Powering Productivity
Mapping Method Briefing

Understanding failing productivity growth in the UK is a transdisciplinary challenge. The ESRC funded Powering Productivity project used a combination of thematic literature review and expert elicitation within a systems-oriented design mapping method. The system mapping allowed researchers and participants to co-generate information on the evidence base and links between 1) energy and productivity and 2) wellbeing and productivity.

Exploring Energy, Wellbeing and Productivity

This project mapped the knowledge base relating productivity to energy and wellbeing. We used systems-oriented design mapping practices to engage researchers from a range of disciplines in knowledge exchange. New insights were captured in a series of system maps. These informed the design of interactive digital knowledge maps that will be freely available online. The information gathering and co-production activities were integrated with the development of two thematic literature reviews. Stages in the research design are illustrated in Figure 1.
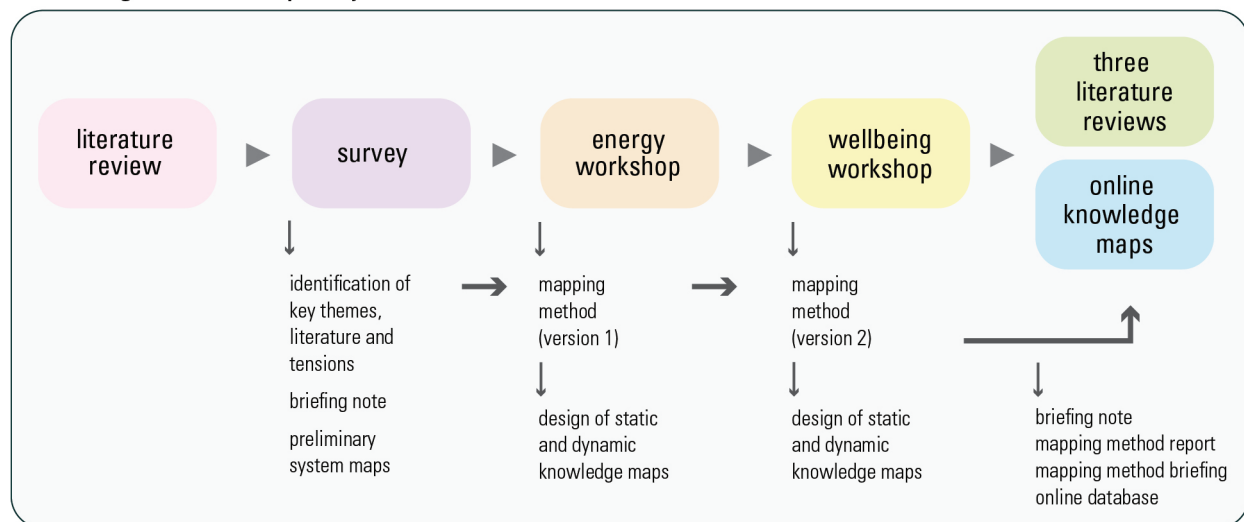
Powering Productivity Project Overview

Figure 1: Powering Productivity Project Overview

Process Summary

The mapping process began with questionnaires sent to potential participants/experts to identify key themes, literature and research groups exploring energy and productivity; and wellbeing and productivity in the UK. The results of these surveys guided preliminary literature searches carried out by the literature review group (based at the University of Surrey). The mapping methods research group (located at the Loughborough University) organised and facilitated two participatory systems mapping workshops in July and September 2019.

The aim of the workshops was to enable interdisciplinary discussions and capture key themes using systems mapping methods. Ahead of the workshops, participants were sent a briefing note summarising the results of the surveys and preliminary literature searches. At the workshops, participants worked together to create foundational structures to visualise knowledge. Specific attention was paid to significant relationships and tensions on the topics under investigation. The initial system maps co-produced at the workshops were refined in an iterative process with feedback from the wider research group at the University of Surrey. This process informed the design of the static knowledge maps that were subsequently transformed into interactive digital visualisations. Additionally, the literature review group used the initial maps to guide their writing and searching processes. Here, the maps and accompanying discussions were particularly useful in highlighting new linkages. Workshop participants created visualisations that became the basis of two interactive knowledge maps.

Systems and Knowledge Mapping Practices
Systems mapping is an umbrella term that refers to different visual strategies for synthesising knowledge within a complex systems approaches. Participatory system mapping supports the integration of ideas and evidence with other forms of knowledge by involving different stakeholders, disciplinary traditions and sectors. Visual methods are employed to integrating diverse perspectives. Participatory mapping enables knowledge exchange where the creation of new visualisations provide a common conceptual focus. Mapping increases the quality of the knowledge and allows participants to connect tacit with explicit knowledge. A bespoke process was designed for both workshops which were facilitated by systemic design researchers. Images from the two workshops are below (figures 2+3).

