

THE SIXTH & SEVENTH FRAMEWORK PROGRAMMES

The Sixth and Seventh Framework Programmes cover Community activities in the field of research, technological development and demonstration for the periods 2002-2006 and 2007-2013 respectively

2007 Update on EC FP6 & FP7 Research of relevance to Defra's Water Directorate (Reviewed March 2007)

Undertaken by FWR on behalf of the Water Directorate of the Department for Environment, Food and Rural Affairs (Defra) under contract reference DWI 70/2/200

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The CORDIS World Wide Web site is <http://cordis.europa.eu>

ABBREVIATIONS

CIRCA	Communication & Information Resource Centre Administrator
CORDIS	Community Research and Development Information System
Defra	Department for Environment, Food and Rural Affairs
EUROPA	EUROPA is the portal site of the European Union (http://europa.eu.int/). It provides information on European Union affairs and integration
EU	European Union
FP5, FP6, FP7	The 5 th , 6 th or 7 th EU Framework Programme for Research and Technological Development
GCE	Global Change and Ecosystems" thematic sub-priority of FP6
IP	Integrated Project
NoE	Network of Excellence
SME	Small or Medium-Size Enterprise
SSP	The 'Scientific Support to Policies' research projects initiative under FP6
STREP	Specific Targeted Research Project
URL	Uniform Resource Locator (web address)
WD	Water Directorate (of Defra)
WFD	Water Framework Directive

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1 Introduction

This report provides information on projects related to water supply in the FP6 research programme. These projects may be directly related to water supply interests or they may address techniques that may be similarly employed in a water supply context. The report is an update of the information provided in a previous review produced for the Water Directorate (WD) of Defra in March 2006 ¹.

The current status of FP7 research plans is also assessed with respect to water supply.

Although this report only identifies specific projects related to water supply, the sources of information described in the text also serve as a resource for the identification of research relevant to the interests of the whole of Defra's Water Directorate.

2 Sources of Information on FP6 projects

2.1 The GCE website

Within FP6, environmental research is mainly funded under the 'Global Change and Ecosystems' (GCE) thematic sub-priority. This has its own website

<http://cordis.europa.eu/sustdev/environment/home.html> providing information on the research activities to be funded by the EC under this sub-priority. In addition to the research areas defined under the GCE sub-priority, environmental research is also financed through specific activities designed to provide Scientific Support to Policies (SSP). The GCE website has a section entitled 'Funded Projects', which provides several sources of information. These are: -

- 1 A link to the EUROPA web portal for the FP6 'Scientific Support to Policies' (SSP) website at http://ec.europa.eu/research/fp6/ssp/index_en.htm.
- 2 A link to the EUROPA web portal for the FP6 Major Projects Library at http://ec.europa.eu/research/fp6/ssp/index_en.htm. This library contains overviews of Integrated Projects (IPs) and Networks of Excellence (NoEs) selected so far for **all** the FP6 thematic priorities.
- 3 A catalogue of information available to download as a PDF file. On the GCE website this is referred to as *FP6 "Global Change and Ecosystems" Project Synopses*. When downloaded the Report Title is *Abstracts of related contracts. Global Change and Ecosystems (calls 1-2) and Scientific Support to Policies (calls 1-2)* published 30/06/2005.

2.2 The CORDIS website

The CORDIS website also has pages dedicated to FP6 project details at <http://cordis.europa.eu/fp6/projects.htm>. This is a database of projects, which have been authorised as signed contracts. The database is searchable using key words or it can list projects by "activity areas" such as "global change and ecosystems", or by "instrument" such as an integrated project, or by country. This database complements the information available from the sources identified in sections 2.1 and 2.3.

