
Reward for environmental performance: using the Scanlon Plan as catalyst to green organisations

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Abstract: Institutionalising, a reward system based on measurable performance and incentives for environmental improvements, serves as a potential mechanism to enhance a firm's environmental performance. Our main purpose is to integrate the principles of environmental management and the Scanlon Plan as a means to achieve this. Specifically, our paper advocates the utilisation of Scanlon Plan principles for environmental performance. The Scanlon Plan features (1) collectiveness and cooperation, (2) employee participation, (3) quantifiable performance and bonus measures and (4) an equitable reward system; all components that would enhance environmental performance.

Keywords: environmental management; environmental performance; gainsharing; rewards; Scanlon Plan.

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1 Introduction

Environmental performance is important for businesses because of its connection with sustainability and profitability (Porter and Van der Linde, 1995; Hart, 1997; Berry and Rondinelli, 1998; Berens, 2004). Efforts to reduce negative environmental impacts should be a priority for businesses as a means to lower long-term costs, improve public relations and increase the bottom line. However, the complex nature of environmental problems often deters firms from undertaking proactive endeavours to improve environmental performance. In the past, firms frequently relied on a reactive, compliance-oriented approach (Porter and Van der Linde, 1995; Hart, 1997; Brockhoff et al., 1999; Kitazawa and Sarkis, 2000; Klassen, 2001; Chen et al., 2002).

More recently, scholars have espoused proactive approaches to environmental management in support of the notion that it pays to be green (e.g. Hart, 1995; Hart, 1997; Porter and Van der Linde, 1995). To date, few studies clearly link environmental and financial performance. Several empirical studies have found a positive relationship between measures of environmental performance and profitability (Russo and Fouts, 1997; Orlitzky, 2005). However, the potential organisational performance benefits extend beyond profitability. Researchers have also identified links between environmental performance and operational performance (Klassen and Whybark, 1999; Hanna et al., 2000; Sroufe, 2003). Together, these findings show that in some instances, attention to environmental issues offers firms financial incentives and operational benefits. Despite this evidence, and in lieu of a recent shift towards more sustainable business practices, environmental problems persist. Perhaps what is needed is a mechanism to make environmental management improvements even more financially attractive to both firms and their employees.

According to several authors, a properly designed reward system provides a significant contribution to employee motivation and organisational performance (McConnell, 1997; Hackett and McDermott, 1999; Pierce et al., 2003). Motivated employees tend to demonstrate improved performance, which has important implications for organisational performance. In fact, the literature is filled with examples of the positive organisational and employee outcomes associated with rewards (see O'Driscoll

and Randall, 1999; Pierce et al., 2003; Podsakoff et al., 2006). Similarly, we would expect that rewards for environmental improvements positively affect environmental performance. In this paper, we adopt the ISO 14031 definition of environmental performance, which emphasises an organisation's success in managing the relationships between its activities, products or services, and the natural environment. Environmental performance is improved through the reduction of the environmental impacts caused by an organisation's activities, products and services (Rikhardsson, 1998). An appropriate reward system should improve a firm's environmental performance.

Conceptual discussions about the role of rewards in environmental management indicate a positive effect on environmental performance (e.g. Laabs, 1992; Epstein and Roy, 1998; Chinander, 2001; Forman and Jorgensen, 2001; Ramus, 2001; Ramus, 2002; Fernandez et al., 2003; Daily et al., 2003; Daily et al., 2007). However, empirical studies have been rather limited. Two notable studies tested the effects of rewards in environmental management. Daily et al. (2003) and Daily et al. (2007) analysed the role of rewards in an Environmental Management System (EMS) and determined that rewards for environmental efforts were positively related to employee perceptions of environmental performance. In another empirical study, Ramus and Steger (2000) found that supervisor support behaviours that advocate rewards and recognition have a positive effect on employee motivation to put forward novel environmental initiatives. Several case studies also corroborate the utility of rewarding for environmental improvement efforts (Kitazawa and Sarkis, 2000; Rondinelli and Vastag, 2000).

Despite few examples, researchers have suggested that overall, most organisations do not formally reward for improved environmental performance (Denton, 1999; Kitazawa and Sarkis, 2000; Chinander, 2001; Daily et al., 2006). Organisations that encourage environmental improvement efforts infrequently attach monetary incentives to environmental performance (Denton, 1999). This not only raises the question of why rewards are not more common in environmental management, but also suggests that there is a need for an environmental reward strategy.

Although an environmental reward strategy seems to be highly appropriate, the characteristics of environmental issues make traditional individual reward systems difficult. However, the characteristics of environmental issues make traditional individual reward systems difficult. According to Daily et al. (2006), reasons for a lack of environmental rewards include: (1) environmental management is relatively new and organisations have neglected to define rewards for environmental management efforts, (2) the scope of defining new environmental performance standards may be so broad as to cost the organisation an inordinate amount of time to do so and (3) the cross-boundary nature of environmental problems makes it difficult to reward on an individual basis. Furthermore, capturing the benefits of improved environmental performance in financial terms is often complicated due in part to the complexity of environmental performance measurements (Peacock, 1993; Young and Welford, 1998). Linking environmental performance directly to profitability represents a challenge for firms.

In addition to these explanations, environmental issues often rely on a multi-disciplinary, team-oriented approach to solving problems rather than on the work of individuals (Rothenberg, 2003). Moreover, firms frequently calculate environmental performance metrics at the organisational or departmental level rather than the individual level (Rikhardsson, 1998; Young and Welford, 1998). It is highly conceivable that simply rewarding on an individual basis has inherent flaws with regards to managing for the environment. Given these issues, we reason that a collective reward and performance measurement strategy is appropriate for continuous environmental improvement.

