

ERP Plenary meeting – Minutes

MEETING DATE: Wednesday 8 July 2015, 15:00 -17:20
LOCATION: Royal Academy of Engineering, London

ATTENDEES:

Chair:	John Loughhead	DECC, ERP Co-chair
Members:	Keith MacLean	ERP Co-chair
	John Miles	Arup
	Carl Arntzen	Bosch
	Bob Sorrell	BP
	Tom Delay	Carbon Trust
	Peter Emery	Drax
	Kathryn Magnay	EPSRC
	David Clarke	ETI
	Derek, Grieve	GE
	Rob Saunders	Innovate UK
	David, Wright	National Grid
	Peter Bance	Origami Energy Ltd
	Neville Jackson	Ricardo
	Maggie McGinlay	Scottish Enterprise
	Angus Gillespie	Shell
	Prof Julian Allwood	University of Cambridge
Alternate		
Member attendees:	Peter Jones	ABB
	Craig Edgar	Atkins
	Duncan McCombie	EST
	Makiko Hisatomi	Hitachi
Observers:	David Joffe	CCC
	Gareth Evans	Ofgem
	David Casale	Turquoise International Ltd.
Invited:	Tony Espie	BP
	Elsbeth Finch	Atkins
	John Fiennes	DECC
	Andy Bullock	GE
	Paul Jordan	Ricardo
Secretariat:	Farida Isroliwala	DECC
	David Noronha	SSE
ERP Analysis Team:	Andy Boston	ERP
	Mark Workman	ERP
	Helen K Thomas	ERP

Simon Cran-McGreehin	ERP
Richard Heap	ERP
Mathilde Bourgeois	ERP

1. Chair's introduction

Written apologies were acknowledged.

Guests were welcomed and included: David Casale – Director at Turquoise International (Turquoise have agreed to join ERP as one of our representatives from the finance sector), Elspeth Finch - Atkins (Chair of the Cities project that is on the agenda), Tony Espie - BP, John Fiennes - DECC, Andy Bullock - GE, and Paul Jordan from Ricardo.

Minutes of the April 2015 meeting were approved.

The key objectives of the plenary meeting were outlined as follows:

- i. Discuss and provide feedback on the conclusions and recommendations of the **Cities project**.
- ii. Discuss and provide feedback on the conclusions and recommendations of the **CO2 Enhanced Oil Recovery project**. This will then be finalised by Q3 2015 and report published.
- iii. Project Initiation: **Horizon Scanning**. Consider and approve this proposed project.
- iv. Discuss the results from the April plenary interactive session on key messages for ERP.
- v. Prepare for Lord Bourne's attendance at dinner.

2. Cities Project

John Loughhead introduced the project which was about the role of city authorities in the evolution of the UK energy system and the increasingly important role that they might play in the future. The project started in Q3 - 2014, intends to publish a report in Q3 of 2015.

Project Chair Elspeth Finch (Atkins) began by highlighting key observations from the project work including:

- (1) The diversity of audiences that the work brought together;
- (2) The importance of economic drivers, social impact and environment issues;
- (3) How local authority budget cuts are impacting their capacity to operate in this space; and
- (4) The need to address the challenges faced by the different actors that are found in the city space.

Many of the key project finds were developed by the holding of a workshop on 24th March 2015.

Recommendations from the project were:

- Demonstrate the economic benefits of decentralised energy;
- Create a Cities and Energy Unit in DECC and Devolved Governments;
- Develop resources and Tool Kit for Cities;
- Ensure integration of local and national planning; and
- Create Cities Roadmaps.

Elspeth Introduced Mark Workman who presented key findings from the project. The premise of work was based on the fact the UK energy system will become more spatially heterogeneous. This will mean

that future energy planning for heat and electricity will increasingly need to take into account spatial characteristics and infrastructure.

Detailed local knowledge will be essential to convene multiple stakeholders and for the individual choices of actors to be addressed across communities and commercial interests. Local authorities are therefore best placed to address these complex socio-technical and socio-economic requirements. Local authorities however, have no clear mandate to engage in development of the UK energy system. If central Government does not fully develop a framework that both recognises and allows the capacity for local authorities to facilitate and co-ordinate UK energy system evolution - then the risk is not only that the optimisation of the UK energy system be compromised but also the economic value add, social and environmental benefits will be missed.

