Accounting as a tool for sustainable business

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Summary

Accounting is a tool that has been used for hundreds of years in order to provide enterprises and stakeholders with information needed for decisions. Accounting has developed because of the changing needs for information. During the last decades, the need for a new type of information has emerged for enterprises and organizations and for their stakeholders that have ambitions and strategies for sustainable operations. This newly emerging need has increased the demand for reliable information about sustainability indicators for and from enterprises.

This chapter discusses and argues for an extension of accounting as a tool to present information on sustainability dimensions of enterprises. Sustainable enterprise theory and modified accounting postulates are introduced and discussed from the perspective of both internal and external reporting. Evidence from practice illustrates the need for an accounting concept of sustainability reporting.

This chapter concludes that accounting and auditing professions need to take part in the development of sustainability reporting. New and adapted normative equity theories are the bases for a framework for sustainability accounting and reporting. The framework also facilitates audits of sustainability reports and internal control.

Keywords: Sustainability, accounting, reporting, management control, audit and assurance, sustainable business

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1 Introduction

Accounting and double-entry bookkeeping are information tools used for more than six hundred years in enterprises (Littleton, 1933). *One* aim of these tools is to analyze the going concern, financial performance and financial sustainability of an enterprise. A *second* aim of these tools is to give information about the stewardship role of management. A *third* role of these tools is to provide data input for risk assessment and audit of enterprises. Over time these tools have increased in importance for enterprises and society. As a result, legal regulations and accounting standards have been developed both on national and international levels. Judgements and decisions in financial matters need a solid and common ground for information.

"From the 1970's, the question of the interests of 'stakeholders' emerged, with attempts of 'social reporting', 'corporate social responsibility', 'environmental', and 'social and environmental' and finally 'integrated' accounting and reporting" (Mähönen, 2020, p. 1). These trends are reflected also in the European Union legal framework, both in regulation of financial intermediaries especially and of 'nonfinancial' reporting. New and wider responsibilities linked to a desire for sustainable enterprises create new forms of accountability.

The aim of this chapter is to stimulate the development of sustainability in business by suggesting some new normative ideas on how accounting can be used as a vehicle for sustainability reporting. The target readers are people with an interest in sustainable business.

If accounting should be used as a vehicle for sustainable business, accounting needs to develop and include more resources used by sustainable enterprises in addition to financial resources. Sustainable enterprises also need to develop accounts and indicators for all the main resources used in sustainable operations if data should be recorded in the accounting system:

1. Human and social resources
2. Environmental resources
3. Technological resources
4. Continued use of financial resources

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These four resources are the bases for producing goods and services in an enterprise. The amount and specific type of resource varies among different business operations. The figure below illustrates this resource mix:

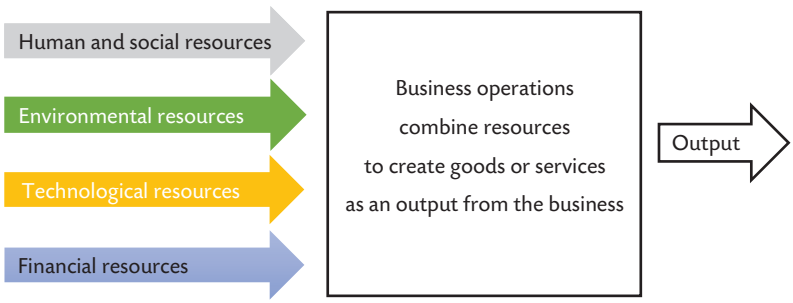

Figure 1 Resource mix, a base for all business operations

There is a need to develop and extend the accounting framework and accounting "toolbox" in order to provide information about resources one, two and three[1] above (Fagerström, Hartwig and Cunningham, 2017). The objective of sustainability accounting,[2] reporting and assurance is to provide systematic information about reporting units' sustainability risks and opportunities using sustainability indicators.

Because of adoption of EU directive 14, a large number of European companies must publish annual sustainability reports beginning in 2017. The increased number of sustainability reports indicates that reporting has been developed faster than the underlying work to prepare reports. Therefore, sustainability reporting might be more of a way to adopt a practice and create legitimacy rather than actually contributing to sustainability (Ingdahl and

1 Resource four, financial, is already accounted for in traditional financial and management accounting.

2 Financial and management accounting is based on systems to record transactions in a systematic way, double-entry bookkeeping. Financial reporting has an accounting system as a base, but *sustainability reporting is not yet based on an accounting system* (Fagerström *et al*., 2017).

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Påhlsson, 2015). In a report by the Mistra Center for Sustainable Markets on the Stockholm NASDAQ Large Cap 2019, one of the findings showed that 88 per cent of the companies communicated largely about their sustainability strategies rather than their actual sustainability work. Driven by external pressure, enterprises have largely started to recognize the importance of integrating corporate sustainability, but it is still rare they consider it in strategic management (Engert and Baumgartner, 2016).

2 Meaning of sustainability

Sustainability is not a new concept. Yet there is no clear commonly understood definition of what the term "sustainability" means. As a policy concept, sustainability has its origin in the 1987 Brundtland report, which defines sustainability as "development that meets the needs for the present without compromising the ability of future generations to meet their needs." (United Nations, 1987, p. 1).

