Proposal: Energy Sector Behavioural Insights Platform

This proposal is for a new project ('task'[1]) under the User-Centred Energy Systems Technology Collaboration Programme (Users TCP), the *Energy Sector Behavioural Insights Platform* (the Platform). The Platform would bring together government policy makers and other experts working on the application of Behavioural Insights to energy policy. It would enable the sharing of knowledge and experiences, and potentially, the development and dissemination of guidance for policy makers.

Background

Why behaviour matters for energy demand

Although technologies are important determinants of energy demand[2], people's decisions about which technologies they use, and how they use them (amongst others), ultimately determine energy use. This is true for all sectors.

In the buildings sector, while estimates of the impacts vary, there is wide agreement amongst the literature (Lopes, Antunes, & Martins, 2011) that several opportunities exist for optimising building sector energy use through behavioural interventions. Moreover, technology and behavioural interventions are mutually reinforcing (Lopes, Antunes, & Martins, 2011). At the global level, one study has estimated that around 29% of building sector GHG emissions could be avoided through behavioural change (Ürge-Vorsatz, Novikova, Köppel, & Boza-Kiss, 2009).

While much of the literature has focused on buildings, the transport sector also holds promise for energy savings through relatively simple changes. For example, a study of the effects of monetary rewards to encourage efficient driving behaviours among bus drivers showed an average improvement of 10% after the introductions of such rewards (Lai, 2015).

Identifying ways to influence human behaviour, in all sectors, will therefore be an important ingredient in clean energy transitions globally. Building on existing knowledge and experience to incorporate behavioural science throughout the policy cycle will ensure that energy policies are designed to work with people's likely behaviours, reducing the risk of ineffective or counterproductive outcomes.

What are Behavioural Insights?

Behavioural Insights (BI) constitute the evidence-based approach to integrating insights and methodologies from the behavioural sciences in public policy to provide better and more effective public policies (OECD, 2019, p. 44).

1 In the language of IEA TCPs, projects are referred to as 'tasks'.

2 Throughout this paper, the 'demand side' refers to energy consumption as well as small-scale (household) distributed generation and storage

BI draw lessons from the fields of behavioural economics, psychology and other behavioural sciences which seek to explain people's behaviour. Research from these fields has shown that behaviour is often not rational and that habits are often guided by automated cognitive processes, which can involve misperceptions (Lopes, Antunes, & Martins, 2011). For example, people tend to view losses as being more significant than gains (a phenomenon known as 'loss aversion'). This is a natural outcome of the brain's capacity to develop mental shortcuts for accomplishing habitual actions, which, while useful in many situations, sometimes results in the persistence of erroneous actions (UK Cabinet Office, 2010). BI aims to take such factors into account when designing policies, offering policy makers a data-driven and nuanced approach to policy making based on what actually drives citizens' decisions rather than relying on assumptions about how they should act (OECD, 2019).

BI can be used to influence both conscious and unconscious decision making

Broadly speaking, most policy is designed to change human behaviour, with interventions directed towards influencing conscious or unconscious actions. In the former case, attempts are made to influence rational choices, by providing information or changing the cost of an action, (for example, through subsidies). Typical policy interventions targeting conscious decisions might include labelling to display their energy performance of appliances or subsidies to reduce the cost of energy efficient appliances.

Influencing *unconscious* actions proceeds from the assumption that choices are not always rational or consistent and instead, depend on context. For example, an intervention might seek to influence consumers' appliance purchasing decisions by delivering information on appliance energy efficiency through specially selected messengers, or changing the way the lifetime cost of an efficient appliance is displayed on an online shopping website so that consumers find the information easier to digest.