Knowledge mapping is a method that organises complex information to reveal relationships in ways that generate meaning. The knowledge mapping method in this project combines the participatory system mapping elicitation phase (which used gigamapping and other visualisation techniques) and a representation phase (post-workshops). The gigamaps developed in the workshops were used as the basis for static knowledge maps that later became (by means of a design process) interactive knowledge maps. With this method we co-produced new ways of representing knowledge generated at the workshops and new means to transfer knowledge by means of online interactive visualisations.

Integrating Mapping Processes and Desk Based Research: Challenges and Reflections
The mapping workshops produced unusually rich datasets from which researchers leading the desk based reviews could draw. Workshops were facilitated by the mapping research group, leaving the literature review research group free to take notes and participate in map construction. At each workshop, two review authors participated in the mapping process. Each was in different mapping group to ensure coverage of all discussions. This provided a level of immersion in the mapping process which contributed to the co-production and helped to ensure the mapping process influenced the literature reviews.

The two mapping workshops played different roles in shaping the review process. As well as the different subject matter, they had different participants and occurred at different points in the two review processes. They also had slightly different structures – as the method was refined in for the second workshop.

The energy workshop was much broader in scope. This is likely because it occurred at an earlier stage of the review process. Consequently, the literature search was less complete, and there was greater scope for the workshop to influence the overall direction of the review. The broader scope was also a result of the participants and subject matter: there was no consensus on the energy/productivity relation in the room. Discussions quickly turned to fundamental concepts, such as 'what is value?' This made the review process challenging, as the topics introduced by the workshop were broad and complex.

On the other hand, the wellbeing workshop was more targeted. The review was further along in

the process. There was also more of a shared understanding of the nature of a productivity-wellbeing link amongst participants. The only area in which participants did not show agreement was the need to consider if and how productivity could have negative impacts upon wellbeing. Consequently, the workshop served more to clarify gaps and ensure all relevant literature had been covered.
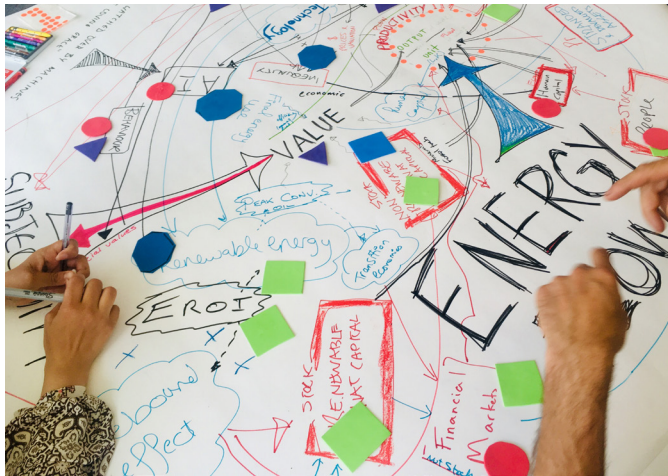