In order to operationalize a sustainability perspective, John Elkington introduced the Triple Bottom Line (TBL) concept in 1994. The TBL broadened the traditional economic measures of profits, return on investment and shareholder value, and added environmental and social dimensions. TBL dimensions are also called the three Ps: people, planet and profits. The TBL is the most commonly used framework for sustainable development (Slaper and Hall, 2011). TBL is the basic concept for sustainability management reporting tools in sustainability reporting frameworks. One example is the Global Reporting Initiative (GRI) (Hartmann, 2018). Dyllick and Hockerts (2002) broadened the TBL framework when including the stakeholder perspective in the TBL concept. They defined corporate sustainability as the need to meet the needs of current stakeholders in order to be able to meet the needs of future stakeholders (Engert, Rauter and Baumgartner, 2016). From this perspective a company is considered economically sustainable if it fulfils the principle of continuity, the owners' profit expectation and maintains its own and its shareholders' value (Hódi Hernádi, 2012). Socially sustainable companies contribute to social value when they increase both individual

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human capital as well as support social goals in the community (Dyllick and Hockerts, 2002). Companies are identified as environmentally sustainable when they consider their environmental impact in absolute terms. It is not enough to carry out activities in an environmentally sustainable way. The product or service produced should be sustainable as well (Hódi Hernádi, 2012).

3 A new scope of accounting

Accounting is a service function which provides information for management of an enterprise. A part of the information is disclosed to outside stakeholders in financial accounting and another part is kept for internal management purposes. Audit and assurance are tools which help improve the quality of accounting information both in an internal and external perspective. Regulation in the external perspective, financial accounting, has developed both on national and international levels over a long time. Accounting for internal management purposes, management accounting, has also developed over a long time into management control systems.

Management control systems are needed to provide reliable information that is used as a basis for strategic management and disclosure. Internal decision-making and improvements require a good understanding of corporate sustainability goals, the possibility for the enterprise to contribute to solve sustainability problems and measuring of the performance. Sustainability performance data are used for both internal and external reporting (Maas, Schaltegger and Crutzen, 2016). Sustainability reporting is based on an external "outside-in" perspective of the company; reported criteria are based on external requirements and standards (Hertzig and Schaltegger, 2006). Reported sustainability measurements enable stakeholders to assess enterprises' impacts and issues (Maas *et al.*, 2016). The focus is on transparency and on compliance with regulations and legitimized standards (Beusch, 2018). One risk when focusing on an outside-in perspective in sustainability reporting is that information might be generated and reported without considering internal activities and implementation of sustainable business. This lack of consideration leads to lack of transparency because external stakeholders do

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not have enough information to judge what information is not covered and which is needed to understand the sustainable development of the enterprise (Hertzig and Schaltegger, 2006). The new scope of accounting is presented in Figure 2.

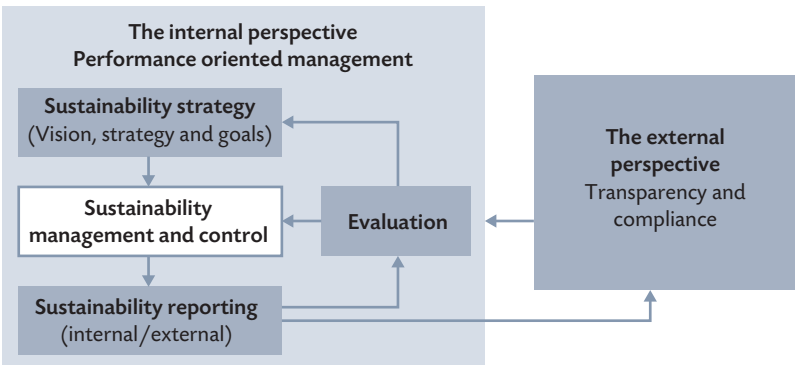

Figure 2 The internal and external perspectives on reporting and sustainability. Source: Maas *et al*. (2016), adjusted by Beusch (2018)

When the link between external reporting and internal management perspective is missing, enterprises tend to provide only limited quantitative data regarding actions taken to achieve sustainable outcomes. In addition, enterprises avoid providing information about poor performance (Maas *et al*., 2016). Sustainability indicators for evaluation cannot be found in traditional financial accounting charts of accounts. Normative recommendations can be obtained from different organizations and deduced from enterprise strategies. The most commonly used recommendation is the Global Reporting Initiative (GRI). The GRI is a set of voluntary standards that provide norms on what to report and how to report (Laurence, Humphrey and Moon, 2015). In the following sections, external perspectives and internal perspectives are further discussed and developed.

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4 Accounting for sustainability, external perspective

According to International Financial Reporting Standards (IFRS), the objective of 'general purpose financial reporting' is to provide financial information about the reporting entity that is useful to existing and potential investors, lenders and other creditors in making decisions relating to providing resources to the entity. In the development of a sustainable society, the need for additional reporting requirements has become apparent because the traditional demarcation of a reporting unit as the enterprise or consolidated group does not reflect the entire responsibility of the enterprise towards a wider group of stakeholders.