BI is often applied to influence unconscious decision making. Applying BI principles in the design of policies that target *conscious* decisions is also important, and may be crucial to ensure policies succeed in what they set out to achieve. Research has shown that many of the existing policy programmes which governments have put in place to reduce carbon emissions fundamentally rely on changing behaviour. For example, studies (Fowlie, Greenstone, & Wolfram, 2015; Allcott & Greenstone, 2017; James & Ambrose, 2017) have shown that the uptake, and effectiveness, of retrofit policies are strongly influenced by human behaviour.

The emergence of Behavioural Insights in government

Over the last decade, several countries have set up specialised teams to incorporate BI within policy development and implementation processes (Afif, Islan, Calvo-Gonzalez, & Goodnow, 2019). Different institutional models have been used. For example, in some countries, dedicated BI teams have been established within energy or environment departments. In others, BI teams are established in central agencies to apply BI across a portfolio of issues, including energy. In others still, BI analysis has been conducted by private or semi-private organisations, with government as the primary client.

Who are the global leaders?

Many global leaders in the application of BI to national-level energy policy are members of the Users TCP. For example:

- United Kingdom: former Cabinet Office team and now social enterprise, the Behavioural Insights Team, and teams embedded within the UK energy department

(BEIS) and energy regulator (Ofgem) that form part of the cross-Government Behavioural Insights Network;

- United States: home to academics such as Nobel Prize winner Richard Thaler and Dan Ariely as well as the former head of the US Government BI unit, Mayar Shankar (now Global Head of Behavioural Science at Google).
- Australia, Ireland and the Netherlands have each established BI teams within government agencies responsible for energy policy.
- Switzerland: Home of Ernst Fehr, a major contributor to the field of behavioural economics.

In addition to these Users TCP member countries, Japan has established a cross-ministerial Behavioral Sciences Team (BEST), for sharing best practices in BI across government. Its Ministry of Environment hosts a BI unit called "Platinum" and its Ministry of Economy Trade and Industry, (responsible for energy policy), has also recently established a BI unit.

The need for a global platform on BI for energy

There is a large body of literature on applying BI generally, and annual conferences (BX for general applications of BI, and BECC and BEHAVE for energy and climate related applications) provide global forums for knowledge sharing periodically.

However, there is currently no global platform for collating policy makers' practical experiences applying BI *specifically for energy policy*. Both the OECD (OECD, 2017) and World Bank (Afif, Islan, Calvo-Gonzalez, & Goodnow, 2019) have conducted global surveys of BI for government but, while energy sector case studies were included, the analyses were general in nature, without going into depth on any particular sector.

Further, while several countries now have valuable experience from the application of BI to the energy sector, most of these counties are centred in advanced economies. A global platform would provide a central knowledge base to benefit both advanced and emerging economies.

In addition, the IEA's Energy Efficiency Division would find it valuable to include BI in its policy advice, however currently a global evidence base for providing these insights is lacking. The challenges found in the energy sector are shared by governments across the world and a wide range of tools are required to address issues. Behaviour Insights offers a framework and evidence base to develop and evaluate effective interventions that can be used in isolation, or more commonly, in conjunction with more traditional regulatory tools.

In September 2018, participants at the joint IEA/IPEEC/G20 workshop on behaviour change for energy efficiency expressed interest in taking forward work on BI through the IEA Demand Side Management Technology Collaboration Programme (now Users TCP). These countries felt that there could be much to gain from sharing experiences, collecting case studies and developing guidance for each other's benefit and to help countries that were considering using BI for the first time.

A global platform for energy sector behavioural insights

A global platform for sharing knowledge and experiences in applying BI to energy policy could benefit energy policy makers by potentially providing:

- A global network of energy policy makers using BI, who could share insights into their experiences applying BI.
- A regularly updated database of case studies with detailed information about what worked (and what didn't work) to design and deliver energy policy and programmes using BI.
- Guidance for policy makers considering using BI for energy policy.

