is probable that the expected future economic benefits are attributable to the asset, will flow to the entity and its cost can be measured reliably. According to IAS 38, there are two possible models for the recognition of intangible assets: the cost model and the revaluation model. Intangible assets under the cost model will be carried at cost less accumulated impairment losses, and any revaluation increase is not permitted. Under the revaluation model, intangible assets are carried at the re-valued amount (fair value at revaluation date less accumulated impairment losses). If revaluation increases the carrying amount, the increase shall be credited to comprehensive income while a decrease is debited to a loss (Krupova’ and Černy’ 2007). Additionally, it is explicitly stated that intangible assets held for sale in the ordinary course of business are to be recorded in accordance with IAS 2 Inventory.
In theory, emissions allowances are identifiable non-monetary assets without physical substance and IFRIC 3 supports this classification. In 2003, IFRIC proposed an amendment to IAS 38 to create emissions allowances as a new subset of intangible assets, which could be measured at fair value through profit or loss (IASB, 2010). Veith, et al. (2009) claim that the IFRIC amendment reduces mismatches among the three items (government grants, emissions rights assets and carbon liability) in the balance sheet and the impact on earnings.

The Australian UIG 3 Emissions rights and Renewable energy certificate is a guideline that supports the intangible assets classification. It defines both granted and purchased emissions allowances as intangible assets under AASB 138 Intangible Assets:

An intangible asset is defined as an identifiable non-monetary asset without physical substance.

In order to recognize intangible assets, AASB also requires that the asset is capable of being separated from the entity and able to be sold, transferred, licensed, rented or exchanged, or arises from contractual or other legal rights. It is noted that Australian NGACs (abatement certificates) meet the definition of intangible assets under AASB 138.

The US SFAS No.142 Goodwill and Other Intangible Assets defines intangible assets as assets that lack physical substance but do not include financial assets and goodwill, which will initially be recognized and measured based on its fair value. As abatement certificates lack physical substance, it is possible that they meet this definition. As indicated in Section 2.2., this view is supported by EITF (2003), cited in Deloitte (2007), that emissions allowances are intangible assets because they lack physical substance. Similar to the inventory model, Deloitte (2009) believes that the intangible asset model is widely used under both US GAAP and IFRS.

As described in SFAS 142 and IAS38, intangible assets are identifiable assets that lack physical substance. Deloitte (2007) also argued that:

From a definitional perspective, emissions allowances appear to align more closely to intangible assets than inventory, although some traditional intangible accounting practices may not be a precise fit for allowances.

This argument, therefore, implies a need for the amendment of existing accounting standards for intangible assets.

In contrast, Krupova' and Černy' (2007) argue that although emissions allowances fulfil the definition of intangible assets, they are short-term assets which are expected to be re-granted annually and which the entity can sell and repurchase as a speculation; this issue will be discussed
in the next section. There is instability, high-volatility and liquidity in emissions markets, which seems a feature of financial instruments rather than intangible assets under IAS 38 (or US SFAS No.142). However, Australia’s Greenhouse Gas Emission Reduction Schemes (GGAS) and Carbon Farming Initiatives allow the creation of carbon credits by forest planting and the demand-side abatement. These entities are obligation-free and hold carbon credits for sale or speculation.

However, during the first phase of Clean Energy Package and Carbon Farming Initiatives (CFI) that commenced in July 2012, Australia is in transit to Cap-and-Trade Program. The price of granted carbon credits was fixed to $23. This clashed with the intangible asset model because intangible assets are non-monetary assets with no fixed exchange cash value and whose value depends on market climate. Emitters can use them to acquit their obligations or to sell back to the government (KPMG 2012).

The FASB staff have indicated that the nature of the asset (i.e. intangible asset) requires an impairment approach under SFAS 144, *Impairment or Disposal of Long-Lived Asset*, which is appropriate for emissions allowances (Deloitte 2007). However, there is no justification provided by the FASB. If emissions allowances are intangible assets, impairment testing is one of the accounting consequences of emissions trading. An indication of impairment is a decline in market value. According to SFAS 144, the emissions allowances or abatement certificates must be tested for impairment as part of a larger cash-generating unit (Ernst & Young 2009). The materiality of allowance value is a major factor if impairment testing is needed. However, Australian abatement certificates are mainly created as by-products. The ACPs need to compare the value of abatement certificates with the value of their main product if these abatement certificates are considered a cash-generating unit.

Regarding the recognition of expenses, Ernst and Young (2010) found that, based on the disclosures provided, emitters generally do not amortise emission credits, since their economic benefit is not diminished until they are surrendered. Companies recognize expenses only when emissions allowances are sold or used.

A formal inquiry conducted by Deloitte and PricewaterhouseCooper in the US in 2009, indicated that FASB staff view emissions allowances as intangible assets. However, Deloitte (2009) maintains that an amortisation methodology for intangible assets may not make sense, since allowances are not used until the end of the compliance period when they are relinquished to the regulatory body to acquit their obligations related to actual emissions over that period.

The intangible and inventory models could create some of the following comparability issues:

- Classification in Cash Flow Statement on purchase and sale of emissions allowances
Subsequent carrying value adjustment (lower of cost or market versus impairment and revaluation model)

Recognition of previous cost basis reduction

Vintage year swaps

Disclosure requirement (Deloitte 2009)

In order to prepare a cash flow statement, classification of an asset to particular activities is an important factor. Intangible assets are long-term assets but inventories are short-term assets. The application of each model results in different financial outcomes. The carrying value of emissions allowances under the intangible assets model needs a price index or reference, so as to test impairment and to revalue; however, the availability of a price index is based on how active the relevant emissions market is. In addition, the application of two models leads to differences and incomparability in the recognition of previous costs reductions and expenses, vintage year swaps and disclosure requirements, since the intangible asset model and the inventory model require different subsequent measurements.

With respect to accounting for vintage year swaps, under the inventory model entities would account for a vintage year swap at carryover basis and based on their inventory policy. Under the intangible assets model (described in 2.4.2.1), a vintage year swap would be accounted for on a fair value basis. No matter how emissions allowances are accounted for, practices generally demonstrate that a granted allowance is assigned no value (Ernst&Young 2010).

(iii) Government grant

Under the EU ETS, carbon-emitting entities will be allocated emissions allowances through the schemes allocation process, with a requirement to manage all of their emissions against this initial allocation. These allocated emissions allowances are widely considered by accounting standard-setters and leading audit firms to be granted emissions allowances (Deloitte 2007; Ernst&Young 2009). In the case where granted emissions allowances are issued for less than fair value, accounting guidelines such as IFRIC3 and UIG 3 require entities to recognize this difference in deferred income under IAS 20 Accounting for Government Grants and Disclosure of Government Assistance and AASB 120 Accounting for Government Grants and Disclosure of Government Assistance, respectively.

IAS 20 and AASB 1120 define government grants as (p.1):

Assistance by government in the form of resources to an entity in return for past or future compliance with certain conditions relating to the operating activities of the entity. They
exclude those forms of government assistance which cannot reasonably have a value placed upon them and transactions with government which cannot be distinguished from the normal trading transactions of the entity. A government grant may take the form of a transfer of a non-monetary asset, such as land or other resources, for the use of the entity.

However, as indicated in the previous section, accounting standards such as IFRIC 3 Emissions Rights clearly supports IAS 20 (AASB 1120) when actual emissions exceed the limit, expense and liability recognition are needed.

It should be noted that IAS 20 and AASB 120 share virtually the same definition with no significant differences. Furthermore, AASB 120 also provides guidance for government grants relating to assets, as does IAS 20. It requires the entity concerned to recognize, in their statement of financial position, the grant as deferred income or to deduct the grant in arriving at the carrying amount of the asset.

In contrast, Wambsganss and Sanford's (1996) opinion is that it is inconsistent not to recognise granted allowances while purchased allowances are recognised on the balance sheet, and to recognise them as expenses when they are used to compensate for pollution emissions. These authors recommend that both granted and purchased allowances should be treated as donated assets, which are recorded at fair value, based on the rationale of free allocation. However, they do not justify their argument.

The recognition of assets and liabilities with a different valuation bases could produce a volatility of results in some companies (Bebbington & Larrinaga-Gonzalez 2008). Nonetheless, Krupova' and erny' (2007) argue that the portion of government grant can only be recognised as income when the entity demonstrates a reduction in emitted pollution. In addition, it is not matched with the liability measured by reference to the current market value of the allowances. These issues cause volatility in the income statement. The key issues related to contingent liabilities and contingent assets will be described and discussed in the second half of this chapter.

This government grant approach follows IFRIC 3. However, Deloitte (2007) argues that rather than measuring the liability at the present market price of permits, the liability should be measured by reference to the amount recorded for emissions permits held as assets that will be used to settle liabilities.

In the context of the Australian emissions market, there are no free abatement certificates allocated by the government, but a state and territory-wide mandatory GHG benchmark is imposed on all
holders of electricity retail licenses in NSW and the ACT. The approach discussed above is therefore inapplicable in Australia.

(iv) Financial instrument

Another accounting issue raised in the emissions accounting literature is whether emissions allowances or abatement certificates are financial instruments. Although there is no justification provided by the EITF (2003) to support its assertion that emissions allowances do not meet the definition of a financial asset under the US SFAS 140, Transfers and Servicing of Financial Assets and Extinguishments of Liabilities, there are arguments to the contrary from some parties, making it important to examine the definitions of financial instrument. This section, therefore, provides definitions and related discussions on financial instruments in an emissions trading context.

SFAS 140 Accounting for Transfers and Servicing of Financial Assets and Extinguishments of Liabilities defines financial assets and liabilities as assets and liabilities that qualify as financial instruments, as defined in paragraph 3 of FASB Statement No. 107, Disclosures about Fair Value of Financial Instruments. Under SFAS No.107, a financial instrument is defined as cash, evidence of an ownership interest in an entity, or a contractual obligation to deliver cash or another financial instrument to the second entity, or to exchange other financial instruments on potentially unfavourable terms with the second entity. In addition, a financial instrument is a contractual right to that second entity to receive cash or another financial instrument from the first entity or to exchange other financial instruments on potentially favourable terms with the first entity.

Conversely, Deloitte (2009) believes that if a financial settlement is attributed to emissions allowance trading, emissions allowances should be classified as financial instruments or derivatives consistently and appropriately. However, further analysis is required and market liquidity, historical practice, vintage year specificity and intent should be considered.

Ernst and Young (2010) maintain that it is very common to enter into forward contracts, swaps or options pertaining to emissions credits if their specific terms meet the definition of derivative under US GAAP. Vintage year swaps in the US cap-and-trade program should be accounted for at fair value because the nonmonetary transaction guidance would generally recognize it at fair value. In cases where emissions allowances are treated as inventory, historical cost is applied.

9 In performing an analysis, if there is a sufficiently liquid current spot market, there is an underlying presumption that there will also be a liquid spot market in the future when the contract delivers.

10 Derivative is a financial instrument or financial contract used to hedge the risk arising from price fluctuations of other assets.
Furthermore, IAS 32 *Financial Instrument: Presentation* defines financial instrument in the following way:

> A financial instrument is any contract that gives rise to a financial asset of one entity and a financial liability or equity instrument of another entity  

Moreover, a financial asset under this standard includes: cash; an equity instrument from another entity; a contractual right; and a contract that will or may be settled by the entity’s own equity instruments. A financial liability is: any liability that is a contractual obligation to deliver cash or another financial asset to another entity; or to exchange financial assets or financial liabilities with another entity under conditions that are potentially unfavourable to the entity; or a contract that will or may be settled by the entity’s own equity instruments. Moreover IAS 39 states that a financial asset or financial liability may be held for trading or held to maturity.

As previously indicated, in Australia there are three groups of ACPs. The electricity generator group is the only one that can surrender the abatement certificates that they created. The other two groups create abatement certificates for speculation or trading. Some ACPs might trade abatement certificates via market facilitators such as brokers and aggregators. Abatement certificates, therefore, can be traded as forward or future contracts in the same way as other financial instruments.

Krupova’ and Černy’ (2007) assert that emissions allowances are like a feature of financial instruments rather than intangible assets under IAS 38 *Intangible Asset*; since they are short-term assets expected to be re-granted annually (under the cap-and-trade program) the entity can sell and repurchase speculatively. However, the authors also point out that the emissions allowances or abatement certificates do not fulfil the definition of IAS 32 and IAS 39 as they are neither equity instruments, a receivable nor a beneficial contract.

In addition, KPMG (2012) pointed out that granted emissions allowances, and free and created carbon credits are the result of statutory obligations not a contractual relationship as defined in accounting standards for financial instruments. This issue is, therefore, a limitation of the financial instrument model.

The issuance of SFAS 153, *Exchanges of Nonmonetary Assets*, in December 2004 led to a new focus on its scope and coverage. Deloitte (2007) claims that questions have arisen in practice specifically on whether SFAS 153 applies to exchanges of emissions allowances through what are
commonly referred to as 'vintage year swaps' under the US acid rain emissions program (sulphur dioxide (SO2) and nitrogen oxides (NOX). Emissions allowances may have a specified vintage that dictates when they may be used. Different vintages and market regulators require a different inventory cost measurement as well.

Under SFAS No.153:

Exchange (or exchange transaction) is a reciprocal transfer between an enterprise and another entity that results in the enterprise acquiring assets or services or satisfying liabilities by surrendering other assets or services or incurring other obligations.

Additionally, the Statement says that a reciprocal transfer of a nonmonetary asset shall be deemed an exchange only if the transferor has no substantial continuing involvement in the transferred asset, such that the usual risks and rewards of ownership of the asset are transferred.

The inventory model adopted by entities under FERC reporting, and the intangible asset model adopted by entities that have acquired the allowances in business combinations leads to diversity in practice (Deloitte 2007). Since there is no formal guidance for emissions allowances, exchanges or trades between two parties that applied a different accounting treatment/model is inapplicable.

However, Deloitte argue that the nature of the asset depends on the intended use of the emissions allowances by the entity, with it being treated as an intangible asset or inventory if used for operational purposes and as a financial asset if used for trading purposes (Deloitte 2007). Hamidi-Ravari (2012) suggested that the type of asset carbon credits are initially recognized as, results in the subsequent application of the impairment of asset standards. When carbon credits are classified as intangible assets, IAS 36 (or AASB 136) impairment of assets applies. When carbon credits are classified as financial assets, then impairment requirement of IAS 39 or AASB 139 applies.

IAS 36 (or AASB 136) impairment of assets requires entities to recognize assets up to the recoverable amount\(^\text{11}\). Goodwill and certain intangible assets are the only exemption. In addition, under IAS 39 or AASB 139, impairment of financial instrument uses the incurred loss model, which assumes the repayment of the loan until the loss trigger is identified (Deloitte 2012).

To summarise, market conditions in each country and scheme are a factor if emissions allowances are considered a financial instrument (Haller and Thoumi 2009). Each model has its own merits; accountant interviewee from Lovell et al. (2010) suggested that it is not the standard setters’ duty to define what emissions allowances (carbon credits or abatement certificates) are. They are not law

\(^{11}\) The higher of fair value less cost to sell and the value in use
setters. (The accounting approach can arise after a clear identification of the legal nature such as in the European community (for EU ETS).

The Australian Securities and Investment Commission (ASIC) define the regulated carbon credit units (also referred to as: carbon units or Australian Carbon Credit Units (ACCUs)) as financial products under the Australia Corporation Act, 2001. ASIC requires that both traders and brokers are licenced to trade according to the Australian Financial Service License (AFSL), (ASIC 2012). However, neither formal international accounting standards nor Australian Accounting Standards issued a specific accounting standard for emissions trading. In Brazil, where carbon credit businesses operate under the Clean Development Program (CDM), the Brazilian Securities Commission (CVM) does not consider carbon credits as securities because they do not have collective investment agreement and the nature of derivative. They are not derived from underlying instruments and do not create contractual relationships and financial return for the acquirer (Herscovici et al. 2010).

2.4.2.2 Source of abatement

As discussed in Chapter 1 and Appendix 1, there are many eligible activities to create carbon credits or emissions allowances such as:

- Low-emission operation/production, for example in power stations, oil refineries etc.
- Demand-side abatement (DSA) – perform any activities that reduce energy consumption.
- Carbon sequestration\textsuperscript{12} – the process of capturing and removing Carbon Dioxide (CO\textsubscript{2}) from the atmosphere (Daniels 2011).

Australia is the first mandatory scheme in the world that includes forest carbon sequestration. Also, this is the only activity that creates carbon credits as an ordinary course of business. The accounting issue in recognition of carbon plantations or the carbon sinks is discussed in this section.

\textsuperscript{12}There are at least three potential ways to keep CO\textsubscript{2} out of the atmosphere: oceanic sequestration pumps the CO\textsubscript{2} into the deep ocean (CO\textsubscript{2} is soluble in water); geological sequestration captures CO\textsubscript{2} from an industry, stationary, or energy related source (e.g. a power plant, a coal-to-syngas plant, a cement production plant) and buries or injects into the subsurface (generally, CO\textsubscript{2} injections are used in enhanced oil and gas recovery); terrestrial sequestration binds CO\textsubscript{2} in soil and vegetation near the earth’s surface, for example tree-planting and no-till farming (Daniels, 2011).
**AASB 1037 Self-Generating and Re-generating Assets (SGARAs)**

In relation to carbon sinks and sequestration, planted forests are assets that generate abatement certificates, which provide economic benefits to abatement certificate providers, as described in Chapter 1. The concept of self-generating and re-generating assets (SGARAs) is explored in Roberts et al. (1995)’s Discussion Paper No. 23 and AASB 1037 Self-Generating and Regenerating Assets. It is assumed that the financial reporting of SGARAs is controlled by reporting entities (in the Australian GGAS context these are carbon credit providers); however, these entities are partially under the control of other government regulations.

SGARAs are non-human related living assets. As a useful means of classifying SGARAs, a plant and animal dichotomy is commonly accepted. Forestry is a representative of the plant category and livestock, of the animal category. Horticultural and viticultural assets and marine life are also included in SGARAs. These SGARAs possess an inherent capacity of growth, procreation, production and degeneration; therefore, SGARAs have economic benefits and service potential which are subject to many factors throughout their life (Roberts et al. 1995)

Self-generation and regeneration are physical phenomena, thus an awareness of the physical attributes of physical change in SGARAs is a prerequisite to financial reporting. The changes in quantity and quality of SGARAs must be physically measured before their monetary value can be measured and attributed. In some cases, only physical measurements are meaningful since monetary values may be unascertainable.

The concept of SGARAs is only relevant to carbon sequestration. ACPs control SGARAs through their forestation and sequestration of carbon. Plants have inherent growth and can produce abatement certificates via natural photosynthesis. There are two branches of SGARAs: plant and animal. This thesis, however, only includes the plant category of SGARAs from the Discussion Paper No. 23 and from AASB 1037 Self-Generating and Regenerating Assets in response to forest carbon sinks. However, abatement certificates lack of physical substance is the same as intangible assets; this view is discussed in the next section.

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13 To my knowledge there is no literature available that discusses SGARAs or the replacement standard AASB/IAS 141 Agriculture in terms of the carbon market context. There is only literature in the sustainability context which criticises the ability of the new IAS141 in enhancing sustainability reporting (for example, Williams and Wilmshurst, 2009). The SGARAs standard was mandatory for general purpose financial reporting for financial years ending on or after 30 June 2011 and when replaced by AASB/IAS 141 Agriculture, companies could also treat carbon market products as inventory.
Key aspects of SGARAs discussed below are the unique nature of SGARAs, the classification and presentation of SGARAs in financial reports, the measurement of SGARAs, and the recognition and measurement of revenue.

Nature of SGARAs

SGARAs have a natural capacity to grow and/or procreate. The physical changes both in quality and quantity are economically and uniquely important characteristics of SGARAs. Changes can be identified through natural growth of the asset itself or through the inherent reproductive processes of that asset such as seeds. It may be through other physical productions such as tea leaves from tea plantations. As to which SGARAs are held or cultivated, this depends upon natural environmental conditions and the changes in the market price or the general-price level. This does not need any financial transactions adding to or reducing the value during the relevant period; the SGARAs on hand at the beginning of the reporting period may be significantly different from the SGARAs on hand at the end of the period. On the other hand, assets held may disappear and a new economic unit appear without any connecting financial transactions. Carbon sequestration and abatement certificates, therefore, are outcomes of the growth and reproduction process of the forest which relies on natural environmental conditions as well as other forest produce.

Roberts et al. (1995) identify the following as economic attributes of forestry SGARAs:

- There are changes in the method of establishment and maintenance due to technological developments during the reporting period.
- There are changes in the original purpose for which a forest was planted.
- In early establishment years, forest-related costs are incurred.
- The growth and value of a forest in the early years of its life may have a significant relationship with its costs and may have a decreasing relationship with its costs as trees develop.
- Revenue from forests can only be realised after a long growing cycle.
- Forest management practices can affect growth rates.
- Marketable size, marketable age, utility of trees and merchandisable value may vary according to tree type, management intent and demand from buyers.
- Free inputs of sun, air and rain affect growth of trees with little or no cost. Trees are vulnerable to wind, drought, pests, diseases and bush fires.
- There are significant changes in monetary value from planting until harvest.
- Changes in the value of forests are not only due to price movements but to self-generated changes.
- The cost of growing individual or native plantations may not be comparable due to the variability of local conditions.
- The cost of clearing stumps and reforestation can be anticipated after harvesting.
- The regulatory environment and requirements may differ between entities and over time.

However, these economic attributes may be more applicable to plantations. It is noted that the carbon sequestration business does not focus on physical changes of wood or timber and carbon abatement can begin in a short growing cycle or in the early years of a tree's life. Roberts et al. (1995) note the possibility of identifying SGARAs as a separate class of assets that need an appropriate method for financial reporting. This method must address the nature and innate ability of SGARAs.

Figure 2.1 The Economic Taxonomy of SGARAs by Roberts et al. (1995)

According to Figure 2.1, such assets can be distinguished on the basis of whether they produce consumables once or on an ongoing basis. In economic terms, the former is described as 'consumable'; this term is analogous to the financial reporting description 'inventory'. In addition, the latter may be described as 'bearer' and is analogous to the financial reporting description 'equipment' or 'productive plant'.

The estimated lives of SGARAs found in Australia may provide a useful basis for financial reporting if management intent is clear. Management can precisely evaluate turnover rate of SGARAs and their agriculture produces. However, in preparing financial statements, the same basis and method should be used for the same type of SGARAs. Roberts et al. (1995) conclude that the economic attributes of SGARAs differ from those of other assets and provide justification for being subject to classification schemes that reduce reliance on management intent. Thus, they should be shown in a separate category, and further sub-categories in accordance with Figure 2.1 (Robert et al, 1995)

In the Australian emissions market, carbon credits are not analogous to the description of SGARAs provided above because the forest carbon credits are not under plantation conditions. The estimated
lives of carbon credits do not depend on natural environment conditions, but rely completely on management intent and the liquidity of the emissions market. On the other hand, carbon credits are outcomes of planted forest SGARAs; the accumulated cost from the plantation is thus a basis for calculating the cost of carbon credits. The measurement of SGARAs is discussed below.

Roberts et al. (1995) view SGARAs that generate future economic benefits and have service potential as inventory. In addition, under AASB 1037 Self-Generating and Regenerating Assets (1998), non-living produce extracted from SGARAs are also inventory. Carbon credits created from planted forests for carbon sinks and carbon sequestration are thus analogous to the financial reporting description inventory discussed in the previous section.

- **IAS 41 Agriculture**

AASB 141 Agriculture defines a biological asset as a living animal or plant. These assets have to be physically attached to the land, like trees in plantations. There may be an active market to sell only a combined asset (land and biological asset), or there may be no market for biological assets that are attached to the land. Indeed, it defines the harvested product of the entity's biological asset as an agricultural produce. This guideline requires valuation of agricultural produce at a harvest point. After harvest point this agricultural produce is classified as inventory.

- **IAS 16 Property Plant and Equipment**

Cited in Hall and Thoumi (2009), McEvoy (1998) points out that in legal aspect, forestland is real property (includes any interest in land). If forest carbons sinks are considered forestlands, classification of carbon sinks as Property, Plant and Equipment under IAS 16 Property Plant and Equipment are potential.

IAS 16 defines Property, Plant and Equipment as follows:

Property, plant and equipment are tangible items that: (a) are held for use in the production or supply of goods or services, for rental to others, or for administrative purposes; and (b) are expected to be used during more than one period.

Carbon credits are produced from carbon sinks. These carbon sinks are long-term/non-current asset. Trees must be maintained and never been cut down during the compliance period. Therefore, in legal aspect, it's argued that carbon sinks are real property and would fall into the scope of IAS 16 Property, Plant and Equipment.

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\[14\] AASB 1037 defines non-living produce as the potentially, commercially saleable produce derived from a SGARA, but not a SGARA itself. The net market value of it is determined immediately after it becomes non-living.
2.4.2.3 Other related intangible assets

The license (NGAC Accreditation and AFSL) to create carbon credits could generate future economic benefits to them (who clarify). However, there is no formal guideline on how to treat these intangible assets. The real accounting practices will be discussed in Chapter 5 and Chapter 6 research results and analysis.

Haller and Thoumi (2009) points out that for forest carbon sequestration it needs to be understood that forestland is real property. Forestry carbon develops this real property right. Forestry rights or carbon rights over the land are other related intangible assets in this emerging market. This issue will be discussed in Chapter 6.

2.4.3 Applicable Value and Valuation

2.4.3.1 Carbon credits/emissions allowances

Ohlson (1987) argues that the measurement/valuation perspective cannot and should not be abandoned since the abandonment of this perspective renders even the choice of accounting terminology impossible.

This section, therefore, provides discussion on subsequent measurement of the related assets in the carbon emissions market.

As indicated in the survey findings reported in Section 2.3.1, applicable value and the valuation of emissions allowances or abatement certificates are critical issues in emissions markets since there are no formal guidelines or consensus from regulatory bodies. Following ARB No.43, SFAS No.142, IAS 2 and IAS 38, a primary valuation of accounting for intangible assets and inventories is cost. Cost means the sum of expenditures incurred to bring an item to its existing condition and location. However, one entity can hold both granted allowances allocated at no cost as well as purchased allowances recorded at fair value. Haller and Thoumi (2009) indicated that without the active market, to record at cost is prudent. Thus, there are some operational complexities involved with the cost method.

The inventory and intangible asset models for emissions accounting have attracted considerable interest and support in the accounting literature. In the following section I examine key issues in the applicable value of emissions allowances under both models. Under the inventory model, emissions allowances are measured by weighted-average cost and classified as inventory in the balance sheet. Granted emissions allowances are recorded on a zero-cost basis while purchased emissions allowances are recorded at purchase price. The weighted-average cost of surrendered emissions
allowances in each period is charged to cost of goods sold. Impairment under the inventory model is subject to the lower of cost or market rule. Related cash inflows and outflows are classified as operating activities in the statement of cash flows. However, brokers and dealers generally treat emissions allowances held for sale at fair value (Ernst&Young 2010).

Under the intangible asset accounting model, companies initially measure both granted and purchased emissions allowances at cost. Granted emissions allowances are recognized at a nominal or zero cost since they are allocated by government free-of-charge. Conversely, purchased allowances have a cost associated with them and are recorded at purchase price. Additionally, there is a debate over whether allocated allowances are purchased and there are not many other analogous instances where an asset with a verifiable value is received for free (Deloitte 2009).

In addition, the fair value (mark-to-market) model may be adopted only if there is an active market since its values on the balance sheet could be changed frequently, as market conditions change. However, Ernst and Young (2009) maintain that it may be difficult to prove that the market is active, particularly in the early years of a scheme.

If carbon credits are a financial instrument, IAS 39 allows an entity to designate a financial asset or financial liability as fair value through profit and loss (FVTPL), available for sale (AFS), held to maturity (HTM), or loans and receivables (LR):

- FVTPL financial assets are initially measured at fair value, and changes in fair value are subsequently recognized in profit and loss.
- AFS financial assets are not primarily acquired for trade but can be trade in the near future.
- HTM financial assets are an instrument the entity intends to hold onto until maturity, with fixed payment and fixed maturity.
- LR financial instruments are non-derivative fixed-term and payment instruments that are not for sale in the active market.

Houpt and Ismer (2011) argue that if carbon credits or emission allowances are held for trading purpose rather than surrendering or compliance purpose, the subsequent measurement using fair value through profit and loss seems appropriate.

However, no prior study exists that defines what type of financial assets carbon credits are since initial asset classification has not been defined.
2.4.3.2 Carbon sinks as source of abatement

Roberts et al. (1995) defined inventory as outcomes of SGARAs. Abatement certificates/Carbon credits are created from planted forests for carbon sinks and carbon sequestration, and are thus analogous with the financial reporting description inventory. However, it is important to examine the measurement of planted forest SGARAs since this is relevant to the price determination of reporting entities.

**Measurement of SGARAs**

The measurement practices of forest SGARAs adopted by Australian entities are diverse since there are no industry-based accounting standards. Roberts et al. (1995) examined the valuation bases for forestry from the perspective of reliability and relevance of the resulting information for resource decision allocation.

The authors found that eight entities in the sample of eleven, utilised different forestry valuation (or measurement) practices with no particular predominating valuation practice. It is notable that none of them adopted the net present value method in 1990. Many entities adopted methods other than historical cost. This is an acknowledgement of the inadequacy of the historical cost method in providing useful information for resource allocation.

According to Roberts et al. (1995) there are two broad categories of valuation base for forest SGARAs—the cost-based method and the current value-based method.

**Cost-based methods** in forestry financial reporting comprise three methods: a) historical cost, b) compounded historical cost, and c) cost of replacement through normal course of business.

a) Historical cost methods

Roberts et al. (1995) identify two historical cost methods known as the sustained yield method and the stand method.

The sustained yield (perpetual forest) method involves cost only for the period until the forest as a whole reaches equilibrium (that is when the volume of the timber harvested equals the growth in each reporting period)

When equilibrium is reached, the forest asset is measured in the balance sheet by using accumulated historical cost. Other replacements and the maintenance of trees are recognized as expenses. Revenue is recognized after sale.
Carbon credits can be created via photosynthesis. Moreover, most forms of photosynthesis absorb carbon dioxide from the atmosphere. Different plantations, species and ages can be included for carbon sequestration purposes.

The stand (or unit or venture) method involves accumulating costs over the life of each homogenous planting unit and capitalising those costs to show the cost of stand or area when it is eventually clear felled, at which time the total of those costs is charged against the revenue derived from the harvest. If the harvested area is replanted, a new cost centre is established (Robert et al, 1995).

However, Roberts et al. (1995) reject historical cost methods for forest SGARAs, whether under the sustained yield method or the stand method, because of what they see as major shortcomings associated with historical cost:

- ignores incremental value through natural events
- ignores price changes
- provides irrelevant information on performance and does not reflect the relative value
- results in unreliable information
- ignores the value of native forests

b) Compound historical cost is an adjustment to the accumulated historical cost of forests by applying purchasing power indices. This method aims to derive an estimate of replacement costs. However, Roberts et al. (1995) point out that this method can be criticized on the grounds that changes in silviculture\(^{15}\) practices are ignored, and the resulting value will not reflect replacement costs.

c) Cost of replacement through the normal course of business this method is an attempt to calculate the present cost of forest replacement in the normal course of business (same species, age, location and quality). However, Roberts et al. (1995) claim that this method is criticised on the grounds that it does not represent the value of the growth attributable to natural and therefore costless, causes since it is based on the same transactions.

**Current value-based methods in forestry financial reporting** this method recognises the changes in value over the life of forests in the balance sheet or profit and loss statement, depending on the accounting model adopted. Roberts et al. (1995) promote that this method overcomes the weaknesses of the cost-based method because it provides value relevant to performance measurement. Revenue and consumption of assets are measured according to current prices, which enhances the usefulness of profit and loss or operating statements. This method enables a better

\(^{15}\) Silviculture is a branch of forestry dealing with the development and care of forests (Merriam-Webster 2011)
overview assessment of service potential, future economic benefit and a natural growth perspective. In addition, it ascribes value to cost-free native forests and avoids the problem of allocation.

There are two current value bases considered by Roberts et al. (1995)

i) Net present value (NPV), which estimates the present value of future net cash inflows through a discounting process. NPV models vary according to input criteria such as the discount rate and growth projection and also according to how the model is used.

ii) Current market value this method is defined by The International Valuation Standards Committee (IVSC) standards Volume 1, 1994, General Valuation concepts and Principles, paragraph 5.2 as:

The estimated amount for which an asset should exchange on the date of valuation between a willing buyer and a will seller in an arm's-length transaction after proper marketing wherein the parties had each acted knowledgeable, prudently, and without compulsion.

Regarding current market value, Barton (1975) comments in The Australian Accountant that if assets are measured at current market prices, statements of gross investment in the firm's assets and the owners' investment in its assets are meaningful because all items are valued at the contemporary market price.

Roberts et al. (1995), however, were in favour of the current market value basis of measurement of SGARAs. This is consistent with the AASB 1037 Self-Generating and Regenerating Assets issued in 1998, which requires entities to apply net market value (the current value) as a basis of measurement of SGARAs.

Under AASB 141 Agriculture (p10):

Agricultural activity is the management by an entity of the biological transformation and harvest of biological assets for sale or for conversion into agricultural produce or into additional biological assets.

Moreover, AASB 1037 Self-Generating and Regenerating Assets, paragraph 5 states:

The cost of the non-living produce obtained from a SGARA is deemed to be its net market value immediately after it becomes non-living.

Carbon credits are outcomes of SGARAs (from AASB 1037) and agriculture activity (from AASB 141). It is noted that AASB 141 values agriculture produce at the harvest point but AASB 1037 values produce only after it has become non-living. However, it is not clarified when carbon credits are harvested or become non-living.
2.4.4 Revenues, Expenses Recognition and Capitalization

As described in the previous section, the type of emissions allowances, timing or vintage year swaps are critical factors in revenue and expense recognition of emissions trading, especially when a fiscal year does not coincide with the compliance period. In the following section the various definitions of revenue and expense provided by different accounting standards are considered.

(i) Revenue recognition

Under the US FASB Concepts Statement No.6:

Revenues are inflows or other enhancements of assets of an entity or settlements of its liabilities (or a combination of both) from delivering or producing goods, rendering services, or other activities that constitute the entity's ongoing major or central operations

Revenues represent actual or expected cash inflows (or the equivalent) that have occurred or will eventuate as a result of the entity's ongoing major operations.

In contrast, the Australian Statement of Accounting Concepts No. 4 (SAC 4) Definition and Recognition of the Elements of Financial Statements defines revenues as:

Inflows or other enhancements, or savings in outflows, of future economic benefits in the form of increases in assets or reductions in liabilities of the entity, other than those relating to contributions by owners, that result in an increase in equity during the reporting period

It is noted that FASB's revenue definition does not include "saving in outflows of future economic benefits" as does the Australian SAC 4; apart from this there is no significant difference.

According to SAC4, when abatement certificates are sold, ACPs could recognise revenue in the determination of the result for the reporting period only when it is probable that the inflow of future economic benefits has occurred and can be reasonably measured. As described in Chapter 1, almost all abatement certificates generated under GGAS are by-products, not major operations. If there is no formal accounting guidelines for emissions trading, ACPs can choose when and how to recognize revenue.

In addition, FASB Concept Statement No. 5 requires that:

Revenues and gains generally are not recognized until realized or realizable. Revenues and gains are realized when products (goods or services), merchandise, or other assets are exchanged for cash or claims to cash. Revenues and gains are realizable when related assets received or held are readily convertible to known amounts of cash or claims to cash. Revenues are not recognized until earned

These conditions are usually met by the time the product or merchandise is delivered or services are rendered to customers.
In comparison, IAS 18 *Revenue* includes revenue recognition from the sale of goods and revenue from the rendering of services:

Entities should recognize revenue from a sale of goods when all the following conditions have been satisfied:

(a) the entity has transferred to the buyer the significant risks and rewards of ownership of the goods;

(b) the entity retains neither continuing managerial involvement to the degree usually associated with ownership nor effective control over the goods sold;

(c) the amount of revenue can be measured reliably;

(d) it is probable that the economic benefits associated with the transaction will flow to the entity; and

(e) the costs incurred or to be incurred in respect of the transaction can be measured reliably

Also, IAS 18 defines revenue from the rendering of service that should be recognized when all the following conditions are satisfied:

(a) the amount of revenue can be measured reliably;

(b) it is probable that the economic benefits associated with the transaction will flow to the entity;

(c) the stage of completion of the transaction at the end of the reporting period can be measured reliably; and

(d) the costs incurred for the transaction and the costs to complete the transaction can be measured reliably

In the case of carbon sequestration, it could be argued that companies who make a long-term sale commitment to their customers to deliver a certain amount of abatement certificates, are actually selling products or providing services.

(ii) Expense recognition

Expense recognition in emissions trading must be matched with revenue earned from sales of emissions allowances, as in the case of other businesses. The US FASB Concepts Statement No.6 paragraph 80 defines expenses in the following way:

Expenses are outflows or other using up of assets or incurrences of liabilities (or a combination of both) from delivering or producing goods, rendering services, or carrying out other activities that constitute the entity's ongoing major or central operations.

Actual or expected cash outflows (or the equivalent) that have occurred or will eventuate as a result of the entity's ongoing major operations, are thus an expense. For example, plantation costs from
carbon sequestration are expenses from entities major operations. It is noted that the IASB definition of expense focuses on expenses incurred from the major operations of the entity concerned; this is the same way as its definition of revenue.

In contrast, Australian SAC4 defines expenses as follows:

> Expenses are consumptions or losses of future economic benefits in the form of reductions in assets or increases in liabilities of the entity, other than those relating to distributions to owners that result in a decrease in equity during the reporting period.

Similar to the AASB definition of revenue, this definition of expense is focused on the timeframe of the reporting period. Expense or cost in the creation of abatement certificates, therefore, should be recognised in the determination of the result for the reporting period only when it is probable that the consumption or loss of future economic benefits resulting in a reduction in assets and/or an increase in liabilities has occurred, and that consumption or loss of future economic benefits can be measured reliably.

Furthermore, it is noted that the definition of both revenue and expense provided by US GAAP focuses on the entity's main ongoing major operations, whereas the Australian SAC 4 definition focuses on the overall decrease of assets or increase of liabilities during the reporting period.

In the case where carbon credits are internally created and are recorded as intangible assets, impairment testing of assets in carbon market is required.

(iii) Capitalization

In terms of planted forest SGARAs for carbon sinks and sequestration, Roberts et al. (1995) favoured a current market value approach, as we have seen. Revenue recognition and measurement of planted forest SGARAs are examined below:

Recognition and measurement of revenue from SGARAs

Changes in the current market value of planted forest SGARAs have two possible sources:

- biological factors, for example growth, aging, quality and changes in volume
- price change

In a prior study, Roberts et al. (1995), three Australian private sector entities revealed that they revalue their forests annually. One of these entities realized the increment directly in a Regenerative Asset Reserve, a second entity recognised this as operating revenue and transferred it (net of tax) to Forest Revaluation Reserve, while the third recognized the net change in volume of the forest as revenue with no adjustment to reserves. It is noted that forest growth is firstly realized in revenue, The consequent adjustments to reserve is secondary. Australian public forest
entities adopted a variety of ways to recognise changes in value of forest SGARAs. One entity recognized the net change as operating revenue but identified it as unavailable for distribution and then transferred it to Growing Timber Revaluation Reserve, making an adjustment upon the sale of harvested timber. A second forest entity recognized the revaluation in the profit and loss or other operating statement but did not show it as a separate component of revenue. A third public forest entity recorded the change in an asset revaluation reserve account and recognized it as revenue upon sales. It is noted that each Australian public forest entity initially recognizes revaluation in different accounts; however, adjustment upon sale is optional.

Roberts et al. (1995) adopts a productive capacity concept of capital which measures profit as the increase in the entity’s productive capacity during the reporting period; this means that the changes attributable to price changes are not recognized as revenue. The value of the physical/volume changes of SGARAs should be recognized as revenue.

In the Australian emissions market, changes in the volume of planted forests, which contribute to changes in carbon sinks and sequestration, and changes in the volume of abatement certificates, could be recognized under a productive capacity concept of capital.

In addition, AASB 1037 Self-Generating and Regenerating Assets requires revenue and expense recognition of planted forest SGARAs when there are increments and decrements in the net market value of SGARAs for the financial year in which they occur.

2.4.5 Disclosure and Accounting Policy Changes

In Australia, the Statement of Accounting Concepts (SAC2) identifies the users of general purpose financial reports, the common information needs of such users and the broad types of information required by them. This applies to all reporting entities including business and non-business reporting entities in the public and private sectors in the emissions market.

General purpose financial reporting is defined by SAC2 as a means of communicating relevant and reliable information about a reporting entity to users, based on their needs. The primary users of general purpose financial reports, and those whose common information needs should dictate the type of information to be disclosed by such reports, are resource providers, recipients of goods and services, and parties performing a review or oversight function. In emissions markets, the ACPs are the resource providers while benchmark participants are the recipients of goods and services. The IPART (GGAS Administrator) and the Australian Government, labour unions, the media and special interest community groups are parties performing a review or oversight function.
The particular information that users need is the performance of a reporting entity, which can be measured in both financial and non-financial terms, financial position, financing and investing activities, and compliance which is relevant to allocation of scarce resources. ACPs’ management and governing bodies have to present general purpose financial reports in a manner that assists in discharging their accountability.

In addition, IAS 8 Accounting Policies, Changes in Accounting Estimates and Errors defines accounting policies as the specific principles, bases, conventions, rules and practices applied by an entity in preparing and presenting financial statements. In the absence of a specific standard or an interpretation that applies to emissions trading transactions, IAS 8 requires entities to use their judgement in developing and applying an accounting policy that results in information that is relevant and reliable. However, for the selection and application of accounting policies in the absence of International Financial Reporting Standards (IFRSs), IAS 8 requires entities to consider materiality, the retrospective application of voluntary changes in accounting policies and retrospective restatement to correct prior period errors (IFRS 2009). Carbon sequestration firms create abatement certificates as their ordinary course of business, value of their products are definitely represent the performance of their business Changes in their accounting policies, if any, are discussed more in Chapter 5 Case Sites Background: Analysing Archival Data to Address Research Question 1

2. 5 Alternative Approaches

2.5.1 Net Liability Approach for initial recognition

In Europe, there has been a strong trend towards the net liability approach on the emitter’s side (Fornaro et al. 2009). This approach involves recording granted emissions permits at their nominal value; when actual emissions exceed granted permits, the entity must recognise a liability in the balance sheet. The liability must be re-valued regularly (Krupova’ & Černy’ 2007, Dellaportas 2010). Given the lack of specific guidance on accounting for emissions rights and the requirements of AASB 120 Accounting for Government Grants and Disclosure of Government Assistance, which allows non-monetary government grants and the related emission rights (asset) received to be measured at a nominal amount (i.e. nil if granted for nil consideration) or at fair value, this approach seems plausible (Dellaportas 2010)

Riley (2007) believes that this approach is significantly less complicated than that required under IFRIC 3. This net liability approach treats purchased emissions permits as any other purchased intangible asset (Ernst&Young 2009). The measurement of a deficit shall be based either on the
annual allocation of emissions rights or on the entire first period of the allocation (Krupova’ & Černy’ 2007). Furthermore, the additional purchased allowances should be recorded at cost as intangible assets, so that the cost and revaluation model is applied as described above in Section 2.4.2 (ii)

The sale of emissions allowances (intangible assets) should be recorded at the consideration received and differences between the fair value of such consideration and the carrying amount should be recognized as a gain or loss. If this sale creates a deficit, the additional liability should be recognized (Krupova’ and Černy’ 2007). In addition, Krupova’ and Černy’ disagree with the selling of granted allowances for short-term cash management and consider this profit non-legitimate; however, there is no justification provided for this view. They also provide an example of emissions allowance speculation and propose the Modified Net Liability Method or the Net Liability Method with Gain/Loss Deferrals, which will be discussed in the next section.

There is evidence presented by Krupova’ and Černy’ (2007) that one enterprise prefers the net liability approach, but one entity is not representative of all liable entities, therefore, further study on this issue is necessary.

2.5.2 Krupova’ and Černy’ Modified Net Liability Method

Krupova’ and Černy’ (2007) illustrate the Modified Net Liability method based on an entity’s speculative purpose, which involves planning to sell and buy emissions allowances back at a lower price than what they were sold at. Under this method, there is no initial recognition in the accounts when allowances are granted. The shortfall of allowances after selling is credited to a Net Liability account. Revenue received from the sale of emissions allowances is credited to deferred income; revaluation is required at balance sheet date. If the entity can buy back emissions allowances at a lower price, it can recognize income by reversing its Deferred Income account. On the other hand, if the allowance prices are increasing and that entity needs to purchase additional allowances so as to acquit its obligations, then the additional price paid is debited to Loss in the income statement. Consequently, an additional net liability is credited and deferred gain is lower than it should be. This method has not attracted any support in the literature since it is based on speculation. An entity will not hold emissions allowances for surrendering but for incremental profit from speculation.

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2.5.3 Three Fair Value Models for Emissions Accounting

The FASB found that users polled saw fair value measurement as providing more transparent and useful information than historical cost. Therefore, FASB recommends that the issued emissions allowances should be measured initially at fair value.

At their regular meetings, FASB staff presented three models with respect to accounting for emissions allowances. These models are the non-reciprocal transfer model, the performance obligation model and the compensation model (Ernst&Young 2010):

The non-reciprocal transfer model would generally result in gain recognition, and the performance obligation model would result in recognition of a liability upon initial measurement. The compensation model is focused on the concept that the issuance of offsets is intended to compensate for the change in value of certain assets (page 8).

FASB staff members recommended the performance obligation model because it best reflects the substance of the arrangement; however, they did not illustrate the method nor provide any justification for it. There is no evidence of any further discussion on this model in the literature.

2.6 Chapter summary

The legislation in each participating country requires different practices in quantifying, auditing and managing emissions volumes. Moreover, market liquidity at the early stages of emissions trading schemes is a key factor for participants to take into consideration, since this helps participants to plan and manage emissions allowances held either for sale or for surrendering.

As we have seen, accounting for GHG emissions trading is a developing area. Diversity and inconsistency of accounting practices, as indicated in the literature and limited empirical studies, is an outcome of a lack of formal accounting guidelines at both local and international levels. Compliance and accounting practices under each protocol are varied. As long as there is no formal guidance, benchmark participants and abatement certificate providers can select their accounting policy from existing accounting standards that are not exclusively designed for this business.

