Integrating energy efficiency into core business practices – an institutional work perspective on the implementation of energy management systems

Patrick Crittenden
PhD candidate
University of Technology, Sydney
Director, Sustainable Business
63 Buttenshaw Drive
Coledale NSW 2515
Australia
patrick@sbusiness.com.au

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Abstract

Energy efficiency in industrial firms has had more of a focus than ever before. In particular, this has been driven by a growing level of interest amongst organisational stakeholders as diverse as suppliers, government, investors and customers. With more activity and focus, new roles are being created in firms and new practices are being applied in order to improve the effectiveness with which energy efficiency projects are identified, evaluated, presented for funding and implemented.

This paper identifies and examines the emerging practices of energy efficiency practitioners in Australian industrial firms as they implement energy management systems. Specifically it aims to identify and explain the key practices that energy efficiency practitioners apply with the aim of integrating energy efficiency into their organisation's core business practices in order to improve energy efficiency performance on an ongoing basis.

The research involved an analysis of the case study presentations made by twenty energy efficiency practitioners during the September 2011 Australian Energy Efficiency Opportunities workshop series. The data has been analysed and is described in this paper within a theoretical framework that is based on the notion of institutional work. Institutional work explores the practices used to influence the cognitive, normative and regulatory dimensions of the institutions that influence the decisions made by individuals and firms on energy efficiency issues. The paper concludes by considering the implications of the research for practitioners, policy makers and researchers that have an interest in delivering organisation and economy wide improvements through energy efficiency improvement in industrial firms.

Introduction

How can we improve the energy efficiency performance of industrial firms? This is a question of interest to energy efficiency practitioners and government policy makers alike. In the past few years the focus on climate change has also heightened interest in energy efficiency from organisational stakeholders including investors, suppliers and customers. Despite an increase in the drivers that encourage energy efficiency improvement in industrial firms, research suggests that overcoming the gap between actual and optimal energy use in organisations remains a challenge (Crittenden & Lewis. 2011).

This paper aims to identify and explain the key actions that energy efficiency practitioners take to integrate energy efficiency into the core business practices of industrial firms. In doing so, the paper will contribute important perspectives on emerging practices associated with the implementation of Energy Management Systems (EnMSs). This paper distinguishes between the notion of 'core business' and 'core business practices'. A company's core business may be considered the main focus from which it gains its revenues and profits. Core business *practices,* as examined in this paper are considered to be regular, day-to-day activities that are conducted in the course of daily business. In many organisations energy efficiency is more typically approached in an 'ad-hoc' way. A challenge for energy efficiency practitioners is to integrate energy efficiency practices so that they become routine. Typically this is achieved through integration into the systems and processes of an organisation.

The empirical work described in the paper is based on an analysis of the case study presentations made by the representatives of twenty industrial firms in Australia during the September 2011 Energy Efficiency Opportunities workshop series. Specifically, the paper aims to provide perspectives on the following questions:

- What do effective practitioners do to successfully integrate energy efficiency within the core business practices of industrial firms?
- How can we explain the rationale behind their actions?
- What are the implications for policy makers and practitioners?

The paper begins with a brief literature review that identifies some of the potential issues associated with the implementation of standardised management systems. The theoretical framework for the analysis, which is based on institutional theory and the notion of institutional work, is then introduced. The research context and method is then explained and the results presented. In the final section of the paper the implications of the research findings for practitioners, educators and policy makers are discussed.

Standardised Management Systems – implementation and effectiveness

Energy management systems (EnMSs) are 'a means by which organisations establish the systems and processes necessary to achieve operational control and continual improvement of energy performance.' (Reinaud et al. 2012: 10). The purpose of an EnMS is to provide a framework that corporations can use to 'integrate energy efficiency into their management practices, including fine-tuning production processes and improving the energy efficiency of industrial systems.' (McKane et al. 2009: 2). Beneficial outcomes from successful implementation of EnMSs may include energy cost savings and a range of co-benefits including improved productivity, safety and reduced maintenance costs.

EnMSs are typically based on a continuous improvement philosophy incorporating a 'plan-do-check-act' cycle. 'Planning' involves establishing an energy baseline, conducting an energy review and establishing energy performance indicators, objectives, targets and action plans. Plans are then implemented ('do') and are then typically followed up with regular monitoring and measurement of progress ('check'). Actions ('act') are then intended to be regularly taken to improve both energy performance and the structure of the EnMS itself (ISO 2011).

The standardisation process involves transforming a set of loosely described practices into a more closely defined set of generally accepted rules for the way in which a particular management practice should be applied (Perkmann 2008). Standardisation processes may be initiated and supported by companies themselves, industry groups, governments or through international bodies such as the International Standardisation Organisation (ISO). Standardisation of management practices may reduce variation in the application of particular management practices, facilitate comparison within and across firms, allow for third party certification to provide assurance as to whether standards have been met and structure product and service offerings of consulting firms.

