

Influencing Business Behaviour and Decision Making to Improve Energy Efficiency

12-13 November 2015

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INTERNATIONAL ENERGY AGENCY

The International Energy Agency (IEA), an autonomous agency, was established in November 1974. Its primary mandate was – and is – two-fold: to promote energy security amongst its member countries through collective response to physical disruptions in oil supply, and provide authoritative research and analysis on ways to ensure reliable, affordable and clean energy for its 29 member countries and beyond. The IEA carries out a comprehensive programme of energy co-operation among its member countries, each of which is obliged to hold oil stocks equivalent to 90 days of its net imports. The Agency's aims include the following objectives:

- Secure member countries' access to reliable and ample supplies of all forms of energy; in particular, through maintaining effective emergency response capabilities in case of oil supply disruptions.
- Promote sustainable energy policies that spur economic growth and environmental protection in a global context – particularly in terms of reducing greenhouse-gas emissions that contribute to climate change.
- Improve transparency of international markets through collection and analysis of energy data.
 - Support global collaboration on energy technology to secure future energy supplies and mitigate their environmental impact, including through improved energy efficiency and development and deployment of low-carbon technologies.
 - Find solutions to global energy challenges through engagement and dialogue with non-member countries, industry, international organisations and other stakeholders.

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Background

While many energy efficiency policies have led to energy efficiency improvements, some have fallen short of achieving expected/technical energy savings – and large energy efficiency potential remains. Increasingly governments and industry are interested in understanding how interventions can be improved to close the gap between expected and achieved policy outcomes.

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For many technologies and policies, success relies on behavioural factors and thus mechanisms going beyond traditional regulatory, financial and information approaches are being explored to draw on a growing body of research and evidence based on behavioural economics, sociology, psychology, anthropology and other social sciences. These measures take into account the impact of design, culture, geography, socio-economics, values, attitudes, habits, infrastructures, etc. on energy-service demands and behaviours.

The IEA estimates that at least 25% of energy efficiency potential could be accessed by changing behaviour (Ehrhardt-Martinez & Laitner 2010), including by enabling and motivating people to implement energy efficiency projects and to invest in energy efficiency. Other studies indicate that more than two-thirds of the savings that can be achieved in energy efficiency in any corporation comes from human behaviour (Economist Intelligence Unit, 2012).

In particular, a better understanding of behaviour and decision making in organisations could contribute to the development of more effective policies and programmes and help accelerate the implementation of energy efficiency.

To help countries share experiences with the measures mentioned above, the International Energy Agency (IEA) hosted a workshop on Influencing Business Behaviour and Decision Making to Improve Energy Efficiency at the IEA headquarters 12-13 November 2015 in Paris, France. Workshop presentations can be found [here](#).

Objective

The workshop sought to explore how decisions are made and what types of information, processes and actions influence behaviour and decision-making. The objective of the workshop was to identify effective and promising behavioural approaches to increase the impact of energy efficiency programmes.

Workshop participants shared experience with programmes they are implementing and discussed success factors, triggers and types of information needed to stimulate behaviour change. Participants also explored costs involved in achieving change in organisations and how people and organisations interact with technological changes, including smart controls and metering systems.

Topics discussed during the workshop included how to effectively link energy efficiency to priorities, how to ensure senior management buy-in, and how to promote a culture of energy efficiency and ultimately embed energy efficiency into business operations.

Participants included policy makers from IEA member countries and key emerging economies interested in learning about and sharing experiences with influencing business behaviour and decision making. Private sector experts also joined the workshop, as did researchers.

Outputs

Findings from the workshop will feed into a wider IEA project on strengthening energy efficiency policies by better understanding human and business behaviour. It will also inform IEA work on energy efficiency markets.

Overview of the topic area

There is relatively extensive research and programme experience with the behaviour of residential energy consumers. However, how behaviour and decision making can be influenced to overcome barriers to energy efficiency uptake in organisations¹ is still a relatively unexplored area. There is a gap in terms of research on and analysis of behaviours affecting energy efficiency in organisations. There is also a gap in the integration of behavioural aspects in the development of energy efficiency programmes targeting organisations. The effective use of insights from behavioural science and other research fields could lead to improved energy efficiency programme outcomes at a lower cost, than conventional approaches.

Workshop report

Experts from more than a dozen countries, representing the private sector, national and local governments and research institutions presented their analysis of and experiences with influencing business behaviour and decision making to improve energy efficiency. The next section provides a summary of the key themes that emerged from the workshop presentations and is followed by a summary of each of the presentations.

Key themes

Why are organisations not investing in cost-effective energy efficiency technologies and energy managements systems? Why are employees not practicing energy-efficient behaviour in their workplaces? What can we learn from behavioural research and how can this improve the effectiveness of energy efficiency programmes? What types of interventions have been shown to work in the short and long run?

These are some of the questions that this workshop tried to answer by taking into account diverging perspectives from different disciplines including psychology, sociology, behavioural economics and engineering.

It was generally agreed that in an organisational context there are two types of energy efficiency behaviours:

- **Decision-making and investment behaviours** (adoption of new technologies). This includes both individual decision-making as well as group decision-making. This is relevant, as without a decision (or a set of decisions) in favour of energy efficiency, either in terms of operational improvements or in terms of investments, limited progress on energy efficiency will happen.
- **Habitual behaviours** (use of technologies). Habitual behaviours are automatic and routine behaviours through which individuals repeat and do things automatically without

¹ Including businesses (commercial and industrial), non-profit and public-sector organisations

conscientiously weighting the pros and cons (Lopez et al., 2012). This is relevant as the energy demand of businesses and organisations can be critically dependent on staff behaviour and on how technology is used.

In order to influence these behaviours, the following themes and guidance emerged from presentations and discussions:

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I. While energy cost reduction may be a driver for company owners or general managers, it is rarely a strong motivator for staff

Employees typically have no direct financial incentive to reduce energy use and rarely have access to information regarding energy consumption. This lack of financial incentive and awareness poses a big challenge to efforts to improve energy efficiency in businesses. Creating this motivation by incentivising energy efficiency behaviour within an organisation can unlock these energy efficiency benefits. Such changes can be enabled by enhancing data access and availability, thereby by making energy use and associated costs more visible within an organisation (Jean-Jacques Marchais).

