

Towards an Environmental Sustainability Management Accounting Template

Alan Parkinson

Lynsie Chew

UCL School of Management, UK

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Abstract

In the 1980s, a recognition of the growing significance of environmental sustainability saw a momentum of pressure to go beyond financial reporting to include non-financial reports, with a focus on corporate governance and sustainability matters (Larrinaga and Bebbington, 2021). That momentum stemmed from general references to sustainable development by the International Union for Conservation of Nature (1980), through to defined references in the Brundtland Report (World Commission on Environment and Development, 1987), initiatives from the International Federation of Accountants (IFAC 2005). Further work by the GRI - Global Reporting Initiative (1999, 2016), and successive COP summits led to the establishment of the International Sustainability Standards Board (November 2021) by the International Financial Reporting Standards (IFRS) Foundation, linked to the International Accounting Standards Board. Currently, on a voluntary basis, many companies disclose sustainability initiatives and results, often based on the framework and methodology issued by the GRI. In some localities, aspects are now compulsory (e.g., France, Sweden, Brazil, South Africa, UK). The reporting scope itself has evolved from, initially, the three pillars of people, planet, profit, wider scopes. The three evolved into four: human, social, economic and environmental, and then into five: people, planet, prosperity, peace and partnerships. The challenge to organisations is to identify what needs to be measured and how, and to be reported upon.

This working paper explores how an organisation's internal management accounting function can provide a template for that, and to good effect. As a base it draws upon the UNDS (United Nations Division for Sustainable Development, 2001) recommendations that environmental management accounting should focus on identification, collection, analysis and use of two types of information for internal decision making: physical information on the use, flows and destinies of energy, water and materials (including wastes), and monetary information on environment-related costs, earnings and savings. It builds on that base by identifying an examining what organisations are currently reporting upon, and evaluating the strengths and weaknesses of such reports.

Introduction

This focus of this paper is the role environmental management accounting (EMA) can play in helping businesses, societies and nations in achieving the commitments, agreements, aspirations and targets set out in the COP26 global climate action summit in Glasgow, Scotland (November 2022). It considers the scope of EMA and identifies specific areas which should be planned for, monitored and measured after implementation, and reported upon. In so doing, as context, it reviews the development of the scope of EMA from the 1980s through to the present. As a departure point, although explored in more detail further below, the following description of EMA sets a steer for the EMA considerations in this paper: 'EMA supports managers to make better decisions by informing them about environmental impacts of an organization beyond its boundaries and about environmental issues that influence the organization. This includes economic drivers and consequences of environmental issues. EMA can help identifying environmental problems caused, environmental improvements made and how they relate to the economic performance of the organization.' (Burritt, Schaltegger and Christ, 2021).

COP26 was the twenty-sixth meeting of the Conference of Parties (COP), the membership of nations arising from the initial meeting in 1992 under the auspices of the United Nations Framework Convention on Climate Change. Representatives of the 197 nation states attending discussed and reached agreements

on a number of issues across a range of areas including: ‘...the continuation of key principles from the Paris Agreement and previous COPs, including multilateralism, and the importance of nature and biodiversity to climate action, as well as human rights, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations, gender equality, empowerment of women and intergenerational equity.’ (<https://ukcop26.org/> p.5, 2021). Specifically, key aspects of the continuation of key principles from the Paris Agreement (in 2015) were affirmed regarding the targets of limiting global warming to 1.5 degrees (C) and adapting to the impacts of climate change and establishing financing to help achievement of those targets. As part of that, there was a commitment by most nations to i) strengthen emissions reduction targets by 2030, and ii) aspire to net zero emissions by 2050 through a combination of reducing carbon emissions and using carbon capture and storage strategies. These aspects are summarised under four broad headings: recognising the emergency; accelerating action; moving away from fossil fuels; and delivering on climate finance (<https://www.un.org/en/climatechange/cop26>). It should be noted that, perhaps not surprisingly with such a volume of nation states, each with their own contexts, that not all nation states agreed to each commitment but did pledge to move in the broad direction. As part of the COP26 deliberations, the term carbon budget was often cited. This is the term used by many national governments to set legally-binding stepping stones towards the 2050 target. It is a cap on the amount of greenhouse gases emitted over a series of five-year periods. Illustratively, through its Climate Change Act, the UK government has committed to reduce emissions by at least 100% of 1990 levels (Net Zero) by 2050.