All the literature on accounting for GHG emissions trading addresses accounting policy choice from the perspective of emitters or benchmark participants. According to these surveys, it is clear that findings in subsequent measurement and impairment testing are very limited.

This represents a gap in the literature that this thesis attempts to fill, with a focus on accounting policy choice in Australia, especially from the perspective of forest carbon credit providers whom are free of obligations. The sample selection process is provided in Chapter 4 Methodology.
In Chapter 3 the theoretical framework and related theories are presented and discussed in order to explain how and why an entity chooses to adopt a particular accounting practice in relation to emissions trading.
Chapter 3
Theoretical Framework

3.1 Introduction

In this chapter the theoretical framework is developed. The literature review highlighted the importance of institutional pressures on accounting choice and techniques adopted in practice. The literature review highlighted the institutional micro-environmental pressures as well as the broader macro societal pressures which call for better accounting techniques by organisations. In particular, the societal pressures have resulted in the emergence of a carbon emissions trading market to alleviate concerns of global warming and contributions from large polluting organisations (see Appendix 1 for more details). Given both macro and micro perspectives, Zucker (1977) explains that researchers should consider wider environments and their impacts on organisational forms and processes, such as accounting. Justifiably, an institutional theoretical (IT) perspective which considers the varying institutional influences (including economic factors) would provide a suitable theoretical lens underpinning this study (Scapens, 1994; Carpenter and Feroz, 2001). In particular, Carpenter and Feroz (2001) identified financial resources dependence as potent form of coercive institutional pressure associated with early adoption of generally accepted accounting principles. Scott summarises the institutional theoretical approach by suggesting:

Institutions are variously comprised of cultural-cognitive, normative and regulative elements that, together with associated activities and resources, provide stability and meaning to social life (1995, p.33)

Scott (1987) also alluded to three useful themes that underpin institutional theory. These themes can be interpreted in a new market environment, such as the carbon emissions trading market as they include: the emergence of different organisational forms; issues associated with disruptive institutional environments; and, processes associated with developing rules and logic in new organisational fields (Scott, 1987). This chapter provides a comprehensive explanation of IT as a grand theory and its framework, including economic sub-divisions to help understand the applicability of the approach taken in this research.

In the absence of formal accounting guidelines for carbon emissions trading, managers may adopt a particular accounting method for reporting emissions-trading activity — asset valuation, liability measurement, and income and expense recognition. This choice may be driven by a desire to report effectively and efficiently but alternative drivers are possible, such as pressures from professional accounting associations and other professions, societal expectations, and a wish to conform to the
accounting practices of other organisations within the industry. One of the aims of this thesis is to uncover the reasons for accounting policy choices. This chapter, therefore, is divided into 3 parts; Section 3.2 explains the institutional theory and Section 3.3 explains Economic Factors (3.) and section 3.4 concludes the chapter.

There is a range of theories that can be used to explain accounting policy choice. These include Positive Accounting Theory (PAT) and systems-oriented theories such as Stakeholder Theory, Legitimacy Theory and institutional theory. However, based on the materials collected for this study, the researcher believes institutional factors and economic factors are more contributory to this study. This study primarily applies institutional theory as a major theoretical framework to help explain the notion of accounting in carbon markets. This theory is selected for the following reasons.

As indicated in chapters 1 and 2, abatement activities that create tradeable abatement certificates are classified under the GGAS, indicating considerable pressure by governments to abide by emerging regulation. Whereas, in the voluntary market, pressures are exerted from individuals within the firm, as well as shareholders, activists and other stakeholders, that would expect a company comply (through their product offerings) with the overall need to reduce global warming. These voluntary activities are divided into 3 groups; lower-emission generation, carbon sequestration and demand-side abatement. Carbon sequestration groups are the only activity that creates abatement certificates /carbon credits as an ordinary course business. Carbon credits created by the other two groups are all by products derived along with their production processes. As highlighted later, each of these are monitored by different institutional factors, all exerting and resulting in different institutional pressures.

As indicated in the literature review, the carbon sequestration activity is a new and emerging focus of research. In particular, in this thesis, the researcher has elected to follow the practices of Australian private and public organisations as they work to adapt to new economic conditions and differing legislative constraints (The researcher will follow with further justification of my sample selection in Chapter 4 Research Methodology).

It is noted that institutional theories are characterised by a great variety of positions, which are sometimes complementary and sometimes conflicting (Scott, 1995; DiMaggio and Powell, 1991, p.1). The perspective that guides our analyses recognises how the interdependencies among organisations can sometimes produce a web of relationships that reflect the distribution of power and other resources among them and hence making some organisations behave in certain defined
ways. Institutional theorists have identified a number of different institutional elements of which institutional isomorphism, as elaborated by DiMaggio and Powell (1991), has been extensively employed to make sense of accounting phenomena within the literature. DiMaggio and Powell (1983, p. 150) argue that organisations compete not just for resources and customers, but also for political power and institutional legitimacy, for social as well as economic fitness.

Di Maggio and Powell (1991) had stressed that organisations which operate in similar environments are said to experience comparable demands with regard to what is generally seen as acceptable behaviour and consequently, will have similar structures and processes. In this thesis, the researcher considered the notion that the accounting choices of carbon credit providers are potentially varied by their management and existing rules and regulations. The lack of formal accounting guidance may result in uncertainty and diversity in accounting practice. To date, this would affect comparability of their financial statements. In the section that follows, the researcher provides definitions, classification, discussions and empirical studies of institutional theory in different contexts. This provides a means to theorise change.

### 3.2 Institutional Theory

As suggested earlier, in the thesis it is proposed to investigate the financial reporting behaviour of abatement certificate providers using a widely accepted theoretical institutional perspective along with key economic factors that influence organisational practices.

Institutional theory is concerned with examining external pressures from stakeholders in the social and economic environment and their influences on organisations to provide an understanding of the relationship between organisational structures and the wider social environment in which organisations are situated (Meyer and Rowan, 1977; DiMaggio and Powell, 1983; 1991).

According to institutional theory, the elements of formal organisation structure, policies and procedures mostly stem from widespread societal expectations and myths about what constitutes acceptable social and economic practice. These sources of reinforced beliefs offer generalised beliefs about effective practices (in both private and public sector efficiency and effectiveness) and legitimacy.

In addition, Meyer and Rowan (1977: P343) justifies it thus:

> Many of the positions, policies, programs, and procedures of modern organisations are enforced by public opinion, by the views of important constituents, by knowledge legitimated through the educational system, by social prestige, by the laws, and by the definitions of negligence and prudence used by the courts. Such elements of formal structure are manifestations of powerful institutional rules which function as highly rationalised myths that are binding on particular organisations.
In this respect, it could be anticipated that carbon credit providers might adopt accounting policy that is in line with powerful institutional rules or highly rationalised professional beliefs. In addition, Zucker (1977) pointed out that the organisation with the greater institutionalisation maintains greater generational uniformity and cultural understanding. While the case companies in this study have different backgrounds, they would have relatively uniform accounting systems, as expected by legislation and the profession.

Furthermore, institutional theory attends to the deeper and more resilient aspects of social structure. It considers the processes by which structures, including schemes, rules, norms, and routines become established as authoritative guidelines for social behaviour. It inquires into how these elements are created, diffused, adopted, and adapted over space and time, and how they fall into decline and disuse.

In addition, institutional theory demonstrates how non-choice behaviours can occur and persist, through the exercise of habit, convention, convenience, or social obligation (Oliver, 1991 pp. 151). Accounting policy choices of carbon credit providers might be attributed to habit, convention, convenience, or social obligation as well.

This particular form of theorising, attempts to explain why characteristics and practice of organisations within the same field (under similar conditions and pressures) tend to become similar or dissimilar. In addition, this theory explores how particular organisation forms/practices might be adopted in order to bring legitimacy.

As indicated in the previous section, carbon credit providers have very diverse backgrounds and perform different activities in order to create abatement certificates under the GGAS or provide carbon credits under a voluntary market provision.

This thesis adopts the institutional theory definitions and scopes cited above. This theory considers two main institutional dimensions: isomorphism and decoupling. Both dimensions have made a significant contribution towards explaining voluntary corporate reporting practices.

3.2.1 Isomorphism has been defined by DiMaggio and Powell (1983) as a constraining process that forces one unit in a population to resemble another unit that faces the same set of environmental conditions. It is a process of homogenisation or a tendency for organisations to adopt similar structures, systems and operating procedures (DiMaggio and Powell 1983: 150 2). Building on DiMaggio and Powell’s idea of an iron cage of bureaucratisation, organisations can be viewed as imprisoned by institutions through the powerful processes of institutional isomorphism, which is
based on the idea that environments are collective and interconnected, and that, in order to survive, they must respond to external demands and expectations. For public and private sector organisations, DiMaggio and Powell (1983) term the tendency to adopt similar (accounting) rules and routine as isomorphism.

In addition, DiMaggio and Powell identify three isomorphic processes—that is, processes by which institutional practices such as voluntary reporting adapt and change. These isomorphic processes are: coercive, mimetic and normative.

(i) **Coercive Isomorphism**, DiMaggio and Powell (1991, p. 150) defines coercive isomorphism

results from both formal and informal pressures exerted on organisations by other organisations upon which they are dependent and by cultural expectations in the society within which organisations function.

The greater the degree of dependence and centralisation, the more similar it will become to that organisation in structure, climate and behavioural focus. For example, subsidiaries must adopt accounting practices, performance evaluations, and budgetary plans that are compatible with the policies of the parent corporation. In addition, legitimacy in the external environment, that is, from the state, government and external bodies, is another means of ensuring survival since being efficient is not the only way that organisations can survive. The institutional process is a cultural and political one that concerns legitimacy and power much more than efficiency alone.

DiMaggio and Powell further note that in cases where alternative sources are either not readily available or require effort to locate, the stronger party to the transaction can coerce the weaker party to adopt its practices in order to accommodate the stronger party's needs (DiMaggio and Powell, 1991, p. 154). The provision of forest carbon credits and carbon sinks are new businesses in a new market (carbon emission market), the stronger companies might coerce the weaker companies to adopt its practice as well.

There are many forms of coercive pressure. Carpenter and Feroz (2001) identified financial resource dependence as potent forms of coercive institutional pressure that was associated with early adoption of General Accepted Accounting Principles (GAAP) by the US State Government. In addition, GAAP adoption may be attributed to change in elected political leadership. If the proposed GAAP legislation is expect to alter the existing power relationships, the powerful interests may impede this GAAP as well. These institutional pressures were created by the federal government and representatives from the credit market. It is noted that financial resource dependence is also considered an economic factor that will be elaborated in the next section. However, this study
includes only four US States (New York, Delaware, Ohio, and Michigan), not all of the US state governments.

In the US financial service industry, there are institutional pressures in the adoption of Non-Financial Performance Management (NFPM) as pointed out by Hussain and Gunasekaran (2002). The adoption could be affected by some coercive factors such as association and the Central Bank’s regulation and control; socio-economic-political institutions requirements, regulation and condition, uncontrollable economics and nature of business. However, economic and normative pressures affecting NFPM will be described later in economic factors section.

In the Australian emissions-trading market, abatement certificate providers (Carbon credit providers) who are public sector entities, have to conform to federal government regulations. Financial resource dependence and regulations are coercive institutional pressures on them to adopt a particular policy and practice. Likewise, the private sector entity's adoption in a particular policy and practice might be affected by; professional associations, federal government regulations and control, socio-economic-political institutions' requirements, uncontrollable economics and nature of business as well.

Järvinen (2006) explored the motivation and rationale of implementation and adoption of activity-base costing systems (ABC) in two Finnish university hospitals. There is evidence that one hospital voluntarily implements the new system with weak pressures. These pressures mostly originated from software vendors and management. Their motivations follow Oliver (1991)’s economic or social fitness where the use of accounting practice yields benefits as a means of an efficient organisational control system. This view may be a fact, or it may be an institutionalised belief in itself. Another hospital adopted ABC by coercive pressure through media, auditors and financiers. Their motivations follow Oliver (1991)’s institutional view that organisations adapt new, fashionable technique because of external pressure and a bandwagon effect.

Carbon emission markets are the new emerging environmental market in Australia. There are both voluntary and mandatory markets which are monitored by the Federal Government. The carbon credit providers might adopt a particular accounting practice through advice from auditors or other forest advisors, since there are no accounting guidelines for the voluntary or mandatory markets. Institutional theory would therefore recognise these external pressures as coercive factors.

On the other hand, the Finnish hospital may placate the external financier by adopting state-of-art systems in order to claim to have adequate financial control over the situation. However, both institutions may be in line with Brignall and Modell (2000)’s prediction, pay lip-service to the
demands of economic efficiency but, in practice, decouple the financial performance measure. It is noted that this study is based on only two case studies and these two hospitals are not representative of all Finnish hospitals. Thus, further studies in this country are necessary. It is noted that coercive pressure, such as adoptions of legislation, reform, and managerial accounting technique, might affect each organisation at different level based on its conditions and the independence of that firm.

In the Australian emissions-trading market, adoptions of particular accounting practice are possibly multi-level decisions since each firm might classify and value carbon credits differently because of their own conditions. For carbon sequestration entities, carbon credits are the main products; accounting policy and practice are adopted and reflected mainly to their ordinary course of business as well. These accounting policies are presented in Chapter 5.

(ii) Mimetic Process: Uncertainty is also a powerful force that encourages imitation. When organisational technologies are poorly understood, when goals are ambiguous, or when the environment creates symbolic uncertainty, organisations may model themselves on other organisations. In addition, some institutional theory studies have demonstrated a tendency for a number of organisations within a particular sector to adopt similar new policies and procedures as those adopted by leading organisations in their sector.

An example of mimetic processes and adoption of the GAAP is seen in the findings from Carpenter and Feroz’s (2001) study. The study found that one factor influencing the US state governments in adoption of the GAAP is organisational imprinting. Since the environment creates symbolic uncertainty, such as providing financial reporting choice, some of the state governments chose to model themselves after other leading organisations.

Hussain and Gunasekaran (2002) also found mimetic process in an adoption of Non-Financial Performance Management (NFPM) in the US financial service industry. This mimetic behaviour is shown in the process of integration of costing and performance measurement systems with organisational strategy. Organisations copied best practice from other organisations.

To summarise, it is possible that Carbon credit providers will model themselves after other carbon credit providers because of an absence of formal accounting guidance for abatement certificates.

The next section provides a definition of the Normative Process and related empirical study and literature in the adoption of a particular practice, technique, legislation or technology.

(iii) Normative pressures: A third source of isomorphic organisational change stems primarily from paraprofessionals. This isomorphism relates to the pressure arising from group norms to adopt
particular institutional practices. The greater the reliance on academic credentials in recruiting managerial and staff personnel, the greater the extent to which an organisation will become like other organisations in its field. In addition, the greater the participation of management in trade and professional associations, the more likely the organisation will become like other organisations in its field.

For example, normative pressure is a factor influencing the US state governments in adoption of the GAAP. Although there are many strategic responses from each state to resist adoption, participation of key administrative accounting/auditing personnel are more powerful. These resistances, therefore, were unsuccessful. Moreover, if accounting bureaucrats are not active in professional associations that promote the GAAP adoption, their educational process will be missing. This process is important to early adoption of the GGAP.

In the Australian emissions-trading market, similarly, if accounting bureaucrats are active in professional associations that promote specific standard setting for emissions trading, their education process will be exist and developed. The normative pressure might be exerted by the accounting profession in shaping the Emission Right exposure draft as it stemmed from an institutional legacy and a close relationship with the Australian Accounting Standard Board.

3.2.2 Decoupling refers to the creation and maintenance of gaps between formal policies and actual organisational practices, that is, a situation in which practice is not integrated into the organisation's managerial and operational processes. For example, earnings management is posited as a decoupled behaviour. Organisations may avoid the necessity to conform to institutional pressures by concealing their non-conformity or changing their activities. Some organisations may defy rules and norms by dismissing, challenging or attacking them while others may manipulate rules and norms by attempting to co-opt, influence or control them. Institutional Theory demonstrates how non-choice behaviours can occur and persist through the exercise of habit, convention, convenience, or social obligation.

Salvador et al. (1998: 119) observed that:

More recent literature in the field has attempted to highlight, and to some extent address, a number of limitations which have been raised against institutional theory. One limitation concerns the presumption that practices aimed at attaining/enhancing external legitimacy are decoupled from internal operating systems. (Salvador et al. 1998; Major & Hopper 2003)

In the carbon emission trading context, for which there is no formal guidance, those carbon credit providers would choose their accounting treatment from existing standards for external legitimacy.
However, it’s possible that their internal operating systems are decoupled from existing accounting standards.

Economic and Accounting reform is one of the important factors affecting accounting practices. According to Bing’s study of accounting reform in China showed the adoption of accounting principles in close conformity with International Accounting Standards (IAS). The recent economic reforms in China have changed and have profoundly altered the accounting environment in that country. Bing pointed out that the lack of independent/ professional auditing implies the proposed detailed IAS-based standards may be counter-productive in the specific context of China. Moreover, the proposed standards allow enterprises to pursue their own interests. This incident encourages decoupling accounting practice in China’s business environment since the proposed standard provides accounting choice for practitioners.

As indicated in chapters 1 and 2 and the empirical studies noted above, an absence of formal accounting guidance in emissions trading would encourage institutional fragmentation and decouple accounting practice as well.

In 2001, Carpenter and Feroz found not only coercive pressures; they also found decoupled behaviour in their state government study too. The key accounting bureaucrat in Ohio, one of the four US state governments, adopted a defy strategy whilst Delaware did not adopt the GAAP for external reporting until political entrepreneur emerged in the 1990s. It is noted that there are no sanctions for state governments that avoid adoption of the US GAAP and that’s why some of the sample state governments decoupled themselves from adoption of the GAAP.

However, carbon credit providers might adopt other related accounting standards or GHG accounting guidelines in each step of their transaction. Each carbon credit provider could interpret these guidelines in their own way. Loose decoupling behaviour in their practices could be plausible.

3.2.3 Loose decoupling

Weick defines loose decoupling as follows:

Loose decoupling is a situation in which elements are responsive, but retain evidences of separateness and identity (Weick 1976, p.3)

In 1982 he wrote:

Loose decoupling is evident when elements affect each other “suddenly (rather than continuously), occasionally (rather than constantly), negligibly (rather than significantly),
Loose decoupling is caused by casual indeterminacy, a fragmented external environment or a fragmented internal environment. In the carbon market, there is no formal accounting guidance for emissions trading. Market participants can choose to disclose or not to disclose carbon credit-related accounting information. This could be a basic fragmented external environment in this market that has allowed diversity of disclosure level and quality.

However, forest carbon credit providers are reporting entities. They are required to lodge financial statements to government since carbon credit creation is their ordinary course of business. They can be responsive in regular financial reporting and disclosure but their accounting practices are not necessarily the same. Each of them interprets existing guidelines, classifies and measures assets, recognises revenue and expense and tests impairment from their own perspective. As long as there are no formal guidelines, loose decoupling behaviour at the organisation, subunit or individual level might occur. However, these providers must still comply with the General Accepted Accounting Principles (GAAP).

Loose decoupling behaviour contributes to enhanced leadership, focused attention and shared value to people in that environment. If the carbon market is a fragmented external accounting environment, then accountants and all stakeholders in each firm need to be a learning and creative group of people so they can loosely decouple the accounting treatment but maintain compliance with the GAAP.

In summary, Powell and DiMaggio and Powell and DiMaggio have stressed that many dynamics in the organisational environment stem, not from technological or material imperatives, but rather from cultural norms, symbols, beliefs, and rituals. Therefore, it is important to incorporate other related theories such as Stakeholder theory and Legitimacy theory into this study even though the primary theoretical perspective for this thesis is an Institutional Theory.

### 3.3 Economic Factors

Cummings and Burritt (2002) maintain that

> What constitutes wealth is not only driven by social value which evolves over time through government involvement in conservation activity, but also by core economic characteristics such as marketability and ultimately solvency

As discussed in the previous section, institutional factors are indirectly driven by economic factors as well.
Carpenter and Feroz (2001) points out that:

[A] firm conforms to societal rules, obtains external legitimacy and increases its chances of survival, irrespective of whether the new rules make the organisation more effective. (Carpenter and Feroz, 2001, p.569).

To increase their chance of survival, carbon sequestration firms could seek to alleviate economic uncertainty by implementing a particular practice and procedure no matter if the new practice makes them more effective or not. How they maximise profit and manage risk is discussed in Chapter 6 (CFO delegates interviews)

In the absence of formal accounting guidance for carbon emissions trading, carbon credit providers are allowed to choose their accounting policy by themselves. Economic factors, such as resource dependence in public organisations, competition and technology advancement, therefore, might be potential factors affecting carbon credit providers accounting policy choices.

Scapens (1994) maintains that, in the neoclassic sense, various institutional influences, including economic ones, cause changes in accounting practices. On the contrary, accounting practices have not changed so as to increase continuing efficiency. This section, therefore, provides potential economic factors from prior empirical studies that would affect an organisation's adoption of particular procedure or practices.

Powell and DiMaggio described the economic influences from the relationship between the World Bank and most developing countries. The World Bank, as a resource providing or controlling organisation, is able to influence most developing countries in the field of policy-making because these developing countries are resource-dependent.

Carpenter and Feroz (2001) identified financial resource dependence as a potent form of coercive institutional pressure that was associated with the early adoption of General Accepted Accounting Principles (GAAP) by the US Federal Government. However, this implies economic influences affecting an organisation's financial position. They found that the financial management control systems currently used by the state are cash-basis. This dominates state financial management practices since state budgets are based on projected cash flow expenditure and receipts while the GAAP is based on accrual accounting.

Due to the environmental contribution of carbon business, Federal and State Government, other professional organisations would subsidise carbon credit providers to achieve particular environmental projects. This financial dependence (sponsorship) might associate cash flow
expenditure and receipt of them. Consequently, it might affect the financial accounting practices of carbon credit providers.

In Hussain and Gunasekaran (2002)’s study on the adoption of Non-Financial Performance Management (NFPM) in the US financial service industry, the nature of business and competition has an effect on improving the Bank/Financial Institution’s NFPM. Managements were forced to enhance NFPM to prevent themselves from losing business. Economic condition is one of the most influential factors in the Bank/Financial Institution (BFI). A BFI with poor financial conditions pays more attention to improving and measuring financial performance than NFPM. Some controllable economic pressures, like the opportunity for technological advancement, are being considered convergent factors on NFPM since it has made it possible to track many non-financial aspects, like quality services, and to improve management information systems for decision making, planning and control of NFPM. It is to be noted that technology is sometimes cheaper. The ATM, for example, has to be provided for customer satisfaction. In addition, it should be noted that technology would not be highly used/implemented if competition were not so serious. To wrap up, technology advancement increases offers and improvements of NFPM. Economic conditions increases improvement and measurement of non-financial performance.

In carbon emissions trading business, a critical issue is reliability of measurement method employed by carbon credit providers. The carbon credit providers resort to satellite navigation, software and other equipment to measure emission reductions and to gather data in long term. This technology advancement would enhance effectiveness and efficiency of the financial and non-financial performance. Carbon credit providers with less financial resources will not be able to afford the latest technology and measurement software, therefore potentially diminishing accounting information and capability for generating quality financial and non-financial performance measurement. The limitation of their technology is an economic factor that would affect the completeness of accounting data and their accounting practice respectively.

In the adoption of particular procedures and practices, Hussain and Hoque (2001) maintain that economic constraints appears to be the most forceful factor, followed by regulatory control, accounting standards/financial legislation, management strategic focus, bank size, competition and organisational tendencies to copy best practice from others.

Dharan and Mascarenhas (1992), endorsed by Martin (2002), pointed out that when the whole industry is affected by an unfavourable economic climate, the oil and gas companies changed their depreciation accounting methods to better represent the changed growth options and economic reality.
Being a carbon credit provider is the way a company increases its chances of survival since this is another source of income, regardless of whether the emissions trading scheme concerned makes it more effective or not. Moreover, economic factors, such as competition, economic constraints, technology advancements, characteristics of business and bank finance, are also potential pressures that could affect carbon credit providers’ accounting practices in emissions trading.

### 3.4 Sustainability

Although carbon emissions trading is a market based-mechanism aiming to control pollution in the atmosphere by providing economic incentives to participants, in the long-term it indirectly creates sustainability in the Australian economy. Tree planting also indirectly connotes a symbolic meaning and sustainable entrepreneurship to both growers and forest carbon credits buyers during the introduction phase of the emissions trading market. Sustainability therefore, is one indirect factor affecting accounting practices in this study.

Therefore, the theoretical model used in this thesis is depicted in Figure 3.1

**Figure 3.1. Theoretical Model: Factor influencing Carbon credit providers Accounting Practice**

3.5 Chapter summary

There is currently no formal guidance in accounting for Carbon Emission Trading and carbon credit providers could choose their accounting treatment from existing accounting standards, as indicated
in previous sections. Also, there are possible institutional and economic factors that might affect accounting policy choice for carbon credits created by carbon sequestration firms. The research methodology, qualitative research method, case studies research and sample selections are discussed in Chapter 4 Research Methodology.
Chapter 4
Research Methodology

4.1 Introduction

Given the literature review, in chapter 2, it was necessary to make a particular decision concerning appropriate research methods. These in turn were partly predicated upon more general orientations as regards methodology. The methodology used in this thesis is a qualitative one with the techniques of exploratory case study method. Case studies arise out of a need to understand and explain complex phenomena. In addition, this study adopted semi-structure/in-depth interviews to explore underlying reasons of carbon credit providers’ accounting policy.

Firstly, purpose of this study is to determine the current accounting practices of carbon credit providers or abatement certificate providers (ACPs) who have developed the full set of financial accounting practice for carbon emission trading. This full set of accounting practice is consisted of the following steps:

1) Asset classification
2) Subsequent measurement
3) Impairment testing

These three steps accounting determine case company selection. The detail sample selection and criterion is presented in section 4.5

This will draw out the interest in Australian carbon credit providers and that there is little or no research in this area. Given there is minimal research, an exploratory approach to research is required (Yin 2009), Secondly, the study aims to identify the underlying reasons that influence their accounting practice in corporate financial statements. Finally, the study aims to uncover emerging good practices (if any) in accounting for emission trading drawing on expert opinion and extant practices.

This chapter is organized as follows. Section 4.2 outlines the research questions Section 4.3 Research Method and section 4.4 presents Sample Selection andCriterion. Scope of Research is presented in Section 4.5 Section 4.6 discusses the Semi-Structure Interview. Data Collection and analysis is presented in section 4.7 and 4.8 respectively. Potential contribution is presented in section 4.9 and section 4.10 presents the conclusion.
4.2 Research Questions

The need of formal accounting guidance indicated in Chapter 1, the integration of a wide range of accounting literature in chapter 2 and coherent set of theories in Chapter 3 underpin the construction of the research questions in Chapter 1. These are:

1. How do the carbon credit providers who perform carbon sequestration in Australia account for carbon emission trading and carbon credits in their annual financial statements?

2. Why the carbon credit providers who perform carbon sequestration are motivated to choose a particular accounting method to report emission trading activities and carbon credits in their annual accounts?

3. What constitutes the emerging good practices in accounting for emissions trading schemes?

To answer these questions, the research method is determined in the following section 4.3.

4.3 Research Methods

The most accurate description of the elephant comes from a combination of all three individuals’ descriptions. (Nedjat 2011 P.6)

Using two or more aspects of research to strength the ability to interpret the findings is the intent in research (Laughlin & Puxty 1981; Patton 2005; Bloomberg & Volpe 2008; Cherry 2011)

Triangulation is one way to increase validity and strength and interpretative potential of study, decrease researcher biases, and provide multiple dimensional view (Denzin 1978). This study applies 2 forms of triangulations. Firstly, triangulation of method is used to cross-check findings derived by different data collection method. Secondly, triangulation of source is used to explore the different data source within the same method to examine consistency of findings.

First of all, to address Research Question 1, archival data must first be collected. Archival data in the form of annual reports will enable the researcher to observe accounting practices taken. Furthermore, to address Research Question 2 (and confirm Research Question 1) archival data, interviews with managers and accountants from carbon credit provider organisations will provide data that can be cross-checked for inconsistencies in corroboration. Finally, to address Research Question 3, interviews with key academics and those familiar with accounting treatment of carbon
emission credits will be able to comment on findings from Research Question 2. Apart from archival data collection at the beginning of this study, a largely exploratory, and qualitative, approach to research is required. This is further discussed in the following sections. 4.3.1

4.3.1 The Qualitative Research Method

A qualitative approach to this research is taken. This approach is distinct from quantitative analysis which relies on the gathering and collecting of data sets in which to model findings. Instead a qualitative approach to research and analysis aims to make sense of non-quantified data. This includes gathering data on the perceptions and views of participants to the research.

Van Maanen (1983, P.9) defines qualitative research method as

an array of interpretative techniques which seek to describe, decode, translate and otherwise come to terms with the meaning, not the frequency, of certain more or less naturally occurring phenomena in the social world

In addition, Key (1997) defines that qualitative research seeks to understand people's interpretations since reality is what people perceive it to be.

Ontology- Epistemology

The determination of a research methodology is mainly dependent on the researcher's ontological and epistemological viewpoint on what the nature of reality is and how knowledge can be generated. Also in the determination of the methodological position, the educational background of the researcher and the impact of the research group which the researcher belongs to are considered to be one of the most important factors.

Ontology is an attempt to understand the subjective reality of the practicing world. Epistemology is the philosophy focuses on how this social reality can be known and who can be a knower (Guba & Lincoln 2008; Hesse-Biber & Leavy 2011).

The researcher’s ontological and epistemological positions form every aspect of research process including topic selection, formulation of research question, sampling method and research design. (Hesse-Biber and Leavy 2011)

Carbon market and accounting issues raised in absence of formal guidelines are ontological position in this study. The researcher formulated research questions, determine research method and research design by the reality of carbon market and emerging critical accounting issues. (Hesse-Biber and Leavy 2011) Epistemologically, it is based on the replication of theory as against the generalisation of the social phenomena. The current accounting practices of carbon credit providers can be
explored from annual report and the review of literature. Underlying reasons of these practices can be explored from practitioners and emerging good practice can be explored by experts' justification and critique.

Findings in this study would be produced by reviewing notes to financial statements, those found in an archival data search of publicly available company records to determine interview questions, interviewing senior accounting people in carbon credit provider organization and experts in financial reporting such as scheme administrators, accounting profession associations and forest association and commission, there is no other means of quantification. The analysis strategy is discussed in 4.8

4.3.2 Case Study Research

Yin (1984:23) defines the case study research method

as an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used.

The case study engages a longitudinal and an in-depth examination of single incidence, person, group, organization using smaller samples and more flexible set of rules. It is increasingly used as a research tool (Perry & Kraemer 1986; Hamel 1992; Robson 2002; Cassell & Symon 2004; Yin 2009). On the other hand, it is defined as a research methodology commonly used in social science (Greene & Shepard 2003; Yin 2009).

Furthermore, since a case study is an empirical inquiry that illuminates the phenomenon for a sharper understanding of why the instance happened as it did, Yin (2009) and Lamnek (2010) suggest that a case study should also be classified as a research strategy. It is noted that a case study is interpreted to many terms such as research tool, research, and methodology and research strategy. However, these interpretations are indicative of its contributions to research.

To answer how and why questions as indicated in the previous section. Yin (2009) points out that case studies are the preferred strategy, an exploratory approach, therefore, is taken. Robson (2002: P144) points that:

The exploratory case studies can be used to explain the reason for particular accounting practices. They enable the researcher to generate hypotheses about the reasons for particular practices. These hypotheses can be tested subsequently in the larger scale studies. As such, the case study represents a preliminary investigation, which is intended to generate ideas and hypotheses for rigorous empirical testing at a later stage. The objective of such subsequent research is to produce generalizations about accounting practices. The exploratory case study is the first step in such research.
As discussed in Chapters 1 and 2, carbon trading has major implications for the Australian economy. The carbon sequestration business is the only emerging industry that creates abatement certificates (a term specifically used in the mandatory market), the Greenhouse Gas Reduction Scheme (GGAS) or carbon credits as its main products. Accounting for carbon emission trading is a developing area. Accounting issues from Chapter 2 defines accounting problems in asset classification, subsequent measurement and impairment testing. The next section discusses the research design required for multiple case studies to establish reliability and validity of this study.

4.3.3 Research Design

The study started from an objective view of society, focus on accounting practitioner s behavior as deterministic, this is similar to much of mainstream research (Chua 1986). This qualitative study draws on inductive study and focuses on idea generation as suggested by Bloomberg and Volpe (2008).

In order to ensure that the evidence obtained was able to answer the initial questions in the previous section as unambiguously as possible, the study begins with accounting policy disclosed in notes to financial statements reflected in annual accounts from 2005-2012, to investigate how carbon sequestration firms account for carbon emissions trading and abatement certificates/carbon credits. The accounting issues derived in this process will be compared to those in literature, discussion papers and in the surveys discussed in Chapter 2

In-depth interviews were conducted to find out the underlying reasons for the accounting methods adopted by carbon credit providers to answer the second research question. CFO delegates, senior accounting professionals (1-3 interviewees) of each carbon credit provider organisation were invited to participate in individual interview sessions. They are experienced Certified Practicing Accountants (CPA) who have been working in the case companies. In this study, 6 CFO delegates and senior accounting professionals participated in the interview session.

4.4 Sample Selection and Criterion

4.4.1 Case Companies

According to the review of literature in Chapter 2, five surveys conducted in Europe, as discussed in Chapter 2, found limited number of disclosure of accounting policy for the recognition of carbon credit (emission allowances under EU ETS), and found minimal disclosure of subsequent
measurement (up to 20% of them) and found no disclosure of impairment testing from the emitters annual accounts.

To fulfil the gap in this area and to access the in-depth full set of data in asset recognitions, subsequent measurement and impairment testing, the researcher focuses on companies who have been developing their accounting system on all of these issues. This required that all potential participant entities should be major players in the carbon markets and should have no obligation to the surrendering activities as required by government. Therefore, market participants who produce/trade carbon credits as a major operation have been taken into consideration. The carbon credits providers who disclosed all three folds of the following accounting practices have been chosen.

- Initial recognition of asset (carbon credits and related assets)
- Subsequent measurement of asset (carbon credits and related assets)
- Impairment testing of asset (carbon credits and related assets)

As indicated in Chapter 1, Introduction and in Appendix 1, Carbon Emission Market, there are three eligible abatement activities to create carbon credits in Australian carbon market.

The producers can create carbon credits by performing the following activities:

- Low-emission operation/production power stations, oil refineries etc.
- Demand-side abatement (DSA) perform any activities that reduce energy consumption.
- Carbon sequestration Carbon sequestration is the process of capturing and removing Carbon Dioxide (CO2) from the atmosphere

Thus, there are three groups of carbon credit providers in Australia. In 2009, there were 147 carbon credit providers.

Consequently, I examined the annual reports of these entities. Those who perform lower emission generation were emitters who created carbon credits as by-products in order to hedge against a

---

18 There are at least three potential means to keep CO2 out of the atmosphere; Oceanic sequestration pumps the CO2 into the deep ocean. CO2 is soluble in the water; Geologic sequestration captures CO2 from an industry, stationary, or energy related sources (e.g. a power plant, a coal-to-syngas plant, a cement production plant) and buries or injects it into the subsurface. Generally, CO2 injection is used in enhanced oil and gas recovery; Terrestrial sequestration binds CO2 in soil and vegetation near the earth's surface, for example tree-planting and no-till farming. Under the New South Wales GGAS, only forest carbon sequestration (Terrestrial sequestration) is an eligible abatement activity.
shortfall of carbon credits. Also, entities who perform demand-side abatement created carbon credits as by-products from energy consumption reduction. In July 2012, these carbon credit providers withdrew from the GGAS and some of them were in transit to the Clean Energy legislation. These entities, therefore, did not develop an accounting system for emission trading.

Forest carbon sequestration is an eligible activity to create carbon credits under the GGAS (mandatory market) and Greenhouse Friendly (voluntary market) as the main product. As reporting entities, they have to lodge their financial statements to Government in the same manner as other business entities. Thus, they have been developing their accounting systems for their ordinary course of business. They have completed accounting practices as shown in Figure 4.1 below:

![Figure 4.1 Sample Selection Process](image)

In 2009, there were seven (7) forest companies registered in the mandatory market. Four (4) of the companies operating in the mandatory market have disclosed their accounting policies. However, three (3) of them are under the same parent listed company. Although they provide separate accounting statement they are all under the (1) reporting entity/group. In total, only three (3) companies were left in the final selection. There was only one (1) case company trading in the mandatory market and only one (1) listed case company operating in both markets. The third case company was only trading in the voluntary market at that time. However, they had begun to participate in the mandatory market from July 2012.
In absence of formal guidance, practitioners from case companies shall use the judgement in applying accounting policy that results in relevant and reliable accounting information according to an accounting conceptual framework. To explore underlying reasons for their accounting policy, CFO delegates, senior accounting professionals from each firm were invited to participate in the in-depth interview sessions to answer why they were motivated to choose a particular accounting method to report emissions trading activities and abatement certificates/carbon credit. Six interviewees participated in my in-depth interviews. They are all practitioners and one of them has license to trade carbon credits.

They were asked to explain the underlying reasons for their accounting policy choices based on the following accounting issues:

- Accounting principles for emissions allowances/abatement certificates
- Asset type
- Applicable value and valuation
- Revenues, expenses recognition and capitalisation
- Timing and vintage year swaps
- Contingent asset, contingent liability and related expenses
- Forward, future contract, speculation and hedging financial statements
- Disclosure and accounting policy changes

Only the controversial issues were taken to expert interviews.

As defined in Chapter 1 Introduction, emitters are allowed to register as abatement certificate providers (APCs) and could invest in all abatement projects such as forest carbon sinks (terrestrial sequestration) to create forest carbon credits. Both emitters and forest ACPs can be owners of tree plantations as presented in Chapter 5 Case Sites Background: Analysing Archival Data to Address Research Question 1. However, only forest ACPs provided full set of accounting data as depicted in Figure 4.1

4.4.2 Expert interviewees

The research also uses purposeful criterion sampling for the last phase of data collection, which is the primary data from in-depth interviews with experts made up of 5 accounting scholars from Australian University and 1 auditor from an audit firm. The academias are experts in financial
reporting and have publications in carbon market-related accounting issue. The auditor has had extensive experience in auditing, financial reporting and taxation.

In addition, residency, race, citizenship, religion, marital status, income level, age and gender of ACPs's accounting management and experts do not matter for this study. The participants' political view toward the carbon tax does not matter as well. These factors are not addressed in the analysis unit because other theoretical factors have been defined in Chapter 3.

This study has a prior written approval from the Business College Human Ethics Advisory Network (BCHEAN), RMIT University. All participants were assured of their rights and privacy when taking part in this study. Adherence to BCHEN guidelines and anonymity for participants was provided to the best of the researcher's ability.

4.5 Scope of Research

The study is concerned with financial accounting for emissions trading activities only. Other accounting issues in the surrendering activities of liable entities as required by the GGAS, United Nations or other emission trading schemes are not addressed.

The focus is on asset recognition, applicable value, revenue and expense recognition, and their financial statement reporting.

Management accounting and earnings management issues are not addressed. Issues relating to quantification of carbon dioxide, abatement auditing and reporting, emitter's surrendering activities are not included in this study.

The term ‘experts’, when used in this study, relates to the experts in financial reporting only.

The study covers financial years 2005-2012 while Australia mandatory market was under Greenhouse Gas Reduction Schemes, baseline and credit schemes (before an introduction of the Clean Energy Legislation Package and Carbon Farming Initiative (CFI), the cap-and-trade schemes on 1 July, 2012.)

4.6 Semi-Structured Interview

The human person is the primary collection instrument for qualitative research. Thus this study adopts the in-depth interview to explore the underlying reasons for carbon credit providers accounting practice and uncovering emerging good practice (if any) drawing on the experts opinion.
The standard interview questions for this study were developed from controversial accounting issues in prior studies, discussion papers and surveys. Since this is a new business, all transactions and their nature have not been widely disseminated. This study adopts the semi-structured interview, the non-standardised and frequently-used interview for qualitative analysis (David and Sutton 2004).

The semi-structured interview is the most common form of interview. The interviewer has worked out a set of questions beforehand but intends the interview to be conversational.

"The order in which the various topics are dealt with and the wording of the questions is left to the interviewer s discretion. Within each topic, the interviewer is free to conduct the conversation as he thinks fit, to ask the questions deemed appropriate in the words he considers best, to give explanation and ask for clarification if the answer is not clear, to prompt the respondent to elucidate further if necessary, and to establish his own style of conversation." (Corbetta 2003, P.270)

The accountant interviewees were asked to explain the underlying reasons for their accounting practices based on what they have disclosed in notes to financial statements and archival data collected. If there were other useful issues raised during the interview, then they were expanded upon.

In addition, this type of interview encourages probing, which is an ideal way to uncover new paths, views and opinions of interviewees (Gray 2009). As discussed in previous chapters, there is currently no formal guidance in this area; semi-structured interview questions would allow interviewees to construct their idea if the interviewer conducts suitable and clear communication during the interview.

Woods (2006) suggests that interview is a great deal of qualitative material. It is essential for the researcher to develop empathy with the interviewee and win their confidence in order to tap into the depth of reality of phenomena and discover meaningful findings. In addition, Woods (2006) points out that the researcher should be unobtrusive so as not to impose one s own influence on the interviewee. However, the researcher has some experience in both unstructured and semi-structured interviews. Leading questions and induced bias are avoided for objectivity of research findings.

The semi-structured, open-ended interview questions are designed according to accounting issues shown in chapters 2 and 5 from the Theoretical Framework in Chapter 3. Sample of in-depth interview questions are provided in an appendix.
4.7 Data Collection

Data collection consists of 3 phases, as follows:

1. Secondary data collected online from notes to the financial statements of carbon credit providers who perform forest carbon sequestration. Basic information from registered/accredited carbon credit providers was downloaded from the GGAS registry\textsuperscript{19} and their website and categorised by accreditation.

2. Primary data collected from in-depth interviews of carbon credit providers' CFO delegates, senior accounting persons and accountants. The short listed were selected by the criterion determined in 4.5.1 Sample selection and criterion. Firstly, invitations were sent by mail and e-mail to all carbon credit providers' CFO delegates. After receiving responses, more participants, such as other senior accounting persons and accountants in those firms were physically contacted with the permission of their CFO. The outgoing mails or e-mails provided all required information, such as project title, name and e-mail address of investigator, objectives of interview, scope, duration, Information Statement and prescribed consent form. Duration of interview is about 1-1.5 hours per person in order to encourage a perfect recall and enlightenment of interviewees. Voice recording, place, date and time of interview were arranged from interviewees' permission and preference.

3. Primary data was collected from in-depth interviews with experts. The short listed experts were selected by the criterion determined in 4.5 Sample selection and criterion invitations were sent to all of them by mail and e-mail. The invitation provided all required information such as project title, name and e-mail address of investigator, objectives of interview, a scope, duration, Information Statement and prescribed consent form. Duration of each interview lasted approximately 1-1.5 hours per person in order to encourage a perfect recall and enlightenment of the interviewee. Voice recording, place, date and time of interview are arranged from interviewees' permission and preference.

In the next section, data analysis at each step of data collection is discussed.

4.8 Data Analysis

1. Financial statements of carbon credit providers from 2005-2012 were collected. However, these accounting policies are collected only when voluntarily disclosed in their notes to financial statements. The information derived at this stage will be categorised by accounting issues derived from literature review.

\textsuperscript{19} www.ggas.gov.au
2. Primary data in the second phase (in-depth interview) were transcribed and assigned code as soon as possible by researcher and analysed by NVIVO software. This software helps to organise unstructured audio information and to analyse findings effectively. Common, recurrent and emergent regularities are defined and provided systematically for expert interview in the next phase.

3. Linking with data derived in the second phase, primary data in the third phase (from expert in-depth interview) were analysed using NVIVO software and convergence or content analysis to find out regularities, commonalities and emerging good practice (if any).

4.9 Potential contributions

Given the data on carbon credit provider’s accounting treatment is minimal, this study is expected to provide a foundation of good emerging practice and practical insights of:

i) the relationships between carbon credit providers activities and their carbon credits-related accounting practice

ii) factors underpinning the accounting practice of carbon credit providers who capture carbon dioxide from the atmosphere.

iii) the experts opinion on accounting practice and financial reporting of carbon credit providers in the Australian emissions market.

iv) potential recommendation for implication of good emerging practice in accounting emission

4.10 Chapter summary

As mentioned in this chapter each qualitative data analysis requires the researcher to devise his or her own method for presenting the results. Accordingly, the researcher has identified the methodological position as being rooted in a qualitative case study approach. In this method of qualitative research, the data is transcribed written and documented accompanied by analytical summaries. The use of tables and graphs, and a careful consideration of the order and logic of presentation serve as the foundation of quality research process through the interviews and archival records and secondary data analysis approach. The interview method described in this chapter produced the data through which qualitative analysis and interpretation forms the basis of this thesis.

Based on literature reviews, surveys in Chapter 2, theoretical frameworks in Chapter 3 and secondary data derived from notes to financial statements of carbon credit providers (which are
exhibited in Chapter 5), in-depth interview questions are developed to find out underlying reasons of their accounting practice choices.

To ensure consistency of findings, cross-checking by semi structured/in-depth interviews of expert users are conducted. Interview questions are developed from those prior literature, surveys, theoretical frameworks and findings from carbon credit providers’s CFO delegate, senior accounting professionals to uncover good emerging practice in accounting for carbon emission trading. Data analysis was done using NVIVO software package.

Chapter 5 provides research results from the review of notes to financial statements of carbon credit providers during 2005-2012. The accounting policy related to abatement certificates and emissions trading under the Australian Greenhouse Gas Reduction Schemes and in the voluntary market is described and categorised by company.
Chapter 5

Case Sites Background: Analysing Archival Data to Address

Research Question 1

5.1 Introduction

Following on from Chapter 4 Research Methodology which justifies why forest carbon credits providers have been provided this chapter will introduce and discuss in more detail the three forest carbon credit providers selected and their current accounting practices from 2005-2012.