Gainsharing plans are one such form of collective rewards for performance. They typically involve groups of employees in the resolution of problems in costs, quality and productivity. The organisation then shares a portion of the realised gains that result from this process with its employees (Bullock and Lawler, 1984; Recardo and Pricone, 1996). The Scanlon Plan represents a particular gainsharing plan with a long history of use and abundant application in industry both in the USA and abroad (Lesieur, 1977; Schuster, 1984a; Welbourne and Gomez-Mejia, 1988; Welbourne and Gomez-Mejia, 1995; Recardo and Pricone, 1996). At the same time, the Scanlon Plan rewards efforts for cost savings and productivity on a collective basis while relying on an underlying philosophy similar to that of environmental management.

Thus, our purpose is to apply the Scanlon Plan principles to reward for environmental performance. Accordingly, this paper will contribute to both theory and praxis by illuminating the underlying conceptual relationship and providing a set of useful considerations for practitioners. We expand theory by proposing the application of the Scanlon theoretical principles to environmental performance as an alternative benefit to traditional cost-savings applications. This study extends the research on environmental performance in the following ways. First, we take a widely accepted and respected programme and apply it to environmental performance. Second, we provide practical advice for managers. Third, we suggest a framework for empirical research.

2 Review of the literature and discussion

2.1 The Scanlon Plan

The Scanlon Plan embodies an established reward system that could offer a solution to the dilemma of rewarding for environmental improvements. Joseph Scanlon's innovations date back to the 1930s (Frost et al., 1974; Lesieur, 1977; Owens, 1988; Cotton, 1993). His initial work led to improved productivity, efficiency, and quality, as well as a reduction of waste and costs. The company derived this success by utilising an employee suggestion system centred on production and screening committees, and ultimately shared the cost savings by increasing worker wages. The plan itself represents not only a set of management principles, but also a philosophy (Frost et al., 1974).

Two main principles embrace the Scanlon philosophy: (1) employee involvement and (2) an equity system for distributing group incentive-based rewards usually in the form of a bonus (Cotton, 1993; Frost et al., 1974; Geare, 1976; Miller and Schuster, 1987a; Schuster, 1984b; Welbourne and Gomez-Mejia, 1995). In addition to these two main principles, organisation and individual identity serve as important preconditions for the successful institutionalisation and maintenance of Scanlon Plan programmes. Organisational identity refers to the definition of the organisation and its objectives. This is an ongoing process that is tied to an organisation's history and unique purpose. Identity also extends to every person throughout the organisation. People are vital assets and the Scanlon Plan seeks to make individual members of the organisation significant and visible (Frost et al., 1974).

2.2 Environmental management systems

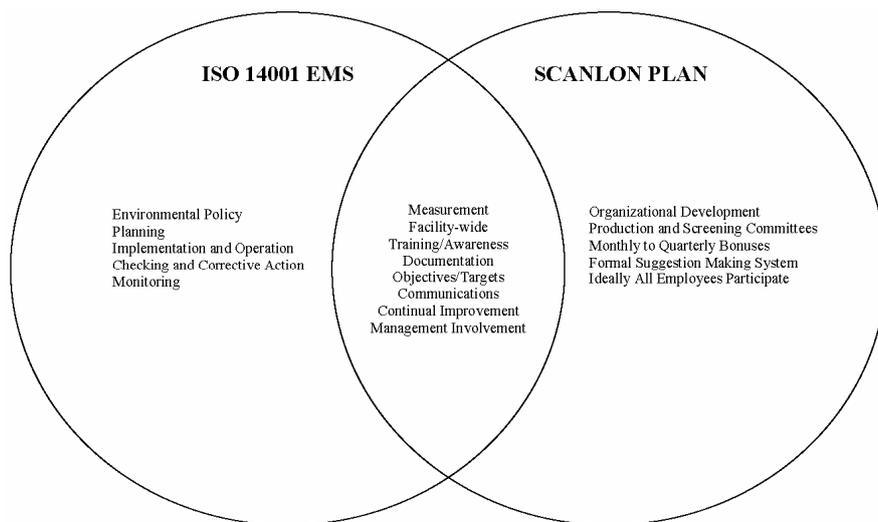
An EMS is a management system that aims to prevent negative impacts on the environment and improve a firm's environmental practices. By developing environmental

programmes and practices, a firm can achieve this goal. Examples of practices that contribute to a successful EMS include among other things the adoption of cleaner production processes, greener products and measures of environmental performance (Gupta, 1994). An EMS is a voluntary approach, which can result in a reduction of environmental impacts such as pollutant emissions and waste (Bansal and Hunter, 2003; Szymanski and Tiwari, 2004).

The environmental programmes and practices associated with an EMS are considered important factors in reducing the impact of businesses on the natural environment. For example, green technologies and products as well as metrics to evaluate and monitor environmental performance can lead to improved environmental performance (Gupta, 1994; Epstein and Roy, 1997). Additionally, an EMS plays an important role in a firm's environmental performance. Environmental management standards, such as ISO 14001, have been shown to be positively related to both environmental performance and operational performance (Sroufe, 2003). Epstein and Roy (1997) also point out that ISO 14001 can contribute to organisational learning by developing core capabilities, skills and knowledge. Consequently, certified EMSs, such as ISO 14001, have been linked to improvements in overall corporate performance (Montabon et al., 2000; Melnyk et al., 2003; Sroufe, 2003).

An EMS can be certified through organisations, such as the International Organisation for Standardisation (ISO), British Standards Institution (BSI) and European and the European Eco-Management and Audit Scheme (EMAS) (Freimann and Walther, 2001; Gupta, 2004). In this paper, we refer primarily to the ISO 14001 standard. We believe that environmental management in general and the ISO 14000 series EMS share important similarities to the Scanlon Plan that if used together could simultaneously reward organisational members for environmental performance improvements. Figure 1 illustrates some of the features of an EMS and the Scanlon Plan. The overlapping dimension of the venn diagram represents implicit and explicit aspects shared by both programmes. In the following section, we will provide a detailed overview of the theoretical linkages between the Scanlon Plan and environmental management in general.