Objectives

1. **Overall objective: Improve the efficacy of demand-side energy policies by ensuring that human behaviour is accounted for at all stages of the policy cycle.**
2. Build an international network of energy policy makers that use or are interested in using BI for energy policy.
3. Identify benefits and drawbacks of different institutional governance models for incorporating BI into policy: From in-house models (including both centralised models placing BI teams within a central agency and decentralised models which embed BI teams in line agencies), to outsourced models.
4. Share lessons learned and identify best practices, from inside and outside the energy sector, in applying BI throughout the policy cycle and in both advanced and emerging economies.

Why Users TCP?

The IEA's Technology Collaboration Programme is a network of 38 research collaborations involving over 6 000 experts worldwide who represent nearly 300 public and private organisations located in 55 countries, including many from IEA Association countries such as China, India and Brazil.

Most of the collaborations are focussed on the development of energy technologies. Users TCP is unique, as the only collaboration focussed primarily on energy technology *users*. Its mission is to provide evidence from socio-technical research on "behind the meter" energy use and production, to inform policy making for clean, efficient and secure energy transitions.

With its focus on energy users, and previous work on behaviour change (IEA DSM TCP, 2019), the TCP a natural home for the Platform. In addition, many of the TCP's members are leaders in the field of applying BI to energy policy (See *Who are the Global Leaders?*).

Deliverables and timeline

Work streams are described using the TCP terminology as "sub-tasks". Deliverables refer to the individual products that together, comprise a sub-task.

Sub-task 1: Environment scanning

Duration: ~9 months

The purpose of the sub-task is to assess **where** and **how** BI is being used to inform energy policy around the world.

The core countries of focus will be TCP member countries with BI teams that have already

expressed an interest in this task, including: Australia, Ireland, and the United Kingdom and Switzerland. Japan, although not currently a member of Users TCP, has also expressed an interest in being involved.

Other countries that may be included in the study, based on their application of BI in the energy sector, are listed in Table 1.

Table 1 Examples of countries where BI has been applied in the energy sector

Country	Institution	Project
Australia	Department of Environment and Energy / BETA	Testing the efficacy of different energy efficiency appliance rating labels
Canada	Ontario Ministry of Energy	Social factors contributing to the success of cycling uptake interventions
European Union	European Commission Consumers, Health and Food Executive Agency (CHAFEA)	Framing energy efficiency information to encourage uptake of energy efficient electric appliances: How the provision of online information on energy performance of household appliances can be improved to promote energy efficient product choices
	European Commission Director-General for climate action (DG Clima)	Framing fuel efficiency, emissions and running cost information: Testing the effectiveness of variants of car eco-labels and of mandatory information on fuel efficiency in promotional material
	Executive Agency for Small and Medium Enterprises (EASME), Unit B1 Energy	Can new ICT tools trigger more Energy Efficient behaviours? - Challenges and good practice to improve pilot design and implementation
France	DITP (French public transformation unit)	Project with the City of Paris to encourage more energy efficient practices to reduce energy bills
Italy	Regulatory Authority for Electricity, Gas and Water	Better consumption data for more efficient energy use: How individuals react to different types of feedback they receive when they use energy
Japan	Ministry of Environment (Administrative office of BEST) and Oracle	Trial testing BI for improving the efficacy of home energy reports. Improving transport fuel consumption through eco-driving.
Portugal	Municipality of Lisbon	Development of a digital social market to promote sustainable and energy efficient behaviour: Lisbon pilot
Singapore	Ministry of the Environment and Water Resources (MEWR) and Land Transport Authority (LTA)	Encouraging employees to go car-lite: Study on the effectiveness of usage-based parking schemes in encouraging employees to take public transport to work
South Africa	Western Cape Government	Energy efficiency project: Testing behavioural responses to four different styles of email prompts

