

ERP Plenary meeting – minutes

MEETING DATE: Wednesday 15 October 2014, 09:45 -12:30
LOCATION: Church House, London

ATTENDEES:

Chair:	Keith MacLean	Independent, ERP Co-chair
Members:	Craig Lucas John Miles John Perkins Tom Delay Philip Sellwood David Clarke Neville Jackson Angus Gillespie Rob Saunders John Loughhead	Acting ERP Co-chair, DECC Arup BIS Carbon Trust Energy Saving Trust ETI Ricardo Shell TSB UKERC
Alternate Member attendees:	Peter Jones Richard Neale Ian Jones Neil Ebenezer Andy Bullock Chris Bennett Rufus Ford	ABB Atkins BP DfT GE National Grid SSE
Observers:	Peter Bance David Joffe Andrew Wright	Origami Energy Ltd CCC Ofgem
Invited:	Oonagh Werngren	Oil & Gas UK
Secretariat:	Farida Isroliwala David Noronha	DECC SSE
ERP Team:	Analysis Andy Boston Mark Workman Richard Heap Helen K Thomas Simon Cran-McGreehin	ERP Analysis Team ERP Analysis Team ERP Analysis Team ERP Analysis Team ERP Analysis Team

1. Chair's introduction

Apologies were noted from: Stephen Trotter (ABB – with Peter Jones in attendance); Martin Grant (Atkins - with Richard Neale in attendance); Carl Arntzen (Bosch); Bob Sorrell (BP – with Ian Jones in attendance); Miles Elsdon (DfT – with Neil Ebenezer in attendance); Peter Emery (Drax); Alison Wall (EPSRC); Duncan McLaren (Friends of the Earth); Derek Grieve (GE - with Andy Bullock in attendance); Masao Chaki (Hitachi); Mark Wagner (Isentropic); Nick Winser (National Grid – with Chris Bennett in attendance); Sue Ion (Royal Academy of Engineering); Maggie McGinlay (Scottish Enterprise), Tony Robison (SEP), Marta Smart (SSE with Rufus Ford in attendance), Julian Allwood (University of Cambridge) and Ron Loveland (Welsh Government).

The Co-chairs extended a warm welcome to all Alternate Members and Observers including: Andrew Wright (new ERP representative from Ofgem) and David Joffe, who will now represent the CCC in place of Mike Thompson. Oonagh Werngren from Oil & Gas UK and representative of the UKCS Technology Leadership Board was welcomed and thanked in advance for her presentation on 'The Technology Challenge in Oil & Gas'.

It was announced that following his appointment as the new DECC CSA, John Loughhead (currently ERP Member from UKERC) would take up the position of public-side ERP Co-chair from 22 October 2014. Members congratulated John and went on to thank Craig Lucas (DECC) for his role as acting public-side Co-chair since the departure of David MacKay.

The minutes from the July 2014 meeting were approved by Members (with one minor change to the apologies section).

The key objectives of the plenary meeting were outlined as follows: (i) Provide an introduction to ERP's recent project on Smart Energy and discuss / approve recommendations; (ii) Ascertain the key findings from the Buildings report; (iii) Increase awareness of the technology challenges of Oil & Gas and the Wood Review - its work and findings (iv) understand some of the trade-offs between factors in the transport sector and its interactions with the energy sector and (v) approve the Enhanced Oil Recovery and Energy in Transport Project Initiation Documents (PIDs).

2. Smart Energy

Chris Bennett introduced the 'Smart Energy' project work, noting it was a huge topic that was constantly evolving with new technologies being introduced. He noted that this was exactly the right time to be assessing the field of Smart Energy, making the ERP project timely.

It was explained that ERP's assessments were threefold:

1. To review current activity
2. To assess any gaps in R&D
3. To make recommendations and highlight areas for future consideration.

Richard Heap provided details of the project work so far. Richard agreed that Smart Energy was a large topic and a 'crowded space', with enormous amounts of work going on. This emphasised one of the report's recommendations, that a map is needed to collate this into one place, so as to avoid missing opportunities and assist in joining up solutions.

Members were made aware of the complex, interrelated and interdependent interests within the space, with various groups all with different incentives and perspectives. For example DNOs would like to reduce the stress on the network, whereas suppliers focus on smoothing supply; both call on DSM technologies, but for different reasons.