Drivers for applying EMABurritt

At a meta-level, the COP26 agreements, affirmations and pledges are drivers in themselves for EMA as a planning and reporting system. There are other drivers, both broad and specific. One is the location within the arena of ESG matters, environmental, social and governance. Businesses in many parts of the world are required to report on such matters through legislation or codes of conducts, often linked to corporate governance reviews and reports. The momentum towards ESG inclusion originated in the 1980s with pressure to supplement financial reports with non-financial matters, the focus of the latter being corporate governance and sustainability matters (Larrinaga and Bebbington, 2021). General references to sustainable development were made by the International Union for Conservation of Nature (1980). Generalities evolved into specific and defined references in the Brundtland Report (World Commission on Environment and Development, 1987), and initiatives from the International Federation of Accountants (IFAC) in 2005. ESG received formal recognition in the UN’s Principles for Responsible Investment (2006) report. This required ESG matters to be incorporated in the financial evaluations of companies for the first time with the aim of developing sustainable investments. Atkins (Forbes, 2020) reports that in the aftermath of that report sixty-three investment companies with \$6.5 trillion in assets under management incorporated ESG issues in their reports. Atkins (ibid) notes that in June 2019, 2,450 signatories were reporting on ESG, with \$80 trillion in assets under management (\$ in US dollars.) In this arena of investments, in 2015, with Michael Bloomberg as Chair, the Taskforce on Climate-related Financial Disclosures facilitates reporting by companies on climate-related financial risks. In 2020, more than 1,000 public and private companies with \$138.8 trillion assets under management were engaged with ESG reporting. For commercial organisations and investment companies, the link between climate impacts and financial performance requires a focus of planning, measurement and reporting systems, located within EMA.

Further work by the GRI - Global Reporting Initiative, established in 1997, saw the creation and evolution of an accountability framework for companies to report on responsible environmental business practices amended in each of 1999, 2009, 2016. That framework’s focus is climate change, human rights, governance and social well-being. Concurrently and since, there have been specific developments regarding economic and financial aspects. Blending such aspects with carbon-related matters, the Carbon Disclosure Project was set up in 2000 seeking to create a global economic system that protects against climate change and now has (Atkins, ibid). In 2011 the Sustainability Accounting Standards Board initiated development of standards covering both sustainability and financial matters. This has evolved to the establishment of the International Sustainability Standards Board in 2021 by the International

Financial Reporting Standards (IFRS) Foundation, linked to the International Accounting Standards Board.

The EMA journey towards established scope and principles: the early years

Given that there have been debates of concern about environmental issues since the 1980s, including financial consequences, it is not surprising that businesses and interested parties have been engaged with identifying and implementing approaches to relevant reporting across time. The early approaches reflected differing priorities and suffered from a lack of consensus. Management accounting literature reflects this with a range of views regarding the scope and focus of EMA systems. Illustrative research by Gray et al (1993), Hammer and Stinson (1995), White and Savage (1995), Schaltegger (1996), Parker (1999), Schaltegger and Burritt (two thousand) observed differences in the scope and a range of practices, with many relating to financial measures through internal accounting. Porter and van der Linde (1995), focusing on pollution, argued that pollution equates to inefficiency and inefficiency leads to economic disadvantage for a business. They translated this into a contention that preventing pollution should form the underpinning for business cases to improve financial performance. This was in contrast to the views of many businesses that 'environmental actions' were nothing more than an expense.

