



ZER0-M

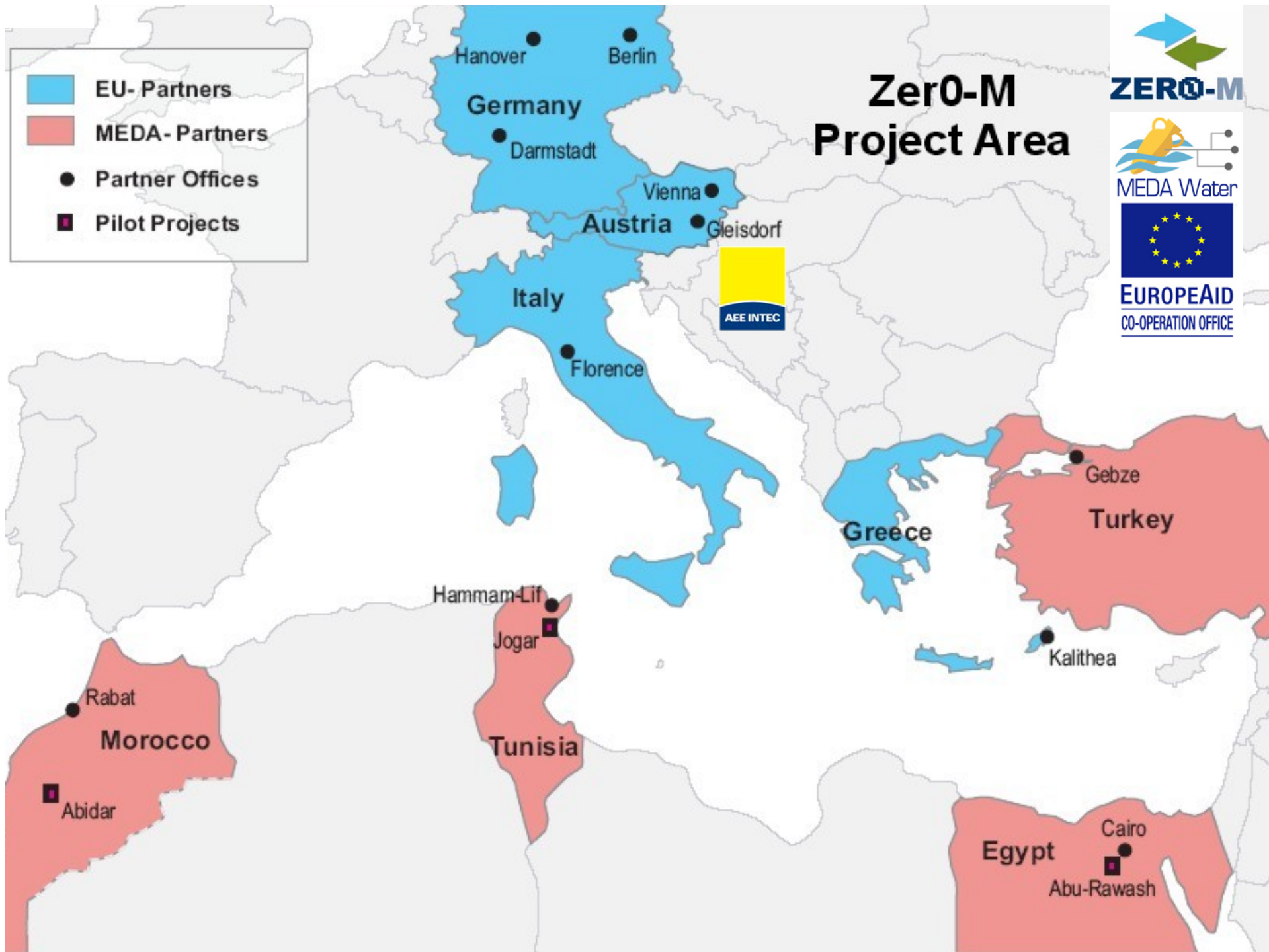
Sustainable Concepts Towards A Zero Outflow Municipality

www.zer0-m.org

A project under the
EURO-MEDITERRANEAN PARTNERSHIP

Euro-Mediterranean Regional Programme For Local Water Management

Zer0-M aims at concepts and technologies to achieve optimised close-loop usage of all water flows in small municipalities or settlements (e.g. tourism facilities) not connected to a central wastewater treatment - the Zero Outflow Municipality (Zer0-M).