Richard highlighted that much of the current focus is on the electricity system, where monitoring, communication and control systems are being deployed, particularly on the distribution networks. One of the drivers for this is the deployment of renewables on the distribution networks, which are already impacting on them. Future deployment of heat pumps and EVs will be an additional pressure.

The biggest challenge from the electrification of heat and transport will be addressing the daily and seasonal variations in supply and demand. This current focus is potentially resulting in missed opportunities relating to other energy vectors for example:

- Gas to provide peak heat using hybrid gas/electric boilers with smart systems that can switch between a heat pump to CHP or gas boiler.
- Hydrogen for grid services, but also for transport and feeding into the gas grid.
- Heat networks and waste heat to reduce congestion and stress on the electricity system.

The commercial challenges of moving demonstration projects to business as usual were noted, including:

- The variety of users for each option.
- The convoluted market.
- SMEs not having the resources to fund wider deployment
- Benefits don't necessarily always accrue to developer.
- Economic and environmental benefits are hard to define (also noted in ERP's Energy Storage report). Nevertheless, developing these should be a priority.

The presentation went on to highlight the importance of understanding the smart energy landscape and all the activity, its stakeholders and all parties contributing to it. The report recommends a mapping exercise, which would:

- Be useful for RDD&D community to highlight risks, gaps, overlaps and opportunities.
- Be valuable to the development of the Energy System Catapult (recommending that the Catapult be tasked with developing and maintaining the map).
- Include all energy vectors: no small undertaking but necessary to avoid gaps.
- Cover commercial aspects, including policy and regulatory factors and how they work together (or against each other).

The recommendations of the paper were then revisited, emphasising looking at all energy vectors, better coordination of activities (aided by the proposed map) and a better understanding of commercial models and market pull for technologies.

1. A broader 'Smart Energy' approach is needed with all energy vectors able to contribute to the delivery of an affordable, secure, low-carbon energy system.
2. Better coordination of current activities and research is needed, facilitated by a mapping exercise to identify what R&D is being done across the TRLs.
3. Clear commercial models need to be developed as a priority, so that new innovations can capture the appropriate value to enable them to be deployed.

Member discussion

Craig Lucas opened discussion, informing Members that DECC is looking at Smart Grids as part of a crosscutting policy, with focus on consumers. He noted two areas, recommending these be added to ERP's work:

1. How does policy on Smart Energy engage with and benefit consumers? And
2. How are infrastructure costs reduced to benefit consumers?

ERP Co-chair Keith MacLean agreed and felt developing market models was a priority. He raised the question: *do we think there are markets that will give profit opportunities, or are there no such opportunities, but other benefits justify regulating*

to make uptake happen? Referring to Figure 2.1, page 20, in the report, each individual business case doesn't stand up on its own but all together they might - but only *might*. The case remains that they may still need to be subsidised.

Richard agreed, noting that putting the control and communications infrastructure in place would help facilitate other options and technologies. In other words, smart meters are important for paving the way for future technologies, even though their business case is currently unclear. It is therefore right to mandate them e.g. on two levels (a core infrastructure level and for building upon).

Members discussed market versus regulation further noting:

- It is a moving feast suggesting need for regulation, but might be better to make the current complex market easier, including for new entrants. Then see if regulation is required, or if the market can take over.
- But situation is worse, as investment today will not make immediate savings for consumers. Risks over-investment, especially for SMEs. It was suggested that there won't be any clever business models that can deal with this.
- Smart Grids are driven by renewables, but real benefits are likely to be in the future, so government will need to decide whether to subsidise. Cost of conventional backup for intermittent generation could be huge. Difficulty is explaining the counterfactual - costs will go up due to Smart Grids, but less than they would have otherwise.
- Standards were noted as important, noting that there were probably a few key ones that need agreement: parallels were drawn to the communications industry and the development of the 'Internet of Things'.
- Motivations of incumbents may not lead to the Smart platform that is needed, but other existing companies might be willing to pay today to solve problems, e.g. connecting up stuff to networks.
- Smart Grids presents opportunities for new entrants to deliver exciting innovations, which incumbents won't deliver. But needs a market that will support these sub-critical value products.
- Financial innovation; capex turning into opex; huge amount for learning from financial sector.
- Demand-side of Smart Grids important - UK too focussed on generation.
- Need to ensure the consumer and technological journeys are aligned, including costs and benefits, to avoid criticism from the press.
- Capital cost of technologies to the consumer should be noted. Some solutions getting to market in commercial settings, but harder in domestic. Others agreed, illustrated by cost to retrofit a ground-source heat-pump (~£15k pump & ~£10k under-floor heating). Multiplied UK-wide becomes expensive.
- Some aspects are very long-term e.g. retrofit, should focus on new-build and regulations; but there are lots of costs now on the supply-side, so need to look for demand-side savings as well.

