

**New Perspectives on Institutional Change:  
The Case of Changing Energy Management  
Practices in Australia**

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Management**

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## **Certificate of Original Authorship**

I certify that the work in this thesis has not previously been submitted for a degree, nor has it been submitted as part of the requirements for a degree, except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

The research presented in this thesis was approved by the University of Technology, Sydney Human Research Ethics Committee, Approval Number: 2013000126.

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Date: 1 May 2014

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## List of Acronyms and Abbreviations

AUD	Australian Dollar
Btu	British Thermal Units
CCS	Carbon Capture and Storage
CDP	Carbon Disclosure Project
CO <sub>2</sub>	Carbon dioxide
CPRS	Carbon Pollution Reduction Scheme
Department of RET	Australian Government Department of Resources, Energy and Tourism *
Department of Industry	Australian Government Department of Industry *
Department of ITR	Australian Government Department of Industry, Tourism and Resources *
EEBP program	Energy Efficiency Best Practice program
EEO legislation	<i>Energy Efficiency Opportunities Act 2006</i> (Cth) Energy Efficiency Opportunities Regulations 2006 (Cth)
ENGO	Environmental non-governmental organisation
EPA	U.S. Environmental Protection Authority
ESCO	Energy service company
ESG	Environmental, social and corporate governance
ETS	Emissions Trading Scheme
GtCO <sub>2</sub>	Gigatonnes of CO <sub>2</sub>
GBCA	Green Building Council of Australia
G8	Group of Eight (of the largest global economies)
IAC	Industrial Assessment Center
IEA	International Energy Agency
IMF	International Monetary Fund
IPCC	Intergovernmental Panel on Climate Change
IPMVPC	International Performance Measurement & Verification Protocol Committee
ISO	International Organization for Standardization
KPI	Key Performance Indicator
NABERS	National Australian Built Environment Rating System

NGER Act	<i>National Greenhouse and Energy Reporting Act 2007</i> (Cth)
NGER Scheme	National Greenhouse and Energy Reporting Scheme
NGO	Non-governmental organisation
OECD	Organisation for Economic Co-operation and Development
PJ	Petajoule
Q&A	Question and answer
SCOTS	Social construction of technological systems
SMEs	Small and medium enterprises
USD	United States Dollar
U.S. DOE	United States Department of Energy
White Paper	Australian Government White Paper – <i>Securing Australia’s Energy Future</i>

\*Refer to the glossary for an explanation of the historical name changes associated with these Australian government departments

## Abstract

This thesis provides new perspectives on the dynamics of institutional change by examining the case of changing energy management practices in large energy consuming organisations in Australia between 2006–2012. Effective energy management practices can deliver cost savings, greenhouse gas reductions and a range of benefits to organisations and society more widely through energy efficiency improvements. However, there is evidence to suggest that there is a gap between the availability of profitable energy efficiency projects in organisations and the extent to which such projects are implemented. Researchers refer to this phenomenon as ‘the energy efficiency gap’.

The thesis builds on contemporary developments in the institutional entrepreneurship literature by developing a multi-level model to conduct the research. Due to the complexity of interrelated issues and events, case study method is applied to analyse and report on the dynamics of changing energy management practices over the study period. The primary research question is: *How* and *why* do energy management practices change?

The research finds that energy management practices evolved over the study period through a process of ‘collaborative co-creation’; that is, multiple organisations were involved in experimentation, negotiation and consensus-building processes. These disrupted previously established energy management practices and informed the development and maintenance of new and more effective practices. The thesis contributes to the institutional theory literature by offering original and empirically tested insights into the conditions that support institutional change as a dynamic process involving interactions between multiple organisations. These conditions are that stakeholders with varying degrees of attachment to established management practices are engaged in the change process, roles emerge for institutional entrepreneurs and collaboration is facilitated through the enactment of constructive social skills. Change is further reinforced through shifts in the underlying beliefs about the energy management practices that are considered to be legitimate within a community of corporate energy practitioners.

Based on the findings, it is concluded that energy efficiency policymakers can encourage the adoption of more effective energy management practices in organisations by developing and refining policies based on three key principles. First, energy efficiency policies should encourage a wide range of organisational stakeholders to engage in the process of energy efficiency improvement. Second, policies should be enduring in order to support learning and institutional change across business cycles. Third, policies should be flexible in order to align with the capability, needs and readiness of organisations in order to accelerate energy efficiency improvement.

