International UCL-CIRED workshop
26-27 March 2014, London

Innovative techniques for Quantitative SCenarios in ENergy and Environmental research (IQ SCENE)

Workshop programme

Day 1, Wednesday, March 26
Venue: Court Room, Senate House, Malet Street, WC1E 7HU London

9:30 – 10:00	Registration
10:00-10:05	Welcome by Neil Strachan (UCL Energy Institute) and Franck Lecocq (CIRED)
10:05-10:15	Introduction to the workshop by Evelina Trutnevyte (UCL Energy Institute) and Celine Guivarch (CIRED)
10:15 – 11:15	Keynote speech by Robert Lempert (RAND)
11:15 – 11:45	Coffee break
11:45– 13:00	Panel discussion "Challenges in developing and using quantitative scenarios in energy and environmental research and decision making" • Thomas Counsell (UK Department of Energy and Climate Change) • Martin Haigh (Shell) • Franck Lecocq (CIRED) • Bert de Vries (Utrecht University) • Panel discussion chair: Neil Strachan (UCL)
13:00 – 14:00	Lunch and walk to UCL Energy Institute

Venue: UCL Energy Institute, Central House, 14 Upper Woburn Place, WC1H 0NN London

14:00 – 16:00 **Parallel session "Uncertainty analysis"**

(4th floor, 4.05-4.06 room)

Chair: *Rob Lempert*

Presentations:

- *Joe DeCarolis* "Improving model-based scenario analysis with stochastic optimization and modelling to generate alternatives"
  (Discussant: Steve Pye)

- *Gideon Gal* "Learning from uncertainty in lake ecosystem model scenarios"
  (Discussant: Joe DeCarolis)

- *Julie Rozenberg* "The cost of climate change mitigation: uncertainties and metrics matter"
  (Discussant: Gideon Gal)

- *Steve Pye* "A systematic approach for analysing the robustness of a UK low carbon energy future using uncertainty analysis"
  (Discussant: Julie Rozenberg)

Parallel session "Scenario discovery and scenario choice"

(4th floor, 4.08 room)

Chair: *Celine Guivarch*

Presentations:

- *Jan Kwakkel* "Scenario discovery in heterogeneously typed data"
  (Discussant: Stuart Galloway)

- *Evelina Trutnevyte* "Using retrospective UK power system modelling to inform the scenario choice for the future"
  (Discussant: Jan Kwakkel)

- *Michael D. Gerst* "Combining threshold- and cluster-based scenario discovery methods to improve scenario interpretation and usability"
  (Discussant: Evelina Trutnevyte)

- *Stuart Galloway* "A machine learning approach to determining viable energy future scenarios"
  (Discussant: Michael D. Gerst)

16:00 – 16:30 Coffee break (4th floor, 4.04 room)

16:30 – 18:00 **Parallel session "Exploring storylines"**

(4th floor, 4.05-4.06 room)

Chair: *Evelina Trutnevyte*

Presentations:

- *Vanessa Schweizer* "Toward mapping topographies of qualitative scenarios: an investigation of a comprehensive scenario set"
  (Discussant: Celine Guivarch)

- *Henrik Carlsen* "Combining quantitative techniques for selecting qualitative elements of socio-economic scenarios adapted to a specific problem"
  (Discussant: Vanessa Schweizer)

- *Celine Guivarch* "Enhancing the policy relevance of scenarios through a dynamic analytical approach"
  (Discussant: Henrik Carlsen)

Parallel session "Robust decision making"

(4th floor, 4.08 room)

Chair: *Julie Rozenberg*

Presentations:

- *Laurent Drouet* "Robust selection of climate policies under current knowledge of uncertainties"
  (Discussant: Steven Popper)

- *Joseph Kasprzyk* "Framing energy and environmental planning problems using many objective robust decision making"
  (Discussant: Laurent Drouet)

- *Steven Popper* "Strategic energy analysis under deep uncertainty"
  (Discussant: Joseph Kasprzyk)

18:00 – 19:00 AOB and drinks at the 1st floor kitchen

19:00 – 21:30 Dinner at Number Twelve Restaurant, 12 Upper Woburn Place, WC1H 0HX London

Day 2, Thursday, March 27
Venue: UCL Energy Institute, Central House, 14 Upper Woburn Place, WC1H 0NN London

9:00 – 10:30 **Parallel session "Developing energy scenarios"**

(1st floor, Jevons room)

Chair: *Neil Strachan*

Presentations:

- *Stefan Pfenninger* "Contrasting different electricity futures by comparing a large number of optimized scenarios" (Discussant: Scott Milne)

- *Abhishek Shivakumar* "Modelling facility energy systems for enhanced climate resilience and security of supply" (Discussant: Stefan Pfenninger)

- *Scott Milne* "Exploring low carbon scenarios with the ETI's Energy Systems Modelling Environment (ESME)" (Discussant: Abhishek Shivakumar)

Parallel session "Linking storylines and models"

(4th floor, 4.05-4.06 room)

Chair: *Bert de Vries*

Presentations:

- *Sigrid Prehofer* "Constructing hybrid scenarios to enhance socio-technical system understanding and to improve coupling the story with quantitative modelling" (Discussant: Alexey Voinov)

- *John Barton* "Synthesis of qualitative narrative and quantitative models into consistent descriptions of low carbon energy transitions" (Discussant: Sigrid Prehofer)

- *Alexey Voinov* "Exploring low-carbon transitions by means of model integration" (Discussant: John Barton)

10:30 – 11:00 Coffee break (4th floor, 4.04 room)

11:00 – 12:00 Interactive sessions

	1. Topic 1 (4th floor, 4.05 room)
	2. Topic 2 (4th floor, 4.06 room)
	3. Topic 3 (4th floor, 4.08 room)
12:00 – 12:15	Short break
12:15 – 13:00	Summary of the interactive sessions, general feedback session and next steps (1st floor, Jevons room)
13:00	Closing
13:00 – 14:00	Lunch (1st floor kitchen)

Keynote speech abstract

Can Interacting with Computers Help People Choose Better Scenarios?

Rob Lempert, RAND

Scenarios provide a ubiquitous and advantageous tool for energy, climate, and environmental analysis and decision-making. At their best, scenarios can effectively represent deep uncertainty; integrate over multiple domains; and enable parties with different expectation and values to expand the range of futures they consider, as well as to see the world from different points of view, and to grapple seriously with the potential implications of surprising or inconvenient futures. Traditionally, people have chosen scenarios using largely qualitative methods. While scenario practitioners have long assembled data to help inform the judgment and creativity of those developing scenarios and have used exemplar runs of computer simulation models to flesh out scenario logics, the fundamental steps of scenario choice and design have long rested on unaided human judgment. In recent years, however, new technology has enabled quantitative tools, which when used in appropriate decision support processes, can complement human judgment in the choice of scenarios. These new methods offer the promise of making scenarios even more effective in addressing complicated, difficult, and often contentious policy debates. This talk will survey this emerging field of computer-assisted scenario design and its promise to improve and expand scenarios' role in managing our energy, climate, and environmental challenges.