Figure 1 Scanlon Plan and ISO 14001 comparison (Cotton, 1993; Barnes, 1996; Goetsch and Davis, 2001; Bansal and Hunter, 2003; Kim, 2005b)



3 Adapting the Scanlon Plan for environmental management

Our review of the literature on environmental management revealed potential for the application of the Scanlon Plan's principles. We have highlighted examples of these linkages in Table 1. This table displays the relevant contributions in the environmental management literature as they relate to the Scanlon Plan. The most prominent feature of environmental management that is shared with the Scanlon Plan is a participative philosophy. This strongly supports a theoretical connection with the Scanlon Plan, whose philosophy of participation underscores the programme. Other similarities were cited less frequently (e.g. formal suggestion systems, committee structures). In addition to these shared characteristics, we assert that the quantifiable approach to rewards inherent in the Scanlon Plan's formula is appropriate for manufacturing-based environmental management. The rationale for the corresponding adaptation of the Scanlon Plan for environmental management is discussed below.

Table 1 Comparison of the Scanlon Plan with environmental management

<i>Environmental management</i>		
<i>Scanlon plan principle</i>	<i>Authors</i>	<i>Contributions</i>
Participation through committees	Denton (1999)	Energy Evaluation Committee effectively used to evaluate employee waste reduction ideas. Case analysis.
	May and Flannery (1995)	Guidelines to minimise organisational waste include steering committee and employee problem-solving teams. Theoretical analysis.
Formal suggestion making system	Denton (1999)	Recommends a formal system for idea sharing. Case analysis.
	Laabs (1992)	Reviewed companies successfully implementing environmental HR initiatives; several had formal suggestion systems.
Participative philosophy	Ramus (2002)	Participative communication style and shared environmental responsibility with everyone. Questionnaire.
	Rothenberg (2003)	Managers worked floor to create buy-in and promoted environmental problem solving by employees. Case analysis.
	Zutshi and Sohal (2003)	Employee involvement important component to implement an EMS and foster commitment. Case analyses.
	Cramer and Roes (1993)	Employee-management interaction and communication and individual responsibility are important for successful environmental management. Case analyses.
	Ramus (1997)	Employee empowerment and flatter organisational hierarchy improve environmental problem solving. Case analysis.
	Forman and Jorgensen (2001)	Management needs to involve employees in environmental work. Case analysis.

Table 1 Comparison of the Scanlon Plan with environmental management (continued)

<i>Environmental management</i>		
<i>Scanlon plan principle</i>	<i>Authors</i>	<i>Contributions</i>
Participative philosophy	Ramus (2001)	Participative management style has a positive impact on employee eco-initiatives. Questionnaire.
	May and Flannery (1995)	Employee involvement programmes minimise waste. Theoretical analysis.
	Kitazawa and Sarkis (2000)	Employee empowerment is a vital aspect of managing source reduction programmes. Case analyses.
	Daily and Huang (2001)	Employee empowerment is an important HR factor in achieving sustainability. Theoretical analysis.
	Govindarajulu and Daily (2004)	Participative culture and employee involvement are important HR factors in motivating employees towards environmental improvement. Theoretical analysis.
	Klassen and McLaughlin (1993)	Promote employee involvement to attain environmental excellence. Theoretical analysis.
	Daily et al. (2003, 2007)	Empowerment has a significant positive influence on perceived environmental performance. Questionnaire.
Organisational and individual identity	Epstein and Roy (1998)	Corporate culture should be properly aligned with environmental strategy. Theoretical analysis.
	Manning (2004)	Achieve environmental stewardship by showing strong commitment to the environment. Theoretical analysis.
	Ramus and Steger (2000)	Enhanced environmental creativity when organisation demonstrates strong commitment to environment. Questionnaire.
	Fernandez et al. (2003)	Reviewed the role of organisational culture in environmental performance. Theoretical analysis.
	Azzone and Noci (1998b)	Employee environmental culture internal factor to make use of during organisational change. Empirical.

3.1 Collectiveness, commitment and cooperation

The cooperative approach that is an integral component of the Scanlon Plan can be applied to the teamwork required for successful and efficient environmental management. Teams have a prominent function in environmental performance and they effectively promote cooperation and problem solving (Coyle-Shapiro, 1995; Beard and Rees, 2000; Daily and Huang, 2001; Govindarajulu and Daily, 2004; Daily et al., 2007). For example, teams have been shown to be innovative at implementing environmental initiatives that improve company environmental performance (Ramus, 2001). More specifically, cross-functional teams that utilise employees with different knowledge backgrounds are frequently used to solve complex problems and develop creative ideas and innovations

(Denison et al., 1996). Other researchers maintain that employee involvement teams, particularly cross-functional teams, typify the most effective means to minimise waste in organisations (May and Flannery, 1995).

Under circumstances when employees work together in teams, a collective reward system is advantageous for administrative purposes as well as for promoting cooperation. This collaborative mentality corresponds well with the Scanlon Plan in particular, which rewards on collective performance and emphasises organisation-wide cooperation (Frost et al., 1974; Cotton, 1993). Like environmental management, employees from different departments and functional areas often work together to find a common solution.

The importance of organisational identity and development in the Scanlon Plan has a key link to environmental management. The Scanlon Plan emphasises organisational identity to establish employee commitment and cooperation. Identity engenders commitment to a cause on behalf of the organisation as well as responsibility for individual employees (Frost et al., 1974). Likewise, a strong commitment by an organisation and its employees has been linked to sustainability in organisations (Manning, 2004; Topf, 2000a; Topf, 2000b; Zutshi and Sohal, 2003). This is supported by several authors who contend that commitment to environmental performance should be a component of the organisational culture, employee culture and identity (Klassen and McLaughlin, 1993; Russo and Fouts, 1997; Azzone and Noci, 1998b; Fernandez et al., 2003; Manning, 2004).

