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A MISTRA-funded research programme

The VASTRA Programme

VASTRA is a multidisciplinary, solution-oriented research programme dealing with sustainable water management strategies. The programme aim is to raise the current level of scientific knowledge, and to develop methods and models that will considerably contribute to solving the environmental problem of eutrophication in an efficient and socially acceptable way. The programme is scheduled to run between 1997 and 2004 and the second concluding phase started in 2002.

New Scene of Water Management

The water management in Sweden is currently undergoing important changes related to adopting the European Water Framework Directive, a new Environmental Code and new and revised National Environmental Quality Objectives. While these changes provide a new and promising basis for future water management in Sweden, many steps have yet to be taken, scientifically and technologically as well as politically and administratively, in order to produce workable solutions that will support achieving the new policy and management objectives.

Research Focus

Eutrophication continues to be a major and severe environmental problem in inland waters as well as in coastal waters and the seas surrounding Sweden. Hence, VASTRA phase II focuses on the problem of eutrophication. Three problem areas have been identified and subsequently form the basis for the subprogrammes:

1. Integration and synthesis of knowledge for eutrophication control in a catchment
2. Selecting policy instruments, institutions and conflict resolution mechanisms for sustainable catchment management
3. Nutrient flow in landscape elements and catchments.

Sustainable Water Management?

Despite our solid knowledge of the causes of the eutrophication problem, it is still far from being solved. A sustainable solution must involve increased knowledge on avoiding serious conflicts between stakeholders and how to best stimulate stakeholders to co-operate and become involved in the management process. It should include an efficient and socially acceptable framework of water resource management. This must be sought through multidisciplinary efforts, including politics and economics as well as the natural sciences.

By providing tools for applying a chain of actions from the sources on land, through wetlands and lakes and allowing them to act in concert with other known measures as well as political and economic decision support devices, VASTRA will be able to assist in finding a solution to the eutrophication problem.

Toolbox for Eutrophication Control

The integration and testing of alternative management strategies, as well as judging their general feasibility and acceptance, are important steps in catchment management. The aim of VASTRA is to provide instruments to help formulate effective water management strategies in catchments.

The tools comprise guidelines, methods, models and synthesis of the current knowledge. The research

findings will in this way be integrated and translated into strategies that can cope with practical realities. Development and test of the toolbox will be a joint effort between researchers and stakeholders. VASTRA will conduct focus group discussions and scenario simulations with stakeholders in the pilot catchment, Rönne å, in southern Sweden. The VASTRA toolbox will include:

- » **SOCIAL SCIENCE:** Synthesis of organisation, conflict resolution and public participation for water management
- » **ECONOMICS:** Method of catchment valuation, synthesis of alternative policy instruments and a model for best management practices on farm level
- » **NATURAL SCIENCE:** Dynamic models for phosphorus and nitrogen flow at the catchment scale and in selected landscape elements such as arable land, wetlands and lakes
- » **INTEGRATED DECISION SUPPORT TOOLS:** Prototype of a scenario-simulation tool for best allocation of nutrient reducing measures at the catchment scale including cost-benefit analysis
- » **BOOKS:** Experiences from an Actor Game in the Catchment Genevadsån in Sweden (published 2000), The Right of Use and Tradition of the River Em (published 2001), Optimal Wetland Design (published 2002), and Sustainable Water Management (to be published 2004). The books are in Swedish.

