

Submission re: draft National Risk Assessment 2018

Prepared by Dr. Eoin O'Neill, UCD Earth Institute

(This is submitted in a personal capacity)

This submission has been prepared by Dr. Eoin O'Neill, Lecturer/Asst. Professor in Environmental Policy at UCD Planning and Environmental Policy and UCD Earth Institute. The submission provides some background context, goes on to make some observations from international research generally, before specifying research from some of the Irish-based research projects (which I am involved) and findings that should be considered in this consultation. The Irish multidisciplinary research projects, undertaken with colleagues, focus on flooding, water contamination, and some related health implications, all being exacerbated by climate change. These are discussed below:

Some general points from international research re: Climate Action

The scientific consensus is that climate change is ongoing, accelerating, and will bring about significant economic costs, including primarily negative public health impacts.

Whilst the science is generally accepted, many people do not necessarily conceive of the personal impacts (i.e. at household or local level) of climate change. For many, climate change impacts are occurring far away e.g. Pacific islands or at least elsewhere.

In terms of climate change impacts, such as flooding or extreme precipitation events, people frequently underestimate their exposure, resulting in a lack of preparedness. Many are overly-optimistic about their capacity to cope while others fail to accomplish their intentions (value-action gap). Others adopt a fatalistic perspective, resulting in non-protective responses.

Where extreme events do arise, studies have highlighted individuals' tendency to place more responsibility on public authorities rather than recognising much personal responsibility.

Much of the focus in climate adaptation practices has been on structural solutions (e.g. flood defences).

The communication of risk information significantly influences perceptions, and subsequently, behaviours and actions. Individuals are more likely to engage with information that fits with their beliefs and with those of their peers.

Research Findings:

1. *Flooding Impacts and public health (floodrisk2wellwater)* – funded by Irish Research Council and Geological Survey of Ireland

- *Dr. Eoin O'Neill UCD; Dr. Paul Hynds DIT; Dr. Jean O'Dwyer UL; Dr. Owen Naughton TCD; Ms Luisa Andrade UCD*

The susceptibility of private groundwater drinking sources (i.e. private wells and group water schemes supplying 800k Irish people) to contamination is almost certain to increase as a result of climate change, with rainfall representing a driver of environmental pathogen transmission.

The impact of extreme weather events on waterborne infection is a critical trigger for waterborne outbreaks of disease.

Previous work by the research team has shown evidence of widespread failure to take appropriate preventative actions at the household level to mitigate against rural drinking water contamination.

With increased flooding anticipated, there is likely to be a marked increase in the incidence of waterborne disease outbreaks in rural Ireland. As a case in point, we presently have the highest VTEC notification rate in the EU.

This ongoing, and novel study in Europe, will develop initiatives to increase awareness and precautionary behaviours among vulnerable groundwater consumers.

Supporting References

Devitt C, O'Neill E, Waldron R. 2016 Drivers and barriers among householders to managing domestic wastewater treatment systems in the Republic of Ireland; Implications for risk prevention behaviour. *Journal of Hydrology*, 535: 534-546.

Hynds, P. D., Misstear, B. D. Gill, L. W. (2012) Development of a microbial contamination susceptibility model for private domestic groundwater sources. *Water Resources Research*, 48(12).

Naughton, O., Hynds P. D. (2014) Public awareness, behaviours and attitudes towards domestic wastewater treatment systems in the Republic of Ireland. *Journal of Hydrology*, 518: 108-119.

O'Dwyer, J., Dowling, A. and Adley, C. (2016a) The Impact of Climate Change on the Incidence of Infectious Waterborne Disease. In: Eslamian, S. (ed). *The Urban Water Reuse Handbook*, UK: Taylor and Francis, (77): 1017-1024.

Óhaiseadha, C., Hynds, P.D., Fallon, U.B. and O'Dwyer, J., 2016. A geostatistical investigation of agricultural and infrastructural risk factors associated with primary verotoxigenic E. coli (VTEC) infection in the Republic of Ireland, 2008–2013. *Epidemiology & Infection*, pp.1-11.

