

Transforming Birmingham – A city system approach 2nd Workshop

*Susan Lee, Andrew Quinn, Jonathan Radcliffe,
John Bryson (University of Birmingham)*

25 January 2018
Energy System Catapult, Birmingham



Overview



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- Housekeeping from ESC
- Plan for the Day - Agenda
- Introductions – team, speakers, others
- Presentations
- 2 discussion sessions after lunch
- Proposal



Agenda



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- 11.00 3 Presentations
- 12.30 Lunch
- 13.15 Breakout session 1
- 14.15 Tea & Coffee
- 14.45 Breakout session 2
- 15.30 Full group discussion
- 16:00 End of meeting



Discussion sessions (1)



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- Numbers on name badges
- Four tables - cross-sectorial
- Introductions
- Chair, scribe (post-its & flip chart), scribe (laptop)



Discussion sessions

(2)



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Session 1: User needs and challenges in analysing transformative change in the city

Session 2: Addressing gaps and challenges

- Specific questions to address
- Choice of model variables
- How can current practices be improved?
- Potential model scenarios



Modelling innovative city-region whole energy systems for the 21st Century



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- This will be informed by this workshop and the last (26th June 2017)
- Opportunity to contribute to the proposal
- Cross-sectorial views
- Proposal due to be submitted to the EPSRC on 1st Feb





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Thanks



Whole Energy systems modelling

*Susan Lee, Andrew Quinn, Jonathan Radcliffe,
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Overview



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- Aims
- Conceptual Model Development
- Findings and outputs to date
- Future work planned





Aims

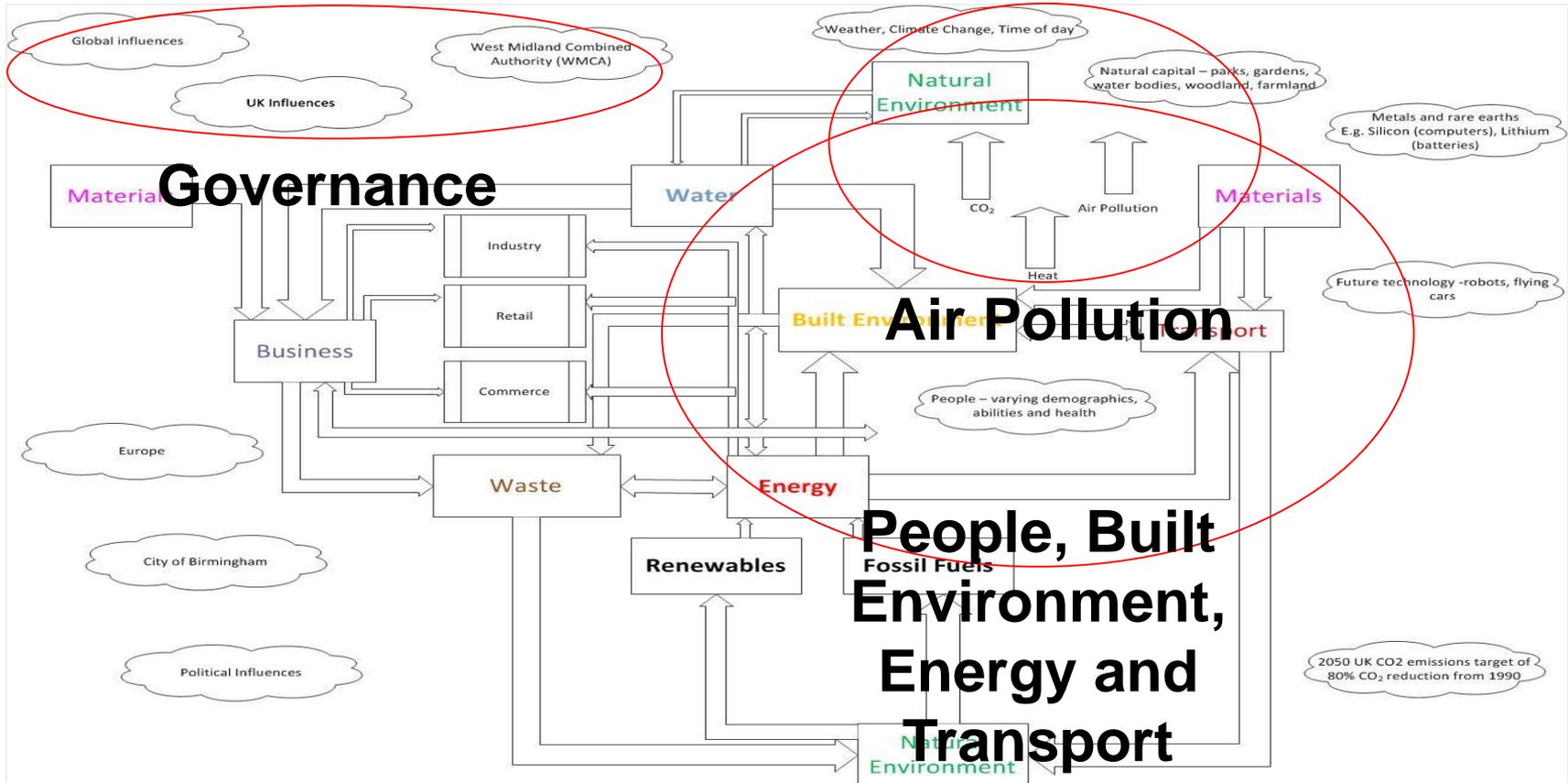


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- To bring together all the energy system modelling approaches across the UK to be critically assessed as to their suitability for the inclusion of waste, air quality, legacy housing stock, new build and transport within an urban environment.
- To build on this knowledge to develop a much larger study encompassing Birmingham and the West Midlands region including the WM Combined Authority (WMCA)