A recent review also suggests that organisational culture is a basic element of corporate identity that contributes to improved environmental performance (Fernandez et al., 2003). For example, a company's vision shapes organisational culture. It can serve to motivate and involve employees as well as foster communication regarding environmental issues (Shrivastava, 1995; Ramus, 1997; Russo and Fouts, 1997; Hanna et al., 2000; Kitazawa and Sarkis, 2000;). By strongly embracing the environment as a cause, organisations can boost their reputation which helps attract and retain the best employees (Manning, 2004). For these reasons, the organisational identity facet of the Scanlon Plan is an attribute also reflective of environmental performance principles.

Much like environmental management, the Scanlon Plan relies on a variety of tools to create an organisational identity and promote employee cooperation and commitment. Both environmental management and the Scanlon Plan utilise training, communication and an organisational orientation articulated by top management or a mission statement (Cotton, 1993; Daily and Huang, 2001; Ramus, 2001). According to Markham et al. (1992), in order for the Scanlon Plan to be effective, employees must understand how the business operates, what customers demand and what it takes to be competitive in its industry. Therefore, the organisation's mission must be clearly expressed to integrate employee involvement. Additionally, education and training help to build competency for both managers and employees (Cotton, 1993; Markham et al., 1992). Training often includes the development of leadership skills for managers and awareness about the Scanlon process (Markham et al., 1992). Effective communication and employee participation also contribute to the success of the Scanlon Plan by establishing greater trust (Cotton, 1993). Coupled with financial incentives, these attributes help the Scanlon Plan establish a high level of organisational commitment, identity and cooperation.

3.2 Employee participation

Environmental management shares philosophical components with the Scanlon Plan. Both pragmatically emphasise employee participation and involvement. The Scanlon Plan specifically calls for employee participation as one of its philosophical underpinnings (Frost et al., 1974; Geare, 1976; Schuster, 1984b; Miller and Schuster, 1987a; Cotton, 1993; Welbourne and Gomez-Mejia, 1995). It relies on two elements within the participation system to promote higher productivity and alter the status quo. An open suggestion system functions together with a committee structure to ensure that employee suggestions receive management support, proper evaluation and implementation if appropriate (Cotton, 1993; Frost et al., 1974; Kim, 2005a).

Proponents of empowerment and participation abound in the literature on environmental management (Cramer and Roes, 1993; Ramus, 1997; Denton, 1999; Kitazawa and Sarkis, 2000; Daily and Huang, 2001; Forman and Jorgensen, 2001; Fernandez et al., 2003; Govindarajulu and Daily, 2004; Zutshi and Sohal, 2003). In each article, employee participation is cited as an important ingredient for successful environmental management. For example, in one empirical study empowerment was found to have a significant positive influence on perceived environmental performance (Daily et al., 2007).

Several case studies further illustrate the benefits of empowering employees to make environmental improvements. For example, GE Plastics encouraged employees to develop and implement solutions to environmental problems and implemented a flatter organisational structure to facilitate this endeavour. The results included a 70% reduction in hydrocarbons and 30% reduction in waste (Ramus, 1997). Additionally, Zutshi and Sohal (2003) found that employee involvement and commitment enhanced the process of establishing an EMS at several companies. Empowerment has also been shown to have a significant positive influence on perceived environmental performance (Daily et al., 2003; Daily et al., 2007). These studies lend support to the effects of employee involvement on environmental performance and corroborate an alignment with the Scanlon Plan's fundamental use of employee participation.

3.3 Quantifiable approach to performance and equitable rewards

Linking a firm's environmental performance to specific individuals remains extremely difficult since under most circumstances environmental performance measurements contain multiple dimensions and centre on higher organisational levels, such as departments, plants or the organisation as a whole. Approaches to measuring environmental performance tend to vary considerably. Commonly utilised metrics often consider a mix of business costs, profits and environmental impact added (Peacock, 1993; Illinitch et al., 1998; Rikhardsson, 1998; Young and Welford, 1998; Characklis and Richards, 1999; Piasecki et al., 1999; Schaltegger et al., 2003). For example, Rikhardsson (1998) identified five dimensions for the concept of environmental performance. The dimensions included: (1) the environmental efficiency and effectiveness of the production process, (2) product life-cycle assessment, (3) environmental policy and EMS performance, (4) the environmental impact of company operations measured using indicators and (5) linking environmental and financial performance. Each of these performance dimensions corresponds to measurements more representative of strategic facets of an organisation, such as organisational units, systems, policies or even products.

The Scanlon Plan is attractive for environmental performance management because its formulas provide tangible computations of productivity, cost savings and bonuses. Azzone and Noci (1998a) assert that 'green' manufacturing strategies call for quantifiable output. Doing so enables manufacturing firms to evaluate their eco-efficiency and reward employees for effective performance. The Scanlon Plan accomplishes both. Under the Scanlon Plan, the formulas are customisable, allowing firms to use metrics relevant to their specific industry. Thus, a variety of industries can participate in this programme. The adaptability of the formula would allow firms to translate environmental improvements into additional cost savings or productivity growth.

One possible option involves the development of productivity measures related to the sale of green products. According to Azzone and Noci (1998a), economic value creation in a proactive 'green' manufacturing strategy results from the following four factors:

- 1 incremental revenues, indicating increase in market share
- 2 incremental contribution margin due to sales of products made from regenerated materials. This measure identifies whether, in addition to the environmental considerations, the take-back and regeneration of end-of-life products can also be justified from an economic viewpoint
- 3 internal efficiency costs; this item describes the production costs of 'green' products
- 4 operating costs/investments needed for the implementation of the intended programme (p.320).

These four considerations represent a good starting point for firms attempting to develop productivity measurements linked to firm environmental performance.

