Integrating management accounting and control for sustainability

Chapter · July 2020
DOI: 10.4324/9781003037200-6

1 author:

Peter Beusch
University of Gothenburg
19 PUBLICATIONS   **32** CITATIONS

Some of the authors of this publication are also working on these related projects:

Project   Business Models and Sustainability View project

Project   Sustainable Management Accounting and Control View project

Chapter 4

Integrating Management Accounting and Control for Sustainability

Peter Beusch

This chapter aims to describe more in detail how companies can integrate management accounting and control (MAC) for sustainability. First, the major difference is illustrated between integrating rather simple certifications/standards and integrating strategic and significant sustainability priorities for the entire company. Integration is then explained by means of a three-part division, namely a cognitive, an organizational and a technical integration. It is further described how integration can be understood in the light of structuring processes between people and structures. Therefore, it is clarified how technical, cognitive and organizational structures are affected and what is needed to integrate sustainability issues into MAC systems. Since technical structures are not infrequently the core of traditional MACs, major focus is then placed on the description of the technical structures and the technical integration required for sustainability. An overview of today's most well-known MAC techniques and tools for sustainability (e.g. budgeting, calculations, hybrid control and measurement systems, etc.) is then presented before the chapter concludes with a discussion of how everything is related and what it means for (management) accounting for sustainability.

Learning outcome

After reading the chapter, the reader is expected to be able to:

1. Describe the difference between integrating a simple certification in the field of sustainability and integrating large and comprehensive sustainability strategies within a company;

2. Understand what can be meant by the term 'integration' in the field of management accounting and control (MAC) and sustainability but also how it can be related to structuring processes in general;

3. Describe what constitutes cognitive, organizational and technical structures within companies, but also how these structures are affected and what is needed to achieve sustainability integration within each and one of these structures;

4. Describe in more detail the typical technical structures that often form the core of the area of MAC and how they can be linked to sustainability;

5. Describe how all this is related and what it means for (management) accounting for sustainability.

4.1 From simple certifications to strategic sustainability priorities

In the last chapter, *Step 3* was presented as the most important and perhaps also the most comprehensive step for accounting and finance managers and other employees in this domain within organizations to design a management accounting and control (MAC) system for sustainability. *Step 3* was about planning, implementing, following up and adapting the business in relation to (sustainability) goals and strategies. This was divided into four parts, where part 3.2 consisted of integrating sustainability goals into existing MAC systems or, in case there are no existing systems for this purpose, to create new MAC systems for these new goals and objectives that one wants to achieve.

What is meant by the word 'integration' can be illustrated in many different ways. One way to see integration is to look at it as if we are bringing together two different systems, where the usual and traditional (often financially oriented) MAC systems already exist. Because new requirements from (new) stakeholders come up, you either have to add them to the original (financially oriented) systems or you have to design new systems for the specific purpose. Such new requirements may have their beginnings in a relatively simple certification. The word certification means that something complies with a requirement specification, norm or standard.

Sustainability standards and certifications are voluntary, usually third party-assessed, norms and standards relating to e.g. environmental, social, ethical or safety issues that can be adopted by companies to demonstrate the performance of their organization or products in specific areas. Standards are normally developed by a range of stakeholders and experts in a particular sector and they are accompanied by a verification process to evaluate that the company complies with that particular standard. Exactly this phenomenon with the connection between internal work and external verification on behalf of certifications can be compared with the overall sustainability issues firm internally and the external reporting thereof (as discussed in the previous Chapter 3).

Today, many companies use different certificates as proof of compliance, but certifications can range from having a very small to having an excruciating impact on a company and the management systems used. For example, ISO 14001 is an environmental certification that requires the organization to have a quality management system where the focus is on planning, control and monitoring of environmental issues within the companies. OHSAS 18001, on the other hand, aims to prevent accidents and illnesses and then mainly looks at the work environment and health of the staff. Both mentioned certifications are large and require many organizational tasks to get 'certified' and 'verified'.

Certifications are often time-limited and in many areas and industries, certain certifications are required in order to become supplier to other companies (B2B). The link between certifications and the area of sustainability is very clear today in society as a whole, and not just in the corporate world with e.g. labels such as FSC (forest products), Fairtrade (mostly for small producers and farmers) and Organic (organic farming).

Most certifications require that you work company internally with, for example, environmental or health related issues, collect data and report on what has been achieved. The problem is,

however, that many of these new work tasks are outside the usual tasks and systems that accountants and finance people use. The HR department mainly handles the social issues, e.g. the employees' wages, health, satisfaction, efficiency, etc. The environmental issues, on the other hand, can be found in many different departments and levels, in manufacturing companies, however, mainly in the factories, i.e. at the operational level, and they are coordinated, often to a much lesser extent, at the higher levels in organizations.

A further problem is that environmental and social issues usually use other than financial measures, e.g. water consumption in liters, air pollution in tones of CO_2, or noise in decibels, etc. When there is for accounting and finance related people no common value, namely measures in financial terms, i.e. in Swedish crowns, Euro or USD, it is not easy to work for them, as most traditional calculations and other accounting templates, for products and services, require a monetary format. It is not always possible to have truly quantitative measures, but social issues can often only be measured with different scales, where the scales might well be numerical but cannot be compiled in a mathematical way. For example, a five on a scale where you fill in whether something is satisfactory or not is not automatically five times better than a one on the same scale.

Economic issues are traditionally the issues that always come high on the agenda in many companies. The great risk with environmental and social goals that cannot be grasped by accounting and finance people, or cannot be translated into financial goals and dimensions, then is that such issues become marginalized. Thus, the introduction of a new certification in a company might rather become a thing beside rather than attending the most important meetings at the top management level. The consequence is that they become less prioritized than the traditional financial issues.

If it only applies to the introduction of a rather small certification, it may not appear to be a major problem for a company when not everything is connected and fully integrated. However, the problems arise when companies deliberately choose sustainability as a strategic priority, which more and more companies are doing today, not only in Sweden but also globally, and yet they plan, manage, control and follow up these sustainability priorities alongside the traditional MAC systems. Then, the risk with sustainability issue to become marginalized is major. Below we will explain the reason for this and what can be done to avoid such problems.