II. Campaigns aimed at ‘using less energy’ tend to be less successful than those motivating people through competitions, comparisons and financial rewards

To influence people’s behaviour, messages and interventions need to make use of the drivers of the target audience. ‘Using less energy’ is hardly ever the main motivation for investing in new technology or engaging in energy-saving behaviour. In contrast, if people are particularly motivated by competition, status, or helping others, they are likely to react favourably to respective interventions. Identifying drivers that are specific to the situation of the target group can play an important role (Figueroa et al., 2015).

Competition also motivates action at a whole of organisation level and therefore policies or programmes which leverage the benefits derived from competition within the market can enhance outcomes (Daniel Alford).

III. Energy efficiency programmes should take into account how decisions are made in organisations

Decision-makers weigh a wide range of factors in deciding among alternatives – some involving economic benefit and costs and some not (IEA, Boardroom Perspective). These include:

- The financial imperatives of a company.
- The policy obligations placed on the company to achieve environmental compliance.
- The knowledge of energy-savings opportunities within the company.
- The commitment of the company to the environment and energy efficiency.

The information provided describing the costs and benefits of energy efficiency opportunities should align with that expected by decision makers, such that it can be judged appropriately and considered as core business within the organisation (Celine Tougeron).

The timing of information provision is also an important consideration. Specifically the time at which opportunities to improve energy efficiency are presented may impact investment decisions. At an individual level, the period of time either before or after an

energy bill is received should be considered when presenting opportunities to improve efficiency. Too short and the individual may not be receptive to efficiency measures if other concerns are creating frustration, too long and the motivation for efficiency may be lost (Simon Hill).

At a larger organisation level, if opportunities to improve efficiency are put to decision makers alongside other investments that are linked to core business, then energy efficiency investments may struggle to obtain approval. Therefore, in seeking to increase investment in energy efficiency, it is necessary to develop an understanding of the motivations for decision makers and the timeframe for decision making processes, so as to maximise the likelihood of energy efficiency receiving positive investment decisions (Thore Berntsson).

IV. Senior management commitment to, and leadership of, energy efficiency is vital

Decisions made by businesses are disproportionately influenced by the executive ranks of organisations. Decisions about energy efficiency investments must pass through organisational hierarchies that may or may not authorise an economically rational decision seen from the point of view of its impact on energy efficiency. Decisions made by businesses about investments in energy efficiency often take place inside a larger institutional context in which energy efficiency investment alternatives may be competing with other alternatives that have lower or higher value to the organisation, with energy efficiency investment not always taking account of the multiple benefits that are possible (Ronald Vermeeren).

Until relatively recently, energy efficiency programmes targeted at businesses have tended not to focus on company management. Instead, they have focused on plant engineering, energy managers or environmental compliance departments (at the bottom of the decision-making hierarchy), who generally receive little attention from senior decision makers (Mats Bladh). These departments generally do not have the authority to authorise significant capital expenditures, and they usually are not in a position to be corporate sponsors or champions of energy efficiency initiatives. Consequently, other departments, such as procurement, finance and the executive ranks, become involved in evaluating energy efficiency investment decisions (Sullivan et al, 2009).

The receptiveness of business organisations to energy efficiency initiatives is almost completely under the control of company management. Company management determines whether an organisation is receptive to energy efficiency improvements or not by establishing policies that govern how the organisation will react when it is presented with energy efficiency investment decisions (Robert Taylor).

It is therefore vital that company executives and decision makers are engaged and provide explicit endorsement to the goal of improving energy efficiency. Such actions ensure that energy efficiency is recognised as being a business and organisation priority, which itself will compel behaviour change across all levels of the organisation. (Laura Edwards, Eva van den Broek and Ulrika Wising)

V. Establishing an energy efficiency policy within a company can create a culture of energy efficiency

Unless company management has established an energy efficiency policy, guidelines used in various departments may not be consistent with good practice from the point of view of evaluating energy efficiency investment decisions (Robert Taylor). Procurement departments, for example, may or may not use lifecycle cost analysis to evaluate costs

and benefits. They may instead focus entirely on first cost. If they do so, the decision outcome generally will not be the same and will not favour energy efficiency investment over other investment decisions with lower first costs. The same result can occur as a result of the involvement of the finance department or the executive branch (Sullivan *et al.*, 2009).

VI. Consideration of the multiple benefits of energy efficiency is important for investment decision making

For energy efficiency investment it is important that the non-energy benefits are considered when examining the costs and benefits of potential opportunities (Ronald Vermeeren). These benefits might include reduced operation and maintenance costs, product quality improvements and positive health impacts.

Incorporation of these factors into consideration of energy efficiency will provide decision makers with a more complete picture of the benefits from energy efficiency and are seen as a crucial component of energy efficiency investment decision making within organisations (Ruth Mourik).

VII. Energy efficiency is not generally core business for organisations and therefore interventions should try to make energy efficiency investment decisions as frictionless as possible

Decision making about energy efficiency investments is not frictionless – the transaction costs associated with making these decisions may be relatively large for businesses that have little experience with such decisions (Sullivan *et al.*, 2009) or where energy is not core business.

It may therefore be necessary to increase decision maker comprehension of energy use and efficiency. In doing so, the importance of energy efficiency to business profitability and productivity should be underscored, which may assist in obtaining senior executive buy-in and endorsement for energy efficiency, which is an identified barrier to greater investment in energy efficiency (Eva van den Broek).

VIII. Technology can drive behaviour change and reduce the influence of energy inefficient behaviour

The use of technology to track and analyse energy use or control energy using processes within an organisation can be a powerful tool to change behaviour (Jean-Jacques Marchais). Increasing awareness of energy use by making data more available and understandable can motivate behaviour change by making the impact of energy use and the benefits from efficiency more apparent.

Although behaviour change can drive improved energy efficiency within organisations, behaviour itself can be a hindrance to efficiency improvements, particularly where an individual's choice affects the energy use of equipment or processes. The use of technology to take energy using decisions out of the hands of individuals through automation can therefore drive efficiency improvements.

IX. Organisations are more receptive to messages from their “own kind”

In seeking to provide information that will drive behaviour change an important observation is that messages conveyed by groups or individuals, perceived by the

organisation as being outsiders, will not be as well received as those coming from individuals or groups the organisation sees as its “own kind” (Daniel Alford).

Information from trusted sources that are perceived as having an understanding of the challenges faced by the organisation will be better received than that coming from outsiders. Therefore, initiatives seeking to drive behaviour change within organisations should seek to incorporate individuals or groups with similar experience or background to that of the organisation, so that messages can be conveyed in a manner that is readily understandable and accepted (Daniel Alford).