# 1. Introduction

*“Institutions are the humanly devised constraints that structure political, economic and social interaction. They consist of both informal constraints (sanctions, taboos, customs, traditions and codes of conduct), and formal rules (constitutions, laws and property rights).”*

*Institutions (North 1991, p. 97)*

This thesis contributes new perspectives on institutional change. It examines how and why energy management practices changed in large energy consuming organisations in Australia between 2006-2012. To do this it creates a multi-level process model of institutional change that makes links between the emerging stakeholders driving energy efficiency concerns, the changing energy management practices adopted by large energy consuming organisations and the shifts in underlying beliefs that inform the development of energy management practices. There is a particular focus on understanding the role that individuals play in the process of change. This chapter introduces the thesis by describing the aim, research questions, approach and contributions of the research. It concludes with an outline of the thesis.

## 1.1 Aim and research questions

Improving the energy efficiency performance of organisations can reduce business operating costs and cut greenhouse gas emissions significantly in the short-term and deliver many other societal and organisational-level benefits (Ates & Durakbasa 2012; Jollands et al. 2010; Thollander & Ottosson 2010). Despite the potential benefits that are available to organisations and the wider community, cost-effective opportunities to improve energy efficiency in organisations remain underexploited (Bernstein et al. 2007; IEA 2013; Levine et al. 2007). To understand this phenomenon, researchers have typically examined the barriers that limit the uptake of energy efficiency in organisations (Sorrell, Mallett & Nye 2011; Trianni et al. 2013). Few studies examine the way in which organisations develop and adopt effective energy management practices over time (Ates & Durakbasa 2012;

Thollander & Ottosson 2010).

Studies that have examined the adoption of energy management practices in organisations (e.g. Ates & Durakbasa 2012; Christoffersen, Larsen & Togeby 2006; Thollander & Ottosson 2010) examine energy management practices as a static phenomenon. That is, these studies focus on the extent to which particular energy management practices have been adopted at a particular point in time, but do not provide insights into the dynamic<sup>1</sup> process by which established energy management practices are disrupted and new practices are developed and then maintained by organisations. Further, there has been limited examination of the influence that stakeholders within and external to organisations have on energy management practices.

To address these knowledge gaps the primary research question examined in this thesis is: *How* and *why* do energy management practices change in large energy consuming organisations?

This question is supported by three secondary research questions that aim to expose the dynamics of institutional change:

1. How do corporate personnel with responsibility for energy efficiency improvement (referred to as ‘corporate energy practitioners’ in this thesis) influence the disruption, development and maintenance of energy management practices?
2. Who are the other key stakeholders that influence energy management practices and how do they affect change?
3. How does the organisational and organisational field-level context influence individual decision-making on energy efficiency projects?

These questions are developed further in Section 5.1 of this thesis.

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<sup>1</sup> In this thesis the term ‘dynamic’ refers to the process through which stakeholders interact to influence energy management practices.

The theoretical aim of this thesis is to contribute new perspectives on the dynamics of institutional change by examining the case of changing energy management practices in large energy consuming organisations in Australia. In terms of practice, the aim is to provide insights into the actions that policymakers and other stakeholders can take to accelerate the adoption of effective energy management practices by organisations.

## **1.2 Approach and contributions of the research**

To achieve these aims, this thesis draws on and extends contemporary interpretations of institutional theory. Specifically, a multi-level model of institutional change is developed to examine changing energy efficiency practices in Australian organisations over the period 2006–2012. The research focuses on large energy consuming organisations<sup>2</sup> and examines energy efficiency in their existing facilities. The model of institutional change that is developed and applied empirically examines how corporate energy practitioners exploit the expanding interest of stakeholders<sup>3</sup> to overcome hierarchical, professional and structural boundaries within their own organisations. This enables organisations to accelerate energy efficiency improvement through the development of new and more effective energy management practices.

The research also highlights how practitioners disrupt and re-establish ‘taken-for-granted’ energy management practices by selectively applying strategies that aim to influence the cognitive, normative and regulative institutional mechanisms that have previously served to maintain less effective energy management practices. The processes that support learning and collaboration within and between organisations are also exposed, providing novel insights into the manner in which effective energy management practices are shared and reproduced across organisational boundaries.

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<sup>2</sup> ‘Large energy consuming organisations are defined as organisations using more than 0.5PJ of energy annually. As described later in the thesis this definition aligns with the definition applied in the *Energy Efficiency Opportunities Act 2006* (Cth)

<sup>3</sup> The term ‘stakeholder’ is used interchangeably with the term ‘actor’ in this thesis. It refers to any individual, group or organisation who can affect or who are affected by the activities of a single organisation or a community of organisations. This definition is based on Freeman (1984, p. 46).