Mandating or subsidising the implementation of EnMSs is widely considered an effective way to encourage energy efficiency improvement in industrial firms since there is typically wide variation in energy use across firms and industry subsectors (Reinaud et al, 2012). It is estimated the release of the ISO 50,001 Energy Management Standard has the potential to deliver significant energy savings and other benefits to firms in both developed and developing countries (McKane et al, 2009).

There are a number of potential limitations to the standardised management system approach however. We can look to the considerable research undertaken into the implementation of Environmental Management Systems and the ISO 14,001 standard to obtain some useful insights into potential issues that may arise with the wider implementation of EnMSs. For example, Nawrocka et al. (2009) undertook a meta-study of 23 studies that aimed to identify the link between environmental performance in firms and the implementation of environmental management systems. They were unable to clearly identify a link, which suggests there is wide variation in the effectiveness of systems across different firms. Könnölä et al. (2007) suggest that a major limitation of standardised management systems such as ISO 14,001 is that they are likely to encourage incremental improvement but may have the unintended effect of limiting the identification and implementation of more radical improvements in environmental performance. Yin and Schmeidler (2009) found wide variability in the implementation of ISO 14,001 and suggest that differing implementation approaches may account for the wide variation in environmental performance across the firms involved in the study.

These studies highlight the relevance of research that considers the way in which EnMSs are being implemented within firms. However, much of the energy efficiency -related research has focused on identifying the barriers that limit the uptake of energy efficiency in firms. By focusing more closely on the implementation of effective practices in firms, practitioners and policy-makers can promote leading practices and support the implementation of EnMSs. This study addresses this need by examining the question:

- What do effective practitioners do to successfully integrate energy efficiency within the core business practices of industrial firms?

As well as identifying such practices, it is also important to consider why they are effective and how policy makers might encourage their uptake more widely across industrial firms. The next section introduces the notion of institutional work and explains why it can provide a useful theoretical framework to explore these questions.

Variability in EnMS performance – towards an institutional work perspective

Much of the academic and empirical research into the energy efficiency gap has focused on the barriers that limit the uptake of energy efficiency in firms. This research has typically adopted an economic perspective in which individuals and organisations are assumed to make decisions on the basis of rational action that aims to deliver direct financial and other

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instrumental benefits to the individuals and the organisations involved (Biggart et al. 2007, Paton 2001).

In contrast with economic perspectives, institutional theory assumes that organisations operate in open systems (Hoffman 2001) that are deeply embedded in the social environment that they operate within (Powell 2007). Scott (2008: 48) defines institutions as "social structures that have attained a high degree of resilience [and are] composed of cultural-cognitive, normative, and regulative mechanisms that … provide stability and meaning to social life."[1] Institutions act like the "rules of a game" as they influence organisational behaviour (Kraatz 2008) through the enactment of the three mechanisms proposed by Scott. With regard to decisions and actions taken by firms on energy efficiency, we can consider the way in which these three institutional mechanisms (cognitive, normative and regulative) influence individual and firm behaviour.

The cognitive mechanism is associated with our understanding of reality and the frames of reference that are used to create meaning (Hoffman, 2001). Cognitive assumptions are often reflected in the 'taken-for-granted' assumptions and actions that are considered 'right and natural' (Zietsma 2009).

Normative mechanisms influence individual and firm behaviour through values, norms, role expectations, authority systems, duty and codes of conduct (Scott 1995). Rather than financial or other instrumental outcomes, actors are influenced by their need to be part of social groups (Geels 2004). March and Olsen (2006) suggest that normative social influences act through a "logic of appropriateness" that informs the question "what is required of a person like me in a situation like this?"

Regulatory mechanisms influence firm behaviour through formal rules and incentives (Strang 2000) that are developed by actors that have the authority to enforce conformity and deliver sanctions where deviation occurs (Scott 2001). The most common regulatory institutions are laws established and enforced by the state but other examples include industry standards (Hoffman 1999), industry-enforced codes of conduct, certification and labelling schemes (Gale 2004).

Cognitive, normative and regulatory mechanisms influence individual and firm behaviour at a number of interconnected levels including the world system, society, organisational field, organisational population, organisation, and organisational sub system (Scott 2001). Institutional analyses commonly focus at the level of the organisational field which is made up of "a community of disparate organizations, including producers, consumers, overseers, and advisors, that engage in common activities, subject to similar reputational and regulatory pressures" (Powell 2007: 976). However, as Powell et al (2008: 277) suggest, institutions are "reproduced through the everyday activities of individuals". A focus on individual and organisational practices can provide important insights into the way in which institutions are created, maintained and disrupted (Lawrence et al. 2006). Consideration of the activities at the organisational level can also inform the way in which practices are changed and spread across populations of organisations and industry sectors at the field level (Hoffman 2001). Institutional analysis conducted at multiple levels can provide useful insights into the strategies that actors use to influence the development of institutional practices, and to evaluate the effectiveness of those strategies and the factors that may influence them.