In recent years, the EU has issued mandatory rules on sustainability reporting. Directive 2014/95/EU on sustainability reporting provides a high degree of flexibility to companies regarding what information is relevant to disclose. As a guide to what to include in the reporting, the European Commission (EC) refers to widely accepted reporting standards and frameworks, like for example the GRI, SASB and IIRC (European Commission, 2014). In 2017 and 2018, the EC issued new guidelines. Again, they pointed out that companies can choose which guidelines to use in order to be in line with their business environment (European Commission, 2019). Therefore, the directive regulates which areas companies need to cover in their sustainability reporting, but not what information needs to be provided. Even if reporting is mandatory, it leaves room for interpretation and what is reported depends on which framework the company chooses to use (D'Aquila, 2018).

Sustainability reports should include information that is needed to understand the development of a company and the impact of a company's activities, including environment, social responsibility, treatment of employees, respect for human rights and anti-corruption (EU Directive 2014/95) stakeholders. Reports should include the business model, applied policies, results of the policies, identified risks, risk management and key performance indicators. The role of auditors is to issue a limited assurance statement, meaning a statement in which an auditor concludes whether a sustainability report has been disclosed in accordance with the legal requirements stated in Directive

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2014/95/EU. The EU Directive 2014/95/EU is currently under review. As part of the Communication on the European Green Deal in December 2019, the EC committed to review the directive. The aim of the review is to ensure that investors and civil society have access to relevant non-financial information to be able to assess companies' impacts on society and the environment. The policy options currently under review are whether to continue the non-binding guidelines, endorsement of a voluntary standard of non-financial reporting or strengthening of the existing model by specification of what the report should include and strengthening of the provisions regarding the assurance of the provided information (European Commission 2020).

Regulations of industry emissions and permits to operate are other forces on sustainability reporting. The Industrial Emissions Directive 2010/75/EU (European Union, 2010), adopted in 2010, is the main instrument within the EU to regulate pollutant emissions from industries. Each member state is obliged to comply with the directive and integrate the requirements into a country's own regulations. Industries included in the directive are required to operate in accordance with a permit granted by the authorities in the member states. Permit conditions, including emission limits, must be based on the Best Available Techniques (BAT). In order to define BAT and the BAT-associated environmental performance at the EU level, there is a joint work performed by the EC, the member states and environmental organizations. The result is a series of technical documents called the EU Best Available Techniques reference documents (BREFs). Reference documents describe the best available techniques and environmental performance for different sectors of the industries (European IPPC Bureau, 2019).

The regulations governing sustainability reporting for businesses in the EU lack accounting procedures to record and provide information to be included in sustainability reports. It is like building a house without a basement but with open doors for "creative reporting". Research in financial accounting has identified key institutional factors that impact financial reporting, namely corporate governance, statutory audits, institutional oversight systems, courts and public press sanctions. Better auditing and accounting enforcement have

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a positive impact on financial information, which thereby influences market development and financial reporting (Brown, Preiato and Tarca, 2014). Mandatory sustainability reporting is questioned because it lacks enforcement mechanisms. Therefore, there is a need for credible report assurance practices and standards. In addition, reporting companies (Brown, de Jong and Levy, 2008) see it as a potential risk that regulations may lead to a loss of the sense of ownership.

Greenwashing has a negative impact on both consumers and companies. Consumers are misled about corporate images; consequences can be that greenwashing affects consumers' opinions about corporate environmental sustainability and so-called consumer green trust. In the end, greenwashing affects consumers' willingness to purchase a company's products which will then affect the companies' financial performance (Gatti, Seele and Rademacher, 2019). Research shows that some companies may report less about their sustainability efforts because of fear of being accused of greenwashing (Ibid.). On the other hand, if companies do not report negative outcomes, their reliability is at risk and disclosing negative aspects can be seen as positive signals of actively managing risks (Rüdiger and Lülfs, 2014). Greenwashing researchers argue that reduction of greenwashing activities requires at least industry-wide codes of practices and, at best, regulation. Arguments have been raised against this approach, however, claiming that an exclusively mandatory approach may favor the establishment of grey zones in which companies look for ways around rules (Gatti, Seele and Rademacher, 2019).

Research has pointed out, however, the risk that regulation without enforcement generates behaviours in which companies communicate that they comply with the regulations but fail to apply them (King and Lenox, 2000). With increased demands on companies to be transparent with their sustainability activities there are increased phenomena of greenwashing. Greenwashing is defined in several ways, but a common usage is that greenwashing includes:

> … communications that mislead people into adopting overly positive beliefs about an organization's environmental performance, practices, or products. (Lyon and Montgomery, 2015, p. 225).

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Sustainability accounting and reporting development began over the last decades due to pressures on enterprises from different stakeholder groups. Responses from legislative bodies, both national and international, have focused on which areas are to be reported. There are lessons to be learned from the early development of financial accounting standards. For fifty years from the 1930s regulators of financial accounting struggled with various issues of non-compliance, so called green (dollar) washing. The Financial Accounting Standards Board (FASB) of the U.S. began in 1972 to develop an accounting framework for financial accounting and reporting in order to establish basic assumptions for financial reporting standards in the U.S. Questions like who the recipients of financial reports are and on quality criteria were addressed. It is clear that sustainability reporting needs to develop a similar framework for itself. In the next section, sustainable enterprise theory is introduced as a similar process of that of the FASB's frameworks as a precursor to sustainability reporting standards.

