

The Greater Dublin Area is facing serious water shortages in the coming years and the country's aging water infrastructure is unable to cope. In order to meet future demand, major new sources will have to be found, but where? Eoin Bassett reports.



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# PROBLEMS IN THE PIPELINE

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Population growth in the Greater Dublin Area coupled with the effects of climate change will leave the region in the throes of a major water crisis if new sources are not found.

The water supply for the Greater Dublin Area (GDA) could be 20 per cent behind demand by 2020, and by the middle of this century the region could face a shortfall of up to 50 per cent, according to a report from the Irish Climate Analysis and Research Units (Icarus) at NUI Maynooth.

With 1.4 million people living in the GDA, this is forecast to grow to 2.4 million by 2031. The Icarus research indicates that the east and the southeast of the country are going to be worst hit.

Dr Conor Murphy, author of the Icarus report on the effect of climate change on water resources, said that in terms of the rest of the country "we see similar patterns of change but not as extreme as in the east and the southeast. Those areas are largely dominated by surface run-off, so when rain falls it runs off into rivers and not into storage. Urban development adds to the losses, but the main issue from a climate change perspective is decreased summer rainfall and increased evaporation rates."

Murphy estimates that summer levels in the river Ryewater in Kildare will be between 40 per cent and 50 per cent lower by mid to late century due to global warming. The Ryewater is the main tributary of the Liffey, which supplies 80 per cent of Dublin's drinking water needs.

He also believes local authorities may face increased costs for water treatment as water sources become more polluted. "Water levels will be too low to dilute pollution, and water temperatures will rise which increases the risk of contamination as in Galway. That is likely to become more common."



**€5.8 BILLION INVESTMENT PROGRAMME**

In September the Government published a €5.8 billion spending plan on new water supply and waste water infrastructure. John Gormley, Minister for the Environment, confirmed that €288 million of the Water Services Investment Programme will be made available to local authorities for improved water supply management systems and for mains renewal and rehabilitation.

The Minister said he was conscious that considerable quantities of treated drinking water were being lost through leakage and he has issued new guidelines to local authorities to reduce leakage, asking every council to draw up plans by the end of next year to achieve this. "I want to see local authorities being pro-active on mains leakage control and rehabilitation," he said, adding that water conservation "is crucial to the sustainable use of water resources".

He said that measures taken to systematically reduce leakage in the Greater Dublin Area since the mid-1990s had ensured that it had been possible to cater for the huge increase in population and jobs in recent years without any substantial increase in water abstraction.

Murphy points out that climate change and its impacts on water quality are not mentioned in the Water Framework Directive at all, which requires Ireland's waterways to be of a good ecological status by 2015.

**SHANNON WATER PROPOSALS**

The Department of the Environment is currently studying a plan to quench the thirst of the Dublin region by piping water from the Shannon. The proposals have met with opposition from local groups claiming the plan will be environmentally detrimental to the region.

The Shannon Protection Alliance (SPA), set up in April, claims the extraction of million litres of water from Lough Ree on a daily basis would have disastrous consequences. Martin McEnroe, chairman of SPA, was part of a group that recently met with Minister for the Environment, John Gormley, to explain their concerns and present him with a scientific report commissioned by the SPA, which clearly indicates that the project is unsustainable, according to McEnroe.

"The amount sought by Dublin City Council is 475 million litres of water a day now. Opposition to this is massive and we've had a motion passed at an Athlone Town Council meeting saying the project is unsustainable and unworkable."

One of the options offered by the SPA as an alternative source is the aquifer north of Dublin. But the aquifer is under threat. "A decision is to be taken on whether a landfill site will be situated in North County Dublin on top of the aquifer. If that landfill goes ahead it means that the aquifer that it sits on top of will be destroyed for all time," said McEnroe.

"Large parts of the Bog of Allen can also be used as a reservoir, and in the wintertime when you have a surplus of water in the Shannon, it could be pumped south of Athlone into that reservoir. They should also look at leakages in a serious and meaningful way. And if they still want to look at a water supply from the Shannon let them look south of Ardnacrusha when everyone is finished with it."

McEnroe firmly believes that the Government needs to set up a water commission or board. "Some such body needs to be set up because we could be in big trouble in this country in the next ten years with the supply of water. It is still not too late."