		aimed at encouraging energy efficient practices
Switzerland	Swiss Federal Office of Energy (SFOE)	Testing the efficacy of different energy efficiency appliance rating labels Using BI to design a program to increase awareness and willingness for energy efficient behaviour
	Schweizerische Bundesbahnen (SBB)	Analysing behavioural drivers of Swiss citizens by conducting online surveys in the field of renovation (boiler exchange), space heating and mobility (shifting rush hours to non-busy periods)
	Canton St.Gallen	Energy concept 2021-2030: Development of BI-founded interventions to reach a reduction of CO2, increase the share of renewable energy and to increase efficiency of energy usage in the Canton of St.Gallen
Sweden	Energy Markets Inspectorate (EMI)	An electricity market in transition: Changing energy consumption patterns amongst the Swedish population
The Netherlands	The Netherlands Authority for Consumer and Markets (ACM)	Transparency in energy contracts: Increasing compliance amongst energy suppliers in terms of transparency in energy contracts
	Ministry of Economic Affairs and Climate Policy	Project with the Netherlands Enterprise Agency (RVO): Using BI to increase readership of an e-mail containing the feedback on commercial users' energy consumption
Turkey	Directorate General of Renewable Energy, Ministry of Energy and Natural Resources	End-use electricity consumption profiles of Turkish homes
United Kingdom	Ofgem / UK Behavioural Insights Team	Testing different communications methods to incentivise consumers to switch energy suppliers.
United States of America	Department of Energy (DOE)	Consumer adoption of renewable energy: Testing various behavioural tools to encourage homeowners to select renewable energy sources
	Philadelphia Behavioral Science Initiative and GovLabPHL	Testing interventions to increase bike-share use

Sources: OECD "Behavioural Insights and Public Policy: Lessons from Around the World" (2017); BEHAVE "Book of Abstracts" (2018); Afif, Islan, Calvo-Gonzalez, & Goodnow "Behavioral Science Around the World: Profiles of 10 Countries" (2019); Personal communication.

Methodology

Through desktop research, a survey, and interviews, evidence will be compiled on which countries have established BI teams for the purpose of informing the design and delivery of *energy* policy and regulations.

The following organisations will be within scope:

- Central policy agencies (for example, Cabinet offices)
- Line agencies responsible for energy and related policy areas (e.g. transport)
- Energy regulators responsible for regulating energy markets

In addition, increasingly governments and utilities—particularly those obligated to achieve energy savings under national or state energy efficiency obligations—are partnering with product manufacturers and behavioural specialists to influence energy users' purchasing decisions and behaviour. These collaborations often involve the application of BI (for example, Pacific Gas and Electric's *Marketplace* for energy efficient products. Therefore, case studies from beyond government will also be examined where relevant.

To assess how BI are being used, a **BI policy typology** will be developed to categorise the use of BI in energy policy making. Dimensions assessed could include: policy type, policy stage, scale, behaviour targeted, intervention type, impacts, evaluation methods and institutional/cultural settings amongst others (Table 2). While similar to the typologies used by SEAI (2018) and DECC (2012) to assess international studies of 'what works' in changing behaviour, the focus of this work will be on government applications of BI, rather than academic studies. Therefore, only certain academic case studies will be in scope, and there will be much more reliance on evidence provided through surveys and interviews with policy makers.

Table 2 Examples of dimensions included in a typology of BI applications in energy policy

Dimension	Categories

Policy type	• Information provision policies, including:
	  ○ Billing information and customer comparisons
	  ○ Appliance, vehicle and building labels
	  ○ Product information and comparisons
	• Financial incentives, such as grants and loans
	• Regulatory compliance, including compliance with:
	  ○ Mandatory reporting requirements
	  ○ Building code compliance
	  ○ Appliance minimum energy performance standards, etc

Policy stage	• Problem identification • Policy design • Implementation • Monitoring • Evaluation
Sector and end use targeted	• Buildings (Heating and cooling, lighting, etc) • Transport (Road transport, Modal shift, etc) • Industry (Energy reporting, Energy management systems, etc)
Scale of intervention	• Trial • Full-scale policy, etc
Behaviour targeted	• Loss aversion • Bounded rationality • Optimism bias • Social norming, etc