The research makes important contributions to the institutional entrepreneurship and energy efficiency literatures. The notion of institutional entrepreneurship is that: “new institutions arise when organized actors with sufficient resources (institutional entrepreneurs) see in them an opportunity to realize interests that they value highly” (DiMaggio 1988, p. 14). However, since the notion of institutional entrepreneurship was first introduced by DiMaggio (1988), institutional researchers have been challenged to explain the way in which actors change institutions when actors are themselves subject to institutional pressures – the so-called ‘paradox of embedded agency’ (Dorado 2005; Holm 1995; Seo & Creed 2002).

Institutional theorists have been critical of the way in which stakeholders have been depicted as socially determined ‘cultural dopes’ that are deeply embedded in and influenced by social forces (at one extreme) or as heroic actors able to overcome social pressure with relative ease (at the other extreme) (Fligstein 2001; Powell & Colyvas 2008; Suddaby 2010b). This has led to calls for institutional researchers to develop more comprehensive depictions of institutional entrepreneurship and change by examining human agency as a distributed phenomenon that involves interactions between multiple stakeholders (Battilana, Leca & Boxenbaum 2009; Lounsbury & Crumley 2007). By examining the interactions between multiple stakeholders in an organisational field over time, under theorised aspects of institutional change are developed in this thesis. Specifically, this thesis contributes to the institutional entrepreneurship and institutional theory literatures by:

- revealing the social conditions that support institutional change as a collaborative process (involving multiple stakeholders in experimentation, negotiation and consensus-building processes)
- highlighting how and why the involvement of stakeholders with varying degrees of social embeddedness (i.e. “the degree to which actors and their actions are linked to their social context” (Reay, Golden-Biddle & Germann 2006, p. 978)) are engaged in and contribute to institutional change, and
- identifying the role key social skills that stakeholders actively involved in progressing institutional change apply to successfully progress institutional change in complex social environments.

