



Societal role of universities in integrated water management through research, education and training

Thomas Ertl

BOKU – University of Natural Resources and Life Sciences
Department of Water, Atmosphere and Environment
Institute of Sanitary Engineering and Water Pollution Control

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Overview

Starting with a very general definition of the tasks of Universities, this presentation wants to address the possible role of universities regarding the contribution to the emerging challenges of modern societies with the background of climate crisis and biodiversity loss, demonstrated with the case study on sewer infrastructure research, education and training.

Then looking on Integrated Water Resources Management as a broad field for challenges and opportunities for Universities as AUT.

Concluding remarks will summarize this presentation.

Introduction - Role of Universities

“**Universities are higher education institutions**, which serve the cultivation and development of the sciences **through research and teaching** but are **also** intended to provide their students with **practice-oriented professional qualifications**” [adapt. from german version of Wikipedia].

“**To address the growing societal and economic challenges**, there is an increasing demand for universities to use their knowledge from research and teaching to **fulfill their so-called "Third Mission" in society and economy.**

This implies **taking responsibility**, actively and consciously, **for the society** on whose behalf they are working.”

<https://thirdmission.univie.ac.at/en/>

Teaching and Research principles @ BOKU – University of Natural Resources and Life Sciences Vienna



BOKU University recognises the unity and equivalence of **teaching and research** in the sense of Humboldt's educational ideal ("research-led teaching").

“The **continuing education strategy** of the University of Natural Resources and Applied Life Sciences Vienna is oriented towards the national Life-Long-Learning strategy, whereby action line 8 "Continuing education to secure employment and competitiveness" is of particular importance.

<https://boku.ac.at/fos/themen/boku-wissensbilanz/boku-wissensbilanz-2020>

Continuing Education at BOKU Vienna

Signature features of BOKU Continuing Education Programs & Courses are

- cutting-edge research-led teaching content
- extensive exchange and networking amongst participants
- immediate practical applicability in professional context

In BOKU University Continuing Education

- more than 120 lecturers and experts from 24 BOKU institutes and industrial practice contribute to
- approx. 150 study units grouped in 52 program modules
- a multitude of focus topics from the scope of BOKU competence fields

4 Categories of study programs

Category 1: University Continuing Education Programs (Universitätslehrgänge) of min. 90 ECTS - Degree: "Master of ..."

Category 2: 60 ECTS and Cat. 3: <60 ECTS

Category 4: University Continuing Education Courses (seminars, summer academies etc.)

<https://boku.ac.at/en/service-units/continuing-education-academy>



Interactions between university and society within the case of sewer operation in Austria