The context however was still internal accounting linked to external financial reporting of profit figures. Thereafter research started to reflect two broad approaches to EMA were reported. Bennett and James (1998) report that EMA is considered by some to be based on a monetary measure on an internal accounting basis, and the second approach, as in Bennett and James (1998), and IFAC 1998, reflects both monetary and non-monetary scope and associated measures again on an internal accounting basis (UNSD 2000, p. 39). Jasch (2003, pp. 667-668) reports that a clearer focus began to develop in a more meaningful manner following the establishment in 1998 of the Expert Working Group on Improving Government's Role in the Promotion of Environmental Management Accounting, motivated by that year's meeting of the United Nations Commission on Sustainable Development, and in particular the sub-group of the UN Division for Sustainable Development. That led to a consensus on concepts and associated principles and practices in Jasch's publication *Environmental Management Accounting – Procedures and Principles* in 2001. That publication, on behalf of the Expert Working Group. This was a watershed in that for the first time a degree of consensus established a framework for what to report on and how to report on it via EMA. The ethos underpinning this publication was an acknowledgement of the necessity of monetary and non-monetary scope, requiring associated costs to be identified to be measured.

Within that was the recognition that in conventional cost accounting and management accounting, at least in circa two thousand, environmental and non-environmental costs are aggregated together within the overheads umbrella categorisation, leading to management failures to recognise the cost and impact of environmental issues as they are hidden (Jasch *ibid* p. 669). The publication proposed that the scope of EMA should expand from conventional cost accounting to include both internal and external costs relating to environmental damage and protection. It should focus on identification, collection, analysis and use of two types of information for internal decision making: physical information on the use, flows and destinies of energy, water and materials (including wastes), and monetary information on environment-related costs, earnings and savings. At a more detailed level, it recommends identifying costs associated with contaminated sites, effluent control technologies and waste disposal, including prevention costs. It advocates inclusion of the i) conventional definition of environmental costs comprising all treatment, disposal and clean-up costs of existing waste and emissions, and ii) prevention and environmental management.

The EMA journey: the later years

Burritt, Hahn and Schaltegger (2008) developed Jasch's work further, seeking to develop a more comprehensive framework, facilitating better decisions by an organisation's managers, leading to improved environmental-related decisions and outcomes. They proposed expansion of the scope and content from environmentally related impacts on the economic situation of companies to include company-related impacts on environmental systems (p. 95). The former demands monetary environmental information, and the latter physical environmental information. Given the emphasis on ESG reporting referred to earlier, it is mooted that these groupings contribute towards improved and

more meaningful external reporting, not least within annual reports with sections focusing on corporate governance and sustainability. Internally the data and information generated assists managers in a range of matters including, as reproduced from p.97:

- identifying environmental improvement opportunities;
- prioritizing environmental actions and measures;
- environmental differentiation in product pricing, mix and development decisions;
- transparency about environmentally relevant corporate activities;
- meeting the claims and information demands of critical environmental stakeholders, to ensure resource-provision and access; and
- justifying environmental management division and environmental protection measures.

As a framework for decision-making and reporting, Burritt, Hahn and Schaltegger (ibid p. 101) adapt Porter’s 1985 value chain theory. This identifies operational activities and required support activities and links them to whether the required information is specific or aggregate. The operational activities: purchase, production, logistics, marketing/sales, and Disposal/recycling, are supported by activities of senior management: finance/accounting, environmental management, health/safety, quality, human resource management, legal affairs, R&D, product design, corporate marketing and PR. It is suggested that for operational activities the types of information collected should be very specific and detailed with more aggregated information for support activities. This enables internal accounting systems to be designed to operate in tandem, providing appropriate details for each type of information required. This 2008 framework has been adapted by organisations taking account of their own circumstances, leading to variations on the theme.

One variation on the theme is the recommendations regarding the scope of and approaches to EMA by the Institute of Chartered Management Accountants (CIMA) and the American Institute of Certified Public Accountants (AICPA), published under the guise of the Chartered Global Management Accountant (CGMA) designation. The recommendations are detailed in Figure 1.