2.3 The 'RTD: Environmental Technologies' CIRCA website

This is part of the Communication and Information Resource Centre Administrator (CIRCA) website within the EUROPA portal site of the European Union. The 'RTD: Environmental Technologies' part of the website (<http://forum.europa.eu.int/Public/irc/rtd/eesdwtakeact/home>) is described as a "public

¹ 2006 Update on EC FP5 & FP6 Research of relevance to Defra's Water Directorate (Reviewed March 2006). FWR March 2006.

site hosting pertinent information and documents related to the FP7 activity Environmental Technologies within the Theme 6 - Environment of the Cooperation Specific Programme, including relevant documentation derived from the previous FP6 and FP5". The website contains the following two sources of relevant information.

- 1 The "Research Projects Information" folder of the "Library" section (<http://forum.europa.eu.int/Public/irc/rtd/eesdwatkeact/library>) contains a document entitled *Water and Soil European Research – Catalogue of FP6 Projects*, which is dated 11/07/06. It is in the form of downloadable PDF file.
- 2 The "Information" section contains all the copies of "Water and Soil Times", an e-newsletter dedicated to disseminate information about activities, RTD projects and results achieved within the thematic area "Water and Soil related aspects" under FP6. In total, 22 issues were published between July 2003 and November 2006. These are available for download at: <http://forum.europa.eu.int/Public/irc/rtd/eesdwatkeact/info/data/index.htm>
- 3 Projects listed on the FP6 'Scientific Support to Policies' website

The website described in item 1 of section 2.1 above

(http://ec.europa.eu/research/fp6/ssp/index_en.htm) lists projects under these categories: -

?? Agriculture	?? Fisheries & Aquaculture
?? Animal health & welfare	?? Health
?? Cultural heritage	?? Migration
?? Disability	?? Information society
?? Economic development & cohesion	?? Security – Crime - Drugs
?? Energy	?? Transport
?? Environment	??

The listed projects have been reviewed and the following have been selected as having possible relevance to water supply. If a specific website reference is available this is shown. **Appendix A** provides an overview of each project, along with a description of the problem being addressed and how the research will contribute to policy development.

Acronym	Title (URL)
HAIR	Harmonised environmental indicators for predicting pesticide risk
BRIDGE	Developing a common methodology for the evaluation of groundwater environmental quality
ESPREME	Reducing the environmental impact of heavy metals
REBECCA	Relationships between ecological and chemical status of surface waters (www.rbm-toolbox.net/rebecca)
SWIFT-WFD	Harmonising water quality sampling and screening methods www.swift-wfd.com
Virobathe	New methods for assessing micro-organisms in EU bathing water www.virobathe.org
EVENT	Towards better surveillance of food and water-borne viruses http://ec.europa.eu/research/fp6/ssp/event_en.htm

4 Projects listed in the FP6 Major Projects Library

The website referred to in item 2 of section 2.1 above

(http://ec.europa.eu/research/fp6/ssp/index_en.htm), lists projects under the various FP6 themes. All the major projects have been reviewed and the following have been selected as having possible relevance to water supply. If a specific webpage reference is available this is provided.

Assessing large-scale environmental Risks with tested Methods (ALARM)

An Integrated Project www.alarmproject.net

The strategic objectives of ALARM are to develop an integrated large-scale assessment of the risk to bio-diversity, and terrestrial and freshwater ecosystems, including those risks arising from: climate change; environmental chemicals; biological invasions; and the loss of pollinators. ALARM will establish socio-economic risk indicators related to the drivers of pressure on bio-diversity.

Evaluate the Impacts of Global Change on European Freshwater Ecosystems (EURO-LIMPACS)

An Integrated Project www.eurolimpacs.ucl.ac.uk

EURO-LIMPACS focuses on the key drivers of aquatic ecosystem change (land-use, nutrients, acid deposition and toxic substances) and examines their interactions with climate, change, using time-series analysis, space-for-time substitution, palaeolimnology, experiments and process modelling. A central activity is the development of a toolkit for integrated catchment analysis and modelling to simulate hydrological, hydrochemical and ecological processes at the catchment scale for use in assessing the potential impact of global change under different climate and socio-economic scenarios.