Comments and questions were invited from members:

- The need and opportunity to make things truly scalable by pooling intervention, knowledge, and capital, to avoid high one-off costs was encouraged as needing to be highlighted. This was endorsed by using the example of Public Finance Initiatives where hospitals had not developed learnings and therefore not making economies and savings. There was also the requirement to balance the need for learning with the context specific nature of the circumstances that these initiatives were being undertaken.
- ERP's Industry Co-chair highlighted the following points:
 - For balance there was a need to ensure that the benefits of the centralised system were anchored in the work;
 - The need to segregate the issues that are faced in cities with those that are taking place in the decentralisation agenda more broadly; and
 - Finally, he observed that the transmission network already operates in a smart, two-way manner, it is the distribution system that does not.
- Another observation was that the competitiveness of London was related to international cities like Paris and New York. The lack of ability for London to develop its infrastructure and energy capacity in a timely manner was having an impact on its global attractiveness. There is a need to develop models for infrastructure planning to address this concern; leadership is key.
- Another member reinforced this with the need for economic benefits to be better unpicked highlighting the potential for technology transfer, the role of City and Growth Deals in economic and energy development in cities. Greater emphasis might also be better put on the risks involved. The need to be more prescriptive as to the actual recommendations to stimulate economic growth and benefits was additionally highlighted by another member.
- Work undertaken by Ricardo on cities highlighted the need for benchmarking, identifying the costs for energy system development and assets which might impact energy development. It was raised that it is also worth considering what elements of the push for a digital economy could energy projects piggy-back off? Finally, the degree of capacity and tolerance for risk of city authorities needs to be considered.
- The lack of capacity of city authorities was picked up by another member who sought to get a better understanding of the opportunity for co-ordination and ability to facilitate synchronisation of investor / developer needs.
- The need for clarity was sought regarding the types of decentralised energy technologies and policies that local authorities have a role in co-ordinating and facilitating, e.g. the potential to prioritise or highlight zones for district heating projects.
- The timing of the report was noted as being good in terms of government policy, and that it would be useful to unpick why this activity is happening in cities and emphasise the fact that there will be benefits from components of the centralised and decentralised energy system.

The chair enquired as to how individual communities were going to be engaged, how the findings would be more widely communicated and what scale cities / authorities needed to engage effectively in energy system co-ordination and facilitation. He then thanked members for their questions and comments, inviting further comments to be made by email and concluded by saying that the report would take the discussion points into consideration.

Action: A final redrafted version will be circulated to members for review, with a view to publishing the final report in September.

3. EOR Project

John Loughhead introduced the project, noting the plan to publish the report in August / September 2015, subject to Members' approval. Angus Gillespie, the steering group's chair, was called upon to introduce the project. Angus presented the three objectives pursued, which were:

1. The potential for EOR in UK Central North Sea,
2. The technical and economic challenges,
3. The policy levers to make a difference.

It was emphasised that the report reflected the objectivity of the steering group (and was therefore unbiased), and the following key insights from the work were presented:

- CO₂-EOR in the UK is much more difficult than in the US where it has been carried out in Texas for 30-40 years;
- Both timing and synchronisation are key aspects, to ensure capture plants and CO₂ supply are ahead of field closures;
- There are 'Goldilocks' conditions in the fact that you need the right oil price, taxes, costs, etc., stressing the importance of the commercial challenges as well as the technical ones;
- It is a 'chicken and egg' situation where EOR needs CCS, and EOR can reduce costs for CCS, but neither are able to lead the other;
- The value of developing a CO₂ transport company, as a 'Market Maker', to balance supply and demand, rather than waiting for pipelines to emerge;
- There is plenty of interest in this ERP project including from Europe;

Richard Heap gave an overview of the report. He highlighted the technical challenges of CO₂-EOR, emphasising that the 40 years of onshore experience in the US may not translate to the offshore environment. He pointed out the geographical and temporal disconnect in CO₂ supply and CO₂-EOR development, driven by the maturity of the suitable oil fields in the Central North Sea. Richard highlighted the milestones in CO₂ supply that would need to be met to deliver any significant benefits from the narrow time window for CO₂-EOR, which included securing Phase 2 CCS projects in the next two years. The report proposes that establishing a CO₂ transport company would reduce the counter-party risks, thereby helping accelerate deployment of capture, storage and use. The wider socio-economic rewards are expected to make this public investment attractive.