X. Establishing an energy efficiency culture will drive long-lasting behaviour change within organisations

Interventions to drive behaviour change within an organisation, while of benefit, will potentially be lost over a longer period of time if there is not a sustained shift in the organisation’s culture. Therefore, development of an energy efficiency culture within an organisation is required to provide a drive for long lasting behaviour change (Ulrika Wising).

Such cultural change will need to be driven from the top-down, with management and senior executive endorsement essential to instituting behaviour change. The use of energy management systems, such as that described through international standards like ISO 50 001, can provide a framework for instituting a long lasting energy efficiency culture within the organisation (Ronald Vermeeren).

XI. Energy Service Companies (ESCOs) provide a means of increasing energy efficiency within organisations

Energy service companies (ESCOs) that provide energy efficiency technology and services to an organisation through an energy performance contract (EPC) are a powerful and growing means of implementing energy efficiency. In some cases the use of ESCOs has been motivated by favourable government policies, which have led to rapid market growth and efficiency improvements (Lily Zhao). From a behavioural perspective, the motivations behind engagement of an ESCO are mainly associated with an effective outsourcing of risk, which increases the ease of improving energy efficiency (Antonio Ciccarelli).

In enhancing the role of ESCOs it is important to gain an understanding of the expectations that the organisation has of the ESCO and EPC and vice versa. Specifically, organisations might expect that an EPC will lead to better technology and energy efficiency at lower risk. Conversely, the ESCO would expect a reasonable degree of engagement from the organisation, including senior management and key decision makers, in order to ensure that barriers to energy efficiency are sufficiently lowered so that the expectations of the organisation can be met (Antonio Ciccarelli).

Workshop presentations

This section summarises and presents the key messages from each of the workshop presentations.

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Welcome and introduction

Kamel Ben Naceur, IEA Director of Sustainable Energy Policy and Technology opened the workshop by highlighting the role behaviour will play in reaching ambitious climate commitments.

Vida Rozite, Analyst in the Energy Efficiency Unit, presented the rationale for why the IEA embarked on the behaviour work stream. She touched upon the objectives of the workshops, including to share experiences, ideas and practices, and understand actions can drive behaviour change and could be applied elsewhere. She introduced the agenda that was divided into five sessions:

SESSION 1: Understanding energy efficiency behaviour and decisions- in businesses and organisations

SESSION 2: Learning from energy efficiency programmes and interventions targeting organisations

SESSION 3: Learning from energy efficiency programmes and interventions targeting organisations (continued)

SESSION 4: Informing decision making through better data

SESSION 5: Promoting energy efficiency culture

SESSION 1: Understanding energy efficiency behaviour and decision- in businesses and organisations

In this session, presenters offered frameworks for promoting energy efficiency and improving the effectiveness of energy efficiency programmes based on a better understanding of behaviour and decision-making in organisations.

Perspectives on behaviour in organizations. Discussing different views and adding theories about the firm into the picture

Mats Bladh, Swedish Energy Agency

This presentation provided an overview of how historic economic theory has examined organisational behaviour and its relationship to energy efficiency. Conclusions identified were that:

- Organisations are typically neglected in dominant economic theory. However, these theories are important for analysis and policy development. Therefore, a broader set of theories, which incorporate organisational theory, is required.
- There is a lack of attention on energy matters within organisations

- Policies aimed at businesses should take into account organisational theory, stimulate the introduction of energy management systems and promote firms that pay attention to energy efficiency.
- It is apparent that some price changes are more important than others at driving energy efficiency improvement.

Research on behaviour and decision-making in organisations

Sarah Darby, University of Oxford

This presentation outlined the results of research into how energy systems are understood and the means by which this understanding can be enhanced to drive energy efficiency improvements. Within an energy system people are not just using energy. Rather there are dynamic socio-technical activities including adopting and adapting technologies; buying, refurbishing and maintaining buildings, vehicles and appliances; taking part in network management; designing markets and tariffs; operating infrastructure; inventing; purchasing, installing and repairing software and hardware; advising; lobbying; trading and regulating energy.

In terms of our comprehension of the system, a large amount of data and understanding about energy demand comes from households, where the purposes and dynamics of daily life are different from most organisations, which differ widely in what they are for and how they operate. Therefore, in order to understand and ultimately impact decision-making within an organisation it is necessary to first understand what the organisation is for and how it is connected to other elements in the energy system. In gathering this understanding benefit can be gained by considering insights from sociology and theories associated with learning, design, organisational and systems thinking.

Understanding the behavioural drivers of organisational decision making

Daniel Alford, DECC, UK

An overview was presented of a cross-government research project, being led by the UK Department of Energy and Climate Change (DECC), which will develop a toolkit for business-facing policy makers. This toolkit will contain non-regulatory approaches and techniques designed to help influence organisational behaviour and decision-making.

The first phase of the project has drawn on behavioural economics, management sciences, social and organisational psychology to identify findings relating to structural and behavioural factors that influence organisation behaviour. In terms of structural factors, the main findings were that for organisations there is no one-size fits all approach, specifically:

- Smaller organisations are not as influenced by reputation but are more risk averse;
- Organisation hierarchy is also an influencing factor, with flatter organisational structures being more creative, hierarchical structures being more risk-averse and entrepreneurial organisations acting more like individuals; and
- Public sector organisations are less concerned with competitive advantage, but are concerned with other common drivers, including budget maximisation and innovation.

Key findings relating to behaviour were that:

- Organisations can be better at slower more rational thinking than individuals;

- Competition is an important driver of behaviour for groups, who tend to be more aggressive and less cooperative than individuals;
- Groups trust outsiders less than individuals, but they will listen to their own kind and outsiders with a trustworthy track record;
- Organisational culture can make influencing and creating change difficult; and
- Tone of leadership is a powerful factor in shaping organisational culture.

The second phase of the project involves refining the initial findings, and then socializing, testing, and translating them with a broad range of public policy makers, academics, and businesses. The findings will then be repackaged as a set of approaches that should be considered when developing policies and interventions that affect organisations of all types.

SESSION 2: Lessons learned from energy efficiency programmes or interventions targeting organisations

In this session, presenters shared lessons learned from energy efficiency and behaviour programmes and policies targeting organisations.

Stimulating energy efficient behaviour in business – programme results and lessons learned

John Randles, SEAI, Ireland

This presentation provided an overview of the business programmes administered by Sustainable Energy Authority of Ireland (SEAI). These programmes include support for:

- Public sector organisations including assistance with funding, finance and procurement, monitoring, reporting, and best practice;
- Large energy users through the Energy Agreements Programmes and the Large Industry Energy Network; and
- Small to medium enterprises (SMEs) through advice and monitoring and energy management training.

