

The Energy Research Partnership: Energy Horizon Scanning Project Briefing - Clarification of Outputs

Summary

- There is a need to clarify the outputs sought from the ERP Horizon Scanning Project with the ERP Members in order to ensure that the exercise provides value to the UK energy sector.
- A number of measures have been put in place to mitigate and/or address the potential for UK energy group think as per concerns of past UK energy futures exercises.
- Details of the work-up to the two workshops scheduled for 30th November and 7th December are articulated as well as the follow up scenarios, energy and policy modelling and financial analysis exercises.

1. Background

Many of the present suite of energy policies and research are based on a set of mega trends and uncertainties established in futures thinking developed at the turn of the millennia. Since that time there have been a number of disruptive changes which have had an impact on the energy sector. There have also been sufficient energy futures produced to date so as to develop an understanding of the strengths and weaknesses of past UK energy futures work¹. There is a need to integrate the most recent disruptive developments whilst accounting for the issues that have impacted previously developed energy futures - into the present work of UK energy sector. This forms the basis of the Energy Research Partnerships (ERP) Energy Horizon Scanning Project.

This briefing note seeks to address the following issues: (1) allow ERP members to understand the intentions of the ERP Horizon Scanning Project; (2) reassure the members that the work will avoid a UK Energy Group Think exercise and therefore add value to the UK energy sector's thinking about energy futures; and (3) confirm with members the types of outputs that they would like to see from the initial stages of the project.

2. The Energy Research Partnership's Horizon Scanning Project - Design Concept

The first phase of the Horizon Scanning project will inform the work of scenarios and energy models going forward both within the project and beyond. The ERP work is timely as it will be synchronised with the release of the Committee on Climate Change's 5th Carbon Budget (2028 - 2032) and the development of the Carbon Plan in government to meet the 5th Carbon Budget in Q1 and Q2, 2016.

The initial phase of this horizon scanning work will involve two exclusive workshops involving senior level policy makers, academics, thought leaders and industry representatives identifying what the key uncertainties are in the development of energy issues both internationally and in the UK. The timeframes that the exercise is focused on are 2030 to 2050 to 2100.

The purpose of the workshops will be to '**identify what the main uncertainties that will impact international and UK energy sector development which might need to be considered over a number of timeframes.'**

The intention will be to:

¹ <http://www.ukerc.ac.uk/publications/ukerc-energy-systems-theme-reflecting-on-scenarios.html>

- Harvest a number of points of view from different sectors;
- What are their underlying rationale for looking at those issues;
- Organise the information; and
- Then relay it to the energy community with a particular focus to the energy policy audience.

The outputs will be:

- A cataloguing of the underlying assumptions from the horizon scan / meta study of uncertainties identifying: (a) why these issues were selected; and (b) the impacts on the energy system and environment according to the following tiers: (1) 1st Tier: Big 7; (2) 2nd Tier: Next 7; and (3) 3rd Tier: Outliers / Wild cards ‘that is ridiculous’
- A list of technology game changers - in traded and non-traded emissions sectors
- Path dependencies, timing of trends and when those trends need to be accounted for; and
- *So what?* The implications as to what the UK should do regarding these issues.

3. Post-Workshop Work-Up

The project will deliver the following as outputs from the workshop(s):

- A living document will be developed on an ongoing basis on a shared site;
- Changes Slide Decks and Summary paper for each event;
- Scenarios will be generated from the key issues picked up in the horizon scanning exercise;
- Energy, Policy and Financial Modelling may be undertaken based on the scenarios produced. These will be undertaken by the Grantham Institute, UKERC and the Carbon Tracker Initiative, respectively; and
- Overarching Final Report in the format of the ERP Energy Innovation Milestones Report with accompanying slide deck targeted at policy makers and industry.

4. Addressing the concerns of past Energy Futures Work

The ERP Horizon Scanning Project will seek to address and/or mitigate the concerns of past UK energy futures work² by undertaking the processes outlined in Table A1 in Annex 1 - in the project execution.

5. Additional inputs requested by the Energy Research Partnership’s Members

There is the need for the following input from the Energy Research Partnership Members:

- Clarification of the outputs that the members would consider useful for inputs into other energy futures work; and
- Offer to assist in the dissemination of the horizon scanning survey which will seek to identify the variables and drivers that need to be considered in the workshops.

Any questions or issues regarding the ERP Horizon Scanning project should be directed at Mark Workman on mark.workman@ukerp.org or 07788 110802

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² <http://www.ukerc.ac.uk/publications/ukerc-energy-systems-theme-reflecting-on-scenarios.html>

Table A1: Avoiding a UK Energy Sector Group Think - addressing the key concerns of previous UK Energy Futures work.

