

Living with and learning lessons from the floods



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ANALYSIS

Today's floods could recur every two or three years before the end of the century because of climate change

AFTER A week in which many people might have felt that disastrous floods seemed to take civilisation in Ireland back a notch, it is worth standing back a bit and reflecting on where we are, how we have come to this point and what the future holds for this most disruptive hazard.

Firstly, it is important to recognise that without floods humanity would not have advanced to become the driving force of the planet it is today. It was the alluvium deposited by the annual flooding of rivers such as the Nile, Indus, Euphrates and Hwang Ho which was the catalyst for the birth of the world's oldest civilisations. Not for nothing is the Hwang Ho/Yellow River described as the "Cradle of Chinese Civilisation" but at the same time labelled "China's Sorrow" due to its catastrophic flood history.

In Ireland flooding has been a deeply rooted fear throughout our history and we have a tradition of documenting events to rival any part of the globe. Probably the earliest written account of a weather event anywhere in Europe describes a flood on Lough Conn in Co Mayo, allegedly in the third millennium BC. Although such dates cannot be relied on, the events they chronicle show that floods in western Ireland have been a constant feature of the Irish climate.

Thus it is simplistic to label an individual event, such as we have experienced over the past week, as driven solely by climate change. Floods are part and parcel of river processes and will always be. They shape our landscape, enrich our soils, support valuable ecosystems on and offshore and provide a valuable water resource. But it is how we cope with floods that ultimately determines the balance of advantages of living close to a river.

In Ireland, as elsewhere, we calculate the risk of a particular flood event based on a



Grand Parade, Cork, under water last Friday. "It is how we cope with floods that ultimately determines the balance of advantages of living close to a river." Photograph: David O'Riordan

climatic fingerprint of typically about 30 years. Advanced statistical methods enable the probability of river levels of a particular height to be estimated. This technique has been refined over the years and the Office of Public Works has recently completed a major exercise in upgrading these calculations.

This data is, of course, based on a past climate, and the question arises as to whether it is now obsolete. Significant increases in winter rainfall amounts and intensity have been observed in parts of western Ireland. In north Donegal winter amounts have increased by well over 50 per cent in the last century.

The future response of Irish rivers has been modelled by the Icarus (the Irish Climate Analysis and Research Unit) team at NUI Maynooth, principally by Dr Conor Murphy, using climate scenarios projected for coming decades. These reflect the widespread acceptance by climate modellers that Irish winters will become significantly wetter in the west, while summers will (notwithstanding the last three!) become drier in the east. These ultimately produce a likelihood of more

frequent and more severe flood events.

To be more specific about frequency changes is still risky; much more research is needed to overcome basic uncertainties at global and local levels. But as a first pass at the problem, for a river such as the Boyne, for example, the projections imply that the event which today occurs typically every 25 years could be happening every 8-10 years by mid-century and every 2-3 years by the 2080s. It follows of course that the once in, for example, 25-year event will reach heights not projected on the basis of past calculations.

For much of the southwest of Ireland, the floods are the result of a sustained rainfall not experienced since August 1986. Individual rainfall days last week, while significant, were often not that remarkable compared to that earlier event. Tralee and Killarney, for example, had daily totals over 100mm on the 24 hours after August 5th, 1986. But August is very different from November in terms of the ability of the soil to soak up rainfall. After a long wet summer the brief dry interlude of early autumn has been succeeded by a

prolonged burst of westerly weather bringing moist air from a warmed Atlantic onshore.

Although town and city centres flooded on this occasion there were often special circumstances involved, such as the release of water from dams under pressure. But it is also striking looking at the air photographs how many of them show new housing under water.

Why, we can ask, were houses not built there before? Of course we know the answer. But we should not place the blame for these decisions on planners who have together with voluntary organisations such as An Taisce railed against unwise rezoning practices at local authority level for more than a decade. For their efforts they were demonised.

Rather it is now clear that the rezoning frenzy that produced our economic collapse has also been a major contributor to our latest environmental disaster. Culpability should be directed at those who ignored the advice of professional planners and engineers and persisted in supporting a clientelist-based short-term view which has placed families in hazardous locations now possibly facing the future in homes of rapidly falling value without the benefit of flood insurance.

In learning lessons for the future it is clear that climate change is a backdrop. As such, we must begin incorporating climate-change considerations into our planning and flood protection systems. Strategic environmental assessment of programmes and policies is now a mandatory requirement under an EU directive. Astonishingly, however, the biggest plan of all, the National Development Plan, was not subjected to this assessment.

For protection measures, the pressures will come from the insurance industry and large expenditures will be involved. Interestingly, towns such as Kilkenny, where the OPW has done such work, largely escaped unscathed last week. One hopes that the completion of such works in Clonmel will also provide similar benefits in the future.

But it is unlikely the State will ever be able to afford to defend every place at risk as flood heights rise and frequencies increase. The precautionary principle is an essential component for the future; we must be ultra cautious about placing infrastructure or housing in any areas with a flood history and be conscious that areas above the floodplain may become high risk in the future.

We need to accelerate the production of floodplain maps tied to future climate scenario data. But ultimately we have to recognise that containing a river is rather like squeezing an overweight individual into a tight pair of trousers. We can pull at the corset strings all we like; but inevitably something will pop out somewhere else!

Perhaps slimming down our greenhouse gas emissions is something in the longer term that would make a contribution to ensuring that our towns and cities do not in future start taking part in a reality TV show competing for the title of: Venice of the North.

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