Given emitters demand for greenhouse gas emission offsets, these carbon sinks offer sequestration of carbon dioxide from the atmosphere via trees natural photosynthesis. While some of these entities provide carbon credits for mandatory purposes, others offer credits for the voluntary market. Likewise, hybrid forms are emerging to become active players in the carbon emissions trading market. Archival data, in the form of annual reports are used to gather data to help answer Research Question 1: How do the forest carbon credit providers in Australia account for carbon emission trading and abatement certificates in their annual financial statements? The company in the mandatory market is denoted as Company M, the one from both markets is denoted as Company H (Hybrid) and the last one from the voluntary market is denoted as Company V.

These forest companies are operating in four major business activities as depicted in Figure 5.1 below. In a carbon market, Company M performs sales of forest carbon credits from their plantations only. These carbon credits are the NSW Greenhouse Abatement Certificates (NGACs) under the New South Wales Greenhouse Gas Reduction Schemes (GGAS). Company H makes sales of various types of environmental credits, including carbon credits, in both markets. On the left hand-side of Figure 5.1 is the trading arm, making margins from price speculation of all environmental credits. Companies H and V also make sales of forest carbon credits from their own plantations, as depicted in the second box from the left (See Figure 5.1). The second box from the right of Figure 5.1 is the provision of the carbon planting project. Both companies H and V provide this service for project development revenue. The rightmost box is the advisory service. Both Companies H and V help clients in the management of greenhouse gas abatement projects. The background and milestones of each company will be discussed in the next section. The following sections will discuss each of these organisations in turn, commencing with the public organisations.
that were early contributors and concluding with the private sector organisations that are becoming more active in this new market.

**Figure 5.1 Forest Carbon Credit Providers’ Major Operating Activities**

### 5.2 Company M

Company M is a public trading enterprise, producing carbon credits as its by-product. Company M is a self-funded division of the State Government, and commenced with revenue generated from the sale of forestry timbers. The following summary of Company M’s accounting practice is based on their main operations, the timber business. As far as their by-product, there is no monetary value provided to created carbon credits (NGACs) since 2005. Following a review of their annual reports, it is assumed that carbon credits are included in inventories under finished goods. Recognition of biological assets (plantations, carbon sinks) and associated valuations are also assumed to be made from a timber business perspective. Although the report suggests the company has made many million dollars from sales of carbon credits since 2005, there is no separate revenue account for this sale.

When Company M was accredited under GGAS on 10 February 2005, it became the first body in the world to trade carbon credits arising from forest carbon sequestration. While it made more than $1.5 million of revenue from the first major sales in this financial year revenue from carbon credits were a very minor segment (0.057%) when compared to its main operation.
In the fiscal year 2005, Company M disclosed in its financial statements that carbon credits are Self-Generating and Regenerating Assets (SGARAs) under Non-Current Assets but the report stated that it did not recognize their valuation since estimation and measurement cannot be made reliably (the policy detail is highlighted further in Appendix 2). Hence, there was no monetary value of carbon credits in their financial statements. Likewise, it was assumed that revenue from sales of carbon credits was included in the related operating activity. In addition, no expense related to carbon credits production was disclosed in the Note to Financial Statement. There was also no separate disclosure of carbon sinks; rather they were included in general plantations which are recognized as SGARAs. The company had no separate item of revenue from sales of carbon.

In June 2006, the enterprise registered carbon credits (NGACs) created from over 20,000 hectares of hardwood and softwood plantations commenced in 2005, and were expected to be ready for sale in the next financial year. M recognized unsold carbon credits as inventory but had no monetary value of them presented; these carbon credits were classified as inventory at the lower of cost or net realizable value. It also did not recognize carbon sinks separately from general plantations; however, it gave value to Hardwood and Softwood plantations for timber. No revenue and expense related to carbon credits were disclosed in the note to financial statements this year since no sale was made.

In 2007, M sold carbon credits registered at 80,000 NGACs. Given this initial activity and registration, it appeared as if the company expected to continue to develop and integrate their business into mainstream commercial operations. Again, according to the annual report, their accounting policy recognized unsold carbon credits as inventory at the lower of cost or net realizable value, with no disclosed monetary value. There was no separate revenue item from sales of carbon credits and no expense related recognized in the note to financial statements this year. Also there was no disclosed valuation policy for plantations or carbon sink, instead valuing Hardwood and Softwood plantations for timber.

In 2008, M stated that it did not make any sales due to low prices and uncertain markets. Shortly after this, the Australian Government’s Carbon Pollution Reduction Scheme (CPRS) was put into place with a proposed introduction for 2010. The company’s carbon credits created under NSW Greenhouse Gas Abatement Scheme (State-level scheme) was underway to determine how to transfer to new national-level schemes. Since GGAS would be replaced by national scheme in the foreseeable future, M disclosed in annual report it could not ensure the continuity of its carbon business during the transition process and may limit its participation in national scheme as Abatement Certificate Providers (ACPs).
Similar to the previous financial year, M recognised unsold carbon credits as inventory and included carbon sinks in general plantation. Carbon credits were classified as inventories at the lower of cost or net realizable, with no monetary value disclosed in M’s financial accounts. In addition, it did not mention a specific valuation policy for carbon sinks but it valued Hardwood and Softwood plantations for timber business. No revenue and expense related to sales of carbon credits disclosed in the note to financial statements either. Sales of timber and related activities were recognized only when control of goods passed to customer.

In 2009 the accounting policy related to its carbon credits business similarly recognized unsold carbon credits as inventory, with no monetary value disclosed. Carbon credits were classified as inventory at the lower of cost or net realizable, with no mention of a specific valuation policy for carbon sink. Again there was no record indicated in sales of carbon credits, and no revenue and expense related to sales of carbon credits disclosed in the note to financial statements. However it changed the method of determining the fair value of Hardwood and Softwood plantations from net market value to a discounted cash flow approach. Sales of timber and related activities were recognized when the significant risks and rewards of ownership were transferred to the buyer.

In 2010, Company M sold carbon credits of 235,716 NGACs. In June, M registered further sales of 622,567 NGACs, and brought the total number of credits the company had created to 3,277,469 carbon credits, with 27,467 hectares of eligible plantation accredited for carbon trading at the end of this financial year. Its accounting policy recognized unsold carbon credits as inventory. Carbon credits were classified as inventory at the lower of cost or net realizable value. There was no separate revenue item from the sales of carbon credits, and no separated expense item for the cost of carbon credit incurred, too. There was no mention of specific valuation policy for carbon sink but it used a discounted cash flow approach to determine the fair value of Hardwood and Softwood plantations. Sales of timber and related activities were recognized when the significant risks and rewards of ownership were transferred to the buyer.

In 2011, M recognized $33.7 million and paid $14 million dividend to the Treasury, but it did not make more sales of carbon credit. The statistics of carbon credit created and number accredited area are shown in Figure 5.2 below.
As depicted in Figure 5.2 above, M disclosed information related to a continuing sales of carbon credit worth $6.3 million in its annual report under “Performing well in uncertain times” but there was no disclosure in its financial statement.

M recognized unsold carbon credits as inventory but there was no monetary value of them. Carbon credits were classified as inventory at the lower of cost or net realizable value. There was no separate revenue item from the sales of carbon credits worth $6.3 million in this year. In addition, there was no specific expense item for the cost of carbon credits incurred. M did not provide a specific valuation policy for carbon sink but it used a discounted cash flow approach to determine fair value of Hardwood and Softwood plantations. Sales of timber and related activities were recognized when the significant risks and rewards of ownership were transferred to the buyer.
<table>
<thead>
<tr>
<th>Accounting Issue</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>None</td>
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<td>None</td>
</tr>
<tr>
<td>Carbon credits</td>
<td>SGARAs</td>
<td>Inventory</td>
<td>Inventory</td>
<td>Inventory</td>
<td>Inventory</td>
<td>Inventory</td>
<td>Inventory</td>
</tr>
<tr>
<td>Carbon sink/Plantations</td>
<td>SGARAs</td>
<td>Biological Assets (AASB 141 Agriculture)</td>
<td>Biological Assets (AASB 141 Agriculture)</td>
<td>Biological Assets (AASB 141 Agriculture)</td>
<td>Biological Assets (AASB 141 Agriculture)</td>
<td>Biological Assets (AASB 141 Agriculture)</td>
<td>Biological Assets (AASB 141 Agriculture)</td>
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<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
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<td>2. Applicable Value and Valuation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Inventory</td>
<td>The lower of cost or net realizable value</td>
<td>The lower of cost or net realizable value</td>
<td>The lower of cost or net realizable value</td>
<td>The lower of cost or net realizable value</td>
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</tr>
<tr>
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<td>The lower of cost or net realizable value (Inventory)</td>
<td>The lower of cost or net realizable value (Inventory)</td>
<td>The lower of cost or net realizable value (Inventory)</td>
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</tr>
<tr>
<td>Carbon sink</td>
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<td>None, For timber, Hardwood and Softwood-Net market value model, Native Forest-Net market value model at the reporting date (Fair value was determined using discount cash flow approach)</td>
<td>None, For timber, Hardwood and Softwood-Net market value model, Native Forest-Net market value model at the reporting date (Fair value was determined using discount cash flow approach)</td>
<td>None, For timber, Hardwood and Softwood-Net market value model, Native Forest-Net market value model at the reporting date (Fair value was determined using discount cash flow approach)</td>
<td>None, For timber, Hardwood and Softwood-Net market value model, Native Forest-Net market value model at the reporting date (Fair value was determined using discount cash flow approach)</td>
</tr>
</tbody>
</table>
Table 5.1 M’s Carbon Credits Related Accounting Policy from fiscal year 2005-2011 (Continue)

<table>
<thead>
<tr>
<th>Accounting Issue</th>
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<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Applicable Value and Valuation</td>
<td>Forestry Right</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>3. Revenue and Expense Recognition</td>
<td>Revenue</td>
<td>Sales of timber and related activities - when control of goods pass to customer</td>
<td>Sales of timber and related activities - when control of goods pass to customer</td>
<td>Sales of timber and related activities - when control of goods pass to customer</td>
<td>Sales of timber and related activities - when the significant risks and rewards of ownership transfer to the buyer.</td>
<td>Sales of timber and related activities - when the significant risks and rewards of ownership transfer to the buyer.</td>
<td>Sales of timber and related activities - when the significant risks and rewards of ownership transfer to the buyer.</td>
<td>Sales of timber and related activities - when the significant risks and rewards of ownership transfer to the buyer.</td>
</tr>
<tr>
<td></td>
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<td>None</td>
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<tr>
<td></td>
<td>Amortization of NGAC</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
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<td>None</td>
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<tr>
<td></td>
<td>Depreciation of Carbon sinks</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
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<tr>
<td></td>
<td>Revaluation of Environmental credits</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
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<tr>
<td></td>
<td>Impairment testing of assets</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>4. Disclosure and Changes in Accounting Policy</td>
<td></td>
<td>No disclosure of monetary value of carbon credits</td>
<td>No disclosure of monetary value of carbon credits, Classification of carbon credits</td>
<td>No disclosure of monetary value of carbon credits. The valuation process of plantation was changed from liquidation to discount cash flow approach (Following Auditor-General Financial audit qualification)</td>
<td>No disclosure of monetary value of carbon credits. Wording in revenue recognition policy for sales of timber and related activities</td>
<td>No disclosure of monetary value of carbon credits</td>
<td>No disclosure of monetary value of carbon credits</td>
<td>No disclosure of monetary value of carbon credits</td>
</tr>
</tbody>
</table>
In conclusion, although Company M has created around 4 million carbon credits, its carbon credit business is a very minor segment with timber as the main business operations. Accounting practice disclosed in note to financial statements does not represent the carbon credits business. There is no monetary value, no valuation of carbon credits in its financial statements although it had been creating these by-products. Furthermore, carbon sinks are included with other commercial plantations, no separate term disclosed in financial statements. Thus, the researcher cannot assume if its accounting practices related to carbon business are similar or different to those highlighted in the literature review.

It is important to conduct more in-depth interviews to follow inside information.
5.3 Company H

H Group Limited, previously was registered since 10 June 1988 in Perth, Western Australia as a mining resource exploration company. Then in 3 August 2004, it officially changed their business activity from mining resource exploration to the exclusive provision of environmental services, primarily forest carbon sink and sequestration through the establishment of long-term and large scale plantations. It disposed of its entire mineral exploration interests and recognized exploration cost written off from this change. Figure 5.3 below depicts biological carbon sequestration via photosynthesis.

![Figure 5.3: Biological Carbon Sequestration](image)

On 22 November 2004, Company H had secured the first contract to supply carbon credits under the New South Wales Greenhouse Gas Abatement Scheme (NSW Benchmark Schemes). The contract was with Energy 1 Company, a leading Australian energy company, to help release their emission reduction obligation by the provision of carbon credits (NGACs). In the accounting policy related to its carbon credits business H did not disclose carbon credit-related information under its Current Assets. There was no inventories disclosed in this financial year although the scope and definition of Inventories were published. It stated the inventories at the lower of cost and net realizable value in compliance to the accounting standard. The cost formula of major inventory is first-in first-out (FIFO) basis. It is noted that the cost includes fixed and variable overhead too. H reclassified capitalized research and development cost as intangible assets due to the impact of the adoption of A-IFRS on the financial performance for the ended 30 June 2005.

There are two categories of revenue (the real policy snapshot is available in Appendix 2) but there was no revenue from carbon credit trading or planting in this financial year. H recognized research and development cost as expense. Indeed, unamortized research and development cost from previous year was reviewed regularly.
During fiscal year ended 2006, the company completed planting for Energy Company 1. In addition, it concluded its carbon credits contract with Energy Company 3, a major NSW Government-owned corporation; to plant 10,000-15,000 hectares of Mallee Eucalypt for greenhouse gas offsetting. This agreement represents the first voluntary forest offset program and a landmark 30-year project in the emerging carbon economy.

This was the first financial year H included forestry right and plantation project (Carbon Sink) in Property, Plant and Equipment but no depreciation/disposal recognized during this the period. In addition, the forestry right in Note 9 of its note to financial statements, which will be sold shortly, was presented under other current assets. There was no clear policy on valuation of forestry right. These transactions were attributed to the terms and conditions of contract secured with its customer. It adopted A-IFRS requirement of reclassification of capitalized research and development cost, CO2 planting project, and NGAC accreditation (which will be amortized on a straight line basis over its useful economic life of 30 years) as intangible assets. Impairment losses were recognized in this period to restate the financial statements. H also recognized seed as inventory that was stated at cost. It recognized forestry right and plantation at historical cost under Property Plant and Equipment, and disclosed revenue recognition policy for sales of goods, rendering service, dividend and interest revenue. The planting revenue was recognized by the stage of completion method. H has disclosed accounting policy on impairment of asset, and Impairment testing has been conducted on an annual basis.

In 2007 H is officially accredited under the Federal Government’s Greenhouse Friendly Program, the voluntary emission market. H was then the first (and only) carbon sink offset provider who has got accreditation in both mandatory market and voluntary market. There were upfront payments for carbon offset plantings contracts established in the 2008 planting season as well. Indeed, customers paid a small instalment for the maintenance of plantations along the contract. It is noted that H started providing service in project establishment and management, not only carbon trading alone. However, no dividends have been paid nor declared.

From January 2007, a Carbon Offset Planting Contract (hence known as contract), the Event 1 Company, planted 15,983 trees in NSW with species of Blue Leaved Mallee for the duration of 30 years and 4,668 tonnes. In the same month, it is noted that the area of planting was extended interstate in a contract with the State Government 1 Company engaging in Environmental Planting. In February, there was a contract with Technology 1 Company while in March, there was a contract for Organiser 1 company. From April 2007, agreed a contract with Organiser 2 Company in NSW and VIC for Mallee Eucalyptus trees for 150 years. And in June 2007, a contract with the State Government1 was for 3,564 tonnes of Mallee Eucalypts in NSW for 1 year.
H recognized the assets from their carbon business as Inventories. They consisted of seeds and carbon sink underdevelopment as same as the last year. Purchased carbon credits were recognized under other current assets. H recognized cost incurred on development project and NGAC accreditation as intangible asset, and recognized carbon sinks as Property, Plant and Equipment. The inventories were stated at the lower of cost or net realizable value. In addition, weighted-average cost formula was applied for individual items. Carbon credits were identified as purchased carbon credit bought from spot market, thus, it is stated at fair market value. Carbon sinks were stated at historical cost less accumulated depreciation and impairment as same as other Property, Plant and Equipment. There was no forestry right disclosed in this year. H recognized Project and Development Fee, Sale of Carbon Credits and Carbon sink project management fees as Sale Revenue. It also recognized research expenditure as expense as incurred. Moreover, it amortized carbon sinks for the first time on the unit of production basis. H also disclosed accounting policy on impairment of asset with Impairment testing conducted on annual basis.

In 2008, the Australian Carbon Emission market was still in the emerging stage. H remained the only one Australian company accredited by NSW Greenhouse Gas Reduction Schemes (GGAS), the Federal Government’s Greenhouse Friendly Program, and Chicago Climate Exchange, the largest USA carbon market in 2008. And H’s Subsidiary 4, its subsidiary, is accredited by NSW Greenhouse Gas Reduction Schemes in April 2006. During the financial year, Energy 3 Company established additional planting (in Mandatory Program). H also successfully secured three more carbon offsets planting contracts with leading Australian and international multinational organizations, which generate long-term management income streams. These new contracts are as follows:

(a) In September 2007, under the Voluntary carbon offset program contracted with an airline company in NSW for a 100 years (two eucalyptus plantings were established) and

(b) In November 2007, through the Government’s Greenhouse Friendly Program, The Biggest commercial emissions offset program, a contract was secured with another petroleum company of over 27 million tonnes with Mallee Eucalyptus trees planted between 2008 and 2012 in NSW and WA for 50 years.

(c) In Apr 2008, under the Greenhouse Friendly Program contracted a Biosequestration Project for a petroleum company for Mallee Eucalyptus trees in Western Australia (WA);

Company H auditor’s provided an audit service and reviewed financial reports in accordance with the Corporations Act 2001, similar to the last year. The company Balance Sheet as at 30 June 2009...
recognized from its continuing operation inventories consisting of seeds and carbon sink underdevelopment as same as last year, with the Definition, Scope, Valuation and Formula of Inventories described in the notes to financial statements. Carbon credits this financial year were purchased carbon credits bought online from spot market, thus, it is stated at fair market value. Intangible assets in its carbon sequestration plantation business consisted of research and development cost and NGAC Accreditation, the license to create carbon credits by forest carbon sequestration. Carbon sinks were under Property, Plant and Equipment.

In 2009, again inventories comprise seeds and the carbon sink under development. They were stated at the lower of cost or net realizable value. There was no clear policy on valuation of carbon credits. Carbon sinks were stated at historical cost less accumulated depreciation and impairment. There was no forestry right disclosed in this financial year. H also provided the basis of revenue recognition from carbon sequestration plantation, the stage of completion method has been applied; the estimation of stage of completion for each project was made by management. It recognized research expenditure as expense as incurred. In addition, H depreciated carbon sinks by the unit of production method, the same treatment as used in the last financial year. H has commenced NGAC Accreditation by unit of production basis in this year, and has disclosed accounting policy on impairment of asset with Impairment testing conducted on an annual basis.

In 2009 H continued to be involved in the Federal Government s Carbon Pollution Reduction Scheme (CPRS). It contributed significant input to both (drafted) legislation and rules and regulations. The legislation included forest carbon sink as an eligible abatement activity. Abatement certificates/permits from CPRS were bankable, tradable and extinguishable in the same way as other permits created by other abatement activities. Given that Australia is moving to a low-carbon economy, H finalized three contracts as follows: (a) in May 2009, under the Voluntary carbon offset program, a Provision of accredited forest carbon sink offsets from 2012 was secured with an energy and water company with 225,000 tonnes of carbon per year from Mallee Eucalyptus plantings in NSW for 30 years; (b) in December 2008, through the Voluntary carbon offset program, a contract with a water company includes 110,000 tonnes from Mallee Eucalyptus in WA for 50 years; and (c) in February 2009, under the Voluntary carbon offset program, secured a contract for another water company for 3,800 tonnes of Mallee Eucalyptus in VIC for 50 years. In addition, during this year, two high-ended customers (an energy company and a petroleum company) exercised options for establishment of further carbon sinks. These contracts annually generated long-term management income steam. This financial year is the second profitable year with 21% in increased revenue; however, H did not pay or declare dividends.
H has disclosed in their accounting policy that again inventories were consisted of seeds and carbon sink underdevelopment stated at the lower of cost or net realizable value and weighted-average cost formula was applied for individual items. Carbon credits were purchased carbon credit bought from spot market stated at fair market value. H recognized carbon sinks as Property, Plant and Equipment. Carbon sinks were stated at historical cost less accumulated depreciation and impairment. There was no forestry right disclosed in this financial year. H had applied the stage of completion method in recognizing their revenue. The estimation of stage of completion for each project was made by management. H recognized project development fee, sales of carbon credits and carbon sinks project management fees under Sales Revenue as same as the financial year 2008. It recognized research expenditure as expense as incurred and it depreciated carbon sinks by a unit of production method. The company continued amortizing NGAC Accreditation by unit of production basis as same as last year. And has disclosed accounting policy on impairment of asset with Impairment testing held on an annual basis.

In 2010, H changed its financial year ended from 30 June to 30 September for closer matching of its seasonal planting cycle. And on 1 July 2010, the Australian Government introduced the National Carbon Offset Standard (NCOS) to identify what is a genuine voluntary offset and to set minimum requirements for calculating, auditing, offsetting the carbon footprint and achieving ‘carbon neutrality’. This guideline provide consumer confidence in voluntary market. During the year, the Labor government announced its Carbon Farming Initiative in 2011, which would allow the export of Australian-made carbon credits to international carbon markets.

H continued existing planting from the last 7 years for the airline, energy, petroleum, water, textile, law companies, the State Government, the technology and electronics companies, research institute, real estate institute, and many more. The energy and water 1 company expanded its carbon offset planting site by at least 50%. In the same financial year, the mining company expanded its current agreement to triple carbon planting sites in WA. The planting of Mallee Eucalyptus trees will create permanent forest carbon sink over its 30-year life. The offset project is Kyoto compliant and established in accordance with draft CPRS legislation. On a note, a CO2 Group staff in New Zealand secured a large engagement to conduct detailed mapping of lands eligible for issue of New Zealand Units (NZU s)

Again H disclosed in its accounting policy recognizing Inventories as consisting of seeds and carbon sink underdevelopment as same as last year, and stated at the lower of cost or net realizable value. Weighted average cost formula was applied for individual items. It recognized research and development cost and NGAC Accreditation as intangible assets. Purchased carbon credits were
recognized under other current assets, and recognized carbon sinks as under Property, Plant and Equipment that were stated at historical cost less accumulated depreciation and impairment. Other related assets, such as forestry rights were not disclosed in this financial year. H recognized its revenue from continuing operation by management's estimation of stage of completion for each project. The company recognized research expenditure as expense as incurred. It depreciated carbon sinks and NGAC accreditation by a unit of production method as same as the last financial year. Again H has disclosed accounting policy on impairment and Impairment testing is held on an annual basis.

In the following fiscal year 2011, H Group's business was successfully diversified by launching new operations, such as the H's Subsidiary 6 - the retail carbon platform and H's Subsidiary 7 carbon credits and renewable energy certificates trading arm. In Australia, the group provided carbon advisory service for another petroleum company, a leading oil and gas exploration, and a production company and another mining company in the world's top five gold mining company. Also, the carbon sink planting and maintaining projects for current blue chip customers were ongoing throughout the year. At this stage, the group has established 22,300 hectares of carbon plantings. Income earned in this year came from advisory service, planting, project management service, and trading which increased by 28 percent with $17.9 million of cash on hand and very small debt.

Similarly, H has disclosed accounting policy recognizing assets from its continuing operation. Inventories consisted of seeds and carbon sinks underdevelopment. They were stated at the lower of cost or net realizable value as same as the last year. The weighted average cost formula was applied for individual items. H recognized research and development cost and NGAC Accreditation as intangible assets. This accreditation was continuously amortized on a unit of production basis as same as last year.

H had changed the term Carbon credits to Environmental credits for the first time in this financial year. Environmental credits were stated at fair value through profit and loss (FVTPL). H also changed the term Sales of Carbon Credits to Sale of Environmental Credits for reason, these further interviews were required. H recognized its project revenue by stage of completion of each project estimated by management, and provided the detailed policy of revenue recognition as summarized in Table 5.2. H still recognized carbon sinks as Property, Plant and Equipment similar to last year. These carbon sinks were stated at historical cost less accumulated depreciation and impairment. There was no forestry right disclosed in this financial year. H recognized research expenditure as expense as incurred. H also depreciated carbon sinks and amortized by a unit of
production method as same as the last financial year. H again disclosed accounting policy on impairment of asset and this testing is conducted on an annual basis.

For the year 2012, the Australia Government passed the Clean Energy Legislation to price carbon in Australia. This price is imposed to large emitters of greenhouse gases. The development of emissions trading in Australia was the favourable event which increased the potential size of the Australian mandatory market. In this year, H secured a $4 Million grant from the Federal Government for planting across Western Australia. It conducted the landmark study on assessment of carbon value for the State Government. It is commercializing its intellectual property and deep knowledge of carbon emissions market so as to extend its operations to international markets, to identify emerging potential markets, to increase an opportunity for further business offering. H is aiming to improve its performance to deliver the lower cost to help its customers to achieve their contractual obligation in emissions reduction. It has developed a highly experienced professional team in forestry to drive efficiency in its continuing operation from seed procuring, land sourcing to planting.

H in this fiscal year similarly recognized Inventories that consisted of seeds and carbon sinks underdevelopment that were stated at the lower of cost or net realizable value as same as the last year. The weighted average cost formula was applied for individual items. H recognized development cost and NGAC Accreditation as intangible assets and this accreditation was continuously amortized on a unit of production basis as same as last year. H did not stock created carbon credits at the end of fiscal year 2012. The company recognized carbon sinks as Property, Plant and Equipment as same as the last year and were stated at historical cost less accumulated depreciation and impairment. It purchased Carbon credits and other environmental credits were stated at fair value through profit and loss (FVTPL). There was no forestry right disclosed in this financial year as same as in 2006. The components of revenue are in Table 5.2. In this financial year, H recognized its project development and management fee by stage of completion of each project estimated by management. It recognized research expenditure as expense when incurred. H depreciated carbon sinks by a unit of production method as same as the last financial year. H has disclosed its accounting policy in impairment of asset and this testing is conducted on an annual basis. Figure 5.4 below depicts the statistics of H’s share prices in Australian Dollar from September 2004-September 2012.
H is officially accredited under the Federal Government’s Greenhouse Friendly Program, the voluntary emission market. H was then the first (and only) carbon sink offset provider who has got accreditation in both mandatory market and voluntary market in 2007. The share prices in this graph are quite low although it rose in 2007 but no later than one year it rebound to the same range as usual. It’s noted that the significant change of revenue and expense recognition was in 2008. However, there is no evidence to conclude that the change led to significant share price reaction.
<table>
<thead>
<tr>
<th>Accounting Issue/ Year</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
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<tbody>
<tr>
<td><strong>1. Asset Type</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Inventory</td>
<td>None</td>
<td>Seed</td>
<td>None</td>
<td>Seeds and Carbon sinks under development</td>
<td>Seeds and Carbon sinks under development</td>
<td>Seeds and Carbon sinks under development</td>
<td>Seeds and Carbon sinks under development</td>
<td>Seeds and Carbon sinks under development</td>
</tr>
<tr>
<td>Intangible asset</td>
<td>Research and Development Cost, NGAC Accreditation, CO2 Project</td>
<td>Research and Development Cost, NGAC Accreditation, CO2 Project</td>
<td>Research and Development Cost and NGAC Accreditation</td>
<td>Research and Development Cost and NGAC Accreditation</td>
<td>Research and Development Cost and NGAC Accreditation</td>
<td>Research and Development Cost and NGAC Accreditation</td>
<td>Research and Development Cost and NGAC Accreditation</td>
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<tr>
<td>Carbon credits</td>
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<td>None</td>
<td>Other current assets</td>
<td>Other current assets</td>
<td>Other current assets</td>
<td>Other current assets</td>
<td>Other current assets</td>
<td>Other current assets</td>
</tr>
<tr>
<td>Forestry Right</td>
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<td>Other Current Assets/Property, Plant and Equipment</td>
<td>Other Current Assets</td>
<td>Other Current Assets</td>
<td>Other Current Assets</td>
<td>Other Current Assets</td>
<td>Other Current Assets</td>
<td>Other Current Assets</td>
</tr>
<tr>
<td><strong>2. Applicable Value and Valuation</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory</td>
<td>The lower of cost and net realizable value/ First-in First-out basis</td>
<td>The lower of cost and net realizable value/ Weighted-average method</td>
<td>The lower of cost and net realizable value/ Weighted-average method</td>
<td>The lower of cost and net realizable value/ Weighted-average method</td>
<td>The lower of cost and net realizable value/ Weighted-average method</td>
<td>The lower of cost and net realizable value/ Weighted-average method</td>
<td>The lower of cost and net realizable value/ Weighted-average method</td>
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</tr>
<tr>
<td>Intangible asset</td>
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<td>Historical Cost</td>
<td>Historical Cost</td>
<td>Historical Cost</td>
<td>Historical Cost</td>
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</tr>
<tr>
<td>Carbon credits</td>
<td>None</td>
<td>None</td>
<td>Historical Cost</td>
<td>Purchased Carbon credits - Fair Value</td>
<td>Purchased Carbon credits - Fair Value</td>
<td>Purchased Carbon credits - Fair Value</td>
<td>Purchased environmental credits-Fair Value Through Profit and Loss (FVTPL)</td>
<td>Purchased environmental credits-Fair Value Through Profit and Loss (FVTPL)</td>
</tr>
<tr>
<td>Carbon sink</td>
<td>None</td>
<td>Historical Cost less accumulated depreciation and impairment</td>
<td>Historical Cost less accumulated depreciation and impairment</td>
<td>Historical Cost less accumulated depreciation and impairment</td>
<td>Historical Cost less accumulated depreciation and impairment</td>
<td>Historical Cost less accumulated depreciation and impairment</td>
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<td>Historical Cost less accumulated depreciation and impairment</td>
</tr>
<tr>
<td>Forestry Right</td>
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<td>Historical Cost</td>
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<td>None</td>
<td>None</td>
<td>None</td>
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Table 5.2 H’s Carbon Credits Related Accounting Policy from fiscal year 2005-2012 (continue)

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<th>Accounting Issue/ Year</th>
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<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenue</strong></td>
<td>1. Sales of goods and disposal of assets 2. Rendering Service - the stage of completion of the contract</td>
<td>1. Sales of goods - when significant risks and rewards of ownership are transferred to the buyer. 2. Rendering Service - the stage of completion of the contract</td>
<td>1. Sale of carbon credits - when significant risks and rewards of ownership are transferred to the buyer. 2. Project Development Service - the stage of completion of the contract, 3. Other revenue - Carbon sink project management fees (no definition provided)</td>
<td>1. Sale of carbon credits - when significant risks and rewards of ownership are transferred to the buyer. 2. Project Development Service - the stage of completion of the contract</td>
<td>1. Sale of carbon credits - when significant risks and rewards of ownership are transferred to the buyer. 2. Project Development Service - the stage of completion of the contract</td>
<td>1. Sale of environmental credits - when significant risks and rewards of ownership are transferred to the buyer. 2. Project Development Service - the stage of completion of the contract, 3. Carbon sink project management fees - an accrual basis in accordance with the substance of the relevant contract. 4. Other service Fee - when service delivered</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Research and Expense Recognition</strong></td>
<td>When incurred</td>
<td>When incurred</td>
<td>When incurred</td>
<td>When incurred</td>
<td>When incurred</td>
<td>When incurred</td>
<td>When incurred</td>
<td>When incurred</td>
</tr>
<tr>
<td>Amortization of NGAC</td>
<td>None</td>
<td>Straight-line method over 30 years commenced on the date asset is available for use</td>
<td>Indefinite useful life (No amortization)</td>
<td>Unit of Production Basis</td>
<td>Unit of Production Basis</td>
<td>Unit of Production Basis</td>
<td>Unit of Production Basis</td>
<td>Unit of Production Basis</td>
</tr>
<tr>
<td>Depreciation of Carbon sinks (Plantation cost written off)</td>
<td>None</td>
<td>30 years commencing on the date revenue generated from the specific project</td>
<td>30 years commencing on the date revenue generated from the specific project</td>
<td>Unit of Production Basis</td>
<td>Unit of Production Basis</td>
<td>Unit of Production Basis</td>
<td>Unit of Production Basis</td>
<td>Unit of Production Basis</td>
</tr>
<tr>
<td>Environmental credits Revaluation</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>Gain/(loss) on environmental credits FVTPL</td>
</tr>
<tr>
<td>Impairment testing of assets</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>4. Disclosure and Changes in Accounting Policy</td>
<td>-</td>
<td>Useful life of Intangible Assets (NGAC) 30 years, AIFRS Impact</td>
<td>Classification of Forestry Right, Useful life of Intangible Assets - indefinite useful life (NGAC)</td>
<td>Amortization Basis of NGAC / Depreciation Basis of Carbon Sinks</td>
<td>None</td>
<td>None</td>
<td>Classification of revenue, Recognition of Gain and Loss on Environmental Credits</td>
<td>None</td>
</tr>
</tbody>
</table>
In conclusion, Company H’s asset classification of carbon credits (as Other Assets) is not similar to any withdrawn guidelines (EIFT, IFRIC3, UIG3) or active US guidelines (GHG Protocol, PSP, FERC’s UofSA), nor audit firms’ discussion papers, nor surveys result. Applicable value of carbon credits using FVTPL is another issue that is not precisely similar to any guidelines and surveys but it is similar to Houpt and Ismer (2011) as discussed in Chapter 2 (2.4.3.1). Furthermore, H treats carbon sinks as Property, Plant and Equipment and carbon sinks are regularly depreciated. These accounting treatments are supported by McEvoy (1998) Haller and Thoumi’s (2009) point that forestland is the real property, even though they did not directly defined carbon sinks as forestland. Other intangible asset such as NGAC Accreditation which has been amortizing during the period of this study and its depreciation method is not similar to prior literature and had never been recommended by any guidelines. Revenue recognition of project establishment and management income using the percentage of completion method is another issue that had not been discussed in prior literature. Therefore, it is important to conduct an in-depth interview to explore the underlying reasons of these policies.
5.4 Company V

Company V Ltd is an Australian public company, limited by shares, registered since 2 January 2008 in Perth, Western Australia, and listed in the Australian Stock Exchange (ASX) since 21 May 2008 with strong support from stockbrokers and their clients.

Company V’s major business activity is environmental service. That is, they provide large quantities of carbon credits through forest carbon sinks as summarised Figure 5.5 V’s Operating Processes. It is noted, other related asset such as carbon right and carbon covenant on the third and fourth bullet points are disclosed in the figure but not in the financial statements. Thus, there is no disclosure of their monetary value either. These carbon sinks comprise Mallee Eucalyptus trees in the wheat belt farm in Western Australia. These tree plantations are integrated in existing agriculture activities and approved by landowners. The company operates only one geographical and business segment, the bio sequestration.

Figure 5.5: V’s Operating Processes

Source: Company V’s Annual Report 2009
In late June 2008, V finalised an agreement with Nurseries 1 company, to supply 44 million Mallee Eucalypt seedlings and mini plugs at an agreed price for an initial 5-year period. These seedlings were planted in 30,000 hectares over this period. The initial planting of 100,000 Mallee trees was successfully completed in July 2008 under its Carbon Capture Program. Plantation took place in the north-east of Perth, and according to the annual report, the planting land was effectively and efficiently selected because of its good rainfall rate. Consequently, in 3 July, the company lodged The V Greenhouse Friendly™ Program application for accreditation under the Federal Government's Greenhouse Friendly™ Program. The program also complied with the Kyoto Protocol standards that strengthen the foundation of its business. It partnered forestry consulting company to assist in the preparation and submission of an eligibility statement for the Mallee Tree project. The V Greenhouse Friendly Program was accredited as Abatement Certificate Provider (ACP) under the Federal Government’s Greenhouse Friendly™ Program (voluntary market) in December 11th, 2008.

This fiscal year, the company disclosed Stock on Hand (Inventory) under its Current Assets (definition and scope of inventories and carbon development expenditure are also available in Appendix 2). It is noted that there are two account disclosures: the Stock on Hand account and the inventory and carbon capital expenditure account). There was no recognition of Carbon right and Carbon Covenant in its annual accounts. V stated the inventories of carbon emission reduction at the lower of cost and net realizable value in compliance to the accounting standard. The cost of inventory based on both first-in first-out basis and on a weighted-average cost basis, which is ambiguous. It is noted that the cost includes related acquisition and administration cost too. Cost of inventory is revalued to its recoverable amount at the end of period. Also the revenue generated in this financial year was only Bank interest received. The company determined revenue recognition policy before making sale and delivering service. V provided policy in impairment testing of its assets including inventory.

In the following year 2009, it was an industrious year for exhaustive research and development; the company successfully developed carbon forecasting model by evidence-based approach involving plantation data and growth rate analysis. This strengthened V's business and provided client confidence in effective forest carbon offsetting. Although there
was a legislative uncertainty and unfavourable political process, the board of directors were confident that all related issues will be resolved.

V disclosed its accounting policy of changing the term “Stock on Hand” used in previous financial year (2008) to “Inventory” in this financial year (2009). It also changed the term “Carbon development expenditure” in 2008 to “Carbon Emission Reductions” in 2009. The scope and definition of the “Carbon Development expenditure” defined in Annual Account 2008 under “Inventory” item was shown under “Non-Current Assets” in 2009. V provided the definition and scope (the snapshots are available in Appendix 2). V also stated the inventories of carbon emission reduction at the lower of cost and net realizable value in compliance to the Australian accounting standard. The cost of inventory was based on both FIFO basis and on a weighted-average cost basis, which is ambiguous since the term “carbon emission reduction” sounds uncountable. It is noted that the cost includes related acquisition and administration cost, too. Inventory cost will be re-valuation to recoverable amount at the end of period. This definition and scope are exactly similar to the previous year. The company recognized revenue from Bank interest received, planting income and from other source (as seen in the Appendix 2). However, it provided revenue recognition policy for the sale of carbon credits, project revenue and interest revenue too. It is noted that V provided revenue recognition policy for sale of carbon credit although it did not make sale during this financial year. V provided policy in impairment testing of its assets such as inventory. There is no significant accounting change in this year, only the wording in inventories item was changed. In addition, there is no recognition of Carbon right and Carbon Covenant in its annual accounts.

The large scale native Mallee Eucalyptus planting started in July 2009 with Energy 1 Company was conducted in the 10,000 hectares of wheat-belt region of WA for the purpose of creating tradable carbon credits under the Federal Government’s Carbon Pollution Reduction Schemes (CPRS) which was expected to be introduced in 2010. Since the company was established on a “pre-revenue” basis, all bio-sequestration projects need to be paid upfront before plantings occur. During the first three year of agreement (2009, 2010, 2011), at least 6 million Mallee Eucalyptus trees were planted, therefore, planting fee was payable over the first three years; licence and management fee will be paid over the 15 years along contract period. The deal costs $26 million in total. In addition, the energy 1 company has options to extend the contract in 2010-2014, and in 10 March 2010, this option was
exercised to extend more plantations in 2012. Hence another 10 million Mallee Eucalyptus trees will be planted over 10,000 hectares. Similarly in October 2009, V finalized an agreement with the petroleum company for large scale commercial carbon sink which involved 10 million Mallee Eucalyptus trees planted on less viable agricultural land in the wheat belt regions of Australia. V, therefore, has two long-term bio-sequestration contracts that generated income steam over 15 years. However, V earned from other smaller source of income as well. The revenue received in this year is bank interest, planting income, carbon sale, Land license fee and other income. This financial year 2010 is the first year the group recognized profit amounted $317,330.

The company at the end of financial year, has only 1 subsidiary, a carbon fund company. Company V recognized Inventory under its current assets and Carbon development expenditure in its non-current assets account (as depicted in in the Appendix 2). Inventories, V changed the term from Carbon Emission Reductions in financial year 2009 to Plantations-at Cost in 2010. V disclosed the definition and scope of its inventory and Carbon Development Expenditure (the snapshots of this policy are available in Appendix 2). The company defined Inventory as Carbon emission reductions as same as the prior year. It is noted that it did not define inventory as carbon credits but carbon emission reductions. V also recognized inventories in compliance to the Australian accounting standard. There was a change from last financial year when the disclosure in inventory costing methods (FIFO and weighted average) was removed. Only the impairment testing, re-valuation to the recoverable amount at the end of period remained in this financial year. The cost of inventories included related acquisition and administration cost as same as the previous year. Revenue consisted of Bank Interest received, Planting income, Carbon sales, Land license fees and Other income as shown in note to financial statements. (The components of revenue generated this year are available in Appendix 2.) It is noted that the group did not provide the definition of Land license fee in this note. And V provided policy in impairment testing of its assets such as inventory. Moreover, expense was estimated by the director's base on the method outlined in the AASB 111 Construction Contract. The company disclosed accounting policy on unavailable items such as financial assets and impairment of assets. In this year only wording in the definition of inventories were changed. In addition, there is no recognition of Carbon right and Carbon Covenant in its annual accounts.
For the Financial Year End of 30 June 2011, events such as on 1 July 2010 when the new National Carbon Offset Standard (NCOS) replaced the Federal Government's "Greenhouse Friendly" Program, the standard ensured the environmental integrity of carbon offset and provided customer confidence; and the company became compliant of NCOS. Also on 5 October 2010, V the carbon planting contract with an insurance company involving 26,000 Mallee Eucalyptus trees planting in WA was secured. Carbon sink will be established and maintained for long-term sequestration over a 30-year period through V's Carbon Capture Program. V did an annual review of the new and revised Australian accounting standards and interpretation as same as last year. There is no accounting standard for carbon emission trading as well.

The company changed the term Plantations- at cost from previous financial year (2010) to Plantation; however, V defined that trees and seeds are Inventory, and not Carbon emission reduction (The snap shots of accounting policy are available in Appendix 2). The scope and definition of Carbon Development Expenditure was shown under Non Current Assets in this financial year (2011) as seen in Appendix 2; however, the value of this account was zero. V also stated the inventories of trees and seeds at the lower of cost and net realizable value. This is in compliance with the Australian accounting standard. Inventory cost will be re-valuing to recoverable amount at the end of period: these definition and scope are exactly similar to the previous year. The Carbon development expenditure is cost of carbon sinks; therefore, carbon sinks are stated at historical cost. V recognized revenue from Bank interest received, planting income, carbon sales, land licence fee and from other source. Moreover, it provided revenue recognition policy for the sale of carbon credits, project revenue and interest. The directors made the percentage of completion of carbon sink project in order to estimate portion of revenue and expense that should recognized. It is noted that there was no recognition policy for revenue from land license fee. The company also provided policy in impairment testing of its assets such as inventory. The Costs of carbon sink are capitalized, and subsequently transferred to inventory based on production of saleable credits. For the Financial Year End of 30 June 2012, the Carbon Price Mechanism (CPM) The Clean Energy Act 2011 passed the senate in November 2011 and required large carbon emitters to pay for a carbon price. The demand for carbon planting service was expected to increase since major corporations could acquit obligations through low cost forestry carbon offsetting. V's business model had been verified by CPM to assist major emitters under this mechanism. And in August 2011, the Carbon Farming Initiatives passed
the Australian Parliament with bipartisan support from both parties. This legislation established the world’s first system land-based carbon sequestration. Reforestation is the major source of Australian Carbon Credit Units (ACCUs). Liable entities can use ACCUs to offset their liabilities under the Clean Energy Act 2011.

In its accounting practice, V recognized only inventories in its balance sheet. There was no Carbon Development Expenditure under Non-current assets similar to the previous year since it was shown at nil value in 2011. (The components of Inventories are shown in of Appendix 2). It is noted that the company again changed the term Plantations in the last financial year (2011) to Plantations at cost in this year (2012). It’s argued that the valuation method in 2011 was unidentifiable. Seed was included under Inventories as well. V also stated the inventories of trees and seeds at the lower of cost and net realizable value in compliance to the Australian accounting standard. Inventory cost will be re-valuating to recoverable amount and current market price at the end of period; these definition and scope was as same as previous year. There was no recognition of carbon development expenditure in this financial year, thus, there was no valuation method policy disclosed in the note to financial statements.