Issues with previous UK Energy Futures Work ³	How these issues will be addressed	References and Notes
Diversity of methods, tools, approaches (e.g. exploratory and normative) and constituencies consulted is important	<p>This workshop combines horizon scanning, historical pattern analysis, the Three Horizons Framework, Causal Layered Analysis, and the Verge Futures Framework. The latter two are particularly useful in exploring social, cultural, and political implications of change. These approaches and the workshop output they create can then feed into diverse scenario, vision, and wind-tunnelling methods. Rigorous futures research and foresight should include an integrated methodological approach, with specific methods chosen to complement the issue, the types of data, and the people participating – and should be underpinned by robust theoretical and conceptual frameworks for futures thinking.</p> <p>In addition, outside experts and participants have been invited with the specific intent of expanding points of view.</p>	http://www.emeraldinsight.com/doi/abs/10.1108/14636680610681996 http://www.jfs.tku.edu.tw/13-1/A01.pdf http://www.emeraldinsight.com/doi/abs/10.1108/14636680810855991 http://www.slideshare.net/richardl91/apf-2013-104
Actual changes developed outside the ranges the scenarios depicted – scenarios insufficiently audacious.	The Three Horizons, CLA, and Verge tools have all been chosen for their capacity to challenge assumptions and entrenched points of view and push beyond the margins.	http://www.jfs.tku.edu.tw/wp-content/uploads/2014/01/134-AE03.pdf
The need to accommodate broad uncertainty. Developments considered 'too unlikely' did materialise. Expert judgements of plausibility and implausibility rest on assumptions which should be reviewed and critiqued.	The facilitator has actually both written and presented about the dangers of invoking plausibility – especially when based on unexamined assumptions and worldviews – as a criterion for evaluating futures output. The workshop process will evaluate emerging changes based on speed of impact, scope of impact, and potential levels of disruption, deliberately looking for 'most surprising' changes and outcomes.	https://www.academia.edu/16743037/Crazy_Futures_Why_Plausibility_is_Maladaptive https://www.academia.edu/10651732/Rx_for_Leadership_Scotomas_blindspots_aka_Hunting_Black_Swans http://www.slideshare.net/wendyinfutures/ict-vilnius
Scenarios mirrored biggest concerns of the time, but the most important and unexpected forces driving change were not always captured - especially true of:	Starting the workshop by reviewing broad historical change patterns will establish discussion goals as wide-ranging, and remind participants of the origins of surprising and disruptive changes. Horizon Three will review current emerging changes	For example emerging issues across all STEEP sectors, see, for example, the following Shaping Tomorrow summaries: - general changes http://www.shapingtomorrow.com/home/trendalerts

³ <http://www.ukerc.ac.uk/publications/ukerc-energy-systems-theme-reflecting-on-scenarios.html>

	<ul style="list-style-type: none"> • Geo-political e.g. Oil Price Shocks; Fukushima; • Institutional e.g. Privatisation / Liberalisation; • Economic restructuring e.g. deindustrialisation • Political e.g. Energiewende and LC targets; • Governance elements e.g. product standards 	<p>across all STEEP sectors (social, technological, environmental, economic, and political):</p> <p>participants will be prompted to share emerging and novel changes they think most disruptive; and</p> <p>pre-workshop emerging issues scanning research (including survey results) will add to participants' suggestions to further expand the discussion (see example trends / emerging issues / challenges scanning data at Shaping Tomorrow, links listed to the right).</p>	<p>- global challenges http://www.shapetomorrow.com/challenges/list/1</p> <p>- country specific http://www.shapetomorrow.com/challenges/list/6</p>
Need to include a wider range of uncertainties and scenario variables, especially 'soft systems' like society, culture, politics, and governance.	A wide range of emerging changes will emerge from the scanning research, the pre-workshop survey, and workshop discussions. These will be further broadened by considering their impacts on the wide variety of systems identified as comprising the 'current state of play' in the First Horizon.		
Actual pathways more challenging than 'least-cost' models and market allocation suggest.	The workshop begins by reviewing turbulent patterns of past change. It then inventories the interconnecting systems comprising the First Horizon 'current state of play.' Both activities will highlight the complexity of change – both in the number of potential interconnections and in the potentials for backlash, hype, and sudden accelerations of change due to positive feedback.		
Quantification is too precise - false impression of accuracy and certainty.	'Spurious mathematicisation' is another way of expressing this – after all, all mathematical models and quantitative forecasts emerge from 'soft' assumptions regarding the variables under study. Rigorous thinking – whether quantitative or qualitative – begins with a wide-ranging examination of assumptions about the past and present states of play, and how emerging changes could disrupt not only operating conditions, but also our assumptions about those conditions. This is exactly what the proposed workshop design will do.		
Failure should be 'allowed'.	An infinite array of possible futures could emerge from the collision of current conditions, trends and drivers, and the		

	myriad of emerging changes. Consequently, there is no 'right answer' to exploring futures – the greater the breadth of exploration, the more likely useful insights will emerge.
Think the unthinkable.	See previous comments about moving beyond plausibility to creativity, rigour, and insight as criteria to evaluate workshop processes and output.
Considering Trigger Events.	Starting with a review of historical events reminds participants of the patterns of triggering events and emergent system properties that created watershed historical changes. Continuing the discussion by focussing on how waves of change overlap and intersect focusses attention on leverage points and potential trigger events.