However, according to Dublin City Council studies, the Lough Ree extraction proposal is one of only two options that would technically meet demand. The other, a desalination plant, is considered by planners to be too costly. A 2005 report by Dublin City Council identified water



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**CLIMATE CHANGE AND WATER RESOURCES**

Research conducted by the Irish Climate Analysis and Research Units (Icarus), NUI Maynooth indicates that:

- Precipitation will be the most important aspect of future climate change for Ireland with substantial increases in winter and reductions in summer likely.
- The largest winter increases are expected to occur in the midlands, greatest reductions in rainfall are likely for the east coast with reductions in the order of 25 per cent by the middle of the century and up to 40 per cent by the end of the century.
- Implications include the widespread reduction in annual run-off over the coming century, with reductions most marked in the east and southeast of the country.
- On a seasonal basis winter run-off is likely to increase in the midlands and west while all areas are likely to experience a decrease in summer run-off, with the greatest reductions in the east of the country.
- Hydrological changes due to climate change hold significant implications for water resources in Ireland by altering the resource base, as well as increasing the likelihood of competition between sectors such as agriculture, domestic supply, industry and environmental requirements for a diminished resource.
- Under current climatic conditions the Eastern River Basin District has the lowest availability of water per head of population when considered against all other RBDs.
- It is unlikely that the needs of water provision will be met from the development of a single option; such serious and ambitious long-term plans need to be initiated for the sustainable development of water supply.

"Within Ireland, the ability and capacity to adapt to climate change differs hugely throughout the country...there are counties that will not have the monetary capacity to increase infrastructure or to change water supply networks or upgrade them."

Dr Conor Murphy, Irish Climate Analysis and Research Units, NUI Maynooth

demand projections for the GDA, based primarily on National Spatial Strategy population projections and census results.

In the case of the Shannon, options to abstract water from Lough Derg or south of Lough Derg were also identified as technically feasible. But these options compared unfavourably with the Lough Ree option because of the increased distances from the GDA and the additional costs involved.

**OTHER SOURCES**

Both the council and the SPA may be missing the point. According to Murphy, the Shannon development project overlooks the affect of climate change. "It just takes into account current needs without looking at an increased demand in water as a result

of climate change." In order to meet future demand, more than one new source will have to found he explained. "We cannot suddenly start adapting to climate change in 30 years' time."

New water-treatment plants at Ballymore Eustace and Leixlip will increase supply, but only up to 2016 while Dublin City Council decided against extraction from the Slaney or Barrow as the volume of water is not enough.

