Water Management:
A future framework

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The environmental marketplace is now huge and global – it is growing at 5-10 per cent per annum. These markets are primarily driven by national and international regulation and are forecast to grow to $700bn by 2010 – triple the size of the global aerospace industry.

This is partly why as an element of the preparations for FP7 (*the Seventh Framework Programme 7 - EU R&D budget blocks of 5 to 7 year agreements. FP7 lasts from 2007 to 2013*), the European Commission established the Water Supply and Sanitation Technology Platform (WSSTP) (visit: www.wsstp.org) in 2004. The objectives of WSSTP are to: improve the international competitiveness of the European water sector, solve European water problems and contribute to the achievement of the UN's Millennium Development Goals. We'd all like the UK to be well placed to exploit this growing, global market and the research funding opportunities that FP7 will provide, but how?

Innovation

In 1996, the EIC published a report entitled: *Barriers to Investment by the Environmental Technology Industry in R&D* that revealed that: "laxity and uncertainty in British environmental regulation leaves the environmental technology industry without the long-term goals it needs to justify investment in R&D and without a home market from which to launch its exports."

During 2006, UKWIR, DTI and OFWAT funded PREST, part of Manchester University Business School, to review ten cases of success or failure to commercialise technology innovations in the UK water industry. The report – *Barriers to Innovation in the Water Sector* – concluded that the barriers are due to a: "misalignment of expectations between the supply-chain, the water companies, the regulators and government which is limiting the sector's ability to fully exploit its capacity for technological innovation sustainably to meet the future needs and challenges of UK and world markets."

The report suggests that the regulatory system and five-year price-setting cycle created a relatively risk-averse environment and did not sufficiently stimulate or reward innovation, especially as many innovations take a long time to develop. The following key actions were recommended:

- Replace fragmented, ad hoc or short-term strategies with an aligned multi-stakeholder vision, strategy and implementation plan for the UK water industry's innovation needs and priorities;
- Align UK water industry stakeholders on the needs and means to urgently increase the industry's innovation intensity and lobby relevant stakeholders to create a targeted innovation platform;
- Improve the water company-supplier interface for innovation and jointly develop a better common understanding of the specific features and strategic need for innovation.

Ten years on and the message from the EIC and UKWIR reports are the same!

Water Framework Directive (WFD)

The Water Framework Directive (WFD) not only requires, in general, for waters to achieve good status by 2015, but that there should be a proper economic assessment to inform policy makers of how and when this should be achieved. In order to meet this exacting timetable, including finalising River Basin Management Plans by the end of 2009, a Collaborative Research Programme (CRP) was established to produce the economic tools needed for the WFD. The programme is primarily funded by Defra, the Environment Agency and UKWIR and involves many stakeholders including English Nature, Ofwat and the DTI.

UKWIR has also been very active in managing projects stimulated by the regulations proposed in the Water

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Framework Directive. A 2003 UKWIR project, *Priority Hazardous Substances, Trace Organics and Diffuse Pollution WFD*, estimated the cost of complying with the wastewater treatment (priority substances) requirements of the WFD in terms of £billions - purely based on end of pipe treatment. And even with this investment, compliance could not be guaranteed due to the current technical infeasibility of removing some of the priority substances at sewage works down to the required level.

In 2006, this project was extended with joint funding from Defra, the Environment Agency and Ofwat. The report: *Dangerous Substances and Priority Hazardous Substances/Priority Substances under the WFD*, compares the alternatives of pollution prevention at source with providing additional wastewater treatment. Twenty-four substances were assessed and three categories identified:

- Substances with restrictions imposed under EC regulations;
- Examples where product replacement has or will soon be undertaken;
- Substances where control at source is difficult owing to a large number of sources and uses and levels remaining after advanced sewage treatment may still exceed new quality standards in rivers. These are primarily metals and the plasticiser DEHP.

After close examination of the options, three management strategies were identified:

- Do nothing;
- Substitution;
- End of pipe solutions – that may mean further investment in new technologies if no existing treatment options are available.

Another follow on UKWIR project, *Cost Benefit Analysis of Potential Solutions for Point and Diffuse Source Pollution to Achieve WFD Good Status*, started in late 2006 and that will provide further evidence on performance and costs of treatment. The results of all this work have been passed to the European Commission to contribute to the process of establishing sound policy for the WFD, based on sound scientific information.

Underground Assets

UKWIR has been active in stimulating research into the location of buried pipes and cables. In particular, the UKWIR managed, DTI funded, £2.4M VISTA project has been getting wide media attention. The project aims to: "Develop methods to integrate legacy data with newly acquired satellite data to produce easily understood 3D representations of underground assets to millimetre accuracy."

The interest in the project has been such that the consortium now includes 24 partners, including six water companies, BT, Transco, Transport for London, Ordnance Survey, NJUG, as well as equipment manufacturers, professional bodies and universities.

In addition, EPSRC has funded a £1M research programme *Mapping The Underworld*, which has four projects in this four-year initiative:

- Enhanced Methods for the Detection of Buried Assets (Oxford University);
- GPS Based Positioning System (Nottingham University);
- Buried Asset Location, Identification and Condition Assessment using a Multi-Sensor Approach (Birmingham University);
- Knowledge and Data Integration (Leeds University).

In November, the €5M EU funded Optimising Radar to Find Every Utility in the Street (ORFEUS) project started, in which UKWIR represents the water sector. This project will potentially deliver the next generation of Ground Probing Radar (GPR) to improve the capability of those who have to repair and replace our ageing buried infrastructure to enable them to be more efficient and safer when working amongst the complex web of pipes and cables under our streets.

Together with some directly funded UKWIR projects, there is now some £7M of research that the utilities will be able to access to address issues related to underground assets

The UKWIR facilitates and manages collaborative research for the 24 UK water service companies. For more information visit: **www.ukwir.org.uk**

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