Network of prevention and control of zoonoses (MED-VET-NET)

A Network of Excellence www.medvetnet.org

Diseases naturally transmitted from animals to man, termed zoonoses, constitute major public health risks and generate emerging disease problems. Such diseases, especially when food borne, have significant social and financial impacts in Europe and need to be addressed across the whole food supply chain. The overall objective of this Network of Excellence (10 participants) is to integrate veterinary, medical and food scientists in the field of food safety at European level, in order to improve research on the prevention and control of zoonoses, including food borne diseases, while taking into account the public health concerns of consumers and other stakeholders throughout the food chain. The network comprises 5 veterinary and 5 public health institutes in 8 European countries. All partner institutes have national reference laboratory-based responsibilities for the prevention and control of zoonoses.

5 Projects in the catalogue downloaded from the GCE website

The catalogue is described under item 3 of section 2.1 above. The following project was identified as of potential interest.

New Approaches to Adaptive Water Management under Uncertainty (NEWATER)

www.newater.info

The complexity of current water resource management poses many challenges. Water managers need to solve a range of interrelated water dilemmas, such as balancing water quantity and quality, flooding, drought, maintaining biodiversity and ecological functions and services, in a context where human beliefs, actions and values play a central role. Furthermore, the growing uncertainties of global climate change and the long-term implications of management actions make the problems even more difficult. NeWater addresses some of the present and future challenges of water management. The project recognizes the value of highly integrated solutions and advocates integrated water resource management (IWRM) concepts. However, NeWater is based on the hypothesis that IWRM cannot be realized unless current water management regimes undergo a transition towards more adaptive water management.

6 Projects in the catalogue and newsletters downloaded from the ‘RTD: Environmental Technologies’ CIRCA website

The catalogue and newsletters are defined under items 1 & 2 of section 2.3 above. They contain the following projects of potential interest that have not been identified already in this report.

Water Supply and Sanitation Technology Platform (WSSTP) www.wsstp.org

The Water Supply and Sanitation Technology Platform (WSSTP) is one of the technology platforms that are set up within the European Environmental Technology Action Plan (ETAP) that was adopted by the European Commission in 2004. It is a European initiative, open to all stakeholders involved in European water supply and sanitation and major end-user groups. The participants in the platform have produced the following documents available on the website.

The Vision Document: "Water Safe, Strong and Sustainable" paints a picture of what could be achieved by 2030 if resources for research and development resources would be made available and targeted to respond onto the issues and challenges that the European water sector is facing.

The Strategic Research Agenda; ‘Water Research- A necessary investment in our common future’, describes the research which must be undertaken to realise the vision. The SRA is based on an integrated and participatory approach for water resources management. The solutions are integrated across individual sectors and disciplines and involve the civil society.

The Implementation Plan describes the initial ideas for demonstration pilots and implementation cases and mechanisms for financial engineering of grants and debts. The Implementation Plan will use a systems approach, which encompasses water supply, sanitation, water use in agriculture and industry and river basin management to develop solutions for the global water market. The IP describes the strategy chosen for the execution of the SRA through six pilot themes of generic research, enabling technologies development and implementation cases.

Technology enabled universal access to safe water (TECHNEAU) www.techneau.org

TECHNEAU, an integrated project funded by the European Commission, challenges the ability of traditional system and technology solutions for drinking water supply to cope with present and future global threats and opportunities. This will be initiated through rethinking of current water supply options and by providing researched and demonstrated new and improved technologies for the whole water supply chain.