One approach to such analysis is to consider the institutional work of institutional entrepreneurs. Institutional entrepreneurs are "change agents who actively participate in the implementation of, changes that diverge from existing institutions" (Battilana et al. 2009: 70). Based on this definition, managers charged with integrating energy efficiency into core business practices through the implementation of an EnMS may be considered institutional entrepreneurs. The notion of institutional work can then be used to "examine the practices of individual and collective actors aimed at creating, maintaining, and disrupting institutions" (Lawrence et al. 2011: 52).

When considered in relation to energy efficiency practice, the aims of institutional work align with the aims of environmental management systems – that is, to "integrate energy efficiency into management practices, including fine-tuning production processes and improving the energy efficiency of industrial systems" (McKane et al. 2009: 1).

Applying an institutional work framework to energy efficiency practices we can use an institutional framework to help identify and explain the practices that managers use to implement an EnMS effectively. Research questions that emerge when applying an institutional framework include:

How do the actions taken by practitioners:

- influence underlying beliefs and assumptions about energy efficiency (related to cognitive institutional mechanisms)
- develop social perceptions and networks that encourage energy efficiency improvement (related to normative institutional mechanisms)
- establish formal incentives and penalties associated with energy efficiency improvement (related to regulatory institutional mechanisms).

These questions and the theoretical construct of institutional work can help to explain why particular strategies might be effective in progressing the institutionalization of energy efficiency practice – that is, embedding energy efficiency into core business practices within industrial firms. The next section of this paper considers the research context used to identify institutional work practices and to consider whether they are likely to influence the cognitive, normative or regulatory institutional mechanisms that influence energy efficiency practice within industrial firms.

Research context and methodology

An important influence on the implementation of EnMSs in Australian industrial firms is the Energy Efficiency Opportunities (EEO) Act, 2006 (Commonwealth of Australia 2006, Reinaud et al. 2012). As of June 2011 a total of 280 corporations were registered under the legislation. The Act requires corporations that use more than 0.5 petajoules (PJ) of energy annually to conduct energy efficiency assessments to a standard defined in the EEO Act and to report the outcomes from those assessments annually. The legislative requirements encourage companies to establish an EnMS that is broadly aligned with

1.The theory applied in this paper is based on 'Organizational Institutionalism' (Greenwood et al. 2008). It is important to note that this approach is somewhat different to common usage in which the term 'institution' may be used to describe government agencies or large and influential organisations.

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the principles of the global standard for energy management ISO 50,001. Assessment requirements are detailed under six broad categories: Leadership; People; Information, data and analysis; Opportunity identification and evaluation, Decision making and Communicating outcomes (see www.energyefficiencyopportunities.gov.au for further information).

Analysis of public reports from 207 corporations that had conducted energy efficiency assessments between July 2006–June 2010 shows that that 141.9 PJ of energy efficiency savings with a better than four-year payback had been identified. If all identified opportunities are implemented then these projects will result in a 2 % annual reduction in Australia's greenhouse gas emissions relative to a 'business as usual' baseline. The estimated benefit for the corporations is estimated at $1.2 billion/annum. Of the identified opportunities companies report they that have implemented or intend to implement projects that are expected to deliver 75.5 PJ of energy savings. It is estimated that these projects will reduce greenhouse gas emissions at a net benefit of approximately $117 per tonne of CO_2 equivalent reduced (RET 2011a).

Building capacity and skills within companies has been an important priority for the government since the program commenced in July 2006. In order to support this aim, annual two-day workshops have been held in capital cities around Australia. In September 2011, around 600 people, including company representatives and consultants attended the EEO workshops. The purpose of the 2011 workshops was to 'provide EEO participating companies and other stakeholders with an opportunity to learn more about recent changes to program requirements and share ideas on best practice approaches to identifying, evaluating and implementing energy efficiency opportunities' (RET 2011b).

Workshop evaluations consistently show that industry panel sessions and presentations are one of the most valued components of the workshops. These sessions involve industry participants presenting case studies in which they describe how their companies have approached the program, key achievements, lessons learnt and planned future actions. Workshop participants then have an opportunity to ask questions of the presenters. Informal small-group sessions are also held. In these sessions workshop participants discuss specific topics associated with the EEO program in groups of six to eight people.