The programmes have resulted in energy savings equating to €700 million. A key factor to this achievement has included increasing consumer awareness about what options are available to improve energy efficiency and elevating energy as a priority within organisations.

Driving energy efficiency in the UK's large energy users: Findings from the evaluation of the CRC Energy Efficiency Scheme

Laura Edwards, DECC, UK

The findings from the evaluation of the first four years of the CRC energy efficiency scheme covering the period from 2010 to 2014 were presented in this session. The scheme applies to large non-energy intensive organisations and is designed to incentivise energy efficiency by requiring:

- Participants to report their carbon emissions annually;
- Participants to buy and surrender carbon allowances;

- Senior management from participating organisations to be responsible for compliance; and
- Regulatory bodies to report carbon emissions for participants and take action for non-compliance.

These requirements establish drivers for energy efficiency and increased awareness, particularly at the board level through the financial cost of compliance and reputation risk associated with non-compliance.

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The key findings from the review of the first four years of the CRC energy efficiency scheme included:

- Reduced carbon emissions by an annual average of 6-8%, between 2010 and 2012;
- Reduced electricity consumption by an annual average of 3 to 5%;
- Reduced gas consumption by approximately 30% (tentative result);
- The scheme had a beneficial impact on energy efficiency behaviour and some positive influence on the take-up of energy efficiency measures;
- Smaller organisation reported more influence from the scheme, but the top 25% of energy using companies reporting 75% of total energy and emissions reductions;
- Private sector impacts appear stronger than the public sector;
- Their main drivers for action on energy efficiency were energy prices, awareness and finance;
- Reputation was a weaker driver, although some public facing firms reported reputation as being a stronger driver; and
- Major barriers to action on energy efficiency include lack of funding/finance, too much uncertainty about long term benefits and costs, limitations of the premises and personnel resources not available.

Increasing energy efficiency in the Netherlands by behavioural insights: randomised controlled trials

Eva van den Broek, Ministry of Economy, Netherlands

This presentation provided a report on interventions that have been undertaken to increase the number of energy efficiency measures taken up by organisations participating in the Netherlands voluntary energy efficiency scheme. The report was underpinned firstly by field research, which identified the reasons why energy efficiency measures are not taken up by organisations, including:

- Energy not being core business;
- Focus primarily on increasing safety and production standards;
- Limited enforcement of energy efficiency obligations by authorities;
- Company boards have limited financial incentives to increase energy efficiency; and
- Lack of buy-in from senior management.

The interventions enacted in an attempt to address some of the identified issues included increasing contact between energy managers and CEOs and asking for an explicit commitment to energy efficiency from company CEOs.

Role of policy and regulatory environment in driving investment decision-making

Jonathan Sinton, The World Bank

The emerging results from the Readiness for Investment in Sustainable Energy (RISE) Project were presented during this session. RISE involves a suite of indicators that are designed to assess policies, regulations and support mechanisms for investments in energy efficiency in order to better understand and track the investment climate.

A pilot was conducted in 17 countries in 2014, with the first full global edition covering 110 countries released in early 2016. Indicators have been developed that encompass policies and regulations, cross-cutting measures including prices, and procedures that affect sustainable energy and procedural efficiency including the time, costs and procedures to implement activities.

Preliminary results for selected countries were presented indicating varying results across sectors, depending on the policies and incentives in place for energy efficiency including:

- Incentives for large consumers;
- Financing mechanisms;
- Minimum Energy Performance Standards (MEPS) and other energy labelling systems;
- Building codes and incentives; and
- Incentives from electricity pricing.

Investment principles to promote energy efficiency and mobilisation of financial institutions

Annie Degen-Neuville, United Nations Environment Programme (UNEP)

This presentation provided an overview of the latest developments on energy efficiency investment under the G20 Energy Efficiency Action Plan. This action plan, which was endorsed by G20 leaders in 2014, is seeking to encourage uptake of energy efficiency policies. To enact the action plan Energy Efficiency Investment Principles have been developed, which provide guidance to nations about how to ascertain greater benefits from energy efficiency investments.

To date, consultations have been undertaken with over 180 experts, leading to the publication of an Activity Report and the currently proposed energy efficiency investment principles, which are:

1. Recognise the importance of energy efficiency as an economic development priority.
2. Encourage countries to consider both supply and demand side investments in a balanced way.
3. Country-level review of measures and policies that stimulate demand for energy efficiency investments.
4. Collaboration to unlock barriers that prevent the supply of finance for energy efficiency investments.
5. Build capacity within public and private financial institutions for energy efficiency investments.

The presentation also provided an overview of the Bank Declaration of Intent on Energy Efficiency, with over 85 banks managing \$3 trillion of assets formally acknowledging the need to fully embed energy efficiency in investment processes. The work on mobilising the banking sector is being co-led by the European Bank for Reconstruction and Development and the United Nations Environment Program and includes:

- Channelling finance;
- Recognising opportunities;
- Tracking deployment;
- Embedding investment principles;
- Guiding clients; and
- Sharing experience.

SESSION 3: Decision-making and behaviour in organisations

Industrial CO₂ Mitigation and Energy Efficiency – A Driving Force for New Strategic Decision-Making and Cooperation in Process Industries

Thore Berntsson, Chair of IEA IA IETS

The presentation focussed on experiences gained from working closely with industry in the development and implementation of energy efficiency projects, with a particular focus on the trends relating to new strategic decision making in industry, including:

- Increases in future CO₂ charges and energy prices creating an interest in new, more advanced technologies and systems;
- Possible developments creating opportunities for more radical system changes;
- The time perspective of changes being more important, with changes around energy prices, industry development and performance of measures over time affecting decision making; and
- Cooperation and new business models being required.

Emerging trends relating to industry that create opportunities for improved energy efficiency were also highlighted including clustering of industries and improved cooperation between organisations. Overall it was concluded that new long-term strategic energy efficiency and emissions mitigation solutions are being investigated in industry, with new strategic approaches enabling energy efficiency solutions.

Fostering organisational energy management in industry – Efficiency Nova Scotia’s insights and results

Andrea Henwood, Efficiency Nova Scotia

This presentation provided an overview of the continuous energy management work undertaken by Efficiency Nova Scotia, which involves the provision of assistance to organisations to implement Strategic Energy Management (SEM) and Energy Management Information Systems (EMIS). The SEM Program provides participants with consulting resources to apply a Continuous Improvement methodology to their energy management program.

