**The need**

The Scottish Government recognises that the impacts of climate change and urban creep will increase future flood risk, and that all can play a role in helping to reduce their own risk. Importantly, it also recognises that this can only be achieved through improved public awareness of both flood risk and the measures that can be taken to protect themselves from the impacts of flooding. Whilst the Scottish Government is currently working to ensure that flood resilience is an integral part of the Curriculum for Excellence for school children, it is accepted that it is difficult to engage the wider public on such issues unless they have recently experienced a flood event themselves. Hence, there is a very real need to develop innovative ways to engage the wider public. This project was designed to help meet this need.

**What we have achieved**

We have developed an interactive exhibit that communicates the concepts of flood risk and uncertainty to the general public. The project has drawn together a wide range of different professionals, including academics, government policy advisors, communication officers and exhibit designers; all now have a far better understanding of each other’s field. The exhibit has now been installed at Glasgow Science Centre. Initial evaluation has identified areas for improvement (primarily to cater for “overenthusiastic” participants!), and has also highlighted success with some key demographics, most notably families with young children. The project has now finished, but the exhibit will remain at Glasgow Science Centre for the foreseeable future, where its impact will continue to be evaluated. In the future, the exhibit will be moved to alternative venues and be targeted at other audiences, such as local authority planners. If this proves successful, the format may well be applied to similar areas with some element of uncertainty and risk (e.g. to illustrate the impact of heatwaves or earthquakes).

“Education and raising awareness of flood risk is an integral part of the Scottish Government’s approach to sustainable flood risk management. We’re delighted to support Heriot Watt University in the development of such an innovative project to demonstrate in an enjoyable way that everyone can do something to reduce flood risk.”

Debi Garft, Scottish Government
How we did it

Much of the project was dedicated to developing the exhibit format, which needed to be both fun and engaging, whilst at the same time being scientifically robust; as the exhibit was developed primarily for unsupervised use within science centres, with a wide range of different target audiences, this was not an easy task! The final design incorporates a “wheel of fortune” linked to a database of flood event impacts. The wheel is split into segments to represent different weather scenarios (1 in 25/50/75/100 year return period events), with the number of segments for each event being dependent on the probability of the event occurring. Participants manually spin the wheel to determine the prevailing weather conditions, and this introduces an element of uncertainty. The weather “selected” by the wheel is used in conjunction with historical and simulated data to determine whether a flood will occur, and the resulting flood depths within people’s houses. Industry standard methodologies are then applied to determine the associated financial damages. Each wheel spin represents a 25 year period, and participants can spin the wheel 3 times, so each “game” lasts 75 years, which is around a person’s lifetime. To emphasise the benefits associated with proactive actions, such as the installation of property flood protection products, the impacts of specific events are dependent on “investment” choices made by the participant prior to each wheel spin. Participants can play in two player mode with the overall “winner” being the player who spends the least amount of money (flood damages and protection costs) over the 75 year game period.

The team

Seth Owusu, Heriot-Watt
Dr Grant Wright, Heriot-Watt
Debi Garft, Scottish Government

Project Details

Partners
Scottish Government
Heriot-Watt University

Project dates
October 2013 – April 2014

Project contact:
Debi Garft
Scottish Government
Debi.Garft@scotland.gsi.gov.uk

For information on the NERC PURE Associates programme or the PURE Network, contact:
Dr Vera Hazelwood
PURE Network Director
vera.hazelwood@pure-associates.org
+44 (0) 1483 579108

“The risk of flooding is increasing, and flood impacts can be significant and long-lasting. However, we can all do something to help ourselves; flood risk awareness and education is essential and we can also take simple proactive measures to protect ourselves. Doing nothing is not an option.”

Seth Owusu, Heriot-Watt University

This project is part of the Probability Uncertainty and Risk in the Environment (PURE) Associate programme, funded by the Natural Environment Research Council (NERC) and managed by the Smith Institute for Industrial Mathematics and System Engineering.

NERC is the UK’s main agency for funding and managing research, training and knowledge exchange in the environmental sciences. Its research contributes to a strong UK economy and improves people’s lives.

PURE is a Knowledge Exchange Network and Research Programme funded by NERC to increase the impact of Natural Hazard research and to take a national leadership role in changing the way in which uncertainty and risk are assessed and managed across the Natural Hazard community.