A second approach for firms concerns cost savings. The formula can be adjusted to measure cost savings for improvements in environmental performance. Some examples of potential cost savings for firms include: reducing energy consumption, waste reduction, improvements in eco-efficiency, lower pollution emissions, fewer environmental fines and decreased environmental cleanup costs. Characklis and Richards (1999) convey this idea: 'In manufacturing, measures of packaging efficiency and percent recycled material can address consumer concerns, while simultaneously identifying cost savings in product transport and raw materials' (p. 389).

Additionally, a cost savings/green productivity strategy could also be implemented by including relevant measures in the formula. Any of these suggested approaches represents a viable opportunity for manufacturing firms. The flexibility of the formula creates a helpful advantage by permitting firms to choose appropriate environmental measures to be included in the formula as well as the amount of the incentive payout.

The bonus formula denotes the final quantifiable component of the Scanlon Plan, which imparts the equitable system for distributing rewards to employees. As Arthur and Kim (2005) note, an equitable reward system is essential for promoting employee-management cooperation and attaining useful employee suggestions. Typically, a firm predetermines with its employees an allocation ratio for gains in productivity or cost savings (Cotton, 1993). Employee participation plays a pivotal role in gauging the fairness of the ratio, and the ratio remains open to adjustments as a result (Frost et al., 1974). Distribution of any realised gains or savings often occurs as monthly bonuses to individual employees (Frost et al., 1974; Cotton, 1993).

4 Practical implications

It is beyond the scope of this paper to provide a blueprint of how a firm should implement the Scanlon Plan to improve environmental performance. A variety of factors will influence the appropriateness of the Scanlon Plan for a specific firm. Nevertheless, it is important to mention some of the features, which a firm should consider when implementing the Scanlon Programme in order to enhance environmental performance. To be precise, the programme needs to:

- 1 contain a committee structure that affords special attention to environmental issues
- 2 provide an open suggestion system that encourages employee ideas to solve environmental problems
- 3 incorporate a participative management style
- 4 espouse a strong commitment to the environmental cause
- 5 develop an organisational identity that reflects this commitment.

Each of these features is critical to the success of a Scanlon Plan adapted to improve environmental performance. Instead of solely using a productivity committee, a joint committee or an environmental subcommittee explicitly charged to evaluate suggestions regarding environmental issues is recommended. This will stress the importance of the company's position to protect the environment. The open suggestion system provides a forum to offer ideas. Such an approach empowers employees when their ideas are implemented. The Scanlon Plan's fundamental philosophy requires a participative management style. Finally, an organisational identity and commitment that show strong support for the environmental cause will go a long way with employees and enhance the firm's reputation in the public eye.

We believe that adapting the Scanlon Plan to improve environmental performance represents a unique opportunity for many firms. However, those firms possessing an existing Scanlon Plan should be better positioned to successfully undergo such a transformation. In theory, such firms already have the existing organisational culture and general management system in place. The Scanlon Plan simply needs tweaking to address environmental issues. The abovementioned features represent a shift in this direction. Moreover, the Scanlon Plan represents a customisable collective reward programme. Given its customisability, several options exist to tailor the programme to firm-specific needs. First, the customisability affords firms the flexibility to apply the programme at various organisational levels. For example, in some firms it might be warranted to implement the Scanlon Plan throughout the entire organisation, whereas at others it might be more suitable to do so at the plant or even departmental level. Second, the adaptability of the formula allows firms to choose the relevant metrics. Depending on a firm's strategic orientation, it could develop a cost savings, productivity or combined metric with regards to environmental performance. The formula could also be adjusted to include additional measures of productivity or cost savings at organisations that already carry out the Scanlon Plan.

5 Limitations and future research

As with any reward system, situational factors, such as firm size, industry type and company age, play a significant role in determining its appropriateness. The Scanlon Plan might not be for everyone. It requires a significant commitment of resources and in many cases a shift in the organisation's philosophy and culture. Consultants are often needed to assist in the planning and transition. Fortunately, gainsharing consultants frequently possess expertise in Scanlon programmes as opposed to other types of gainsharing plans due to the popularity of the Scanlon Plan (Kim, 2005a). Problems are also likely to arise during the early phases, because of an increase in tension from the change (Frost et al., 1974). We surmise that a facility which already implements an established Scanlon Plan programme is positioned to successfully adapt its programme for environmental management purposes. This probability for success is rooted in the underlying Scanlon philosophy and culture which would be embedded in an established programme.

Determining the most suitable metrics represents a formidable challenge. For example, it might be difficult for firms to determine an adequate measure for productivity or cost savings associated with environmental performance. As discussed, environmental performance metrics are complex and often multidimensional (Rikhardsson, 1998; Young and Welford, 1998). Currently, there is no agreement on what the best measures are (Illinitch et al., 1998). In addition, developing such measures requires the service of accounting and finance experts and is industry dependent. Some Scanlon Plans require basic accounting, whereas others utilise more complex methods. For example, the Multicost Scanlon Plan might be better suited for programmes aiming to save materials; however, this programme requires more complex accounting (Kim, 2005a). It is probable that any Scanlon Plan adapted to improve environmental performance will require more complex accounting procedures.

A group-based incentive system also has the potential to create a free rider problem. It has been theorised that a free rider problem is likely to occur as a side effect of collective reward programmes, particularly in large groups where monitoring is difficult (FitzRoy and Kraft, 1986; Bhattacharjee, 2005). As a group-based reward system, the free rider problem could surface during the implementation of the Scanlon Plan. Without individual performance incentives, employees might not contribute equally towards any realised organisation-wide cost savings or gains; yet, each would still benefit from a bonus distribution. Overall, the Scanlon Plan has generated decades of success by improving productivity in a variety of industries and organisations (Miller and Schuster, 1987b; Cotton, 1993). Based on our review of the Scanlon Plan literature, it does not appear that the free rider manifests itself as a serious detriment to organisational performance.