Conceptual Model



Summary from Summer Workshop



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- Model outputs need to include:
 - energy and carbon outputs,
 - energy “exchange” balance sheet,
 - metrics associated with the energy trilemma
- There is a need to investigate linkages and interactions between sectors in detail
- There are major problems in terms of capacity and difficulties related to placing significant additional demand on the existing infrastructure system
- Skills and training need to be addressed



Literature Review findings



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- Gaps in knowledge of interconnections between sectors
- Recognition of systems of systems approach
- Many models are modular but don't have the flexibility to deal with rapidly changing technologies
- Social and environmental considerations need to be accounted for not just economic
- There are challenges in linking models across scales
- Assumption that economic growth and GDP leads to rising transport use may no longer be valid



Recent events attended

- 20th Oct ESC/EPSCRC Workshop
- 21st/22nd Nov ETI Conference
- 2nd workshop of the MPSRI Transitions Scoping Study
- 6th/7th Dec Liveable Cities Final Event (see Little Books + flash drives)



Birmingham activities (1)



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- Low carbon working group (Mike Woollacott)
<https://tinyurl.com/ya6ewgj6>
- New Innovation Alliance for the West Midlands
(Pam Waddell)
<https://tinyurl.com/y9l3aewe>
- Sustainability West Midlands (Alan Carr)
<http://www.sustainabilitywestmidlands.org.uk/>



Birmingham activities



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- HS2
- Smithfield Market area development
- LC final events (House of Lords and Future City Catapult, London)
- Tyseley Energy Park
- Power station run on waste at Wednesbury (Sandwell)



Outputs



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- Workshop. Mon 26th June – representatives from transport, housing, energy, business, community groups, academics
- Workshop summary distributed to participants
- ISNGI 2017 Conference Paper
- Web page: <http://tinyurl.com/yaxvzkam>
- Literature review
- Final workshops 25th Jan 2018 to discuss new approaches and modelling scenarios and outcomes



New Proposal





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Modelling innovative city- region whole-energy systems for the 21st century (MICRES21)



Proposal Aims



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- Develop a prototype whole energy systems model that is able to operate at the city-scale and city-region scale to respond to rapid transformative change
- Use the model to test out new (and radical) changes to one or more systems (or human behaviour and policy) and to identify potential system tipping points which will lead to a major step change.
- Engage the network built up through the scoping study, to raise awareness and integrate whole-energy system modelling into decision making.



Proposal Key Questions



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- What are the key linkages and interactions at the city and city-region scale between sectors?
- What factors influence how quickly consumers respond to a transformative change in the whole energy system?
- How will alterations in both current and future infrastructures impact on city and city-region whole energy systems?



Methodology



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- Identification of key relationships, model scoping and key scenario setting
- Investigating (and quantifying) human behavioural patterns and detailed scenario creation
- Model development
- Impact activities





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Next steps

- Complete proposal for the EPSRC
- Send out workshop summary
- Produce network email list
- Funding decision April 2018
- MICRES21 start June 2018



Birmingham networks



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Sustainability West Midlands

Includes private, public and third sector organisations

2020 vision of a West Midlands that is economically productive, environmentally sustainable and socially just

<http://www.sustainabilitywestmidlands.org.uk/>

Includes other networks including

Innovative Low Carbon Working Group- cross-sector network that brings together those working in the field of low carbon innovation. This is chaired by Mike Woollacott (Greenwatt Technology)



Birmingham networks



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Innovation Alliance for the West Midlands (IAWM)

Set up on 1 January 2018

Building and maintaining a thriving innovation ecosystem and (2) catalysing collaborative innovation activity

<https://tinyurl.com/y9l3aewe>



Thank-you



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Any questions?

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Publications

- ISNGI 2017 Conference Paper

Towards the Development of an Energy City Systems Conceptual Framework.

<http://tinyurl.com/ycumzos9>

<https://tinyurl.com/y9h5ed3a>

- *the Conversation* online article

The economic black hole at the heart of the shift to electric vehicles

<http://tinyurl.com/y7cvpuj3>



Links



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- Transforming Birmingham – a city systems approach <http://tinyurl.com/yaxvzkam>
- Birmingham Energy Institute
<http://www.birmingham.ac.uk/research/activity/energy/index.aspx>
- Liveable Cities Program
www.liveablecities.org.uk
- City REDI Programme
<http://www.birmingham.ac.uk/schools/business/research/city-redi/about.aspx>