2. Flood Policy, Awareness and Preparedness (FloodPAP)

➤ Project leads: Dr. Eoin O'Neill UCD; Dr. Finbarr Brereton UCD

Many people believe they live further away from potential flood risk areas than is actually the case. Moreover, individuals with low risk perceptions are less likely to undertake preventive actions that will reduce the harmful impacts of flooding. Such combinations of factors increase household vulnerability to damaging flood impacts.

Study findings show:

(1) many people believe they live further away from potential flood risk areas than is actually the case (O'Neill et al. 2016)

(2) individuals with low risk perceptions are less likely to undertake preventive actions that will reduce the harmful impacts of flooding (O'Neill et al. 2016)

(3) the main predictor of household flood preparedness is prior experience (O'Neill et al. 2016)

(4) preparedness can be undermined by low levels of efficacy amongst individuals in terms of the preparedness measures available to them and their own personal capacity to implement them (Fox-Rogers et al. 2016)

(5) construction of public flood defences affects people's perception of flood risk. In spite of a residual flood risk (e.g. overtopping), flood awareness and preparedness levels are reduced (Fox-Rogers et al. 2016)

(6) debates in the Irish media on flood management do not fully reflect shifts in contemporary flood policy away from protection towards risk management, with negative implications for the direction of societal adaptation e.g. household preparedness action (Devitt and O'Neill 2016)

Supporting References

O'Neill E, Brereton F, Shahumyan H, Clinch JP. 2016 The impact of perceived flood exposure on flood-risk perception: the role of distance. *Risk Analysis*, 36 (11):2158-2186.

Fox-Rogers L, Devitt C, O'Neill E, Brereton F, Clinch JP. 2016 Is there really "nothing you can do"? Pathways to enhanced flood-risk preparedness. *Journal of Hydrology*, 543 (Part B):330-343.

Devitt C. and O'Neill E. 2016 The framing of two major flood episodes in the Irish print news media; implications for societal adaptation to living with flood risk. *Public Understanding of Science*, 26 (7):872-888.

3. Some Preliminary analysis on Irish Climate Attitudes from European Social Survey (ESS) 2016.

In terms of gaining some insight into householder attitudes, there is useful information in the EU-funded European Social Survey (2016) that is undertaken on a pan-European basis every two years, and whose recent round includes a section on climate change. In addition to providing baseline information about climate change awareness, it also points to challenges that exist to promote climate adaptation and preferential environmental behaviour:

- The results show two thirds of Ireland's 2,700 randomly selected respondents reporting that the world's climate is definitely changing. This is third highest amongst the 18 countries reported (involving 33,000 face-to-face interviews).
- When asked about the cause of this change in the climate, nearly two in five Irish respondents reported the single leading cause being human activities.
- While Irish recognition of human-induced climate change is comparable to UK reported levels, it is otherwise less than our western European peers.
- In terms of worry about climate change, we are fourth lowest with fewer than one in five respondents reporting being very or extremely worried about climate change compared to two in five in Germany, and one in every four across Europe.
- Importantly, the degree of worry is usually strongly related to people's likelihood or willingness to take real action. When it comes to taking action, the Irish response is concerning.
- More than half of Irish respondents report being against increasing taxes on fossil fuels to reduce climate change; the second highest rate against such measures. Interestingly this is at odds with the conclusions of the Citizens' Assembly which recommended paying higher taxes on carbon intensive activities.
- Although two-thirds of the survey's Irish respondents favour subsidising renewable energy to help combat the threat of climate change, we have the highest rate of opposition of any country, with one in five Irish respondents opposed.

This ESS data snapshot is illustrative of the divergence of views about how to pursue climate change related policy objectives but also indicative of some risks (e.g. public acceptability) to implementation of policy interventions.

Data source: <http://www.europeansocialsurvey.org/>

Dr. Eoin O'Neill is a tenured Lecturer in Environmental Policy at UCD Planning and Environmental Policy and serves on the executive management team of the UCD Earth Institute. He holds BA (Hons) and MRUP degrees, and a PhD in planning and economics. He is a chartered planner with the Royal Town Planning Institute (MRTPI). Prior to being appointed at UCD he worked as a Technical Specialist in Flood Risk Management in the UK Environment Agency. For more details on his research and publications etc. visit Eoin's [UCD webpage](#).