V recognized revenue from bank interest received, planting income, carbon sales, land licence and management fee and from other source. It is noted that the group recognized land license and management fee for the first time to reflect its service revenue. However, there was no definition and scope of Land license and management fee disclosed in the note to financial statements. The company provided policy in impairment testing of its assets such as inventory. Expense was estimated by the director’s base on the method outlined in the AASB 111 Construction Contracts.
### Table 5.3 Summary of Accounting Policy of V Ltd Form Year End 2008-2012

<table>
<thead>
<tr>
<th>Accounting Issue</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Asset Type</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventories</td>
<td>Stock on hand (Carbon Development Expenditure)</td>
<td>Inventories (Carbon Emission Reduction)</td>
<td>Inventories (Plantations-at Cost)</td>
<td>Inventories (Plantations)</td>
<td>Inventories (Plantations-at Cost and seed stock-at cost)</td>
</tr>
<tr>
<td>Carbon Development Expenditure</td>
<td>Current Assets (Inventories)</td>
<td>Non-Current Assets</td>
<td>Non-Current Assets</td>
<td>Non-Current Assets</td>
<td>None</td>
</tr>
<tr>
<td>Intangible asset</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Carbon credits</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Carbon sink</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>Property, Plant and Equipment</td>
</tr>
<tr>
<td>Forestry right/Carbon Right/Carbon covenant</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><strong>2. Applicable Value and Valuation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory</td>
<td>The lower of cost and net realizable value/ First-in First-out base, determined by Weighted-average method</td>
<td>The lower of cost and net realizable value/ First-in First-out base, determined by Weighted-average method</td>
<td>The lower of cost and net realizable value</td>
<td>The lower of cost and net realizable value</td>
<td>The lower of cost and net realizable value</td>
</tr>
<tr>
<td>Carbon Development Expenditure</td>
<td>Historical Cost</td>
<td>Historical Cost</td>
<td>Historical Cost</td>
<td>Historical Cost</td>
<td>Historical Cost</td>
</tr>
<tr>
<td>Intangible asset</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Carbon credits</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Carbon sink</td>
<td>Historical Cost</td>
<td>Historical Cost</td>
<td>Historical Cost</td>
<td>Historical Cost</td>
<td>Historical Cost</td>
</tr>
<tr>
<td>Forestry right/Carbon Right/Carbon covenant, Land license</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>
Table 5.3 Summary of Accounting Policy of V Ltd Form Year End 2008–2012
(continue)

<table>
<thead>
<tr>
<th>Accounting Issue</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Revenue and Expense Recognition</td>
<td>Revenue 1. Sale of carbon credits - when significant risks and rewards of ownership are transferred to the buyer.2. Project Revenue - the percentage completion of the project.</td>
<td>Revenue 1. Sale of carbon credits - when significant risks and rewards of ownership are transferred to the buyer.2. Project Revenue - the percentage completion of the project.</td>
<td>Revenue 1. Sale of carbon credits - when significant risks and rewards of ownership are transferred to the buyer.2. Project Revenue - the percentage completion of the project. (AASB 111), 3. Land License fee</td>
<td>Revenue 1. Sale of carbon credits - when significant risks and rewards of ownership are transferred to the buyer.2. Project Revenue - the percentage completion of the project. (AASB 111), 3. Land License fee</td>
<td>Revenue 1. Sale of carbon credits - when significant risks and rewards of ownership are transferred to the buyer.2. Project Revenue - the percentage completion of the project. (AASB 111), 3. Land License and Management Fee</td>
</tr>
<tr>
<td>4. Disclosure and Changes in Accounting Policy</td>
<td>Research and Development cost None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Intangible asset None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Carbon Development Expenditure Capitalized and transferred to inventories in the proportion that saleable carbon credits are produced relative to the expected output from each specific project.</td>
<td>Capitalized and transferred to inventories in the proportion that saleable carbon credits are produced relative to the expected output from each specific project.</td>
<td>Capitalized and transferred to inventories in the proportion that saleable carbon credits are produced relative to the expected output from each specific project.</td>
<td>Capitalized and transferred to inventories in the proportion that saleable carbon credits are produced relative to the expected output from each specific project.</td>
<td>Capitalized and transferred to inventories in the proportion that saleable carbon credits are produced relative to the expected output from each specific project.</td>
</tr>
<tr>
<td></td>
<td>Impairment testing of Asset Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Definition and scope of inventories, Classification of Carbon development Expenditure</td>
<td>Definition and scope of inventories, Cost Formulas were removed from inventory policy</td>
<td>Definition and scope of inventories, Cost Formulas were removed from inventory policy</td>
<td>Carbon Development Expenditure was removed from Non-current assets. Definition and scope of inventories. The inclusion of management fee</td>
<td></td>
</tr>
</tbody>
</table>
As depicted in figure 5.6, V's share price was low and fluctuated during 2008-2012. According to V's disclosure, uncertainty in political climate and policy in (Carbon Pollution Reduction Schemes) CPRS would be a potential factor for this company. Moreover, there is no evidence to conclude that the accounting changes led to significant share price reaction.

To summarize, Company V did not classify what the type of asset carbon credits are. It disclosed related items under inventory and carbon development expenditure accounts. V's inventories include plantations and seeds stock but not carbon credits. The inventory model applied by V follows the IAS 2 Inventory instead of IAS 41 Agriculture. The terminology currently used are diverse and are changed annually. The possible attempts were explored in the interview session. Carbon right and Carbon covenant had never been disclosed or valued in its financial statements. Revenue recognition method was referred to AASB 111 Construction Contracts. There are many ambiguous issues such as asset type of carbon credits and carbon sinks. Thus, as with the other two companies, it important to conduct further in-depth interviews with this company.

5.5 Chapter summary

As defined in Chapter 1 Introduction, emitters are now investing in forest carbon sinks (terrestrial sequestration) to create forest carbon credits. Both emitters and forest ACPs can be owners of tree plantations as presented in this chapter. However, clarifications in
ownership of carbon credits, carbon sink, forestry/carbon right require practitioners interview.

The accounting policies disclosed by the case companies are diverse given there are no formal guidelines. The state trading enterprise (M)’s disclosure level is low although it is the forest carbon credit providers who created most NGACs for the mandatory market (GGAS 2010). Although M and V have not provided definitive asset classifications for their carbon credits, seed stocks and plantations are treated as inventories in their accounts. Based on their disclosures, all companies conform to existing general accounting standards. The institutional theory would recognise this as coercive pressure. However, H recognises carbon credits as other assets but measures by fair value through profit and loss (FVTPL) in the recent year, this measurement is an applicable value according to the standard for financial instruments. It is likely to be loose-decoupling process because initial recognition and subsequent measurement are decided by management choice. Normative pressure from accounting profession is evident in audit process conducted by external auditors.

However, in-depth interview is required and presented in Chapter 6 since case companies might internally adopt in-depth accounting practice but have chosen not to disclose.

In summary, the controversial accounting issues from all three companies are:

- Asset classification of carbon credits and subsequent measurement.
- Asset Classification of carbon sinks and subsequent measurement
- Disclosure and Recognition of carbon sequestration license, forestry right, carbon right, carbon covenant
- Impairment Testing of related assets
- Revenue recognition from planting project, management revenue.
- Research and Development expense recognition
- Accounting policy changes

In addition to interviewing managers from each of the three case sites, interviews with accounting professionals were invited to help clarify and explain underlying reasons for the different accounting practices evidenced by this archival research. The opinions of experts informed on such accounting practices are provided and discussed in chapter 6
Chapter 6
Research Results and Analysis Parts 2 and 3

6.1 Introduction

To explore underlying reasons of companies’ accounting practices, in-depth interviews with 6 senior accountants were conducted. Interview questions were constructed using Chapter 2 literature review which were further developed using archival data findings highlighted in Chapter 5 review of accounting practices of forest carbon credit providers. The questions were both closed and open-ended questions as follows:

1. Does your organisation have a specific internal guideline for accounting for carbon emission trading? If not, what are the important/critical accounting principles in the financial reporting of carbon emission trading?

2. In your view, what type of assets are purchased and created carbon credits?

3. In your view, what type of asset are carbon sinks?

4. How do you account for related intangible assets such as NGAC accreditation, Carbon Farming Initiatives Accreditation, forestry rights and carbon rights? What are the rationales for this treatment?

5. How do you value your carbon credits and carbon sinks?

6. How do you recognise revenue and expense and why?

7. How do you account for unplanned surplus and shortages of carbon credits and why?

8. Do you have foreign currency transactions? How do you manage these transactions and why?

9. How do you disclose or decide not to disclose your accounting practices and why?

10. What are the rationales of your accounting practice or accounting estimate changes?

The second part of this chapter provides expert interviewee responses and analysis. The 6 experts in financial reporting were asked to comment on these controversial accounting issues raised by senior accountant interviewees.
6.2 Research Result and Analysis Part 2: Underlying Reason of Forest Carbon Credit Providers to address Research Question 2

6.2.1 Company M

Company M is a state enterprise. It owns large scale plantations mainly for sale in the timber industry. Creation and trading of carbon credits are its minor operation. The review of accounting practice in Chapter 5 provided details of accounting practices for their timber industry only. Research question 1 could not be fully addressed with archival data analysis. The only details disclosed was, as almost a by-product of regular operations they have created about 4 million carbon credits. The monetary value of carbon credits owns by M is not disclosed in the financial statements and further investigations, through interviews, were required. The interview was designed to probe deeper for data on accounting for carbon credits. It was conducted according to accounting issues in financial statements from 2005-2012. These are highlighted in more detail in Chapter 5.

Research Question 2. Why are ACPs that perform carbon sequestration motivated to choose a particular accounting method to report emission trading activities and abatement certificates in their annual accounts?

As described in chapter 4 research methodology, the interviewees consisted of people from two groups; senior accounting people in each company and experts in financial reporting. To acquire relevant information about the underlying reasons for companies accounting policies, senior accounting people from Forest New South Wales were invited to participate in an interview session. Accountant Interviewees, who will be identified as A4, A5 and A6, were asked about the following topics:

1. Qualitative Characteristic of Accounting Information for Carbon Emission trading

M’s Carbon credits were accounted for as part of inventory and carbon sinks were accounted for as non-current biological assets. This was confirmed in interview. M’s carbon credit trading is a very minor segment of Company M, all three interviewees pointed out that
Relevance and Reliability are the key qualitative characteristics of accounting information because they are under the AGAAP.  

2. Asset type
2.1 Carbon credit

Table 6.1 Summary of M's Scope of Inventory

<table>
<thead>
<tr>
<th>Asset Type</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
</table>

There was no monetary value of carbon credits in Company M's financial statements since the estimation cannot be made reliably. In the interviewees' view, carbon credits must be treated as inventory under the AGAAP. It's assumed that carbon credits are included in finished goods in archival data. But A4 argues that

it could be invisible, it could be financial instrument because it could be traded.

This idea is not similar to withdrawn guidelines for emission rights such as IFRIC3, UIG 3 but it supports the inventory model in EITF ISSUE 03-14, FERC's USofA, WRI's GHG Protocol and PSP, IAS 2 Inventory.

However, A5 argued that

The auditor general gives us advice to recognize as inventory.

A6 said

Under the national schemes the CFI\(^{21}\), they are going be treated at a real property right (the carbon property right)

Moreover, A5 said he does not want to share an idea due to the code of conduct in government organisations but it appears that AGAAP and CFI and the Auditors opinion

\(^{20}\)AGAAP stands for Australian General Accepted Accounting Principle

\(^{21}\)Carbon Farming Initiatives (CFI) is the Federal Government's voluntary schemes that allow farmers and land managers to register carbon credit from their greenhouse gas emission reduction activities on their land
have directed accounting policy choice. Institutional theory would recognise this as coercive and normative pressure.

2.2 Carbon sinks

Table 6.2 Summary of M's Asset Classification

<table>
<thead>
<tr>
<th>Carbon sink/Plantations</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGARAs</td>
<td>Biological Assets (AASB 141 Agriculture)</td>
<td>Biological Assets (AASB 141 Agriculture)</td>
<td>Biological Assets (AASB 141 Agriculture)</td>
<td>Biological Assets (AASB 141 Agriculture)</td>
<td>Biological Assets (AASB 141 Agriculture)</td>
<td>Biological Assets (AASB 141 Agriculture)</td>
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</tbody>
</table>

The group never recognised the carbon sinks separately. They are included with other plantations. All of them think carbon sinks are a biological asset under AASB 141 Agriculture. No one argues this issue.

2.3 Intangible asset (NGAC accreditation)

Company M never recognises NGAC Accreditation as an intangible asset, A5 said

We just want to follow the standard; we don’t want to open up to a lot of questions. Intangible asset you have to be careful, we have to test impairment and we want to stay away from there.

In addition A4 said

We ve just want to follow the standard

However, there is no specific standard for emission trading, thus the accountant has a choice not to recognise or to recognise it by themselves. Impairment testing is a potential problem for M in order not to recognise the license. However, NGAC accreditation meets the definition of asset as provided in Chapter 2 Review of Literature. Materiality is one possible factor for M since this is its minor business (Area for carbon planting is only 1.6% of the total plantations M owns now, this generate less than 0.1% of the total revenue. It appears that there is no economic pressure on M’s accounting practice for carbon credit business).
3. Applicable value

3.1 Carbon credit

Table 6.3 Summary of M’s Inventory Valuation

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Inventories</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>The lower of cost or net realisable value</td>
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<td></td>
</tr>
<tr>
<td>The lower of cost or net realisable value</td>
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<tr>
<td>The lower of cost or net realisable value</td>
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</tr>
<tr>
<td>The lower of cost or net realisable value</td>
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<tr>
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</tr>
<tr>
<td>The lower of cost or net realisable value</td>
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</tr>
</tbody>
</table>

As indicated in the previous section, Company M never recognises the monetary value of carbon credits in its financial statements. Carbon credits are included as finished goods under inventory. The inventory is stated as the lower of cost of net realisable value. A5 pointed out the underlying reasons for this policy as follow:

It’s really a sort of inventory standard.

Furthermore, A4 said

We haven’t gone into other conception. We’ve just follow the standard that we have and some audit advice; we really haven’t sorted on anything else. We actually use the easiest method as possible.

Institutional theory would recognise this as a coercive factor from existing accounting standards exerted on Company M’s accounting policy.

3.2 Carbon sink

Applicable value for biological assets are subject to AASB 141 Agriculture, however, A6 pointed out that

All type plantations can create. Pine plantations, Hardwood plantation and Soft plantation, we use the standard approved by qualified scheme administrator. The NSW GGAS (IPART) has a whole set of rules, simulation to carbon sequestration.

To wrap up, there are evident coercive factors such as accounting standard and rules from scheme administrator (IPART). However, there were no separate items for carbon plantations. Disclosure is ambiguous since this is a very minor business for them.
Table 6.4 Summary of M's Carbon Sinks Valuation

<table>
<thead>
<tr>
<th>Carbon sink</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>None, For timber, hardwood-historical cost, Softwood-Net market value model, Native Forest-Net market value model at the reporting date</td>
<td>None, For timber, hardwood-historical cost, Softwood-Net market value model, Native Forest-Net market value model at the reporting date (Fair value was determined using discount cash flow approach)</td>
<td>None, For timber, hardwood-historical cost, Softwood-Net market value model, Native Forest-Net market value model at the reporting date (Fair value was determined using discount cash flow approach)</td>
<td>None, For timber, hardwood-historical cost, Softwood-Net market value model, Native Forest-Net market value model at the reporting date (Fair value was determined using discount cash flow approach)</td>
<td>None, For timber, hardwood-historical cost, Softwood-Net market value model, Native Forest-Net market value model at the reporting date (Fair value was determined using discount cash flow approach)</td>
<td>None, For timber, hardwood-historical cost, Softwood-Net market value model, Native Forest-Net market value model at the reporting date (Fair value was determined using discount cash flow approach)</td>
<td>None, For timber, hardwood-historical cost, Softwood-Net market value model, Native Forest-Net market value model at the reporting date (Fair value was determined using discount cash flow approach)</td>
<td></td>
</tr>
</tbody>
</table>

4. Revenue and Expense Recognition

Table 6.5 Summary of M's Revenue Recognition

<table>
<thead>
<tr>
<th>Revenue and Expense Recognition</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>Sales of timber and related activities - when control of goods pass to customer</td>
<td>Sales of timber and related activities - when control of goods pass to customer</td>
<td>Sales of timber and related activities - when the significant risks and rewards of ownership transfer to the buyer.</td>
<td>Sales of timber and related activities - when the significant risks and rewards of ownership transfer to the buyer.</td>
<td>Sales of timber and related activities - when the significant risks and rewards of ownership transfer to the buyer.</td>
<td>Sales of timber and related activities - when the significant risks and rewards of ownership transfer to the buyer.</td>
<td>Sales of timber and related activities - when the significant risks and rewards of ownership transfer to the buyer.</td>
</tr>
</tbody>
</table>

A4 said

It's very very small portion of our business. It's additional revenue.

To summarise, the value of carbon credits are included in finished goods under inventory. This concept is partially similar to Haller and Thoumi (2009) and partially similar to US based guidelines such as EITF ISSUE 03-14, FERC s USofA, WRI s GHG Protocol and PSP. An opinion from one senior accountant, that carbon credits could be traded and they could be treated as financial instruments, is partially supported by Deloitte (2007); Deloitte (2009); Krupova’ and Černy’ (2007) and Hamidi-Ravari (2012).
On the ground that carbon sinks have been treated as biological assets in accordance with IAS 41 or AASB 141 Agriculture, this is not similar to Haller and Thoumi (2009), who suggests the forestland (which creates carbon credits) is real property.

M did not disclose specific policy on impairment testing of carbon sinks but it discloses the policy in determination of plantation's net present value (NPV) as presented in Appendix 2 (figure 25). This value is determined by qualified foresters, using advance modelling.
6.2.2 Company H

H is a carbon credit provider trading both wholesale (under plantation condition) and retail credits. It has secured many long-term contracts with liable large emitters and leading corporations in both mandatory and voluntary markets.

According to the research findings, the summary of H’s accounting practice is highlighted in more detail in Chapter 5.

Research Question 2. Why are ACPs who perform carbon sequestration motivated to choose a particular accounting method to report emission trading activities and abatement certificates in their annual accounts?

As described in chapter 4, research methodology, the interviewees consisted of people from two groups; senior accounting people in each company and experts in financial reporting. To acquire relevant information about the underlying reasons for companies’ accounting policy, senior accounting people from Company H were invited to participate in an interview session. Accountant interviewees have been identified as A1 and A2.

Accountant interviewee responses about the underlying reason for their Accounting practice for carbon emission trading is as follows:

1. Qualitative Characteristic of Accounting Information for Carbon Emission Trading

Both interviewees indicated that the group does not have written internal guidelines or an accounting concept for abatement certificates because of the following reasons:

There is a methodology signed off by GGAS or under Carbon Farming Initiatives (CFI). There is a methodology created by CFI’s role. As trees grow, exist amount of carbon on the balance that is created, it’s a case of recognising carbon, if you want to, in the balance sheet. Because we don’t do that, we haven’t spent a lot of time thinking the methodology for recognising carbon in our balance sheet. We are working through the process at the moment, but we would be looking, and we discuss this thing a lot without auditor. We would look at what accounting standard best fits, whatever we do that in a particular point of time. We haven’t had to do that today. (A1)

Clearly, the accounting for abatement certificates mainly depends on legislation and quantifying methodology approved by government (via Greenhouse Gas Reduction Schemes, GGAS and Carbon Farming Initiatives, CFI) which are a coercive isomorphic factor, the formal pressure exerted on the company. There are no accounting standards for emission...
trading, those legislation and quantifying methodology are the major framework for the company, financial reporting is secondary. However, A1 said the accounting information data for carbon credit creation should be understandable. The methodology of quantification of sequestration is a very well understood scientific methodology.

A2 stated that a written internal guide does not exist at the moment and the group is on the other side of carbon accounting. A lot of polluters are having problems working out their liability and how they will account for that. The group has plantations that are owned by customers.

We assist in research and development and to assist them registering carbon credit, doing abatement with having audit done by IPART 22 (A2)

IPART is another regulator who governs the abatement activities and number of created abatement certificates. This is another formal pressure that strongly influences the formal development of an organisation’s direction. Abatement certificate providers have to get accreditation and to be audited by the regulator. Therefore their focus is based on the legal requirement off-balance sheet and it is not compulsory for them to prepare internal accounting guidelines for their business.

However, the interviewees have indicated some important qualitative characteristics of accounting information for carbon emission trading as follows:

1.1 Reliability and Understandability, A1 pointed out that there is a science behind it all. That science is well known in its discourse community.

There is an issue at the moment at this whole State. In what we do, we have a very defined methodology and this is our methodology. There is other - who goes out and uses a national carbon accounting toolbox which would say five plants on any piece of land are created as many credits, it doesn’t matter. In that sense it’s very clear, one hectare of land equals this many credits, a lot easier to define. Our methodology is all on what’s real. When we go out and measure, that’s what is signed off by independent auditors who deal in this base. It’s not our number, it’s signed off by a forestry independent auditor who has been recommended by GGAS or under the CFI (Carbon Farming Initiatives), there will be a series of organisations that all put themselves up to be recognised as auditors of carbon.

22 IPART or The Independent Pricing and Regulatory Tribunal of New South Wales is a regulator in maximum prices for monopoly services such as water, gas, electricity and public transport.
A1 promotes H’s method in measuring the quantity of carbon credits as more reliable than using the national accounting tool box and it’s signed-off by a qualified auditor. In A1’s view, the methodology of quantification is well understood by people in its discipline and it’s approved by the scheme administrator, this support Lovell et al. (2010) on the ground that accounting approach raised from identification from legal setter. Understandability, therefore, is a preferable/favourable qualitative characteristic of accounting information related to carbon emission trading as well. In terms of quantity of carbon credits created, A1 argues that it is not necessary to be comparable.

We have one competitor in the marketplace at the moment and they use the national carbon accounting toolbox (NCAT). The amount of carbon they say they will create will be less than what we create. The national carbon accounting toolbox basically measures 5 square kilometres all around Australia. If you plant here in this particular location, you’ll earn this much carbon. If you plant in a different location, you’ll have a different amount of carbon.

It appears that competition is an economic factor affecting H’s accounting estimate and practice. H is adopting its own measurement method for carbon sequestration to represent economic reality and maximize profit.

The concept of comparability in unit of production basis of each provider is not likely to be applicable since there are more choices of method approved by the scheme administrator. These choices of method would make a difference to its financial reporting and accounting policy. Its accounting policy and related issues will be discussed in the other section. A1 believes that going out and measuring is a more accurate and reliable method than using NCAT. A1 argues that:

If you have planted, if you have a one-fifth square kilometres area where there is only six inches of soil, you’ll get the same amount of carbon being created in there if you planted on 2 meters of soil. The best methodology is going out there and measuring and confirming this is what we’ve got. It’s more costly but I think it’s a better measure or it’s a better outcome for Australia. When we create carbon, we demanded carbon as eclectic amount of carbon, so we are not missing out on some. And it actually reduces the cost of carbon for our customer. Because we have gone out and say the national carbon accounting toolbox might say there are 400 tonnes of carbon on that hectare, when you go measure, it might be 700 tonnes. If you have 700 tonnes compared to 400-500 tonnes so the cost per tonne is cheaper.

This can be assumed that true and fair views, accuracy of measurement, reliability are qualitative characteristics as well. This measurement method is also indirectly driven by economic motivation in maximizing profit.
These quantification methods are governed, the formal regulators from GGAS and National Carbon Accounting System. Institutional theory would recognise this as a coercive pressure. Moreover, as noted in the institutional theory, there is the normative isomorphic factor from the forest profession, as indicated above by A1, that the number of carbon credits measured is signed off by the forest independent auditor as well.

1.2. Transparency and Verifiability, There are three sources of income for forest carbon credit providers as shown in Figure 5.1 in chapter 5; sales of carbon credits, provision of carbon sinks, and advisory services. Carbon credits created internally are measured, registered and directly transferred to customers as described in the contracts. A2 pointed out that:

"I think we don t have real transparency around carbon credits we generated internally. Because they are not in our account, they are not on our balance sheet. The stock, they are just lurking around"

Therefore, for this business the accountant was concerned with transparency. This principle is one of the potential qualitative characteristic according to A2 s opinion. This view is similar to the accounting principle of WRI s GHG Protocol. In addition, A2 mentioned the carbon credits created are verifiable by IPART since they are cross-checked and signed off by the independent forest auditor.

"We can get them registered on the registry, that s verifiability"

Verifiability, thus, is a potential (enhancing) qualitative characteristic of accounting information for carbon emission trading.
2. Asset Type

As described in company's background and accounting practice, there are 5 types of assets incurred in their continuing operation since 2005; inventories, carbon credits, carbon sinks, intangible assets related to carbon sinks and sequestration and forestry right and carbon sinks. The interviewee response about the underlying reason for each asset account are as follows:

2.1 Inventory

Table 6.6 Summary of H’s Scope of Inventory

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventory</td>
<td>None</td>
<td>Seed</td>
<td>Seeds and Carbon sinks under development</td>
<td>Seeds and Carbon sinks under development</td>
<td>Seeds and Carbon sinks under development</td>
<td>Seeds and Carbon sinks under development</td>
<td>Seeds and Carbon sinks under development</td>
<td>Seeds and Carbon sinks under development</td>
</tr>
</tbody>
</table>

As described in financial year 2007, the group was the first forest carbon offset provider who was accredited under the Federal Government’s Greenhouse Friendly Program. It secured a number of planting contracts such as Organiser 1 Company, Organiser 2 Company, Technology 1 Company and State Government 1 Company. Although carbon credits are agriculture produce under IAS 41 (AASB 141) Agriculture, the group never treats carbon credits as inventory. A1 indicated that, physically, inventories are pure seeds.

In the policy of inventory is concerned. It’s purely seeds. Because whenever we plant, we give the nursery of the seeds, so we own the seeds. So, we have the seed orchards and we also have our trees. In so far, as seed is concerned. No one else is allowed on those properties for picking any of those seeds. No one is allowed in our orchard, only us.

Carbon sink under development is cost related to carbon planting on behalf of customers. A1 pointed out that;

The scenario for us is we don’t have a big bank of carbon. We do business for the customer. The majority of our work, we don’t earn any of the credits that are created. They are all earned by our customer.

Under the carbon planting or environmental planting contracts, the group will receive prepayment from the customer. It arranges the acquisition of land; registers forestry right, plants the trees, lets the technical people measure the amount of sequestered carbon, gets
them registered (in the mandatory market), but these carbon credits belong to the customers, not the group.

Undoubtedly, the provision of planting service allows company to receive a huge prepayment at least 50% of the whole contract. It appears that cash inflow relies on customers prepayment for operation. The company's fund is dependent on customer. Revenue and expense recognition matching caused accounting estimation. This resource dependence is supported by Powell and DiMaggio (1991) and this is a potential economic factor exerted on accounting practice. The detail discussion is highlighted in section 4.1 of Company H

A2 maintains that

The stuff that we’ve generated ourselves, we don’t put on the balance sheet. We’ve just taken revenue. It’s not a major purpose of our business at all, it’s a minor part of our business. It’s to do this thing on behalf of customers.

Inventories, therefore, consisted of seeds (raw material and cost of work-in process [carbon sink under development] only, no finished goods (created carbon credits). This policy attributes to the nature of business and the conditions of the contract the group has finalised with customers. The classification of carbon credits and underlying reasons for that policy will be discussed in 2.3.

2.2 Intangible assets

<table>
<thead>
<tr>
<th>Intangible asset</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research and Development Cost</td>
<td>Research and Development Cost, NGAC Accreditation, CO2 Project</td>
<td>Research and Development Cost, NGAC Accreditation, CO2 Project</td>
<td>Research and Development Cost, NGAC Accreditation</td>
<td>Research and Development Cost and NGAC Accreditation</td>
<td>Research and Development Cost and NGAC Accreditation</td>
<td>Research and Development Cost and NGAC Accreditation</td>
<td>Research and Development Cost and NGAC Accreditation</td>
<td>Research and Development Cost and NGAC Accreditation</td>
</tr>
</tbody>
</table>

As described in 2.2 above, the company background and its current accounting practices, the group is accredited under GGAS since financial year 2005. There are research and development (R&D) costs for the last 7 years. An adoption of A-IFRS after January 1, 2005 requires reclassification of capitalised research and development costs, CO2 planting projects and NGAC accreditation as intangible assets.

A1 stated that;

There are not many companies that have got this sort of experience. We have been doing this since 2004, just sitting here in this space. It’s a long period of time; no one else has been here
for 7 years and the amount of money we spend on research and development is helping us. We are seen to be a leader by potential customers because they are looking at us in the same way. You know the tree planting companies are IP Companies. It's intellectual property that we are pooling together. We are helping them to solve their own problem. But we are more than an IP Company and full service company of carbon sinks as just the trees planted.

Research and development cost, therefore, is recognised in their annual account in accordance with the Australian accounting standard as it can generate future economic benefit and it's been an important cost that created intellectual property for the group. Clearly, A1 defined the tree planting company is an IP company, not an agriculture business. A1 also emphasised that its sector is an environmental service sector, not an agriculture sector. The recognition policy of research and development expense will be discussed later.

In a theoretical perspective, this accounting policy is attributing to a coercive isomorphic pressure, accounting standard's requirement.

Furthermore, normative isomorphic pressure from the research and development people (the science profession and the network) has an influence on accounting policy as well. A1 provided an overview of the teamwork as follows:

We certainly rely on our technical people. We rely heavily on our technical gurus, on coming out with new species, new methodology and dealing with CSR role but ultimately, accounting is accounting, the truth is the truth. We do keep secrets. We have regular monthly meetings with accepted committee, with the accounting people, operations people, and technical people. We have got some quite highly regarded scientists on our board and they regularly communicate with the department of climate change and the minister's office about are the practical things on the ground but, at the end of the day, when it comes doing our accounts, recognising stuff in our system, that's mine.

In addition, A2 stated that accountants have to ask for information from R&D people who are foresters and scientists

There are also foresters’ GAAP\(^\text{23}\). They have their own knowledge. They are audited by IPART. They give us models to tell customers how many carbon credits we think we are going to generate before concluding the contract.

These models are an intellectual property researched and developed by H. However, their methodology must be audited and governed by IPART, anyway. Institutional theory would recognise it as a coercive isomorphic factor from government that controls the business transaction in overview. Investment in research and development is ongoing to maintain technology advancement in carbon sequestration. Technology advancement increases improvement of accounting practice by providing consistent and useful information for

\(^23\) GAAP stands for General Accepted Accounting Principle
bookkeeping and it is supported by Hussain and Gunasekaran (2002). Therefore, this is an economic factor exerted on accounting practices of H.

For NGACs accreditation and related Co2 project (the chunk of work from the accreditation process), A1 elaborated that

Under the NGAC, we did that because of the Energy 1 Company and Energy 2 Company. Those two plantings in 2005-2006, they are exactly like this. We amortise as we create credits and sell the credits to Energy1 Company and Energy 2 company. In those contracts, there are plantings around, we do our own forestry right but that's not how we do it today. We've got both path of the gang covered, so we understand the processes. We also have accreditation for Energy 3 Company and Water 1 Company but they own the trees, own the forestry right. We organised accreditation for them. We changed a bit, we are not experts. Every customer is different.

It appears that the conditions of contract secured with each customer are different. The group makes to the requirements of customers. Accounting policy, therefore, is indirectly dominated by business model and customers too. A1 elaborated customers' requirements and their staffs that:

They have independent experts, so they have foresters come in, so whenever we have a contract with the Oil and Gas 1 Company, Oil and Gas 2 Company, any day, they bring their foresters. They ended the due-diligence on us. They go through our farm to ensure, to quiz us on what we've done. The interesting thing is they use the same forestry adviser. He gets paid each time. But at the end of the day, they do due-diligence on us to determine what we can do. For example Oil and Gas 1 Company, they did come in and audit the process once after the first three years, an independent forester come in and do the audit of our processes that we had done what we said we will do, that we had reported what we said we will report. As long as the trees are in the ground and still there, we have to do every three years

In addition, not only on the seller's side, both customers are advised by professionals and there is a normative isomorphic pressure indirectly exerted on seller's operation as well.

When A1 was asked if the firm relies on customers, since each contract is long and there are not many customers, he responded:

Yes, for example, with Oil and Gas 1 Company, we planted for them for 5 years, and we have a 45-year management fee. We manage the trees for 40 years or 45 years and we get a management fee from them for doing that. So we have a long league, a long tail but it's important that each year we get a new big contract.

It's clear that the group responds to their customers for a long term revenue stream and maximised profit as supported by Powell and DiMaggio (1991) in resource dependence, a potential economic factor.
2.3 Carbon credits

Table 6.8 Summary of H’s Carbon Credit Classification

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon</td>
<td>None</td>
<td>None</td>
<td>Other</td>
<td>Purchased</td>
<td>Purchased</td>
<td>Purchased</td>
<td>Purchased</td>
<td>Purchased</td>
</tr>
<tr>
<td>credits</td>
<td>current</td>
<td>current</td>
<td>assets</td>
<td>carbon</td>
<td>carbon</td>
<td>carbon</td>
<td>credits</td>
<td>credits</td>
</tr>
<tr>
<td></td>
<td>assets</td>
<td>assets</td>
<td>current</td>
<td>credits-</td>
<td>credits-</td>
<td>credits-</td>
<td>environmental</td>
<td>environmental</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>assets</td>
<td>Other</td>
<td>Other</td>
<td>Other</td>
<td>credits-</td>
<td>credits-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>current</td>
<td>current</td>
<td>current</td>
<td>current assets</td>
<td>current assets</td>
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</table>

As indicated in 2.3 of the previous section, the major operation of the group is carbon sink project development. The group does not have a big bank of carbon credits. A2 maintained that the group treats generated carbon credits and purchased carbon credits as other current assets.

We don’t hold very much stock at all of what we have registered, we typically sell straight on. We treat it as other current assets if they have been registered until they don’t exist, we do the small amount that we do a whole value at current market rate.

In Table 6.8 in 2011 other current assets include carbon credits and other environmental credits from the trading arm of the group. A2 explained that:

I think we are moving into the trading of renewable energy certificates and NGACs.

A1 described registered carbon credit as follows:

We don’t get a piece of paper, it’s on the registry. We can log-in to the register and see our name, so we can sell credit number 32-65, also our customer can go and see the same to buy from us.

H’s asset classification of carbon credits (as other assets) is not similar to any withdrawn guidelines (EIFT, IFRIC3, UIG3), active US guidelines (GHG Protocol, PSP, FERC’s UofSA), audit firms’ discussion papers, nor survey results. This seems to be a loose decoupling since the definition of all possible choices in literature review such as inventory, intangible asset, and financial instrument are partially to meet the nature of carbon credits traded by H. They can directly generate future economic benefit to H. While the term other assets sounds secondary.

Asset type of carbon credits - both of them pointed out that carbon credits are a financial instrument - because of the following reasons:
Ours is a different sort of service and that’s why under the clean energy bill, it’s very clear that creating and selling a credit under CFI, you must have AFSL\textsuperscript{24}, so let’s say it’s financial instrument. If you are going in this space, you are selling them, then you have to. As a seller, it’s a financial service, as a purchaser, it probably isn’t because they are going to relinquish that, because they’ve got an obligation to relinquish it to the government to meet their target. For them, it’s almost like a commodity.

This reason is in response to ASIC’s (2012) regulations that require a licence to trade carbon credit. Also, Lovell et al. (2010) pointed out that legal setter (regulator) need to identify the legal nature of the asset for the accounting approach to be emerged. Moreover, A2 maintains that the group does not stock many created carbon credits, the purchased credits for speculation are traded in a spot market.

We treat almost financial instrument, that’s why we do it fair value through profit and loss (FVTPL)

The requirement of CFI and a spot market environment, therefore, are the formal coercive pressure exerted on their view. The trading activities and revenue recognition of the trading arm will be discussed later. H values its financial assets in accordance with IAS 39 Financial Instruments: Recognition and Management.

Regarding the view that carbon credits are intangible assets because they lack physical substance, A2 argued that:

Bizaare!!...they have too (have physical substance). They have got to be verified, they’ve got to exist.

To wrap up, in A2’s view, carbon credits have a true physical substance which is verifiable. This view has been disagreed with in all discussion papers, guidelines and surveys on the grounds that carbon credits have no physical substance. To him, physical substance is definitely verifiable by the forestry professionals. Institutional theory would recognise this as a normative influence exert on interviewee’s view. (Moreover, the role in house forestry experts and forest independent auditors are presented in Appendix 2)

\textsuperscript{24} Australian Financial Service License (AFSL), license authorizes licensees to trade financial products, provide custodial and depository service, provide financial product advice to clients, operate a registered scheme, and provide traditional trustee company services
2.4 Carbon sink

### Table 6.9 Summary of H’s Carbon Sink Classification

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Property, Plant and Equipment</td>
<td>Property, Plant and Equipment</td>
<td>Property, Plant and Equipment</td>
<td>Property, Plant and Equipment</td>
<td>Property, Plant and Equipment</td>
<td>Property, Plant and Equipment</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As described in the previous section that the group recognised carbon sinks as Property Plant and Equipment because they sell only carbon credits and they are holding these plantitions. A1 pointed out:

> The carbon sinks in the account; they are at cost less some amortisation as you create carbon and sell the carbon to Energy 1 Company and Energy 2 Company. So you then diminish the value of the asset because you have now sold the carbon. So let's say it's a million dollars in a balance sheet. It creates carbon. We have our assessment of how much carbon we think will be in that planting. We create and sell, so we will reduce the value of the asset in the balance sheet. We amortise it against the cost.

Before January 1, 2009, IAS 41 or AASB 141 did not include investment in forest carbon sinks as part of biological assets. However, the plantations were being depreciated by the company as they were treated as part of Property, Plant and Equipment. After 1 January 2009, the group could then apply IAS 41 (AASB 41) but for whatever reason they continued to treat the plantations as Property, Plant and Equipment. According to the long-term contracts signed with Energy 1 Company and Energy 2 Company, the group will deliver carbon credits to them until 2012. The cost of getting trees on the ground and the cost of forestry right must be capitalised over the contract period.

> To generate carbon credits, we have to afford right over the trees. We started using the costs that have gone in there, all the cost to make the farm.

These assets are non-current assets that can generate future economic benefit in accordance with the Australian accounting standard. It’s clear that the conditions of contract determine how the group treats its carbon sinks. This view supports McEvoy (1998) and Haller and Thoum (2009) on the ground that carbon sinks or forestland is real property and IAS 16 Property, Plant and Equipment would suit H’s recognition of carbon sinks.
2.5 Forestry Right

Table 6.10 Summary of H's Forestry Right Classification

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forestry right</td>
<td>None</td>
<td>Other Current Assets/Property, Plant and Equipment</td>
<td>Other Current Assets</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

The group recognised forestry rights which will be sold shortly in other current assets. A1 stated that some contracts required the company to register forestry right for them such as the carbon planting contract. The trees/plantations belong to customers.

To create credit, we have to have land; we have to register a forestry right, forestry right gives you the right to create carbon credits and that forestry right said when you planted the trees, you cannot cut those trees down. It actually makes the land worthless.

A2 explained in that:

We have to afford Forestry right over the trees we’ve planted to guarantee their safety.

This accounting policy, therefore, is attributing to the requirement of a contract secured with the customer. It's the economic factor exerting on their accounting practice.

3. Applicable Value

3.1 Inventories

Table 6.11 Summary of H's Scope of Inventory

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventory</td>
<td>The lower of cost and net realisable value/First-in First-out basis</td>
<td>The lower of cost and net realisable value/Weighted-average method, Purchased inventory are determined after deducting rebates and discounts.</td>
<td>The lower of cost and net realisable value/Weighted-average method, Purchased inventory are determined after deducting rebates and discounts.</td>
<td>The lower of cost and net realisable value/Weighted-average method, Purchased inventory are determined after deducting rebates and discounts.</td>
<td>The lower of cost and net realisable value/Weighted-average method, Purchased inventory are determined after deducting rebates and discounts.</td>
<td>The lower of cost and net realisable value/Weighted-average method, Purchased inventory are determined after deducting rebates and discounts.</td>
<td>The lower of cost and net realisable value/Weighted-average method, Purchased inventory are determined after deducting rebates and discounts.</td>
<td>The lower of cost and net realisable value/Weighted-average method, Purchased inventory are determined after deducting rebates and discounts.</td>
</tr>
</tbody>
</table>
As described in the previous section that inventories in 2006 are seeds and from 2007-2011 are seeds and carbon sinks under development. A1 explains the underlying the policy in valuation of inventories as follows:

Straight forward accounting, we go back to the basic accounting principles. What is the basic accounting principle? It's the lower of cost or net realisable value, and that only it can be. Once that accounting standard comes out on its whole space then you might revisit it but there is no accounting standard then you follow the nearest accounting standard applicable on that. It's just a straight forward accounting principle. It's a straight policy. We are not trying to be tricky. It was a simplest way for measuring the value now. We can go out and say that based on the growth of the trees, the value of asset is something larger but how you prove it?, We can actually prove when we measure and we can only measure when we create credit and sell to customer. So, we recognise it through in Profit and Loss on the revalue basis and any changes in value applicable to be recognised as we created the credit. Until the credits are created there is nothing to sell. We have kept everything very simple in an accounting sense and area because if you started it complicated then you've got to persuade the auditor this is the right methodology. You've got to persuade the shareholders this is the right methodology. You've got to persuade the ASIC this is the right methodology. The simplest thing is keep it simple stupid, it's a simple accounting policy.

The underlying reason falls into the requirement of accounting standard IAS 2 or AASB 102 inventory. It is partially similar to EITF ISSUE 03-14, GHG Protocol, PSP, FERC USofA, Deloitte (2007), Haller and Thoumi (2009). This underlying reason is attributed to the normative and coercive isomorphic pressure. The practitioners from accounting profession decided to use accounting policy in accordance with the nearest existing accounting standard, which is understandable by both auditors and regulators.

3.2 Intangible asset

Table 6.12 Summary of H's Intangible Asset Valuation

<table>
<thead>
<tr>
<th>Intangible asset</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historical Cost</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Intangible assets of forest offset providers are stated at cost. The group does not have a policy to sell in the market since it's the intellectual property that boosts the company value.
3.3 Carbon credits

Table 6.13 Summary of H's Carbon Credit Valuation

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon credits</td>
<td>None</td>
<td>None</td>
<td>Historical Cost</td>
<td>Purchased Carbon credits - Fair value</td>
<td>Purchased Carbon credits - Fair Value</td>
<td>Purchased Carbon credits - Fair Value</td>
<td>Purchased environmental credits - Fair Value Through Profit and Loss (FVTPL)</td>
<td>Purchased environmental credits - Fair Value Through Profit and Loss (FVTPL)</td>
</tr>
</tbody>
</table>

These created, purchased credits and renewable energy certificates are treated like a financial instrument and they have been traded in the spot market. A1 maintains that:

Because we currently trade large and small renewable energy credits, these credits from carbon will be treated, will be created in a very similar way to the credits created under renewable energy credit block.

In addition, A2 argued that carbon credits are not inventory. They are traded electronically by the company's qualified trader who has AFSL. This follows IAS 39 or AASB 139 Financial Instruments: Recognition and Measurement and ASIC (2012).

The valuation is based on the publication called Green Room which is at the end of each week and quotes the spot rate of all the items. You have to subscribe to it. We have a middle office, the trader has got market rate, spot rate in our system. We do market-to-market every week and prepare a report every month. The trader monitors it on daily basis actually because they have to buy and sell buy and sell. The trading business is what we keep separate really. It's a different segment and different business.

The role of the accountant is to prepare sufficient funds for them to make a deal approved by the directors. This subsequent measurement, FVTPL, is similar to an opinion from Houpt and Ismer (2011) when the carbon credits are held for sales.

3.3 Carbon sink

Table 6.14 Summary of H's Carbon Sinks Valuation

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon sink</td>
<td>None</td>
<td>Historical Cost less accumulated depreciation and impairment</td>
<td>Historical Cost less accumulated depreciation and impairment</td>
<td>Historical Cost less accumulated depreciation and impairment</td>
<td>Historical Cost less accumulated depreciation and impairment</td>
<td>Historical Cost less accumulated depreciation and impairment</td>
<td>Historical Cost less accumulated depreciation and impairment</td>
<td>Historical Cost less accumulated depreciation and impairment</td>
</tr>
</tbody>
</table>
As indicated by A1, the carbon sinks in the account are recorded at cost less amortisation. These carbon sinks are prepared for Energy 1 Company and Energy 2 Company to supply carbon credits till 2012. They generate revenue from sales of carbon credit since 2006. Depreciation and impairment testing will be discussed later.

4. Revenue and Expense Recognition

4.1 Revenue

<table>
<thead>
<tr>
<th>Table 6.15 Summary of H's Revenue Recognition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Revenue</td>
</tr>
<tr>
<td>1. Sales of goods and disposal of assets</td>
</tr>
<tr>
<td>2. Rendering Service - the stage of completion of the contract</td>
</tr>
<tr>
<td>Other revenue</td>
</tr>
</tbody>
</table>

As indicated in the company's current accounting practice, the group did not make sale of carbon credit until 2007 according to the sales agreement with Energy 1 Company and Energy 2 Company. A1 pointed out that:
The sale agreement that we will sell credits to them X number each year up to 2012. The fact we have planted, it’s great. So we generally create credits of our balance, but if we haven’t got enough, we are in the position that we have to go to the market and buy some.

The rest of sales are purchased carbon and other environmental credits which are traded electronically as described in the applicable value section.

A1 described the flow of revenue from project development as follows:

All of our businesses in 2008, that's how we go buy land, register forestry right for customer. The customer owns the tree and customer owns the credit, we don’t earn any credits at all. From the new planting, we recognise the planting revenue and we have the planting cost. So this is the upfront, so we get paid upfront, we plant the trees. Those trees are owned by the customer which means, for the customer, they have security, that if we fail, we got break, they still own the trees, still forestry right, still own credits.

The revenue from project development is recognised by the stage of completion of the contract. A2 maintains that:

When we talk about producing carbon sinks for our customer, we are going to stop where they join the risk and reward of carbon sink. They will bet from the carbon credits that sink produced. When we come up with that our revenues are based on recognising the stage of completion of the contract evaluated by our operation department, foresters. They manage those plantations for clients. We are selling plantations; it's got to go in a very different asset. We developed the model. Basically, we established a plantation over two year period. Our client will pay stage payments, which are a part of agreement, in advance. We use the money that they pay, we use the money while revenues are going up as part of the stage of completion. If we get 50% of the contract we are not going to recognise all that. We will recognise from what we have done. The difference is unearned revenue.

The revenue inflow must be proportionally matched with expense incurred (Matching Principle). The stage of completion of contract is estimated by foresters. Therefore, there is a normative pressure exerted on accounting policy in project revenue recognition.

Other revenue from the Carbon sink project management fee is recognised when the service is delivered as described by A1:

With Oil and Gas 1 Company, we planted for them for 5 years, and we have a 45-year management fee. We manage the trees for 40 years or 45 years and we get a management fee from them for doing that.

Therefore, the recognition of this revenue is based on the condition of contract signed with customers as well. The percentage of completion method is a revenue recognition method under IAS 11 or AASB 111 Construction Contract; however, interviewees from H did not mention the name of this standard directly.
4.2 Research and Development Cost

Table 6.16 Summary of H’s Research and Development Cost

<table>
<thead>
<tr>
<th>Research and Development cost</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
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</thead>
<tbody>
<tr>
<td>When incurred</td>
<td></td>
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</tr>
</tbody>
</table>

Research and development cost is recognised as expense when incurred. The estimation of expenses incurred are made by a board of directors member who is a PhD holder. A1 elaborates the detail of the planting model developed by the R&D people:

There are not a lot of people in the space who can actually go and measure like us. And there are a number of companies that haven’t spent enough on research and development to determine what is the right basis for the location that they are planting. We don’t plant the same species in every location, depends on where we are that the species we plant. Because it is a species for that area not just a cross the border single species. We plant Mallee trees, there are 500 species of Mallee, and we currently plant 4 or 5 different species depending on the location. We determine place on spending $4 or $5 million on research and development which are the species are best planted in a certain location.