5 Sustainable enterprise theory (SET)

In order to address questions about the aim of sustainability reporting, answers outside legal guidelines are found in equity theories. Enterprise theory by Suojanen (1954) gives a broader scope of accounting and reporting. Enterprise theory defined a firm as an enterprise or a social unit used by stakeholders. He posited:

> If the enterprise is considered an institution, its operations should be assessed in terms of its contribution to the flow of output of the community. If the income generated in the enterprise is to be analysed on the basis of social considerations, then the traditional type of income statement is insufficient. (Suojanen, 1954, p. 395)

Stakeholders of an enterprise are focus groups for accounting in enterprise theory. In reporting sustainability, stakeholders, both external and internal, are the main user groups of external reports. When enterprise theory is extended and combined with resource theory based on the four resources mentioned above, a figure illustrates sustainable enterprise theory:

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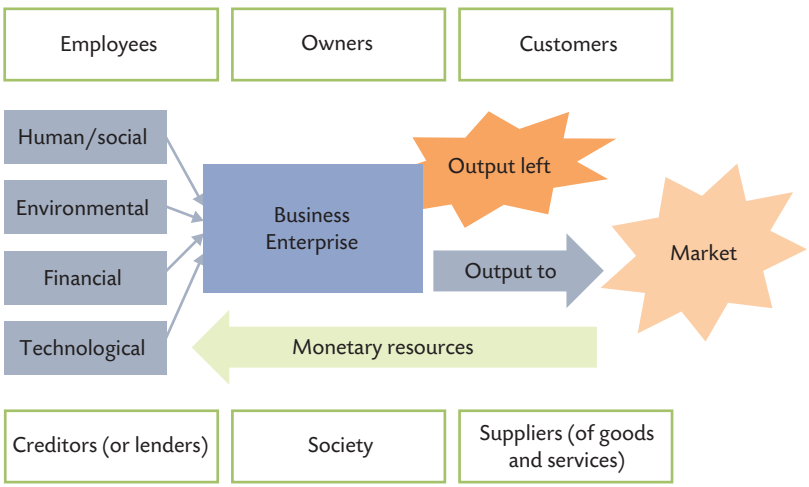

Figure 3 Sustainable enterprise theory, Fagerström and Cunningham (2017, p. 141)

The model is circular in which resources are used in production of goods and services. This output serves a market and money flows back to the enterprise. Some values do not leave the enterprise in the circular process; they stay as immaterial assets or liabilities. Example of such values are goodwill and brand values.

Applying the continuity postulate, sustainability accounting and reporting focus on providing bases for professional assessments of a company's risks and opportunities concerning all aspects of companies' activities. This period would often be longer than the period of continuity for financial reporting, especially if there is a long product life cycle with requirements for recycling, disposal, clean-up and restoration at the end of the cycle. The continuity postulate also has an impact on capital maintenance because companies must have enough capital to cover both financial risks and sustainability risks. Hicks' (1939) "well off" concept includes the sustainability dimension in a broader context, even if not discussed explicitly.

Financial resources are accounted for and reported in the traditional accounting model in which the indicator is a monetary unit. Other sustainability

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indicators are evidence of sustainability for all four resource groups and each resource has different types of indicators. The indicators are objective or subjective depending on their nature. In the sustainability accounting model, indicators for each resource are recorded and assessed for risk and opportunity, thus providing a more accurate assessment and overall picture of the sustainable area and an enhanced and standardized assurance process. Persons providing assurance, such as auditors, need to find evidence and make professional judgments based on evidence. The systematic approach thus makes it possible to find missing evidence in case an indicator is not accounted for. Standardized sustainability accounting and reporting using indicators, which can be given a level of assurance, allow users to make rational assessments of risks and opportunities. (Fagerström and Cunningham, 2017). The next section presents internal perspectives on sustainability reporting and accounting.

6 Accounting for sustainability, internal perspective

Management accounting and control is another area that has a large impact on the information needs of sustainable enterprises. Diagnostic control systems are backbones needed to implement goals in an organization (Simons, 1995). Formal information systems help managers monitor outcomes, compare outcomes with standards and take corrective action (Simons, 1995; Tessier and Otley, 2012). Management accounting and control systems focus on output variables that represent important performance dimensions of business strategies. Often these strategies are called critical performance variables, where critical performance variables are those that must be achieved in order to implement intended strategies for business success (*Ibid.*). Prior research on sustainability and management control systems (MCSs) has addressed the emergence of sustainability control systems (SCSs) by either focusing on their impacts upon financial and nonfinancial performance or describing and analyzing the use of dedicated systems to control for sustainability (Arjalès and Mundy, 2013).