Despite these limitations, the prospect of solving two organisational issues at once is appealing. It seems theoretically possible to use the Scanlon Plan to collectively reward as a means to improve environmental performance while simultaneously making improvements in productivity and/or cost savings. However, this theoretical linkage has not been tested empirically or investigated in a case study. Further research is needed to determine if this approach would succeed in accomplishing the objectives set forth in this paper.

We recommend several avenues for future research. First, it would be highly relevant to conduct an exploratory study of firms already implementing the Scanlon Plan. Such a study should emphasise the relative merits of using the Scanlon Plan to solve

environmental issues. It should investigate both those firms that are already using the Scanlon Plan for such purposes as well as firms that do not. By examining both in practice, it will provide a better understanding of the issues and applicability of our proposed relationship. Second, research should also be directed towards change management to determine the measurable effects of implementing a Scanlon Plan to affect environmental improvement. This approach would be longitudinal in nature, highlighting changes stemming from pre-environmental management emphasis to post-environmental management emphasis within an already existing or newly adopted Scanlon Plan.

6 Conclusion

As evidenced by the problems of assessing performance at the individual level, a group-based strategy seems more relevant regarding the environment. We have argued that gainsharing, particularly the Scanlon Plan, presents an opportunity to improve firm environmental performance through collective rewards. The mechanism behind the conceptual linking of environmental management and the Scanlon Plan lies in the philosophical nature of the Scanlon Plan, which espouses employee participation and equitable rewards to solve complex organisational problems. Similar to the Scanlon Plan, scholars indicate that environmental problems are complex and require cooperation to solve. Thus, a merger of the two presents an opportunity for manufacturing firms to improve their environmental performance, reduce costs and increase productivity.

References

- Arthur, J.B. and Kim, D. (2005) 'Gainsharing and knowledge sharing: the effects of labour-management cooperation', *International Journal of Human Resource Management*, Vol. 16, No. 9, pp.1564–1582.
- Azzone, G. and Noci, G. (1998a) 'Identifying effective PMSs for the deployment of 'green' manufacturing strategies', *International Journal of Productions & Operations Management*, Vol. 18, No. 4, pp.308–335.
- Azzone, G. and Noci, G. (1998b) 'Seeing ecology and "green" innovations as a source of Change', *Journal of Organizational Change Management*, Vol. 11, No. 2, pp. 94–111.
- Bansal, P. and Hunter, T. (2003) 'Strategic explanations of the early adoption of ISO 14001', *Journal of Business Ethics*, Vol. 46, pp.289–299.
- Barnes, P.E. (1996) 'Green Standards', *Business Economic Review*, Vol. 43, No. 1, pp.24–28.
- Bhattacharjee, D. (2005) 'The effects of group incentives in an Indian firm: evidence from payroll data', *Labour*, Vol. 19, No. 1, pp.147–173.
- Beard, C. (1996) 'Environmental training: emerging products', *Industrial and Commercial Training*, Vol. 28, No. 5, pp.18–23.
- Beard, C. and Rees, S. (2000) 'Green teams and the management of environmental change in a UK county council', *Environmental Management and Health*, Vol. 11, No. 1, pp.27–38.
- Berens, C. (2004) 'Green grossers', *Financial Management*, September, pp.20–24.
- Berry, M.A. and Rondinelli, D.A. (1998) 'Proactive corporate environmental management: An industrial revolution', *Academy of Management Executive*, Vol. 12, No. 2, pp.38–50.
- Brockhoff, K., Chakrabarti, A.K. and Kirchgeorg, M. (1999) 'Corporate strategies in environmental management', *Research Technology Management*, Vol. 44, No. 4, pp.26–30.

- Bullock, R.J. and Lawler, E.E. (1984) 'Gainsharing: a few questions and fewer answers', *Human Resource Management*, Vol. 23, No. 1, pp.23–40.
- Characklis, G.W. and Richards, D.J. (1999) 'The evolution of industrial environmental performance metrics: Trends and challenges'. *Corporate Environmental Strategy*, Vol. 6, No. 4, pp.387–398.
- Chinander, K.R. (2001) 'Aligning accountability and awareness for environmental performance in operations', *Production and Operations Management*, Vol. 10, No. 3, pp.276–291.
- Chen, A.S., Hergeth, H. and Zuckerman, G.J. (2002) 'Environmentally conscious manufacturing through total cost management', *Journal of Applied Business Research*, Vol. 18, No. 3, pp.15–22.
- Cotton, J.L. (1993) *Employee Involvement: Methods for Improving Performance and Work Attitudes*, Sage Publications, Newbury Park, CA.
- Coyle-Shapiro, J. (1995) 'The impact of a TQM intervention on teamwork: a longitudinal assessment', *Employee Relations*, Vol. 17, No. 3, pp.63–74.
- Cramer, J.M. and Roes, B. (1993) 'Total employee involvement: Measures for success', *Total Quality Environmental Management*, pp.39–52.
- Daily, B.F. and Huang, S. (2001) 'Achieving sustainability through attention to human resource factors in environmental management', *International Journal of Operations and Productions Management*, Vol. 21, No. 12, pp.1539–1552.
- Daily, B.F., Bishop J. and Govindarajulu, N. (2006) 'A conceptual model for organizational citizenship behavior directed toward the environment (OCBE)', *Business and Society*, Forthcoming.
- Daily, B.F., Bishop, J.W. and Steiner, R. (2007) 'The mediating role of EMS Teamwork as it pertains to HR factors and perceived environmental performance', *Journal of Applied Business Research*, Vol. 23, No. 1, pp.95–109.
- Daily, B.F., Bishop, J.W. and Steiner, R. (2003) 'The Impact of Human Resource Management Practices on Employee Perceptions of Environmental Performance', *Proceedings of the Annual Meeting of the Decision Sciences Institute*.
- Denison, D.R., Hart, S.L. and Kahn, J.A. (1996) 'From chimney to cross-functional teams: Developing and validating a diagnostic model', *Academy of Management Journal*, Vol. 39, No. 4, pp.1005–1023.
- Denton, D.K. (1999) 'Employee involvement, pollution, control and pieces to the puzzle' *Environmental Management and Health*, Vol. 10, No. 2, pp.105–111.
- Epstein, M. and Roy, M. (1997) 'Using ISO 14000 for improved organizational learning and environmental management', *Environmental Quality Management*, Vol. 7, No. 1, pp.21–30.
- Epstein, M. and Roy, M. (1998) 'Managing corporate environmental performance: A multinational perspective', *European Management Journal*, Vol. 16, No. 3, pp.284–296.
- Fernandez, E., Junquera, B. and Ordiz, M. (2003) 'Organizational culture and human resources in the environmental issue: a review of the literature', *International Journal of Human Resource Management*, Vol. 14, No. 4, pp.634–656.
- FitzRoy, F.R. and Kraft, K. (1986) 'Profitability and profit-sharing', *The Journal of Industrial Economics*, Vol. XXXV, No. 2, pp.113–130.
- Forman, M. and Jorgensen, M.S. (2001) 'The social shaping of the participation of employees in environmental work within enterprises – Experiences from a Danish context', *Technology Analysis & Strategic Management*, Vol. 13, No. 1, pp.71–90.
- Freimann, J. and Walther, M. (2001) 'The impacts of corporate environmental management systems: A comparison of EMAS and ISO 14001', *Greener Management International*, Vol. 36, pp.91–103.
- Frost, C.F., Wakeley, J.H. and Ruh, R.A. (1974) *The Scanlon Plan for Organization Development: Identity, Participation, and Equity*, Michigan State University Press, Michigan.