The EMIS involves firstly an audit which establishes the business case for EMIS implementation, followed by the establishment of an Implementation plan, which involves detailed design based on recommendations outlined in the audit. The EMIS is then implemented, which involves the organisation’s team being led through a staged process for equipment procurement, hardware installation and integration, software and reporting system configuration, training and communication planning, and the incorporation of energy into management processes and

procedures. The benefits obtained from implementation of EMIS included energy savings of over \$CAD500 000. The benefits from implementation of the SEM Program between June 2014 and May 2015 included operational and maintenance savings of \$CAD359 139.

Lessons from the implementation of SEM and EMIS included:

- Customise communications to suit different organisations;
- Leverage existing organisation practices where possible to aid implementation;
- Engage the organisation;
- Be willing to adapt the program to suit different organisations and industry sectors; and
- Ensure that ongoing support and engagement is available to participating organisations.

What drives businesses to engage in energy efficiency and connect with energy service companies

Zhao Ming (Lily)

This presentation highlighted the progress of Energy Service Company (ESCO) development in China. This included the main drivers for business to engage in energy efficiency by analysing different types of ESCOs and the potential opportunities and challenges for ESCO businesses in China.

ESCO annual turnover has grown exponentially in China since 2005, with companies ranging from small privately owned organisations to foreign, state-owned and listed companies. The drivers that were identified as motivating companies to engage ESCOs were separated into categories of government, market and economic drivers. Government drivers pertained to supportive policies included:

- Direct financial awards with energy savings obtained through ESCO implemented projects rewarded through financial support by national and local governments;
- Tax incentives, with ESCOs exempt from operational tax, corporate income tax (0 for the first 3 years with profit and 50% for the next year), and value added tax when fixed assets are transferred to the customer; and
- Energy efficiency financing.

Market drivers for engaging ESCOs were:

- Government energy efficiency targets and policies mandating energy efficiency improvements;
- Energy prices; and
- ESCO industry representing a new opportunity for strategic economic growth.

Economic drivers included:

- For state-owned enterprises – practising social responsibility and maintaining competitive advantage.
- For private enterprise – reducing operational cost.
- For public buildings – regulations and other requirements.

The main barriers for the engagement of ESCOs were:

- Lack of awareness and subsequent acceptance of ESCO model;
- Reductions in supportive government policies; and
- Lack of capacity building for ESCOs, limiting ability to provide services.

China Energy Management Companies Association What drives decision making in businesses - Experiences from companies in the US and China

Robert P. Taylor, Energy Pathways LLC (no presentation available)

This presentation examined what is required to realise the financially attractive potential savings from energy efficiency projects, particularly those that have a simple payback of between 2 and 5 years and those in the design and implementation of major production line upgrades or greenfield projects.

It was identified that capturing these potential projects in most industrial companies requires three things:

1. People, especially on-the-ground personnel, with it necessary to clearly determine who will identify, package and implement energy efficiency projects.
2. Effective internal systems to apply for and receive internal financing for attractive projects.
3. An explicit corporate commitment and associated accountabilities for achieving improved energy efficiency.

SESSION 4: How information can inform decision making

Technology impacts: Energy Performance & Behaviours

Jean-Jacques Marchais, Schneider Electric

The technologies available to implement energy efficiency actions, which are being enhanced by connectivity and digitisation, were presented in this session. Implementation of these technologies was put forward as a bridge to changing behaviours and building an energy management culture.

Key aspects of energy management were outlined including:

1. Measuring and metering; and
2. Improved control through automation and management.

In terms of measuring and metering, the following were identified as being core components:

- Energy consumption & cost allocation
- Energy sub-billing
- Energy usage analysis
- Building energy performance benchmarking
- Electrical distribution asset management
- Energy consumption alarming
- Bill auditing (shadow metering) and energy procurement
- Regulatory or certification compliance.

The outcomes from these components, particularly improved availability of data and information, were identified as being a potential driver of behaviour change. For control, automation and performance management, digitization was seen as being able to enhance data integration, convergence and openness.

Demand response and energy efficiency in businesses

Jessica Stromback, Smart Energy Demand

Presentation and/or summary not available

Innovative approach to information delivery

Elhay Farkash, Light App

This presentation provided an overview of the “Berkeley” Project, which is a joint initiative of the University of California, Berkeley, Massachusetts Institute of Technology, and University of Chicago and Lightapp Technologies. The project, which has received a \$5 million research grant from the California Energy Commission (CEC), is structured around 4 key questions:

1. How much energy and money do energy management systems save industrial utility customers?
2. Do energy management systems lead to a higher participation in utility energy efficiency programs?
3. How do energy management systems affect management actions to optimise energy consumption?
4. What is the demand curve and potential market for energy management systems and similar analytical technologies across large industries in California?

The project involves the largest demonstration and evaluation of an innovative energy monitoring system for industrial facilities, which will provide policy makers and industrial customers with answers to the four questions outlined above. This system has been developed by Lightapp Technologies and involves a software-based optimised energy management system for industrial facilities that relates electricity consumption within specific plant systems to the production outputs. The software collects data from shop-floor sensors, manufacturing software systems and external data such as weather, and then creates reports that will enable users to discover, analyse, and share data about how energy is consumed and how it could be used more efficiently.

Experiences and opportunities of using ICT to influence decision making and behavioural change

Simon Hill, Opower

Opower’s work using behavioural science software, data analytics, consumer marketing and user-centric design to enable improved energy efficiency was presented in this session. Opower work with nearly 100 utilities in 9 countries to gather household energy consumption data, which is used to develop paper reports that are mailed directly to the utility’s customers. These reports include information that is intended to drive behaviour change including:

- Neighbour comparison – Behaviour science helps motivate consumers to save energy

- Analytics – Insights that consumers care about, such as how their energy use for cooling compares with neighbours and previous billing periods.
- Personalised tips – Intended to help consumers take action to reduce energy use.

Opower has sought to determine whether the information it provides does deliver energy efficiency benefits. It estimates that the vast majority of utility customers engage with the reports provided, specifically:

- 77% of customers remember the reports;
- 73% read the reports;
- 59% share or post reports; and
- 28% save the reports for future reference.

Combined, Opower's work is estimated to have led to average savings of 1.5 to 3% of the total energy consumed by the utility customers covered, which is equivalent to approximately 8 TWh. These benefits are distributed fairly evenly across income, age and household occupancy, with greater savings occurring during times of peak demand.

