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The EUROHARP Project

Towards European Harmonised Procedures for Quantification of Nutrient Losses from Diffuse Sources

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What is EUROHARP?

- The EUROHARP project will provide a comprehensive scientific evaluation of nine different contemporary methodologies for quantifying diffuse losses of N and P.
- The project includes 17 study catchments.
- The methodologies have been selected to include those approaches which are currently used by European research institutes to inform policy makers at national and international levels.

EUROHARP Objectives

- **First Primary Objective**

  Provide end-users with a thorough scientific evaluation of nine contemporary quantification tools and their ability to estimate N and P losses to surface freshwater systems and coastal waters, and thereby facilitate the implementation of the EC Water Framework Directive.

- **Second Primary Objective**

  Develop an electronic decision support system (tool-box) for the identification of benchmarking methodologies with respect to both costs and benefits, for the quantification of diffuse nutrient losses under different environmental conditions across Europe.

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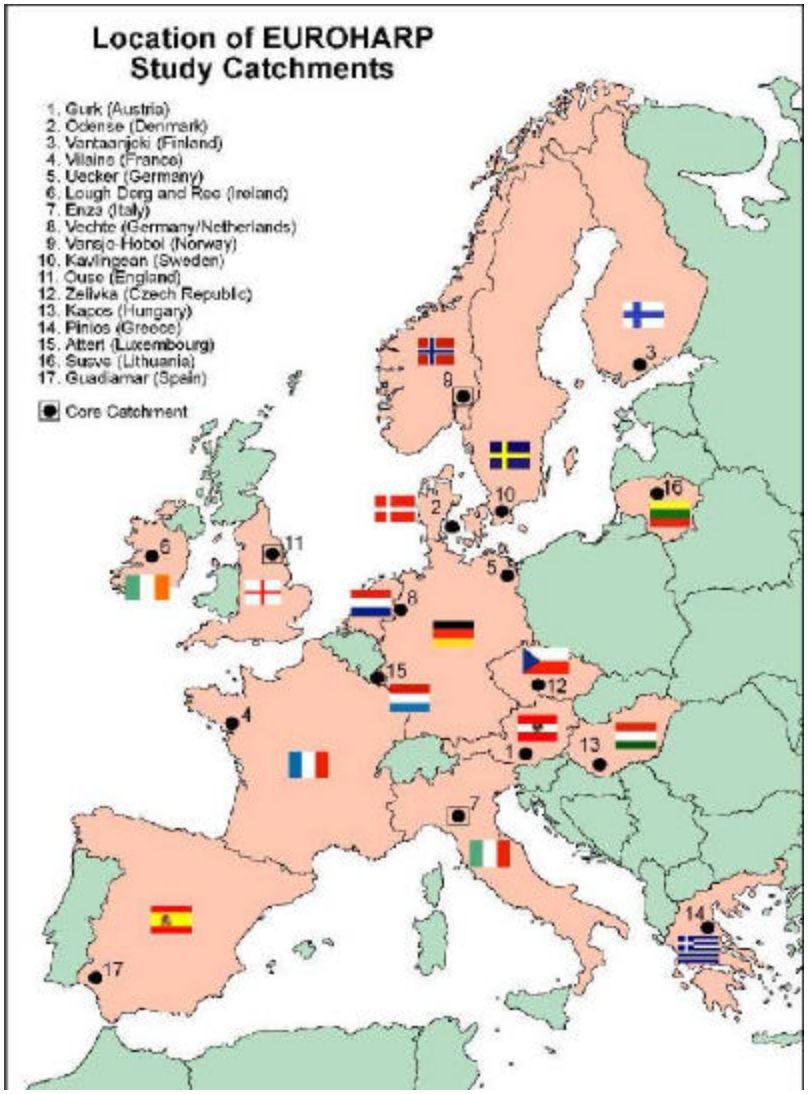
Study Catchments

The project has a total of 17 study catchments across gradients in European climate, soils, topography, hydrology and land use.