Evaluation methods	• Ex-ante • Ex-post • Quantitative • Qualitative
Impacts	• Energy / emissions savings • Increased regulatory compliance • Increased take-up of product or service, etc
Institutional settings	• In-house/central • In-house line agency • Outsourced, etc

Deliverable 1.1: Summary briefing note

The *Global Commission on Urgent Action for Energy Efficiency* (the Commission) is a group of influential people from the energy sector, who are examining how progress on energy efficiency can be rapidly accelerated through new and stronger policy action. The Commission will conduct its investigation between July 2019 and June 2020, supported by the IEA's Energy Efficiency Division.

It is proposed that preliminary findings of the environment scanning report are presented for consideration by the Commission in the form of a short briefing note, as part of their search for novel ways of scaling up energy efficiency action.

Audience: The members of the IEA Global Commission on Urgent Action for Energy Efficiency

Format: A short, briefing note of 1-5 pages.

Timing: February 2020

Deliverable 1.2: Environment scanning full report

The full report will summarise research conducted over a 6-month period. It will include case studies from all the countries involved and summaries of activities undertaken by governments using the BI policy typology.

The report will contain suggested areas for further research, which will be used to inform Sub-task 2.

The report will be published on ieadsm.org. Depending on if the IEA itself is a co-author of the report, it may be published on the IEA website, potentially as part of the website itself.

Audience: Global

Format: Electronic document and/or website [tbc]

Deliverable 1.3: Workshop: Environment scanning report results

A workshop will be held to discuss the results of the environment scanning report. Potentially, this could be held as a side event in Paris, alongside the IEA's Global Conference on Energy Efficiency or another major international energy or behaviour change conference (such as

BECC, BEHAVE or BX). In 2020, Japan will host BECC Japan and its *Innovation for Cool Earth Forum*, which is likely to have a behavioural focus, both of which could be an appropriate forum at which to launch the work.

The purpose of the workshop will be to:

- Present the findings of Sub-task 1.
- Identify areas for in-depth analysis to be undertaken during sub-task 2.
- Attract new members to the research collaboration (if desired).
- Discuss options for the ongoing governance and management of potential sub-task 2 activities – for example, the ongoing management of an online platform to ensure its currency and promotion.

Audience: Users TCP members and other national behaviour/energy sector experts

Format: In person workshop. Location tbc.

Deliverable 1.4: Workshop report and recommendations

This report will summarise the outcomes of the discussions during the workshop and provide detailed written recommendations for the next phase of work (Sub-task 2).

Audience: Task participating countries

Format: 5-10 page electronic document

Sub-task 2: [TBC]

Based on the analysis from Sub-task 1, and the results of Deliverables 1.3 and 1.4, the topic for the next phase of work will be identified. A range of ideas are presented below:

- **Workshops and training** sessions with policy makers (in both advanced and emerging economies). For example, the IEA's *Energy Efficiency in Emerging Economies* (E4) programme provides regular week-long training sessions with energy efficiency policy makers from emerging economies. A session on using BI could be developed and incorporated into a future training week.
- **Webinar series**: A series of webinars from policy makers could be delivered via DSM University. Each webinar could be focussed on a different aspect of applying BI for energy policy.
- **Guidance reports** for energy policy makers on various topics. For example:
    - *How-to establish a BI team for energy policy*: What expertise is needed, where to look for qualified personnel, what institutional conditions make a BI team more or less successful, etc.
    - *How to conduct field trials in the energy sector*: What resources are needed, how to measure and verify the impacts of behavioural interventions, what

mistakes to avoid, etc.