4.2 Structuration processes and sustainability integration

To walk the talk, thus to integrate sustainability issues at all levels of a company, but also in MAC systems, rather than to provide external information about it only is today perhaps considered the most important puzzle piece to bring about a faster transition to a sustainable development of companies and society. As previously discussed, integration can be seen in many ways, mainly depending on what you consider to be the subject of MAC. In this chapter, we account for a three-part integration division that has received attention recently. In several MAC articles (e.g. in Gond, Grubnic, Herzig & Moon, 2012; Rodrigue, Magnan & Boulianne,

2013; Battaglia, Passetti, Bianchi & Frey, 2016), a framework has been used that focuses on integration mainly based on three characteristics. These are:

1) A cognitive integration
2) An organizational integration
3) A technical integration

These researchers have investigated the integration between traditional MAC systems, which usually have a financial focus, and control systems that focus on environmental and social issues, here so-called sustainability MAC systems. We use the three-part integration division in own research (Beusch, Dilla, Frisk & Rosén, forthcoming). Below, however, we first illustrate how integration can be looked at in a larger context that shows how things in the world might be structured in general, and in companies in particular. Own research results, from a large international company, show that all integration is reflected in a larger process that takes place in reality, namely something we here call a "structuration process" that includes the two main dimensions of structure and agency.

The division is similar to the long academic discourse on structuration processes that determine how things in organizations and societies are shaped and embodied. This is most evidently described in Anthony Giddens many works (especially in his writings from 1979 and 1984), in which he summarizes the two dimensions with the concepts of structure and agency. Below is a brief simplified summary and interpretation of what has been written in Giddens' work connected to the MAC literature. However, we apply a more pragmatic approach to the whole reasoning.

Figure 4.1 summarizes the *structuration processes* where we have agency (human beings/agents/actors) on one side and the structures they create on the other side of a common field. In the text here, for simplicity's sake, we only use the concept of agency for the three concepts of human beings/agents/actors although literature, with its different frameworks and interpretations, can use different or the same names to describe slightly different discourses depending on the field of research (e.g. in Englund, Gerdin & Burns, 2011). In summary, however, this agency and structure concept can be seen as reaction to almost 'people-free' functionalistic research, where technical-efficiency is in focus, then often disconnected from values, culture, politics and history.

As in Giddens' (1979 and 1984) works, agency can in reality hardly be totally separated from the structures they themselves create, consciously and unconsciously, because precisely the interaction between them, the structuration process, as illustrated in Figure 4.1 with the two large arrows, determines the design and characteristics of each. Two core assumptions of structuration processes are important to mention here. First, these processes apply the concept of *duality of structures*, rather than dualism, to illustrate that "structure works as both the medium for, and outcome of, social systems" (Englund et al., 2011, p. 495). Second, this includes the problem with "the paradox of embedded agency" that is: "if social structures are so powerful an influence on behaviour how can they change and if agents have free-will why is their behaviour constrained by social structures at all?" (Englund et al., 2011, p. 506).
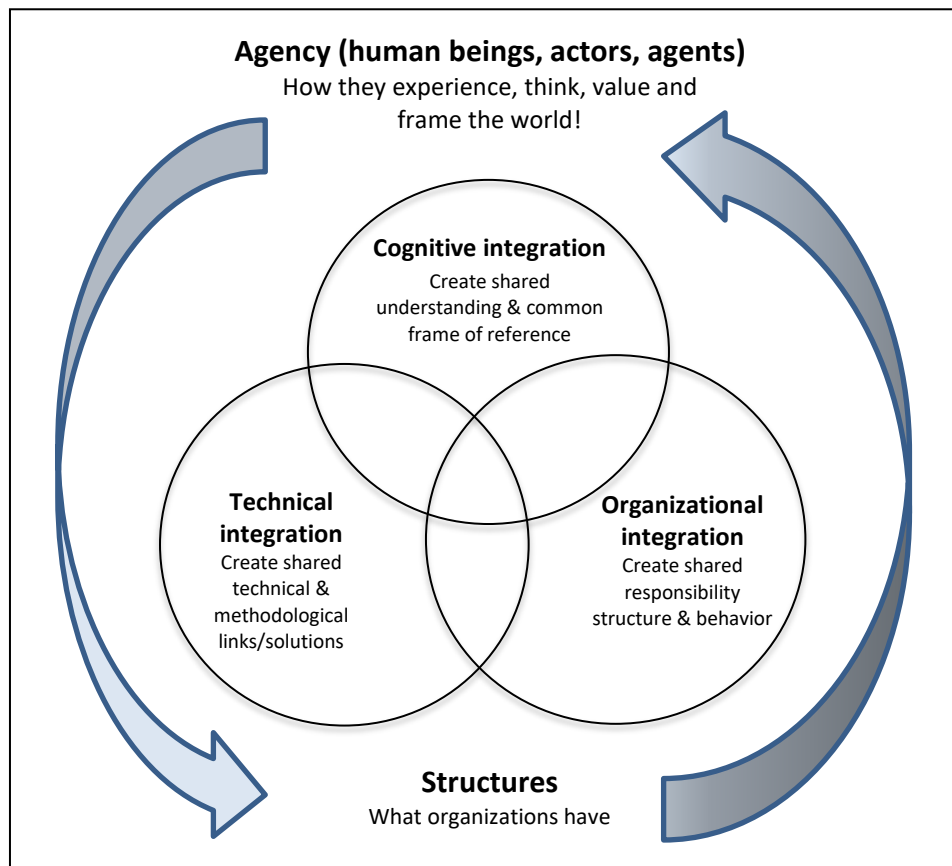
Figure 4.1: Ongoing structuration process, control integration and practice development

In Figure 4.1, we place, in the middle of the structuration process, the three above mentioned types of integration between traditional and sustainability MAC systems (e.g. in Rodrigue et al., 2013; Battaglia et al., 2016) in three circles. Full integration can then be imagined in the middle of the three circles where we have a technical, cognitive and organizational integration simultaneously, which we will describe in more detail below.