- Geare, A.J. (1976) 'Productivity from Scanlon-type Plans' *Academy of Management Review*, Vol. 1, No. 3, pp.99–108.
- Goetsch, D.L. and Davis, S.B. (2001) *ISO 14000 Environmental Management*, Prentice Hall, Upper Saddle River, NJ.
- Govindarajulu, N. and Daily, B.F. (2004) 'Motivating employees for environmental improvement', *Industrial Management & Data Systems*, Vol. 104, No. 4, pp.364–372.
- Gupta, M.C. (1994) 'Environmental management and its impact on the operations function', *International Journal of Production & Operation Management*, Vol. 15, No. 8, pp.34–51.
- Hackett, T.J. and McDermott, D.G. (1999) 'Seven steps to performance-based rewards', *HRFOCUS*, Vol. 76, No. 9, pp.11–12.
- Hanna, M.D., Newman, W.R. and Johnson, P. (2000) 'Linking operational and environmental improvement through employee involvement', *International Journal of Operations & Production Management*, Vol. 20, No. 2, pp.148–165.
- Hart, S.L. (1995) 'A natural-resource-base view of the firm', *Academy of Management Review*, Vol. 20, No. 4, pp.986–1014.
- Hart, S.L. (1997) 'Beyond greening: strategies for a sustainable world', *Harvard Business Review*, Vol. 75, No. 1, pp.66–76.
- Illinitch, Y.A., Soderstrom, N.S. and Thomas, T.E. (1998) 'Measuring corporate environmental performance', *Journal of Accounting and Public Policy*, Vol. 17, pp.383–408.
- Kim, D. (2005a) 'The choice of gainsharing plans in North America: a congruence perspective', *Journal of Labor Research*, Vol. 26, No. 3, pp.465–483.
- Kim, D. (2005b) 'The benefits and costs of employee suggestions under gainsharing', *Industrial and Labor Relations Review*, Vol. 58, No. 4, pp.631–652.
- Kitazawa, S. and Sarkis, J. (2000) 'The relationship between ISO 14001 and continuous source reduction programs', *International Journal of Operations and Production Management*, Vol. 20, No. 2, pp.225–248.
- Klassen, R.D. (2001) 'Plant-level environmental management orientation: the influence of management views and plant characteristics', *Production and Operations Management*, Vol. 10, No. 3, pp.257–275.
- Klassen, R.D. and McLaughlin, C.P. (1993) 'TQM and environmental excellence in Manufacturing', *Industrial Management & Data Systems*, Vol. 93, No. 6, pp.14–22.
- Klassen, R.D. and Whybark, D.C. (1999) 'The impact of environmental technologies on manufacturing performance', *Academy of Management Journal*, Vol. 42, pp.599–615.
- Laabs, J.J. (1992) 'The greening of HR', *Personnel Journal*, Vol. 71, No. 8, pp.60–68.
- Lesieur, F.G. (1977) 'The Scanlon Plan: Divvy up the gross and double the profits', *AMA Forum*, Vol. 66, No. 5, pp.29–32.
- Manning, D.J. (2004) 'Benefits of environmental stewardship', *Review of Business*, Vol. 25, No. 2, pp. 9–14.
- May, D.R., and Flannery, B.L. (1995) 'Cutting waste with employee involvement teams', *Business Horizons*, 38, No. 5, pp.28–38.
- McConnell, C.R. (1997) 'Employee recognition: a little oil on the troubled waters of change', *Health Care Superv.*, Vol. 15, No. 4, pp.83–90.
- Markham, S.E., Scott, K.D. and Cox Jr., W.J. (1992) 'The evolutionary development of a Scanlon Plan', *Compensation & Benefits Review*, Vol. 24, No.2, pp.50–56.
- Melnyk, S.A., Sroufe, R.P. and Calantone, R. (2003) 'Assessing the impact of environmental management systems on corporate and perceived environmental performance', *Journal of Operations Management*, Vol. 21, 329–351.
- Miller, C.S., and Schuster, M.H. (1987a) 'Gainsharing: a comparative analysis', *Organizational Dynamics*, Vol. 16, No. 1, pp.44–67.