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Surprisingly little is known about the relationship between 'conventional' MCSs and SCSs. SCSs capture environmental and social issues in a more systematic and broader way than do conventional MCSs and are usually operated by groups other than the finance and accounting team within organizations. Gond, Grubnic, Herzig & Moon (2012) have proposed a typology of sustainability integration within strategy through MCSs. Based on Simons' (1995) levers of control, they use the typology to clarify the theoretical paths and barriers towards integrating sustainability. In Figure 4, a strategy control system relation and external pressures are illustrated:

Figure 4 Diagnostic control system for sustainable business, developed from Simons (1995) and Gond *et al*. (2012)

First, formulation of a sustainable business strategy in sustainable business depends on a few basic issues such as legal frameworks or regulation from states, directives from legal institutions such as the EU or UN and stakeholders' demands. Based on those factors, companies formulate sustainable business strategies considering customers and other stakeholders. Legal frameworks guide what companies can or cannot do. For example, landfill and other toxic

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material handling issues are clearly specified in laws. There are directives by legal institutions that are considered good practice that also become enforceable laws. Stakeholder demands are important for formulating strategies. In Nordic countries, stakeholders including investors and customers apply indirect pressure on companies to be sustainable.

Second, critical performance variables are those factors that must be achieved or implemented successfully for the intended strategy (Gond *et al*., 2012; Simons, 1995). For sustainable businesses to achieve circular strategies, as an example, companies can use GRI or SASB indicators as their performance standard variables. The companies can design MCSs so that outcomes from different departments match the performance standards variables or indicators. Managers intervene only if there are issues raised. In this way, the system ensures control by keeping employees motivated without constant monitoring and oversight (Simons, 1995). The size of an operation has a major role. The larger the size, the more difficult it is to manage.

Third, diagnostic management control systems are products of sustainable business strategies and critical performance indicators. In both internal and external reports, companies share outcomes in the form of sustainability indicator reports. These reports reflect strategic and management styles and meet information demands of various stakeholders.

Management control systems are supported by extensions of bookkeeping systems with dimensions and accounts in addition to traditional accounts that receive debit and credit entries. Dimensions such as company, department and product levels are common in many companies. In order to process data from sustainable responsibility areas, new dimensions outside traditional ones need to be developed. Two examples are: 1) products that have been sold to customers and are in use, and 2) recycling of products that have been sold. In addition to new dimensions, there is a need for extensions of management control measures and new *separate accounts* in the management accounting chart of accounts for other resources such as human, social, environmental and technological resources. All strategies need to be operationalized and managed. In the table below, these additional dimensions and measures are presented.

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Table 1 Object matrix for diagnostic indicator control systems

Measure / Objects	Company level	Depart-ment level	Product level	Products in use	Products lifecycle
Financial control	X	X	X	N/A	N/A
Social control, note 1	X	X	N/A	N/A	N/A
Environmental control, note 1	X	X	X	X	X
Technological control, note 1	X	X	X	X	X

Note 1: In order to separate resources, the chart of accounts needs new accounts for these resources.

In this object matrix, monitoring of financial and non-financial critical performance variables will occur on company, department and product levels including products in use by customers and recycling activities by ensuring top-down linkage of strategies. Moreover, object matrix diagnoses ensure control within the organization by keeping employees' motivation up without constant monitoring and oversight.

As in most enterprises, the external and internal accounting perspectives merge and have an interdependent impact on business information systems. In order to integrate sustainability reporting into accounting for sustainable business, the basic assumptions or postulates for accounting need to be developed. In the next section, refined accounting postulates are presented.

7 Postulates for sustainability accounting

Traditional accounting is based on systematic, ordered accounting using generally accepted accounting principles, regulations and good accounting practices which can be verified through good auditing practices (GAAP). Traditional accounting contrasts with sustainability reporting which is less structured and in which rules and customs are under development. Sustainability reporting can be done without underlying accounting systems and only lighter forms of audit for so-called assurance.

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Postulates are as important for sustainability accounting as for external financial reporting. They represent basic assumptions on which sustainability accounting is based. Postulates of financial reporting provide the bases but are not in themselves adequate. The four postulates, in IFRS, U.S. GAAP and similar concepts of accounting principles in many countries, are:

- Continuity (going concern)
- Accounting (reporting) entity
- Reporting (time) period
- Measurement unit

Continuity (going concern). The going concern postulate assumes a company continues its activities for the near future and is able to complete its planned financial activities and meet its financial obligations. The concept affects the valuation of assets and liabilities. When the going concern assumption does not apply, other valuation methods must be used. Continuity can be interrupted voluntarily by closure of the business or voluntarily declaring bankruptcy. Continuity is disrupted involuntarily by legal action to force termination of the business. Sustainability reporting, in principle, is based on the traditional continuity postulate, but the period is extended to include the time necessary to complete sustainability objectives including product service and disposal, environmental clean-up etc. If a company has trouble meeting its obligations related to the resources that are needed to meet sustainability objectives in terms of social and human resources, environmental resources and technological resources, the business cannot continue for the indefinite future. The continuity postulate in a sustainability context is defined as:

> The continuity postulate is based on the expectations that operations will continue for the foreseeable future and that the company can meet its commitments, both.financial and sustainability, including but not limited to product life cycle, recycling, disposal, and clean up. (Fagerström *et al*., 2017, p. 48.)