Comments specifically focussed on the draft report included:

- Members agreed need to consider electricity *and* gas, noting National Grid and DECC already do.
- Queried raised as to who regulates heat and hydrogen, to which it was noted that this was a long standing discussion, particularly on district heating. Ofgem does already administer the Renewable Heat Incentive.
- ERP's report should include bolder recommendation that Ofgem's role should be expanded to include heat and other energy vectors.

- LCNF projects have to come from a DNO / Gas Distribution Network / TO perspective: need to explore how to bring forward multi-vector solutions.
- It was noted that the Energy Systems Catapult starts operations in April 2015; whilst support was given to the recommendation that they lead and maintain the mapping exercise, it would not be available until later in 2015, unless something can be put in place earlier: It was suggested that DECC could start the process in the interim.
- There is much more activity in the energy sector at scale than we've seen before. Therefore questions about how much change will be at large scale vs. distributed should be considered whilst reviewing how these develop.
- UK is not leading, lots to learn from abroad e.g. rollout in California, USA has had both good and bad experiences to learn from.
- Members felt that enthusiasm for multi-vector schemes exist, but can be hindered by a lack of central planning and coordination. Examples were noted, such as at a city scale, where business cases can be demonstrated and were supported by local businesses, but a lack of central support and planning means that coordinating these complex projects does not happen. DECC highlighted that they were aware of this issue and have a team that can help advise on this.

The European Energy Research Alliance (EERA) project on energy system integration (relating to smart grids) was referred to, which highlighted two issues:

1. Tractability of the problem; need to focus on operational issues, not RDD&D;
2. There is no UK research on the wider question of system integration (just on electricity); models are concerned about what a Smart Grid will look like, not how to achieve it.

It was agreed that an additional recommendation should be added about broadening Ofgem's role in regulating other energy vectors.

3. Buildings

John Miles (Project Chair) introduced the item on Buildings and informed Members that the draft report had been redrafted following Member discussion in April 2014 and was now due to be published in November 2014. John explained that the purpose of the short update was to facilitate discussion around how ERP Members can engage in the proposed recommendations and recent research initiatives.

Simon Cran-McGreehin went on to provide a re-cap of the project: it had focussed on the heating of buildings, which accounts for a quarter of total UK emissions. Heating performance is currently thermally worse than the potential; this is often called the "performance gap", but in fact can be better thought of as three "gaps":

- The uptake gap is the limited ambition for performance. For new buildings this is due to the current level of regulation and the lack of a clear future trajectory. For existing buildings it is largely due to costs and inconvenience.
- The predication gap is unrealistic expectations of performance. It results from limited knowledge about performance.
- The performance gap is the failure to meet realistic expectations. It is often due to poor workmanship, and evidence suggests that problems are widespread.

For addressing all of these problems, knowledge is the key issue: there could be improved gathering of, and access to, data for research purposes, both via detailed studies of buildings, and ‘crowdsourcing’ data from large number of buildings. But better knowledge will only be applied if driven by regulations; and regulations will only be effective if they are enforced effectively.

Recommendations from the report were noted (focussing on knowledge gathering and knowledge sharing), along with new initiatives with which ERP members could engage.

- Performance tests should be developed that are quicker and less disruptive.
- Enforcement of regulations should include random spot-checks.
- Monitoring of policy outcomes should be included as part of delivery plans.
- There should be a longer-term approach to studying energy use in buildings. (We note the Energy Lab proposed by UCL.)
- Within the sector, there should be greater knowledge sharing. (We note the new academic / industrial Building Performance Network (BPN).)
- Within government, policy on buildings’ energy performance is affected by DECC, DCLG and BIS, and better coordination would be beneficial. (We note recent work between these departments about improving the quality of onsite works.)
- Between the sector and government, there should be better communication of knowledge to inform policy development and to help the sector. (We note the proposed Existing Buildings Hub that is being scoped by the National Energy Foundation (NEF) on behalf of DECC.)