Knowledge plays a key role in all structuration processes as it provides the basis for the rules and structures that people create around them. In this way, people are knowledgeable, reflexive, cognitive persons who, through their activities, create structures, which often become real and lasting institutions (institutional structures). As these institutional processes continue, parts of these structures are reproduced and transformed. Institutional becomes a structure if it forms a permanent part of organizations or society that influences the behaviors and values of individuals and collective groups. This is done by the existence of norms for action, cognitions, emotions, and values. If you deviate from these norms, it is assumed that this leads to some kind of disadvantage or cost.

In the case of MAC and sustainability, one can imagine a situation where the company's employees try to integrate strategic sustainability priorities into their traditional, usually financially oriented, MAC systems and tools. Figure 4.1 therefore shows, in the lower part of the figure, the structures or what the company has and consists of. These structures have been

created or produced by employees over generations, and are reproduced, in most cases, all the time. Such reproduction can either go slow or fast, depending entirely on the situation, the context, the people involved, internally and externally. The strength of the institutions and, on the one hand, the propensity to retain the structures as they are, is placed against a willingness to continuously adapt to changing conditions. In literature, this is sometimes described as the '*stability and/versus change*' or '*continuity and/versus change*' (Englund et al., 2011) dilemma.

The sustainability issues that currently require companies to mobilize and thus also adapt their agency and structures can be considered to be of a nature that requires organizational and institutional change. The extent of the changes required seems to determine how the interaction between the structures and agency advances and how long this takes. Anyone who looks around at daily work, or when studying at university, understands that the structures can have all sorts of shapes and peculiarities. One type of structure that includes much of the human component is social and cultural structures. On the other hand, almost as an opposite, we have natural and material structures, which, theoretically in any case, can exist without humans. Apart from the planet and nature itself, however, everything else has been materially and physically structured, constructed, and produced by humans. Factories and assembly lines, computers, products, papers etc. are such constructed and man-made things.

Entirely physical or material structures that constitute MAC mechanisms are relatively rare in companies, although one could count access cards, barriers or even the access to everything else that constitutes a company to this kind of structures. Departments, for example, may constitute physical structures, and even the hierarchy within a company constitutes some form of almost physical structure that affects the way MAC mechanisms work, or are intended to work, although this 'physical' is usually only visible on paper in form of concepts or drawings (e.g. organizational charts) and not as tangible/physical artefacts, which is described in more detail later.

Gond et al. (2012), Rodrigue et al. (2013), but also Battaglia et al. (2016), emphasize that integration is primarily required in the cognitive, technical and organizational area in order for traditional MAC systems to be successfully combined/integrated with the new sustainability MAC systems. In their studies, the researchers have used Simons' (1995) Levers of Control (LOC) framework, which is also the framework we have applied in own research, which we will refer to below. In the following discussion, we further refer to two other popular MAC concepts when describing this integration. First, this is Malmi & Brown's (2008) management control package concept, which we already introduced in Chapter 3 as a holistic management control typology that includes five groups of controls. Second, we link the three-part integration concept to other popular MAC literature (e.g. Merchant & van der Stede, 2017).

4.3 Cognitive structures and MAC integration

Integrating cognitive structures is considered a basic prerequisite for a company to successfully work towards sustainability (Gond et al., 2012; Rodrigue et al., 2013; Battaglia et al., 2016). A bit simply put, cognitive structures are people's attitudes, ways of thinking, mindsets, values

and beliefs. In the MAC literature, these structures are often referred to as social or cultural controls, sometimes also as people controls (Merchant & van der Stede, 2017) where social norms, values and cultural habits etc. form the structures that hold the whole control system together. In Simons' (1995) LOC framework, one can most clearly see value based control in what he calls belief systems, which then include formal control mechanisms such as mission and vision statements, and other credos to affect employee's behavior. In Malmi & Brown's (2008) control package, cognitive structures are largely within cultural control, namely within clans, values and symbols, i.e. formal and informal forms of control, where social norms are considered to affect not only thoughts but also action.

Cognitive integration, or the integration of cognitive structures, requires working towards achieving a common approach regarding/view of what MAC and sustainability means and how to relate to it. Here, it is primarily about getting employees to gain a more similar understanding of how the connections between economic, social and environmental sustainability aspects look like and what this means for the company. In this matter, there are mainly two cognitive types of people (Hahn, Preuss, Pinkse & Figge, 2014). The first type only makes sustainability investments if these pay off according to the business case principle, thus are paying pay-back within the (short) time limit that is common for traditional investments. The second cognitive people type accepts the fact that many of today's sustainability investments require a different (new) approach where the profitability aspect, which is the typical *business case approach*, must be partially or completely overridden in order to address important issues for society.

Within the domain of sustainability, there are many times when you either do not know what return the investment will generate or you do not know when this will happen. Therefore, the *paradoxical view* has it that one should not make a traditional business-case for such issues, precisely because profitability goals can be contradictory compared to social and/or environmental goals according to the criteria used by today's governing mechanisms (Hahn et al., 2014). Thus, from a *business case* approach, most things still center on financial returns, the pay-back. Sustainability issues can be included, and taken into account, in cases where they do not conflict with this economic logic or the *business case*.

However, demonstrating positive causality is often difficult in the field of sustainability due to measurement problems and because the areas have different formats (monetized or not). Submitting proof of a *business case* is not easy then. Often a logical connection can be sensed by the involved but not statistically or mathematically proven. This is, for accounting and finance people, a problem as budgets, calculations and most other accounts overall have to total exactly. This can be regarded as one of the main explanations why sustainability initiatives have not been more successful in accounting and finance dominated areas and that development there has been slow.

On the other hand, *paradoxical thinking* accepts, according to Hahn et al. (2014), different logics and do not latch on to just the economically rational. Here, social or environmental issues may be in focus and prioritized despite the fact that they may run counter to financial returns as other, non-monetary values, are included into the (e)valuation. Therefore, you do not need to compile a *business case* to be able to proceed with, for example, strategic investment

decisions. Also, conflicts between different stakeholders are accepted to a larger extent and you focus on what the company contributes to society and not just the organizational contribution, and this also in other than just financial terms.