Quantification Tools

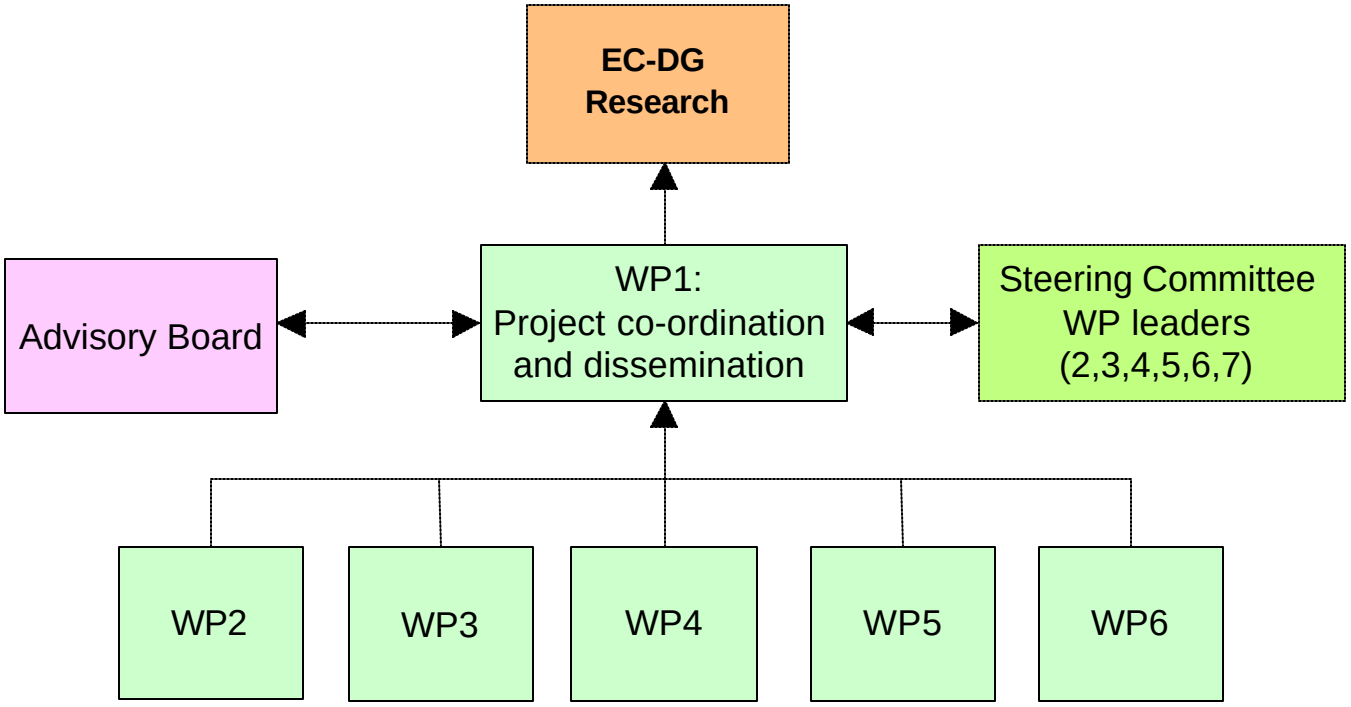
- ANIMO (The Netherlands)
- REALTA (Ireland)
- N-LES (Denmark)
- MONERIS (Germany)
- TRK (Soil-N/HBV) (Sweden)
- SWAT (Italy, Greece)
- EVENFLOW(United Kingdom)
- NOPOLU(France)
- Source Apportionment (Denmark)