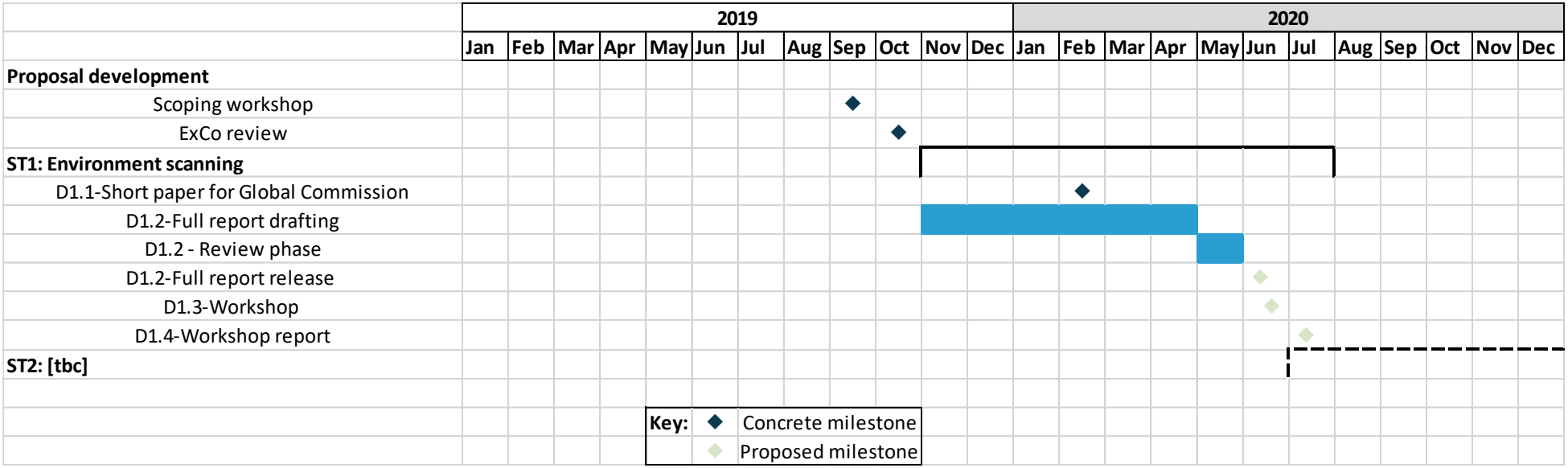
- *From field trials to actual policy:* How to move from trialling interventions on a limited scale, to implementing policies at full scale?
- *Using BI to optimise [X]*: A series of papers on how BI can be used to optimise the various policy used by energy policy makers.

- **Online case study database:** A searchable online database of case studies, cataloguing the types of interventions tested, impacts, etc.

Alignment with objectives

Sub-task / deliverable	Objectives to which product is aligned
Sub-task 1: Environment scanning	*Refer to specific deliverables below*
Deliverable 1.1: Summary briefing note	• Obj 2: Build an international network
Deliverable 1.2: Environment scanning full report	• Obj 3: Identify good governance models • Obj 4: Share policy best practices
Deliverable 1.3: Workshop: Environment scanning report results	• Obj 3: Identify good governance models • Obj 4: Share policy best practices
Deliverable 1.4: Workshop report and recommendations	• Obj 4 Share policy best practices
Sub-task 2: In-depth analysis of selected topic	[tbc]

Proposed timeline for delivery



Risk assessment

Description	Likelihood	Impact	Risk pre-mitigation	Mitigation	Risk post-mitigation
Unable to identify a project coordinator to continue work after ST1	Medium	High	High	During ST1, planning to begin for next phase of work	Medium
Inability to identify suitable interviewees to survey	Low	High	Low	IEA Secretariat to fully utilise networks with member countries and OECD	Low
D1.2 time over-runs affect delivery of D1.3 and D.14	Medium	Medium	Medium	Alternative times and places for workshops to be identified (later in year)	Low
Additional requirements from countries joining late.	High	Low	Low	Clear stipulation of national contributions required, and clear cut-off dates for later entry.	Low

Governance

This proposal has been developed primarily by Users TCP members Australia, the UK and Ireland, coordinated by the IEA Secretariat.