Industry workshops and conferences are considered useful events for studying the development of institutions. Conferences provide settings in which organisational fields may be defined and developed through theorization, discussion and debates between people from diverse organisations that assemble on a temporary basis. Unfolding public and private discussions amongst participants encourage both shared and contested beliefs to be explored and debated (Garud 2008).

This study draws on the industry case study presentations made at the September 2011 EEO workshops by representatives of twenty industrial firms across a range of industry sub-sectors including chemicals, food and beverage manufacturing (sugar, beer, general food products), mining (coal and gold), metals (aluminium, steel) and paper manufacturing. Each of the companies represented had been involved in the EEO program over the full period the first five-year cycle of the EEO program in which they were required to assess at least 80 % of their total energy use. At the time of the presentations the companies represented were involved in planning for the second five-year cycle of the EEO program in which they will be required to conduct new assessments that cover at least 90 % of the corporation's total energy use. The presentations were recorded, transcribed and analysed using NVivo qualitative analysis software.

The first stage in the analysis involved identifying the actions taken by presenters or others in their organisation that reflected the aim of integrating energy efficiency more effectively into core business practices. The second stage involved categorising those actions as influencing the cognitive, normative or regulative institutional mechanisms associated with energy efficiency in the organisation. The most commonly described actions by presenters were selected and are described in the next section of this paper.

Research findings – The institutional work practices of energy efficiency practitioners

The research findings are described below in three parts. The first considers the institutional work of practitioners that involves influencing the cognitive mechanisms of institutionalisation by framing the rationale for action in ways that align with the understanding and interests of decision-makers. The second considers the institutional work of practitioners that is aimed at influencing normative mechanisms by building a sense of social obligation amongst individuals and groups that motivates them to act on energy efficiency improvement opportunities. The third section considers the institutional work of practitioners that involves establishing formal incentives and penalties to motivate behaviour that supports energy efficiency improvement. Analysis of the industry presentations highlighted a number of common practices that practitioners were using with the aim of integrating energy efficiency into core business practices. There are summarised in table 1.

THE COGNITIVE INSTITUTIONAL MECHANISM – FRAMING THE RATIONALE FOR ACTION

Four institutional work practices associated with the cognitive dimension were frequently cited by presenters. These are: improving the infrastructure that supports data collection, analysis and reporting; conducting regular senior management update briefings; incorporating co-benefits into the business case proposals for energy efficiency projects; and, integrating energy efficiency into organisational training programs.

1. Improving energy information infrastructure to better support data collection, analysis and reporting

Presenters highlighted the importance of improving their energy information infrastructure. This was considered to be a fundamental aspect of improving awareness and integration of energy efficiency into decision-making and operational practices. The level of sophistication of the energy information systems varied widely from firm to firm. Some had comprehensive sub-metering systems in place whereas others were still working to improve the quality and use of their billing data. All agreed that they had improved the quality of data over the past five years and were continuing to make improvements.

One presenter described the progress made over the past few years and the importance of good data as the basis to justifying a focus on energy efficiency.

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Table 1: Summary of activities and the institutional mechanisms they aim to influence from an institutional perspective.

Aim and institutional mechanism	Institutional Work Practice overview	Institutional Work Practice application
To influence underlying beliefs and assumptions about energy efficiency – cognitive mechanism	Framing the rationale for action on energy efficiency to influential decision makers in ways that align with their understanding and interests	- Improving the infrastructure that supports data collection, analysis and reporting - Conducting regular senior management update briefings - Incorporating co-benefits into the business case proposals for energy efficiency projects - Integrating energy efficiency into organisational training programs.
To develop social perceptions and networks that encourage energy efficiency improvement – normative mechanism	Creating roles and networks that build a sense of social obligation amongst individuals and groups that motivates them to act on energy efficiency improvement opportunities	- Incorporating energy efficiency responsibilities into formal role descriptions - Establishing and maintaining cross-functional energy efficiency teams - Designing and implementing organisation-wide communication and change management strategies - Integrating energy efficiency into written operational procedures
To establish formal incentives and penalties associated with energy efficiency improvement – regulatory mechanism	Establishing formal incentives and penalties to motivate behaviour that supports energy efficiency improvement	- Integrating energy efficiency criteria within performance management systems - Establishing systems and procedures to support external reporting and other compliance requirements

> Five years ago we had three direct reports to the CEO who were all over this and really wanted to get the ball rolling. I think their interest was based on a *hunch* more than anything else. Once we started getting into it and doing the serious energy management like getting energy consumption data, analysing the data and putting together the reports, it just clearly showed where there were inefficiencies. We were then able take that hard data to the board. It just kind of opened their eyes for them and confirmed that this was something we need to look at.