Funding

Total budget: 7.3 million euro

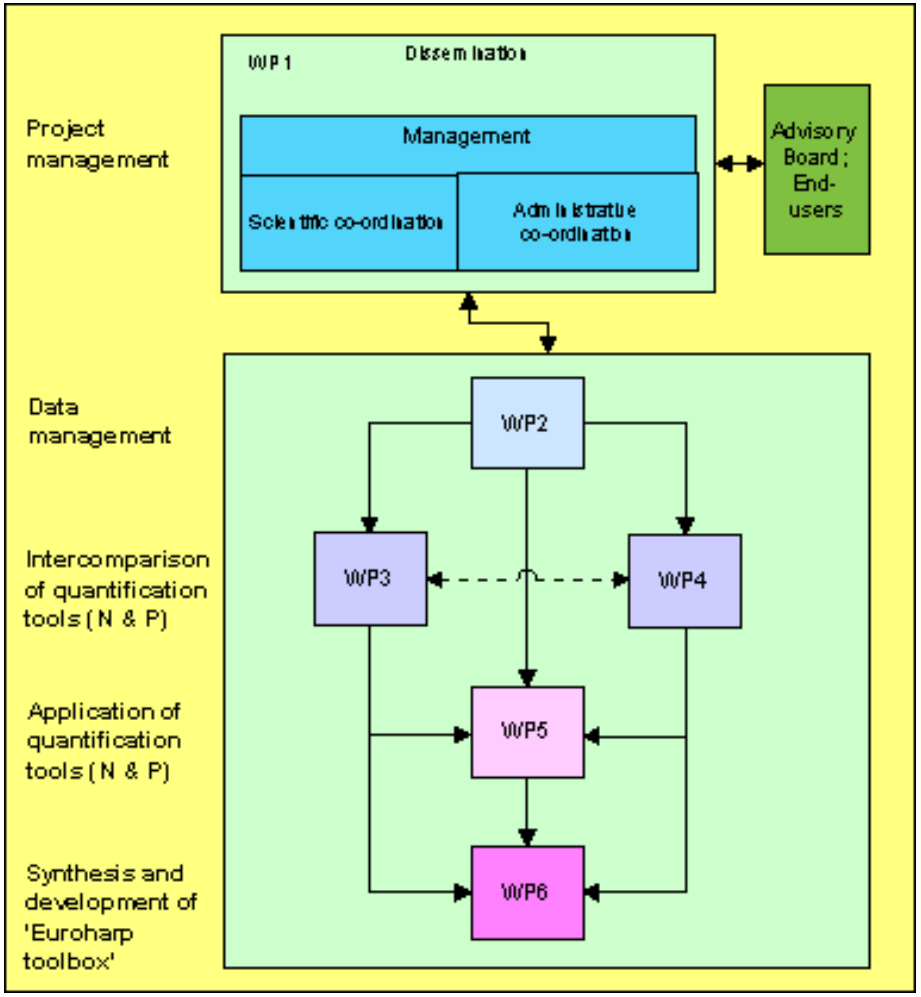
EC contribution 4.032 million euro

Organisational chart showing decision structures (responsibilities) of the EUROHARP project



Work plan of the EUROHARP project

- The work plan is divided into six work packages (WPs).
- Each Workpackage is divided further into tasks and subtasks.



EUROHARP Workpackages

- WP1: Project Management and Dissemination
- WP2: Development of a Catchment Information System
- WP3: Application and evaluation of phosphorus loss quantification tools
- WP4: Application and evaluation of nitrogen loss quantification tools
- WP5: Application of methodologies to analyse nutrient pollution in a European River Basin Network
- WP6: Evaluation/synthesis of model performance and river basin Toolbox

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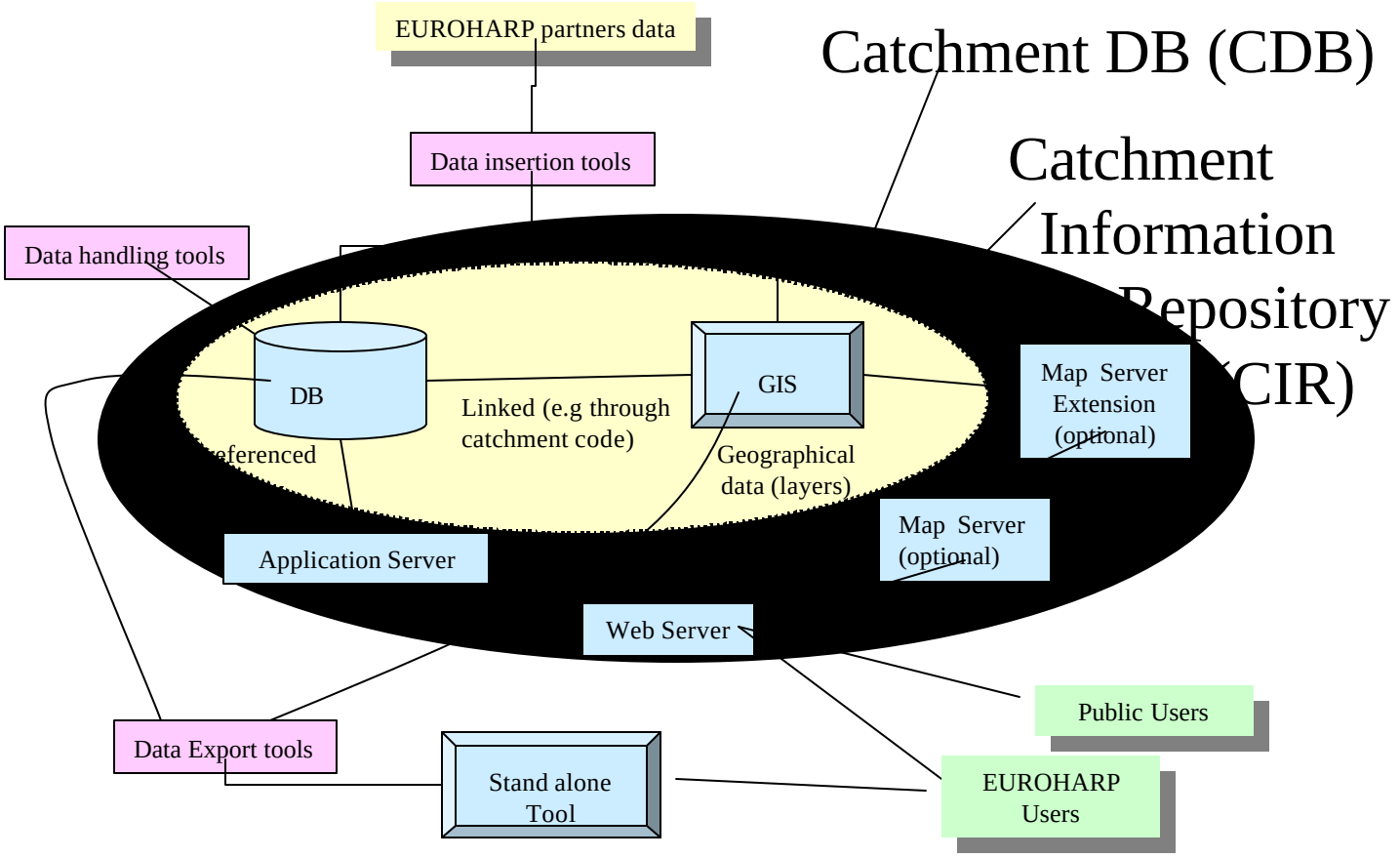
EUROHARP WP1