This postulate indicates that the focus of sustainability accounting is to provide a basis for professional assessments of the company's risks and opportunities concerning all aspects of companies' activities. This period would often be longer than the period of continuity for financial reporting, especially if

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there is a long product life cycle and requirements for clean-up, disposal and restoration at the end. The continuity postulate also impacts capital maintenance. Companies must have enough capital to cover both financial risks and sustainability risks.

Accounting (reporting) entity. The traditional financial accounting postulate of accounting unit is based on ownership and control. In financial accounting, an entire company is treated as an accounting entity and is usually a consolidated group. Financial accounting's entity concept provides a basis for methods used in financial accounting such as reporting on results, or profits, assets, debts, liquidity and similar items for an enterprise as a whole to make it easier to assess, among other things, financial risk. In sustainability accounting, which is focused on assessment of risk and opportunities associated with a company's use of resources, the same concepts as in financial accounting cannot always be used. Risks regarding a company's use of resources start with raw materials and proceed to transportation of raw materials and production. After production, products are used and ultimately are disposed of, often recycled, and may require clean-up, which is also associated with risk. The entire life cycle has different types of risks called the **sustainable responsibility area**. To make a systematic assessment of risk and opportunities possible, the following definition of sustainability accounting entity is made:

> The sustainability accounting entity concept includes all activities over which a company has some form of control. Control regarding sustainability can be exercised directly over a company's or group's own operations and indirectly through a company's responsibility to choose suppliers that meet its demands for sustainability. Indirect control also occurs because a company or group is responsible for products the company or group has sold. The responsibility includes products' life cycles, which include recycling and disposal. (Fagerström *et al*., 2017, p. 48.)

Sustainable responsibility requires that a company contract with its suppliers and recycling companies to exchange information regarding sustainability indicators. Furthermore, products in use among customers must be followed up. This follow-up is one part of a company's sustainability responsibility which is why product use must be observed until disposal, any recycling

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and any environmental clean-up. This information then forms the basis for sustainability disclosures regarding the sustainable responsibility area. Figure 5 below illustrates the entity concept of sustainability accounting:

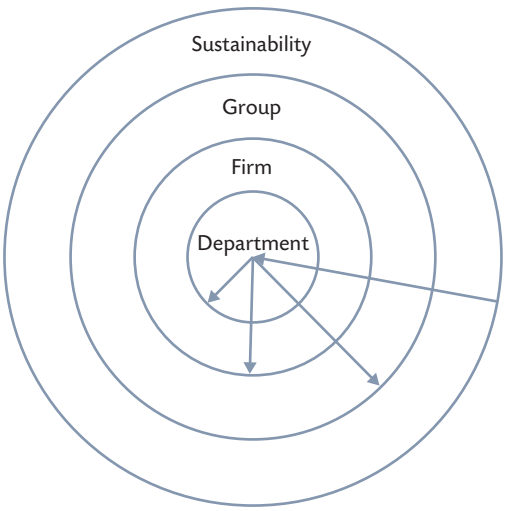

Figure 5 Sustainability accountings entity concept

To aggregate all aspects of sustainability from raw materials to recycling, extension in time and space can be difficult. This concept is developed further in the following postulate of reporting period.

Reporting (time) period. In financial accounting reports, companies or groups use time periods such as annual periods and quarters of a year. In order to provide net income for a period, two different approaches are used. One uses the matching principle to make accrual-basis reports. Another approach measures changes in net assets during the period excluding owner transactions. In this latter measurement, net income is derived and is divided into revenues and expenses. Both methods have obstacles: Matching requires difficult judgements about the future, and measurement of net assets is a difficult judgement about value. Sustainability accounting does not measure

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profit and financial position but gives bases for professional judgments about a company's risks and opportunities relating to companies' resources and products. The entire life cycle is included in these assessments. It usually takes a long time from when raw material is taken up to when products are sent 'to the grave', perhaps ten to twenty years or more.

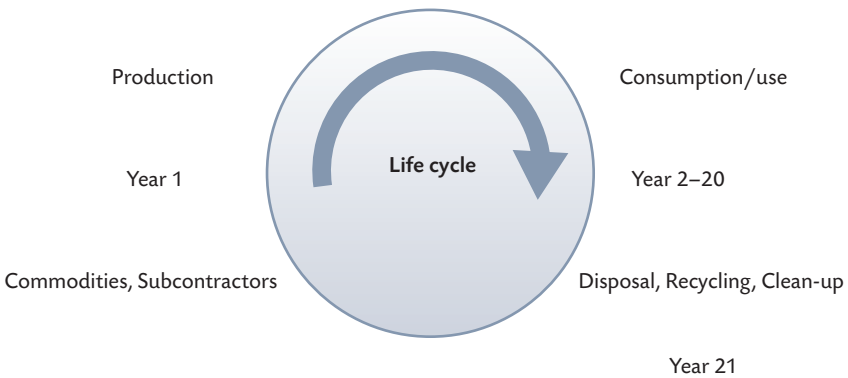

Figure 6 Product lifecycle and demarcation of time

Figure 6 above illustrates recording over a long time from raw material to disposal, recycling and clean-up. In a sustainability statement for a calendar year, outcomes may be based on production that has taken place during the period, which may include aspects of sustainability reported from suppliers and in the form of commodities that might have been produced in previous periods. Because products being produced during the year partially come in use during this period, forecasts and estimates regarding product sustainability are recorded because products' use and recycling occur in the future.