Modelling behavioural factors to support policy design, Overview of Australian Experience, video presentation (password CWA001)

Amandine Denis and Rob Kelly, ClimateWorksAustralia

This presentation provided an overview of the tools created by ClimateWorks Australia to better understand and model decisions made by industrial companies, which drew on data from the Australian Government Department of Industry. This work has involved development of a comprehensive framework for the barriers preventing take up of energy efficiency within industry, which has been separated into three broad categories of company capability, company motivation and project attractiveness. A methodology was then created to link these barriers to the untapped opportunities to improve energy efficiency, by identifying the project and company-related attributes that influence whether a barrier is impeding an activity or not.

A scoring system was created to quantify the strength of the identified barriers, which are applied to every combination of relevant company and technology attribute. By multiplying the strength of the barrier by the total energy savings potential in specific industry sectors, it was possible to calculate the business as usual energy savings.

Through consideration of by how much these barriers would be reduced by certain policy measures, it was then possible to calculate the energy savings that would be enabled through enactment of the identified policy measures. This analysis was later refined to model the potential impact of given policies, which was used to create a simplified barriers modelling tool, with the intent that this could be used by government as a high-level first step to understand what policies might unlock energy savings within industry.

SESSION 5: Creating an energy efficiency culture

Energy efficiency culture

Ulrika Wising, DNV GL

This presentation highlighted DNV GL's research examining how a company's "Energy Culture" affects the potential for energy efficiency within energy intensive industry. It was outlined that

energy efficiency faces many barriers within industry, many being non-technical and non-financial, including lack of knowledge and commitment, resistance to change and an insufficient focus on non-technical solutions.

A key driver for change within an organisation was outlined as being its Energy Culture, which is defined as the shared mind-set that creates and sustains an environment leading to continual improvement in energy performance. Building on models of behaviour, theories of change, and energy efficiency expertise, energy culture can be quantified based on eight characteristic dimensions:

1. Visibility – is energy use visible e.g. through a display that shows the energy consumption for the last month compared to a target
2. Accountability – is responsibility for energy use clear e.g. each department is directly responsible for its energy consumption and savings targets
3. Targeting – are targets established and known within the organisation
4. Collaboration
5. Commitment
6. Motivation
7. Learning
8. Progress.

Ranking an organisation on the basis of five maturity levels against each of the eight dimensions provides a quantification of the organisation's energy culture. This ranking is determined following data analysis, surveys, interviews and workshops. Improving an organisation's energy culture requires serious commitment from senior management since it involves the entire organisation and takes time. However, it usually requires limited capital expenditure and the potential energy savings range from 5 to 20% of total energy use.

In many organisations, a far-reaching change in Energy Culture is needed to fully unlock the remaining energy efficiency improvement potential. The main success criteria for effectively improving the Energy Culture of an organization are the commitment, buy-in, support and perseverance of senior management.

Energy efficiency behaviour change and business models

Ruth Mourik, IEA IA DSM and

This presentation provided an overview of IEA DSM Task 24, which is focused on understanding the behavioural issues involved in the uptake of energy efficiency by businesses and other end-users. At the outset it was noted that achieving lasting behaviour change in demand side management and upscaling is more likely to take place if social practices are targeted and the context in which these practices are embedded changes as well. Through the use of systemic approaches, it is possible to drive energy efficiency improvements. Some of the principles of these systemic approaches include:

- Focus on both the individual and the social context
- Change workstyles not just equipment
- Think of the non-energy benefits
- Focus on the “why” of a behaviour
- Pre-scope the task through benchmarking, measurement and modelling
- Do not leave monitoring of performance up to the end-user

- Information needs more than a display.
- Peer-to-peer learning is a key
- Involve all levels of the organisation in energy efficiency initiatives

Task 24 is in its second phase, which will focus on putting theory and lessons learnt into practice in different business and organisational environments. This will lead to development of a toolbox of interventions that has been identified as working for specific demand side management issues, contexts and needs.

Lessons learnt in IEA DSM Tasks 24 and 25

Boukje Huijben, IEA IA DSM

This presentation provided details of the work of IEA Task 25, which examines business models for a more effective market uptake of demand side management energy services for small to medium enterprises and communities. The logic behind Task 25 was outlined as being the need for:

- A better understanding of what business models and services work;
- New value driven Business Models;
- Development of entrepreneurial skills and stakeholder support; and
- An understanding of the role of user centred design.

Task 25 involves the identification and analysis of effective business models and underpinning services for Small to Medium Enterprises and residential communities. This will incorporate an understanding of the influence of national energy ecosystems and contribute to the growth of the supply and demand market for energy efficiency. To date the work has identified four major categories of change strategy:

- Conscious system changer;
- Unconscious system changer;
- Smart matcher; and
- Stealth changer

These categories have advanced an understanding about how different business models achieve change within organisations. The next steps are to undertake workshops that will feed into development of guidelines relating to effective business models

A WICKED approach to energy strategies in retail organisations

Kathryn Janda, University of Oxford

This presentation outlined experiences from the WICKED (Working with Infrastructure Creation of Knowledge and Energy strategy Development) Project that is seeking to provide energy solutions for different segments of the UK retail market. Through cooperative research, WICKED investigates clusters of technical, legal, and organisational challenges faced by retail groups, including those with smart meters and energy managers (the “data rich”) and those without (the “data poor”).

In partnership with energy suppliers, retailers, landlords, SMEs, and Oxford University, WICKED develops actionable energy and business insights by combining (1) top-down big data analytics,

(2) middle-out organisational research, and (3) new bottom-up data. The project explores the challenges faced by data rich and data poor owner-occupiers, landlords, and tenants and subsequently co-designs market-ready energy strategies to fit the retail sector's diverse needs.

Findings from this project show that technical, legal, and organisational infrastructures need to align to enhance energy efficiency. The project shows that one size does not fit all with the data rich and poor needing different energy management solutions. For the data rich, access to data will not solve everything, with further analysis necessary to turn numbers into knowledge. Changes to legal infrastructure (e.g. lease agreements) are also needed to assist tenants and landlords in sharing data to enable both groups to monitor, measure and report energy use.

Other outcomes from WICKED to date include that:

- The concept of best practice depends on how well energy efficiency fits within different organisations and with different staffing levels; and
- Socio-technical innovation will drive more change across the sector than technical innovation on its own.

Disclosure promotes commitment and action

Dexter Gavin, CDP

This presentation provided information about the Carbon Disclosure Project (CDP), which uses the power of measurement and information disclosure to improve the management of environmental risk by companies. By leveraging market forces including shareholders, customers and governments, CDP has incentivized thousands of companies and cities across the world's largest economies to measure and disclose their environmental information. CDP puts this information at the heart of business, investment and policy decision making.

