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# Submission to the inquiry on 'Future flood prevention' by the House of Commons Select Committee on Environment, Food and Rural Affairs

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Policy paper

March 2016

ESRC Centre for Climate Change Economics and Policy  
Grantham Research Institute on Climate Change and  
the Environment

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**The Grantham Research Institute on Climate Change and the Environment** was established in 2008 at the London School of Economics and Political Science. The Institute brings together international expertise on economics, as well as finance, geography, the environment, international development and political economy to establish a world-leading centre for policy-relevant research, teaching and training in climate change and the environment. It is funded by the Grantham Foundation for the Protection of the Environment, which also funds the Grantham Institute for Climate Change at Imperial College London. More information about the Grantham Research Institute can be found at: <http://www.lse.ac.uk/grantham/>

This policy paper is intended to inform decision-makers in the public, private and third sectors. It has been reviewed by at least two internal referees before publication. The views expressed in this paper represent those of the author(s) and do not necessarily represent those of the host institutions or funders.

# **Submission to the inquiry on 'Future flood prevention' by the House of Commons Select Committee on Environmental, Food and Rural Affairs**

## **Introduction**

1. This is a submission by the ESRC Centre for Climate Change Economics and Policy and the Grantham Research Institute on Climate Change and the Environment at the London School of Economics and Political Science to the inquiry on 'Future flood prevention' by the House of Commons Select Committee on Environment, Food and Rural Affairs.
2. We welcome this opportunity to assist and support the work of the Environmental, Food and Rural Affairs Committee in this important area. Our submission draws on our research, which provides strong evidence that the UK needs to develop a comprehensive strategy for flood risk management. The strategy needs to adopt a holistic approach, and include better land-use and planning policy, increased resilience for existing housing stock, improved flood defences and affordable insurance. The National Flood Resilience Review, launched by the Government in December 2015, could be an important step towards the creation of a comprehensive flood risk management strategy for the UK.
3. This submission outlines the latest research findings from the Grantham Research Institute on Climate Change and the Environment and the Centre for Climate Change Economics focusing particularly on three of the topics highlighted by the Committee as being of interest to the inquiry: predicting the future, planning for floods, and flood insurance.

## **Predicting the future**

4. Models that assess the impact of climate change on flood risk, particularly the risks resulting from extreme rainfall, have improved significantly in recent years. While an evaluation of those new models remains beyond the scope of our work, we highlight the research carried out by Sayers et al. (2015) for the Committee on Climate Change, as a contribution to the Climate Change Risk Assessment, which provides projections of future flood risks for the 2020s, 2050s and 2080s.
5. It is far from clear how, and if, the growing evidence base from these models is being taken into account by policy-makers, particularly the Government, and others who make decisions relevant to flood risk, including planners, developers and home and business owners. It should be noted that the UK Climate Change Risk Assessment 2012 Evidence Report (HR Wallingford et al., 2012) warned: "Warmer conditions are expected to lead to a more intense hydrological cycle with an increase in rainfall (depths and intensities), particularly in winter months". According to the Met Office, six of the UK's seven wettest years on record, and its eight warmest years, have occurred from 2000 onwards. The UK experienced its wettest and second wettest winters on record in 2013-14 and 2015-16, respectively. The heavy winter rainfall over the past few years may have been unprecedented, but it should not have been unexpected.