Presenters found that establishing the rationale to invest in energy information systems was challenging. Many found that a progressive approach was effective. That is, assessments utilised available data in the first instance and as opportunities were identified and results achieved, the savings were used as the justification to invest in more sophisticated energy information systems. In companies where the systems were already quite sophisticated (for example, accurate, real-time data available at sub-system levels) presenters confirmed that these systems were built up progressively over a number of years. Presenters explained that one of the design features of the EEO program that was useful is that it is structured around 5-year cycles. Presenters were using the planning process for their second five-year cycle to identify gaps in their existing systems – particularly those related to energy data and information – and developing investment proposals to address those gaps.

2. CONDUCTING REGULAR SENIOR MANAGEMENT UPDATE BRIEFINGS

Many presenters found that before they had commenced implementation of the EEO program there was limited awareness and understanding at senior levels of their organisation of the strategic and operational risks and opportunities associated with energy use.

In many cases it was due to the lack of available energy data or due to limitations in the way in which existing data was structured. In other cases it was the result of misinformation or unsubstantiated assumptions. Some incorrect assumptions made by senior managers in some organisations included: "we are a large energy user so we must be focused on this", "somebody must be driving this issue" and "carbon pricing will have the greatest impact on energy costs but there isn't a lot that we can do about it".

Presenters frequently described the importance of framing the rationale for action on energy efficiency to influential decision makers at all levels of the organisation. They described a wide range of external stakeholders that were interested in their firm's energy efficiency performance including government legislators, customers, investors and suppliers. The introduction of an Australian carbon tax (commencing 1 June, 2012 with a fixed price period for three years) and rising energy prices were considered to play a significant role in raising the level of awareness and building a case for action to senior site and corporate managers.

Due to the dynamic nature of changes in the external business environment and the growing interest of stakeholders,

regular senior management briefings were considered essential. These typically included information on the organisation's energy efficiency performance, the statue of energy management plans, updates on legislative changes and communicating new and specific interests of external stakeholders.

The institutional work that presenters described demonstrates the importance of maintaining current information and ensuring that senior managers are informed based on fact rather than assumptions.

3. Incorporating co-benefits into the business case proposals for energy efficiency projects

One self-limiting assumption can be that consultants and internal staff focused on energy efficiency overemphasise energy cost reductions without effectively accounting for the co-benefits that may be associated with particular projects. This approach can reinforce thinking in an organisation that energy management as separate from the main focus of the organisation.

Incorporating and communicating co-benefits of projects and framing them in language and with an emphasis on the interests of managers that determine whether to proceed with a project or not, was mentioned as an important aspect of obtaining support for projects and to reinforce the overall value of a focus on energy efficiency within organisations.

For example, one organisation found that bulldozers used to handle raw materials at the site spent 30 % of their operational time idling. One of the primary reasons for not turning off the bulldozers was that the main 850 HP engine was being used to run the cabin cooling system. The organisation successfully piloted an alternative cabin cooling system that could be electrically driven and allow for the bulldozer engines to be turned off. Reducing the idle time of the bulldozers not only reduced fuel use, but also reduced the operational hours of the bulldozers which meant that maintenance costs were significantly reduced.

4. Integrating energy efficiency into organisational training programs

Most presenters were involved in developing and/or enhancing training programs in their businesses. Early in the first five-year cycle of the EEO program most of the training programs had been focused on the staff involved in administrating the program. As awareness of energy efficiency was established more widely across the organisation however, the training programs more directly targeted core business processes. An example of an approach to training as described by an energy efficiency practitioner in a manufacturing firm is provided below.

> We're currently working on developing modular training programs to deliver to our production operators, our maintenance team, our middle managers and production planners. It is important to get to everyone. For example a production planner in our business can really screw up energy efficiency if they are programming products side by side in ways that increases our refrigeration load unnecessarily. People need to know about the consequence of their actions in regard to energy efficiency.

THE NORMATIVE INSTITUTIONAL MECHANISM –ESTABLISHING ROLES, BUILDING SOCIAL NETWORKS AND STANDARDISING OPERATIONAL PROCEDURES

There were four institutional work practices associated with the normative mechanism that were frequently cited by presenters. These are: incorporating energy efficiency responsibilities into formal role descriptions; establishing and maintaining cross-functional energy efficiency teams; designing and implementing organisation-wide communication and change management strategies; and, integrating energy efficiency into written operational procedures.

1. Incorporating energy efficiency responsibilities into formal role descriptions

Many of the presenters suggested that the role of the corporate-level person responsible for energy efficiency in their businesses had changed from a focus on technical issues towards a greater focus on building support and engaging the appropriate staff in energy efficiency across the organisation. They found that their role had evolved throughout the process of implementing the EEO program. In part this was due to a greater awareness of the complexities involved as well as a need for additional resources. There was also a strong recognition of the need to involve a wide range of technical and operational staff in the process of identifying and implementing opportunities as well as support staff such as accountants and human resources specialists.