Based on the above arguments, the following definition of the reporting period postulate is used when sustainability accounts are prepared:

> Time demarcation in companies' external sustainability reports includes annual and interim periods and also the full life cycle during which future outcomes of sustainability indicators are based on good forecasts and known data. (Fagerström *et al.*, 2017, p. 50.)

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It is important to indicate clearly in sustainability statements what are documented outcomes, facts, what are forecasts and on what data these forecasts are based.

Measurement unit. Traditional financial accounting statements are expressed in monetary amounts which facilitate comparisons among companies and over time. Financial reports are analyzed using key figures and ratios to identify financial risks and opportunities. One obstacle is that the value of money changes over time due to inflation and other reasons; in addition, a currency's exchange rates go up or down against other currencies. In sustainability accounting, it is difficult to convert data from different indicators into money. Therefore, units of measure for sustainability reporting are given for each sustainability indicator. Examples are tons of carbon dioxide, sick days etc. The value of a sustainability indicator together with other financial information are bases for assessments of risk and opportunity. Shuaib, Seevers, Zhang, Badurdeen, Rouch and Jawahir (2014, p. 492) describe: "An indicator is a specific expression that provides information about performance or describes the state of a phenomenon, environment, or area". Values of sustainability indicators are supplemented by risk and opportunity factors. Risk factors can be graded from one to nine with one being no risk and nine high risk; opportunity factors are also graded from one to nine, one being no possibility to improve, other than to stop production or stop using the resource, and nine being major improvement opportunities. The worst-case scenario is nine in risk and one in opportunity; very high risk and no opportunity to influence the outcome. Based on this reasoning, a postulate regarding the sustainability accounting's unit of measurement is:

> Sustainability is expressed in the unit of measurement for the respective sustainability indicator. Furthermore, reports include a scale showing the risk and opportunities. (Fagerström *et al.*, 2017, p. 50.)

Extensive comments on risks and opportunities are needed. Some indicators may be expressed in money terms through, for example, emissions trading. The table below shows a summary of traditional accounting postulates compared with modified sustainability postulates.

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Table 2 Accounting postulates compared to modified sustainability reporting postulates

Postulate	Traditional	Modified for sustainability
Going Concern	Unlimited time in order for the entity to complete its obligations	Unlimited time in order for the entity to complete its obligations to achieve sustainability related goals
Accounting unit	Based on ownership and control	Sustainable area of responsibility, over which companies have direct and indirect control
Accounting period	Specific time, normally one year	The entire life cycle of products
Monetary unit	Currency unit	Unit of measurement for each sustainability indicator, including risk and opportunity factors

The next section discusses some of the problems arising from the consolidation of sustainability reports.

8 Issues in consolidation of non-financial information

Consolidation means that accounting reports of companies within a group of common ownership and control are combined into one. In connection with consolidation of information, aggregation problems emerge. Consolidated information loses capacity for value-based judgement and transparency (Gray and Wiedemann, 1999). The issue is that merger of data means loss of information. For example, three different annual accounts of companies in a group can read: Company 1 profit 1000, Company 2 loss 500, and Company 3 profit 800. The consolidated profit is 1300. The figure of 1300 gives no information on how profits and losses are distributed among the companies.

Consolidated sustainability statements have the same problems. Suppose that a group that consists of companies 1, 2 and 3 records a risk factor for an indicator as follows: Company 1 = 9, Company 2 = 4 and Company 3 =

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2, in total 15 (9 + 4 + 2) and average risk of five (15/3). Because the purpose of sustainability accounting is to be as thorough and detailed as possible, informing about risks and opportunities should, if possible, highlight risks and opportunities for smaller units rather than for the entire group. In addition to consolidated group statements, reports can also be prepared on lower aggregation levels by country or product area. Another important report could be on the sustainable responsibility area and include information on activities that can be directly or indirectly controlled. In the following discussion with an example from Swedish sustainability reporting, the needs for development in sustainability reporting are illustrated.

9 Need for change, a Swedish example

This discussion begins with an internal perspective, inside-out, in which organization and sustainable reporting might be influenced by accounting postulates. In the figure below, environmental strategies are examples.

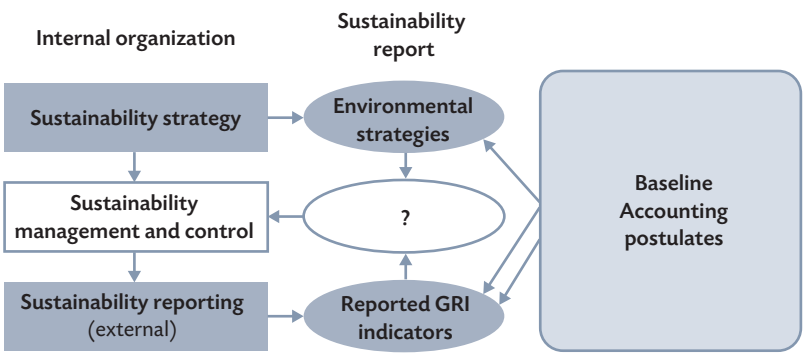

Figure 7 Links between internal organization and sustainability reporting

The left side of the figure shows sustainability work inside the company. Sustainability strategies are created, implemented and followed by control systems. Control systems are created to measure and evaluate outcomes of sustainability efforts. The middle part of the figure shows information available in external sustainability reports. Both environmental strategies and GRI

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performance indicators are reported in external sustainability reports. What is not reported in the external sustainability reports are management control systems and therefore marked with a question mark. Sustainability accounting postulates can be used to analyze the boundaries of sustainability reports.