Consortium

MEDA Partners

- Tübitak-Marmara Research Center (MRC-ESERI), **Turkey**
- Water Research & Pollution Control Department, National Research Centre, (NRC) **Egypt**
- Institut National de Recherche Scientifique et Technique, Laboratoire Eau et Environnement (LEE), **Tunisia**
- Institut Agronomique et Vétérinaire Hassan II, Wastewater Treatment and Reuse Unit (WTRU), **Morocco**

European Partners

- **Applicant:** Arbeitsgemeinschaft ERNEUERBARE ENERGIE, Institute for Sustainable Technologies (AEE INTEC), **Austria**
- Associazione Ambiente e Lavoro Toscana – O.N.L.U.S. (ALT), **Italy**
- Department of Geography and Regional Research, University of Vienna (IGR), **Austria**
- TU Berlin, Zentraleinrichtung Kooperation and Fakultät III, Fachgebiet Verfahrenstechnik I (TUB), **Germany**
- Universität Hannover, Zentrale Einrichtung für Weiterbildung (weiterBILDUNG), **Germany**
- Fachvereinigung Betriebs- und Regenwassernutzung e.V. (fbr), **Germany**



MEDA WATER Meeting in Jordan, 5. December 2005

Key elements of the project

➤ **Know-how exchange**

Internet network

Regional and international conferences,

Publication of a journal.

➤ **Know how transfer**

Training and workshops

Excursion for experts

➤ **Zer0-M Realisations**

Installations at 4 Training and Demonstration Centres

Three real-scale pilot implementations (Egypt, Tunisia and Morocco)

➤ **Case studies**

Elaboration of Zer0-M concepts on four pilot sites,

Developing of a Design Support System

➤ **Public awareness**

DVD with video and text information



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Know-how exchange

ZERO-M
Sustainable Concepts Towards A Zero Outflow Municipality

Home Page | Overview | Innovations | News | Demonstration Sites | Results | Partners | Links | Forum | Archive

News
Visit the new Public Discussion Forum.

1st ZERO-M INTERNATIONAL CONFERENCE
Download the 1st announcement
Pre-Register to the conference
Search the website

Overview - The ZERO - M Project
A project under the EURO-MEDITERRANEAN PARTNERSHIP
Euro-Mediterranean Regional Programme For Local Water Management
Zero-M aims at concepts and technologies to achieve optimised close-loop usage of all water flows in small municipalities or settlements (e.g. tourism facilities) not connected to a central wastewater treatment - the Zero Outflow Municipality (Zero-M).

Summary
Several technologies are already available, which allow efficient wastewater treatment and re-use without hygienic risks on a low-cost and easy-to-handle level. These include sanitation systems with low water consumption, separation of grey and black water, biological treatment of grey water and reuse for non-drinking purposes (e.g. irrigation), bio-membrane reactors for effluent treatment, constructed wetlands for extensive treatment, sludge hygienisation for re-use as fertilizer. The beneficiary countries are Egypt, Morocco, Tunisia and Turkey.

The project consortium consists of 11 partners from these four Mediterranean Partner Countries (MPC) and the EU-countries Italy, Greece, Austria and Germany and comprises a Municipality, environmental NGOs, non-profit professional organisations and research institutions (see under Consortium).

Target groups of the project are experts from administration, planning and engineers. Awareness raising measures additional target on schools and interested public.
Zero-M wants to enable one centre in each country to implement and disseminate SWM solutions and to promote the technologies and the approach among authorities and consumers. Main issues to be taken into consideration are:

- Function, treatment performance and maintenance requirements of existing SWM technologies
- Integrated concepts for different applications of decentralised waste water treatment and re-use
- small settlements in rural areas with agricultural production
- isolated tourism facilities
- peri-urban areas not connected to a centralised waste water collection and treatment system
- Hygienic aspects and good practice to avoid health hazards, with special regard on re-use of wastewater and sludge for irrigation and fertilisation.
- Costs and tariffs.