CDP holds the largest collection of self-reported climate change, water and forest-risk data. Through this global system companies, investors and cities are better able to mitigate risk, capitalize on opportunities and make investment decisions that drive action.

Energy performance contracts and behaviour

Antonio Ciccarelli, SEA

This presentation firstly enhanced understanding of the difference between business as usual and Energy Service Company (ESCO) approaches to energy efficiency. These differences are outlined below:

Business as usual approach	ESCO approach
End-user pays for technologies	End-user pays for a service
End-user takes technical risk	Technical risk borne by ESCO
No guaranteed energy savings from efficiency project	Guaranteed energy savings from efficiency project
End-user makes technical decisions	Technical decisions are ESCO responsibility
End-user invests its own time and money	ESCO invests its time and money in the first instance
End-user takes operation and maintenance risk	Operation and maintenance risk is ESCO responsibility

Financial risk rests solely with the end-user	Financial risk can sit with the ESCO
Savings are not necessarily measured and verified	Savings and performance is measured and verified

The second part of the presentation provided an understanding of the expectations that an ESCO, residential customer and industrial customer have from an energy performance contract (EPC), in which an ESCO is contracted to deliver energy efficiency. For an ESCO, the expectations from an EPC are that:

- Residential customers have an interest in energy efficiency and not just economic savings;
- Industrial customers talk with owners and CEO to get approval for efficiency measures and are interested in energy management; and
- Technology suppliers provide good after sale service and are reliable companies that provide long term warranties and are available to undertake external staff training.

For residential customers, the expectations from an EPC included:

- Positive expectations that they will save money, will not have to deal with operation, maintenance and energy suppliers, will not have to make an initial investment, will have less responsibility for the project and that the value of their property will increase.
- Negative expectations relating to whether they will have a good legal understanding of the EPC and whether the new approach will work.

Finally for industrial organisations the expectations from an EPC included:

- Positive expectations that the company will save money, have new more reliable equipment, won't have to deal with operation and maintenance, will become more environmentally friendly and will be able to save capital to invest in core business activities.
- Negative expectations around whether they will have an understanding of the EPC agreement and whether the procedures are in place to analyse the efficacy of the EPC.

Increase capacities for actual implementation of energy efficiency measures in Industry and Services in the H2020 Programme of the European Commission

Céline Tougeron, Executive Agency for Small and Medium Sized Enterprises (EASME)

The presentation firstly provided an overview of the context within Europe, including the work of the European Commission's Energy Efficiency Financial Institutions Group (EEFIG) and the European Union's Energy Efficiency Directive.

An overview of the support available from the European Union's Horizon 2020 (H2020) Programme was also provided. H2020 is the financial instrument implementing the Innovation Union, a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness. By coupling research and innovation, Horizon 2020 is helping to achieve the initiative with an emphasis on excellent scientific and industrial leadership and tackling societal challenges. The H2020 budget between 2014 and 2020 is nearly €80 billion of which €5.9 billion is allocated for secure, clean and efficient energy.

In relation to energy efficiency, the types of action that are supported by H2020 include research, innovation, coordination and support, the funding areas supported include heating and cooling, consumers, building, industry, services and products and innovative financing. In each of these funding areas, there are opportunities for funding to be sought for capacity building within industry. An example was provided on EE-15, which is targeted at increasing capacities for actual implementation of energy efficiency measures in the industry and services sector. It was outlined that funding proposals submitted under EE-15 should focus on:

- Capacity building for energy auditors to ensure that necessary technical and financial data is included in the results of energy audits that are presented to company decision makers; and
- Staff training and capacity building programmes to enhance corporate policy relating to energy efficiency and initiatives aimed at increasing the sustainability of supply chains.

Examples of the types of projects supported within the industry and business sector during the Intelligent Energy Europe, which preceded the H2020 Programme, were also provided, with it outlined that the measures supported included 18 energy audits, 20 training/capacity building programs, 9 energy management schemes, 2 voluntary agreements and 18 benchmarking activities.

What drives the establishment of an energy efficiency culture - “Steam up” project

Ronald Vermeeren, Netherlands Enterprise Agency

This presentation provided an overview of the Stream-Up project, which is aiming to close the gap between energy audit results and actual implementation, leading to real energy efficiency improvement. As part of the work of the Steam-Up Project, an inventory of energy efficiency behaviour in industry has been compiled through interviews and surveys covering 100 enterprises and energy consultants, as well as literature research.

The results of research presented included that in relation to energy audits and reporting:

- 73% of enterprises regularly perform energy audits
- 38% of audits involve top management and 29% involve people influencing energy efficiency
- In 48% of audits, reporting constitutes more than just a list of potential measures
- 64% of audits are being followed-up
- In 60% of cases, some form of implementation plans are being made
- 27% of enterprises are allocating resources
- In 46% of cases, measures implemented from audits are being verified.

For management practises, the results include:

- In 91% of cases some form of energy management system is in place, with ISO 50 001 representing about 15% of these cases
- Energy efficiency is a priority in 47% of enterprises
- In 53% of cases non-energy benefits are included in business cases presented to decision makers.

Insights obtained from examination of available literature include:

- The financial importance of energy efficiency investment is questioned, specifically whether profitability is decisive
- High rates of return (50% or more) are required for energy efficiency projects to cover risks and hidden costs
- Energy efficiency investment is not considered as being strategic
- Energy efficiency is invisible to senior managers
- Non-energy benefits are crucial to raising the strategic value of energy efficiency investments

As supported by the results of surveys and research, the three crucial factors that constitute the STEAM-UP approach were identified as being:

1. Energy efficiency included as part of corporate strategy;
2. Implementation of an energy management system through ISO 50 001; and
3. The inclusion of non-energy benefits in assessments of energy efficiency.

However, these steps cannot drive increased uptake of energy efficiency alone, with behavioural change at an individual and corporate level recognised as being vital. At the individual level, behavioural change is required to build motivation and capacity, as well as reinforce positive actions. At an organisational level behaviour change can be achieved by ensuring that energy efficiency aligns with what the enterprise wants, hence the importance of incorporating energy efficiency into corporate strategies.

