



Reflections on recent experience with the Water Framework Directive

The brief in brief

This brief identifies insights about communication between science and policy stemming from processes of implementing the Water Framework Directive (WFD) through River Basin Planning. This brief builds on general experiences with the WFD, as well as specific experiences of WFD implementation in Scotland.

Why look at the WFD?

The Water Framework Directive (2000/60/EC)¹ is the most substantial piece of water legislation ever adopted by the European Union. This major driver for sustainable water management is also very relevant to protecting biodiversity and ecosystem services: beyond focusing on improving aquatic ecology, WFD implementation must also maintain or restore the status of Natura 2000 conservation sites (designated under the European Habitats and Birds Directives). The WFD is unusual in that it sets out ambitious timescales for achieving good ecological status of water bodies and also specifies how this should be achieved through the establishment of river basin management plans (RBMPs) created through mandatory public participation. The first RBMPs were published in 2009, and the next are due for publication in 2015. Since the WFD is ambitious and reflects much current thinking about how to achieve economically efficient, equitable and sustainable resource management, its experiences offer valuable insights for other processes.

How did we look at the WFD?

Our reflections from Scotland synthesise observations of planning meetings in Scotland together with six interviews with individuals connected with WFD planning, whilst our general observations are based on academic literature and observations of publically-available websites and other information.

Supporting science-policy communication for the WFD

Since the WFD came into force in December 2000, the need to promote links between science and policy has been

recognised². It was immediately perceived that input from scientists (with a focus on natural sciences) was needed in order to allow planning (for example, to identify and measure indicators of ecological status, to identify the causes of problems, to identify effective solutions). EU funding of research and support (e.g. through the Framework Programmes for Research) also reflected perceived gaps in the communication between science and policy for WFD implementation. However, a decade on, considerable science gaps still remain, including the need for a better understanding of the socio-economic components of WFD implementation³.

Concurrent with these efforts, came the challenge of ensuring that the knowledge resulting from research would be available and accessible to those charged with implementing the WFD. A particular response has been a specific mechanism for streamlining information collection and exchange called 'WISE' (Water Information System for Europe)⁴, described as 'a gateway to information on European water issues'. WISE has been continually developed with the aim of improving the 'flow' of information from the scientific community to policy decision-makers. A myriad of projects are available and linked to its portal at www.wise-rtd.info, together with experiences of implementation and policy documents. WISE is intended to allow different users to search according to their needs, but the results can be confusing. It may always be challenging for users to identify and make sense of the sheer quantity, variety and complexity of relevant information, but this is especially true if those users were not previously involved in processes to share learning and build conceptual understanding. Dealing with complexity is similarly a challenge for efforts to promote SPIs on biodiversity and ecosystem service topics. Therefore, learning positive and negative lessons from initiatives such as WISE may be useful for any comparable efforts to make biodiversity data accessible via web-portals, such as BISE, the Biodiversity Information System for Europe⁵, which is

² E.g. Quevauviller P. et al. (2005). Science-policy integration needs in support of the implementation of the EU Water Framework Directive, *Environmental Science & Policy*, 8(3), 203-211.

³ Hering D. et al. (2010). The European Water Framework Directive at the age of 10: A critical review of the achievements with recommendations for the future. *Science of the Total Environment*, 408, 4007-4019.

⁴ <http://water.europa.eu/> and Vaes G. et al. (2009). Science-policy interfacing in support of the Water Framework Directive implementation, *Water Science & Technology*, 60(1), 47-54.

⁵ BISE: <http://biodiversity.europa.eu/>

¹ <http://ec.europa.eu/environment/water>

discussed in a companion SPIRAL brief⁶. We suggest that investment in on-going shared learning and knowledge co-production by science and policy is needed, in addition to efforts to package and present research outputs.