Members were then asked for their comments and to approve the recommendations. Main points noted from discussions were:

- UCL’s work is very interesting, e.g. they have shown the impact upon gas demand of policy requiring condensing boilers.
- Members felt that the report reflected the difficulties in making improvements to UK buildings, and that it highlighted some important areas that will hopefully start to lead to improvements.

John Miles stated that the situation was complex, and that for many people the benefits are currently not great enough to justify the disruption. He finished by stating that buildings’ thermal performance very much needs regulation and enforcement, despite being politically unpopular.

Members agreed and approved the report for publication subject to steering group guidance and co-chair sign-off.

4. Oil & gas: The technology challenges for Oil & Gas; and ERP’s Enhanced Oil Recovery (EOR) PID

Oonagh Werngren from Oil and Gas UK and representative of the UKCS Technology Leadership Board, presented an overview of the history of the UK offshore oil and gas industry, the current challenges, including:

- The UK Continental Shelf (UKCS) is not on a sustainable trajectory and will stop being productive if the situation continues as is, with impacts for UK economy (tax implications and job losses);
- The industry has failed to deliver in recent years due to low levels of success in exploration and discovery, as well as in production and efficiency

(production has halved in last 10yrs and efficiency of the offshore equipment and workforce has fallen from 80% to 60%).

- Fossil fuels should not be viewed as 'big, bad oil' (for example) but as important for underpinning life in the UK;
- Cost comparisons relating to unit operating costs were provided e.g. UK costs are higher than Gulf of Mexico, Norway etc., and are continuing to rise;
- In regards to remaining resources, up to c.24bn barrels are known to be in play around the UK; almost half of those are in the UK Continental Shelf;
- There is only a relatively small number of oil fields in production;
- Investment in exploration wells and the number of wells has fallen and their geological success is lower than it used to be. Even fewer are economically successful. This low chance of success deters investment in drilling.

Oonagh Werngren also presented the recommendations of the Wood Review that aimed to '*Examine the key factors affecting UKCS performance and develop recommendations to enhance economic recovery of oil and gas resources*'. Four recommendations from The Wood Review were noted:

- Maximising Economic Recovery (MER UK)
- New arms-length regulatory body
- Additional regulatory powers to implement MER UK
- Six Sector Strategies (Exploration, Asset Stewardship, Regional Development, Infrastructure, Technology, Decommissioning)

Projects associated with The Wood Review were highlighted and included pilot projects around:

- Exploration (the Exploration Task Force)
- Rejuvenation
- IOR/EOR Technologies and
- Production Efficiency

The importance of sharing lessons to avoid companies making the same mistakes was noted, plus the importance of a technology transformation which will require:

- Leadership (Technology Leadership Board)
- Focussed Delivery (Technology Themes)
- Support Organisations (OGIC, ITF, NERC, RCUK)
- Funding (Various parties including Oil & Gas UK)

The presentation subsequently moved on to provide an overview of the Technology Leadership Board, which aims to:

- Provide a single industry voice to give clarity, direction and priorities for strategic technologies;
- Lead the communication of the strategy to the funding bodies and research / technology development communities;
- Recommend the level, and prioritise the focus areas, for publically-funded oil and gas R&D;
- Broker the requirements and opportunities to undertake field trials;
- Advise on, and broker, funding sources for technology development;
- Interface with Government to develop interventions to progress strategic technologies;
- Develop, and track progress of, technology themes.

Angus Gillespie (Shell) provided an industry response to the presentation. He began by stating that the oil and gas industry is a global industry with lots of players and therefore competitiveness is key. He added that the work of the Wood Review was

very constructive and had been broadly welcomed by the industry that is engaging with the recommendations. He noted that a core recommendation is for a new body, and for HMT to co-create and implement the strategy, to develop opportunities and remove barriers. In relation to the question of new powers, there were two aspects. Firstly, Shell would like a review of the current powers (e.g. at DECC) to avoid duplication and confusion. But, secondly, there is a concern that the report overstates the economic and legal barriers; taking too much action in those areas would result in too much power being given to the Secretary of State, which could deter investment. In parallel with the Wood Review, it was felt that a review of the fiscal regime could complement and aid its recommendations (here it was noted that effective tax rates are 60-80%), and that there should be a spending implementation of the Wood Review and the Fiscal Regime Review.