Around half of the presenters had an operational/ engineering background and half came from an environmental management/compliance background. In one case the senior person responsible for energy efficiency was the Chief Financial Officer. A presenter summed up the commonly shared view of the skills required to implement energy efficiency across an organisation as:

> Engineers do understand energy but I wouldn't get fixated on that because you need people with communications skills, with leadership skills and with system skills. I think those things are just as important as the technical skills.

Most companies had clearly established written responsibilities for site-level personnel. There was perhaps greater variability in the extent to which personnel at the site level had a technical engineering background. As one presenter described it:

> We have a formal description for an energy champion. Our energy champions have a range of skills and backgrounds. At one site it is the plant engineer, at another the project engineer and at yet another it is the plant accountant. We've got a mixture of people who are driving energy efficiency across their site because they're passionate and that they're keen to get on and do something.

Presenters suggested that after establishing clearer roles for themselves and site-based energy efficiency staff they would be looking to integrate energy efficiency responsibilities more clearly into management roles as well as key technical roles. To achieve this they expected to work more closely with human resources professionals in their organisations.

> One thing that was highlighted in the external verification process for us is that we need to spread knowledge on energy efficiency a lot more across the organisation. As well as

> actually assigning energy efficiency champions we can still make people accountable within their job descriptions. That includes being clear about what is required in relation to providing data or reports at a certain time. It is about clarifying key accountabilities.

In summary, the institutional work conducted by presenters in formalising roles within their organisation provides legitimacy to the time and effort applied by personnel to energy efficiency improvement.

2. Establishing and maintaining cross-functional energy efficiency teams

Presenters typically found one of their most significant challenges was to integrate energy management approaches across functional and hierarchical silos. Establishing cross-functional energy teams at both corporate and site levels was seen as an effective way of achieving this outcome. Some of the presenters had broadened the cross-functional aspects of their teams over the past few years. For example, one presenter described the diversity of experience and roles in their energy steering committee:

> We've formed an energy steering committee and that includes the national manufacturing manager, the supply chain development manager, a corporate project engineer and someone from marketing. It is important to have a high level team because, for example, if I can get the national manufacturing manager interested then his plant managers are interested and then everyone that works at the plant are as well.

Presenters also described the importance of maintaining the work of the teams as they could become less functional due to staff turnover and they were sometimes disrupted by other priorities brought about by, for example, production difficulties.

There had also been lessons learnt about how to most effectively utilise teams. For example, one manufacturing facility found that their teams were initially too large. This meant that it was relatively easy for team members to avoid accountability for progressing energy efficiency by leaving it to others to pick up the slack. Overall, smaller and focused teams were seen to be more effective.

The institutional work conducted by presenters in establishing and maintaining cross functional teams includes creating an identity for the team, building interest by having influential personnel on the team and providing a forum in which those involved in the team obtain a broader business/cross functional perspective on the importance of energy efficiency and the business practices required to improve performance.

3. Designing and implementing organisation-wide communication and change management strategies

Presenters described a wide range of communication strategies and techniques that had been used to raise awareness of the importance of energy efficiency within their organisations as well as providing perspectives on communication challenges and achievements. One example is a steel manufacturer that is leveraging the EEO program by developing a suite of organisational change initiatives that aim to build awareness and support for energy efficiency across the business. Initiatives include an energy culture survey to understand how staff view energy efficiency and where staff see opportunities for improvement. An energy efficiency 'brand' and cartoon character have been developed in order to promote energy efficiency. The organisational change program complements a range of other measures designed to integrate energy efficiency into the business through standard operating procedures, job descriptions and the development of key performance indicators.

Presenters described a range of communication strategies that they were implementing including the use of notice boards, toolbox talks, calendars, video clips, competitions and posters. All saw opportunities to enhance their communication programs in the future with a number of the presenters aiming to work more closely with the communications staff within their organisations to do so.

4. Integrating energy efficiency into written operational procedures

Presenters described the importance of integrating energy efficiency into written operational procedures. The benefits described include a reduction in variation of practices and hence energy use and less reliance on the motivation of individual staff members to actively 'focus on energy efficiency'. One presenter succinctly described the importance of this process:

> We've written 31 energy efficiency procedures so far and they're always being improved. We have really got to document the things we do because if a key person leaves we've got to have the maturity and the robustness for this energy program to continue.