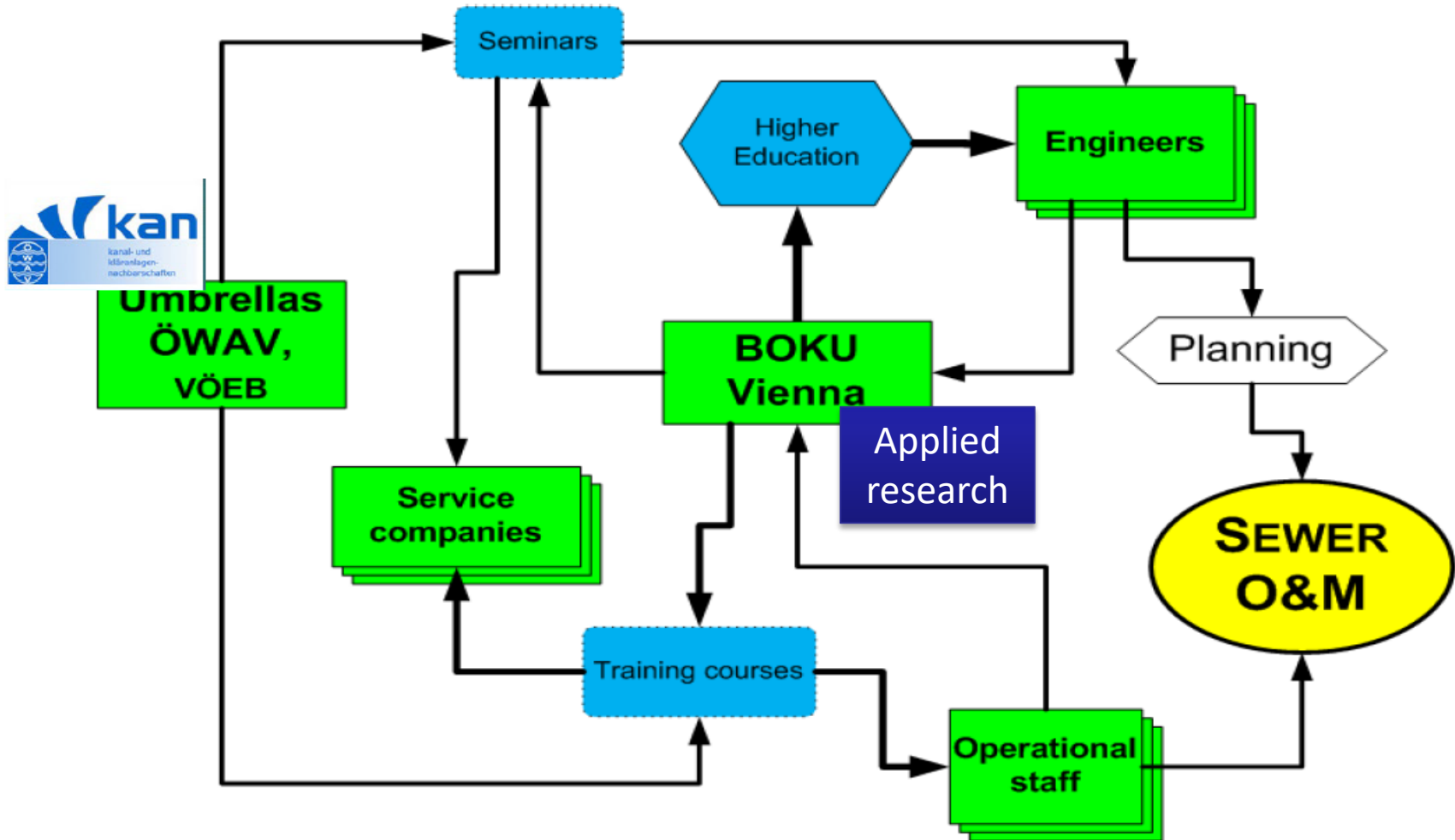


Figure 1 educational components [blue], involved stakeholders [green] and interactions resp. feedback loops within sewer operation and maintenance in Austria