Sustainability managers often, probably due to their education, background and personality, have often such a *paradoxical view*. Traditionally trained financial managers, controllers and accountants more often think in terms of the *business case*, however. Business cases are thus their preferable cognitive approach because they are trained to think so. It has, for decades, also been the logic they have been expected to work on. It can be considered that these people do not even do their job well in case they think differently - which is important to keep in mind when trying to improve cognitive integration for sustainability. Accounting and finance peoples' cognitive way of thinking is probably still mostly a *business-case mindset*, everything else is almost strange.

4.4 Organizational structures and MAC integration

Organizational structures can best be understood by looking at Malmi & Brown's (2008) administrative controls, which includes governance structures, organizational structures, but also an organization's policies and procedures. In Simons' (1995) LOC framework, boundary systems might, at least to quite some extent, cover the aspects of organizational structures (e.g. rules, limits, prescriptions). Organizational integration is the type of integration that Gond et al. (2012) describe least clearly in their integration framework. However, the authors emphasize that organizational integration is basically about support processes for enabling a common practice of employees who work with MAC issues and employees who work with sustainability issues. Organizational integration therefore means above all ensuring that you practice work in an integrated manner, which requires, in relation to sustainability goals and strategies, to:

- structure and define organizational responsibilities and determine which individuals get to participate in which decision-making
- set up policies and procedures
- determine how information flows between functions and levels are
- define other task allocation, coordination, and supervision directed towards the achievement of organizational aims

Together, this assumes that the company creates shared responsibility units and includes organizational structures and processes that enable social adaptation (socialization) across the traditionally often functionally divided boundaries (e.g. R&D, purchasing, production, HR, sales, etc.), which often also consist of specific skills. Information and knowledge about sustainability issues should then not only be with some experts but also with those who have the accounting and financial areas as their main responsibility. In order for organizational integration to lead to better sustainability work within companies, a systematic approach is needed to consider how these organizational structures, or administrative control systems (Malmi & Brown, 2008), are designed. The important thing is that clear links are created between the traditionally different practice areas and that socialization takes place.

4.5 Technical structures and MAC integration

4.5.1 Technical structures are often at the heart of traditional MAC literature

Probably most MAC literature that has been written over the last 40 years has focused on what could be assigned to technical structures as it, first and foremost, is about the infrastructure within a company that enables the (similar) structuring, collection, processing and reporting of accounting information. The technical structure is thus a composition of material, technical, social and knowledge-based structures. What can be included here is all forms of *system-technical infrastructure* (e.g. accounting system, IT system, ERP system, etc.), but not only. It is also about the methodological links and concepts that are built into the various technical structures that form the basis for how such accounting infrastructure ultimately is designed and used. The methodological concepts in turn have often been developed for several decades in society in general (such as the double-entry bookkeeping system) and in companies more specifically, with e.g. formalized and standardized calculation models, specific budgeting processes and various types of specific arranged and designed management concepts and scorecards.

For example, technical structures are illustrated in three of the five parts of Malmi & Brown's (2008) management control package. They are represented by planning (long rang and action planning), cybernetic controls (budgets, financial measurement systems, non-financial measurement systems, hybrid measurement systems) but also reward and compensation systems. In terms of Simons' (1995) LOC framework, it is first and foremost diagnostic controls that constitutes the technical structure, since diagnostic controls' main task is to monitor, communicate and correct for critical target variables and deviations.

The technical structures in the field of MAC usually are thought of as more 'material' or physical substance opposed to the cultural or social structures described above, which are usually of a more intangible but also informal nature, although some sort of formalization is often present. Therefore, technical integration means that traditional MAC systems, but also the tools and techniques associated with them, e.g. budgeting, different types and preferences of calculations, or a balanced scorecard, must also include the new sustainability goals (Gond et al., 2012), which then are primarily system interface and infrastructure issues.

Design issues are also important because the accounting systems, and other information flow mechanisms and tools used within the company, must be interconnected to support a common management of all data, information and decision-making. Thus, the main purpose of the technical integration is to create information channels and systems that enable the collection, analysis, and follow-up of common (financial and sustainability-oriented) data for performance measurement, variance analyzes and as a decision-making basis in general.

4.5.2 An overview of today's most well-known MAC techniques and tools for sustainability

The following overview (Table 4) of traditional but also sustainability oriented MAC techniques and tools summarizes some of the most commonly mentioned concepts that can be counted to be part of the technical structural area. Thus, there are technical structures that exist

in companies with the main aim to achieve integration in Part 3.2 (integrate (sustainability) objectives in existing MAC systems or create new MAC systems if necessary) in Figure 3.2, as discussed in Chapter 3.

The following overview is based on a number of publications in an international and a Swedish perspective (e.g. Passetti, Cinquini, Marelli, & Tenucci, 2014; Carlsson, 2017). It is important to note, however, that there has been quite some *talk* about these tools and techniques in recent years. In reality, however, this does not mean the same as if they are *applied and used* to the same extent. On the contrary, some research shows that there still is no particular systematic and fully conscious work done today to include and integrate social and environmental goals and metrics into the traditional (usually financial) MAC concepts.

(Traditional) MAC techniques & tools	MAC techniques & tools for sustainability
Budgeting and Planning (short and long term)	• Environmental Budgets & Planning • Social Budgets & Planning • Sustainability Budgets & Planning
Cost accounting and calculation techniques	• Full Cost/True-cost Accounting regarding environmental issues • Full Cost/True-cost Accounting regarding social issues • Lifecycle Costing (LCC) and Lifecycle Management (LCM) • Circular Economy • Activity-Based Costing for Sustainability
Hybrid performance measurement systems/ Integrative tools and techniques	• Eco-Efficiency Analysis • Sustainable Balanced Scorecard • Sustainability Reporting • Multicapital-Scorecard
Reward and Compensation systems	• Sustainability oriented Reward and Compensation Systems

Table 4: MAC techniques and tools & sustainability

The parts in Table 4 are, in many ways, similar to three types of Malmi & Brown's (2008) management control systems, namely 'planning, cybernetic control, and reward and compensation systems'. The biggest difference, however, is that we also focus here on specific cost accounting and calculation techniques, which is an important element of real MAC practices in firms and, in addition, includes much tutoring on the basic courses in management accounting at many universities. Sometimes, these courses are even called *Cost Management* or *Cost Accounting* or *Management and Cost Accounting*. However, cost management/cost accounting may be less relevant in the more theoretical and academic discourse, which Malmi & Brown (2008) also mention in their article. In terms of sustainability, however, a lot revolves around costs, which we illustrate below. We, however, start with budgeting and planning.