Planned Activities
• Set up of an internet network for experts on the above described topics; building up links to existing centres
• Organise conferences, publications of a journal, know-how exchange
• Addressing national target groups in order to disseminate SWM technologies and examples in the countries; addressing national target groups in order to disseminate SWM technologies and examples in the countries; updating of relevant legislation in order to discuss SWM friendly regulations.
• Realisation of Zero-M installations attached to four TDCs (components: water saving household and sanitary appliances, biological grey water treatment, membrane bioreactors, constructed wetlands); monitoring; pilot implementation for a site in Egypt, a Tunisian rural settlement and a development site in Morocco. (Technology transfer)
• Case studies on four small municipalities or settlements in the 4 MPCs with the elaboration of Zero-M concepts, developing cartographic visualisation and representation tools, a software tool for modeling economic effects and a life cycle assessment of environment and health aspects of SWM components.
• A CD-ROM containing a video and information about SWM for different target groups. (Awareness raising).

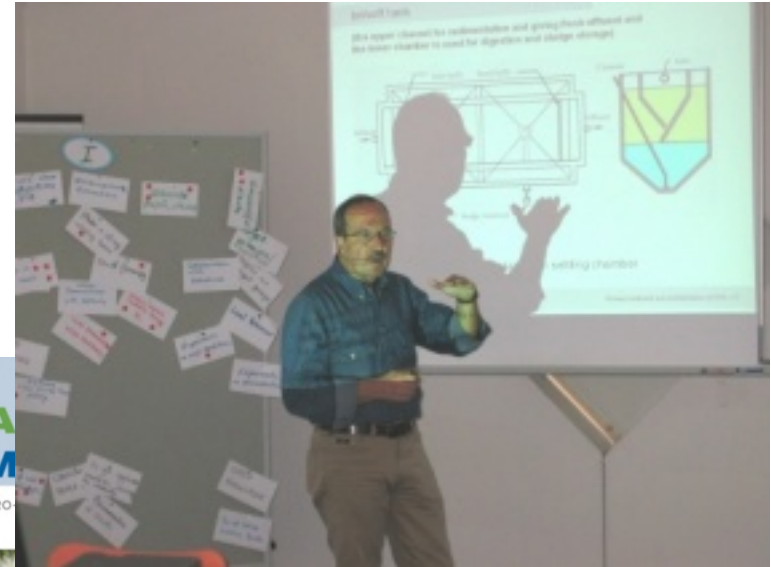
Homepage

SUSTAINABLE MANAGEMENT
CONCEPTS TOWARDS A ZERO

AN AERIAL INTRODUCTION
Domestic water supply and wastewater treatment as we presently know and practice it is a "Victorian art". Though we have improved the techniques used, the approach is still the same. We have to ask whether such an approach, which was developed some 100 years ago for very specific conditions is still appropriate nowadays and more particularly, under completely different conditions. P. 3

This project is funded by the European Union

Journal



CLEANER PRODUCTION
Industrial pollution initially was treated by concentration and storage or dilution and discharge into natural systems. Environment degradation and the new waste treatment technologies led first to end-of-pipe solutions and today to sustainable development. P. 6

ANAEROBIC PRIMARY TREATMENT
The development of low-cost technologies for adequate collection and treatment of wastewater could help responding to the increasing demand for sustainable sanitation and wastewater management in developing countries. P. 15

SANITARY FACILITIES
Efficient use of drinking water especially in regions of water scarcity will gain great importance in the next decades. On one side people are longing for comfortable tap water, on the other side this advantage will automatically lead to a wasteful use of water. P. 36