Comments and questions from members were:

- Are the challenges for oil and gas unique to the UK Continental Shelf, or are these common elsewhere too?
 - In response it was stated that geology, high pressures and temperatures are common to other sites in world, so lessons can be applied. In relation to basin dynamics, in terms of production and cost, last year there were very few new finds in the world, which was worrying for the industry; but in the past few weeks, there have been some finds e.g. in Senegal. The key point was that given the costs, companies are looking for big finds and are not interested in looking for smaller finds. It was also mentioned that Statoil found a new big discovery site off of Norway in the last few years, and have now re-entered the UK Continental Shelf in the hope of using their new knowledge to find more in UKCS.
- Are UKCS costs high due to geological / technical challenges, or supply chain costs?
 - In response it was noted that costs are high mainly due to inefficiencies that have crept into supply chains, so the industry is working to reduce costs (which needs to be done, otherwise exploration and production in the basin will be uneconomical). Members were reminded that costs presented were in unit costs and these increase as production falls due to the sharing of fixed costs on top of marginal costs.

The discussion moved onto shale gas. One view was that Shale will have a small role in the near-term and that it was important to avoid promoting it at the expense of the UKCS. The important role of oil and gas out to 2030 and beyond (where the UK will still likely have a 70% reliance) was reiterated, and the importance of investing to ensure that the sector is productive.

CO₂-Enhanced Oil Recovery PID

Angus Gillespie provided an overview of the newly proposed ERP project on CO₂-Enhanced Oil Recovery (EOR).

Angus expressed to Members that EOR (the process which injects liquids [water, natural gas, CO₂ and polymers] to force crude oil out of mature wells) is key to the Wood Review. It was explained that West Texas, USA has used CO₂ from geological deposits since the 1980s, but there are now more opportunities to source CO₂, meaning we can use it in the UK too. However, the current critical issue with CO₂-EOR is cost, primarily the cost of CO₂ supplied to the field. It was explained that fiscal agreements are all field-specific, so there is however flexibility.

Angus noted that he had spoken with contacts at DECC, plus other ERP members from Drax, GE, National Grid and BP who had all shown support for the project. Other ERP Members were encouraged to volunteer their interest too, in particular:

- Infrastructure providers
- Others who want an insight into the industry.

Angus went on to note that lots of work has been done in the area so far but ERP's value would be to draw it together and provide an overview, not focussing on the details of geology but carrying out a fundamental economic appraisal of the process.

The scope of the work was explained in more detail, which included:

- What are the genuine opportunities for CO₂, the costs, useful assets and
- What are the timings of when CO₂ will be supplied in relation to demand?

The project is aiming to present at the ERP Plenary in July 2015. This would synchronise with parts of the Wood Review follow up.

Members approved the project idea and briefly responded with the following points noted:

- The key question for CCS is when it will become economically viable - a key risk is geological storage. There has been a loss of synergies between DECC's work on CCS and the offshore industry's work on EOR.

In response it was stated that the UK could use CO₂-EOR to reduce the costs of CCS: the report would aim to explain how.

- The ERP project could produce a list of fields and platforms that are most amenable to CO₂-EOR. At this point it was mentioned that Atkins did an assessment regarding whether a platform could cope with the impacts of upgrades to another field / platform. This work was noted as relevant and Atkins volunteered to be involved with the Steering Group.
- There was agreement that ERP should not only do a detailed review of existing work, but also aim to present the technical and commercial aspects.

In response Angus said that the report would focus on the fundamentals and would therefore look at field and platform details. Members questioned accessibility of data but were reassured that data would be made accessible to ensure the report was useful, without breaching commercial confidentialities.

Reference was made to Canada where some CCS projects have failed because no-one would buy the CO₂. It was therefore questioned why there is an interest in CO₂ for EOR. In response, it was explained that different products put into different wells at different times will result in various EOR benefits; e.g. BP using a reduced salinity in Claire Field. It was also noted that water gives far less recovery via physical displacement than CO₂ does via chemical means (it dissolves into oil, reducing its viscosity and hence allows extraction from tighter sandstones).

To conclude, it was highlighted that CO₂-EOR already has some emerging business models. The point was raised however that it is important to remember that economic analysis is just one part of the jigsaw – there are many environmental groups that are not sold on CCS (especially when coupled with EOR) and this should be reflected in the report.

Oonagh and Angus were thanked for their involvement in the meeting item.