THE REGULATORY INSTITUTIONAL MECHANISM – ESTABLISHING FORMAL INCENTIVES AND PENALTIES

There were two institutional work practices associated with the regulatory dimension that were frequently cited by presenters. These are integrating energy efficiency criteria within performance management systems and establishing systems and procedures to support external reporting and other compliance requirements.

1. Integrating energy efficiency criteria within performance management systems

Integrating accountability for energy management into formal employee performance management systems was seen by many of the presenters as an important mechanism for change. One of the companies that had been able to do this successfully had established direct links between energy efficiency performance and the remuneration bonuses for site and senior management.

The presenter from this company explained that the process had taken a number years and a high degree of consultation at both site and corporate level. Firstly they had to review and develop new key performance indicators. The original performance indicator that was traditionally used did not allow for variations in energy efficiency performance that was beyond the control of management and staff. The new performance indicator was developed with experts, trialled on one of the sites that had the most positive culture for innovation and then rolled out across all of the sites.[2]

2. For a detailed case study refer to RET (2011). Analyses of Diesel Use for Mine Haul and Transport Operations, Australian Government Department of Resources, Energy & Tourism (RET).

Many other speakers explained that they were in the process of working through the same process. Many saw significant challenges but as their internal energy information systems were improving and by working in conjunction with their human resources Department they considered that they were likely to have some success in achieving such integration into their performance management systems.

2. Establishing systems and processes to support external reporting and other compliance obligations

Each of the companies represented at the workshops had obligations under the EEO Act. This meant that their approach to energy management would be scrutinised by an external party either through a desktop verification audit or a full verification process that included site visits. The practitioners used the external compliance obligations as a mechanism to improve the rigour of their energy management practices. Many speakers explained that having legislated requirements encouraged them to be more systematic in their approach and to document their activities more carefully than if they were not required to undergo an external verification process.

Some firms conducted internal verification audits in order to prepare themselves for external verification. One presenter found that this provided an important focus for senior management and helped to build their level of understanding and engagement in energy efficiency. As the presenter described it:

> How do you get the people that have got a great deal of responsibility for production, and not a lot of spare time involved? We found a tool just recently and that's to do our own voluntary verification with all of the key managers in the same room together. Suddenly it's not only one of their KPIs but it's a KPI they have to stand up and tell the chief executive about. Boy that's powerful.

The speakers that had been directly involved in an external verification process found it to be a very useful process for obtaining feedback that they would not have obtained if their had not been mandatory requirements. As one presenter explained:

> We found the verification process really useful because like everyone we've got weaknesses. The feedback we received from the verification audit is going to help us target improvement for our subsequent energy efficiency assessments.

The style and focus of the verification approach also seemed to influence the attitudes of the companies that were involved. In the case of the EEO program, government representatives partner with external consultants with specific industry expertise to undertake the verification.

> The people from the Department were flexible and very helpful. They were clear about what they're after and what they wanted the energy efficiency assessments to actually achieve. We did our own internal audit and saw that for much of it, we had it covered. So let the process help you improve your processes.

In summary, presenters were able to use the external verification requirements to engage senior management, justify the establishment of robust systems and use the feedback from the process to support continuous improvement within their organisations.

Summary and discussion

This aim of this paper has been to identify and explain the key actions that energy efficiency practitioners take to integrate energy efficiency into the core business practices of industrial firms. In doing so it is intended to contribute important perspectives on emerging practices associated with the implementation of EnMSs in industrial firms.

The analysis highlights the value of conducting institutional analyses at the level of the firm as a means of understanding the evolution of practices as they develop and are "reproduced through the everyday activities of individuals" (Powell et al. 2008: 277). The research has a number of implications for practitioners, policy makers and educators. These are discussed below.

APPLICATION FOR PRACTITIONERS – INSTITUTIONAL WORK AS A FRAMEWORK FOR THE IMPLEMENTATION OF ENMSS

The experiences shared by practitioners from the twenty industrial firms represented at the EEO workshops reinforces the importance of careful implementation of an EnMS and the range of practices that can help support the integration of energy efficiency into core business practices. The research also highlights the challenges that practitioners face. For example, increasing interest from external stakeholders and changing legislation means that the drivers that support energy efficiency improvement in firms are increasing. The dynamic nature of these changes can present both challenges and opportunities.

Practitioners may find it useful to apply the institutional work framework in their own organisations. This might involve conducting a gap analysis that examines existing practices and considers new strategies that can be used to influence underlying beliefs and assumptions about energy efficiency, develop social perceptions and networks that encourage energy efficiency improvement and, establish formal incentives and penalties.