6. A recent study by our researchers (Jenkins et al., 2016) highlights the role of climate change in driving the development of surface water flood risk. The model used in the research shows that in Greater London the level of risk continues to rise under different climate change scenarios. This highlights the imperative to design surface water flood risk management strategies while taking into account climate change and future levels of risk if impacts and losses are to stay at or below present levels.
7. The Government and the Environment Agency should work together to ensure that flood risk management in the UK takes full account of the impact of climate change. While climate change is not the only factor affecting flood risk, there is strong evidence that sea level rise and increases in the intensity and frequency of heavy rainfall are already having an impact.
8. Yet there are examples of flood risk management policies that have neglected the impacts of climate change. For instance, DEFRA's impact assessment for the new Flood Re scheme initially omitted the impacts of climate change, and still has not taken it into account adequately. (Surminski et.al., 2013; Surminski and Eldridge, 2015). In 'An Independent National Adaptation Programme for England' (Fankhauser et al., 2013), we offer an analytical framework for Government, local authorities and public agencies to respond to the risk of climate change impacts. Of particular importance is early action in areas where decisions today could 'lock-in' flood risk vulnerability for a long time, such as infrastructure investments and land-use planning.
9. The Select Committee should consider how the expert advice from the independent Committee on Climate Change could be taken into account more effectively in policy-making on flood risk management. On 30 June 2015, the Committee published its latest annual progress report to Parliament, making a number of sensible and evidence-based recommendations to the Government. They included a recommendation that the Government should 'develop a strategy to address the increasing number of homes in areas of high flood risk' (CCC, 2015). However, in its response in October 2015, the Government rejected this advice on the grounds that it 'would not be appropriate at this time' (HM Government, 2015). The flooding that has occurred this winter now shows that decision was wrong, and that the Government urgently needs to produce a national flood risk management strategy.
10. In December 2015 the Government announced a National Flood Resilience Review to better protect the country from future flooding and increasingly frequent and severe extreme weather events. It is important that the Review does not only consider river flooding, which was the cause of much of the damage during the exceptional rainfall this winter, but should also examine the UK's resilience to coastal flooding and surface water flooding, both today and in the future. The Review covers similar topics to this inquiry and it is hoped that the inquiry can complement and inform its work.

### **Planning for floods**

11. Our research (Jenkins et al., 2016) highlights that climate change and socio-economic development can exacerbate current levels of surface water flood risk. In our study area – the Borough of Camden in London - surface water flood risk increases over time under a range of different climate scenarios, largely as a result

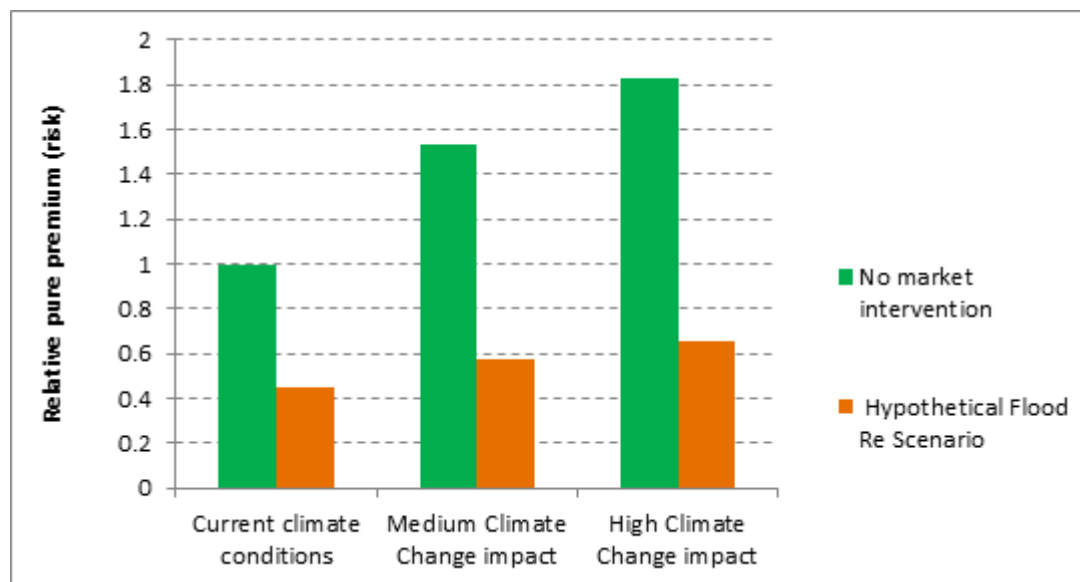
of continued property development. Even with resilience measures such as sustainable urban drainage systems (SUDS) and property-level protection measures (PLPMs) in place, the average surface water flood risk increases over time, and under no experiment does it stabilise or decline. The implications of climate change for surface water flood risk illustrates the risk of further trade-offs between future development plans and flood risk management: ‘as house prices rise so does the investment in new developments, often in high flood risk areas, and consequently overall flood risk rises’ (Jenkins et al., 2016).