- Administration and co-ordination
- Web-site
- Final report to EC
- Dissemination of results

EUROHARP WP2

Development of a Catchment Information System, collection and management of catchment data, together with its associated quality, spatial and temporal resolution.

EUROHARP Data Management (WP2)



EUROHARP Catchment DataBase

GIS

- ESRI Environment (ArcView and ArcInfo)
- geographical data exchange through formats supported by ESRI products (e.g shapefiles)
- geo related data preferably in geographic co-ordinates (decimal degrees)

DB

- relational database - MS SQL Server
- structure to be defined on the basis of the data

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EUROHARP Stand alone tool

- application for the Windows environment, on CD-ROM
- to be developed with VB and ESRI MapObjects (GIS functionality)
- includes all catchment data

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EUROHARP WP3 & WP4

Objective assessment of the performance of methods for estimating diffuse N and P loss to freshwater systems

WP3 & WP4 objectives

- Scientific evaluation of methods for estimating diffuse N and P loss to freshwater systems*
- Development of performance assessment criteria*
- Parameterisation and calibration of methods
- Testing of performance of methods
- Evaluation and reporting

* Common to both WP 3 and 4

EUROHARP WP5

Application of methodologies to analyse nutrient pollution in a European River Basin Network

WP5 Objectives

- Assess the importance of nitrogen and phosphorus retention in streams, rivers, reservoirs, shallow lakes, deep lakes and wetlands for nutrient source budgets in the 17 different catchments.
- Apply nine benchmark quantification tools for predicting riverine nitrogen and phosphorus sources and loadings on catchments in different European Eco-regions.

- Conduct model evaluation tests based on approved validation protocols and intercompare the performance of the eight quantification tools (and the load-oriented method, QT9) in European catchments.
- Provide guidance on the application of the quantification tools to catchment data owners and perform an end-user assessment of the results.
- Establish and implement methods for performing cost-effectiveness analysis of the applied quantification tools with catchment data owners, modellers and in conjunction with WP6.

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EUROHARP WP6

Synthesis of results, socio-economic effects and development of the EUROHARP Toolbox

WP6 Objectives

- Quantify the response in nutrient losses to major changes in land use and management practices by the different QT´s.
- For selected land-use and management scenarios, elaborate the first and second hand efects on the social and economic activity in two scenario demonstration catchments.
- Develop a synthesis of the performance and cost effectiveness of the applied QT´s, provide recommendations and suggest improvements to meet various reporting requirements in Europe.

- Develop, and provide end-users with an integrated river basin toolbox of applicable and scientifically defensible methodologies for the quantification and prediction of diffuse losses of N and P at different scales and temporal resolutions in Europe.