4.5.3 Sustainability budgeting and planning

Budgeting and planning is an important element in most companies, as it is often the largest formal process involving future planning. Simply put, one can say that there are three types of

special budgets for sustainability. The first type consists of environmental budgets, the second type of social budgets, and the third type summarizes both together as a sustainable budget, then either separate from the traditional financial budget or together with such financial planning. In addition, of course, these areas can be placed directly in the traditional and usually financially oriented budgets so that they do not get their own name. Such a budget can be seen as including a Triple Bottom Line (TBL) thinking, which theoretically probably is the best way to push sustainability issues into MAC tools.

A real TBL budget simply includes both social and environmental budgets, and at best also the financial budgets, side by side. Environmental budgeting refers to the budgeting of future environmental outcomes and is a forward-looking planning tool that determines available resources for environmental issues for a future period. This tool also helps determine the size of environmental targets. Of course, it is important that you also decide what the important environmental goals and objectives are that should be in focus. Here you can see a clear difference between a company internal and external approach. Company internally, one focuses on own environmental improvements where targets/goals and strategies are directly linked to the company's income/loss statement and have a fairly clear impact on (lost/increased) revenues and (saved/increased) costs. This area is normally under control of the company precisely because it is about 'internal affairs'. For example, use of 'green energy' or 'non-fossil fuel' within production and transports are internal performance metrics that measure environmental issues that can be planned for rather easily. These measures are often numerical but rarely of a monetary nature, and need to be translated/converted first in order to be included in typical accounting information systems.

The external environmental goals and dimensions, on the other hand, are more difficult to define and measure, and often less visible. This is the case because they are 'external' to the company, thus so called externalities, which is an external effect of what the company does. These externalities can be positive or negative, but above all the negative ones are a problem from a sustainability point of view because these are things that, at present, are often outside the company's area of responsibility, yet they are the result of what the company does or produces, e.g. greenhouse gas emissions, water pollution, noise, land use, etc. External environmental factors can, however, also be factors that the company would like to include in their calculations and managerial decisions but is not able to really do this simply because they have no control over them. Environmental budgeting and monitoring, and thus a formal planning for environmental goals and measures, with using financial and non-financial data can contribute to less environmental impact but also lower costs and increase revenues.

Social budgeting, on the other hand, refers to the budgeting of future social outcomes and is a forward-looking planning tool that determines available funds for social issues for a future period. This tool also helps to set social goals and metrics and expresses the aspirations, expectations and commitments of an organization regarding social impact for an upcoming period. Here, too, one can reason the same way as above for the environment domain because one can think of an internal perspective within the social field (the own employees) but also a company external perspective (external community and society in which the company operates). Measurement systems and structures that deal primarily with internal issues are e.g.

those intended for measuring social issues related to employees' health and safety but also employment conditions and satisfaction, career development paths and rewards.

Externally, on the other hand, it is more difficult to define what you mean by the social dimension and how to incorporate all this into a structured MAC process such as budgeting. Here it can be about human rights in more general terms than just the employees, it can be about social activities, or the social assessment of products that the company sells. In this area, the Global Reporting Initiative (GRI) standards offer a large number of focus areas and metrics (see Chapter 8) that can be applied by companies who really want to make a difference externally with help of (internal) budgets and planning. What is important is that the budget process leads to a systematic approach that delivers information on what activities can be regarded as socially efficient and effective. Numerical metrics are here normal and some things even expressed in monetary terms. However, perhaps the most common are non-monetary measures and not infrequently those of the most subjective nature.

4.5.4 Cost accounting and calculation techniques for sustainability

Full-cost accounting, or even *true-cost accounting,* are terms that have specific meaning when linked to the area of sustainability. Traditionally, full-cost accounting simply means to include all direct and indirect costs (and revenues) incurred to carry out the business operations. This, however, has not included social and environmental costs and benefits of two kinds. First, when such costs where not measurable due to e.g. non-monetary format. Second, when such costs were caused to external parties to the firm who did not choose to incur that cost or benefit (again the so called 'externalities). *Full-cost* or *true-cost accounting*, according to the TBL concept, therefore means to consider, collect, include, and present information about the environmental, social and financial costs and benefits for each proposed product, service, activity or alternative overall, and this company internally (in the first case) and for real sustainability matters to become effective, also company externally (in the second case). Normally, a full-cost is the sum of all the environmental and social costs of a product/service/activity/alternative until it is delivered and paid.

First, you can create *product calculations* or also *activity-based calculations* (ABC), which are calculations that make extensive use of activities and cost drivers to reduce current costs. This can focus on reducing e.g. waste, energy use, land use, decontamination, by-products, noise, odor, transportation costs, fuel costs, etc. It simply means that you need to make sure that you get the right information about precisely these environmental and social costs and include them in the usual calculations, so that the whole, i.e. including the negative impact of the company's products/services/activities/alternatives, is more clearly visible. Based on this more holistic picture, other more far-reaching and long-term decisions can be made than with just the traditional financial calculations.

The next step is to try to reduce future costs by calculating on better technology, increased recycling, reduced energy use, reusable packaging, better transportation solutions, a better waste sorting system, etc. This is then mostly about investment calculations where you look at the whole (manufacturing) processes and how it can be improved. In addition, you can also expect increased revenues by investing in sustainable products that can be sold (more

expensive) to (new) conscious customers. In this way, all parts of the income statement are included and also, in many ways, the link to the balance sheet through new (green) investments.

4.5.5 Life Cycle Costing and Cost Management for Circular Economy

A concept that has gained momentum and e.g. been erected as the number one priority of the upcoming European Green Deal to achieve net-zero carbon emissions by 2050 is *circular economy* (Simons, 2019). For companies, it is essential to look at this from a *Life Cycle Costing* or *Circular Economy* perspective, which means to do business in a more circular (and re-invest, re-create, re-use, re-cycle) rather than linear way that simply followed the idea of 'take, make, waste'. A *circular economy* model aims at redefining growth and focusing on positive society wide benefits. Thus, all calculations therefore must be based on reduced environmental (and social) impact through increased collection and reuse, but also through e.g. sharing economy. The calculation focus on, and serve to, remove environmentally hazardous substances, to redesign the products for as little waste as possible; to use renewable energy, to return materials, and to share products or equipment, to rent instead of procure, or to lease instead of owning.

