The Irish Water Sector and the role of Group Water Schemes

Jennifer Brady
Water Technology Research Group
Centre for the Environment
Trinity College Dublin
Email: jebrady@tcd.ie
www.irelandswater.com/research/wateruse
Overview

- Current organisational structure
- Issues and challenges
- Proposed water reform plans
- Group water schemes (decentralised water supply in rural areas)
- Merits and faults of the group water scheme system
Ireland’s water supplies

- Current population of 4.6 million.
- 1.2 million reside in the capital Dublin.
- 1.7 million cubic metres of drinking water are produced daily:
  - 82% surface water
  - 10% groundwater
  - 8% springs
Five categories of water supply

1. Public water supplies (34 Local Authorities)
   - Serve 80% of population

2. Private Group water schemes
   - Serve 5% of population

3. Public Group water schemes
   - Serve 2% of population

4. Small private supplies
   - Serve 1% of population

5. Exempted supplies (private wells)
   - Serve 12% of population
34 Local Authorities are responsible for the local management and strategic planning of public water and wastewater services.

29 County Councils and 5 City Councils

Map adapted from www.wesleyjohnston.com/users/ireland/maps/base_map.gif
Ireland’s water industry structure

- **European Union**
- **Irish Legislation**
- **34 Local Authorities**
  - **Environmental Protection Agency** (Environmental Regulator)
  - **Department of Environment, Community and Local Government**

**Supplies**
- **Group Water Schemes** (Public & Private)
- **Small Private Supplies**

www.epa.ie  www.environ.ie
Water Sector Funding

- Water Services Investment Programme (WSIP)
  - 3 year programme
  - For major water and wastewater projects

- Rural Water Programme (RWP)
  - For smaller scale projects
  - Administered by Local Authorities

- No domestic water charges in Ireland.
- Only non-domestic sector charged for water use
- Costs €1.2 billion per year to run the public water system - €1 billion of this is provided by government funding.
- Water charges – used as a ’political football’.
Variation in Non-Domestic Water Pricing

2011 Water and wastewater combined charges across the 34 Local Authorities

Local Authority
Challenges - Water services investment

- Costs for water services provision have been rising 7.5% annually since 2007.

- Key drivers:
  - Increases in energy costs
  - Regulatory compliance with national and EU law
  - Capital investment for water and wastewater treatment.


- In Dublin, many parts of the supply network are 140 years old – 140km replaced…approx. 1400km left to do.
Challenges – High leakage levels

2011 Leakage Rates Across 34 Local Authorities

% Unaccounted for water

Local Authority

Adapted from www.lgcsb.ie/sites/default/files/service_indicators_in_localAuthorities_2011.pdf
Challenges – Climate change, population growth and urbanisation

Ireland’s water resources will face increasing pressures in the coming decades from:

1. **Climate change** (Wetter winters projected for the North and West, drier summers in East and South-East).

2. **Population growth** (Current population of 4.6 million increased by 340,000 since 2006, with 55% of the total population residing in the east).

3. **Urban expansion** (62% of population are now living in urban areas).

Will lead to an intensification of competing demands for water.
Challenges-
Mismatch between rainfall and population

1981-2010 Mean Annual Rainfall (mm)

2011 Population Density (per sq km)
Dublin’s water supplies

- Over the last 15 years Dublin experienced unprecedented socio-economic growth.
  - Increased water demand across all sectors.
- Dublin per capita consumption: 148L/day
- 550 million Litres produced daily.
- Water treatment capacity is extremely limited: Water supplies are presently on a knife-edge operating at 96% or higher on a daily basis.
- Two weeks ago, Dublin had to introduce night-time water stoppages for almost a week due to a filtration problem at one of its water treatment plants.
Key problems with the current organisational model

- Fragmented structure - 34 Local Authorities:
  - Duplication of resources
  - Difficulties in exploiting economies of scale
  - No coordinated holistic approach to water management or national planning for future water needs.

- Lack of sufficient investment has resulted in an ageing network, an infrastructure deficit and high leakage levels across the country.

- Ineffective planning for future demand needs = no headroom regarding Dublin’s water supplies.

- Current funding model is not sustainable.
Public Water Sector Reform Plans

- Water service divisions of the 34 Local Authorities will be amalgamated into one public national water utility - Irish Water. Fully established in 5 years.

- The introduction of domestic water charges in 2015 – volumetric charge/m3 with a free allowance.

- 1.1 million households nationwide will be fitted with a water meter within the next 3 years.

- There will be an independent economic regulator of the public water sector (CER).