Figure 2: Workshop one, Energy-Productivity Gigamap, v.2

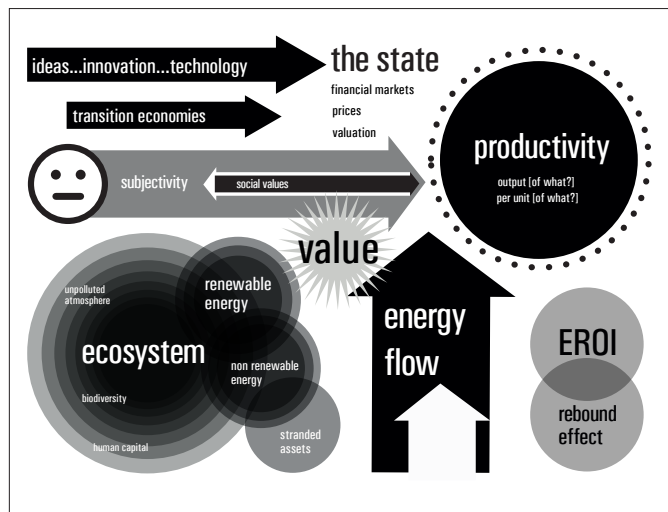Figure 3 Workshop Wellbeing-Productivity Gigamap, v.2
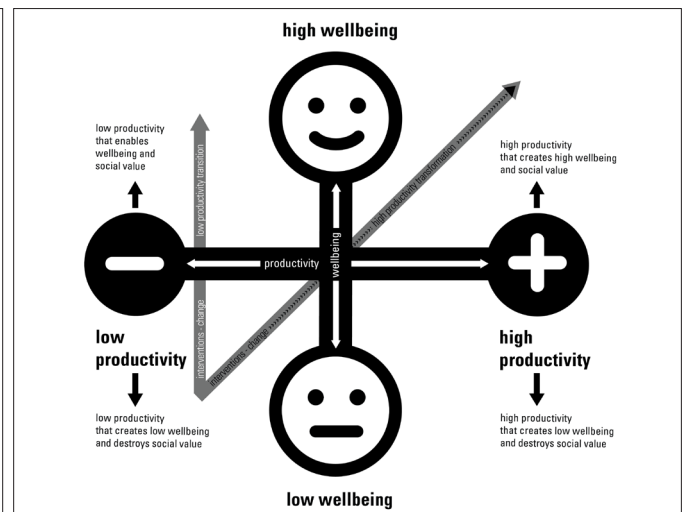

Figure 4: Energy-Productivity Knowledge Map, v.1.

Figure 5: Wellbeing-Productivity Knowledge Map, v.1

Systems Mapping Method: Challenges, Reflections and Recommendations

Systems mapping is most effective when diverse stakeholders are able to work together. Our intention was to include policy makers and industry experts. This proved difficult due to tight time frames. We reduced time commitments of the workshops to recruit more diverse participants.

Mapping sessions can feel daunting for participants not accustomed the uncertainty that is a feature of emergent processes such as design. Additionally, maps can be extensive, but a sense of 'incompleteness' can remain. This sensation can cause a burden in participants who feel a need to 'complete the picture'. A certain level of discomfort was evident at both workshops. It was more noticeable in the energy workshop, which used fewer structured activities. However, it was during the unstructured sessions participants were the most creative. In our judgement this discomfort was a necessary part of the process.

For these reasons we emphasise that mapping requires skilled facilitation. Design facilitation must create space for new ideas to emerge while also reassuring participants that ambiguity is sometimes helpful when developing new ways of thinking about complex ideas. Facilitators need to stimulate participation and help participants recognise the limitations of representation. Facilitators must also adapt strategies for the benefit of the themes under investigation and the energy in the room.

Additionally, while learning-by-doing occurs within the mapping processes, an initial orientation is needed. This was provided using introductory slideshow presentations that communicated the aims and methods of the mapping while also describing how they generate value. We then used individual mapping activities to create starting points for the collaborative participatory mapping session. Design tools such as templates and stickers were used to stimulate initial interaction and prompt participation.

Making space and time for reflection helps participants develop new ideas and proposals. We allocated periods between iterations for reflection where ideas could be shared and developed within the plenary sessions as part of the workshop process. Within the mapping sessions we collected data with a variety of techniques (photos, field notes, Post-it Notes and collection the various types of maps (i.e. individual, structured maps and gigamaps). These were all resources integrated into the analysis.

Conclusions

Knowledge mapping captured perspectives of participants at two participatory workshops. These maps were subsequently transformed into online interactive knowledge maps displaying key themes in the intersection of energy, wellbeing and productivity. The interactive visualisations hold the potential to help researchers identify meaningful pathways for new research. These online maps also function as a means to access the Powering Productivity research reports and will provide an ongoing resource for researchers, policy makers and the public.

Through a process of interdisciplinary knowledge exchange and capture, the workshops created space for participants to collaborate, develop new understanding and capture learnings. The mapping methods encouraged participants to discuss themes across disciplinary silos and explore gaps and tensions in the knowledge base. The project demonstrated the value of system and knowledge mapping in knowledge transfer. Integrating mapping practices into this project strengthened the knowledge base on energy-productivity and wellbeing-productivity relationships. This work has encouraged systems thinking in the co-production of new knowledge. In documenting and disseminate systemic design strategies implemented in this project, this work supports complex problem solving.

Deliverables

1. Two static knowledge maps
2. Two interactive visualisations
3. Two briefing notes, summarising key themes
4. Two thematic literature reviews
5. Two bibliographic databases
6. Powering Productivity: Mapping Methods Report
7. Powering Productivity: Mapping Methods Briefing (this document)

Access to all the deliverables can be found at: www.cusp.ac.uk/powering-productivity

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