Perspectives on behaviour in organisations

Arash Aazami , Kamangir, Beyond Boundaries

This presentation provided firstly an overview of the fundamental way in which energy is viewed, including how its physical manifestation and cost are separated. A subsequent overview of the Path to Zero project was provided, which involves a fully integrated user-centred approach to energy, which promotes the transition to energy independence. For organisations, this approach results in an increase in profits as energy supply decreases following increases in energy efficiency and the use of distributed power generation through renewable energy. It is claimed that the Path to Zero generates a 300% higher gross margin than regular energy supply models, while empowering energy users to become independent.

Annex 1: Workshop Agenda

Influencing Business Behaviour and Decision Making to Improve Energy Efficiency

IEA Workshop

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International Energy Agency Headquarters (Room 1)

12-13 November 2015, Paris, France

Draft Agenda:

Day 1

Time	Topic	Presenters
9.00	Welcome and introduction	Kamel Ben Naceur, Director, Sustainable Energy Policy and Technology, IEA
9.15	Participants roundtable	
<p>Session 1 Understanding energy efficiency behaviour and decision- in businesses and organisations; a framework for promoting energy efficiency and improving the effectiveness of energy efficiency programmes</p> <p>Chair: Sam Thomas, Energy Efficiency Unit, IEA</p>		
9.30 - 10.45	Overview and workshop objectives	Vida Rozite, Energy Efficiency Unit, IEA
	Perspectives on behaviour in organizations. Discussing different views and adding theories about the firm into the picture	Mats Bladh, Swedish Energy Agency
	Research on behaviour and decision-making in organisations	Sarah Darby, University of Oxford
	Understanding the Behavioural Drivers of Organisational Decision Making	Daniel Alford, DECC, UK
10.45 – 11.15 Coffee break		
<p>Session 2 Lessons learned from energy efficiency programmes or interventions targeting organisations</p> <p>Chair: Sara Pasquier, Energy Efficiency Unit, IEA</p>		
11.15 - 13.00	Stimulating energy efficient behaviour in business – programme results and lessons learned	John Randles, SEAI, Ireland
	Driving energy efficiency in the UK's large energy users: Findings from the evaluation of the CRC Energy Efficiency Scheme	Laura Edwards, DECC, UK
	Increasing energy efficiency in the Netherlands by behavioural insights: randomised controlled trials	Eva van den Broek, Ministry of Economy, Netherlands
	Role of policy and regulatory environment in driving investment decision-making	Jonathan Sinton, World Bank

	Investment principles to promote energy efficiency and mobilisation of financial institutions	Annie Degen-Neuville, United Nations Environment Programme
	Discussion: <ul style="list-style-type: none"> • What are the top 5 success factors of programmes? • Can these be replicated across different types of programmes and interventions? • What are the proven benefits and costs (public and private) associated with achieving behaviour change in businesses? 	
13.00 – 14.00 Lunch		
Session 3 Decision-making and behaviour in organisations Chair: Philippe Benoit, Head of Energy Efficiency and Environment Division, IEA		
14.00 - 16.00	Industrial CO2 Mitigation and Energy Efficiency- A Driving Force for New Strategic Decision-Making and Cooperation in Process Industries	Thore Berntsson, Chair of IEA IA IETS
	Fostering organizational energy management in industry – Efficiency Nova Scotia’s insights and results	Andrea Henwood, Efficiency Nova Scotia
	What drives businesses to engage in energy efficiency and connect with energy service companies	Zhao Ming (Lily), China Energy Management Companies Association
	What drives decision making in businesses - Experiences from companies in the US and China	Robert P. Taylor, Energy Pathways LLC
	Discussion: <ul style="list-style-type: none"> • What can energy efficiency programmes do to better link up with business priorities? • What are the key triggers to change behaviour or influence decision-making? • Are there significant differences between types of businesses (small, medium, large, commercial or manufacturing, energy intensive vs non-intensive) and between sectors? • What are the most compelling arguments, most compelling type of information, best information channels? 	
16.00 – 16.20 - Coffee break		
16.20 - 17.15	Discussion continued	
17.15 - 17.30	Summing up and initial findings or conclusions	IEA

Day 2

Session 4 will focus on the use of data to inform decision making including real-time measurement, data analysis, management and control technologies and how they can aid the provision of information and guidance that can influence behaviour/decision-making

Chair: Mel Slade, Energy Efficiency Unit, IEA

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9.00 – 11.15	Technology impacts: Energy Performance & Behaviours	Jean-Jacques Marchais, Schneider Electric
	Innovative approach to information delivery	Elhay Farkash, Light App
	Demand response and energy efficiency in businesses	Jessica Stromback, Smart Energy Demand
	Experiences and opportunities of using ICT to influence decision making and behavioural change	Simon Hill, Opower
	Discussion <ul style="list-style-type: none"> • What are the key opportunities and risks for businesses? • How can energy efficiency programmes be enhanced by use of ICT? • How to avoid data overload? • Is there a need to influence decision-making in businesses to promote the uptake of intelligent energy solutions? 	

11.15-11.45 Coffee break

Session 5 will explore how to promote the establishment of energy efficiency culture and how to embed energy efficiency in business operations and the work of organisations

Chair: Tyler Bryant, Energy Efficiency Unit, IEA

11.45 – 13.00	Energy efficiency culture	Ulrika Wising, DNV GL
	Energy efficiency behaviour change and business models: Lessons learnt in IEA DSM Tasks 24 and 25	Ruth Mourik and Boukje Huijben, IEA IA DSM
	A WICKED approach to energy strategies in retail organisations	Kathryn Janda, University of Oxford
	Discussion <ul style="list-style-type: none"> • Do businesses have time for an energy efficiency culture? • What is needed to mainstream energy efficiency in business operations? 	

13.00 – 14.00 Lunch

Session 5 continued		
Chair: Vida Rozite, IEA Energy Efficiency Unit		
14.00 – 16.00	Disclosure promotes commitment and action	Dexter Galvin, CDP
	Energy performance contracts and behaviour	Antonio Ciccarelli, SEA
	Increase capacities for actual implementation of energy efficiency measures in Industry and Services in the H2020 Programme of the European Commission	Căline Tougeron, Executive Agency for Small and Medium Sized Enterprises (EASME)
	What drives the establishment of an energy efficiency culture - “Steam up” project	Ronald Vermeeren, Netherlands Enterprise Agency
	Perspectives on behaviour in organisations	Arash Aazami, Kamangir Beyond Boundaries
	Discussion: <ul style="list-style-type: none"> • How to we ensure persistence of change • How can programmes promote energy efficiency culture? 	
16.00 – 16.30 Coffee break		
16.30 – 17.15	Discussion continued	
17.15 – 17.30	Summing up and next steps	IEA

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