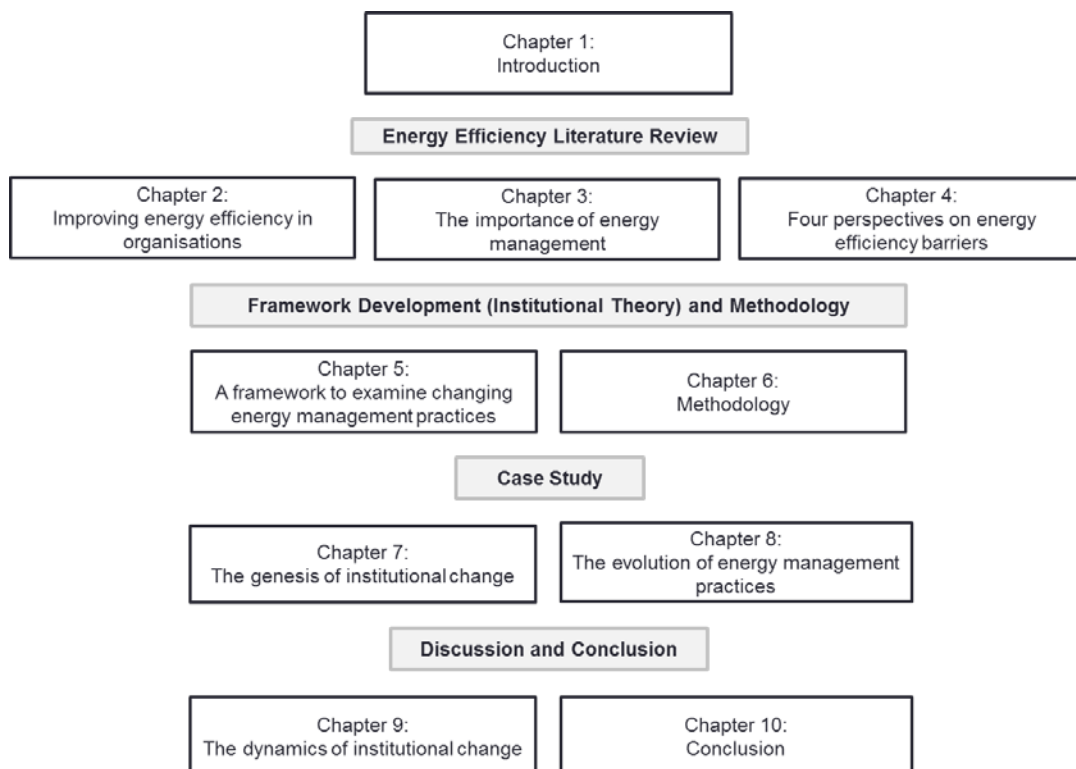


The application of recent understandings in institutional theory to the problem of ‘the energy efficiency gap’ provides scholars and policymakers with new perspectives on the reasons for the gap and the actions that can be taken to accelerate the adoption of effective energy management practices in organisations to resolve it. The processes associated with identifying, evaluating and implementing energy efficiency projects within organisations are complex (Biggart & Lutzenhiser 2007; Palm & Thollander 2010; Warren-Myers 2012). By considering the way in which multiple stakeholders influence practices over time at the project, organisational and interorganisational levels, a more comprehensive view of the factors that both create and address barriers to energy efficiency in organisations is developed. This comprehensive perspective has important implications as organisations, governments, investors and other stakeholders consider the strategies they can apply to accelerate the adoption of effective energy management practices in organisations.

### 1.3 Outline of the thesis

The structure of the thesis is shown in Figure 1.1. A detailed description of each chapter follows.

**Figure 1.1: Structure of the thesis**



Chapter 1: *Introduction*. As explained earlier, this chapter introduces the thesis and describes the aim, research questions, approach, contributions of the research and provides an outline of the thesis.

Chapter 2: *Improving energy efficiency in organisations* establishes the important contribution that energy efficiency improvement in organisations can make towards reducing greenhouse gas emissions in the short-term and delivering a range of other environmental, social and economic benefits to organisations and society.

Chapter 3: *The importance of energy management* reviews the existing academic literature on energy management practices and government energy efficiency policy. First, key terms are defined, including ‘energy management’, ‘energy management systems’ and ‘energy management practices’. Second, the review identifies that – while there has been empirical work examining the adoption of energy management practices in particular industries – there is a need for research that examines how effective energy management practices are developed, adopted and maintained by organisations. The primary research question: *How and why* do energy management practices change? – emerges from this review of the literature. Chapter 3 concludes by highlighting the need to examine the underpinning theoretical assumptions that have been applied within the energy efficiency literature.

Chapter 4: *Four perspectives on energy efficiency barriers* reviews the extensive literature examining the energy efficiency gap in organisations in order to inform the formulation of an appropriate theoretical approach for this research. The review is structured according to four broad perspectives:

1. a neoclassical economic perspective
2. a behavioural perspective
3. an organisational-level perspective, and
4. an interorganisational perspective.

The review highlights the need for research that extends the interorganisational perspective and incorporates multi-level research design.

Chapter 5: *A framework to examine changing energy management practices* establishes the theoretical framework for the study. It is argued that institutional theory is particularly suited to examining change at the level of the organisational field. At the same time it can effectively accommodate multi-level analysis from the micro level (e.g. energy efficiency projects), meso level (e.g. organisations) and macro level (e.g. the organisational field). Contemporary developments in institutional theory (particularly those associated with institutional entrepreneurship and collective action models of institutional change) are reviewed and used in the development of the empirical model of institutional change.

Chapter 6: *Methodology* describes the methodology applied in the empirical research. It justifies the relevance of developing a critical and revelatory case study of changing energy management practices in Australian organisations between the years 2006–2012. The chapter outlines the methodological assumptions, scope of the case study, sources of data and the analytic process that was followed.

In Chapter 7: *The genesis of institutional change*, the background to the case study, including development of the *Energy Efficiency Opportunities Act 2006* (Cth),<sup>4</sup> is presented. The institutionalised energy management practices that were applied by large energy consuming organisations as they first began to respond to their obligations under the EEO legislation are then described. Finally, changes in the stakeholder composition of the organisational field associated with energy management practices over the study period are examined.

Chapter 8: *The evolution of energy management practices* presents the changes to energy management practices that occurred over the study period in four thematic areas emerging from the analysis:

1. engaging staff in energy management
2. developing energy information systems
3. identifying potential projects, and
4. integrating energy management into existing management systems.

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<sup>4</sup> The *Energy Efficiency Opportunities Act 2006* (Cth) and *Energy Efficiency Opportunities Regulations 2006* (Cth) are referred to as the ‘EEO legislation’ throughout this thesis.

Within each of the thematic areas new practices are described. The analysis particularly focuses on the dynamic process of institutional change that influenced the development of these energy management practices.

Chapter 9: *The dynamics of institutional change* discusses the implications of the research. First, the dynamics of changing energy management practices are summarised within and across each level of analysis. Second, the implications for institutional theory are discussed. Third (and finally), the implications of the research for policymakers and other stakeholders concerned with accelerating the adoption of effective energy management practices are presented. The chapter concludes by discussing the limitations of this research and makes recommendations for future research.

Finally Chapter 10: *Conclusion*, briefly summarises and concludes the thesis.