This treatment meets the requirement of IAS 38 Intangible asset in which only the development cost is capitalised.

To wrap up, recognition of R&D expense is based on normative isomorphic factor, forestry professionals who perform the study in each planting location. It sounds reliable and consistent.

4.3 NGAC Amortisation and impairment charge

Table 6.17 Summary of H’s Amortisation of NGAC

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Straight-line method over 30 years commenced on the date asset is available for use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indefinite useful life (No amortisation)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit of Production Basis</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Unit of Production Basis</td>
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<td></td>
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<tr>
<td>Unit of Production Basis</td>
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<tr>
<td>Unit of Production Basis</td>
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<td></td>
</tr>
</tbody>
</table>
A1 defined the underlying reason of this accounting policy as follows:

We determined it, I determined in conjunction with our officers, with respect to our planting in balance sheet. We created credit for Energy1 Company and Energy2 Company but that still to be in 2012, that does still mean be recognising revenue in 2013 financial year.

Moreover, A2 maintain the matching concept that;

We simply do it exactly at the same basis of forecast revenue since 2005

A1 said H focuses on what's real. The materiality concept is applied under this treatment since this is the asset that directly generates future economic benefit to the firm. This is similar to the scope of useful life under IAS 38 Intangible asset. IAS 38 Intangible asset defined useful life of intangible asset includes

The number of production or similar units expected to be obtained from the asset by the entity.

In the theoretical view, accounting people have to work with other professions, such as forestry or R&D people, to determine the accounting policy. From 2007, the group concluded more contracts to share the cost of NGAC . Board of director, therefore, have to review the amortisation method on regular basis to maintain matching principle.

4.4 Depreciation of Carbon sinks (Plantation cost written off)

<table>
<thead>
<tr>
<th>Table 6.18 Summary of H s Depreciation of Carbon sinks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Depreciation of Carbon sinks (Plantation cost written off)</strong></td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
</tr>
<tr>
<td>None</td>
</tr>
</tbody>
</table>

This policy basically follows the initial recognition of carbon sinks as Property, Plant and Equipment and plantations need to be diminished. However, there is no discussion paper, prior study or survey conducted for the appropriate depreciation method for carbon sinks. Expert interview, therefore, is important to this study. However, the Unit of Production Basis conform with IAS 16 (AASB 116) which defined useful life by useful period and also by the following definition.
the number of production or similar units expected to be obtained from the asset by the entity.

A2 stated that the depreciation method of carbon sinks are determined and reviewed by the board of directors, which consisted of accounting and forestry professional, as same as the policy in amortisation of NGAC accreditation. This is the normative isomorphic pressure exerted on its accounting policy.

4.5 Environmental Credits Revaluation

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental credits</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>G/(L) on</td>
<td>G/(L) on</td>
</tr>
<tr>
<td>Revaluation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>env.</td>
<td>env.</td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>credits</td>
<td>credits</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FVTPL</td>
<td>FVTPL</td>
</tr>
</tbody>
</table>

As indicated in the previous section, the group has a minor segment which is a trading business. They treat both created and purchased carbon credit, as well as other renewable energy certificates, as a financial instruments. The revaluation or subsequent measurement therefore, is applicable/allowed by the nature of the FVTPL financial instruments as discussed in chapter 2. This is the coercive factor from the nearest existing accounting standard. However, in revaluation, the qualified trader, the director and the accountant have to refer to the market rate or spot rate from the Green Room as described in the previous section. This subsequent measurement, FVTPL, is similar to an opinion from Houpt and Ismer (2011) when the carbon credits are held for sales.

4.6 Impairment testing of assets

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impairment testing of</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>assets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

The group has a policy on impairment testing of assets related to carbon emission trading but there is no impairment loss/charge of carbon sinks or intangible assets recognised at the moment. However, carbon sinks recognised as Property, Plant and Equipment are written-off.
to match with revenue every year, while trees are also growing. H, therefore, never recognises impairment but reviews it annually. However, this issue needs to be discussed in the experts interview. In addition, A1 maintained that:

We don't have a lot of assets on our balance sheet. It's pretty easy for us to discuss them on a regular basis with our auditor, at our last audit committee meeting which was the sign off of our full year account. There was a general discussion around impairment of asset; it's something we look at on pretty regular basis.

The auditor and audit committees are people who determine impairment of asset. However, A2 maintains that impairment testing is the accountant's responsibility:

It's based on Treasury Modelling looking forward carbon price. We look at what treasury think how the carbon price is going to go. That's the important argument in terms of what we are going to produce from the foresters. We don't mess around changing that too much. We started with the one curve of production and we are staying with that.

To summarise, there is a normative isomorphic pressure from forestry, accounting, and the auditing profession in determining the impairment of asset. Adoption of Treasury Modelling for impairment testing is the way company manage economic risk. However, A1 said survival comes first; the production plan is set up due to the economic climate. A1 mentioned the loss from the first few financial years;

Yes, very little, but that's why we don't bank carbon credits any more. Our business now goes to customers. They pay us to plant, they own, we just get money.

It appears that sale contracts of carbon credits take longer time before selling and H must hold plantations and other fixed assets. This business model, also require huge investments in planting. Provision of planting service is more plausible and H is expanding this service. This is supported by Carpenter & Feroz (2001).

5. Disclosure and Changes in Accounting Policy/Estimate

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Useful life of Intangible Assets (NGAC) 30 years, AIFRS Impact</td>
<td>Classification of Forestry Right, Useful life of Intangible Assets - indefinite useful life (NGAC)</td>
<td>Amortisation Basis of NGAC/ Depreciation Basis of Carbon Sinks</td>
<td>None</td>
<td>None</td>
<td>Classification of revenue, Recognition of Gain and Loss on Environmental Credits</td>
<td>None</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Federal Government's the Treasury Modeling informs policy design and public discussion about carbon pricing. A range of scenarios which explore different environmental targets and design features of a carbon pricing scheme are provided by the treasury.
A1 point out the disclosure policy that

As far as we can see we've got when we can buy with any new customers, we can buy the value of contracts we have with our customer, when we have them on balance sheet. We make it clear that this is its cost. We kept the market well informed in what we have done, what we are doing, how we are doing, our amortisation of planting is clear in a balance sheet. We have a 100%, full disclosure.

Moreover, the group is an Australian listed company, it needs to meet the requirements of the Securities Exchange Commission too.

For these changes of accounting policy during the last 7-8 years, A1 stated that if there is a change of accounting policy, accounting standard and cycle, the CFO will determine it with other officers and auditors in respect to the planting in the balance sheet. A1 pointed out that;

Auditors are happy with our accounting policy. We have regular meeting with our auditors. As we are doing things different, we will flag it which is the best way for us to go. We don't have a situation where we sit and the auditors come and say no, you should not do that way. We talk to tax people a lot. We talk to our legal people a lot.

Moreover, the tax and law professions are indirectly involved in setting accounting policy since this business is new. This is a normative factor affecting adoption of accounting practice and accounting policy for forest offset provider.

6. Unplanned Surplus and shortage of carbon credit

Under the sale agreement concluded with Energy 1 Company and Energy 2 Company, the shortage of carbon credits must be fulfilled by purchasing from the outside and delivering them.

We agree to give them this many credits. We have tied our sale agreement to any of our plantings in our balance sheet. If we need to look at the position of Energy1 Company, we haven't got enough credits in our tree growing; we can go to the market, buy them for them and sell them to them straight away. But the sale agreement that we will sell credits to them X number each year over up to 2012. The fact we have planted, it's great. So we generally create credits off balance, but if we haven't got enough, we are in the position that we have to go to the market and buy some.

However, it's the foresters' responsibility to get them registered every January and June of each year. A1 stated that. In addition A2 explained the responsibility of the R&D department as follows:

If we are getting a lot of assets, we would put them to the trader and realise as quick as that way Foresters have to meet the deadline but they do it, accountant isn't involved at all.
Because it happens in one batch and then they are sold. They are realised when they are sold. It's not something they have to continue and monitor. Just done once and go on it.

In fact, under the carbon planting contract, the group outperforms and never experiences a shortage of carbon credits. Those surplus carbon credits belong to customers and can't be resold to others.
6.2.3 Company V

From 2008-2012 V provided carbon credit planting service in voluntary market. V CFO delegate was asked to explain underlying reason of these accounting policy as highlighted in more detail in chapter 5

Research Question 2. Why are ACPs who perform carbon sequestration motivated to choose a particular accounting method to report emission trading activities and abatement certificates in their annual accounts?

The Senior Accountant Interviewee will be identified as A3. A3 was asked about the following topics:

1. Qualitative Characteristic of Accounting Information for Carbon Emission trading

A3, a senior accounting employee of this company, points out the qualitative characteristics of accounting information related to carbon emission trading as follows:

The hardest thing is verifiability, so for carbon credits, how do I actually verify that those carbon credits are true, are related to actual plantation that is going to be a sticking point. Comparability, under accounting standard, different company will treat carbon credit differently and I think Reliability rely on the underlying business of those carbon credits.

A3 said that verifiability is the most important aspect. He explained the background of the company as follows

We plant very very big scale plantations and we forward sell all the carbon credits to our clients. Our clients are very very interested in how to verify the growth curve of our trees. And we have a database that stands 20 years of tree growth in different stages of their development. So, we ve got client and we say, we are pretty sure that all of the rainfall time in this area, these Eucalyptus trees will grow this exact growth. And we have GPS cord on every single tree. Carbon sequestration derived over the plantation. So our clients understand the trees down there. The tree will grow and we have a good track record on how the trees were grown.

In summary, A3 maintains that Verifiability, Comparability and Reliability are the qualitative characteristics of accounting information related to carbon emission trading. In particular, Verifiability was the qualitative characteristic preferred by practitioners from H Company that would enhance reporting. The reliability of the amount of carbon dioxide stores in the trees will be discussed in section 2. In addition, V applies technology to keep track record on tree growth, for customer and consultant foresters to monitor tree closely. This technology
advancement improves accounting estimate and cost allocation (Hussian & Gunasekaran 2002).

2. Asset Type

2.1 Inventory

Table 6.22 Summary of V’s Scope of Inventory

<table>
<thead>
<tr>
<th>Asset Type</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventories</td>
<td>Stock on hand (Carbon Development Expenditure)</td>
<td>Inventories (Carbon Emission Reduction)</td>
<td>Inventories (Plantations-at Cost)</td>
<td>Inventories (Plantations)</td>
<td>Inventories (Plantations-at Cost and Seed stock-at cost)</td>
</tr>
</tbody>
</table>

A3 explained the underlying reasons for accounting policy in inventories is that the various wordings changed along this 5 year-time are because of the nature of new business:

Because we make up our mind, don t we. I think Plantation and Plantation-at cost is pretty much the same thing, otherwise the wording changed meaning, to be honest. But plantation is the right description for us. Inventory, Note 8 here should be Plantations and Seeds stock, because we ve got seeds as well. Seed is about 400,000 in different families. That s is a good point, note 8 should read plantation at cost and Seed stock-at cost

However, to maintain plantation and seed under an inventory account is similar to company M. In financial year 2011 and 2012, it was A3 who determined the wording. A3 pointed out more reasons for accounting policy in 2008-2010 as follows:

It might be an auditor looking at it and saying, Look, Carbon Development Expenditure; it did not really tell me what that is. Is that Work-in process? Is that cost? The plantation you haven t yet finished? It s just a plantation, plantations of trees. They will sequester carbon once the scheme in place. Now the scheme is in place since November last year (2010). Now the tree will have value beyond the agreement on the ground. Theoretically, up until the pricing scheme last year that the tree was worthless.

Not only the nature of business, in the theoretical view, institutional theory would recognise as a coercive isomorphic factor, such as the introduction of the scheme in 2010 (Carbon Pollution Reduction Scheme, CPRS), exerted on the beginning of carbon sequestration and company s accounting policy in valuation of carbon credits. In addition, a normative pressure from the audit profession as well as the accounting profession is an important factor affecting accounting policy in general.
2.2 Carbon Development Expenditure

Carbon development expenditures are initially capitalised and subsequently transferred to inventory accounting in the proportion that saleable carbon credits are produced.

Table 6.23 Summary of V’s Classification of Carbon Development Expenditure

<table>
<thead>
<tr>
<th>Asset Type</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Development Expenditure</td>
<td>Current</td>
<td>Non-Current</td>
<td>Non-Current</td>
<td>Non-Current</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Assets</td>
<td>Assets</td>
<td>Assets</td>
<td>Assets</td>
<td></td>
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<tr>
<td></td>
<td>(Inventories)</td>
<td></td>
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</table>

A3 explained that they are the plantations, the trees that the group holds in the balance sheet when it can’t predict how many carbon credits can be sold. This is the conservatism principle. This cost will be capitalised until it sells carbon credits to buyers. This follows IAS 38 Intangible asset, the development cost is capitalised. However, as there is no prior accounting study on this issue, further research is required. Applicable value and valuation of plantations and carbon credits will be discussed in the next section.

2.3 Purchased carbon credit

A3 explained when the group purchased carbon credits:

“We might purchase some credits from farmers and sell them to our customers upfront. Then plant to plantation and deliver carbon credit back to farmers. That is further swap something. Then we might go and buy some credits. I will do at the same as created credits, keep it as inventory and I would value at the lower of cost or net realisable value."

V insists to follow IAS 2 (AASB 102) Inventory, the straightforward accounting practice. This is similar to US-based guidelines such as ETIF, WRI’s GHG Protocol, PSP, FERC’s USofA. It’s partially similar to Deloitte (2007), Haller and Thoumi (2009), Hamidi-Ravari (2012), KPMG (2012).

3. Applicable Value and Valuation

3.1 Inventories

Tree planting is an agricultural activity. Agricultural products from harvest point are accounted for as inventory in accordance with IAS2 (AASB 102) Inventory. Company V recognised inventories at the lower of cost or net realisable value. In 2008-2009, the group
defined the inventory costing method but from 2010-2012, the policy was changed as follows:

Table 6.24 Summary of V's Inventory Valuation

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventories</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The lower of cost and net realisable value/ First-in First-out base, determined by Weighted-average method</td>
<td>The lower of cost and net realisable value/ First-in First-out base, determined by Weighted-average method</td>
<td>The lower of cost and net realisable value</td>
<td>The lower of cost and net realisable value</td>
<td>The lower of cost and net realisable value</td>
<td></td>
</tr>
</tbody>
</table>

A3 explained the accounting policy for inventories in 2008-2009 as follows:

Currently the whole company has 16 people. And it was only 3 people in 2008, I don't know back to 5-year round why they changed accounting policy. However, when we have trees, we do have voluntary market. People buy those trees from us. Every month, we have Finance 1 Company, we have number of client purchase trees from us and that we do FIFO. That's the earliest plantation or the one we sell from the first. We were selling the trees in a voluntary market; we were not selling the carbon credit. So the Finance 1 company will say every time they give out a home loan, they will plant a tree. That's a part of their corporate social responsibility. They had an agreement with us.

The unit trees under plantation condition for sale is countable and identifiable. They have physical substance. The inventory cost method is, therefore, applicable to the trees sold.

Thus, the accounting policy is sensible in accordance with the nature of the business.

A3 pointed out the underlying reasons in valuation of inventory in 2010-2012 as follows:

The trees that we hold in our field that we keep in our balance sheet to produce carbon credits. We will value them at the lower of cost or net realisable value. The net realisable value will be the carbon credit that will be produced over next 30 years at treasury's carbon price, the carbon price at the treasury product on their model. And we just discount all them back, we say what's lower. It's cost or net realisable value lower. And we will revalue our plantations.

As defined in Chapter 3, Theoretical Framework, there is a coercive pressure exerted on the applicable value and valuation of inventory. The interviewee defined reference from Treasure Modelling to calculate net realisable value and to re-evaluate its plantations.

They are intangible. To value carbon credit, I have to devalue the tree because I can't have both values at the same time. A carbon credit is relating to the trees.
It's clear that he (the accountant) wants to do this by himself. As discussed in Chapter 3, Theoretical Framework, and Institutional theory would recognise as a normative pressure from the accounting profession exerted on accounting policy. In addition, A3 argued that:

If at 2012 the price of carbon credit is $23 per if the price goes down (there is a forecast that the price will go way down) to $2, suddenly carbon credits are actually worth less than my tree that I had planted.

Clearly, legislation (Carbon Framing Initiatives), the economic climate and market conditions are important factors affecting this accounting policy.

3.2 Carbon Development Expenditure

Table 6.25 Summary of V's Carbon Development Expenditure Valuation

<table>
<thead>
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<th></th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Development Expenditure</td>
<td>Historical Cost</td>
<td>Historical Cost</td>
<td>Historical Cost</td>
<td>Historical Cost</td>
<td>Historical Cost</td>
</tr>
</tbody>
</table>

As described in the note to the financial statement, this are the accumulated costs in relation to the development of carbon sinks before transferring to inventories, thus, it is stated at cost. However, this account is directly associated with the cost of carbon credits. A3 pointed out the view of uncertainty in carbon credit pricing as follows:

Carbon price is going to be $23 from now till 2015, - What happens after 2015? Is the price currently going up? Will it drop like in the EU and other parts of the world? How do you tell if the carbon price is going up in 15 years? Some trees will grow only for 15-30 years. Each year they grow they are going to sequester carbon from the atmosphere. Each year I'm going to plan of credits on how much carbon is growing in our trees and we will get credits, I can only value credit in that year.

As described in Chapter 3 - Theoretical Framework, the legislation, the clean energy bill and the CFI are an important coercive factors exerted on accounting policy. The view in valuation of their asset in relation to carbon emission trading is clearly dependent on the government's carbon pricing policy.

3.3 Intangible Asset: The Greenhouse Friendly program and CFI Accreditation

I don't know when it is done, yep, for the significant cost I'll capitalise it and amortise over the last of plantations. But I know that costs haven't been material, because I haven't noticed
them, so might be a couple of thousands to apply for a license. We wouldn't go and give any value as intangible asset, no.

This idea supports IAS 38 (AASB 138) Intangible assets, however, the firm considers materiality before recognition too.

4. Revenue and Expense Recognition

4.1 Revenue

<table>
<thead>
<tr>
<th>Table 6.26 Summary of V's Revenue Recognition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenue</strong></td>
</tr>
<tr>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>1. Sale of carbon credits - when significant risks and rewards of ownership are transferred to the buyer.2. Project Revenue - the percentage completion of the project.</td>
</tr>
</tbody>
</table>

As explained in chapter 5, the groups provide plantations for its contract customers and directly transfers 90%-95% of carbon credits straight on. It does some plays on carbon credits for the rest, 5-10%

I will treat them as asset, inventory stated at the lower of cost or net realisable value.

The revenue from sales of carbon credits, therefore, will be matched with this cost the same as carbon credits transferred to contract customers. Recognition policy is therefore attributed to matching principles when the sales are made the same as other businesses. The adoption of AASB 111 construction contract, will be discussed in an expert interview. This policy is determined by the nature of business, CFO and approved by auditors. Institutional theory would recognise as a normative pressure exerted on accounting policy.

Planting Income is recognised when delivering a planting service to customers. A3 said:

Planting income is what the client will pay us upfront to plant for them. They pay quite a deep amount upfront. They allow us to buy a land and plant the plantations so we call it Planting Income. And we recognise the expense of planting that plantation for our client at the same time. It's half-half. Of the contract revenue, because half of the cost is upfront to
buy land and trees and we have the rest of 15 years to manage those trees. For the sale related to trees in our balance sheet that we sold to voluntary market, these are Finance 1 Company

As described by A3 in the previous session that, if Finance 1 Company gave out a loan to a customer (signed a mortgage with the customer), they will plant a tree. Every month the group will receive the number of Finance 1 Company’s clients to do planting and bookkeeping. Accounting policy is thus attributed to the condition of contracts signed with customers. This is an economic factor re competition exerted on accounting practice. Revenue recognition, especially in the first two years (2008-2009) is based on the percentage of work done.

To plant or generate carbon credits, the group helps customers to identify suitable land and negotiate terms with the land owner. Moreover, it secures carbon rights, lodges the carbon covenant, undertakes infield land assessment and conducts a sustainability analysis for growth/risk factors such as soil type, salinity and potential weed burden. After planting, it carries out monitoring and assessment as well as the arrangement of regular auditing of carbon credits. A3 explained the Land License Fee and Land License and Management Fees as follows:

We have a Land License Fee that includes ongoing payment for land and the Management Fee is for management service along the planting contract

To wrap up, the revenue accounting policy is attributed to the condition of contract signed with customers. The group employs Law 1 Company doing a lot of research on behalf of it on how CFI works. In addition, A3 explained that:

We have a number of experts such as Forestry 1 Company works on growth our trees and risks involve on the, a major team have a lot of background, a lot of research on how all the schemes work and how to manage the risk.

Moreover, A3 pointed out that accounting policies are reviewed, discussed and approved by board of directors and the accounting department on a regular basis. Institutional theory would recognise as a strong normative pressure from the forestry, law and accounting professions in the determination of accounting policy.

4.2 Expense

As explained by A3 in the previous section, that accountant will work with the forestry consultant and board of directors to determine the risk, and set up accounting policy.
Furthermore, the group's methodology and costing are required to be approved by the CFI and DOIC as follows:

Once we've planted, we've got a methodology at the DOIC (Domestic Offset Integrity Committee). Domestic is local, an offset is carbon credit, to offset liability. What about integrity? So how are we going to measure reliably? So what we do, we will plant the plantation and we will go to the DOIC We are going to say all the trees growing on this type of soil with that species of tree, they are all have the same characteristics. The whole hectare grows 1 tonne of carbon dioxide per year and they will say right, over the 10,000 hectares, we've got 10,000 tonne of carbon grown, it should be 10,000 credits. We are applying for DOIC farm methodology, to be approved. At the moment we're round about 95% toward to having ours approved.

The application for DOIC farm methodology was prepared by the group in conjunction with forestry advisors and Forestry1 Company. Institutional theory would recognise as a normative isomorphic pressure from the forestry profession in calculating and measuring created carbon credits. This pressure indirectly affects the costing and accounting policies of the group as well. Moreover, DOIC's requirements are also a coercive factor indirectly exerted on accounting policy.

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26 The Domestic Offsets Integrity Committee is an independent expert committee supporting the environmental integrity of carbon offsets generated under the Carbon Farming Initiative.
As described in the previous section, the group has Forestry1 Company to manage its risks associated with this business. It performs a major inspection on a regular basis. This is the normative factor associated with determining the accounting policy.

5. Disclosure and Changes in wording

<table>
<thead>
<tr>
<th>Table 6.29 Summary of V's Disclosure and Changes in wording</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5. Disclosure and Changes in Accounting Policy</strong></td>
</tr>
<tr>
<td>2008</td>
</tr>
<tr>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>Definition and scope of inventories, Classification of Carbon development Expenditure</td>
</tr>
</tbody>
</table>

A3 pointed out the normative pressure from the accounting and auditing professions as follows:

Our director is responsible for financial statement and annual report. They will either have the auditor present to them. The auditors will come along and say, Look we've reviewed the change in accounting standard last year, do you think they will have an impact on your business? And we'll say yes or no. If they do not agree with us, they'll look at the standard that they consider due impact on our business and they will change our accounting policy.

6. Unplanned surplus and shortfall of carbon credits

The interviewee was asked if the group has ever had experience with an unplanned surplus or shortfall of carbon credits from their contracts. A3 explained that;

The customers take the risk on carbon credits shortfall but on my own plantations, I'll take the risk so should the trees not be growing as well and they don't attract carbon credits. I will rework my whole model and I will look at the net present value (NPV) of those carbon credits.

Under the carbon planting contract in both mandatory and voluntary markets, the customers gamble on the number of carbon credits. Therefore, an unplanned surplus or shortfalls of carbon credits are at their own risk. The group informs customers of the trends of carbon pricing (in the Treasury Model) before concluding the contract. A3 maintains that:

The only sort of information source of carbon pricing is now the Treasury Model
As discussed in chapter 3, Theoretical Framework, the Treasury Model is the information projected/estimated by the Federal Government; institutional theory would recognise this as a coercive factor that the group uses to model their carbon price.

Summary of accountant interviewees opinion

- Every case company conforms to general accounting standards and Federal Government’s rules and regulations (GGAS and Greenhouse Friendly Program). A case company also applies carbon pricing model formulated by the Treasury to their impairment testing process. In addition, the political climate and policy uncertainty are key factors determining accounting estimates, such as estimating the useful life of license to trade carbon credits. Institutional theory would recognise these external isomorphic factors as coercive. The GGAS’s regulations, also define timeline for emitters to meet emission reduction otherwise relinquish carbon credits. Therefore, carbon credit providers must conform to this timeline by delivering registered carbon credits to emitters on time as well.

- The Australian Securities and Investment Commission (ASIC) is a regulator who has defined carbon credits financial products. This announcement provides basic understanding for market participants and accountants although there is no formal guideline for the trading activities. Institutional theory would recognise this as a coercive factor.

- All of the case companies ensure consultation and audit process are conducted by external auditors in the regular executive meeting. Regarding to the sequestration methodology and carbon accounting, all case companies are audited by independent forest auditors, the representative from GGAS. Institutional theory would recognise the influence from professionals as isomorphic, tending towards a common normative viewpoint.

- There is no evidence of mimetic pressure among these case companies. Their accounting policies and underlying reason are unique due to the specific nature of each of the three businesses. Nevertheless, the group case company, with subsidiaries registered under GGAS, has applied the same accounting policies to their parent company. Institutional theory would recognise this as necessarily mimetic.

- There is evidence of loose-decoupling as defined at the end of Chapter 5. H’s initial recognition of carbon credits as other assets is not in line with the way it values other assets using FVTPL. FVTPL is the applicable value for financial instrument. However,
there are no formal guidelines for carbon emission trading; thus, it is H's choice to choose the FVTPL accounting policy.

- Economic factors such as resource dependence and the size of carbon business segment in the state trading enterprise, are major factors for each of the case companies when developing guidelines for carbon business. For them, if the carbon business is perceived as a very minor segment, the case company would apply general accounting practice mainly to match with accounting for their dominant business segment.

- Other economic factors; technology advancement, is also key. Without detailed information relating to carbon measurement the case companies would not be able to maintain their other important non-accounting/accounting records. The frequency and accuracy of these records determine business cycle, accounting cycle, subsequent measurement and impairment testing method. In addition, Company H and V, who provide a carbon planting service, also rely on funding from customers' prepayment. Company M, a state trading enterprise, is under the State government control. Resource dependence, therefore, is an economic factor determining accounting policy direction for the case companies.

In summary the assets classification, subsequent measurement and impairment testing (if any) of carbon credits, carbon sinks, carbon right, carbon sequestration license and carbon covenants were taken into expert interview session. In addition revenue recognition of long-term plantation contracts, accounting policy changes, accounting policy disclosure were also addressed and discussed in the next section.
6.3 Research Results And Analysis Part 2 : Expert Interviewee Response

The expert interviews were conducted to answer the third research question.

Research Question 3: What constitutes emerging good practice in accounting for carbon emission trading draws on experts' opinion?

The expert interviewees will be identified as E1, E2, E3, E4, E5 and E6. They are 5 accounting scholars from Australian universities who have publications in financial reporting in emission trading-related topics and one highly experienced senior auditor. They were asked about the following accounting issues.

6.3.1. Qualitative Characteristic of Accounting Information for Carbon Emission Trading

All expert interviewees were asked to identify the Qualitative Characteristic of Accounting Information for Carbon Emission trading from their own view.

Relevance

According to the accounting conceptual framework, all expert interviewees pointed out that the most important concept is Relevance.

E4 pointed out that:

Relevance the information will be relevant because the legislation gives rise to financial effects (in some instances this will be quite material to the financial statements). How the entities describe their policies in note 1 to the financial statements will be interesting to say the least. Particularly (as we discussed), because different entities may account for those financial effects differently depending on how they view their participation in that market.

This view on legislation gives rise to a financial effect, in Lovel et al. (2010) that is similar to the interviewee's view. How do each of them view their participation in the carbon market? They have to communicate in accounting language anyway. In addition, another expert said information has to be up to date to have relevance.

Reliability

Four out of six expert interviewees defined this principle as very important to carbon emission trading since each of the providers have their own approved method to create carbon credits (also by lower-emission generation, demand-side abatement or geologic...
Revenue recognition method should match with related and reliable expense recognition.

The potentially different treatments may confuse readers

This expert's view is similar to that of the senior accountants from H and V. The customers were worried about reliability of carbon sequestration. Also, they were concerned about how well carbon dioxide will remain in the plantation, doubting that it is never released to the atmosphere over the period of the long-term contract.

**Comparability**

Comparability is one important principle in this market. An expert interviewee stated that We need information to be comparable. E4 said:

> certainly similar circumstances should be accounted for in like ways, however the circumstances may change depending on the underlying nature of legal rights (freehold/leasehold of physical assets and intangible/financial instrument of the emissions trading rights). In addition, legal rights effect, but do not determine, the accounting treatment. Accountants are supposed to consider the substance of a transaction and not just its legal form.

**Verifiability**

This concept is an enhancing qualitative characteristic of IFRS and FASB as discussed in chapter 2 and it is merely relevant to reliability. Three out of six experts pointed out the verifiability as the same as with accountant interviewees in H and V companies. An expert said that, once the trading stage is reached, problems here should be overcome. Reference to an active market is an important factor which will underpin the validity of the recognition in the financial statements. Although accountants confirm their quantification method, E6 said:

> Assurance providers who are liable, perhaps the best that is available is the gold standard. Do you see what I am saying? It can be verified but I am not satisfied about the credibility of verifier. There is no existence of a formal ...you know, saying ok this all the, especially for carbon credits. At least for the greenhouse gases we do have energy auditors, for carbon credits, its more difficult because it's different. You know they are a different product. And even when we are talking about tree planting. It depends on the type of trees. Where is it located? You know, and so on and so forth. There is just so much uncertainty with the verification procedure.

In summary, experts do not rely on the methodology underpinning this business, especially for the plantations which are attached to the land, and it depends on many environmental and genetic factors.
6.3.2 Asset Type of Carbon Credits

There are two groups of expert interviewees who support the Intangible asset and Financial Instrument model.

2.1 Carbon Credits are an Intangible Assets

E1 explained that;

Just because the nature of it. There is a future, unknown future... and there are obviously potential future economic benefits from them. And there is no physical substance something like that obviously, so it's the same characteristic as an intangible asset. To test impairment creates the potential problem. I assume that it's a bit like patent and sort of right. There are exemptions of those , anyway, so may be the exemption will apply. The other things are irrelevant. This is not property, plant and equipment, this is not current assets. So basically, what I think is that is the best fit. It s not perfect because it's unknown thing really but it's the best fit under the circumstances. Financial instrument is not a potential one, anyway.

E6 maintains that:

It’s unclear as to what represents carbon credits and whether there is a real value to it. There is certainly an asset there - that has a capacity to have future economic benefits. It's not clear until, you know, are able to sort of market it.

E6 agrees with M on this ground about the uncertainty in selling carbon credits, however, M maintains straight forward accounting, treated as inventory.

The experts view that supports the intangible asset model is similar to IFRIC 3 and UIG 3, IETA/Pwc 2007, Lovell 2010, Balatbat & Wang 2010, Steenkamp, Rahman et al. (2011), Warwick and Ng (2012) Also, this view partially supports ideas from Deloitte (2007), Haller and Thoumi (2009), KPMG (2012) and Hamidi-Ravari (2012) who provide more than one possible classification.

E4 emphasised that;

In my view it's a marketable intangible asset. Current or non-current depends on how long they are going to hold them .

This idea is not similar to any prior studies but it needs an amendment of IAS 38 intangible asset, as proposed by IFRIC3, to create another type of intangible asset.

2.2 Carbon Credits are Financial Instruments

E2 pointed out that:
I don’t think it should be inventory, to me, Forest Company’s inventory is the timber, the trees that they cut down etc., that have physical substance. If it can be traded on a financial market so to me it’s a financial instrument.

This point of view supports regulation of ASIC in trading in carbon market (ASIC 2012). Similar to Lovell et al. (2010) the legal setter should identify the nature of this asset. However, this view is not held by Teixeira and Flesch (2010)

E3 explained the reason why carbon credits should be a financial instrument as follows:

A carbon credit is most likely a financial instrument because it is a contract; really a financial instrument is the financial contract that gives rise both to an asset and liability. You can sell it to receive the cash. There is no physical substance. Its value is based around the contracts like debt, equity, like debenture or bond. For my view - carbon credit is the financial instrument.

This view supports the contractual relationship in financial instrument standard (IAS 39, AASB 139). The buyers are permitted to either pollute or resell. However, it is a contractual relationship between buyers and government, not a contractual obligation of the seller to deliver cash or another financial instrument to the buyers. The 2 senior accountants from H and one senior accountant from M also supported the financial instrument model. This idea is similar to, Krupova’ and Černy’ (2007), Deloitte (2009) and it’s partially similar to KPMG (2012) and Hamidi-Ravari (2012).

E5 suggested that it could be a protocol option for emitters to exercise if they don’t want to keep it to acquit their obligation. They can trade in the carbon market as a financial product. This idea is unique. Neither discussion papers, nor surveys, nor withdrawn and active guidelines mentioned it.

6.3.3 Asset Type of Carbon Sequestration Accreditation/License

The expert interviewees were asked how to treat NGAC accreditation (carbon sequestration license). According to the review of their accounting practice, two companies (M and V) do not even recognise this license.

Four out of six experts suggested disclosing and capitalising this intangible asset like other standards. Examples of the rationale are as follows:

We should apply the normal rule as something like research and development, you know, it’s the long term future economic benefit - or it is something that is going to be written off in the short term we expense, long term we capitalise (E1)
You can only capitalise something if it's going to have future economic benefit. They can capitalise if they feel they are going to be able to have a benefit from exceed 12 months and if all the benefit is going to be realised within 12 months. Sometimes it's very hard to predict whether it is going to have benefit within 12 months period. (E4)

The experts prefer the straight-line method rather than the unit of production method. The rationale for this is as follows:

- Consistent with other related licenses that were capitalised in the past and depreciated.
- Look at the companies in extractive industries. They purchased the license to mine for a certain number of year, the telephone company license either.
- The amortisation method must be effective in the way that particular license must be consumed. The essence, in terms of that license, is that it should be according to time.

However, one expert mentioned the depreciation by the unit of production method as follows:

I would not say it's right or wrong. It depends on what right of the benefit from license is again to be realised against revenue. Is the revenue going accrue on the straight-line basis or is it going accrue on a unit of production basis. Probably go to unit of production. Unit of production would be afforded. So I'll be on that one. (E3).

On the other hand, experts who oppose this view maintain that there are managements and manipulations under the unit of production or the accelerated method. This method requires enough scientific information to estimate and construct the production basis. It can be assumed that accountants need forestry experts to make it. In reality, H depreciates its NGAC accreditation from estimations made by forestry (research and development) people.

6.3.4 Forestry Right/Carbon Right/Carbon Covenant

In reference to companies' current accounting practices, one company recognised the forestry right under either current asset or non-current asset. The other company disclosed the carbon right and carbon covenant in its annual report but did not recognise it in financial statements. The other company did not mention these rights at all.

The expert interviewees were asked if companies should recognise these rights and, if so, under what account

One interviewee pointed out that these rights should not be recognised at this stage. E1 said:

This should not be shown just because you have to be a bit more conservative, right? Also, you have to sort of just see how these things, coz to me, this gain is a new concept. And we need to sort of see the issue on how many firms are affected by this, you know whatever.
then when that decided and then we can think about the sort of thing. It's not in the standard at the moment so obviously they flipped it out for a reason.

The rest of them agreed to disclose and capitalise this right. However, E4 expert argued that:

For Carbon Right/Carbon Covenant-, I think they could expense. I don't think it's intangible because, it has no value in the market at this stage unless this agreement itself is tradeable as intangible. Unless you can sell that right you've got nothing that you can value. Forestry Right- Again it comes down to whether they think that they can trade that asset that would seem unlikely but they might be able to sell that right to somebody else and that's only reason you can capitalise it.

However, the value of these intangible assets is a factor the firm takes into consideration. Materiality level is subjective to their interpretation.

6.3.5 Carbon Sinks/Plantation

The expert interviewees were asked how to treat carbon sinks or plantations that create carbon credits. Subsequent measurement and impairment is a plus. Opinions were grouped into 2 categories; Property, Plant and Equipment.

H recognises carbon sinks as Property, Plant and Equipment because, in 2005-2008, IAS 41 (AASB 141) did not apply to investments in forest carbon sinks. An expert agreed with this idea of the straight-line depreciation method since they are long-term non-current assets and because that contributes the same amount to the revenue each year.

Biological Asset

However, the remaining experts preferred the biological asset classification because they consider plantations as tangible assets. Those trees are growing and increasing in both physical and financial sense. It should not be Property, Plant and Equipment. One expert said to realise Carbon Development Expenditure is fine. One expert said all options (Property, Plant and Equipment, Biological Assets, Inventory) are possible.

The number of prior studies in asset classification of carbon sinks is very limited. Further study is required.

6.3.6 Applicable Value of Carbon Credits

The expert interviewees were asked about the applicable value of carbon credits, especially the subsequent measurement. However, it depends on an initial recognition of this asset if we classify carbon credits as an Intangible Asset or a Financial Instrument.
As discussed previously, experts who support the Intangible Asset model said initially we can recognise at cost and subsequent measurement is the lower of cost or net realisable value. This is to be conservative.

On the other hand, those who support the Financial Instrument model argued that it should be the lower of cost or market value.

At the lower of cost or market value because we don’t know if carbon credit will have increasing value over time or they are going to decrease, so that’s the market value, isn’t it. So to be conservative, they should show at the lower of cost or market value which is a bit like how we measure inventory. Inventory we measure at the lower of cost or net realisable value because we’ve been conservative. so to me, that’s conservative. we know two of those are similar. Net realisable value and market value to me, is very similar (E2)

Two experts, who also support the Financial Instrument model, said fair value through profit and loss (FVTPL) in accordance with IAS 39 (AASB 139).

For FVTPL, it depends on how the company is looking at it. If they are looking at it like a hedge, then it starts to get the quality of the possibility having some sort of financial instrument aspect to it. This would be an example with airlines might be having a long term plan that they have to, they are a big polluter. And they have a long term play to hedge the liability. so some of those people is going to that course and they've got long-term play, there might be element of the hedge that you will have people with single modelling they just going to buy what they need and offset their liability that way.

This preferred subsequent measurement, FVTPL, is similar to an opinion from Houpt and Ismer (2011) when the carbon credits are held for sales. FVTPL is adopted by H, an only one case company which has a trading arm. Although H recognises carbon credits and other environmental credits as other assets, H measures them like they are a financial instrument. This is a loose decoupling by opportunistic perspective.

6.3.7 Applicable Value of Carbon Sinks/ Plantations

Experts who support H’s classification as Property, Plant and Equipment, therefore, prefer to value at cost. Those who support M’s biological asset, therefore, prefer the current market value. Impairment is required.

They should be a current market value to fitting with the sense on agriculture, they should be a current market value. You know we have a separate standard on agriculture. And in that standard, Entities and the agriculture industries have to use market value, so I would say that this - plantations have market value also. To be consistent, and to me, the standard sets a time to move towards greatly use market value coz it provides more relevant information, more up to date information. (E2)
6.3.8 Revenue Recognition

The controversial issue for project revenue recognition is the percentage of completion method.

All experts agreed with this method because they wanted to allocate revenue to the periods in which is earned. Also, it just fits in with other standard construction contracts, we use stage of completion. However, one expert said building is not similar to a biological asset. It's a non-living asset but a biological asset is growing during the term of the contract.

Revenue from sale of created and purchased carbon credits are recognised by FVTPL.

In profit and loss. If you are looking at them as a financial instrument, you play on the market, you are an active player out there, you know you are trading in the same way as the share. Once you can nominate this held for trading, the fair value through profit and loss is the right way. Mostly you play in the market?, You've just looking at the straight trading to offset your liability. Both are right depending on how you participate in the market. Both assets may be right.

Other expenses from depreciation and amortisation of asset have been discussed in the previous sections.

6.3.9 Accounting Estimate Change- Useful life of Intangible Assets (NGAC)

Table 6.30 Summary of H's Accounting Estimate Change

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4.3 Amortisation of NGAC</td>
<td>None</td>
<td>Straight-line method over 30 years</td>
<td>Indefinite useful life (No amortisation)</td>
<td>Unit of Production Basis</td>
<td>Unit of Production Basis</td>
<td>Unit of Production Basis</td>
<td>Unit of Production Basis</td>
</tr>
</tbody>
</table>

H had changed its accounting estimate during 2006-2008 due to the growing number of planting contracts secured. To this extent, the experts said it made sense because H is on a steep learning curve. It did not really know how many contracts more to secure or how long the contracts would continue. As long as it complies with AASB 108 (Accounting Policies, Changes in Accounting Estimates and Errors), it can change the accounting policy but it has to disclose that change.
E4 pointed out that;

One of the principle of accounting is the consistency principle, you apply one accounting policy consistently. They are going to find the systematic basis that they can consistently apply. They haven’t yet found a systematic basis.

It s noted that the practice is more consistent with the unit of production basis.

6.3.10 Accounting Policy Change - V's Wording and Scope of Inventory

Table 6.31 Summary of Wording for Inventory Policy

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventories</td>
<td>Stock on hand (Carbon Development Expenditure)</td>
<td>Inventories (Carbon Emission Reduction)</td>
<td>Inventories (Plantations-at Cost)</td>
<td>Inventories (Plantations)</td>
<td>Inventories (Plantations-at Cost and seed stock-at cost)</td>
</tr>
</tbody>
</table>

According to the table 6.31 above, V’s inventories consist of seeds and plantations but has changed the wording of inventory components for every year. In the expert’s view, this is a new business. Experts believe it will become more knowledgeable and consistent. The sample opinions are as follows:

I reckon this, Carbon development expenditure. To me, it's like research and development expenditure, in terms of the title, not the meaning, the title. Plantations-at cost, to me it just Property, Plant and Equipment. If you want be more specific, it doesn't allow for anything that is a bit different. (E1)

The plantation at cost, seed stock at cost more disclosures are better and clearer. (E3)

It's inappropriate to call it carbon emission reduction, the acronym is CER. CER is the term used for those created for the Clean Development Mechanism, so unless it was a CER but as far as I know there are no CERs in Australia. Ok, I think all the others are acceptable except for the CER because it will suggest a different term,. A CER is a credit that is tradeable. (E6)

However, experts point out that substance is over form. Given this is new business, rewording is applicable if it conveys more relevant information.

6.3.11 Disclosure of Accounting Policy related to Carbon Emission Trading

The statistics in the GGAS registry indicates that M created 97% of forest carbon credits (abatement certificates, NGACs) but accountants said this is their minor business and they don’t really know for how much and when they can sell these credits. Therefore, they never disclose the monetary value of created carbon credits in the annual account.
However, all experts said it was fair enough if they can't measure them reliably but this was positive information that they should disclose more although M is a state enterprise not a private listed company. In contrast, E4 argued that this would be an element of double counting since M is conducting a large scale timber business while trees have been planted before M entered the carbon business. All costs were allocated based on the timber segment, not the carbon credit segment.

Expert Views Summary

- All experts agreed that the relevance is an important qualitative characteristic for accounting information when companies are involved in carbon emission trading. Sixty-seven percent of expert views was likewise concerned with reliability in accounting for carbon trading. Moreover, half of the expert views defined verifiability as an important qualitative characteristic for this type of accounting information.

- Asset classification for carbon credits in experts' viewpoints is divided into two camps - financial instruments and intangible assets. According to all expert opinions, the preferred subsequent measurement method for carbon credits depends on its initial recognition. The key measurements are at cost, at cost or net realisable value and at fair value through profit and loss (FVTPL).

- The extent of disclosure for carbon sequestration licensing depends on materiality of the asset held by the company. Sixty-seven percent of the expert opinions support disclosure and capitalisation as an intangible asset. Accordingly forestry rights, carbon rights and carbon covenants should be disclosed and capitalised. The level of materiality is subject to their individual interpretation.

- In general, experts prefer to treat carbon sinks/plantations as Biological Assets rather than Property, Plant and Equipment. Those experts who support Biological Assets must identify the current market value for subsequent measurement. Therefore impairment testing is consequently required under the existing agriculture standard (AASB/IAS 141 Agriculture).

- All experts agree with the percentage of completion method. Accordingly, revenue should be allocated to the period in which it is earned.

- According to the expert opinions, changes in accounting estimation are acceptable as long as they comply with AASB 108 (Accounting Policies, Changes in Accounting
Policies in Accounting Estimates and Errors) because a carbon emission trading is an emerging business. However, they believe the case companies should maintain consistency in selected accounting policies. In conclusion they believe materiality of accounting information is a key factor when determining the extent of disclosure.

6.4 Chapter summary

Relevance, Reliability, Comparability and Verifiability are the qualitative characteristics and enhancing qualitative characteristic of accounting information for carbon emission trading.

![Figure 6.1 Preferred Classifications of Carbon Credits](image)

As shown in figure 6.1, asset recognition and classification are the controversial issues of the carbon emission market. On the carbon credit providers side, there are two potential views to recognising carbon credits. The first one is the inventory model (the straight-forward accounting practice). The second one is the financial instrument model (the market-based practice). These two views are attributed to the strong coercive and normative pressures exerted on their accounting treatment as summarised in the previous section. On the experts side, the intangible asset model (the most popular model on emitters side) and the financial instrument model (the market-based model) are the most appropriate view based on the extent that there is no physical substance and they could be traded in financial markets, respectively. However, the initial recognition of assets leads to subsequent measurement and impairment testing. The applicable value of carbon credits in each stage is an outcome of the asset classification.

Carbon sinks are another related asset that gives rise to debate if they are Property Plant and Equipment or Biological Assets (Non-Current Asset). Both accountant interviewees and experts are divided into two groups. The first group supports the first model defining carbon sinks as long-term fixed assets that generate future economic benefit, therefore depreciation
is required. Those who support the concept of the biological asset model maintain that the plantations accumulate more value by the growth of trees. Thus, carbon sinks should not be depreciated on the same basis as Property Plant and Equipment.

Forestry Right, Carbon Right and Carbon Covenant are assets associated with the carbon planting contract. The interviewees defined the need for recognition by their tradability, materiality. NGACs accreditation or CFI Accreditation are assets that generate future economic benefit directly to firms, however interviewees define the need for recognition from their materiality.