If approved, it is proposed that in lieu of an 'operating agent,' the IEA Secretariat will take the role of 'Coordinator' for this task[3].

Initially, it is proposed that the IEA would act as Coordinator for the duration of Sub-task 1: *Environment scanning*. With respect to Sub-task 1, the Coordinator would develop the work

3 As Coordinator, the IEA Secretariat would take on many of the functions normally undertaken by an operating agent, subject to terms and conditions necessary to conform to the IEA's governance structures, rules, regulations, policies, and procedures. However, unlike an operating agent, the IEA is unable to carry out "legal acts" on behalf of the Task participants, such as holding intellectual property rights on behalf of the participants. That said, the IEA is willing to grant broad intellectual property licenses, such as Creative Commons (CC) licenses, to use any Deliverables.

plan, take the lead on organising and delivering activities and outputs, and coordinate and track inputs from Task participants, where relevant. As currently proposed, the countries and IEA do not anticipate that an operating agent will be necessary for the duration of Sub-task 1.

Depending on the content of Sub-task 2, the IEA could continue in this role or an operating agent could be selected for the next phase of work.

The IEA would be particularly appropriate to lead Phase I of the work for the following reasons:

- Global convening power: With its 30 member countries and 8 Association member countries, the IEA can access a large network of policy makers to conduct research on the use of BI in for energy policy. The IEA also has access to high-level decision makers (Prime Minister and President level) via its role as the Secretariat for the Global Commission on Urgent Action on Energy Efficiency, with which D1.1 will be shared.
- Established connections to the OECD's Directorate for Public Governance. This will allow the IEA to build on existing global surveys of governments' use of BI for policy and tap into OECD networks where necessary.

Budget

The proposed budget for sub-task 1 is €100 000[4] over 9 months (suggested as a contribution of €20 000 from 5 countries).

In addition to the cost of conducting the analysis for D1.1, D1.2 and D1.4, this would also cover the cost of running the findings workshop (D1.3), and producing materials for publication online.

Note that any funding that is provided to the IEA to carry out the Coordinator function would be subject to IEA's standard rules and procedures with respect to voluntary contributions—whether provided from TCP common funds or if provide directly from individual governments.

Alignment with the TCP's strategy

This project aligns closely with the TCP's new focus on 'user centred energy systems' and mission 'to inform policy making for clean, efficiency and secure energy transitions.'

Direct involvement of policy makers using BI

The task will involve direct collaboration between policy makers using BI for energy policy. As such the research outcomes are expected to feed directly into policy, aligning well with the TCP's aim to inform policy.

Alignment with the IEA Secretariat's work

The IEA Secretariat is prepared to take on the role of 'Task Coordinator' during the development of this proposal and throughout Sub-task 1. While the Secretariat's role may change, following the completion of Sub-task 1, the IEA has a strong interest in this topic and will seek to leverage its network to expand the reach of the work beyond the membership of the TCP. This aligns strongly with the TCP's goal of having its work feed into the work of the IEA

4 The United Kingdom has already committed €10 000 during the project proposal phase, meaning the remaining budget required is €90 000.

Secretariat.

Cross-TCP linkages

Several TCPs are producing policy-relevant research to help promote the uptake of clean energy technologies. Amongst these, some are investigating the impact of consumer behaviour. For example, the Hybrid and Electric Vehicle TCP (HEV TCP) has a task that includes examining behavioural drivers behind the consumer adoption and use of electric vehicles.

Annex 66 of the Efficient Buildings and Communities TCP (EBC TCP) focused on ways to better incorporate building occupant behaviour into building simulation models. Annex 79 (2018-2023) will build on this work and includes a deliverable to provide "recommendations on occupant modelling in building energy codes" (Energy in Buildings and Communities Programme, 2018).

These tasks align well with the aims of this proposed task and research findings on the use of BI for policies relevant to these technologies will be shared with the relevant TCP task leaders.

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