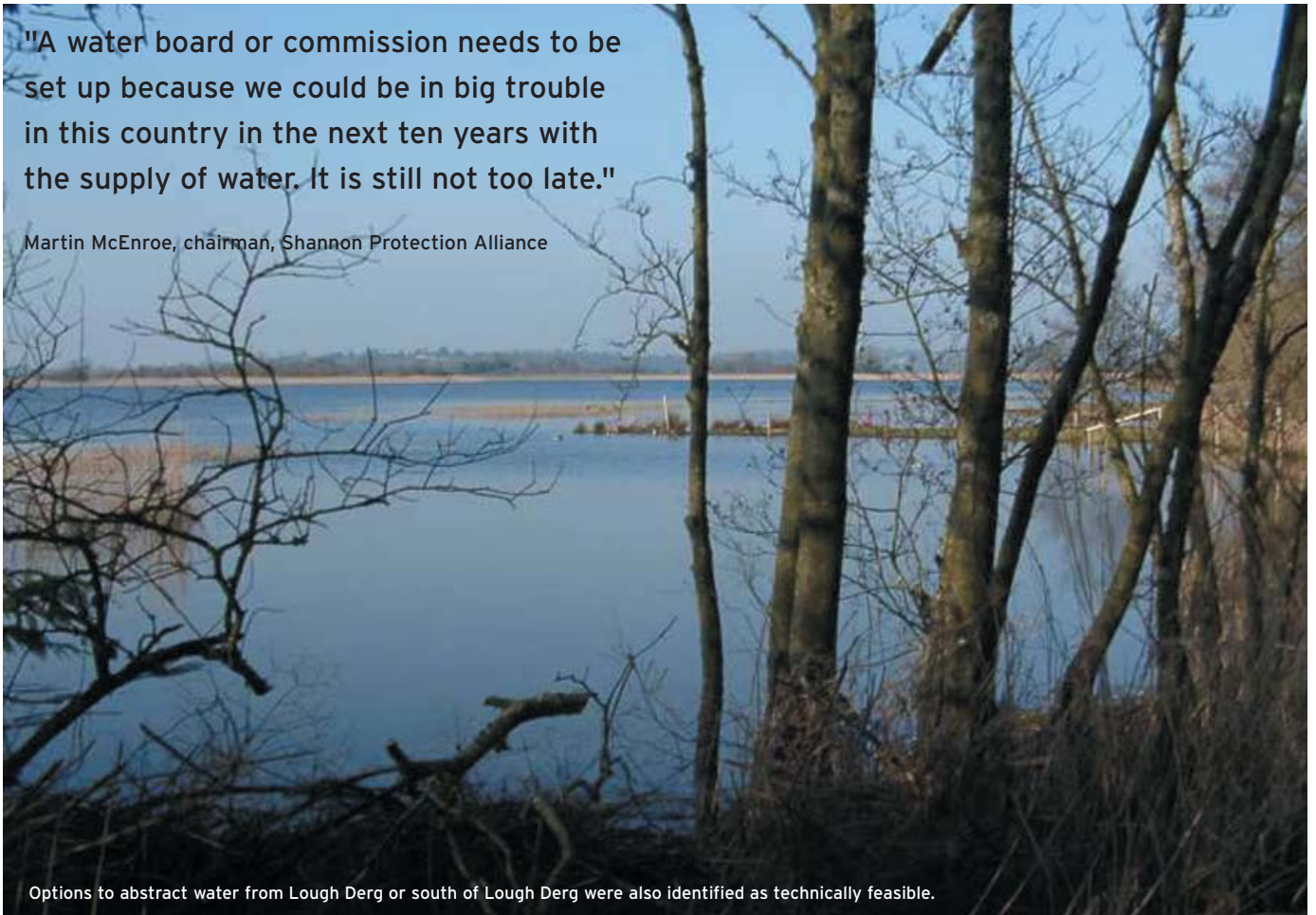
While the taking of water from Lough Ree is the preferred option, another one considered was desalination. Although the initial costs of both options are similar, the process of converting saltwater into drinking water would cost €450 million to run over 20 years as opposed to €131 million



New water-treatment plants at Leixlip (left) and Ballymore Eustace will increase supply, but only up to 2016.

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Martin McEnroe, chairman, Shannon Protection Alliance



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for the Shannon option.

"There are two main approaches, first of all developing strategic water supply such as the Shannon extraction, increased groundwater extraction, desalination, and increasing reservoir capacity; these are large-scale infrastructural developments that will increase the supply side. Secondly, there are measures that can be brought in on the demand side, reducing leakages and losses within water supply systems; a lot of work has been done in the last few years, but they still can do quite a bit more. Also, educating people about the amount of water they waste, conservation measures and efficient appliances."

However, have local authorities failed to treat the issue with the urgency it deserves? The development of water supply has been fairly static, explains Murphy, and the greatest development in water supply over the last 50 years has been in trying to reduce leakages in the network.

"Local authorities in the Greater Dublin Area are becoming increasingly aware of climate change and its impacts through their work on the Water Framework Directive and the river basin districts. They are also aware of the need to bring it into their catchment development plans and to look at how climate change will impact on water quality and availability," Murphy added.

#### GOOD COMMUNICATION

Murphy believes that adapting to climate change, especially in

the east and the southeast, is going to be heavily reliant on good communication between local authorities and central government, the implementation of policies and making sure they are actually carried out on the ground. "There needs to be an increased awareness of what needs to be done and the networks put in place.

"Lack of communication is a major obstacle to overcome in ensuring that populations have water resources and efficient supply, that there are sufficient flood defences available, but the whole idea of efficiency and joined-up thinking is the first step in dealing with the climate change problem.

"Climate change is a global issue but in coming to grips with it, it's going to be an entirely localised approach. Within Ireland, the ability and capacity to adapt to climate change differs hugely throughout the country. There are counties that will not have the monetary capacity to increase infrastructure or to change water supply networks or upgrade them."

According to Murphy, domestic water charges are a controversial solution to funding improved water infrastructure. "The model in the UK is complex with a number of different water supply companies. It is an extremely controversial option. A campaign driven by county councils to reduce the demand for water would be the best way to proceed. Failing that, there are number options to be looked at and charging for water is one of them."