Revenue and expense recognition by the stage of completion method or unit of production basis are critical issues between accountants and experts when the scientific method applied is not compatible with the concept of consistency in accounting. Accounting changes may be required since these carbon credit providers are all on a steep learning curve. Disclosure levels should be determined by materiality of these assets in each organisation. Further study should be carried out from CFI’s timeline on both the producers and the emitters side.
Chapter 7
Conclusion and Further Research

7.1 Introduction

Accounting for carbon emissions trading is a highly controversial issue that has generated interest among emitters, traders, practitioners, standard-setters and academics. Given that this is a relatively new and emerging global market, legislations and market conditions for emissions trading around the world are diverse. The new type of assets, such as carbon credits and related assets, create accounting issues such as asset recognition and classification, subsequent measurement and impairment testing. This results in diversity in practice and lack of comparability. As a global language for business reporting, formal financial accounting guidelines are required.

This chapter is organised as follows. Section 7.2 outlines the research questions addressed in the thesis and summarises the main context of the study by chapters. A review of the implications is presented in Section 7.3, Section 7.4 discusses the limitations of the study and Section 7.5 identifies applications of research outcomes and future research opportunities. Section 7.6 presents the conclusion.

7.2 The Research Questions and Summary of Thesis

The Australian context of the carbon market provides a valuable opportunity to explore the accounting practices of carbon credit providers. Prior studies in the European Emission Trading Scheme have indicated that emitters' disclosure level of subsequent accounting practices for carbon credits are minimal. These liable entities, however, have the choice to disclose or not to disclose their granted and purchased carbon credits (emission allowances) in annual accounts. To overcome this limitation, the researcher has chosen carbon credit providers/sellers who have created carbon credits as their major business as they have developed full set of accounting steps (initial asset recognition, subsequent measurement and impairment testing).

In Australia, the producers can create carbon credits by performing the following activities:

- Low-emission operation/production for example, power stations, oil refineries etc.
Demand-side abatement (DSA) perform any activities that reduce energy consumption.

Carbon sequestration\textsuperscript{27} Carbon sequestration is the process of capturing and removing Carbon Dioxide (CO2) from the atmosphere.

Carbon credits created by entities performing the first two activities are a by-product. The last activity, carbon sequestration, is the only activity as these entities create carbon credits as their major business. Therefore, it is compulsory for them to lodge financial statements to government and to disclose accounting policy in notes to financial statements. As indicated in Chapter 1, 4 and 5, emitters, however, are the owners of carbon sinks, while forest ACPS are holding carbon credits from lower-emission generation or demand-side abatement performed by emitters too.

The purpose of this thesis is three-fold:

1. To determine the current financial accounting practices within the financial statements of forest carbon credit providers in Australia.
2. To identify the underlying reasons that influence the choice of Australian forest carbon credits providers on how they report relevant accounting information in financial statements.
3. To uncover good emerging practice (if any) in accounting for emission trading, drawing on expert opinion and extant practices.

In order to address these research objectives, and to empirically test them, a few research questions were formulated. The research questions are as follows:

1. How do the forest carbon credit providers in Australia account for carbon emissions trading and abatement certificates in their annual financial statements?
2. Why are the forest carbon credit providers motivated to choose a particular accounting method to report emissions trading activities and carbon credits in their annual accounts?

\textsuperscript{27} There are at least three potential means to keep CO2 out of the atmosphere; Oceanic sequestration pumps the CO2 into the deep ocean as CO2 is soluble in water; Geologic sequestration captures CO2 from an industry, stationary, or energy related source (e.g. a power plant, a coal-to-syngas plant, a cement production plant) and buries or injects into the subsurface. Generally, CO2 injection is used in enhanced oil and gas recovery; Terrestrial sequestration binds CO2 in soil and vegetation near the earth's surface, for example tree-planting and no-till farming (Daniels 2011). Under New South Wales GGAS, only forest carbon sequestration (Terrestrial sequestration) is an eligible abatement activity.
3. What constitutes an emerging good practice in accounting for emissions trading relating to carbon sequestration?

A review of literature in **Chapter 2** has indicated that the potential asset classifications for carbon credits are:

1) Inventory
2) Intangible Asset
3) Financial instrument

The applicable value and impairment testing of each alternative are attributed to the initial recognition and classification.

The potential asset classifications for carbon sinks are likely to be biological assets (follows IAS 41, AASB 141 Agriculture) and real property (forestland) Haller and Thoumi (2009).

**Chapter 3** explains the theoretical framework. The main branches of the institutional theory are isomorphism and decoupling. The institutional theory has defined coercive factors such as government rules and regulation and resource independence and normative factors such as professional association, influence adoption of accounting practices. Normative factors from academic credentials in recruiting managerial and staff personnel and from professional association, also, are influences exerted on accounting practices. The mimetic factors would influence accounting practice when the environment creates a symbolic uncertainty. Decoupling behaviour is addressed in this chapter. Decoupling is the gap between formal policy and actual organisational practice. Loose decoupling caused by casual indeterminacy, fragmented external environment or fragmented internal environment, is an effect exerted on the accounting policy of carbon credit providers while there are no formal guidelines in accounting for emission trading. Economic factors clearly exert on carbon credit providers accounting treatment. Economic factors also reside in those institutional factors as well. Since tree planting conveys an emotional message and symbolism to potential customers, the sustainability concept, therefore, is an indirect factor driving this business and accounting practice.

**Chapter 4** explains the Research Methodology and Methods. The researcher has conducted the research to address the research questions that have been formulated and meet the purposes of research objectives above. This research was conducted as qualitative research to
generate empirical evidence on the subject area. Hence the methodology of this research is based on a few case studies.

In terms of methods, firstly, the researcher reviewed related literature and financial statements in the annual reports of carbon credit providers in Australia from 2005-2012, then finalised the selected case companies and summarised the controversial accounting issues. Research questions were constructed and developed from these controversial accounting issues.

Secondly, CFO delegates and senior accounting professionals from case companies were invited to participate for in-depth interviews. This study has a prior written approval from the Business College Human Ethics Advisory Network (BCHEAN), RMIT University, so that the participants are ensured of their rights and privacy. They were asked to explain the underlying reasons for their accounting practices.

Thirdly, the controversial accounting issues from the accountant interviews were taken to the experts interview sessions.

Fourthly, experts in financial accounting were invited to participate in the in-depth interview sessions. The experts were asked to comment on the critical accounting issues and define their own preferences on accounting practices (if any).

Chapter 5 concludes the controversial accounting issues from case companies as follows:

Company M has created around 4 million carbon credits but their carbon credits business is a very minor segment. Its main business operation is timber. Accounting practice disclosed in notes to the financial statement did not represent the carbon credits business. There is no monetary value and no valuation of carbon credits in its financial statements. Furthermore, carbon sinks are included with other commercial plantations and no separate item is disclosed in financial statements. This is detrimental to the usefulness of financial reports. Thus, the researcher can’t assume if its accounting practices related to the carbon business are similar or different from the review of my literature.

Company H’s asset classification of both purchased and created carbon credits (as other assets) is not similar to any withdrawn guidelines (EIFT, IFRIC3, UIG3) or active US guidelines (GHG Protocol, PSP, FERC’s UofSA), nor audit firms discussion papers, nor survey results. Applicable value of carbon credits using FVTPL is not similar to any guidelines, surveys or discussion papers. Furthermore, H treats carbon sinks as Property, Plant and Equipment and it depreciated carbon sinks regularly. This treatments supports
Haller and Thoumi (2009) on forestland as the real property, though they did not directly define carbon sinks as forestland. Other intangible assets, such as NGAC accreditation, which has been amortising during the period of this study, and its depreciation method, are not similar to prior literature and have never been recommended in any guidelines. Revenue recognition of project establishment and management income using the percentage of completion method is an issue that hasn’t been discussed in prior literature. Forestry right was recognised in the early years.

Company V did not classify what type of asset carbon credits were. It disclosed related items under inventory and carbon development expenditure accounts. V’s inventories included plantations and seed stock but not carbon credits. The inventory model applied by V follows IAS 2 Inventory and supports EITF, IFRIC3, FERC’s UniofSA, GHG Protocol, and PSP. Also, this partially supports Deloitte (2007), Haller Thoumi (2009), Hamidi-Ravari (2012) and KPMG (2012). The terminology currently in use is diverse and changed annually. Carbon right and carbon covenant has never been disclosed or valued in its financial statements. Revenue recognition method was referred to AASB 111 Construction contracts.

The entire research outcome from secondary data can be concluded as the following accounting issues:

1. Asset classification of carbon credits and subsequent measurement.
2. Asset Classification of carbon sinks and subsequent measurement
3. Disclosure and Recognition of carbon sequestration license, forestry right, carbon right, carbon covenant
4. Impairment Testing of assets
5. Revenue recognition from planting project, management revenue.
6. Disclosure and Accounting policy changes

The interview questions were developed from the issues above.

Chapter 6 provides underlying reasons on why carbon credit providers apply these accounting practices in their annual accounts (Research Question 2) and Experts’ opinion on what constitute good emerging practices (Research Question 3).
Research Question 2: Why are the forest carbon credit providers motivated to choose a particular accounting method to report emission trading activities and carbon credit in their annual accounts?

M records carbon credits in finished goods and has treated carbon sinks as non-current biological assets. CFO delegates and senior accounting professionals of Company M point out that they maintain traditional accounting practices. They do not wish to create more accounting confusion since their principal function is operating as a state trading enterprise in the timber industry. This was the strong coercive influence exerted on their accounting practice. There was no monetary value and no separate accounts for carbon credits and carbon sinks. However, all interviewees identified this as a very minor and immaterial segment for them. However, one of the interviewees preferred carbon credits to be financial instruments since they can be traded in the market, another maintained the inventory model while the last defined carbon credits are real property right. In addition, all interviewees defined relevance and reliability as a qualitative characteristic of accounting information for carbon emissions trading.

Company H's CFO delegates and senior accounting professionals explained that their major segment/income is planting project revenue. This segment allows them to invest upfront payments by the customers. These projects therefore rely on resources paid for by customers and this is a strong coercive factor exerted on accounting practice. In addition, it minimises their risk and there is no need to invest in land or hold carbon sinks. Revenue is recognised by the percentage of completion method estimated by in-house foresters. Currently (2013), they don't bank carbon credits much. Carbon credits are recognised as other asset for their trading arm. This practice is not similar to any withdrawn guideline, nor any of EITF, FERC, IFRIC 3, UIGs, GHG Protocol, PSP and all surveys conducted in EU ETS. Forestry rights were disclosed because they signed an agreement to sell carbon credits to customers and H holds the plantation and forestry right by itself.

Applicable value is fair value through profit and loss (FVTPL) which is not similar to the prior literature and surveys that support the intangible asset model. This valuation is financial asset valuation. This is evidence of loose decoupling since H's initial recognition is other asset but it values other assets by FVTPL. FVTPL is the applicable value for financial
instrument. All interviewees preferred financial instrument as the asset classification for carbon credits.

H recognizes carbon sinks as property, plant and equipment since 2006. Before 1 January 2009, IAS 41 did not apply to investment in forest carbon sinks. Changes were made in the depreciation of carbon sinks and amortisation method of the NGAC license from 30 years to the unit of production basis. This change was due to there being more planting contacts secured with emitters and the straight-line method did not represent the real cost. This change was determined by in-house foresters. Furthermore, the foresters participate in the impairment testing of assets and estimate research and development costs with the accounting department as well. This is a strong normative factor exerted on the accounting estimate.

However, two interviewees from H preferred carbon credits to be a financial instrument to conform with ASIC's identification (2012), that carbon credits are financial products. They preferred to maintain carbon sinks as Property, Plant and Equipment. Moreover, they defined the concept of Verifiability, Understandability and Reliability as major qualitative characteristics of accounting for carbon emissions trading because they found these were what customers worry about. The senior accounting professional pointed out that carbon credits have physical substance and that they are verifiable by forest independent auditors. An unplanned surplus of carbon credits in the planting project is given away to the customer. H never experience shortfalls.

The CFO delegate from Company V maintains carbon credits in the form of carbon development expenditure (non-current asset) and inventory because of market uncertainty. He personally preferred this practice to be conservative. Impairment testing is conducted annually using the Government's Treasury Modelling in carbon pricing. This is the coercive influence exerted on accounting practice. Furthermore, V has hired a professional forest company as a consultant. This is evidence of normal factors from the forestry profession, the same as with M and H. Interviewees had a preference for verifiability as the most important qualitative characteristic of accounting for emissions trading because of customer's needs. The company adopts the same payment condition as H in planting contracts. Customers pay

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28 Federal Government's the Treasury Modelling informs policy design and public discussion about carbon pricing. A range of scenarios which explore different environmental targets and design features of a carbon pricing scheme are provided by the treasury.
at least 50% of the fee upfront and V will manage all processes for the customer. An unplanned surplus of carbon credits in the planting project is given away to the customer. The changes in the wording of the scope of inventory were attributed to it being in a new area and to changes of CFO. V never experience shortfalls. Purchased credits (if any) will be treated under inventory as well.

The disclosure level of listed companies (H and V), are higher than M (a state trading enterprise) because they are regulated by a different government agency (ASIC)

In conclusion, besides the government s rules and regulations, there is strong evidence that the accounting practice of forest carbon credit providers rely greatly on the forestry profession. Accounting estimates are all made by foresters. Company H and V, who provide a carbon planting service, also rely on funding from customer s prepayment. Regardless, the foresters must make estimates on the progress of planting.
Research Question 3: What constitutes an emerging good practice in accounting for emissions trading relating to carbon sequestration?

Six experts in financial reporting, consisting of five accounting scholars from Australian Universities and one auditor from an audit firm, were asked to comment on carbon credit provider’s accounting practices. The findings are as follows:

Qualitative characteristic of accounting information for carbon emission trading

Reliability and relevant are the most favoured concepts for all experts. The legislation gives rise to the financial effects. This concept is quite material to financial statements, particularly because there are no formal guidelines for carbon emissions trading. The entities may account for these financial effects in a different way, therefore, comparability is the other important concept in the experts’ view. All experts point out that the verifiability of carbon sequestration remains elusive. Therefore verifiability should be one of the (enhancing) qualitative characteristics of accounting information for carbon emission trading as well.

Carbon credits

While accountants preferred to treat carbon credits as inventory or financial instrument, as discussed in research question 2, experts in financial reporting preferred both financial instrument and intangible asset. The former suits the carbon market environment as defined by ASIC in that carbon credits are financial products and ASIC requires trader the Australian Financial Service License (AFSL) to trade in the Australian carbon market. This alternative is partially similar to Deloitte (2007) Hamidi-Ravari (2012) and KPMG (2012) on the ground that entities are holding carbon credit for sale.

Experts pointed out that, if carbon credits are financial instruments, the valuation at fair value through profit and loss (FVTPL) is appropriate for purchased credits. However, carbon credits do not meet the definition of financial instrument in IAS 39 (AASB 139) Financial Instrument: Recognition and Measurement in the context of a contractual relationship. In any country where cap-and-trade programs are implemented, granted/free allowances are assets received by statutory obligation, not a contractual relationship. Valuation at FVTPL,
therefore, is not an appropriate method for granted and free allowances as well. In any country where the securities commission does not provide identification on classification of carbon credits, the financial instrument model is not practical. One expert pointed out the reliability and accuracy of the reference price for FVTPL since the carbon market in Australia is relatively new and developing.

On the other hand, experts who preferred the intangible asset model pointed out that carbon credits are a right or permit to pollute and they have no physical substance. The nature of carbon credits is closer to the definition of intangible assets in accounting standards. This supports the withdrawn guidelines IFRICs, UIG3 five surveys conducted in Europe and is partially similar to Deloitte (2007) Haller Thoumi (2009) Hamidi-Ravari (2012). However, all experts agreed that impairment testing is a potential problem in this new market.

However, in whichever country that the carbon price is fixed, for example, in Australia from 2012-2015, carbon credits will not meet the definition of intangible asset, the non-monetary asset which has no fixed exchange cash value. In New Zealand, the fixed carbon price period ended in 2012, therefore, the intangible asset model is likely to be plausible.

One expert pointed out that the complexity and difficulties in accounting practices for emission trading is attributed to an unclear purpose in holding carbon credits on the emitter’s side. The emitter could hold emission allowances or carbon credits either for sale or for surrendering depending on management intent. The purpose of defining granted or free allowance under cap-and-trade program as Protocol options is to eliminate this limitation. These options, if enforceable, allow the emitter to exercise (register) as a financial instrument for sale in a spot market, otherwise relinquish to acquit their emission obligation.

Carbon sinks

One expert supports H’s treatment in Property, Plant and Equipment using the straight-line depreciation method for conservatism, the same as Haller and Thomi (2009). The remainder agree with non-current biological asset (IAS, AASB 41 Agriculture) because trees are growing, accumulating more and more value. Applicable value of both model at cost and current market value, respectively. However, experts maintain that it’s quite difficult to find a market price for carbon sinks in a new market. One expert pointed out the withdrawn
AASB 1037 Self-Generating and Regenerating Assets (SGARAs), as M had adopted, as the nearest standard for carbon sinks. However, IAS 41 or AASB 141 Agriculture did not apply to investment in forest carbon sinks until January 1, 2009. In fiscal years 2005-2008 H could not apply IAS 41 or AASB 141.

To the extent that M does not disclose or value carbon credits and carbon sinks clearly in its financial statements, experts point out that there might be an element of double counting since M is operating in the timber industry as an ordinary course of business. This is good information and M should disclose it. The classification of carbon sinks requires further accounting studies. In addition, experts pointed out that unplanned surplus carbon credits that companies are giving away were appreciating according to the concept of sustainability.

NGAC Accreditation License

Experts suggest the disclosure and capitalisation of this license because it creates economic benefit to companies. The depreciation method recommended by experts is the straight-line method. They point out that the amortisation method must be effective in the way that particular license must be consumed. In terms of the license, it should be consumed according to time.

Forestry Right, Carbon Right and Carbon Covenant

An expert suggests these rights should not be recognised at this stage due to the conservatism principle. There is no standard at the moment, companies should wait and see. Another expert pointed out that they could expense Carbon right and Carbon Covenant since they are not intangible. These is no value in the market at this stage unless this agreement is tradeable as an intangible asset. This expert maintains that they might be able sell to somebody else, then they can capitalise these rights. The rest of the experts agree with capitalising these rights and amortising them along with other licenses.

Revenue and Expense Recognition

Under a carbon planting contract, the customer made a prepayment upfront. H and V’s project revenue is recognised by the stage of completion method, while V refers to AASB
Construction Contract. Experts agree with this method, though their curiosity is aroused by the fact that trees are living assets but construction projects are non-living assets. Related important expenses came from the initial recognition of assets (carbon sinks, NGAC accreditation). Experts suggested the consistent amortisation method and the straight-line method are both plausible. The unit of production method would allow earning manipulations.

Impairment Testing

The experts agreed with H and V’s impairment testing method using Treasury Modelling\textsuperscript{29} to test impairment of its carbon sinks since this is standard information used by other firms as well. H is recognizing carbon sinks as Property, Plant and Equipment and depreciates them to match with revenue every year, thus, there was no impairment loss recognised. However, they review this with the auditor every year. In addition, FVTPL applied by H for the carbon credits in hand allowed more updated pricing of their stocks.

Disclosure and Accounting Estimate Change

Experts suggest full disclosure if possible. H’s changes in accounting estimates (depreciation method from 30 years to the unit of production basis) is fair enough since this is a new area and the company is on a learning curve. However, experts recommended the concept of consistency.

7.3 A Review of The Implications

The benefit of this study is to provide the potential emerging good practice in accounting for carbon emissions trading. This type of study has not been conducted on the scale of a PhD thesis. This thesis contributes to research knowledge on an empirical and theoretical level. The lessons to be learnt from this study, such as legislations, market conditions and accounting issues, seem to be relevant to a number of countries and include policy makers and players in the world economy and politics as governments. Accounting is a global

\textsuperscript{29} Federal Government’s the Treasury Modelling informs policy design and public discussion about carbon pricing. A range of scenarios which explore different environmental targets and design features of a carbon pricing scheme are provided by the treasury
business language. The research aims to contribute the neutral, faithful, true and view representation for accounting information in carbon markets worldwide. However, the law setters and policy makers in each country should provide legal and tax status for these emerging assets either.

7.4 Limitations of The study

The first limitation of this research relates to the limited number of case companies participating in this study. To access the in-depth full set of data in asset recognitions, subsequent measurement and impairment testing, the researcher focuses on companies who have been developing accounting systems on these issues. Therefore, market participants who produce carbon credits as a major operation have been taken into consideration. These companies have performed accounting practices and they are capable of providing the rationales for their transactions. Also, since these companies are holding both purchased and created carbon credits for sale, it is argued that they are potential interviewees for the qualitative research. Also, emitters annual reports had been reviewed but the researcher discovered only few companies disclosed policy in asset recognition in general. There is no accounting standard for emissions trading and carbon credits, therefore, there are no disclosure requirements for emitters as well. However, the major customers of forest carbon credit providers are emitters. These emitters now own created carbon credits from lower-emission generation and demand-side abatement. Also, they own forest carbon credits and carbon sinks but, for whatever reason, they haven't yet disclosed their minority assets. Thus, it's argued that this study is able to contribute to both buyers and sellers. Moreover, expert interviews were conducted to cross-check and uncover emerging good practice.

A second limitation is the potential difficulty in accessing expert interviewees. The research had contacted experts by every means, such as phone, email, mail, Facebook, Skype or personal contact. However, carbon emission trading is new area in accounting community. Many famous experts in financial reporting in professional accounting organisations, in accounting standard bodies and in leading audit firms, mostly refused to participate in interview sessions for reasons known only to them. In some cases, the researcher had to wait up to two months for their responses.
7.5 Application of The Research Outcome and Further Future Studies

- In absence of formal guidelines, emitters should classify their carbon credits as for sale or for surrendering before recognising them as asset. To be conservative, granted allowances under cap-and-trade program should be recognised at fair value only after the settlement of obligation. Carbon credit providers, who create carbon credits as their minor products, should recognise and value carbon credits when they can make a sale. Those who create carbon credits as their main product should recognise carbon credits created and recognise carbon sinks separately in the balance sheet.

- United Nations and Federal Governments should require emitters of registration granted/free carbon credits for a specific purpose, for example For sale and For surrender so as to eliminate difficulties/complexity in accounting treatment. In addition, under Cap-and Trade Programs, governments should allocate free carbon credits as Protocol options which can be exercised as financial instruments for sales.

- Standard setters, for example, the International Accounting Standard Board, should amend related existing standards IAS 38 Intangible Assets or IAS 39 - Financial Instruments: Recognition and Measurement, IAS 41 Agriculture and IAS 11 Construction Contract or issue a new specific standard to cover all emerging accounting transactions and for the comparability of both emitters and carbon credit providers. In the researcher's view, amendment of IAS 39 Financial Instruments makes more sense. If carbon credits are intangible assets under IAS 38 Intangible Assets, it is not practical when government prefers to control or manage carbon market equilibrium by launching a fixed price policy. Intangible assets are monetary assets that do not have fixed exchange cash value (IAS 38). In the researcher's point of view, issuance of a ‘Protocol Option’ for granted/free carbon credits and amendment of IAS 39 Financial Instruments: Recognition and Measurement for purchased carbon credit have potential.
7.6 Further Future Studies

Given limitations on the scope of research that can be conducted in one body of research, there are potential areas for further exploration. For example, we can contribute further to the financial accounting literature. Further research can be extended to management accounting practices. Finally, further theoretical contributions can be offered.

Further qualitative case studies in financial accounting could be conducted in other carbon credit creation businesses where carbon credits are created as major products through geologic and oceanic sequestration techniques. In particular, it is necessary that these companies have fully developed accounting practices around carbon emissions trading.

In addition, further financial accounting studies would be useful of different market participants in other countries such as European countries, China, US, Ecuador, Venezuela and New Zealand. For example, either emitters, traders or other producers can be analysed for their accounting practices. This research can be conducted using either qualitative case study approaches or quantitative methodology, such as surveys.

The further studies can be extended to carbon credit providers or liable emitters under different legislations (such as Carbon Farming Initiatives in Australia) and in different timeframes.

A managerial accounting perspective such as carbon accounting, emission reduction costing sustainability and integrated reporting approaches are also recommended. This area could also extend to issues associated with transfer pricing and taxation concerns between jurisdictions.

It is suggested that more work can be conducted to explore the changing institutional effects on this new market environment as it matures. In addition does a maturing carbon emissions trading market result in the emergence of different organisational forms? Further exploration of issues associated with disruptive institutional environments is recommended. Likewise, processes associated with developing rules and logic in new organisational fields would provide useful insights for further research.
Finally, given the findings of this thesis highlighted that it was not institutional factors alone that contributed to accounting practices (i.e. that economic influences and market forces contributed to accounting treatment) this research would benefit from further theoretical contributions relating to measurement and treatment criteria, share price reactions and potential for earnings management.

7.7 Chapter summary

The state trading enterprise maintains traditional accounting practice. There was no monetary value and no separate account for carbon credits and carbon sinks. Practitioners prefer to recognise carbon credits as financial instruments and inventory. Experts support intangible financial instrument and intangible asset model. All interviewees defined relevance and reliability as qualitative characteristics of accounting information for carbon emissions trading. The preferable applicable value for carbon credits is fair value through profit and loss (FVTPL) which is not similar to prior literature and surveys that support intangible asset model. Legislation, market conditions and accounting issues seem to be relevant to be a number of countries include policy makers and governments since accounting is a global business language.

In summary, the researcher hopes this thesis will provide a valuable contribution toward answering what constitutes good emerging practice in accounting for carbon emissions trading.
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Appendix 1

Carbon Emission Market

1. Introduction

Mainstream science on climate change advocates reducing global carbon emissions by 80 per cent. The world has begun to respond to this challenge in different ways, although a global solution remains elusive. The Kyoto Protocol, ratified by the United Nations Framework Convention on Climate Change (UNFCCC), aims to fight global warming over the five-year period of 2008-2012. The Protocol was initially adopted in December 1997; since October 2010, the 191 states that have ratified the protocol and accepted greenhouse gas emission reduction obligations either within their border or internationally must submit an annual greenhouse gas inventory during 2008-2012. The target is the reduction of greenhouse gas emission by an average of 5% below their 1990 levels (UNFCCC 2010). Attempts to produce a successor to the Kyoto Protocol are ongoing.30

The Protocol identifies 6 types of greenhouse gas (GHG) (see Figure 1). Thirty-nine industrialized countries and the European Union (termed Annex I countries) have undertaken to reduce their emission of four of these GHGs (carbon dioxide, methane, nitrous oxide, sulphur hexafluoride) and two compounds (hydrofluorocarbons and perfluorocarbons), and all member countries have given general commitments.31

30 In 2007, Heads of governments of a number of countries agreed in principle on the outline of a successor to the Kyoto Protocol (the Washington Declaration). They envisaged a global cap-and-trade system that would apply to both industrialized nations and developing countries, and hoped that this would be in place by 2009. On 7 June 2007, leaders at the 33rd G8 summit agreed that the G8 nations would "aim to at least halve global CO2 emissions by 2050". However, there has been a lack of progress in making a binding commitment or an extension of the Kyoto commitment period in climate talks; several further rounds of negotiation are occurring.
31 Annex I countries have agreed to reduce their collective GHG emissions by 5.2% from the 1991 level. National reduction targets range from 8% for the European Union to 7% for the US, 6% for Japan, and 0% for Russia, with permitted increases of 8% for Australia and 10% for Iceland.
Table 1 Types of Greenhouse Gas

<table>
<thead>
<tr>
<th>No.</th>
<th>Greenhouse Gas</th>
<th>Chemical Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Carbon dioxide</td>
<td>CO2</td>
</tr>
<tr>
<td>2</td>
<td>Methane</td>
<td>CH4</td>
</tr>
<tr>
<td>3</td>
<td>Nitrous oxide</td>
<td>N2O</td>
</tr>
<tr>
<td>4</td>
<td>Hydro-flourocarbons</td>
<td>HFCs</td>
</tr>
<tr>
<td>5</td>
<td>Perfluorocarbons</td>
<td>PFCs</td>
</tr>
<tr>
<td>6</td>
<td>Sulphur hexafluoride</td>
<td>SF6</td>
</tr>
</tbody>
</table>

The Protocol allows for several flexible mechanisms, such as emissions trading, the Clean Development Mechanism (CDM)\(^{32}\) and Joint Implementation (JI)\(^{33}\) to allow Annex I countries to meet their GHG emission limitations by purchasing GHG emission reduction credits from elsewhere, through financial exchanges, projects that reduce emissions in non-Annex I countries, from other Annex I countries, or from Annex I countries with excess allowances.

As part of the move to control carbon emissions, emission trading has become a market-based approach to achieving environmental improvement by providing economic incentives to participating organizations. This approach involves creating a situation where parties either buy permits for emission/speculation or sell credits for emission reduction/margin-making, as depicted in figure 1 below. Carbon credits (or certificates) have been traded since the 1990s in North America. Recently, the value of global carbon markets has been forecast to grow by 68% per year to $669 billion in 2013 (Reportlinker.com 2009). One carbon credit is equal to 1 tonne of carbon dioxide that would otherwise be released into the atmosphere.

\(^{32}\) CDM is a mechanism that has been put in place by the Kyoto Protocol to benefit entities that implement projects to reduce greenhouse gas emissions in developing countries.

\(^{33}\) JI is a mechanism that helps industrialized countries with binding greenhouse gas emissions targets to meet their obligations.
2. Carbon emission trading markets

Carbon will be the world’s biggest commodity market and it could become the world largest market overall, Louise Redshaw, Head of Environmental Market, Barclays Capital (2009).

As indicated in the chapters, carbon emissions trading markets are being established in a number of countries following ratification of the Kyoto Protocol. In general these markets are flourishing. This section provides an overview of how these markets—particularly the larger and better-established ones—operate. This is to contribute to a clearer understanding of the implications of carbon trading for accounting.

**European Union**

The European Union chose to use flexible mechanism certificates—both Certified Emission Reductions (CERs) from CDM and EU allowances—as compliance tools within their emissions trading system (IESC 2008). The European Union Emission Trading System (EU ETS) formerly the European Union Emission Trading Scheme commenced in January 2005, a few weeks prior to the date on which the Kyoto Protocol came into effect. The EU ETS, the largest multi-national, greenhouse gas emissions trading scheme in the world, works on the "cap and trade" principle as in the USA. The term cap refers to the limit placed on the amount of greenhouse gas that can be emitted by industrial operators. Within this emission cap, the governments of the EU Member States have established specific emissions targets in the form of National Allocation Plans (NAPs), which specify the allowances to be awarded to emitters in each regulated industry. At the end of every calendar

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The Scheme requires Member States to ensure that operators of industry installations and aircraft operators monitor and report their greenhouse gas emissions. In addition, it aims to help Member States achieve cheaper compliance with their Protocol commitments by letting participating companies buy or sell emission allowances.
year, each industrial operator must surrender its allowance to cover all of its actual annual emissions; otherwise, a penalty is imposed. If an organization successfully reduces its emissions, its allowance can be retained for future demand or, alternatively, can be sold to another company that has an allowance deficit.

In addition, credits generated by undertaking CO2 reduction projects outside the European Union in accordance with Kyoto Protocol rules are exchangeable with EU ETS allowances.

The EU adopted a phased approach to introducing its emissions trading scheme. Table 1 shows the three phases involved, and the features of the scheme.
### Table 2 Summary of EU Emission Trading System

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Nickname</td>
<td>Trial Phase</td>
<td>Commitment period</td>
<td>N/A</td>
</tr>
<tr>
<td>2 Banking of Allowances</td>
<td>Discretion of member states but almost not utilised</td>
<td>Allowed</td>
<td>Allowed</td>
</tr>
<tr>
<td>3 Emission coverage</td>
<td>CO2 emissions from Energy activities</td>
<td>CO2 emissions from glass, mineral wool, gypsum, flaring from offshore oil and gas production, petrochemicals, carbon black and integrated steelworks, Aviation</td>
<td>CO2 emissions from power and heat generation, Energy-intensive industry sectors including oil refineries, steel works and production of iron, aluminium, metals, cement, lime, glass, ceramics, pulp, paper, cardboard, acids and bulk organic chemicals, Commercial aviation Nitrous oxide (N2O) from production of nitric, adipic, glyoxal and glyoxylic acids Perfluorocarbons (PFCs) from aluminium production</td>
</tr>
<tr>
<td>4 Auction</td>
<td>up to 5% (95% by allocation)</td>
<td>up to 10% (90% by allocation)</td>
<td>More than 40%</td>
</tr>
<tr>
<td>5 A fine</td>
<td>40/tonne.</td>
<td>100/tonne.</td>
<td>100/tonne.</td>
</tr>
<tr>
<td>6 Allocation</td>
<td>Top-down</td>
<td>Top-down</td>
<td>Top-down</td>
</tr>
<tr>
<td>7 Use of JI and CDM Credit</td>
<td>Not allowed</td>
<td>Allowed up to 10% of Member states’ total allowance</td>
<td>N/A</td>
</tr>
<tr>
<td>9 Members</td>
<td>27 EU Member states</td>
<td>27 EU Member states, Iceland, Liechtenstein and Norway.</td>
<td>27 EU Member states, Iceland, Liechtenstein, Norway. And Croatia</td>
</tr>
<tr>
<td>10 Total EU emissions covered</td>
<td>40%</td>
<td>40%</td>
<td>45%</td>
</tr>
</tbody>
</table>

*Table 2 prepared from information extract from IESC (2008, 2013)*
As Table 2 indicates, Phase I—Trial phase ran from 1 January 2005 to 31 December 2007. This phase exclusively covered carbon dioxide emissions from energy activities (combustion installations with a rated thermal input exceeding 20MW, mineral oil refineries, coke ovens), production and processing of ferrous metals, mineral industry (cement clinker, glass and ceramic bricks) and pulp, paper and board activities. Trading volumes and prices per tonne of emission allowance fluctuated over the trial phase; in 2005 only 321 MtCO2e were traded, while in 2006 the trading volume increased 4 times to 1,101 MtCO2e. In 2007, the EU ETS trading volume was about 2,061 MtCO2e (IESC 2008). The price of emission allowance varied from 1/te CO2 to 32/te CO2 due to market confidence (House of Commons Environmental Audit Committee 2007).

In Phase I, a company that failed to surrender sufficient European emission allowances to its Government at the end of each yearly reconciliation period, faced a fine of 40/tonne. The rules allowed countries to auction up to 5% of their allowances. The World Wide Fund for Nature (WWF)36, which commissioned the Center for European Economic Research (ZEW), pointed out that emission trading reduces industry s cost of Kyoto compliance substantially and is far cheaper than most other options; non-trading would cost EU member states 79 billion Euros more than perfect emission trading. In Germany alone, 230-545 million Euros of benefit is expected from the emission market (IESC 2008; WWF 2008).

Thus, the learning phase of the EU ETS has proven that it is economically practicable. If the ETS had not been adopted, other more costly measures would have had to be implemented (Europa.eu 2005). Overnight the EU ETS created a pan-European market worth tens of billions of Euros and developed new challenges and opportunities for those companies within the scope of the scheme and the regulators overseeing it (IETA/PwC 2007). Conversely, from an efficiency perspective, there were insufficient data available to set the initial target emission. Emissions for each installation were estimated and led to over-allocation (Kettner et al. 2007; Ellerman & Buchner 2008; IESC 2008; Anderson & Maria 2010).

35 MtCO2e stands for Metric Tonne (ton) Carbon Dioxide Equivalent. This is the standard measurement of the amount of CO2 emissions that are reduced or secluded from our environment
36 A global organization acting locally through a network of family offices, to conserve nature and ecological processes through a combination of action on the ground, national and international advocacy work to establish appropriate policies, and international campaigns to highlight and demonstrate solutions to crucial environmental problems.
According to a study by Ellerman and Joskow, the first phase of the EU ETS provided a number of useful lessons such as:

- Suppliers quickly factor the price of emissions allowances into their pricing and output behaviours.
- The development of efficient allowance markets is facilitated by the frequent dissemination of information about emissions and allowance utilization.
- Allowance price volatility can be dampened by including allowance banking and borrowing and by allocating allowances for longer trading periods.
- The interaction between allowance allocation, allowance markets, and the unsettled state of electricity sector liberalization and regulation must be confronted as part of program design to avoid mistakes and unintended consequences (Ellerman & Joskow 2008).

In accounting perspective, there is no accounting standard or interpretation that deals specially with the accounting for emission permits or renewable energy certificates. Thus, organizations must choose from generally available principles. Yet a number of different accounting approaches have emerged and undermined the comparability of financial statements, making it harder for stakeholders to make appropriate decisions (Ernst&Young 2009).

Building on lessons from the first phase, the EU ETS Phase II ran from January, 2008 to December 2012. This second phase is known as the commitment period, and broadened to cover CO2 emissions from production of glass, mineral wool, gypsum, flaring from offshore oil and gas production, petrochemicals, carbon black and integrated steelworks (DECC 2010). In addition to Phase I, Nitrous oxide emissions from certain processes were also covered (Climate Action 2010). A company that failed to surrender sufficient European emission allowance at the end of the year was subject to a penalty of €100/tonne (IESC 2010). The number of allowances allocated in the National Allocation plans was reduced compared to Phase I, resulting in an undersupply of allowances. This potential additional demand might raise the market price of allowances. Consequently, companies had to decide whether to buy an allowance for surrendering or to take steps to reduce carbon emissions (Indermuehle 2008). In Phase II, the ETS rules allowed countries to auction up to 10% of allowances. They also allowed companies to use credits from JI and the CDM although to cover their emissions but only up to 10% of the Member state’s total allowances. Since
December 2010, the EU ETS has operated in 27 EU Member states, Iceland, Liechtenstein and Norway. The scheme includes Co2 and Nitrous oxide emission from more than 11,500 installations with a net heat excess of 20 MW. These installations account for almost 50% of the EU's CO2 emission and 40% of its total greenhouse gas emission (Europa.eu 2005). In 2012, the Aviation industry joined the scheme.

A study undertaken by Point Carbon Advisory Service to assess the potential and scale of windfall profit in the power sector in selected countries (UK, Germany, Spain, Italy and Poland) during the second phase of the EU Emissions Trading Scheme (ETS) has revealed the following.

- Windfall profits are highest in countries that have a high level of pass-through of CO2 costs into wholesale power prices, countries with emissions intensive (coal) plant setting the price the majority of the time, and countries that allocate the highest percentage of free allowances to the power sector.

- The generation systems more dominated by low-emitting technologies tend to have lower levels of profits, such as Spain (€1-4 billion);

- Windfall profits accrue due to the allocation of EUAs to generation free of charge. As such, this is due to a political decision, rather than due to any form of improper activity by individual generators.

- Providing a free allocation to individual plant that is carbon intensive does reduce the incentives provided by the scheme to invest in low emissions generation technology - thereby off-setting one of the main aims of the scheme. (PointCarbon 2008)

However, Lovell et al. (2010) argued that the 95% of emission allowances which have been allocated to date free of charge have affected accounting practices, with allowances typically being shown in account at nil value (on the basis of their cost).

Banking of allowances for future compliance or sale was at the discretion of Member States; however, almost all of them decided not to allow unlimited banking until Phase II of the ETS (Zapfel 2008).

In Phase III (2013-2020), the EU ETS will be further expanded to cover petrochemicals, ammonia and aluminium industries, as well as additional gases. In 2020, the EU ETS aims to have 21% lower emissions than in 2005 (Climate Action 2010) The plans for this phase include cutting GHG emissions by 20% below the 1990s emission levels and producing 20% of power from renewable sources. The ETS covers 50% of total EU emissions in this third phase. Cancellation of the National Allocation Plans (NAPs) is also part of Phase III. Another
development is that 60% of EU allowances will be auctioned in 2013; this percentage will be revised and increased later during the phase. Allowances from Phase II can be banked to this phase but cannot be borrowed.

As the above suggests:

EU ETS has already laid the ground work for other developed countries of the world to follow. What remains to be seen is how many countries show the will to help save our planet. (IESC 2008).

United States of America

The US senate refused to ratify the Kyoto protocol in 1997, reasoning that its requirement was a potential damage to the US economy, and that some other developing countries such as China and India were not required to comply with this protocol. However, the US Congress enacted the Clean Air Act (1990), the major environmental law to control air pollution on a national level. It defines the Environmental Protection Agency's (EPA) responsibilities for protecting and improving the nation's air quality and the stratospheric ozone layer.

Title IV of the Clean Air Act established the allowance market system known today as the Acid Rain Program, the first emission trading system in the world, which aims to reduce overall sulphur dioxide (SO2) emissions (the major cause of acid rain) to 50% of the 1980 levels. Similar to the EU ETS, the US Acid Rain Program distributes to each power plant a fixed number of emission allowances, each of which gives the owner the authority to emit [no more than] one tonne of SO2 at any time.

Like its subsequently implemented EU counterpart, the Acid Rain Program involved a phase-in approach. Phase I ran from 1995-1999 and mandated participation by the largest emitters of SO2—specifically, 263 sources at mostly coal-burning electricity plants (located primarily in Eastern and Midwestern states). The character and success of this phase were the fact that the aggregate number of allowances circulated every year was fixed or capped; therefore, the power industry had to plan for its SO2 emission control.

The legislation gave utilities a financial incentive to reduce their emissions below the required levels. Unused allowances derived from extra emission reduction permitted utilities to offset increases of their emission on other occasions. When it was least expensive to reduce emissions, the companies could optimize control by banking allowances for their future demand or for sale. Moreover, power companies had the incentive to find the lowest
cost of compliance. One crucial design of the SO2 Program was: if a party released excess emission in the first compliance period, then there needed to be an automatic deduction of emission from the subsequent compliance period (Aulisi et al. 2000).

This market-based approach, which succeeded on both environmental and economic grounds, led other emission trading programs in the US to address air pollutants, including oxides of Nitrogen (Nox) as well (Aulisi et al. 2000). Phase II of the Acid Rain Program began in January 2000, imposing more stringent emission limits on the emitters participating in Phase I, and covering all other coal-fired electricity-generating facilities with a capacity of greater than 25 megawatts and smaller ones using fuel with relatively high sulphur content. The allocation of emission allowances to Phase I sources was reduced by slightly over half at the onset of Phase II (Burtraw et al. 2005).

Several other emission trading programs emerged later in the US, such as RECLAIM (SO2 and Nox trading in 1994) and the NOx Budget Trading Program (in 2003). To serve these systems, several trading exchanges were initiated to cater to markets in Chicago (the Chicago Climate Exchange was launched in 2003 and closed at the end of 2010) and New York (Regional Greenhouse Gas Initiative, RGGI, launched in January 1, 2009). In 2006, the California Global Warming Solutions Act was introduced as a flexible mechanism using project-based offsets such as manure management, forestry, building energy, SF6, and landfill gas capture (California Environmental Protection Agency 2010). The Western Climate Initiative (WCI), a comprehensive effort and regional greenhouse gas emissions trading system, was established in February 2007 by seven US states and four Canadian provinces, with an aim to identify, evaluate, and implement policies to tackle climate change at a regional level, and especially to curb greenhouse gas emissions by 15% below the 2005 level by putting restrictions on the energy sector, large industrial plants and transportation (WCI 2010). In addition, the US House of Representatives passed the American Clean Energy and Security Act (H.R. 2454), a comprehensive national climate and energy legislation, on June 26, 2009, by a vote of 219-212. This Act involves the establishment of an economy-wide GHG cap-and-trade programme and complementary measures to build a clean-energy economy.
**Other Countries, excluding Australia**

Emission trading schemes have been established in other countries. For example, the New Zealand ETS was introduced in 2008 as a national all-sector, all-GHG uncapped scheme; the ETS puts a price on GHGs to provide an incentive to reduce emissions. The scheme covers the sectors of forestry, transport fuels, electricity production, synthetic gases, agriculture, waste and industrial processes. Emission units will be issued by free allocation to emitters, with no auctions in the short term. Under the scheme, participants with obligations are to acquire and surrender the New Zealand Unit (NZU), the primary unit of trade to cover each tonne of their direct greenhouse gas emission or the emission related to their products.

According to a 2008 study by Brears, participants in the NZ ETS address the following key issues:

- If it is going to be effective it needs to link with other schemes internationally, not operate in isolation, so as to enable firms to reduce emissions at the lowest abatement costs, which would result in less economic damage to the New Zealand economy.

- If international prices prove too volatile, the Government could initiate a two-staged pricing regime, with stage one setting a fixed price for NZUs, followed by stage two, where the economy is fully exposed to the international price of emissions.

- A concern shared by many interviewees is that the NZ ETS is too open to political interference; therefore, there needs to be an independent regulatory body overseeing the scheme to provide the certainty firms need to make capital investments. (Brears 2008)

During the transition phase (July 2010-December 2012), participants other than forest companies have to pay the government a fixed price of $25 or surrender only one NZU for every two tonnes of emission. After December 2012, participants will need to surrender one NZU per tonne of emission and the NZU’s price will be determined by market mechanisms (Climate Change Information New Zealand 2010)

Switzerland has ratified the Kyoto protocol, and its target for reducing GHG emissions between 2008 and 2012 is 8 per cent less than its 1990 emission levels. The Swiss ETS, established in 2008, aims at linking its national system with the EU ETS. Switzerland’s Federal Act on the Reduction of CO2 Emissions (CO2 Act, 2000) aims at reducing consumption of fossil-based energy (by 2010, CO2 emissions from these sources are to be reduced by 10% from the 1990 levels). Under the scheme, companies that assume a legally
binding commitment to reduce their energy-related CO2 emissions and thus accept a target for 2008-2012 will be exempted from the CO2 tax. The tax was initially at Swiss Franc 12 for each tonne of CO2 and was raised to Swiss Franc 36 in 2010 as the reduction targets had not been reached (FEON 2010). The tax acts as a sanction if CO2 reduction targets are not reached; these targets are legally binding for companies in the energy-intensive sectors, such as the cement, paper and pulp, glass and ceramics industries.