Workshops and 1 conference

Excursion of stakeholders to sites in Europe

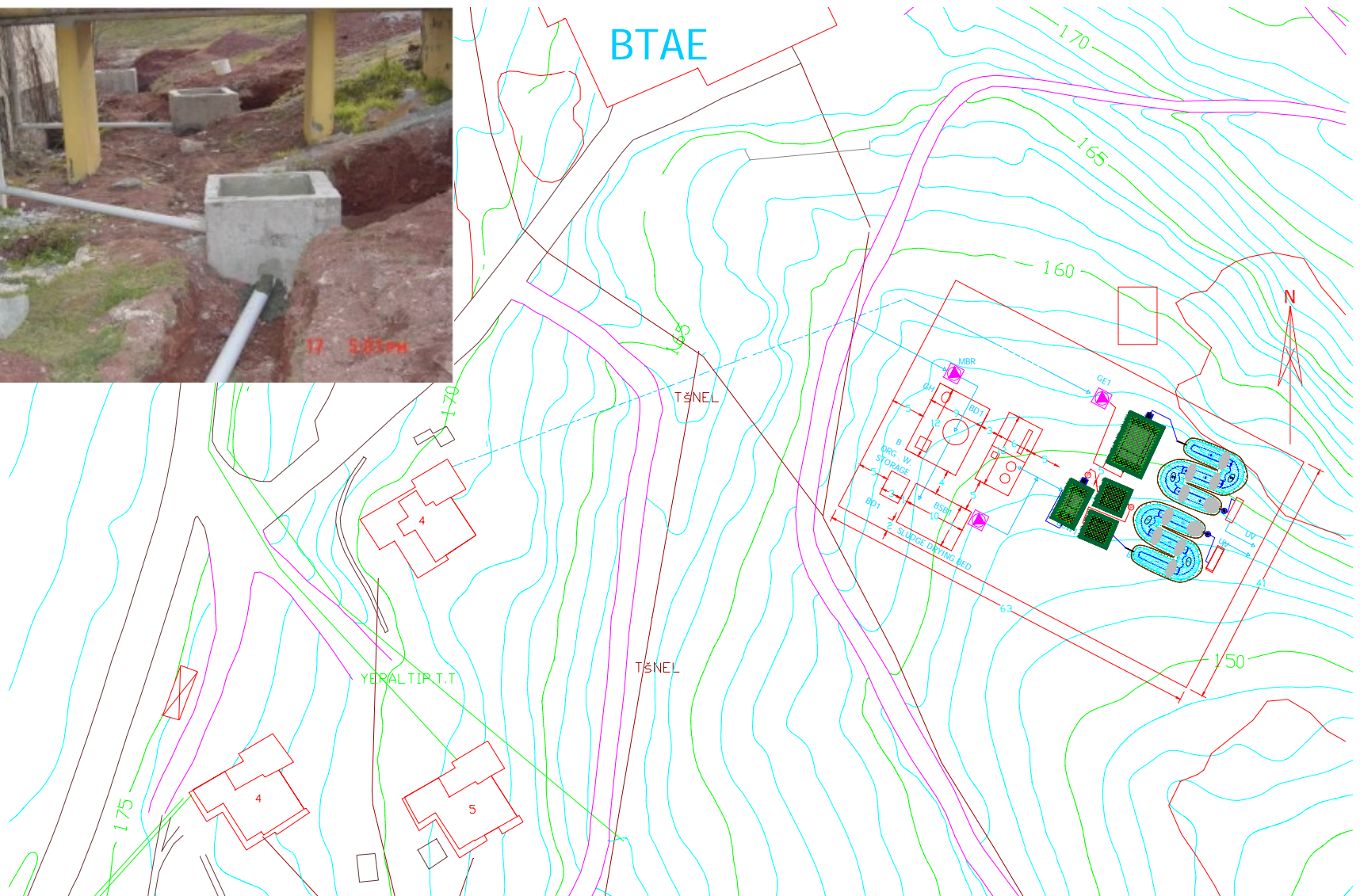


Rainwater harvesting at the Darmstadt University campus: water saving 73.000 m³/year



Constructed wetland near Trevignano, Bracciano lake

TDC layout, tenders, first structures (MRC)



Grey water characterisation, ex. LEE

Characterisation of wastewater and trial runs with SBR pilot

Table1: Characteristics of wastewater used as feed to SBR

Characteristics	Concentrations	
	Min	Max
pH	7,5	7,9
Suspended solids (mg/l)	0,023	0,070
COD (mg/l)	25	100
BOD(mg/l)	20	70
Total organic carbon (mg/l)	15,3	18,2
Ammonical nitrogen (mg/l)	1,5	20,1
Nitrites (mg/l)	0,0	0,0
Nitrates (mg/l)	0,0	5
Phosphates (mg/l)	5,0	16,9

Partly realisation of TDCs, WTRU Rabat



Erection of treatment units for greywater (horizontal and vertical filter) and blackwater (modification of algal canal)

Segregation of grey and black water in sports club buildings
Connection to wastewater treatment plant