TECHNEAU is addressing these challenges by developing adaptive supply system options and new and improved treatment and monitoring technologies. Future system options to be studied are flexible, small scale and multi-source supplies, utilising non conventional resources like brackish ground water, treated wastewater and urban groundwater. Treatment technologies include membrane and oxidation based multi-barrier schemes, providing safety against a broad spectrum of chemical and microbiological contaminants. Monitoring technologies to be developed will provide on-line and at the site information on water quality including parameters that relate to malicious contamination.. The project will integrate and further develop current work on modelling with the purpose of controlling and optimising supply systems. A framework for risk assessment/risk management will assist in integrating the project output into the practice of the water companies

Creating tools for pesticide risk assessment and management in Europe (FOOTPRINT) www.eu-footprint.org

FOOTPRINT is developing a suite of three pesticide risk prediction and management tools, for use by three different end-user communities: farmers and extension advisors at the farm scale, water managers at the catchment scale and policy makers/registration authorities at the national/EU scale.

The tools will allow users to:

- i) Identify the dominant contamination pathways and sources of pesticide contamination in the landscape.
- ii) Estimate pesticide concentrations in local groundwater resources and surface water abstraction sources.
- iii) Make scientifically-based assessments of how the implementation of mitigation strategies will reduce pesticide contamination of adjacent water resources.

The three tools will share the same overall philosophy and underlying science and will therefore provide a coherent and integrated solution to pesticide risk assessment and risk reduction from the scale of the farm to the EU scale. The predictive reliability and usability of the tools will be assessed through a substantial programme of piloting and evaluation tests at the field, farm, catchment and national scales.

The tools developed within FOOTPRINT will allow stakeholders to make consistent and robust assessments of risk of contamination to water bodies at a range of scales relevant to management, mitigation and regulation (i.e. field/farm, catchment and national/EU). They will in particular i) allow pesticide users to assess whether their pesticide practices ensure the protection of local water bodies and, ii) provide site-specific mitigation recommendations. The FOOTPRINT tools are expected to make a direct contribution to the revision of the Council Directive 91/414/EEC, the implementation of the Water Framework Directive and the future Thematic Strategy on the Sustainable Use of Pesticides.

The project has recently released a database containing environmental fate and ecotoxicological data for all pesticides registered in the EU and their metabolites ('The FOOTPRINT PPDB').

7 FP7 research plans and water supply

7.1 General summary of FP7

FP7 is organised into four specific programmes.

Co-operation (€2.3 bn): the objective is to gain leadership in key scientific and technology areas by supporting co-operation between universities, industry, research centres and public authorities across the EU. There are ten different thematic research areas: -

- ?? Information and Communication technologies (€1.1 bn)
- ?? Health (€6 bn)
- ?? Transport (including Aeronautics) (€4.1 bn)
- ?? Nanoproduction (€3.5 bn)
- ?? Energy (€2.3 bn)
- ?? Food, agriculture and biotechnology (€1.9 bn)
- ?? Environment (including climate change) (€1.8 bn)
- ?? Security (NEW! compared to FP6) (€1.4 bn)
- ?? Space (€1.3 bn)
- ?? Socio-economic sciences and the humanities (€0.6 bn)

Ideas (€7.5 bn): the establishment of an autonomous European Research Council (ERC), which will support and stimulate basic research carried out by individual teams competing at European level.

People (€4.7 bn): the 'Marie Curie' actions, which strengthen training, the career prospects and mobility of European researchers. Special focus will be given to skills and career development, increasing mobility between university and industry, and strengthening links with national systems.

Capacities (€4.2 bn): developing and exploiting the EU's research capacities through large-scale research infrastructure, regional cooperation and innovating SMEs as well as increased international co-operation and bringing science and society closer together.