APPLICATION FOR POLICY MAKERS – PROMOTING THE UPTAKE OF ENMS AND ENCOURAGING INDUSTRY-WIDE DIALOGUE ON IMPLEMENTATION ISSUES

Annual workshops facilitated by the government department responsible for administration of the Australian Energy Efficiency Opportunities Act provided the setting within which this research was conducted. Conferences and workshops of this type provide an important opportunity for practitioners and policy makers to discuss their experiences including challenges, frustrations and perhaps most importantly, the practices that they have found to be most effective in the integration of energy efficiency into the core business practices of their organisations. From an institutional perspective, events such as these can be seen to support the industry-wide diffusion (spread) of energy efficiency practices across organisations.

In terms of normative institutional mechanisms, the opportunity for industry practitioners to compare their own experiences with those of their peers can provide a powerful way of legitimizing the actions taken within their own organisation and, in some cases, building their confidence in the actions they may need to take to achieve the outcomes of those being achieved by their peers. This may be particularly beneficial for energy efficiency practitioners since many may operate in

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relative isolation within their organisation. Realising that they are part of a network of like-minded individuals facing similar challenges can provide support, acknowledgement, new ideas and help them build confidence in their work.

In relation to cognitive institutional mechanisms, workshops such as these provide practitioners with an opportunity to develop their skills and understanding of technical issues associated with the implementation of energy efficiency in their organisations and also the strategies that they might apply to build empowerment and support from others within their organisations to support energy efficiency. Hearing from other organisations as well as government representatives can also help them to build their understanding of the legislative requirements of the program. In many cases, peers may be considered a more credible source of such information than, for example, government officials.

For government representatives workshops such as these provide an opportunity to explain legislative requirements and ensure that they are well understood. Framing these requirements in terms of the benefits to the organisations involved may help workshop participants to better understand both the coercive implications as well as the benefits of the legislation. Amongst participants themselves, discussions around the ways they might use the fact that the program is a legislative requirement can also be useful – particularly in relation to the examples provided by some organisations about the way in which they had successfully incorporated energy efficiency as a criterion within their performance management systems.

Workshops and conferences are just one way that policy makers and program managers may use to achieve these outcomes. Others include establishing formal and informal industry networks, developing and disseminating case studies, supporting the development of education and training programs, developing awards and providing industry-wide analysis of the benefits of the implementation of EnMSs (Reinaud et al. 2012).

EDUCATION AND TRAINING

In the same way that practitioners within organisations are actively working to overcome the silos that may limit the integration of energy efficiency into core business practices, policy makers and program managers can consider ways in which education and training can be used to build awareness, skills, knowledge and the legitimacy across professional and occupational communities. An example of this is the NSW Government's Energy Efficiency Training program[3], which has initiated a program that involves the development of teaching materials and training for accountants and business managers at a range of levels. Energy efficiency training is available for senior and middle management in organisations through professional development courses and webinars. The University of Technology, Sydney and other universities are integrating energy efficiency teaching materials into undergraduate and postgraduate accounting and management courses.

Education and training programs could also incorporate an institutional work perspective as a means of promoting the approaches that practitioners can take to integrate energy efficiency into core business practices. One of the benefits of this framework from a teaching perspective is that it provides an integrated approach across the cognitive, normative and regulatory mechanisms that influence individual and firm behaviour.

3. See: http://www.environment.nsw.gov.au/sustainbus/greenskills/eneftraining3.htm

FURTHER RESEARCH

This research has provided an opportunity to apply a theoretical framework based on institutional work at the organisational level. One of the strengths of institutional theory is that it is a theoretical framework that can be applied at multiple levels. Future research could build on the this work, which has focused on the organisational level and the work of key managers involved in integrating energy efficiency into their organisations, to more closely consider the institutional work of policy makers and other industry stakeholders that aim to encourage improved uptake of energy efficiency across industry. Such work could address the notion of 'distributed agency', an aspect of institutional theory that has been under-researched (Battillana 2009, Perkmann 2008, Zietsma 2010). Researching 'distributed agency' would involve consideration of the inter-relationship between multiple institutional actors at the organisational and organisational field level as they work separately and together to support energy efficiency improvement across industrial firms.

Conclusion

EnMSs have an important role to play in supporting businesses to improve their energy efficiency performance. To achieve their potential however, EnMSs must be implemented effectively. This paper has highlighted some of the emerging practices that successful practitioners are using to support effective implementation. The institutional work framework that has been developed to conduct the analysis helps to explain the reasons why such practices may be effective at integrating energy efficiency into the core business practices in firms. Practitioners can learn from the practices identified and consider whether they are appropriate to use in their own firms. They may also use the institutional work framework to review and/or develop their own strategy for EnMS implementation. Policy makers can consider ways of supporting firms in sharing and implementing successful practices. Future research should extend the institutional work framework developed to better explain the interaction amongst stakeholders within and external to firms that aim to improve energy efficiency practices and deliver energy savings within businesses and across industry.

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