The benefit of focusing resources on planning and process

Unlike some other processes, the WFD is unusual in the amount of time and direction it gave to planning for implementation of the mandatory River Basin Management plans (RBMPs). The specifications about how to plan and the mandatory targets helped to highlight where information would be needed: for example, information about drivers of ecological status, or the cost-effectiveness of measures. This process therefore explicitly highlighted many information gaps that the science base in 2000 was not able to provide answers to. The timescale also allowed research to be commissioned to fill some of these gaps necessary for implementation. As such, the relatively long time scale allowed for planning can be seen as a facilitating factor for promoting good links between science and policy. However, despite the investment in planning and resources on River Basin Management plans, there are still research gaps⁷. This illustrates that it can take a long time for science to respond when such a radical change to environmental management occurs.

Policy can 'drive' science

Some conceptions of science-policy interactions suggest that science should 'push' information to policy-makers in order to provide new ideas as well as provide answers to questions. However, in this case, it is clear that the ambitions of policy 'pulled' the scientific research to answer new policy relevant questions. Historically, efforts to regulate the water environment, and hence much research, had been focused on chemical standards and/or pollution⁸ but the WFD prompted a shift in focus towards more holistic understanding of aquatic ecology and the interaction between abiotic stressors and biotic responses. The complexity of ecological systems and the need for new tools and knowledge was perhaps not appreciated by those who drafted the WFD, probably linked to the fact that those tasked with its implementation are not the same groups who were lobbying to influence the WFD ten years ago⁹. This 'push-pull' may provide both short-term evidence for immediate decision making and strategic research to inform policy of future challenges¹⁰.

⁶ The SPIRAL brief "Tools for Science-Policy Interfaces: Recommendations on BISE and Eye on Earth" is available from <http://www.spiral-project.eu/content/documents>

⁷ Quevauviller P et al. (2012). Integration of research advances in modelling and monitoring in support of WFD river basin management planning in the context of climate change. *Science of The Total Environment* 440: 167-177

⁸ Newson, M. D. (1992). *Land, water, and development: river basin systems and their sustainable management*, Routledge.

⁹ Kaika M. and Page B. (2003). The EU Water Framework Directive: part 1. European policy-making and the changing topography of lobbying, *European Environment*, 13(6), 314-327

¹⁰ McGonigle D.F. et al. (2012). Towards a more strategic approach to research to support catchment-based policy approaches to mitigate agricultural water pollution: A UK case-study. *Environmental Science & Policy*, <http://dx.doi.org/10.1016/j.envsci.2012.07.016>

Science and policy are not two simple categories

The WFD RBMP processes demonstrate why 'science' and 'policy' should not be assumed as discrete or distinct categories. Firstly, although those working in agencies responsible for water management are not typically categorised as policy-makers, they do contribute to decision-making. In each European member state the discussions about how to implement and monitor implementation is generally devolved to responsible authorities, who are usually existing regulatory agencies. In addition, the task of coordinating standards across the EU required discussion and negotiation between similar actors from all member states. Secondly, whilst many agency members may label themselves as scientists, their work goals and practices differ from academic scientists, in that they are typically more concerned with applying existing methods and tools to comply with regulation and monitor performance by standards. These 'regulatory scientists' may or may not have close links with academic scientists advancing new ideas and knowledge (indeed, different disciplines from hydrology to economics may vary in the extent to which their knowledge is linked to regulation and policy). So it is not sufficient to accept 'scientist' or 'policy-maker' as a category explaining an individual's role. If we wish to understand – and improve – science-policy interfaces, we should instead expect to identify and work with multiple actors who may have multiple identities, interests and values. For example, a current approach to promoting science-policy interfaces in the UK water sector recognised the need for a network of actors who have both science and policy understanding, by developing a community of problem-solvers sharing a common world view¹¹. Many other initiatives exist across Europe: in future it may be valuable to share experiences and insights about promoting SPIs between the water and biodiversity sectors.

Looking for more information on science-policy interfaces?

For more SPIRAL results, including references related to SPIs, see companion SPIRAL briefs at <http://www.spiral-project.eu/content/documents>. This brief is a result of research and interactions within and around the SPIRAL project. This brief was written by Kerry Waylen and Kirsty Blackstock (The James Hutton Institute), Juliette Young and Allan Watt (Centre for Ecology and Hydrology), and Sybille van den Hove (Median).

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¹¹ Jasanoff S. (1994). *The fifth branch: Science advisers as policymakers*, Harvard University Press.