After negotiation of reduction targets, emission allowances are allocated to Swiss companies free of charge. Similar to the EU ETS, at the end of each year these companies must surrender their allowances to cover actual emissions; otherwise, a penalty is imposed. If, on the other hand, a company successfully reduces its emission, these allowances can be kept for future demand or else can be sold to other companies that are short of allowances. As a rule, the Kyoto Protocol allows flexible compliance; foreign certificates/allowances can be used to cover the reduction target. In addition, the Swiss ETS allows other private actors, such as traders and aggregators, to participate but they are required to maintain an account in the registry (FEON 2010).

The UK ETS was the world’s first economy-wide programme. The first phase of the UK ETS ended in December 2006, with final reconciliation of targets and actuals completed in March 2007, at which time it closed to Direct Participants. The latest version of the UK ETS consolidated rules was released in January 2010 (DECC 2010).

The Japanese Voluntary Emission Trading Scheme (JVEST) was established in 2008. It aims to seek measures for selected and cost-efficient emission reduction methods and to accumulate knowledge and experience in domestic ETS. Moreover, it provides economic incentives for corporations that make efforts to achieve reduction targets. Companies/facilities participate voluntarily by pledging concrete emission reduction targets and receiving emission allowances from the government. One-third of the cost of GHG reduction activities is subsidized by the government as an incentive, but if an organisation fails to achieve its target, the subsidy must be returned to the government.

JVEST is a facility-based scheme since the government selects target facilities from applicants based on the effectiveness of GHG reduction activity and then issues the tradable allowance (JPA) to each facility. The target facilities’ obligation is to submit the same amount of emission allowances as their actual GHG emission to the government. The target
facilities can trade excess JPAs to others or surrender them in order to acquit their future obligations; this encourages a reduction of energy consumption and cost on the part of the participant. The acquisition of know-how on domestic emission trading and the established CO2 emission calculation are also merits for scheme participants (Office of Market Mechanisms 2009). Furthermore, other credits/allowances under the Kyoto Protocol's mechanism are allowed to use in JVEST. Participants are allowed to transfer their excess of emission allowances to the next compliance year (SUDO 2006).

The Canadian Regulatory Framework for Air Emissions, established in 2010, allows two options for firms to meet their legal obligations; they can reduce their own emissions or use emission trading of SOx and NOx across 5 Canadian states under the Western Climate Initiative in conjunction with seven US states. Furthermore, the government is committed to reviewing the regulations on industrial air emissions every 5 years in order to assess progress in reaching medium- and long-term emission reduction objectives, with the first such review being in 2012 (Environment Canada 2007). In October, 2010, the government of British Columbia released the draft cap and trade regulations for public consultation. The proposed regulations established the rules for emission trading and offset projects in the province. The public consultation period was open until December 6, 2010. This emission trading and offset project are part of the province's commitment to the Western Climate Initiative (Canada Energy Law 2010).

South Korea, one of the largest polluters in Asia, legislated in November 2010 on plans to establish a domestic ETS by 2013. This 3-year trial cap-and-trade government-proposed scheme, which would include 641 private and public sector emitters, will be closely modeled on the EU ETS. The Korea Herald reported on November 2\textsuperscript{nd}, 2010, that the Ministry [of Environment] said last year that it will set up a platform at the Korea Exchange for more than 600 public and private organizations expected to participate.

Generally, each of the previously discussed schemes involves four dimensions, namely, (i) the type of approach involved; (ii) the point of allocation; (iii) the coverage; and (iv) the participation, whether voluntary or compulsory, as outlined below.

- Cap-and-trade or baseline and credit;
- Point of emission (bottom-up) or downstream (top-down) allocation;
• Sector-specific or economy-wide coverage; and
• Mandatory or voluntary participation.

Admittedly, there are three types of carbon credit/emission allowance:

• 1) those issued and granted by a government under cap-and-trade program;
• 2) those internally created by each organization and sold in emission trading schemes such as GGAS, the baseline and credit schemes (Ratnatuna et al. 2011).
• 3) those purchased from other emitters, creators or brokers

In addition, Hughes (2000) and Johnston et al. (2008), cited in Veith, Werner et al. (2009), state that economic effects of emission trading schemes have financial consequences for firms in the longer term. Australia has the second largest mandatory schemes in the world. New South Wales Greenhouse Gas Emission Reduction Schemes (GGAS), the base-line and credit schemes, are discussed in the next section.

2.2 The Australian Greenhouse Gas Reduction Scheme

In Australia, the Greenhouse Gas Reduction Scheme (GGAS)\textsuperscript{37} commenced in 2003, one of the first of its kind in the world. Emission trading under the GGAS currently covers certificate trading and associated activities relating to carbon dioxide and its equivalents. The scheme imposes state-wide benchmarks on electricity providers and certain other parties in NSW and the ACT to abate the emission of greenhouse gases. Coal-fired electricity providers, together with much of the industry generating Australia’s export income, account for the majority of carbon emissions in Australia, the latter extending beyond domestic emissions.

One abatement certificate (equivalent to allowance or credit in other markets) represents the equivalent of one tonne of carbon dioxide that would otherwise be released into the atmosphere. Each benchmark participant is required to surrender abatement certificates to offset the excess emission resulting from their operations, or else be subject to a penalty of AU$14.00 per tCO\textsubscript{2}-e (GGAS 2010). In addition, cross-state surrendering is allowed between NSW and ACT. Benchmark participants (electricity generators) are allowed to be abatement certificate providers (ACPs) or sellers as well.

\textsuperscript{37} Formerly the Greenhouse Gas Abatement Scheme, the re-named scheme retains its original acronym.
Abatement certificate providers who have been approved by the scheme's administrator as eligible for NSW Greenhouse Gas Abatement Certificates (NGACs) are permitted to handle one or more of these activities:

- low-emission generation of electricity (including cogeneration) or improvements in emission intensity of existing activities;
- perform any activities that reduce their electricity consumption (Demand Side Abatement: DSA); and
- capture carbon from the atmosphere in forest (carbon sequestration).

Benchmark participants (buyers) can purchase abatement certificates from ACPs so as to acquit their obligation under the schemes; in contrast, ACPs can turn their abatement certificates into currency at the fair value in the NGAC market. The certificates (allowances) thus can be both self-generated and purchased. There is no expiry date for the certificates, once created. However, the GGAS requires producers to register their created abatement certificates within 6 months of the end of each calendar year's activities or the certificates will be invalid (GGAS 2010). Any oversupply of certificates may be used to respond to future demand, as previously mentioned.

However, emitters are allowed to register as abatement certificate providers (APCs) and can perform both lower-emission generation and reduce energy consumption (DSA). Moreover, emitters could invest in other carbon sequestration projects such as forest carbon sinks (terrestrial sequestration) to create forest carbon credits. Their investments are highlighted in case companies' portfolios in Chapter 5 Case Sites Background: Analysing Archival Data to Address Research Question 1. Emitters are main customers of our case companies (Forest ACPs). On the other hand, forest ACPs who perform forest carbon sequestrations can create, buy and sell all type of carbon credits from emitters as well.

To date, carbon trading has had major implications for the Australian economy and its future prosperity. Over 248 million certificates were traded in since 2003 (GGAS 2013) as shown in Table 3 below, a figure likely to grow significantly in line with the predicted growth in global carbon trading activity. Garnaut (2011) maintains that this attempt to mitigate global warming through market-based carbon pricing is a distinct advantage. Revenue from this carbon emission trading scheme can be used to buffer the transition to a lower-emission economy, especially for low- and middle-income households.
Given also the increasingly important issue of climate change for global survival, financial reporting issues in the area of carbon emission trading represent an important topic for study. Indeed, Bebbington and Larrinaga-Gonzalez (2008) maintain that different actions developed to tackle global climate change, such as carbon markets, have accounting and reporting implications that deserve the research of accounting academics.

2.3 Accounting Issues from Australian Carbon Emission Trading

In the two previous sections, carbon emission trading markets, both domestic and international, were described and discussed in order to set the scene for what is to follow. The current section introduces the notion of accounting for carbon emission trading activities of the Australian emission trading schemes, the first cornerstone of Australia’s climate change initiatives.

In Australia, many corporations are now opting to disclose their carbon emissions or are claiming to be carbon-neutral. Why companies might choose to voluntarily report their emission trading activities and assign economic numbers to Abatement Certificate transactions is an interesting question. What determines such reporting behaviour? To what extent is it the result of pressure on management to conform to societal expectations as well as those of professional accounting associations?
The introduction of emission trading schemes also raises the question of how participating entities should record and report, in financial terms, their trading activities and the values of abatement certificates held. Moreover, if a formal reporting requirement is established, this would require legitimate forms of assurance for stakeholders (Simnett 2008). Despite significant growth in the global carbon emission trading market, international accounting practices in the area remain diverse. Attempts by the US Financial Accounting Standards Board (FASB) and the IASB to provide guidance have been unsuccessful (Fornaro et al. 2009).

In Australia, there is currently no formal guidance from accounting standard-setters on how to account for permits and obligations issued under emission trading schemes (ETS). As a result, there is considerable variation in accounting practice (Deloitte, 2008). Indeed, CPA Australia found that, in the absence of a relevant accounting standard or interpretation, there is a similar level of divergence in the accounting practices of Australian GGAS emitters to that found in other countries. The resultant lack of comparability of financial statements has the potential to negatively impact the decision making of users—an outcome not consistent with the objective of financial reporting (CPA Australia 2009).

It needs to be borne in mind that we are not devoid of accounting guidance. According to the International Accounting Standard Board (IASB) and Australian Accounting Standard Board (AASB)’s conceptual framework for financial reporting, promulgated in April 2001, financial information should have 4 qualitative characteristics—understandability, relevance, reliability and comparability. These qualitative characteristics are espoused on the grounds that they make the information provided in financial statements useful to users. In addition, financial statements are prepared to meet the common needs of users as well as showing the results of the stewardship/accountability of management for the resources entrusted to it. The accrual basis of accounting and the going-concern concept underpin the conceptual framework and arguably are as relevant in account for carbon trading activities as in other areas of industry. However, there are issues relating to carbon trading that make the accounting approach unique.

**Carbon Sequestration in Australia**

Carbon sequestration is the process of capturing/removing/absorbing Carbon Dioxide (CO2) from the atmosphere. Daniels (2011) claims that there are at least three potential means to
keep CO2 out of the atmosphere: 1. Pumping the CO2 into the deep ocean (oceanic sequestration); 2. Binding CO2 in soil and vegetation near the earth's surface, for example, tree-planting and no-till farming (Terrestrial sequestration); and 3. Capturing CO2 from a stationary source, such as a power plant or coal-to-syngas plant, and burying into the subsurface (geologic sequestration).

Under the Australian GGAS, Abatement Certificate Providers can create certificates by performing 3 activities indicated in the previous section, but only Carbon sequestration firms create them as their main products. In relation to carbon sequestration, approximately 4 million certificates were created by Australian ACPs during the period of January 2004 to June 2012 (GGAS Registry 2012), a figure likely to continue to grow significantly in line with the predicted growth in global carbon trading activity.

In addition, these abatement certificate/carbon credit providers are supplying Australia's voluntary markets as well. Their customers include aviation business, as well as water, energy and mining corporations, *inter alia*.

Given also the increasingly important issue of climate change for global survival, financial reporting issues in the area of carbon emission trading constitute an important topic for study.

Financial reporting of carbon sequestration companies corresponds to their financial position and performance because carbon sequestration is an ordinary course of their business. The rate at which carbon is sequestered through forestry is dependent upon many factors including plant species, rainfall levels and soil conditions (GGAS 2003). Carbon sequestration through forestry is closely related to accounting issues because abatement certificates derived are seemingly agricultural products with no physical substance. Figure 2 depicts the typical stocks of carbon achieved through the planting of a permanent forest.

![Figure 2. Permanent forest carbon storage, GGAS (2003)](image-url)
GGAS 2003 suggests that ACPs achieve permanent carbon storage by rotating the harvest plantations in the sequestration pool, depending on the scale of forestry activities. Figure 3 depicts how a rotation of planting and harvesting can maintain a permanent volume of carbon storage. The horizontal line in the chart is the permanent level of carbon stocks maintained in the sequestration pool if ACPs have numerous plantations growing and being harvested at the time intervals (shown by the curves in this chart).

![Figure 3 Plant-grow-harvest carbon storage, GGAS (2003)](image)

GGAS allows the banking of NGACs. The timing of accounting treatment and reporting is to be based on management’s judgment, raising the possibility of considerable variation in accounting practice.

From an accounting perspective, the abatement certificate might be classified as an inventory, an intangible asset or some other type of asset on the Balance Sheet. In the absence of an accounting standard on carbon emission trading, it would be hardly possible for a benchmark participant or ACPs to determine the accounting method adopted, a situation where an unclear financial position and financial performance may arise.

Voluntary market in Australia included carbon sequestration in Greenhouse Friendly Program. The emitters such as airlines or individuals would voluntarily offset carbon footprint by tree planting. In addition, they can buy forest carbon credit from both mandatory and voluntary market.

In July 1, 2012, the Clean Energy Package was introduced. Behr et al. (2012) pointed out that this cap-and-trade system is not so much criticised in the emission limits but with regard to its
broader coverage (economy wide approach) includes power generation, transport, industrial process, waste and forestry sector. However, it allows unlimited access to international carbon credits in Clean Development Program (CDP) and Joint Implementation (JI). Carbon Farming Initiatives (Carbon Credits Schemes) is the one legislation under Clean Energy Package that allows farmers and landholders to earn carbon credits from emission reduction or carbon stock on their land. These activities include Capturing piggery methane, Capturing landfill gas, Environmental plantings. Case companies in this study are participating these schemes to expand their business to international level. The accreditation process and their business model are presented in interviewee’s excerpts in chapter 6 too.
Appendix 2:

The Current Accounting Practice of Forest Carbon Credit Providers

In order to obtain information on current accounting practice of forest abatement certificate providers, the researcher reviewed their financial statements from 2005-2011, which are presented below:

1. Company M

**M’s Accounting practice of the financial year ending 2005**

The group disclosed accounting policies related to its carbon credits, as follows:

1. Asset type
   
   It disclosed carbon credits under Self-Generating and Regenerating Assets (SGARAs) - Non-current Assets

2. Applicable Value
   
   Figure 1 Note 1 (e, ii) to Financial Statement, below, shows that the group had not yet recognised the valuation of these potential SGARAs, as reliable estimation and measurement had not been established.

   Figure 1 Note 1 (e,ii) to Financial statements
   (Non-Current Valuation of Self-Generating and Regenerating Assets)
3. Revenue and Expense Recognition

There was no separate item of revenue from sales of carbon credits, as shown in Figure 2 Note 2 to Financial Statement. Revenue from sales of carbon credits was included in related operating activities. Its scope is displayed in Figure 3 Note 1(s) to Financial Statement below.

Figure 2 Note 2 to Financial Performance

<table>
<thead>
<tr>
<th>Revenue</th>
<th>Notes</th>
<th>2005/$’000</th>
<th>2004/$’000</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) from timber related operating activities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Royalties from sale of timber and related products</td>
<td></td>
<td>128,188</td>
<td>130,782</td>
</tr>
<tr>
<td>Contract Harvest and Haulage</td>
<td></td>
<td>78,364</td>
<td>68,522</td>
</tr>
<tr>
<td></td>
<td></td>
<td>206,552</td>
<td>199,304</td>
</tr>
<tr>
<td>b) from other operating activities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community Service Obligations</td>
<td></td>
<td>9,557</td>
<td>9,455</td>
</tr>
<tr>
<td>Other Services Rendered</td>
<td></td>
<td>18,101</td>
<td>19,661</td>
</tr>
<tr>
<td>Interest received</td>
<td></td>
<td>400</td>
<td>335</td>
</tr>
<tr>
<td>Rental of premises</td>
<td></td>
<td>2,954</td>
<td>2,702</td>
</tr>
<tr>
<td>Sale of non-current assets</td>
<td></td>
<td>20,071</td>
<td>4,396</td>
</tr>
<tr>
<td>State Government Capital Grants</td>
<td></td>
<td>-</td>
<td>3,957</td>
</tr>
<tr>
<td>Other State Government Grants</td>
<td></td>
<td>6,769</td>
<td>4,759</td>
</tr>
<tr>
<td></td>
<td></td>
<td>57,872</td>
<td>45,287</td>
</tr>
<tr>
<td>Total Revenue</td>
<td></td>
<td>264,424</td>
<td>244,591</td>
</tr>
</tbody>
</table>

Figure 3 Note 1(s) to Financial Statements

No expenses related to carbon credit production were disclosed in the note to financial statement.

M’s Accounting practice of the financial year ending 2006

The group disclosed accounting policies related to its carbon credits, as follows:

1. Asset type

Company M recognised unsold carbon credits as inventory as shown in Figure 4 Note1(h) to Financial Statements, but did not present its value, as in Figure 5 Note 7  Financial Statement.
2. Applicable Value

As shown in Figure 4 Note 1(h) to Financial Statements above, carbon credits were classified as inventory at the lower of cost or net realizable value, but no monetary value was presented, as in Figure 5 Note 7 Financial Statement.

However, M did not recognise carbon sinks as a separate category from general plantations, but it valued Hardwood and Softwood plantations for timber, based on the following criteria as shown in Figure 6 Note 1 (g, iii) to Financial Statement.
3. Revenue and Expense Recognition

No revenue and expenses related to carbon credits were disclosed in the note to financial statements this year because no sale was made.

M s Accounting practice of the financial year ending 2007

The group disclosed accounting policies related to its carbon credits, as follows:

1. Asset type

Similar to previous financial year, the group recognised unsold carbon credits as inventory, as shown in Figure 7 Note 1(h) to Financial Statements, but no monetary value was presented, as in Figure 8 Note 7 Financial Statement.
2. Applicable Value
Carbon credits were classified as inventory at the lower of cost or net realizable value, as depicted in Figure 7 Note 1(h) to Financial Statements above; however, the group did not disclose monetary value of these carbon credits, as presented in Figure 8 Note 7 Financial Statement. In addition, it did not disclose valuation policy for plantations or carbon sinks but valued Hardwood and Softwood plantations for timber, based on the following criteria as shown in Figure 9 Note 1 (g, iii) to Financial Statement.
3. Revenue and Expense Recognition

There was no separate revenue item from sales of carbon credits, as depicted in Figure 10 Note 3 to Financial Statement.

In addition, expenses related to carbon credits were mentioned in the note to financial statements this year.

**M's Accounting practice of the financial year ending 2008**

The group disclosed accounting policies related to its carbon credits, as follows:

1. Asset type

Similar to previous financial year, the group recognised unsold carbon credits as inventory, as shown in Figure 11 Note 1(h) to Financial Statements, but no monetary value was presented, as in Figure 12 Note 7 Financial Statement.
2. Applicable Value
Carbon credits were classified as inventory at the lower of cost or net realizable value, as depicted in Figure 11 Note 1(h) to Financial Statements above; however, Company M did not disclose the monetary value of these carbon credits, as in Figure 12 Note 7 Financial Statement. In addition, it did not mention a specific valuation policy for carbon sinks but valued Hardwood and Softwood plantations for timber, based on the following criteria as shown in Figure 13 Note 1 (g. iii) to Financial Statement.
3. Revenue and Expense Recognition

No revenue and expenses related to sales of carbon credits were disclosed in the note to financial statements this year. Sales of timber and related activities were recognised when products passed control and reached consumers.

M’s Accounting practice of the financial year ending 2009

The group disclosed accounting policies related to its carbon credits, as follows:
1. Asset type

Figure 14 Note 1(j) to Financial Statements

Figure 15 Note 12 Financial Statement
Similar to previous financial year, the group recognised unsold carbon credits as inventory, as shown in Figure 14 Note 1(j) to Financial Statements, but no monetary value was presented, as in Figure 15 Note 12 Financial Statement.

2. Applicable Value
Carbon credits were classified as inventory at the lower of cost or net realizable value, as shown in Figure 14 Note 1(j) to Financial Statements above.

In addition, the group did not mention a specific valuation policy for carbon sink. However, in order to fairly determine the value of Hardwood and Softwood plantations, the group replaced the net market value method with the discounted cash flow approach, as shown in Figure 16 Note 3 to Financial Statements below.

3. Revenue and Expense Recognition
There was no record indicating sales of carbon credits in this financial year. No revenue and expenses related to sales of carbon credits were disclosed in the note to financial statements this year. Sales of timber and related activities were recognised when the significant risks and rewards of ownership transferred to the buyer, as illustrated in Figure 17 Note 5 to Financial Statement.
M's Accounting practice of the financial year ending 2010

In this year, Company M disclosed accounting policies related to its carbon credits, as follows:

1. Asset type

The group recognised unsold carbon credits as inventory, as shown in Figure 18 Note1(j) to Financial Statements below, but no monetary value was disclosed, as in Figure 19 Note 11 Financial Statement below.

Figure 18 Note 1(j) to Financial Statements

Figure 19 Note 11 Financial Statement
2. Applicable Value

Carbon credits were classified as inventory at the lower of cost or net realizable value, as shown in Figure 18 Note 1(j) to Financial Statements above.

In addition, the group did not mention a specific valuation policy for carbon sink, but used the discounted cash flow approach to fairly determine the value of Hardwood and Softwood, as depicted in Figure 20 Note 1 (h, ii) to Financial Statements below.

3. Revenue and Expense Recognition

There was no separate revenue item from the sales of carbon credits, as shown in Figure 21 Note 5 to Financial Statement.
In addition, there was no separate expense item for the cost of carbon credits incurred, either. Sales of timber and related activities were recognised when the significant risks and rewards of ownership transferred to the buyer.

**M’s Accounting practice of the financial year ending 2011**

In this year, Company M disclosed accounting policies related to its unsold carbon credits, as follows:

1. **Asset type**

   The group recognised unsold carbon credits as inventory, as shown in Figure 22 Note 1(j) to Financial Statements above, but no monetary value was disclosed, as in Figure 23 Note 11 Financial Statement.

   Figure 22 Note 1(j) to Financial Statements

   ![Figure 22 Note 1(j) to Financial Statements](image)

   Figure 23 Note 11 to Financial Statements

   ![Figure 23 Note 11 to Financial Statements](image)

2. **Applicable Value**

   Carbon credits were classified as inventory at the lower of cost or net realizable value, as shown in Figure 22 Note 1(j) to Financial Statements above.

   In addition, the group did not mention a specific valuation policy for carbon sink, but used the discounted cash flow approach to fairly determine the value of Hardwood and Softwood, as depicted in Figure 24 Note 1 (i, ii) to Financial Statements below.

   ![Figure 24 Note 1 (i, ii) to Financial Statements](image)
3. Revenue and Expense Recognition

There was no separate revenue item from the sales of carbon credits worth $6.3 million in this year, as shown in Figure 25 Note 5 to Financial Statement.

Sales of timber and related activities were recognised when the significant risks and rewards of ownership transferred to the buyer. In addition, there was no separate expense item for the cost of carbon credits incurred.
<table>
<thead>
<tr>
<th>Accounting Issue</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Asset Type</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intangible asset</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Carbon credits</td>
<td>SGARAs</td>
<td>Inventory</td>
<td>Inventory</td>
<td>Inventory</td>
<td>Inventory</td>
<td>Inventory</td>
<td>Inventory</td>
</tr>
<tr>
<td>Carbon sink/plantations</td>
<td>SGARAs</td>
<td>Biological Assets (AASB 141 Agriculture)</td>
<td>Biological Assets (AASB 141 Agriculture)</td>
<td>Biological Assets (AASB 141 Agriculture)</td>
<td>Biological Assets (AASB 141 Agriculture)</td>
<td>Biological Assets (AASB 141 Agriculture)</td>
<td>Biological Assets (AASB 141 Agriculture)</td>
</tr>
<tr>
<td>Forestry right</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><strong>2. Applicable Value and Valuation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory</td>
<td>The lower of cost or net realizable value</td>
<td>The lower of cost or net realizable value</td>
<td>The lower of cost or net realizable value</td>
<td>The lower of cost or net realizable value</td>
<td>The lower of cost or net realizable value</td>
<td>The lower of cost or net realizable value</td>
<td>The lower of cost or net realizable value</td>
</tr>
<tr>
<td>Intangible asset</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Carbon credits</td>
<td>No recognition</td>
<td>The lower of cost or net realizable value (Inventory)</td>
<td>The lower of cost or net realizable value (Inventory)</td>
<td>The lower of cost or net realizable value (Inventory)</td>
<td>The lower of cost or net realizable value (Inventory)</td>
<td>The lower of cost or net realizable value (Inventory)</td>
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</tr>
<tr>
<td>Carbon sink</td>
<td>None, For timber, Hardwood-historical cost, Softwood-Net market value model, Native Forest-Net market value model at the reporting date</td>
<td>None, For timber, Hardwood and Softwood-Net market value model, Native Forest-Net market value model at the reporting date (Fair value was determined using discount cash flow approach)</td>
<td>None, For timber, Hardwood and Softwood-Net market value model, Native Forest-Net market value model at the reporting date (Fair value was determined using discount cash flow approach)</td>
<td>None, For timber, Hardwood and Softwood-Net market value model, Native Forest-Net market value model at the reporting date (Fair value was determined using discount cash flow approach)</td>
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<td>None, For timber, Hardwood and Softwood-Net market value model, Native Forest-Net market value model at the reporting date (Fair value was determined using discount cash flow approach)</td>
<td>None, For timber, Hardwood and Softwood-Net market value model, Native Forest-Net market value model at the reporting date (Fair value was determined using discount cash flow approach)</td>
</tr>
</tbody>
</table>

Table 1: Summary of M’s Accounting Practice from 2005-2011
Table 1: Summary of M's Accounting Practice from 2005-2011 (continued)

<table>
<thead>
<tr>
<th>Accounting Issue</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Applicable Value and Valuation</td>
<td>Forestry Right</td>
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<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>3. Revenue and Expense Recognition</td>
<td>Revenue</td>
<td>Sales of timber and related activities - when control of goods passed to customer</td>
<td>Sales of timber and related activities - when control of goods passed to customer</td>
<td>Sales of timber and related activities - when the significant risks and rewards of ownership transferred to the buyer.</td>
<td>Sales of timber and related activities - when the significant risks and rewards of ownership transferred to the buyer.</td>
<td>Sales of timber and related activities - when the significant risks and rewards of ownership transferred to the buyer.</td>
<td>Sales of timber and related activities - when the significant risks and rewards of ownership transferred to the buyer.</td>
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<tr>
<td></td>
<td>Research and Development cost</td>
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<td>None</td>
<td>None</td>
<td>None</td>
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<td>None</td>
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<tr>
<td></td>
<td>Amortization of NGAC</td>
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<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Depreciation of Carbon sinks</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Revaluation of Environmental credits</td>
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<td>None</td>
<td>None</td>
<td>None</td>
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<tr>
<td></td>
<td>Impairment testing of assets</td>
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<td>None</td>
<td>None</td>
<td>None</td>
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<td>None</td>
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<tr>
<td>4. Disclosure and Changes in Accounting Policy</td>
<td>No disclosure of monetary value of carbon credits, Classification of carbon credits</td>
<td>No disclosure of monetary value of carbon credits. The valuation process of plantation was changed from liquidation to discount cash flow approach (Following Auditor-General Financial audit qualification)</td>
<td>No disclosure of monetary value of carbon credits.</td>
<td>No disclosure of monetary value of carbon credits. Wording in revenue recognition policy for sales of timber and related activities</td>
<td>No disclosure of monetary value of carbon credits</td>
<td>No disclosure of monetary value of carbon credits</td>
<td>No disclosure of monetary value of carbon credits</td>
</tr>
</tbody>
</table>
2. Company H Limited

H’s accounting practice for the financial year ending 2005

This company provided the following information as assumptions of its financial reporting.

1. Asset Type: The company did not disclose carbon credit-related information under its Current Assets, as shown in Figure 26.

![Figure 26 The balance sheet as of June 30th, 2005](image)

The terms Other in Figure 26 and Other Current Assets in Figure 27 Note 8 refer to prepayments (upfront payments) received from customers.

![Figure 27: Note 8 to Financial Statements as at June 30th, 2005](image)

1.1 Inventories
There were no inventories disclosed in this financial year. However, the group disclosed the scope and definition of The inventories, as shown in Figure 28 Note 1 (m) to Financial Statements.
1.2 Intangible Asset

The group reclassified the capitalized research and development cost as intangible assets due to the impact of the adoption of A-IFRS on the financial performance for the financial year ending on 30 June 2005, as illustrated in Figure 29 Note 1 (b) to Financial Statement.

2. Applicable Value and Valuation

As shown in Figure 28 Note 1 (m) to Financial Statements above, the company considers the inventories at the lower of cost and net realizable value in relation to the accounting standard. The cost-estimation formula for most inventories is on the first-in first-out basis. It is noted that costs are related to fixed and variable overhead expenses.

3. Revenue and Expense Recognition

There are two categories of revenue as shown in Figure 30 Note 2 to Financial Statement, but there was no revenue from carbon credit trading or planting in this financial year.
The group recognised research and development costs as an expense, as shown in Figure 32 Note 1 (v) to Financial Statement. In addition, previously incurred unamortized research and development costs are reviewed regularly.
**Figure 32 Note 1 (v) Research and Development Cost**

Research and development costs are recognised as an expense when incurred, except to the extent that such costs, together with unamortised deferred costs in relation to that project, are expected, beyond any reasonable doubt, to be recoverable.

Any deferred research and development costs are amortised over the period in which the corresponding benefits are expected to arise, commencing with the commercial production of the product.

The unamortised balance of research and development costs deferred in previous periods is reviewed regularly and at each reporting date to ensure the criterion for deferral continues to be met. Where such costs are no longer considered recoverable, they are written-off as an expense in net profit or loss.

**H's accounting practice for the financial year ending 2006**

1. **Asset Type:**

**Figure 33 Balance Sheet as at June 30th, 2006**

<table>
<thead>
<tr>
<th>Note</th>
<th>CONSOLIDATED</th>
<th>COMPANY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2006</td>
<td>2005</td>
</tr>
<tr>
<td><strong>Current assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>4,664,254</td>
<td>9,068,488</td>
</tr>
<tr>
<td>Trade and other receivables</td>
<td>874,713</td>
<td>21,227</td>
</tr>
<tr>
<td>Other financial assets</td>
<td>773</td>
<td>5,681</td>
</tr>
<tr>
<td>Other</td>
<td>1,151,016</td>
<td>44,489</td>
</tr>
<tr>
<td><strong>Total current assets</strong></td>
<td>6,890,756</td>
<td>9,139,885</td>
</tr>
<tr>
<td><strong>Non-current assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other financial assets - investments</td>
<td>1,048,242</td>
<td>668,745</td>
</tr>
<tr>
<td>Intangible assets</td>
<td>4,606,893</td>
<td>2,220,117</td>
</tr>
<tr>
<td>Deferred tax assets</td>
<td>408,380</td>
<td>603,086</td>
</tr>
<tr>
<td>Inventory</td>
<td>1,290,072</td>
<td>1,269,668</td>
</tr>
<tr>
<td>Other</td>
<td>291,847</td>
<td>153,569</td>
</tr>
<tr>
<td><strong>Total non-current assets</strong></td>
<td>7,669,424</td>
<td>4,939,185</td>
</tr>
<tr>
<td><strong>Total assets</strong></td>
<td>14,360,190</td>
<td>14,079,070</td>
</tr>
</tbody>
</table>
1.1 Property, Plant and Equipment
As can be seen in Figure 33 and Figure 34 Note 1 (n) and Figure 35 Note 11 to financial statements, this was the first financial year the company included forestry rights and plantation projects (Carbon Sink) in the Property, Plant and Equipment category. No depreciation/disposal was recognised during this the period.

Figure 34 Note 1 (n) Property, Plant and Equipment

Figure 35 Note 11 to Financial Statements

1.2 Other current assets
In addition, as shown in Figure 36 Note 9 to Financial Statement, the forestry right, which would be sold shortly, was presented under Other Current Assets. There was no clear policy on the valuation forestry right, and such transactions were subject to the terms and conditions of contracts secured with its customers.
1.3 Intangible Assets

An adoption of A-IFRS requires reclassification of capitalized research and development costs, CO2 projects and NGAC accreditation as intangible assets.

**NGAC Accreditation** will be amortized on a straight-line basis over its useful economic life of 30 years. Impairment losses were recognised in this period to restate the financial statements, as shown in Figure 37 Note 12 below.

Figure 37 Note 12 to Financial Statements

1.3 Non-Current Inventory

As displayed in Figure 38 Note 13 to Financial Statements, the group recognised only seeds under its non-current inventory.
2. Applicable Value

2.1 Inventory

The group recognised seeds as a cost on the inventory.

2.2 Forestry Rights and Plantations

The group recognised forestry rights and plantations as a historical cost, as shown in Figure 39 Note 1 (p) Property Plant and Equipment.

Figure 39 Note 1 (p) to Financial Statements

The group, Company H, disclosed revenue recognition criteria for sales of goods, rendered services and revenue through dividends and interests. Planting revenue was recognised according to the stage of contract completion.

4. Impairment of assets

Company H disclosed accounting policies on impairment of assets are as follows.
(g) Impairment of assets

At each reporting date, and wherever there is an indication that the asset may be impaired, the consolidated entity reviews the carrying amounts of its tangible and intangible assets to determine whether there is any indication that those assets have suffered an impairment loss. If any such indication exists, the recoverable amount of the asset is estimated in order to determine the extent of the impairment loss (if any). Where the asset does not generate cash flows that are independent from other assets, the consolidated entity estimates the recoverable amount of the cash-generating unit to which the asset belongs.

Recoverable amount is the higher of fair value less costs to sell and value in use. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset for which the estimates of future cash flows have not been adjusted.

If the recoverable amount of an asset (or cash-generating unit) is estimated to be less than its carrying amount, the carrying amount of the asset (cash-generating unit) is reduced to its recoverable amount. An impairment loss is recognised in profit or loss immediately, unless the relevant asset is carried at fair value, in which case the impairment loss is treated as a revaluation decrease to the extent that there is a previous revaluation reserve to absorb the decrease (refer note 1(n)).

Where an impairment loss subsequently reverses, the carrying amount of the asset (cash-generating unit) is increased to the revised estimate of its recoverable amount, but only to the extent that the increased carrying amount does not exceed the carrying amount that would have been determined had no impairment loss been recognised for the asset (cash-generating unit) in prior years. A reversal of an impairment loss is recognised in profit or loss immediately, unless the relevant asset is carried at fair value, in which case the reversal of the impairment loss is treated as a revaluation increase (refer note 1(n)).
1. Asset Type

During the financial year ending in 2007, the company recognised the assets related to carbon emission trading, as shown in Figure 41 Balance Sheet.

1.1 Inventories

In this year, the inventories including seeds and carbon sinks under Asset Development are recognised under current assets. The definition and scope of the inventories are provided in Figure 42 Note 1 (j) to Financial Statements and Figure 43 Note 12: Current Assets Inventories, respectively.
1.2 Carbon Credits

This financial year the group generated its first carbon credits from its H™ Carbon Sequestration Program. Thus, it recognised for the first time in its annual account carbon credits under other current assets, as depicted in Figure 44 Note 13 to Financial Statement.
1.3 Intangible Assets

The group recognised research and development costs and NGAC accreditation as intangible assets. Besides, as Figure 45 Note 1 (m) to Financial Statement illustrates, the useful economic life of NGAC accreditation was extended from 30 years as stipulated in the financial year 2006 statement to an infinite useful economic life as stipulated in the financial year 2007 statement.
1.4 Carbon sinks

Completed carbon sinks, recognised under Property, Plant and Equipment, were written off during this financial year.

2. Applicable Value

2.1 Inventory
In this financial year, the inventories categorised seeds and carbon sinks under Asset Development. Seeds and carbon sinks were also recognised at the lower of cost and net realizable value, as in Figure 42 Note 1 (j) to Financial Statements. In addition, weighted-average cost formula was applied to individual item.

2.2 Other related assets

As Figure 44 Note 13 to Financial Statement illustrates, there was no clear policy on valuation of carbon credits, and carbon sinks were stated as a historical cost.

3. Revenue and Expense Recognition

3.1 Revenue

Shown in Figure 47 Note 5 to Financial Statement, Project and Development Fees and Sales of Carbon Credits were recognised as Sale Revenue, the revenue from major continuing business activities. Moreover, carbon sink project management fees were recognised as Other revenue.

![Figure 47 Note 5 to Financial Statements](image)

In addition, the company's policy of revenue recognition is presented in Figure 48 Note 1 (d) to Financial Statements.
3.2 Expenses

The expenses of the company’s carbon sequestration business were costs related to research and development, which were recognised as expenses, as depicted in Figure 49 below.

4. Impairment of assets

Company H’s disclosed accounting policies on impairment of assets are as follows.
(g) Impairment of assets

At each reporting date, and wherever there is an indication that the asset may be impaired, the consolidated entity reviews the carrying amounts of its tangible and intangible assets to determine whether there is any indication that those assets have suffered an impairment loss. If any such indication exists, the recoverable amount of the asset is estimated in order to determine the extent of the impairment loss (if any). Where the asset does not generate cash flows that are independent from other assets, the consolidated entity estimates the recoverable amount of the cash-generating unit to which the asset belongs.

Recoverable amount is the higher of fair value less costs to sell and value in use. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset for which the estimates of future cash flows have not been adjusted.

If the recoverable amount of an asset (or cash-generating unit) is estimated to be less than its carrying amount, the carrying amount of the asset (cash-generating unit) is reduced to its recoverable amount. An impairment loss is recognised in profit or loss immediately, unless the relevant asset is carried at fair value, in which case the impairment loss is treated as a revaluation decrease to the extent that there is a previous revaluation reserve to absorb the decrease (refer note 1(n)).

Where an impairment loss subsequently reverses, the carrying amount of the asset (cash-generating unit) is increased to the revised estimate of its recoverable amount, but only to the extent that the increased carrying amount does not exceed the carrying amount that would have been determined had no impairment loss been recognised for the asset (cash-generating unit) in prior years. A reversal of an impairment loss is recognised in profit or loss immediately, unless the relevant asset is carried at fair value, in which case the reversal of the impairment loss is treated as a revaluation increase (refer note 1(n)).
H s accounting practice for the financial year ending 2008

Figure 51 Balance Sheet as at June 30th, 2008

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Current assets</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>4,198,689</td>
<td>3,295,841</td>
<td>2,641,324</td>
<td>2,142,135</td>
</tr>
<tr>
<td>Trade and other receivables</td>
<td>668,721</td>
<td>401,199</td>
<td>17,705</td>
<td>31,742</td>
</tr>
<tr>
<td>Inventories</td>
<td>2,877,077</td>
<td>1,496,992</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other current assets</td>
<td>145,957</td>
<td>93,058</td>
<td>18,678</td>
<td>29,506</td>
</tr>
<tr>
<td>Accrued income</td>
<td>2,854,908</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total current assets</td>
<td>10,745,352</td>
<td>5,287,090</td>
<td>2,677,707</td>
<td>2,203,383</td>
</tr>
<tr>
<td>Non-current assets</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other financial assets - investments</td>
<td>1,095,638</td>
<td>1,478,790</td>
<td>20,121,758</td>
<td>18,790,973</td>
</tr>
<tr>
<td>Property, plant and equipment</td>
<td>5,788,276</td>
<td>5,641,744</td>
<td>45,341</td>
<td>37,589</td>
</tr>
<tr>
<td>Deferred tax assets</td>
<td>2,215,713</td>
<td>1,138,351</td>
<td>747,356</td>
<td>335,999</td>
</tr>
<tr>
<td>Intangible assets</td>
<td>407,029</td>
<td>468,380</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total non-current assets</td>
<td>9,506,656</td>
<td>8,667,465</td>
<td>20,914,455</td>
<td>19,164,561</td>
</tr>
<tr>
<td>Total assets</td>
<td>20,252,008</td>
<td>13,954,555</td>
<td>23,592,162</td>
<td>21,367,944</td>
</tr>
</tbody>
</table>

1 Asset Type

The group recognised the following assets of their carbon business.

1.1 Inventories

Like in the previous year, 2008's inventories included seeds and carbon sinks under development. The definition, scope and valuation of the inventories are provided in Figure 52 Note 1 (j) to Financial Statements, and in Figure 53 Note 11 to Financial Statement.

Figure 52 Note 1 (j) to Financial Statements
1.2 Carbon Credits

Purchased carbon credits were recognised under other current assets, as in Figure 54 Note 12 to Financial Statement.

1.3 Intangible Assets

As depicted in Figure 55 Note 1 m (i) to Financial Statement, the group recognised costs incurred on development projects and NGAC accreditation as intangible assets.
1.4 Carbon sinks

The group recognised carbon sinks under Property, Plant and Equipment, as shown in Figure 56 Note 15 to Financial Statement.

Figure 56 Note 15 to Financial Statements

<table>
<thead>
<tr>
<th>Consolidated</th>
<th>Freehold land</th>
<th>Plant and equipment</th>
<th>Leasehold improvements</th>
<th>Leased plant &amp; equipment</th>
<th>Carbon sinks</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>At 1 July 2006</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost</td>
<td>203,237</td>
<td>22,620</td>
<td>320,063</td>
<td>3,841,767</td>
<td>4,387,689</td>
<td>97,508</td>
</tr>
<tr>
<td>Accumulated depreciation</td>
<td>(47,583)</td>
<td>(589)</td>
<td>(45,336)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Year ended 30 June 2007</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opening net book amount</td>
<td>-</td>
<td>22,031</td>
<td>270,729</td>
<td>3,841,767</td>
<td>4,290,181</td>
<td></td>
</tr>
<tr>
<td>Additions</td>
<td>20,679</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disposals</td>
<td>(1,409)</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plantation costs written off</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reclassified from assets held for sale</td>
<td>973,733</td>
<td>-</td>
<td>(43,782)</td>
<td>(585)</td>
<td>673,733</td>
<td></td>
</tr>
<tr>
<td>Depreciation charge</td>
<td>-</td>
<td>(565)</td>
<td>(64,013)</td>
<td>-</td>
<td>(108,360)</td>
<td></td>
</tr>
<tr>
<td>Closing net book amount</td>
<td>973,733</td>
<td>131,142</td>
<td>21,466</td>
<td>206,716</td>
<td>4,386,687</td>
<td>5,641,744</td>
</tr>
<tr>
<td><strong>At 30 June 2007</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost</td>
<td>973,733</td>
<td>219,875</td>
<td>320,063</td>
<td>4,308,687</td>
<td>5,844,988</td>
<td></td>
</tr>
<tr>
<td>Accumulated depreciation</td>
<td>(88,733)</td>
<td>(1,514)</td>
<td>(113,349)</td>
<td>-</td>
<td>(203,236)</td>
<td></td>
</tr>
<tr>
<td>Net book amount</td>
<td>973,733</td>
<td>131,142</td>
<td>21,466</td>
<td>206,716</td>
<td>4,308,687</td>
<td>5,641,744</td>
</tr>
</tbody>
</table>

2. Applicable Value

2.1 Inventory
The inventories included seeds and carbon sinks under development, just like in the previous year. They were stated at the lower of cost and net realizable value, as depicted in Figure 57 Note 1 (j) to Financial Statements. In addition, weighted-average cost formula was applied to individual items.

2.2 Carbon credits

Carbon credits in this financial year were identified as purchased carbon credits bought from the spot market; thus, it was stated at a fair market value.

2.3 Carbon sinks

Carbon sinks were stated at historical cost minus accumulated depreciation and impairment, just like other items under Property, Plant and Equipment, as shown in Figure 58 Note 1 (l) to Financial Statement.

2.4 Other related assets

In this financial year, no forestry rights were disclosed.

3. Revenue and Expense Recognition

3.1 Revenue
The group recognised Project and Development Fee, Sales of Carbon Credits and Carbon Sink project management fees as Sales Revenue, as depicted in Figure 59 Note 5 to Financial Statement.

Figure 59 Note 5 to Financial Statements

Furthermore, the definition and scope of revenue were also supplied, as in Figure 60 Note 1 to Financial Statement.

Figure 60 Note 1 to Financial Statements

3.2 Expense

As shown in Figure 61 Note 7 to Financial Statement, the group recognised research expenditures as expenses incurred. Moreover, it amortized carbon sinks for the first time based on the unit of production, as shown in Figure 61, and Figure 62 Note 1 (i) to Financial Statement.
4. Impairment of asset

Company H has disclosed accounting policies on impairment of assets, as follows:

Figure 63 Note 1(g) to Financial Statements
**H's accounting practice for the financial year ending 2009**

Figure 64 illustrates Company H's Balance Sheet for the financial year 2009.

Figure 64 Balance Sheet as at June 30th, 2009

<table>
<thead>
<tr>
<th>ASSET TYPE</th>
<th>Notes</th>
<th>Consolidated</th>
<th>Parent Entity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>30 June 2009 $</td>
<td>30 June 2008 $</td>
</tr>
<tr>
<td><strong>ASSETS</strong></td>
<td></td>
<td>30 June 2009 $</td>
<td>30 June 2008 $</td>
</tr>
<tr>
<td>Current assets</td>
<td></td>
<td>12,964,810</td>
<td>10,748,362</td>
</tr>
<tr>
<td><strong>Cash and cash equivalents</strong></td>
<td>9</td>
<td>8,735,396</td>
<td>4,198,689</td>
</tr>
<tr>
<td><strong>Trade and other receivables</strong></td>
<td>10</td>
<td>2,523,021</td>
<td>668,024</td>
</tr>
<tr>
<td><strong>Inventories</strong></td>
<td>11</td>
<td>3,084,798</td>
<td>2,877,077</td>
</tr>
<tr>
<td><strong>Other current assets</strong></td>
<td>12</td>
<td>236,016</td>
<td>146,644</td>
</tr>
<tr>
<td><strong>Accrued income</strong></td>
<td>13</td>
<td>644,879</td>
<td>2,884,908</td>
</tr>
<tr>
<td><strong>Total current assets</strong></td>
<td></td>
<td>12,964,810</td>
<td>10,748,362</td>
</tr>
<tr>
<td>Non-current assets</td>
<td></td>
<td>7,089,936</td>
<td>2,877,077</td>
</tr>
<tr>
<td><strong>Other financial assets - Investments</strong></td>
<td>14</td>
<td>313,593</td>
<td>1,095,638</td>
</tr>
<tr>
<td>Property, plant and equipment</td>
<td>15</td>
<td>5,304,374</td>
<td>5,788,276</td>
</tr>
<tr>
<td>Deferred tax assets</td>
<td>16</td>
<td>512,024</td>
<td>2,215,713</td>
</tr>
<tr>
<td>Intangible assets</td>
<td>17</td>
<td>7,126,862</td>
<td>407,029</td>
</tr>
<tr>
<td><strong>Total non-current assets</strong></td>
<td></td>
<td>13,287,335</td>
<td>9,506,656</td>
</tr>
<tr>
<td><strong>Total assets</strong></td>
<td></td>
<td>26,221,953</td>
<td>20,252,008</td>
</tr>
</tbody>
</table>

1 Asset Type

With reference to Figure 64 Balance Sheet as at June 30th, 2009, the group recognised the following assets from its continuing operation.