Life-cycle calculations and analyzes are the compilation and evaluation of inflows to, and outflows from, a product system over its entire life-cycle, as well as the evaluation of the potential environmental (and social) impacts of a production system over its entire life-cycle. We here use the social dimension of sustainability in parentheses as the main focus of *Life-cycle costing* and *circular-economy* so far mostly has been on the environmental dimension. More and more, however, especially since the introduction of SDG's 17 sustainability goals, social issues have become stronger linked to these two concepts.

From a cost accounting and calculation perspective, employees might apply quite similar techniques and tools as before but they need to, first and foremost, expand the time span, backwards and forwards, to include all the time it takes from the beginning of the product/service to its actual end, but also include more factors that might be important (e.g. 'externalities'). Life-cycle calculations have started to take off, especially in the areas that require a lot of energy but also large natural resources. The manufacturing of cars is a typical example of this where you can find an illustrative case that also shows the difficulties that can arise and why specific cost accounting techniques and calculations for the entire life-cycle are strongly recommended to really contribute to sustainability.

Electric cars seem to be the type of cars of the future and have become increasingly popular with buyers. South African Elon Musk, who stands behind the Tesla cars, can be considered a revolutionary in the field. However, the most recent debate, that also concerns him, is that it is not certain that today's production of electric cars is good from a life-cycle perspective. In a report compiled by researchers commissioned by the Swedish Transport Administration and the Swedish Energy Agency (Dahllöf, Romare & Larsson, 2017), the authors state that the production of the battery for a Tesla Model S leads to emissions corresponding to eight years of operation of a petrol driven car. Elon Musk rejects this claim via Twitter that the study is

naïve and at the same time emphasizes that Tesla's battery factory, Gigafactory, is powered by renewable energy.

Nonetheless, the manufacturing of batteries today is still very energy intensive and can therefore have significant emissions. The Swedish study's conclusions say nothing about whether electric cars are good or not overall. However, it says that electric cars are good because they have zero emissions in the local environment and therefore, there is a reason to invest in them. However, the study also says that one must take an active grip on production and not just its use. The study therefore finds that better data from the manufacturers is needed to make accurate comparisons of the total impact on the entire life cycle of the cars. The authors clearly state that future instruments need to take into account emissions even in the production phase (Dahllöf et al., 2017). For a real analysis, and e.g. to be able to help from a state-wide level via subsidies, you need to have data, environmental and financial (in terms of costs and revenues) on the entire life-cycle of battery production, use, and probably also what happens to the batteries thereafter.

4.5.6 Hybrid control and measurement systems/integrative tools and methods

A sustainability balanced scorecard (SBSC)

A sustainability balanced scorecard (SBSC) is an extended variant of a conventional balanced scorecard (BSC) that also includes environmental and social aspects. The main advantage of the original BSC, developed by Kaplan & Norton (1992), is considered to be based on the idea that a financial focus is insufficient to manage companies and that additional stakeholders, with a balanced approach, had to be taken into consideration. Three other perspectives, which also derive from Kaplan & Norton, are often mentioned in this context, namely internal processes, customers and markets, but also learning and development (see Chapter 3). The important thing is that companies that use a BSC design the dimensions according to their own preferences and according to what they consider to be important goals to achieve and with strategies that should be designed accordingly. Therefore, there are many different types of BSC and also many different ways to include the new sustainability goals.

An SBSC is a tool that identifies, systematizes, visualizes and measures strategically important economic, environmental and social goals. One can thus say that it usually follows a 'triple bottom line' (TBL) logic. There are several possible ways to design an SBSC structure. The first variant is to add the new sustainability goals of the social and environmental areas to the already existing dimensions where they seem to fit best. Another alternative is to create your own sustainability dimension, which then includes both areas, the social and the environmental, or you add two new sustainability dimensions, one for the social and one for the environmental area. One last option, which is sometimes mentioned, is to use two different balanced scorecards, the traditional BSC already in use, and a new BSC alongside, which then only includes the new sustainability goals. The big disadvantage of the last alternative, when you do not combine all dimensions in the same BSC, is that you do not see the whole picture at ones and how things work together. Thus, there is a risk that the separate BSC, including sustainability specific metrics, will get marginalized and loose significance over time.

A major advantage with the SBSC idea is that it is based on a very well-known and well-used concept (BSC) and applies a similar logic regarding integrating and balancing different components within a company in order to implement and support the strategy/ies. This logic implies that several different dimensions must be brought together and that this is organizational reality that cannot be avoided. In many ways, this is the reason why companies with BSC's also (should) choose to build on this to achieve improvements in the sustainability area.

There are, however, two disadvantages with the use of an SBSC compared to e.g. Simons (1995) LOC methodology. These two problems are similar as with the traditional BSC but may become even more evident when combined with sustainability issues. Since no company has unlimited resources, it always means that you have to prioritize certain things over others. Thus, you cannot fully satisfy the interests of all stakeholders and in all situations. It is important to balance these interests and that is why some authors (e.g. Sundin, Granlund & Brown, 2010; Hahn & Figge, 2016) argue that it is precisely the process of balancing, i.e. in verb form, that should be the focus of everything that has to do with sustainability, rather than thinking that one should be able to get a balanced result in all dimensions and in all situations. Such balancing processes, however, is not what traditional finance and accounting structures support.

The second challenge of a SBSC is that it mostly deals with the diagnostic, and to some extent even interactive, control function in companies when talking e.g. Simons' (1995) LOC concept. The more value-based and from a cognitive integration dimension very important belief and boundary controls (Simons, 1995), on the other hand, have little effect.