- Augment supplies – proposals for construction of a pipeline from West to East.
Group Water Schemes (GWSs)

- Established in the 1950s: They are independent, community owned and run schemes.
- Over 1,000 GWSs serving 7% of population.
- Range in size from supplying 2 - 1,500 households consisting of a mixture of domestic, agricultural and commercial connections.
- GWSs provide water only, no wastewater services.
- Two categories:
  - Private GWSs and Public GWSs.

Private GWSs source, treat and supply their own water.

Public GWSs purchase treated water from the Local Authority but are responsible for its distribution.
Water abstraction and distribution on a private group water scheme.
Most schemes are formed as co-operatives.

All group water schemes must register with their relevant Local Authority.

The Local authority is not involved in administration of the scheme.

Schemes often employ full or part-time staff to manage the scheme but this is more difficult for smaller schemes – lower number of consumers for cost sharing.

Each scheme is entirely independent and are varying stages of advancement (leak detection /water treatment facilities).
Water charging on group water schemes

- Water charges are based on water provision only.
- The amount a group water scheme charges their members depends on the operational costs and overheads.
- Factors affecting operational costs include:
  - Length of the network
  - Raw water quality of the source
  - Pumping versus gravity flow
  - Membership profile (farming/domestic/commercial)
- GWSs receive a government subsidy to cover operating costs for supply to domestic members.
**Variances in GWS water charges**

- GWS tariff structures vary greatly:
  - Volumetric charging most widely used. Standing/fixed charge next most popular and lastly a mixture of both.
- Similar to Local Authorities there is considerable variability in water charges across schemes.
- For a 3 person household using 180m3 per year (OECD estimate):

<table>
<thead>
<tr>
<th>GWS</th>
<th>Volumetric charge €/m3</th>
<th>Standing charge €</th>
<th>Free annual allowance m3</th>
<th>Total annual water bill €</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum charge</td>
<td>0.22</td>
<td>0</td>
<td>0</td>
<td>39.60</td>
</tr>
<tr>
<td>Average charge</td>
<td>0.75</td>
<td>61.25</td>
<td>105</td>
<td>117.50</td>
</tr>
<tr>
<td>Maximum charge</td>
<td>1.80</td>
<td>0</td>
<td>12</td>
<td>302.40</td>
</tr>
</tbody>
</table>
Water Quality Issues

- For many year GWSs struggled to meet water quality standards due to:
  - Insufficient funding for infrastructure/treatment.
  - Lack of training for GWS personnel.
  - Lack of information on importance of effective treatment and source protection.

- In 2002 European Court of Justice found Ireland in breach of water quality standards-threatened fines.

- A number of options for group water schemes:
  1. Become part of a Design, Build, Operate (DBO) Strategy.
  2. Connect to the Local Authority network and become a Public GWS.
  3. Full takeover of the GWS by the Local Authority and become part of public supply network.
What are Design, Build, Operate Systems?

- **A Design, Build and operate (DBO) system** is where a single service provider is employed to construct, install and operate a water treatment plant for the duration of 20 years whilst the GWS remains in charge of the network and source.

- Best option is by means of grouping a number of GWSs to procure treatment plants by a single DBO contract **cheaper operating costs**.

- France played a role - learned best practice.

- There are 17 DBO groups across Ireland consisting of 151 group water schemes.
Benefits of the GWS Model

- Group water schemes provide an important and vital service to rural communities.
- They are a valuable example of an effective form of decentralised water treatment and supply - The alternative is extensive and costly distribution networks across long distances to reach remote rural areas.
- There exists a sense of trust between scheme managers and members - very low failure to pay rates among members.
Issues with the GWS Model

- GWS sector needs continued investment so as not to lag behind the public supply sector once reform plans have been put in place - otherwise there is a risk of an urban/rural divide.

- The overall running of a GWS is becoming increasingly demanding due to increased drinking water standards- smaller GWSs are the least well equipped to cope with the many challenges. Amalgamation of smaller schemes would reduce operating costs.

- Lack of interest/participation from younger generations - as a result many GWSs may eventually be taken over by their relevant local authority.
Small supplies across Europe

- Approximately 40-50 million Europeans or one in ten individuals obtain drinking water from small supplies (less than 5,000 people) or very small supplies (serving less than 50 people) including private wells.

- There is a serious lack of information regarding the number of these supplies and the number of people served.

- Connection of these small and very small supplies to a centralised mains system is the most popular choice of water treatment solutions among EU countries.

Conclusion

- Irish water sector is facing considerable reform in the coming years - long overdue and much needed.
- GWSs will remain an integral element of the rural water sector.
- Many of the reforms proposed for the public water sector are already existent across group water schemes.
- Group water schemes possess a wealth of knowledge and expertise in the field of domestic water metering and charging.
- Continued investment in both sectors is vital to ensure efficient and sustainable water supplies into the future.
Merci!

Email: jebrady@tcd.ie

www.irelandswater.com/research/wateruse