In a recent master thesis by Fahlberg (2020), some Swedish companies' external sustainability reports from 2019 were analyzed. Some of the findings indicate that a kind of "wild west practice" was used in sustainability reports' use of the entity postulate, the accounting unit. All industries examined show the same lack of clarity about sustainable areas of responsibility. The area of control is wider in some respects, like greenhouse gas emissions from scope two and three, but narrower when reporting potential energy consumption upstream and downstream. In addition, screening and follow-up of environmental impacts over supply chains are sometimes included in reports and sometimes not included. Because companies report in different ways, comparison among companies and industries is difficult. Table 3 below shows a summary of units included in the study by company and industry.

Table 3. Reported units per company and industry, Fahlberg (2020), p. 44.

Area of responsibility/unit	Company	Industry
Company	All	All
All group companies	Holmen, LKAB, Sandvik, SSAB, Höganäs	Forest and paper, mining, steel
Operational control companies	Billerud Korsnäs, SCA	Forest and paper
Companies with the major environmental impact	Boliden	Mining
Energy Scope 2 suppliers	All except Höganäs	All
Energy Scope 3 suppliers	Billerud Korsnäs, SCA, Holmen, Sandvik	Forest and paper, steel (partly)
Energy upstream and downstream activities	Not included	Not included
Evaluation of new and existing suppliers	Billerud Korsnäs, Holmen, LKAB, SSAB	Forest and paper (partly), mining (partly) steel (partly)
Recycling activities	Not included	Not included
Client use of products	Sandvik, SSAB	Steel

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The area of responsibility affects what information is included and excluded in sustainability reports. The fact that companies and industries differ in what they define as their areas of responsibility distorts comparability among companies and industries when evaluating their performance in the environmental area. Also, within the same company, the extent of responsibility is not clear. For example, SCA included companies in its report over which it has operational control. It reports energy consumption for both scope two and scope three suppliers but influencing new and existing suppliers through evaluation is not included. This omission makes it difficult to understand on what grounds the sustainability report and the reported numbers are based. (Fahlberg, 2020).

In addition, other recent research indicates a lack of commonly accepted basic assumptions for sustainability reporting in Sweden. The impact of non-financial reporting directives is highly dependent on the way each company chooses to engage with the different reporting areas in the required disclosures (Ahern, 2016). There is a need for regulation and development of sustainability reporting both for external reporting and internal reporting. In the next, final, section of this chapter, suggestions for the future development of sustainability reporting are presented.

10 Suggestions for the future

There is a huge need to improve sustainability reporting in practice, theory and regulation. One of the issues is that even if non-financial reporting has existed for many years, there are still no commonly accepted standards. There is evidence that regulation of mandatory sustainable reporting within the EU is not sufficient. In order to build a base for future sustainable reporting, the suggestion is to develop a framework for sustainability reporting and accounting. As a model, the frameworks of the FASB and the International Accounting Standards Board (IASB) could be used. It is important to develop this framework in parallel with developing "equity theories" suitable for sustainability reporting of enterprises.

The traditional accounting model, based on double entry bookkeeping, can be developed to include sustainability indicators in the chart of accounts.

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Accounting can be used for other reporting purposes than financial resources. One example is from the old steel mills in Sweden during the 1600s, when kilograms of potatoes and other resources where recorded in the mills' accounting systems. In the 2020s chart of accounts, sustainability indicators can be recorded in a systematic way in the accounts. Another example is to compare sustainability reporting today to the development of financial reporting, Accounting regulations and standards for financial reporting did not exist 90 years ago. Until the stock market crash in the U.S. in 1929, companies could choose among wide varieties of accounting principles. The stock market crash in the U.S. and the bankruptcy in 1932 of the Kreuger & Tolls Company created demands for public accounting regulations by the market. Since then, generally accepted accounting principles have been developed and implemented in countries' legislations (Flesher and Flesher, 1986). There are many lessons to learn when building accounting and reporting for sustainable enterprises and organizations.

Another area that needs to be developed is the link among strategies for sustainable business and indicators. Financial accounting has hundreds of accounts in order to present financial performance and position. Sustainability dimensions in nonfinancial indicators need to be further developed. From accounting history, we can learn that regulation does not work without enforcement mechanisms and auditing. It has been shown that better auditing and accounting enforcement have positive impacts on financial information, which influences market development and financial reporting (Brown, Preiato and Tarca, 2014). These suggestions require competence from the accounting and auditing professions to be involved in the development of sustainability reporting.

Finally, I would like to express my gratitude to the anonymous reviewer for the comments on the original draft.

The article has been peer reviewed.

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