- Miller, C.S., and Schuster, M.H. (1987b) 'Gainsharing: A decade's experience with the Scanlon Plan: a case study', *Journal of Occupational Behaviour*, Vol. 8, pp.167–174.
- Montabon, F., Melnyk, S.A., Sroufe, R. and Calantone, R.J. (2000) 'ISO 14000: assessing its perceived impact on corporate performance', *The Journal of Supply Chain Management*, Vol. 36, No. 2, pp. 4–16.
- O'Driscoll, M.P. and Randall, D.M. (1999) Perceived organizational support, satisfaction with rewards, and employee job involvement and organizational commitment', *Applied Psychology: An International Review*, Vol. 48, No. 2, pp.197–209.
- Orlitzky, M. (2005) 'Payoffs to social and environmental performance', *The Journal of Investing*, Vol. 14, No. 3, pp.48–51.
- Owens, T. (1988) 'Incentives that improve productivity: Gainsharing'. *Small Business Reports*, Vol. 13, No. 10, pp.19–28.
- Peacock, M. (1993) 'Developing environmental performance measures (ways to measure the performance of corporate environmental programs)', *Industrial Engineering*, Vol. 25, No. 9, pp.20–23.
- Piasecki, B.W., Fletcher, K.A. and Mendelson, F.J. (1999) *Environmental Management and Business Strategy: Leadership Skills for the 21st Century*, John Wiley & Sons, New York.
- Pierce, W.D., Cameron, J., Banko, K.M. and So, S. (2003) 'Positive effects of rewards and performance standards on intrinsic motivation', *Psychological Record*, Vol. 53, pp.561–579.
- Podsakoff, P.M., Bommer, W.H., Podsakoff, N.P. and MacKenzie, S.B. (2006) 'Relationships between leader reward and punishment behavior and subordinate attitudes, perceptions, and behaviors: a meta-analytic review of existing and new research' *Organizational Behavior and Human Decision Processes*, Vol. 99, pp.113–142.
- Porter, M.E., and Van der Linde, C. (1995) 'Green and competitive: Ending the stalemate', *Harvard Business Review*, Vol. 73, No. 5, pp.120–134.
- Ramus, C.A. (1997) 'Employee empowerment at GE Plastics Europe: an example of a successful environmental change process', *Corporate Environmental Strategy*, Vol. 4, No. 3, pp.39–46.
- Ramus, C.A. and Steger, U. (2000) 'The roles of supervisory support behaviors and environmental policy in employee eco-initiatives at leading-edge European companies', *Academy of Management Journal*, Vol. 43, No. 4, pp.605–626.
- Ramus, C. A. (2001) 'Organizational support for employees: encouraging creative ideas for environmental sustainability', *California Management Review*, Vol. 43, No. 3, pp.85–105.
- Ramus, C.A. (2002) 'Encouraging innovative environmental actions: what companies and managers must do', *Journal of World Business*, Vol. 37, pp.151–164.
- Recardo, R.J. and Pricone, D. (1996) 'How to determine whether gainsharing is for you', *Industrial Management*, Vol. 38, No. 1, pp.12–18.
- Rikhardsson, P.M. (1998) 'Information systems for corporate environmental management accounting and performance measurement', *Greener Management International*, Vol. 21, pp.51–70.
- Rothenberg, S. (2003) 'Knowledge content and worker participation in environmental management at NUMMI', *Journal of Management Studies*, Vol. 40, No. 7, pp.1783–1802.
- Rondinelli, D.A. and Vastag, G. (2000) 'Global corporate environmental management practices at Alcoa', *Corporate Environmental Strategy*, Vol. 7, pp.288–297.
- Russo, M.V. and Fouts, P.A. (1997) 'A resource-based perspective on corporate environmental performance and profitability. *Academy of Management Journal*, Vol. 40, No. 3, pp.534–559.
- Schaltegger, S., Burritt, R. and Petersen, H. (2003) *An Introduction to Corporate Environmental Management: Striving for Sustainability*, Greenleaf Publishing Limited, United Kingdom.
- Schuster, M. (1984a) 'The Scanlon Plan: A longitudinal analysis', *The Journal of Applied Behavioral Science*, Vol. 20, No.1, pp. 23–38.
- Schuster, M. (1984b) 'Cooperation and change in union settings: problems and opportunities', *Human Resource Management*, Vol. 23, No. 2, pp.145–160.

- Shrivastava, P. (1995) 'The role of corporations in achieving ecological sustainability', *Academy of Management Review*, Vol. 20, No. 4, pp.936–960.
- Sroufe, R. (2003) 'Effects of environmental management systems on environmental management practices and operations', *Production and Operations Management*, Vol. 12, No. 3, pp.416–431.
- Szymanski, M., and Tiwari, P. (2004) 'ISO 14001 and the reduction of toxic emissions', *Policy Reform*, Vol. 7, No. 1, pp.31–42.
- Topf, M.D. (2000a) Why employee involvement may not be enough', *Occupational Hazards*, Vol. 62, No. 5, pp.41–42.
- Topf, M.D. (2000b). 'The importance of manager involvement', *Occupational Hazards*, Vol. 62, No. 9, pp.31–32.
- Welbourne, T.M. and Gomez-Mejia, L.R. (1988) 'Gainsharing revisited', *Compensation and Benefits Review*, Vol. 20, No. 4, pp.19–28.
- Welbourne, T.M. and Gomez-Mejia, L.R. (1995). 'Gainsharing: a critical review and a future research agenda', *Journal of Management*, Vol. 21, No. 3, pp.559–609.
- Young, W.C. and Welford, R.J. (1998) 'An environmental performance measurement framework for business', *Greener Management International*, Spring, No. 21, pp.30–50.
- Zutshi, A. and Sohal, S. (2003) 'Stakeholder involvement in the EMS adoption process' *Business Process Management Journal*, Vol. 9, No. 2, pp.133–148.