12. This analysis suggests further policy is required on planning developments, increased investment in SUDS for new and existing properties, and investment in PLPMs.

### Flood insurance

13. Our research (Surminski and Eldridge, 2015; Jenkins et al., 2016) has found that more frequent and severe flooding as a result of climate change is a barrier to continued provision of affordable flood insurance. Linking insurance to effective adaptation and flood risk management is crucial to ensure the affordability and availability of flood insurance. However, these issues were not fully taken into account in the design of Flood Re.
14. The results from Jenkins et al. (2016), highlighted by the Bank of England (2015), show that climate change and socio-economic risk drivers are expected to widen the gap between ‘affordable’ flood insurance premiums and premiums that reflect the technical price of flood insurance (see Figure 1 below).

**Figure 1. The Pricing Implication of Climate Change**



From: Based on Jenkins et.al. (2016), cited in Prudential Regulation Authority and Bank of England. The impact of climate change on the UK insurance sector (2015)

15. Flood Re is designed as a temporary measure to ensure the ongoing affordability of flood insurance for existing homes at high risk of flooding by providing a buffer against high technical risk prices. This subsidised flood insurance scheme is intended

to be a short-term mechanism to 'buy time' and will be phased out over the next 25 years. However, a significant difference is still likely to exist between the price of subsidised coverage through Flood Re and the technical risk price if the underlying flood risk is not addressed - and the potential losses from flooding are not reduced – as acknowledged in Flood Re's transition plan (Flood Re 2016).

16. In its current form the scheme will not help to address the underlying causes of flooding. There are no direct levers for Flood Re to influence flood resilience and the scheme will not impact the behaviour of those groups that will determine future risk levels: homeowners, national and local governments, developers and insurance companies. This is a missed opportunity (Surminski and Eldridge, 2015).
17. The failure to build incentives to increase resilience into the design of Flood Re could have a detrimental effect on overall flood risk management. The scheme's existence may reduce the urgency for Government to prevent and reduce risks and also reduce incentives for home- and business-owners to invest in resilience measures i.e. it creates moral hazard (Surminski, 2014).
18. A crucial component of making homes and businesses more resilient to flooding is raising awareness of the risks posed and of the options for managing them. Yet research by the Environment Agency shows that many homeowners who live on floodplains in the UK are unaware that they are at some risk of flooding (cited in Committee on Climate Change, 2014). Hence, there is a need to utilise Flood Re to raise awareness and incentivise action.
19. Nevertheless, under the current proposal, Flood Re is 'invisible' to the households it covers. Those households covered by the scheme should be made aware in their policy documentation that they are benefitting from subsidised insurance cover and should be provided with information about their flood risk level and what measures are in place to protect them. Flood Re could also be used to offer incentives for households to increase their resilience to flooding. For example, successful claims could be made contingent on sensible resilience measures being taken as part of re-build (Surminski and Eldridge, 2015).
20. A particular concern would be an extension of Flood Re to also cover new build homes. This would remove the only remaining resilience incentive that Flood Re can use – by not offering cover for new homes, it sends a signal to property developers and home buyers to consider flood risk when building and buying homes as subsidised flood insurance will not be available for the owners.
21. For incentives to be successful, they need to target those who can take action. In the case of insurance this could mean that more stakeholders need to be included in the development of new solutions, for example property developers, mortgage providers and local planning officials, who all determine if, where and how houses are being built, refurbished or repaired.

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