5. Transport: The ERP Leaders' Forum; and Energy in Transport PID

ERP Leader's Forum

Keith MacLean informed Members that the first ERP Leaders' Forum (on the topic of Energy in Transport) had successfully taken place in September 2014. Richard Parry-Jones (Chairman of Network Rail) and Baroness Kramer (Minister at the Department for Transport) had given interesting insights into some of the issues and the need for more interaction between the transport and power sectors.

Andy Boston, Head of Analysis Team, explained that discussion at the Leaders' Forum had showed just how many issues there are in transport that the energy sector is not aware of, and that the transport sector is not aware of all of the upstream impacts of changing energy vectors. The event showed that the two sectors must talk more regularly and at various levels of seniority.

Energy In Transport PID

Andy Boston presented the proposal for an ERP project on Energy in Transport. The work is being undertaken with the Government Office of Science (GO-Science), and will be presented to both the ERP and No. 10's Council for Science and Technology (CST). Andy noted that transport has not been studied by the ERP yet (apart from in the ERP's Hydrogen report). He explained that, whilst the main interest is in energy and decarbonisation, this project will need to consider these alongside wider issues.

The project will be divided into two parts.

- Phase one will report to the ERP in April. It will be undertaken by a secondee (hired by the ERP, and funded by GO-Science) and will explore the options for powering transport. This will provide an overview of how energy and emissions are affected by a) the challenges facing transport (e.g. reducing congestion), and b) the interactions with the energy sector (e.g. the competition for energy sources across and within the sectors).
- Phase two will report to the ERP in July 2015. It will be undertaken by the ERP Analysis Team) will focus on the most promising options from the first phase, and provide a more quantitative assessment of these options.

Members were informed that Neville Jackson from Ricardo had kindly agreed to Chair the project Steering Group. Neville provided noted that:

- There are lots of studies about transport;
- DfT's bio-energy task force has started work, and the topic is challenging;
- The Automotive Council (chaired by Richard Parry-Jones) has produced roadmaps, but not one for energy. Neville has been tasked with producing this roadmap, meaning ERP's project is timely and can help inform the work;
- There is a need to consider long distance transport;
- Electrification will not solve transport decarbonisation in the medium term.

Members noted that many transport decisions are taken at international level and queried how the ERP's report would address this. It was agreed that the project will consider international policy, noting that transport regulations should be studied at an EU level (at a minimum).

A member commented that aspects such as the unintended consequences of previous policy shifts (e.g. diesel was encouraged in order to reduce CO₂ emissions, but was now causing air quality problems) should be included in the scope. It was

agreed that some issues have been considered in isolation, and there is now a need to consider interactions. Neville Jackson noted that this was a transitory problem that arose because supply chain members didn't properly communicate when developing diesel solutions.

DfT noted that they agreed with ERP's project scope and the need for a holistic approach. They also noted links with the DfT Special Advisory Committee (SAC) who had put forward that they are happy to work closely with ERP. It was noted that at a recent SAC meeting, a key issue raised was that the baseline of transport could look very different in future. The energy sector does not currently model details of this and socio-economic drivers for transport - ERP should try to cover this. In response, it was questioned whether the whole system approach will look at actions needed in the energy sector and the need to explain to consumers that they are bearing the costs of decarbonisation of the electricity network as a precursor to decarbonisation in other sectors including transport.

It was raised it would be useful for ERP's project to look at drivers for transport in relation to energy, e.g. behaviour change (and comparing this with policies in energy). A member said that transport had a successful regulatory approach of setting a trajectory for CO₂ levels, as opposed to using complex, multi-vector interventions as in energy.

In summary, it was noted that, given the above comments, Members were happy with the proposal for an ERP project on energy in transport,

AOB items included:

- Information for Members that the New ERP website is currently under development. In the meantime, please email Helen Thomas of the Analysis Team if copies of reports etc. are required.
- An announcement that Keith MacLean will be speaking at various events on behalf of ERP including at the upcoming Gas to Power Conference in November.
- With John Loughhead in place at DECC as the new CSA, the ERP Co-chairs will meet with HMT and No. 10 (at their request). The meetings were mainly to raise ERP's profile in those departments.
- Next Plenary will be on **Wednesday 14 January 2015, 3-8:30pm** (to include an evening event).

The meeting was brought to a close and Members were invited to stay for lunch to network.