7.2 Environment theme in 'Co-operation' research area

Water related research will be funded in the 'Environment' theme as it was in FP6. Emphasis will be given to the following activities:

Climate change, pollution and risks

- ?? Pressures on the environment and climate
- ?? Environment and health
- ?? Natural hazards

Sustainable Management of Resources

- ?? Conservation and sustainable management of natural and man-made resources and biodiversity
- ?? Management of marine environments

Environmental Technologies

- ?? Environmental technologies for observation, simulation, prevention, mitigation, adaptation, remediation and restoration of the natural and man-made environment
- ?? Protection, conservation and enhancement of cultural heritage, including human habitat improved damage assessment on cultural heritage
- ?? Technology assessment, verification and testing

Earth observation and assessment tools

- ?? Earth and ocean observation systems and monitoring methods for the environment and sustainable development
- ?? Forecasting methods and assessment tools for sustainable development taking into account differing scales of observation

As usual the European Commission will fund Environment research by selecting project proposals submitted following the publication of a call for proposals. A webpage on the CORDIS website is committed to announcing the calls of the Environment Work Programme as they are published. This is at http://cordis.europa.eu/fp7/cooperation/environment_en.html.

At the time of writing there has been one call for proposals published on 22 December 2006. The contents of this call have been examined and those that are relevant to Defra water supply interests are listed in Appendix B.

8 Concluding comments

The best sources of information on relevant FP6 projects are: -

- ?? The ‘Global Change and Ecosystems’ (GCE) thematic sub-priority website at <http://cordis.europa.eu/sustdev/environment/home.html>.
- ?? The FP6 ‘Scientific Support to Policies’ (SSP) website on the EUROPA web portal at http://ec.europa.eu/research/fp6/ssp/index_en.htm.
- ?? The ‘RTD: Environmental Technologies’ part of the CIRCA website at <http://forum.europa.eu.int/Public/irc/rtd/eesdwatkeact/home>.

The best source of information on potential relevant FP7 projects is at: -

- ?? The CORDIS FP7 Co-operation Environment website at http://cordis.europa.eu/fp7/cooperation/environment_en.html.

Another useful source of information is available as an e-mailed newsletters or ‘alerts’. This is: -

- ?? The DG Environment News Alert Service Science for Environment Policy. This service provides scientific information in the field of the main themes of the Environmental Action Programme and relevant to DG Environment policy priorities. The target audience are policy makers as well as the wider public. The news alert is sent weekly and registration is at http://ec.europa.eu/environment/integration/research/research_alert_en.htm

Appendix A Relevant projects in the ‘*Scientific Support to Policies*’ activity of FP6

Harmonised environmental indicators for predicting pesticide risk (HAIR)

Start date: 2004. Completion date: 2007.

The problem. Within sustainable agricultural systems the aim is to provide effective crop protection, while minimising the impact of pesticides on the environment and human health. The risk arising from pesticide use is currently assessed within Member States of the European Union (EU), but there is no consensus on either methodology or the number and type of indicators to include. There is a need for a harmonised European approach to the assessment of pesticide risk to support policy development toward sustainable agriculture.

Overview: HAIR will deliver a set of indicators to assess pesticide impacts on agro-ecosystems and human health. As such, the project will: -

- ?? Establish a consistent database structure for parameters affecting pesticide risk (e.g. land use, toxicological properties, soil type, climate, etc.)
- ?? Provide a standardised set of indicators for predicting pesticide risk in the expanded EU
- ?? Validate indicators of risk using existing datasets
- ?? Utilise GIS-based information to provide outputs on different regional and European-wide scales
- ?? Deliver an integrated and user-friendly software tool for predicting overall pesticide risk

Contribution to policy development: HAIR will: -

- ?? Enable policy-makers to predict the environmental fate of pesticides in aquatic and terrestrial ecosystems
- ?? Facilitate predictions of pesticide exposure for public health policy
- ?? Provide an assessment tool that contributes to the aims of Agenda 2000 and the 6th Environment Action Programme’s thematic strategy on the ‘Sustainable Use of Plant Protection Products’
- ?? Provide a framework for the pesticide usage that complements the role of Directive 91/414/EEC in authorising pesticides

Developing a common methodology for the evaluation of groundwater environmental quality (BRIDGE)

The problem. In support of the Water Framework Directive, WFD (2000/60/EC), the Commission has proposed [COM(2003)550] the development of a complementary Groundwater Directive (GWD). This Directive would establish criteria for assessing the chemical status of groundwater (nitrates, pesticides and biocides) and would require Member States to identify pollutant threshold values representative of groundwater bodies found to be at risk. It is necessary to test and describe robust methods of analysis and assessment that can be applied in all Member States.

