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SESAME: FINDING WAYS OF PROMOTING SME ADAPTATION TO FLOOD RISK

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INTRODUCTION

Small and medium-sized companies and other enterprises (SMEs) around the world are exposed to flood risk and many of the 4.5 million in the UK are at risk. As SMEs represent almost half of total business turnover in the UK, their protection is a vital part of the drive for greater climate change resilience. However, few have measures in place to ensure the continuity of their activities during a flood and its aftermath. The SESAME project aims to develop tools that encourage businesses to discover ways of becoming more resilient to floods and to appreciate how much better off they will be once they have adapted to the ongoing risk. By taking some of the mystery out of flooding and flood risk, it aims to make it susceptible to the same business acumen that enables the UK's SMEs to deal with the many other challenges they face.

SESAME

SESAME (sesame.uk.com) is a multi-disciplinary project involving engineering, geography, socio-economic science and business studies. This combination is required to understand the wider flood resilience of SMEs through the physical, social and economic aspects of vulnerability. The project covers four main aspects: understanding behaviour, changing behaviour, inundation impacts and modelling wider economic consequences.

A number of case studies are being considered across the project, but initial work has been carried out on an urban area to the East of the City of Sheffield in the Lower Don valley

Understanding Behaviour

A set of structured interviews have been carried out with SMEs (using ISO 22301 BCM) to ascertain the impact of previous events, their level of preparedness, their willingness to

implement resilience measures and their attitude to flood risk. This has revealed a range of business and social responses with differences between categories of SMEs and a clear difference between SMEs that see this as an issue for others (local government, national agencies) and those that see this as something they should address themselves. Overall there is limited evidence of formal business continuity processes or structures and resilience appears to be dependent on factors such as path dependence, social capital and bricolage. Further analysis of these interviews is now underway.

This work has focused on the Lower Don valley, but work on other case studies is underway.

Changing Behaviour

Changing behaviour is not straightforward and requires long-term engagement with stakeholders. Stakeholder Competency Groups have been established in several case study sites to communicate the research findings and to encourage more and better adaptation. Details of this process can be seen in Figure 1.

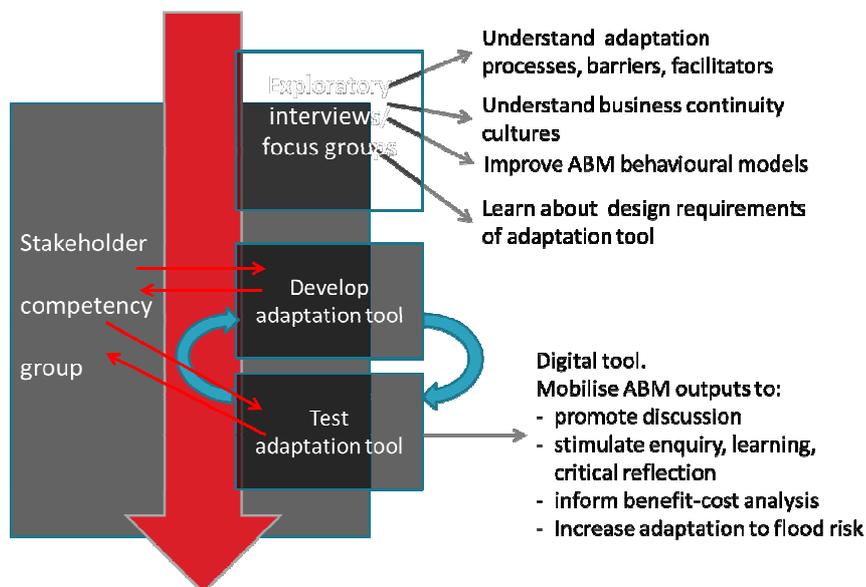


Figure 1: Schematic of the Stakeholder Competency process.

Inundation Impacts

The outcomes of the process of understanding and changing behaviour are being used to develop rules for an agent-based model. This model takes inundation predictions from the standard models used by the Environment Agency for flood prediction in England. This will allow for a study of the time to inundation and the depth of the inundation, both of which will influence damage levels and responses. Whilst previous work has combined agent-based modelling with inundation models for emergency response, this work will consider longer timescales to evaluate the impact of flooding on SMEs in the months and years after an event.

In this way SESAME is exploring the interdependencies between the behaviours of different organisations and businesses and, by reflecting the uncertainties inherent in flood prediction and risk mitigation, will expose the dynamic complexity of organisations' interactions

Economic Impacts

Current methodologies for Cost-Benefit Analysis of flood risk mitigation schemes tend to focus on local impacts. However, there can be wider impacts from flooding beyond the local area i.e. regional, national and even international. This means that significant costs of flooding are not taken into account which can lead to sub-optimal decisions for both economic impact and social equity.

This work is developing the concept of a “flood footprint” which uses an adaptive regional Input-Output model to estimate the cost at regional and national levels. For the Lower Don case mentioned above, impacts are being assessed at the level of the Yorkshire region.

CONCLUSIONS

Through its inter-disciplinary approach SESAME will be able to advise government, local authorities and other public bodies on how to improve their responses to floods and will enable them to recommend ways to improve the guidelines provided to SMEs in flood risk areas.

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