In discussion, it was noted that equipment to separate oil and CO₂ on the oil rigs, would cost several hundred millions of pounds, and were included in the infrastructure costs. It was also noted that it was not realistic to use CO₂ stores to buffer supply, as re-extracting was challenging and expensive.

Questions about industrial CO₂ capture highlighted that they could provide more cost effective sources, but there was no regulation to promote industrial capture. Industry could deliver the consistent supply needed by CO₂-EOR, which power plants could not. However, industry is exposed to wider commercial forces which put it at risk of closing down. The US had the luxury of huge

amount of natural CO₂, whereas UK industry was dependent on the power sector to develop the infrastructure to support industrial capture. The recent Teesside Collective report was referenced.

The potential to link the development of a hydrogen supply to the supply of CO₂ was raised. It was noted that whilst pre-combustion capture produced very cheap hydrogen, it would require the same stimuli as industrial capture. Although hydrogen from refineries, hit a sweet spot for getting CO₂ as these were pure chemical.

With reference to the CCS ambitions set out in the IEA's 2006 Energy Tech Perspectives report, it was proposed that the subsequent lack of progress on CCS meant it was a hypothetical technology and that interest in it was causing delay in taking other actions with existing technologies that could have a real impact e.g. demand-side measures. Angus replied that CCS was never given a fair push, and treated as a poor cousin of renewables, which should not be bypassed as it is a critical technology on supply side.

The importance of public acceptability was raised, emphasising that it needed to be addressed with care as any support for CCS in the UK could be lost if CCS was driven as a means to deliver EOR. Angus noted that one could measure CO₂ impact of EOR oil; high compared to normal North Sea crude, but lower CO₂ than high-flaring crudes from Nigeria, Iraq. Richard Heap added that other offshore EOR techniques may go unnoticed and not attract public attention and opposition, but the use of CO₂ could attract disproportionate interest.

It was suggested that the economic benefits for public intervention needed further attention, including the impact of delays.

The regional impacts of the effects on Scottish cities were raised, in terms of employment, and whether this was a driver for action. It was noted that Scottish Enterprise had looked at this and that it was on their agenda.

It was noted that CCS was a priority in DECC but that CCS projects were competing for funds with all low carbon technologies in the Levy Control Framework. The benefits to the UK – economically, regarding lower CO₂, and of using bill-payers' money and taxes would be kept under review.

It was observed that there was a need to clarify whether EOR was an oil-led project or a CO₂ storage project with some offsetting benefits.

Action: The report is to be redrafted following comments at the meeting and will be circulated / approved by Members via email, with approval by default. The Steering Group will be discussing how to deliver impact from the work.

4. Horizon Scanning

John Loughhead called on fellow Co-chair Keith MacLean (with his UKERC Advisory Board hat on) to introduce this session in the absence of Prof Jim Watson, UKERC, who is the sponsor of the project.

Keith mentioned a 2014 paper by UCL on energy sector scenarios from 1978 with its conclusions - one of which was based on a diverse approach to modelling and boundaries allowed needed. UKERC and MOD were both interested in horizon scanning and the suggestion was for ERP to take a robust approach to the topic, thus helping in focusing and prioritising research.

ERP Analyst Mark Workman informed Members that the plan was to hold a meeting with senior people across energy space, to present to ERP plenary in January 2016, and follow it with sectorial workshops, as interest was already high among members.

Keith MacLean asked members to agree that this would be an appropriate project for ERP, and to state their interest to be part of the steering group.