Overview: Through EU-wide case studies, BRIDGE will:

- ?? compile a representative database of groundwater pollutants
- ?? develop a common methodology for the establishment of groundwater environmental quality standards in order to provide recommendations related to pollutant threshold values
- ?? assess the socio-economic implications of representative pollutant threshold values, following economic analysis procedures set out in the Water Framework Directive

The criteria selected for assessment will incorporate interactions between groundwater and a wide variety of other geological and environmental features. Similarly, the assessment procedures will cover the potential environmental risks posed by different land use. The criteria selected for assessment will incorporate interactions between groundwater and a wide variety of other geological and

environmental features. Similarly, the assessment procedures will cover the potential environmental risks posed by different land use.

Contribution to policy development:

- ?? BRIDGE will support the implementation of the future Groundwater Directive, complementing the WFD framework.
- ?? It will assist water policy and management stakeholders to develop national strategies compliant with the WFD and proposed GWD.
- ?? The project will develop a common methodology for establishing groundwater environmental quality threshold values in support of the chemical status assessment required by the WFD. Project deliverables

Reducing the environmental impact of heavy metals (ESPROME)

Start date: Jan 2004. Completion date: Dec 2006.

The problem. Heavy metals can accumulate in the environment and cause damage to ecosystems and human health. Strategies to reduce these impacts have to be developed. However, it is difficult to tackle this problem because analysis and actions are usually addressed from separate areas, such as air, water or soil. In addition, long-term effects are important. Hence, if only one environmental component is analysed for short periods, no consistent and effective strategy can be derived. A more holistic approach is required that will show how heavy metals are dispersed in Europe's environment, and their effects on ecological and human health.

Overview: ESPROME will carry out cost-effectiveness and cost-benefit analyses to identify strategies that will reduce both the release of heavy metals and, ultimately, their impact on the environment and human health. The project will: -

- ?? Collate data on the emissions of six common heavy metals – arsenic, cadmium, chrome, lead, mercury and nickel – and on ways of reducing emissions
- ?? Improve models of how heavy metals are transported in the atmosphere, soil and water
- ?? Collect data on exposure levels and thresholds
- ?? Estimate the willingness of EU countries to pay for preventive measures

Contribution to policy development: ESPROME aims to develop tools and methods to support Europe's environmental policy-makers. Its results will: -

- ?? Contribute to the EU Thematic Strategy on Air Pollution (Clean Air for Europe programme - CAFE)
- ?? Provide information for the revision of the Directive on heavy metals and polycyclic aromatic hydrocarbons
- ?? Feed into the implementation of the Mercury Strategy
- ?? Provide details for the heavy metals protocol of the UNECE Convention on long-range trans-boundary air pollution
- ?? Provide information for the review of the list of priority substances under the Water Framework Directive

Relationships between ecological and chemical status of surface waters (REBECCA)

Start date: Dec 2003. Completion date: Dec 2006. www.rbm-toolbox.net/rebecca

The problem. The Water Framework Directive (WFD) aims to improve the quality of coastal and inland waterways by setting targets and standards against which to measure them. This requires a sound understanding of the links between the ecological status of surface water and its physico-chemical quality, both natural and as a result of human influence. These associations need to be identified through the analysis of existing information and new models for designing and assessing monitoring programmes should be developed.