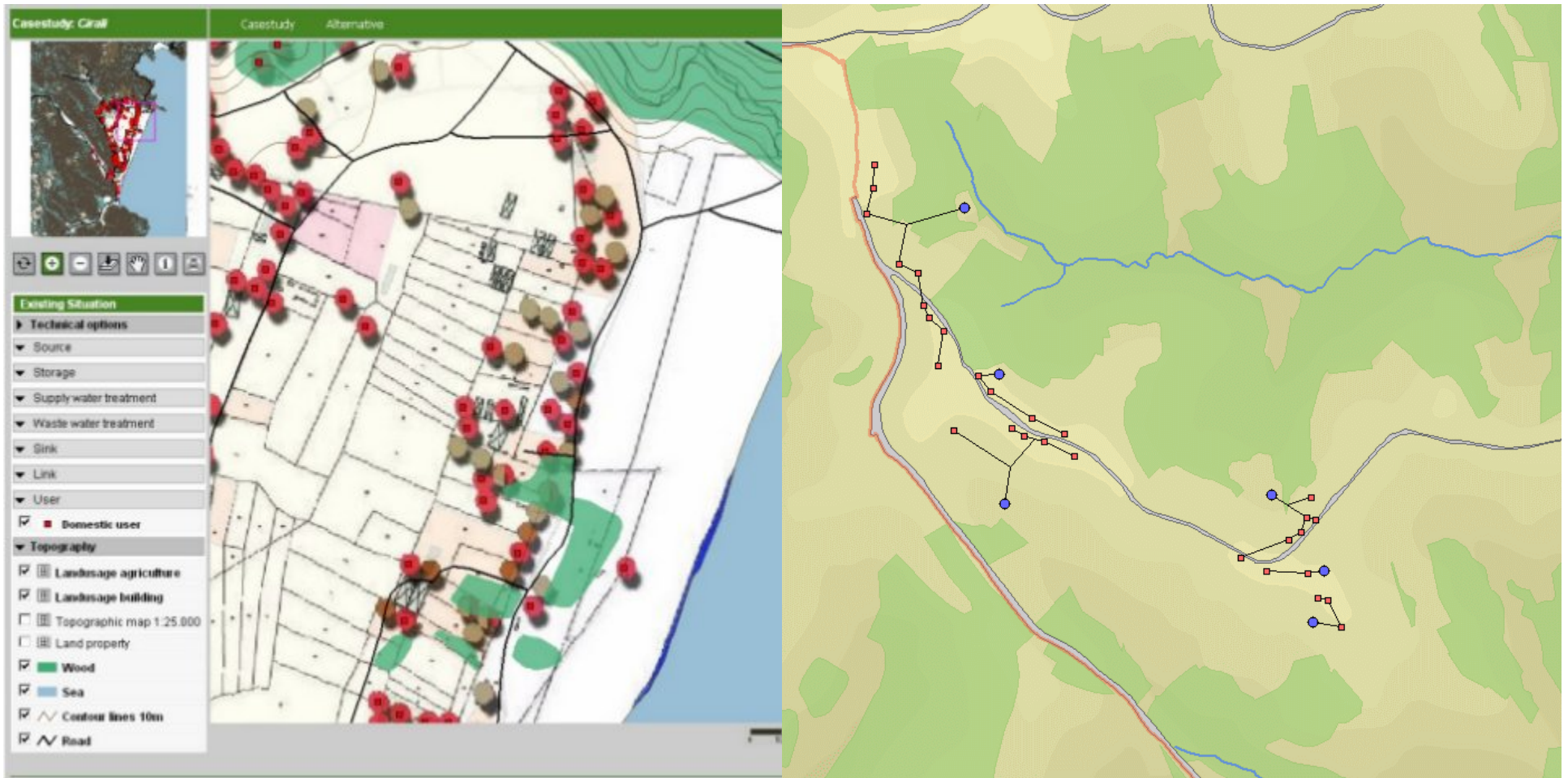


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WP4 Design support system

First draft of
computerised DSS

Test run with data of
Hirtenfeld





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Financial information and Contact

Project budget

Total	5.516.569 EURO
Commission Funding	4.413.255 EURO

Contact

Applicant:

AEE Institute for Sustainable Technologies

Feldgasse 19, A-8200 Gleisdorf. Austria

Martin Regelsberger

Tel.: +43 3112 5886-50, Fax: -51, <http://www.aee.at>

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Sustainability, Trickle-down