Some members stated their interest but would want the project to look beyond the technology aspect to include the social dimension and a wider range of scenarios, to which Keith answered that the UCL report found that issues missed by scenarios tended to be non-tech, e.g. social factors, change of government policy, etc.

John mentioned that there was a lot of horizon scanning happening in government, so being specific would be beneficial. It was stated that ERP provided value in terms of diversity of views and taking Members/colleagues out of their comfort zone.

Keith MacLean echoed the diversity offered by ERP as well as the offer of a 'safe group' in which to 'think the unthinkable'. More structured project briefs, avoiding quarterly reports was encouraged by both co-chairs.

Action: Members were asked to revert to ERP with more detailed suggestions for topics relating to the horizon scanning project before the next plenary.

5. Analysis ERP Projects & Impact (interactive session from April 2015 Plenary)

John Loughhead called on Andy Boston to present key findings and analysis from the interactive session with Members in April 2015:

Andy began by saying that **Storage** came up as most needing a breakthrough and also the project area that most members would like to participate in. He mentioned that a storage project was carried out in 2011, and there were many aspects to this technology so asked what the aims of a new project should be.

The area least needing a breakthrough was **Heat**, as well as being the area which would most benefit from ERP, so the question to Members was to understand what kind of project was intended here (perhaps a project for a non-technology issue?). Members were reminded that HMT and DECC were proposing a project in this area.

Another area members voted for as needing a breakthrough was **Demand Reduction**. Andy reminded members that there was a workshop in 2014 and key recommendations from that could be found on the [website](#).

The area voted equal-first for participation, as well as the most suitable for an ERP project was **Systems**. However this term could have different meanings at different scales and had been covered in previous projects, so more specific feedback from members was needed.

The interactive session in April had shown that Members used ERP's output for their **own education and to influence**. However, weaknesses in profile and impact were also raised. This had been recognised by the ERP team and Andy presented work already undertaken / proposed to address impact (such as the new website, more workshops & conferences, report launches and the ERP 'impact report' due out in the Autumn).

The following comments and questions were made by Members:

- There is a huge breadth and wealth of evidence from ERP that could be used to stimulate discussions, and reports should be used by members themselves (e.g. at conferences or seminars) to improve ERP profile and help with dissemination.
- There is sometimes a difficulty of dealing with both a national and local governance, and of discussing demand which cuts across many Departments: Could ERP look at this (noted as a possible question for Lord Bourne at the later dinner perhaps?)
- Is there value in having a communications expert in ERP? How do we get different engineers to talk about and communicate reports through their networks?

The need for all projects to end with a standard report was questioned and the adoption of a shorter form of ERP's views/recommendations would be appropriate in some areas. Another member mentioned webinars as a useful tool. Andy answered that reports were often useful to anchor the output but other means of communication such as short notes, presentations and workshops were equally valuable and were being increasingly used.

Helen Thomas from the Analysis Team highlighted that the communications strategy and Project Initiation Processes were being reviewed with a recommendation that dissemination is considered at the earliest stage of the project cycle.

It was noted that the granularity of the questions in the interactive session made understanding the specifics difficult. Andy closed the session by inviting those who could help with this or wanted to be part of any of the potential projects to contact ERP Analysis Team directly.

Actions: Members to email Andy Boston of the Analysis Team with their thoughts and potential interest in more specific ideas around the top-voted future project areas of: Energy Storage, Heat, Demand Reduction and Systems, and what led them to vote in the way they did.

Members to email Andy Boston & Helen Thomas of the Analysis Team with thoughts around how ERP can add to its current impact (communications methods or generally).

6. Preparation for the post plenary dinner

John Loughhead reminded the members that Lord Bourne would be joining the ERP Dinner and briefly outlined his portfolio / role which includes looking after climate science and innovation within DECC. Lord Bourne, with a background in law, was new to the energy sector, and by attending ERP's dinner was looking to receive ERP Members' views.

7. AOB

Details of the next plenary meeting were provided as: **Wednesday 14 October 2015, 09:45 – 13:00, Church House Conference Centre, Dean's Yard, London SW1P 3NZ.**

Members were invited to enjoy the drinks reception & dinner with additional guests, and the meeting was brought to a close.