A Multi-Capital Scorecard

A Multi-Capital Scorecard is perhaps one of the newest TBL-based methodology to increase sustainability performance and simplify its reporting (Thomas & McElroy, 2016). This is done by companies focusing and counting on all capital that is included as input and until it is transformed into output but above all outcome (according to the six capital concept from IIRC, se Chapter 9). In addition, in everything companies do, they must see themselves in their context with obligations and opportunities. Thus, this scorecard is combining a stakeholder perspective with a context-based multi-capitalism performance and reporting approach. This scorecard applies a systems-based philosophy, including all capitals, and sets context-based targets in order to transform organizations in a way that is supposed to make them more ecologically. Benchmarking, within the industry and within certain regions, and above all within planetary boundaries, is the main driver for all improvements within MAC practices then.

Eco-Efficiency analysis

Eco-efficiency has, primarily within the industrial area, been proposed as one of the main tools to promote a transformation to 'do more with less', hence to produce more goods that require as little energy and material as possible, in both manufacturing and use. The analysis develops and optimizes the properties of products as well as the operational activities around products regarding the relationship between its economic added value, the use of natural resources and the company's (often financial) goals. The major advantage of this tool is that eco-efficiency can be calculated by extending the typical, and in companies' finance and accounting

departments very well-known, *Du-Pont formula* that measures economic profitability (Return on Assets, ROA), with the resource use required in relation to the financial value created. Thus, such an analysis measures capital efficiency and ecological efficiency simultaneously.

Figge & Hahn (2013) report e.g. in their study how eco-efficient certain car brands in the car industry are by looking primarily at CO_2 emissions in relation to the capital base, on the y-axis, and on the traditional measure of return on total assets (ROA), on the x-axis. The great advantage of their study is that it is based on an old and very well-known model (the *DuPont formula*). The disadvantage is that the analysis is a strong simplification. It does not show all the factors that are part of the ecological impact of car manufacturing. This problem could be avoided with more sophisticated calculation and data gathering methods. However, the bigger problem that remains is twofold. First, eco-efficiency is focusing merely on the environmental dimension together with the financial dimension of sustainability, thus, omits the social dimension. Second, the total growth of production can still erase all efficiency gains made, leaving societal impact in total negative.

4.5.7 Sustainability reward and compensation systems

In short, reward and compensation systems that meet the requirements for sustainability must be based on multidimensional measures and not just financial measures that the company achieves. This means that when building such a systems, the focus is to a lesser extent on the traditional financial measures (e.g. profitability measures, share-price increase, etc.) as the basis for rewards, but more on how well you manage to achieve environmental and social goals.

So far, there is not much research that has investigated precisely the link between compensation and reward systems and sustainability. Own research, however, shows pros and cons with this. Simply applying the same methodology as with traditional reward systems to compensating how well you achieve goals might, however, not be enough. For example, if trying to ensure that no accidents happen and rewarding the responsible managers based on the number of accidents can mean that one simply does not report accidents, which of course counteracts reduced accidents in reality (Beusch et al., forthcoming).

Another example, however, is bonuses for selling sustainability products. Sellers in a company investigated still got their bonuses based on a traditional 'turnover' measures. It is, in such a case, easy to calculate that these salespeople first and foremost are interested in selling the products that can easily be sold to increase turnover rather than working extra hard to sell the more environmentally friendly products, which then also are more expensive, and in addition, or exactly due to that, much more difficult to sell. It is precisely in such a situation that the company must have a long-term sustainability commitment and plan. This includes to 'sustainability' educate employees, especially the salespeople, and ensure that knowledge, attitudes, and behaviors change. This salespeople must become better at selling the more expensive but energy-efficient and environmentally less harmful products. If they succeed with that, bonuses for such achievements might be the right way to go.

4.6 Summary and how everything is connected

Malmi & Brown's (2008) management control package, divided into five parts, which summarizes 40 years of MAC research, can be seen as a fairly good compilation of control issues that can be involved during structuration processes needed for sustainability integration. The design of planning, cybernetic controls and reward and compensation systems is strongly influenced by the administrative control systems (governance structures, organization structures, and policies and procedures) but also by cultural and social forms of control (clans, values, symbols). The key message from Malmi & Brown (2008, p. 291) is that different systems often are introduced by different interest groups at different times and that this is the reason why one should look at all this as a package of systems, thus holistically, rather than single systems. To include sustainability matters into traditional MAC systems might exactly be such a situation. This way, a logical control package, including technical, organizational and cognitive integration, is supposed to be created that generates organizational meaning for the involved agents and best possible MAC for sustainability.

Own research in the field clearly shows that cognitive integration still seems to be one of the major obstacles to achieving a faster transition towards sustainability (Beusch et al., forthcoming). First of all, managers in the field of finance and accounting often lack knowledge about what sustainability means and what such integration takes to get translated into positive contributions beyond nice external reporting that sometimes even includes 'window dressing' and 'green washing'. Many managers still today see sustainability issues mostly as a cost and not a source of increased revenues or important aspects to gain the license to operate (legitimacy) and due to responsibility matters.

When cognitive integration does not exist, or only partially works, in a company or at different departments of a company, it seems to be very difficult to compensate with a possible integration within the other two dimensions (technical and organizational) precisely because cognitive awareness and understanding is important to create meaning in all organizational work, and thus in all sense-making and ultimately decision-making. For things to develop towards sustainability, a basic requirement that employees and managers seem to be interested in working towards more sustainability at all is needed.

Own research further shows that for such cognitive integration to happen, intensive use of interactive control systems (Simons, 1995) is needed within companies (Beusch et al., forthcoming). This then includes meetings, face-to-face debates and challenges, non-invasive facilitating and inspirational involvement, focus on strategic uncertainties, and knowledge sharing and learning. However, it is not important that everyone at once thinks and values business in a paradoxical way (Hahn et al, 2014). To reach feasible solutions, a pragmatic mix of paradoxical and business-case thinking is considered to be enough in reality as one cannot stop doing business during the time when this translation has to go on.

Of course, all of this, in a company, is created by real agents, and all structural work also influences how these agents think and value things, and how they act. This also affects/is affected by the culture within the company. For this very reason, an organizational culture can

be regarded as the result of a structuration process, which is the ongoing process between agency and structure. In addition, agents always have to deal with the fact that they are influenced and shaped by the very same structures, which refers to the so called 'paradox of embedded agency' (Englund & Gerdin, 2018).