1.1 Inventories

As shown in Figure 65 Note 11 to Financial Statement, the inventories included seeds and carbon sinks under development, like in the previous year.
The definition, scope, valuation and formula of the inventories are provided in Figure 66 Note 1 (k) to Financial Statements above.

1.2 Carbon Credits

In Figure 67 Note 12 to Financial Statement, carbon credits in this financial year were identified as purchased carbon credits bought from the spot market; thus, it was stated at a fair market value.
1.3 Intangible Assets

Intangible assets in this group's carbon sequestration plantation business included research and development costs and NGAC Accreditation, the license to create carbon credits by forest carbon sequestration. Figure Note1 (n) to Financial Statements describes the scope and definition of research and development costs, whilst Figure 68 Note 1 (iv) to financial Statement provides the definition, scope and recognition criteria of NGAC accreditation.
1.4 Carbon sinks

The group recognised carbon sinks as Property, Plant and Equipment, as shown in Figure 70 Note 15 to Financial Statement.

2. Applicable Value

2.1 Inventory
In the financial year 2009, the inventories were included seeds and carbon sinks under development, like in the previous year. They were stated at the lower of cost and net realizable value, as shown in Figure 71 Note 1 (k) to Financial Statements. In addition, weighted-average cost formula was applied to individual items.

![Figure 71 Note 1 (k) to Financial Statements](image)

2.2 Carbon credits

Figure 67 and Figure 70 Note 15 to Financial Statement demonstrate that, like in the previous year, no clear policies on valuation of carbon credits were presented.

2.3 Carbon sinks

Carbon sinks were stated at historical cost minus accumulated depreciation and impairment, as shown in Figure 72 Note 1 (m) to Financial Statement.

![Figure 72 Note 1 (m) to Financial Statement](image)

2.4 Other related assets

No forestry rights were disclosed in this financial year.
3. Revenue and Expense Recognition

3.1 Revenue

The group provided the criteria for recognizing revenue from carbon sequestration plantation services, as shown in Figure 73 Note 1 (d) to Financial Statements. The estimation of stage of completion for each project was made by management.

Figure 73 Note 1 (d) to Financial Statements

In Figure 74 Note 5 to Financial Statement, the group recognised project development fees, sales of carbon credits and carbon sinks project management fees under Sales Revenue, in the same way as in the financial year 2008.

Figure 74 Note 5 to Financial Statements

3.2 Expenses

As shown in Figure 75, Note 1 (m) to Financial Statements shows that the group depreciated carbon sinks on the production unit basis, just like in the previous financial year.
The group commenced NGAC Accreditation based on the unit of production in this year, as shown in Figure 69 Note 1 (n, iv) to Financial Statements and Figure 76 Note 7 to Financial Statements.

4. Impairment of assets

H has disclosed the following accounting policies on impairment of assets.
(h) Impairment of assets

Intangible assets that have an indefinite useful life are not subject to amortisation and are tested annually for impairment, or more frequently if events or changes in circumstances indicate that they might be impaired. Other assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. An impairment loss is recognised for the amount by which the asset's carrying amount exceeds its recoverable amount. The recoverable amount is the higher of an asset's fair value less costs to sell and value in use. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset. For the purposes of assessing impairment, assets are grouped at the lowest levels for which there are separately identifiable cash inflows which are largely independent of the cash inflows from other assets or groups of assets (cash-generating units). Non-financial assets that suffered an impairment are reviewed for possible reversal of the impairment at each reporting date.
With reference to Figure 78 Balance Sheet as at September 30\textsuperscript{th}, 2010, the group recognised the following assets from its continuing operation.

1.1 Inventories

As shown in Figure 79 Note 11 to Financial Statement, the inventories included seeds and carbon sinks under development, like in the previous year.
1.2 Intangible Assets

The group recognised research and development costs and NGAC Accreditation as intangible assets, as depicted in Figure 80 Note 1 (n, i) and Figure 81 Note 1 (n, iv) to Financial Statements below.

Figure 80 Note 1 (n, i) to Financial Statements
1.3 Carbon credits
Purchased carbon credits were recognised under other current assets, as depicted in Figure 82 Note 12 to Financial Statement.

1.4 Carbon sinks
The group recognised carbon sinks as Property, Plant and Equipment, like in the previous financial year.
2. Applicable Value

2.1 Inventories

The inventories included seeds and carbon sinks under development, which is stated at the lower of cost and net realizable value. Weighted average cost formula was applied to individual items, as shown in Figure 84 Note 1 (k) to Financial Statement.

Figure 84 Note 1 (k) to Financial Statements

2.2 Carbon credits

There was no clear policy about the valuation of purchased carbon credits, as shown in Figure 82 Note 12 to Financial Statement (under Other Current Assets).

2.3 Carbon sinks

The carbon sinks, treated as Property, Plant and Equipment, were stated at historical cost less accumulated depreciation and impairment, as shown in Figure 85 Note 1 (m) to Financial Statement.
2.4 Other related assets

No forestry rights were disclosed in this financial year.

3. Revenue and Expense Recognition

3.1 Revenue

The components of revenue were listed in Figure 86 Note 5 to Financial Statement.

The group recognised its revenue from continuing operation. Management's estimation of the stage of completion of each project is shown in Figure 87 Note 3 (i) to Financial Statement below.
The group provided a detailed policy of revenue recognition, as shown in Figure 88 Note 1 (d) to Financial Statements above.

3.2 Expenses

As displayed in Figure 89 Note 1 (n) to Financial Statements, the group recognised research expenditures as expenses incurred.
In addition, Figure 90 Note 1 (m) to Financial Statements below shows that the group depreciated carbon sinks based on the unit of production, like in the previous financial year.

Figure 91 Note 7 to Financial Statements below depicts depreciation and amortization of carbon sinks and NGAC accreditation in the 15 months leading to the 30th September of the financial year 2010.
4. Impairment of assets

H has disclosed the following accounting policies on impairment of assets.
1. Asset type

According to Figure 93 Balance Sheet as at September 30th, 2011, the group recognised the following assets from its continuing operation.

1.1 Inventories

As shown in Figure 94 Note 11 to Financial Statement above, the inventories included seeds and carbon sinks underdevelopment, like in the previous year.
In this financial year, the group replaced the term Carbon credits with Environmental credits for the first time.

1.2 Intangible Assets

In this financial year, the group recognised research and development costs and NGAC Accreditation as intangible assets, as shown in Figure 95 Note 1 (n, i) and Figure 96 Note 1 (n, iv) to Financial Statements below.

Figure 95 Note 1 (n, i) to Financial Statements

```
(i) Research and development
Research expenditure is recognised as an expense as incurred. Costs incurred on development projects (relating to the design and testing of new or improved products) are recognised as intangible assets when it is probable that the project will, after considering its commercial and technical feasibility, be completed and generate future economic benefits and its costs can be measured reliably. The expenditure capitalised comprises all directly attributable costs, including costs of materials, services, direct labour and an appropriate proportion of overheads. Other development expenditures that do not meet these criteria are recognised as an expense as incurred. Development costs previously recognised as an expense are not recognised as an asset in a subsequent period. Capitalised development costs are recorded as intangible assets and amortised from the point at which the asset is ready for use on a straight line basis over its useful life.
```

Figure 96 Note 1 (n, iv) to Financial Statements

```
(iv) NGAC Accreditation
The accreditation under the New South Wales Greenhouse Gas Abatement Scheme (NSWGGAS) allows the Group to generate revenues from any single project and is transferrable between projects at no significant additional cost. During 2011 the Carbon Farming Initiative (CFI) received Royal Assent and the Clean Energy Bill passed through the House of Representatives. The CFI has not yet commenced and the Group will review the options available once they are known. In the meantime, management continues the amortisation of the intangible asset on a unit of production basis.
```
1.3 Carbon credits/Environmental credits

Figure 97 Note 12 to Financial Statements

The group substituted the term Environmental credits for the term Carbon credits, as shown in Figure 97 Note 12 to Financial Statement.

1.4 Carbon sinks

Figure 98 Note 15 to Financial Statements

In Figure 98 Note 15 to Financial Statement above, the group recognised carbon sinks as Property, Plant and Equipment, like in the year before.

2. Applicable Value

2.1 Inventories
In this financial year, the inventories included seeds and carbon sinks under development, which were stated at the lower of cost and net realizable value, just like in the year before. Weighted average cost formula was applied to individual items, as shown in Figure 99 Note 1 (k) to Financial Statement.

2.2 Carbon credits/Environmental Credits

Environmental credits were stated as having a fair value through profit and loss (FVTPL), as shown in Figure 100 Note 12 to Financial Statement (Other Current Assets).

2.3 Carbon sinks
The carbon sinks was treated as Property, Plant and Equipment, which were stated at historical cost less accumulated depreciation and impairment, as shown in Figure 101 Note 1 (m) to Financial Statement above.

2.4 Other related assets

There were no forestry rights disclosed in this financial year.

3. Revenue and Expense Recognition

3.1 Revenue

The group’s revenue from major operations was disclosed, as detailed in Figure 102 Note 5 to Financial Statement.

In this financial year, the group changed the term Sales of Carbon Credits to Sale of Environmental Credits. The group recognised its project revenue according to the stage of
completion of each project as estimated by management, as shown in Figure 103 Note 3 (i) to Financial Statement below.

Figure 103 Note 3 (i) to Financial Statements

The group detailed its policy of revenue recognition, as shown in Figure 104 Note 1 (d) to Financial Statements above.

3.2 Expenses

Figure 105 Note 1 (n) to Financial Statements shows that the group recognised research expenditures as expenses incurred.
Figure 105 Note 1 (n) to Financial Statements

Figure 106 Note 7 to Financial Statements below shows the group’s depreciation of carbon sinks and amortization of NGAC accreditation in the financial year 2011.

Figure 106 Note 7 to Financial Statements
According to Figure 107 Note 1 (m) to Financial Statements below, the group depreciated carbon sinks using the method based on the unit of production, like in the previous financial year.

![Figure 107 Note 1 (m) to Financial Statements](image1)

NGAC Accreditation was continuously amortized on the unit-of-production basis, like in the previous year, as explained in Figure 108 Note 1 (n, iv) to Financial Statements.

![Figure 108 Note 1 (n, iv) to Financial Statements](image2)

4. Impairment of asset

H has disclosed the following accounting policy on the impairment of assets.
(h) Impairment of assets

Intangible assets that have an indefinite useful life are not subject to amortisation and are tested annually for impairment, or more frequently if events or changes in circumstances indicate that they might be impaired. Other assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. An impairment loss is recognised for the amount by which the asset’s carrying amount exceeds its recoverable amount. The recoverable amount is the higher of an asset’s fair value less costs to sell and value in use. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset. For the purposes of assessing impairment, assets are grouped at the lowest levels for which there are separately identifiable cash inflows which are largely independent of the cash inflows from other assets or groups of assets (cash generating units). Non-financial assets that suffered an impairment are reviewed for possible reversal of the impairment at each reporting date.
H disclosed its policy on historical cost convention, as explained below.

Figure 111 Note 1 (iii) to Financial Statements

(iii) Historical cost convention

These financial statements have been prepared under the historical cost convention, as modified by the revaluation of available-for-sale financial assets, financial assets and liabilities (including derivative instruments) at fair value through profit or loss.

1. Asset type

According to Figure 110 Consolidated Balance Sheet as at September 30\textsuperscript{th}, 2012, the group recognised the following assets from its continuing operation.

1.1 Inventories
As shown in Figure 112 Note 11 to Financial Statement above, the inventories included seeds and carbon sinks underdevelopment, like in the previous year.

1.2 Intangible Assets

In this financial year, the group recognised development costs and NGAC Accreditation as intangible assets, as shown in Figure 113 Note 18, Figure 114 Note 1 (P, i) and Figure 115 Note 1 (V) to Financial Statements below.

![Figure 113 Note 18 to Financial Statements](image)

![Figure 114 Note 1 P (i) to Financial Statement](image)
1.2 Carbon credits/Environmental credits

Figure 116 Note 12 to Financial Statement
H did not stock created carbon credits at the end of fiscal year 2012.

1.4 Carbon sinks

Figure 117 Note 16 to Financial Statement

In Figure 118 Note 16 to Financial Statement above, the group recognised carbon sinks as Property, Plant and Equipment, like in the previous year. Impairment testing had been introduced in this fiscal year, as stated in Figure 119 Note 16 A, Recoverability of Carbon Sinks.

Figure 118 Note 16 A, Recoverability of Carbon Sinks

2. Applicable Value

2.1 Inventories

In this financial year, the inventories included seeds and carbon sinks under development, and stated them at the lower of cost and net realizable value, like in the previous year. Weighted average cost formula was applied to individual items, as shown in Figure 119 Note 1 (M) to Financial Statement.
2.2 Carbon credits/Environmental Credits

Purchased carbon credits and other environmental credits were stated at fair value through profit and loss (FVTPL), as shown in Figure 120 Note 12 (i) to Financial Statement (Other Current Assets).

2.3 Carbon sinks

The carbon sinks was treated as Property, Plant and Equipment, and were stated at historical cost less accumulated depreciation and impairment, as shown in Figure 121 Note 1 (O) to Financial Statement above.
2.4 Other related assets

There were no forestry rights disclosed in this financial year.

3. Revenue and Expense Recognition

3.1 Revenue

The group’s revenue from major operations was displayed in Figure 122 Note 5 to Financial Statement.

![Figure 122 Note 5 to Financial Statement](image)

In this financial year, the group recognised its project development and management fees based on the stage of completion of each project as estimated by management, according to Figure 123 Note 3 (i) to Financial Statement below.

![Figure 123 Note 3 (i) to Financial Statements](image)
The group provided the definition of revenue recognition, as demonstrated in Figure 124 Note 1 (E) to Financial Statements above.

3.2 Expenses

According to Figure 125 Note 1 (n) to Financial Statements, the group recognised research expenditures, if incurred, as expenses.
Figure 125 Note 1 (n) to Financial Statements

Figure 126 Note 7 to Financial Statements below shows the group's depreciation of carbon sinks and amortization of NGAC accreditation up to the financial year 2012.

Figure 126 Note 7 to Financial Statements
According to Figure 127 Note 1 (m) to Financial Statements below, the group depreciated carbon sinks using the method based on the unit of production, like in the preceding financial year.

Figure 127 Note 1 (m) to Financial Statements

NGAC Accreditation was continuously amortized on a unit-of-production basis, like in the previous year, as demonstrated in Figure 128 Note 1 (V) to Financial Statement.

Figure 128 Note 1 (V) to Financial Statements

4. Impairment of Assets

H has disclosed its accounting policy on impairment of assets, as shown below.
Figure 129 Note 1 (J) to Financial Statements

(J) IMPAIRMENT OF ASSETS

Intangible assets that have an indefinite useful life are not subject to amortisation and are tested annually for impairment, or more frequently if events or changes in circumstances indicate that they might be impaired. Other assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. An impairment loss is recognised for the amount by which the asset’s carrying amount exceeds its recoverable amount. The recoverable amount is the higher of an asset’s fair value less costs to sell and value in use. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset. For the purposes of assessing impairment, assets are grouped at the lowest levels for which there are separately identifiable cash inflows which are largely independent of the cash inflows from other assets or groups of assets (cash generating units). Non-financial assets that suffered an impairment are reviewed for possible reversal of the impairment at each reporting date.
### Table 2: Summary of H's Accounting Policy from 2005-2012

<table>
<thead>
<tr>
<th>Accounting Issue/ Year</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inventory</strong></td>
<td>None</td>
<td>Seed</td>
<td>Seeds and carbon sinks under development</td>
<td>Seeds and carbon sinks under development</td>
<td>Seeds and carbon sinks under development</td>
<td>Seeds and carbon sinks under development</td>
<td>Seeds and carbon sinks under development</td>
<td>Seeds and carbon sinks under development</td>
</tr>
<tr>
<td><strong>Intangible asset</strong></td>
<td>Research and development costs, NGAC Accreditation, CO2 Project</td>
<td>Research and development costs, NGAC Accreditation, CO2 Project</td>
<td>Research and development costs, NGAC Accreditation, CO2 Project</td>
<td>Research and development costs, NGAC Accreditation, CO2 Project</td>
<td>Research and development costs, NGAC Accreditation, CO2 Project</td>
<td>Research and development costs, NGAC Accreditation, CO2 Project</td>
<td>Research and development costs, NGAC Accreditation, CO2 Project</td>
<td>Research and development costs, NGAC Accreditation, CO2 Project</td>
</tr>
<tr>
<td><strong>Carbon credits</strong></td>
<td>None</td>
<td>None</td>
<td>Purchased carbon credits-Other current assets</td>
<td>Purchased carbon credits-Other current assets</td>
<td>Purchased carbon credits-Other current assets</td>
<td>Purchased carbon credits-Other current assets</td>
<td>Purchased carbon credits-Other current assets</td>
<td>Purchased environmental credits-Other current assets</td>
</tr>
<tr>
<td><strong>Carbon sink</strong></td>
<td>None</td>
<td>Property, Plant and Equipment</td>
<td>Property, plant and equipment</td>
<td>Property, plant and equipment</td>
<td>Property, plant and equipment</td>
<td>Property, plant and equipment</td>
<td>Property, plant and equipment</td>
<td>Property, plant and equipment</td>
</tr>
<tr>
<td><strong>Forestry right</strong></td>
<td>None</td>
<td>Other Current Assets/Property, Plant and Equipment</td>
<td>Other current assets</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><strong>Inventory</strong></td>
<td>The lower of cost and net realizable value/ First-in First-out basis</td>
<td>The lower of cost and net realizable value/ Weighted-average method</td>
<td>The lower of cost and net realizable value/ Weighted-average method</td>
<td>The lower of cost and net realizable value/ Weighted-average method</td>
<td>The lower of cost and net realizable value/ Weighted-average method</td>
<td>The lower of cost and net realizable value/ Weighted-average method</td>
<td>The lower of cost and net realizable value/ Weighted-average method</td>
<td>The lower of cost and net realizable value/ Weighted-average method</td>
</tr>
<tr>
<td><strong>Intangible asset</strong></td>
<td>Historical Cost</td>
<td>Historical Cost</td>
<td>Historical Cost</td>
<td>Historical Cost</td>
<td>Historical Cost</td>
<td>Historical Cost</td>
<td>Historical Cost</td>
<td>Historical Cost</td>
</tr>
<tr>
<td><strong>Carbon credits</strong></td>
<td>None</td>
<td>None</td>
<td>Historical Cost</td>
<td>Purchased Carbon credits -Fair value</td>
<td>Purchased Carbon credits -Fair value</td>
<td>Purchased Carbon credits -Fair value</td>
<td>Purchased environmental credits-Fair Value Through Profit and Loss (FVTPL)</td>
<td>Purchased environmental credits-Fair Value Through Profit and Loss (FVTPL)</td>
</tr>
</tbody>
</table>
Table 2: Summary of H's Accounting Practice from 2005-2012 (continued)

<table>
<thead>
<tr>
<th>Accounting Issue/ Year</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
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<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Applicable value and valuation (Continue)</td>
<td>Carbon sink</td>
<td>None</td>
<td>Historical Cost less accumulated depreciation and impairment</td>
<td>Historical Cost less accumulated depreciation and impairment</td>
<td>Historical Cost less accumulated depreciation and impairment</td>
<td>Historical Cost less accumulated depreciation and impairment</td>
<td>Historical Cost less accumulated depreciation and impairment</td>
<td>Historical Cost less accumulated depreciation and impairment</td>
</tr>
<tr>
<td>Forestry Right</td>
<td>None</td>
<td>Historical Cost</td>
<td>Historical Cost</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>3. Revenue and Expense Recognition</td>
<td>Revenue</td>
<td>1. Sales of goods and disposal of assets 2. Revenue from rendering services - stage of completion of the contract</td>
<td>1. Sale of carbon credits - when significant risks and rewards of ownership are transferred to the buyer 2. Project Development Service - the stage of completion of the contract, 3. Other revenue - Carbon sink project management fees (no definition provided)</td>
<td>1. Sale of carbon credits - when significant risks and rewards of ownership are transferred to the buyer 2. Project Development Service - the stage of completion of the contract, 3. Carbon sink project management fees (no definition provided)</td>
<td>1. Sale of carbon credits - when significant risks and rewards of ownership are transferred to the buyer 2. Project Development Service - the stage of completion of the contract, 3. Carbon sink project management fees (no definition provided)</td>
<td>1. Sale of environmental credits - when significant risks and rewards of ownership are transferred to the buyer 2. Project Development Service - the stage of completion of the contract, 3. Carbon sink project management fees - an accrual basis in accordance with the substance of the relevant contract</td>
<td>1. Sale of environmental credits - when significant risks and rewards of ownership are transferred to the buyer 2. Project Development Service - the stage of completion of the contract, 3. Carbon sink project management fees - an accrual basis in accordance with the substance of the relevant contract</td>
<td></td>
</tr>
<tr>
<td>Research and Development cost</td>
<td>When incurred</td>
<td>When incurred</td>
<td>When incurred</td>
<td>When incurred</td>
<td>When incurred</td>
<td>When incurred</td>
<td>When incurred</td>
<td>When incurred</td>
</tr>
<tr>
<td>Amortization of NGAC</td>
<td>None</td>
<td>Straight-line method over 30 years commenced on the date asset is available for use</td>
<td>Indefinite useful life (No amortization)</td>
<td>Unit of Production Basis</td>
<td>Unit of Production Basis</td>
<td>Unit of Production Basis</td>
<td>Unit of Production Basis</td>
<td>Unit of Production Basis</td>
</tr>
</tbody>
</table>
Table 2: Summary of H’s Accounting Policy from 2005-2012 (continued)

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<tr>
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<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Revenue and Expense Recognition</td>
<td>Depreciation of Carbon sinks (Plantation cost written off)</td>
<td>None</td>
<td>30 years commencing on the date revenue generated from the specific project</td>
<td>30 years commencing on the date revenue generated from the specific project</td>
<td>Unit of Production Basis</td>
<td>Unit of Production Basis</td>
<td>Unit of Production Basis</td>
<td>Unit of Production Basis</td>
</tr>
<tr>
<td>Environmental credits Revaluation</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>Gain/(loss) on environmental credits FVTPL</td>
<td>Gain/(loss) on environmental credits FVTPL</td>
</tr>
<tr>
<td>Impairment testing of assets</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>4. Disclosure and Changes in Accounting Policy</td>
<td>-</td>
<td>Useful life of Intangible Assets (NGAC) 30 years, AIFRS Impact</td>
<td>Classification of Forestry Right, Useful life of Intangible Assets - indefinite useful life (NGAC)</td>
<td>Amortization Basis of NGAC/ Depreciation Basis of Carbon Sinks</td>
<td>None</td>
<td>None</td>
<td>Classification of revenue, Recognition of Gain and Loss on Environmental Credits</td>
<td>None</td>
</tr>
</tbody>
</table>
3. Company V Ltd

V's accounting practice for the financial year ending 2008

The company provided the following information as assumptions of its financial reporting.

1. Assets Type: The company disclosed “Stock on hand” under its Current Assets, as shown in Figure 130.

   Figure 130 Balance Sheet as of June 30th, 2008

   ![Balance Sheet Image]

   Figure 131 Note 8 below classifies “Stock on hand” as an expenditure related to carbon development.

   Figure 131 Note 8 to Financial Statements

   ![Note 8 Image]

   The definition and scope of the inventories and carbon development expenditures were also described in Figure 132 Note 1 (j) to Financial Statements and Figure 133 Note 1 (v) to Financial Statements.
It should be noted that there are two accounts related to the Stock on hand account: the inventory and carbon capital expenditures (Figure 133).

2. Applicable Value and Valuation

As shown in Figure 132 Note 1 (j) in the previous section, the company stated the inventories of carbon emission reduction at the lower of cost and net realizable value in compliance with the accounting standard. The cost of inventory was based both on the first-in first-out basis and on the weighted-average cost basis, a method which might cause ambiguity. It should also be noted that related acquisition and administration costs were also included. Inventory cost will involve revaluation of the recoverable amount at the end of the period.

3. Revenue and Expense Recognition:

3.1 Revenue

The revenue generated in this financial year was only bank interest received. The company determined its revenue recognition policy before making sales and delivering services.
Note: No recognition of Carbon Right and Carbon Covenant was stated in its annual accounts.

3.2 Expense

The group provided a policy on impairment testing of its assets, such as inventory, as shown in the second paragraph in Figure 132 Note 1 (j) to Financial Statements as of June 30th, 2008 above.

V's accounting practice for the financial year ending 2009

1. Asset Type

The group changed the term ‘Stock on Hand’, used in the financial year 2008, to ‘Inventory’, in the financial year 2009, as shown in Figure 136.
According to Figure 137 Note 8 to Financial Statements, the group changed the term 'Carbon development expenditure', used in the financial year 2008, to 'Carbon emission reductions', to be use as of 2009, as shown in the Figure 14.
The scope and definition of the Carbon development expenditure defined in Annual Account 2008 under Inventory item was shown under Non-Current assets in the financial year 2009 (Figure 136 Balance Sheet), and the group provided the following definition and scope of this item.

2. Applicable Value and Valuation

As shown in Figure 138 in the previous section, the company stated the inventories of carbon emission reduction at the lower of cost and net realizable value in compliance with the accounting standard. The cost of inventory was based both on the first-in first-out basis and on the weighted-average cost basis, a method which might cause ambiguity. It should also be noted that related acquisition and administration costs were also included. Inventory cost will involve revaluation of the recoverable amount at the end of the period. This definition and scope are identical to those given in the previous year.
3. Revenue Recognition

3.1 Revenue

The group recognised revenue from bank interest received, from planting income and from other sources, as listed in Figures 140 and 141. However, it provided a revenue recognition policy for the sales of carbon credits, as well as project revenue and interest revenue, as in Figure 142. It should be noted that the group provided a revenue recognition policy for sales of carbon credits, although it had not made any such sale during this financial year.

Figure 140 Revenue Balance as of June 30\textsuperscript{th}, 2009

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure140.png}
\caption{Revenue Balance as of June 30\textsuperscript{th}, 2009}
\end{figure}

Figure 141 Note 2 (a) Components of Total Revenue Earned in the Year Ending June 30\textsuperscript{th}, 2009

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure141.png}
\caption{Components of Total Revenue Earned in the Year Ending June 30\textsuperscript{th}, 2009}
\end{figure}

Figure 142 Note (f) The Group's Revenue Recognition Policy

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure142.png}
\caption{Revenue Recognition Policy}
\end{figure}

\textbf{(f) Revenue Recognition}

Revenue is recognised to the extent that it is probable that the economic benefits will flow to the Group and the revenue can be reliably measured. Revenue is recognised for the major business activities of the Group as follows:

i) Sale of carbon credits – revenue from the sale of carbon credits is recognised when the Group has transferred to the buyer the significant risks and rewards of the ownership of the carbon credits.

ii) Project revenue – where the company undertakes the development of carbon sinks for third parties, revenue is recognised in proportion to the percentage completion of the project. Management related income is recognised on an accrual basis in accordance with the substance of the relevant contract.

iii) Interest revenue is recognised as it accrues, taking into account the effective yield on the financial asset.
3.2 Expenses

The group provided a policy in the impairment testing of its assets, such as inventory, as shown in the second paragraph in Figure 138 Note 1 (k) to Financial Statements as of June 30th, 2009.

4. Accounting Changes and Disclosure

There is no significant accounting change in this year, apart from slight wording in inventories. In addition, there was no recognition of Carbon Right and Carbon Covenant in its annual accounts.

**V s accounting practice for the financial year ending 2010**

1. Asset Type

   The group recognised Inventory under its current assets and Carbon development expenditure in its account of non-current assets, as detailed in Figure 143 below.

   ![](image.png)

   **Figure 143 Statement of Financial Position for the Year Ending 30 June 2010**

   ![](image.png)

   **Figure 144 Note 8 to Financial Statement**

   According to Figure 144 Note 8 (Inventories), the group replaced the term Carbon Emission Reductions in the financial year 2008/2009 with Plantations-at Cost for 2009/2010.
The group revealed the definition and scope of its Inventory and Carbon Development Expenditure as shown in Figures 145 and 146, respectively. It should be noted that the scope of inventory stated in Figure 144 Note 8 is clearly different from that stated in Figure 137 Note 8.

The group defined Inventory as Carbon emission reductions as same as the prior year. It’s noted that it did not define inventory as carbon credits but carbon emission reduction.

2. Applicable Value and Valuation

As shown in Figure 145 Definition and Scope of Inventory, the group recognised inventories of carbon emission reductions in compliance with the Australian accounting standard. A significant change from the previous financial year was the removal of the inventory costing methods (FIFO and weighted average). Only the impairment testing and period-end revaluation of the recoverable amounts remained in this financial year. The cost of inventories includes related acquisition and administration costs, like in the previous year.
3. Revenue and Expense Recognition

3.1 Revenue

Revenue included bank interest received, planting income, carbon sales, land license fees and other income, as listed in Figure 147 Note 2 to Financial Statement below.

Figure 147 Components of Revenue in Note 2 to Financial Statement

<table>
<thead>
<tr>
<th>NOTE 2: REVENUES AND EXPENSES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>-------------------------------</td>
</tr>
<tr>
<td>(a) Revenue</td>
</tr>
<tr>
<td>Bank interest received</td>
</tr>
<tr>
<td>Planting income</td>
</tr>
<tr>
<td>Carbon sales</td>
</tr>
<tr>
<td>Land licence fees</td>
</tr>
<tr>
<td>Other income</td>
</tr>
<tr>
<td>Total Revenue</td>
</tr>
</tbody>
</table>

Figure 148 Note 1 (f) Definition and Scope of Revenue Items

The definition of Project Revenue in Figure 148 Note 1 (f) may refer to the planting income in Figure 147 Note 2, as components of revenue generated in this financial year. It should be noted that the group did not provide the definition of land license fee in this note.

3.2 Expense

The group provided a policy on the impairment testing of its assets, such as inventory, as shown in the second paragraph in Figure 138 Note 1 (k) to Financial Statements as of June 30th, 2010. Moreover, expenses were estimated by the director based on the method outlined in AASB 111 Construction Contract.
4. Accounting Changes and Disclosure

The company disclosed an accounting policy on unavailable items, such as financial assets and impairment of assets. In this year only the wording in the definition of inventories were adjusted. In addition, there was no recognition of Carbon Right and Carbon Covenant in its annual accounts.

**V s accounting practice for the financial year ending 2011**

Figure 150 Balance Sheet as of June 30th, 2011

<table>
<thead>
<tr>
<th>Asset Type</th>
<th>Note</th>
<th>2011</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Assets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>6</td>
<td>1,254,735</td>
<td>271,919</td>
</tr>
<tr>
<td>Trade and other receivables</td>
<td>7</td>
<td>2,053,359</td>
<td>1,554,750</td>
</tr>
<tr>
<td><strong>Inventories</strong></td>
<td>8</td>
<td>2,454,637</td>
<td>282,857</td>
</tr>
<tr>
<td>Other assets</td>
<td>9</td>
<td>171,564</td>
<td>207,204</td>
</tr>
<tr>
<td>Other financial assets</td>
<td>10</td>
<td>10,494</td>
<td>19,800</td>
</tr>
<tr>
<td><strong>Total Current Assets</strong></td>
<td></td>
<td>5,944,819</td>
<td>2,336,530</td>
</tr>
<tr>
<td>Non-Current Assets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Carbon development expenditure</strong></td>
<td>11</td>
<td>-</td>
<td>380,866</td>
</tr>
<tr>
<td>Property, plant and equipment</td>
<td>11</td>
<td>9,936,207</td>
<td>6,243,597</td>
</tr>
<tr>
<td><strong>Total Non-Current Assets</strong></td>
<td></td>
<td>9,936,207</td>
<td>6,604,463</td>
</tr>
<tr>
<td><strong>Total Assets</strong></td>
<td></td>
<td>15,881,026</td>
<td>8,940,993</td>
</tr>
</tbody>
</table>

1. Asset Type

1.1 Inventories

In this year the group replaced the term Plantations-at cost, used in the financial year 2010, with Plantation, as shown in Figure 151 Note 8 to Financial Statements.
However, as shown in Figure 152 Note 1 (D), the group defined trees and seeds as inventory, not as an element in Carbon emission reduction.

1.2 Carbon Development Expenditure

The scope and definition of Carbon Development Expenditure was shown under Non Current Assets in the financial year 2011 (Figure 150 Balance Sheet). The group provided its definition and scope of this item as follows. However, the value of this account was zero.
2. Applicable Value and Valuation

2.1 Inventories

As shown in Figure 152 Note 1 (D) in the previous section, the company stated the inventories of trees and seeds at the lower of cost and net realizable value in compliance with the Australian accounting standard. Inventory costs were to be revaluated against recoverable amounts at the end of the period. These definitions and scope were identical to those given in the previous year.

2.2 Carbon Development Expenditure

As shown in Figure 153 Note 1 (y) above, carbon development expenditure was the cost of carbon sinks, which were listed under historical cost.

3. Revenue and Expense Recognition

3.1 Revenue

The group recognised revenue from bank interest received, planting income, carbon sales, land license fees and other sources, as listed in Figure 154 Note 2 to Financial Statement.

Figure 154 Note 2 to Financial Statement
Moreover, it provided a revenue recognition policy on the sales of carbon credits, project revenue and interest revenue, as shown in Figure 155 Note 1 (n) below. It should be noted that there was no recognition policy given for revenue from land license fees.

Figure 155 Note 1 (n) Revenue Recognition Policy for the Year Ending June 30\textsuperscript{th}, 2011

3.2 Expenses

The group provided a policy on the impairment testing of its assets, such as inventory, as shown in the second paragraph in Figure 152 Note 1 (D) to Financial Statements as of June 30\textsuperscript{th}, 2011.

Costs of carbon sinks were capitalized and subsequently transferred to the inventory based on the production of saleable credits, as described in Figure 153 Note 1 (y) to Financial Statements as of June 30\textsuperscript{th}, 2011.

In addition, the group disclosed a policy on the recognition of revenue and expenses of planting projects, as shown below.

Figure 156 Note 1 (w, ii) Critical Accounting Judgment and Key Sources of Estimation Uncertainty
V s accounting practice for the financial year ending 2012

Figure 157 Consolidated Statement of Financial Position as at June 30, 2012

As shown in Figure 150 and Figure 157 above, the group recognised only inventories in its balance sheet. Like in the previous year, "Carbon Development Expenditure", shown at nil value in the financial year 2011, was not listed under non-current assets. The components of the inventories are shown in Figure 158 Note 8 to Financial Statement below.

Figure 158 Note 8 to Financial Statement
It should be noted that the group changed the term Plantations, used in the preceding financial year, to Plantations at cost in this year. Seed stock was included under Inventories as well.

2. Applicable Value and Valuation

2.1 Inventories

As shown in Figure 158 Note 8 in the previous section, the company stated the inventories of trees and seeds at the lower of cost and net realizable value in compliance with the Australian accounting standard. Inventory costs were to be revaluated against recoverable amounts at the end of the period. These definitions and scope were identical to those given in the previous year.

Figure 159 Note 1 (d) to Financial Statement

2.2 Carbon Development Expenditure

No recognition of carbon development expenditure was stated in this financial year; thus, no policy on valuation methods was given in the Financial Statement.

3. Revenue and Expense Recognition

3.1 Revenue
The group recognised revenue from bank interest received, planting income, carbon sales, land license and management fees and other sources, as listed in Figure 160 Note 2. It should be noted that the group recognised land license and management fees for the first time to reflect its service revenue.

Figure 160 Note 2 to Financial Statement, Revenue Balance as of June 30\textsuperscript{th}, 2011

<table>
<thead>
<tr>
<th>(a) Revenue</th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planting income</td>
<td>15,677,510</td>
<td>6,661,025</td>
</tr>
<tr>
<td>Carbon sales</td>
<td>86,001</td>
<td>87,490</td>
</tr>
<tr>
<td>Land licence and management fees</td>
<td>774,212</td>
<td>112,500</td>
</tr>
<tr>
<td>Interest received</td>
<td>92,218</td>
<td>38,924</td>
</tr>
<tr>
<td>Other income</td>
<td>23,532</td>
<td>134,492</td>
</tr>
<tr>
<td><strong>Total revenue</strong></td>
<td><strong>16,601,473</strong></td>
<td><strong>7,034,431</strong></td>
</tr>
</tbody>
</table>

However, Figure 161 Note 1 (m) to Financial Statement, below, shows that no definitions and scope of land license and management fees were supplied.

Figure 161 Note 1 (m) to Financial Statement

3.2 Expense recognition

The group provided a policy on the impairment testing of its assets, such as inventory, as shown in the second paragraph in Figure 159 Note 1 (d) to Financial Statements as of June 30\textsuperscript{th}, 2012.

Expenses were estimated by the director based on the method outlined in AASB 111 Construction Contract, as explained in Figure 162 Note 1 (v, ii) below.

Figure 162 Note 1 (v, ii) Critical Accounting Judgment and Key Sources of Estimation Uncertainty
(ii) **Planting program completion**

The planting season program extends over a 12 month period and involves the identification, preparation and planting of suitable land to trees. The annual planting program finalises in approximately September of each year depending on the size of the planting activities for the season and the rainfall patterns. As at 30 June the Directors are required to make estimates of planting program activities completed and recognise appropriate income and expenses to reflect this activity. Directors utilise the methods as outlined in AASB 111 Construction Contracts to provide conceptual framework for such estimations.

### NOTE 13: CONTRACT WORK IN PROGRESS

<table>
<thead>
<tr>
<th></th>
<th>CONSOLIDATED</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2012</td>
<td>2011</td>
</tr>
<tr>
<td>Costs incurred and recognised profits to date</td>
<td>$13,317,513</td>
<td>-</td>
</tr>
<tr>
<td>Less: Progress billings</td>
<td>$(14,764,500)</td>
<td>-</td>
</tr>
<tr>
<td>Net contract work in progress</td>
<td>$1,446,987</td>
<td>-</td>
</tr>
<tr>
<td>Accounting Issue</td>
<td>2008</td>
<td>2009</td>
</tr>
<tr>
<td>------------------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>1. Asset Type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stock on hand</td>
<td>Inventories (Carbon Development Expenditure)</td>
<td>Inventories (Carbon Emission Reduction)</td>
</tr>
<tr>
<td>Current Assets</td>
<td>Non-Current Assets</td>
<td>Non-Current Assets</td>
</tr>
<tr>
<td>Intangible asset</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Carbon credits</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Forestry right/Carbon Right/Carbon covenant</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>2. Applicable Value and Valuation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The lower of cost and net realizable value / First-in First-out basis, determined by weighted-average method</td>
<td>The lower of cost and net realizable value / First-in First-out basis, determined by weighted-average method</td>
<td>The lower of cost and net realizable value</td>
</tr>
<tr>
<td>Historical Cost</td>
<td>Historical Cost</td>
<td>Historical Cost</td>
</tr>
<tr>
<td>Intangible asset</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Carbon credits</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Forestry right/Carbon Right/Carbon covenant, Land license</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>
Table 3: Summary of Accounting Policy of Company V Ltd Form Year End 2008-2012  
(continued)

<table>
<thead>
<tr>
<th>Accounting Issue</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Revenue and Expense Recognition</td>
<td>Revenue</td>
<td>1. Sales of carbon credits - when significant risks and rewards of ownership are transferred to the buyer; 2. Project Revenue- the percentage completion of the project</td>
<td>1. Sales of carbon credits - when significant risks and rewards of ownership are transferred to the buyer; 2. Project Revenue- the percentage completion of the project (AASB 111); 3. Land license fees</td>
<td>1. Sales of carbon credits - when significant risks and rewards of ownership are transferred to the buyer; 2. Project Revenue- the percentage completion of the project (AASB 111); 3. Land license fees</td>
<td>1. Sales of carbon credits - when significant risks and rewards of ownership are transferred to the buyer; 2. Project Revenue- the percentage completion of the project (AASB 111); 3. Land license fees</td>
</tr>
<tr>
<td></td>
<td>Research and Development cost</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Intangible asset</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Carbon Development Expenditure</td>
<td>Capitalized and transferred to inventories in the proportion that saleable carbon credits are produced relative to the expected output from each specific project.</td>
<td>Capitalized and transferred to inventories in the proportion that saleable carbon credits are produced relative to the expected output from each specific project.</td>
<td>Capitalized and transferred to inventories in the proportion that saleable carbon credits are produced relative to the expected output from each specific project.</td>
<td>Capitalized and transferred to inventories in the proportion that saleable carbon credits are produced relative to the expected output from each specific project.</td>
</tr>
<tr>
<td></td>
<td>Impairment testing of Asset</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Appendix 3
Interviewee Information, Interview Questions and Ethics Approval

The interviews were conducted during December 2011- December 2012. A1-A6 represents CFO delegates and senior accounting professionals. E1-E6 represents experts in financial reporting.

<table>
<thead>
<tr>
<th>Interviewee</th>
<th>Education/License</th>
<th>Position</th>
<th>Work Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>MBA, CPA</td>
<td>CFO</td>
<td>27</td>
</tr>
<tr>
<td>A2</td>
<td>MA, CA</td>
<td>Financial Controller</td>
<td>9</td>
</tr>
<tr>
<td>A3</td>
<td>MBA, CPA</td>
<td>Business Manager</td>
<td>32</td>
</tr>
<tr>
<td>A4</td>
<td>Bcom, CPA</td>
<td>Financial Controller</td>
<td>25</td>
</tr>
<tr>
<td>A5</td>
<td>Bcom, BA , CPA</td>
<td>Director (Settlement)</td>
<td>20</td>
</tr>
<tr>
<td>A6</td>
<td>BSc, CPA</td>
<td>CFO</td>
<td>19</td>
</tr>
<tr>
<td>E1</td>
<td>PhD</td>
<td>Senior Lecturer</td>
<td>25</td>
</tr>
<tr>
<td>E2</td>
<td>PhD</td>
<td>Senior Lecturer</td>
<td>33</td>
</tr>
<tr>
<td>E3</td>
<td>PhD</td>
<td>Associate Professor</td>
<td>23</td>
</tr>
<tr>
<td>E4</td>
<td>Bcom, CA</td>
<td>Director</td>
<td>31</td>
</tr>
<tr>
<td>E5</td>
<td>PhD</td>
<td>Professor</td>
<td>39</td>
</tr>
<tr>
<td>E6</td>
<td>PhD</td>
<td>Senior Lecturer</td>
<td>12</td>
</tr>
</tbody>
</table>

Practitioners Interview

Sample Interview questions for practitioners

1. Does your organisation have a specific internal guideline for accounting for carbon emission trading? If yes, would you please explain overview concept of this guidelines? If not, what are the important/critical qualitative characteristics of accounting information of carbon emission trading?

2. In your view, what type of assets are purchased and created carbon credits?

3. In your view, what type of asset are carbon sinks?

4. How do you account for related intangible assets such as NGAC accreditation, Carbon Farming Initiatives Accreditation, forestry rights and carbon rights? What are the rationales for this treatment?

5. How do you value your carbon credits and carbon sinks?
6. How you do recognise revenue and expense and why?

7. How do you account for unplanned surplus and shortages of carbon credits and why?

8. Do you have Forward contract/foreign currency transactions? How do you manage these transactions and why?

9. How do you disclose or decide not to disclose your accounting practices and why?

10. What are the rationales of your accounting practice or accounting estimate changes?

**Experts interview**

Six expert interviewees were asked to comment the interview outcomes from practitioner interviewees above. Only controversial issues were taken to experts interviews.

The sample of interview questions is as follows

1. In your view, What are the important/critical qualitative characteristics of accounting information of carbon emission trading?

2. Are these accounting practices adopted by practitioners appropriate? Why?

3. In your view, what type of assets are purchased and created carbon credits?

3. In your view, what type of asset are carbon sinks?

4. How do practitioners account for related intangible assets such as NGAC accreditation, Carbon Farming Initiatives Accreditation, forestry rights and carbon rights? What are the rationales for this treatment? Why?

5. How should practitioners value carbon credits and carbon sinks? Why?

6. How do practitioners disclose or decide not to disclose accounting practices and why?

7. Were these accounting practice or accounting estimate changes appropriate? Why?
05 October 2011
Miss Tharatee Mookdee

Dear Tharatee,

I am pleased to advise that your application for ethics approval for a Research Project, Accounting for Carbon Emission Trading: An Australian Perspective, has been approved by the Chair of the Business College Human Ethics Advisory Network. Approval has been granted for the period from 04 October 2011 to 02 March 2013.

The RMIT Human Research Ethics Committee (HREC) requires the submission of Annual and Final reports. These reports should be forwarded to the Business College Human Ethics Advisory Network Secretary. Annual Reports are due in December for applications submitted prior to September the year concerned. I have enclosed a copy of the Annual/ Final report form for your convenience. Please note that this form also incorporates a request for extension of approval, if required.

Best wishes for your research.

Regards,

Allison Tatchell
Secretary
Business College Human Ethics Advisory Network

Encl.
Business College Human Ethics Advisory Network (BCHEAN)
Application for Approval of Research Project

SUMMARY & APPROVAL

Project Title: Accounting for Carbon Emission Trading: An Australian Perspective

Principal Investigator: Miss Tharatee Mookdee

Supervisors: Professor Sheila Bellamy and Associate Professor Prem Yapa

School Name: School of Accounting

Degree for which research is undertaken (if applicable): PhD

Contact Telephone Number: 9925 1661

Email Address: tharatee.mookdee@rmit.edu.au

Date Application Received: 22 September 2011

Business College Human Ethics Advisory Network Register No: 1000345

Period of Approval: 04 October 2011 to 02 March 2013

Comments / Provisos: N/A

The Business College Human Ethics Advisory Network assessed the Project as Low Risk

Signature: ___________________________ Date: 5 October 2011

Professor Roslyn Russell, BCHEAN Chair