Scope of management information	Environmental cost categories
Identifying and estimating the costs of environment-related activities.	Prevention costs: costs associated with preventing adverse environmental impacts.
Identifying and monitoring the use and cost of resources such as water, electricity and fuel, so costs can be reduced.	Appraisal costs: costs of assessing compliance with environmental policies.
Making sure environmental considerations form part of capital investment decisions.	Internal failure costs: costs of eliminating environmental impacts that have been created by the organisation.
Assessing the likelihood and impact of environmental risks.	
Including environment-related indicators as part of routine performance monitoring.	
Benchmarking activities against environmental best practice.	

Figure 1. CGMA EMA Scope (reproduced from <https://www.cgma.org/resources/tools/cost-transformation-model/environmental-management-accounting.html>)

The CGMA Cost transformation Model accompanying the recommendations specifies incorporating sustainability to optimise profits. Of note is the use of the word optimise rather than maximise. This reflects a growing view that there are important stakeholders in addition to shareholders.

Is EMA working?

On the surface, it might be observed that to a lesser or greater degree EMA has made progress. A range of literature contends that globally EMA improves organisational performance. Illustratively such literature includes in Indonesia Sari, Pratadina, Anugerah, Kamaliah and Sanusi (2021), in Pakistan Amir, Rehman and Khan (2020). Such literature bases observations of improved performance, however on broad brush figures. More detailed studies suggest some positives and some negatives, illustratively Erokhin et

al (2019) contend that managers, particularly when faced with turbulent economic times, ignore EMA tools and focus on achieving effects on sales, profits, and other performance parameters using less-sophisticated short-term approaches. Burritt and Christ (2016), through a literature review, report that environmental accounting, and by implication EMA, suffers from a lack of engagement on the part of businesses. They draw upon contentions from Searcy and Elkhawas (2012) and Wiedmann and Barrett (2010) that this is linked to a combination of a lack of appropriate data, and/or the technology to collect appropriate data, together with challenges in understand the nature of corporate sustainability as a concept. Concurrently, businesses and their management teams are under both explicit and implicit pressure to show 'green credentials.' Lack of data, and/or unwelcome results from data analysis, has resulted in some businesses adopting greenwashing. Through greenwashing, a business makes misleading claims, presenting something as more environmentally friendly and sustainable than it is, in order appeal more to consumers. Brownwashing understates the success of green initiatives, where businesses are concerned that stock markets may react negatively to environmental performance, viewing it as being at the expense of financial performance.

Burritt and Christ (ibid) report that IFAC's contention in 2005 that organisational information is not accurate or detailed enough for environmental purposes still appears to be valid, and limited technology and its use in systems is a driver. They refer, illustratively to interviews they held with managers in Germany which revealed the volumes of departments and differing types of professionals resulted in ad hoc rather than systematic data being gathered. Kokubu and Kitada (2015) report another driver as being a reluctance by managers to be held responsible for environmental costs.

EMA and the journey ahead

Given the references earlier to limited technology, there are those who see the technological advances and digitisation accompanying the fourth industrial revolution as offering opportunities to improve data collection and analysis within more sophisticated EMA systems. Burritt and Christ (ibid) suggest that improvements could occur across a range of areas, including: better data quality, reduced opportunity for greenwashing and brownwashing, reduced management discretion over what is measured and reported, leading to higher credibility of data. (Seele, 2016) sees i) technological and systems advances being such that real-time data will be available, leading to shorter time frames for decision making and reporting, and ii) scales of economies being such that analysis and reporting system cost will be reduced significantly. Burritt and Christ (ibid) contend that these advances may well reduce the current propensity for departments within businesses to act as silos, leading to environmental and monetary gains from improved management.

Starting in the 1980s, the EMA journey has thus far been long. The reformation required is taking time but the fourth industrial revolution, with its emphasis on data, may well provide a platform for the architecture necessary to incorporate the key ingredients of the sustainability agenda - carbon emissions, water usage, land use, pollution – both individually and blended, as the recipe for the achievements of the 2050 target date.

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