Overview: REBECCA will assess the available data and develop new models to improve the scientific basis for the implementation of the WFD. The project will: -

- ?? Collate and organise existing knowledge of relationships between physico-chemical and ecological status in EU waterways
- ?? Determine gaps in the knowledge base and appropriate assessment models
- ?? Identify and test appropriate biological indices of environmental stress
- ?? Develop and validate models and statistical tools for assessing the links between the ecological and physico-chemical quality of water

Contribution to policy development:

- ?? Improved scientific understanding to ensure the achievement and maintenance of the good status of surface and ground water
- ?? The provision of more robust numerical models and monitoring protocols for the management and maintenance of high-quality inland and coastal waterways
- ?? Harmonisation of the methods and criteria by which water quality is assessed and the WFD implemented

Harmonising water quality sampling and screening methods (SWIFT-WFD)

Start date: Jan 2004. Completion date: Dec 2006. www.swift-wfd.com

The problem. The EU Water Framework Directive seeks to integrate the management of water bodies with the improvement in water quality from upland headwaters, through river systems and lowland valleys, to estuarine and coastal waters. At present, there is a plethora of disparate sampling methods internationally and across the range of aquatic environments. This project will develop a harmonised range of robust, ‘low-cost’ approaches and protocols for the assessment of water quality across Europe to ensure the effective implementation of the Directive.

Overview: SWIFT-WFD will focus on the preparation and development of robust, reliable sampling methods and procedures for the assessment and control of water quality. It will develop a range of chemical and biological screening methods and test their efficacy through laboratory experiments and field trials. The project will focus on developing new ‘low-cost’ and innovative techniques. It will also include a series of training courses and summer schools for training water management professionals, which could be continued after the completion of the project.

Contribution to policy development:

- ?? The project will develop robust and effective protocols for harmonised, “low-cost” water quality assessment across the EU in support of the Water Framework Directive
- ?? A set of guidelines will be developed to assist policy-makers and water managers – including those in small and medium-sized enterprises – adopt effective water strategies
- ?? The project will inform policy-makers on the potential socio-economic consequences of implementing and maintaining new monitoring programmes

Contribution to policy development: ECASA will: -

- ?? Help define indicators that will improve site selection and assist in meeting the requirements of EU directives for environmental impact assessments (EIA)
- ?? Help define the cost to wild stock fisheries of aquaculture initiatives, and vice versa
- ?? Provide information on socio-economic and ecosystem-aquaculture interactions in European coastal environments

New methods for assessing micro-organisms in EU bathing water (Virobathe)

Start date: December 2005. Completion date: April 2007. www.virobathe.org

The problem. The Bathing Water Directive (BWD – 76/160/EEC) governs the quality of EU bathing waters. It is among the oldest of EU Directives and is currently under review. Advances in technology

provide an opportunity for greatly improved detection of waterborne micro-organisms and the consequential reduction in potential health risks (eg gastro-enteritis) for recreation. For instance, molecular DNA technology could be applied to detect these agents and, hence, improve the quality of European bathing water.

Overview: VIROBATHE will evaluate methods for detecting in water noroviruses and adenoviruses – noroviruses are the cause of 'winter vomiting disease' and some adenoviruses are associated with gastro-enteritis, particularly in young children. This project will:

- ?? Develop methods to detect these agents rapidly in recreational marine and fresh waters
- ?? Test and validate these methods during a 20-week surveillance programme covering representative recreational waters across the EU
- ?? Introduce the technique to other routine environmental testing laboratories across the EU to monitor bathing waters at a local level.

Contribution to policy development: VIROBATHE will provide the scientific information essential for the Commission to review the existing Bathing Waters Directive (76/160/EEC) and meet the environmental health standards appropriate for the 21st century.

The study will inform the international debate on microbiological monitoring of water, especially to the revision of the Bathing Waters Directive.

The project will provide credible data, not only to the Commission but also to the World Health Organisation (WHO), on the potential use of the viral determinants examined for assessing and setting quality standards for recreational waters.