More research is needed in the future to gain more clarity in the relationships between the different integration dimensions and what this means to agency and structures. We assume that full integration, i.e. in the middle of Figure 4.1, where all three circles overlap, can be achieved when e.g. managers and employees think and value sustainability and finance issues equally high (cognitive integration), use system-technical solutions that enable full technical integration of sustainability and financial information while also working, in reality, integrated (organizational integration) with sustainability and financial issues in practice. This in turn requires the company to provide technically integrated (system) solutions and tools.

The circle diagram also shows that many different alternative combinations can exist that do not mean full integration in all three dimensions, namely where, e.g. only two of the circles overlap. It is not even entirely certain if all dimensions must be integrated for all sustainability issues or if certain dimensions are sufficient within certain time frames and in specific situations. More research is needed in this area to clarify the links between MAC changes and sustainability. What theoretically seems to be the best does not automatically have to be the best in reality.

Study questions

1. Describe different types of sustainability certifications that you know of and discuss how you think they are incorporated into different companies.
2. Check out some major companies' annual reports (or go to the investor relation links on the company's website) and look for the accounts of the company's mission, vision, but also how they formulate their strategies and goals. What do you find in terms of sustainability? How is this formulated? What do you think this says about the company works internally with management accounting and control systems to achieve what they report about externally?
3. Describe what a 'structuring process' is that includes people and structures. Can you see the results of such processes around you? Can you see your own role in structuring processes?
4. Describe what is meant by the term 'integration' and what the separation into cognitive, organizational and technical integration means.
5. Discuss, preferably in pairs or larger groups, similarities and differences in the cognitive structures (e.g. attitudes, ways of thinking, values) that you yourself have or that your friends or colleagues have, or simply the environment that you are surrounded by. What does cognitive integration mean to you, as a couple or in a group?
6. Similarly, please discuss, in pairs or larger groups, similarities and differences in the organizational structures (e.g. organizational units of responsibility, policies, and procedures) that surround you. What changes would organizational integration for sustainability require?
7. Finally, also discuss, in pairs or larger groups, similarities and differences in the technical structures (e.g. financial management tools, models, concepts, etc.) that you work with,

either at school, in the workplace, or in everyday life. Do you see sustainability issues included in these technical structures?

8. Do you see a situation in your life, at school, or in your workplace where the cognitive, organizational and technical integration for management accounting and control and sustainability overlaps completely (i.e. where you are in the middle of the three circles)?

References

Battaglia, M., Passetti, E., Bianchi, L. & Frey, M. (2016). Managing for integration: a longitudinal analysis of management control for sustainability. *Journal of Cleaner Production*, *136*, pp. 213-225.

Beusch, P., Dilla, W. N., Frisk, E. & Rosen, M. (forthcoming). *Management Control for Sustainability: Towards integrated systems* (under review at MAR, Management Accounting Research).

Carlsson, J. (2017). Tools for sustainability management accounting – A survey of the frequency and purpose of using tools for sustainability management accounting in Swedish listed companies. Master thesis 2017, Göteborg University.

Dahllöf, L.; Romare, M., & Larsson, M.O. (2017). http://www.ivl.se/toppmeny/pressrum/pressmeddelanden/pressmeddelande---arkiv/2017-05-29-ny-rapport-belyser-klimatpaverkan-fran-produktionen-av-elbilsbatterier.html (Accessed on 18-1-2018).

Englund, H., Gerdin, J., & Burns, J. (2011). 25 years of Giddens in accounting research: achievements, limitations and the future. *Accounting, Organizations and Society*, *36*(8), pp. 494-513.

Englund, H., & Gerdin, J. (2018). Management accounting and the paradox of embedded agency: A framework for analyzing sources of structural change. *Management Accounting Research*, *38,* pp. 1-11.

Figge, F. & Hahn, T. (2013). Value drivers of corporate eco-efficiency: Management accounting information for the efficient use of environmental resources. *Management Accounting Research*, *24*(4), pp. 387-400.

Giddens, A. (1979). *Agency, structure. In Central problems in social theory* (pp. 49-95). Palgrave, London.

Giddens, A. (1984). *The constitution of society: Outline of the theory of structuration*. Univ. of California Press.

Gond, J. P., Grubnic, S., Herzig, C. & Moon, J. (2012). Configuring management control systems: Theorizing the integration of strategy and sustainability. *Management Accounting Research*, 23(3), pp. 205–223.

Hahn, T. & Figge, F. (2016). Why architecture does not matter: On the fallacy of sustainability balanced scorecards. *Journal of Business Ethics*, pp. 1-17.

Hahn, T., Preuss, L., Pinkse, J., Figge, F. (2014). Cognitive frames in corporate sustainability: Managerial sensemaking with paradoxical and business case frames. *Academy of Management Review*, 39(4), pp. 463–487.

Malmi, T. & Brown, D. (2008). Management control systems as a package—Opportunities, challenges and research directions. *Management Accounting Research,* 19, pp. 287–300.

Merchant, K. A. & Van der Stede, W. A. (2017). *Management control systems: performance measurement, evaluation and incentives*. Pearson Education.

Passetti, E., Cinquini, L., Marelli, A. & Tenucci, A. (2014). Sustainability accounting in action: Lights and shadows in the Italian context. *The British Accounting Review*, *46*(3), pp. 295-308.

Rodrigue, M., Magnan, M., & Boulianne, E. (2013). Stakeholders' influence on environmental strategy and performance indicators: A managerial perspective. *Management Accounting Research,* 24, pp. 301–316.

Thomas, M. P. & McElroy, M. W. (2016). *The MultiCapital Scorecard: Rethinking Organizational Performance*. Chelsea Green Publishing.

Simons, F. (2019). Circular economy erected as 'number one priority' of European Green Deal https://www.euractiv.com/section/circular-economy/news/circular-economy-is-number-one-priority-of-european-green-deal/ (Accessed on 20-2-2020).

Simons, R. (1995). *Levers of Control: How Managers use Innovative Control Systems to Drive Strategic Renewal*. Harvard Business School Press, Boston, MA.

Sundin, H., Granlund, M. & Brown, D. A. (2010). Balancing multiple competing objectives with a balanced scorecard. *European Accounting Review*, *19*(2), pp. 203-246.