Towards better surveillance of food and water-borne viruses (Event)

Start date: 01/09/2004. Completion date: 01/09/2007.

http://ec.europa.eu/research/fp6/ssp/event_en.htm

The problem. Food and water is monitored for bacterial contamination but not viral. Diseases caused by some enteric viruses, such as noroviruses, are readily identifiable due to high attack rates and short incubation periods. More difficult to detect are infections with viruses that are largely asymptomatic during lengthy incubation periods, such as viral hepatitis. Identifying the source of such outbreaks is virtually impossible since a surveillance and diagnostic infrastructure has yet to be established in Europe.

Overview: EVENT will develop laboratory and bio-informatics tools for the epidemiological surveillance of food and water-borne viruses. The network will establish which pathogens pose the greatest risk to the food chain, evaluate modes of transmission, and develop suitable diagnostic assays. The project will:

- ?? Develop testing algorithms for the detection and surveillance of noroviruses and hepatitis A virus
- ?? Develop shared database infrastructure for the tracking of these viruses
- ?? Improve the understanding of viral evolution for diagnostics and testing
- ?? Investigate the unexplained gastroenteritis and hepatitis caused by rare or newly described viruses
- ?? Assess animal to man infection by noroviruses, rotaviruses and hepatitis viruses

Contribution to policy development:

- ?? Providing better capability to detect and track viral contamination of food and water, allowing the authorities more time to respond to public health threats
- ?? Strengthening the European network for the surveillance and control of communicable diseases, and providing a blueprint for the development of future epidemiological monitoring
- ?? Helping regulators and risk managers draft targeted guidelines for future control and prevention

Appendix B Relevant call topics in the FP7 Co-operation work programme for the Environment theme for 2007

ENV.2007.1.1.5.1. Climate change impacts and adaptation strategies in water policies

The aim is to study European and international adaptation measures and strategies related to climate change impacts and how these are taken into account in water policies. The project should bring together scientific and policy experiences on the existing and/or missing links between climate change and water management. It will contribute to; the identification of research needs on climate change impacts on water cycle and resources; to the development and application of methodologies for adaptation measures to climate change; to the development of scenarios of water demand and to potential implementation on water policies.

Expected impact: To provide a coherent framework on adaptation strategies of climate change impacts on water. The project will also give the fundamentals on the European/international adaptation strategies that water policy has to take into account when considering climate change impacts. Furthermore, it will support the implementation of the EU water policy, including its relation to other sectors and policies, and the identification of research gaps in the field.

ENV.2007.1.3.3.3. Investigating Europe's risk from droughts

Establish a network to assess the state of the art in research related to droughts in Europe, to identify research needs as a contribution to the development of a European drought policy in regard to Europe's risks and vulnerability. Climate trends also should be taken into account. Analyse key studies and initiatives, within Europe and in relevant areas outside Europe, to assess and estimate the economic, social and environmental impacts of droughts.

Expected impact: Short to long term vision on the research needs and potential contributions to a European drought policy taking into account current climate change knowledge, social and economic implications and interactions with other policies. Provide information on possible impacts of droughts and guidance for stakeholders in the area of planning, implementation and scenarios.

ENV.2007.3.1.1.2. Technologies for measuring and monitoring networks

Technologies to assess the chemical and ecological status of water bodies for cost-effective monitoring campaigns need to be developed. Priority will be given to miniaturized sensing systems and wireless network technology for the deployment of essentially self-sustaining wireless sensor networks aimed at spatial and temporal water quality assessment. Emphasis should be put on the development of stable chemo- and bio-sensors with low maintenance requirements. Hardware components comprising smart (bio)materials and microchip technologies for sensing a wide range of parameters - including those required for the Water Framework Directive reporting- are to be developed with supporting software applications. A relevant participation of industrial partners as well as of SMEs is requested.

Expected impact: Substantial reduction of labour-intensive field sampling and measuring campaigns as well as fewer errors during data collection and transcription of results. The temporally and spatially dense data provided by these technologies is expected to reveal previously unobservable phenomena. The action should lead to strengthening the European industrial competitiveness in this field.