Sociogram of an Applied Research Project



Example of a project as basis for research-led teaching

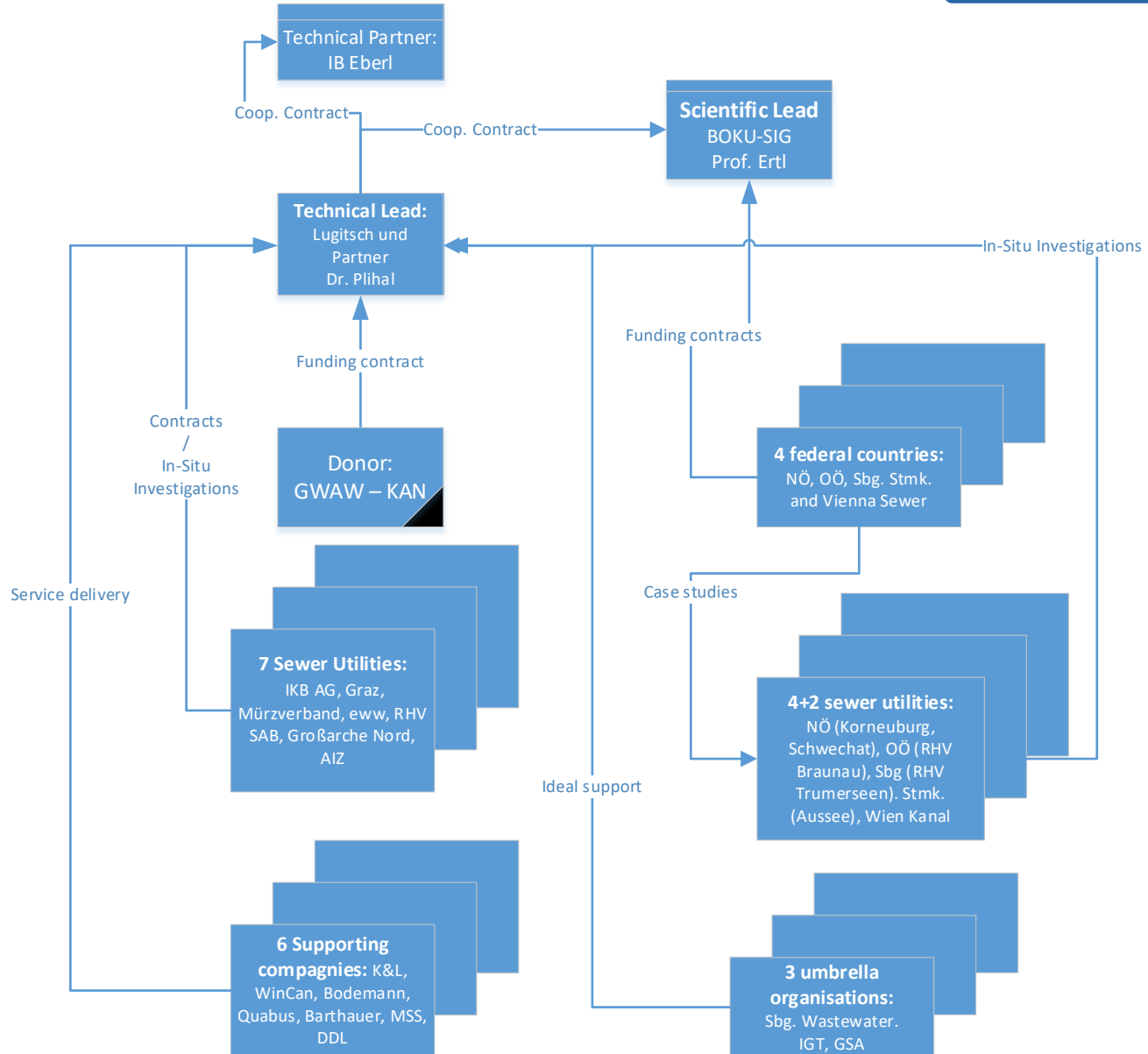
With a participatory approach

Project ZuSoBAR: inspection and condition assessment of big sewer infrastructure

In total 27 Partners

Budget around 125.000,- EUR

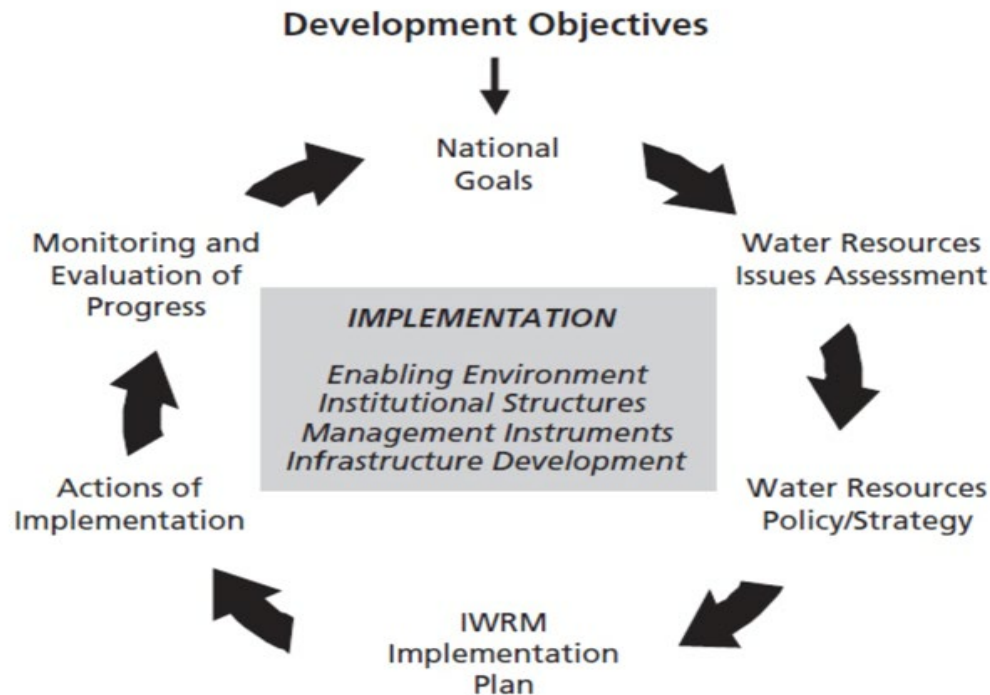
Duration: 2 years



Integrated Water Resources Management

IWRM is a process which promotes the coordinated development and management of water, land and related resources

in order to maximise economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems and the environment.



Stages in IWRM planning and implementation

Integrated Water Resources Management in Eastern Europe, the Caucasus and Central Asia. European Union Water Initiative National Policy Dialogues progress report 2013



Principle 1. Basin management

Principle 2. Intersectoral and vertical coordination of water management

Principle 3. Transparency and public participation

Principle 4. Ensure sustainability of water resources use, including the protection of ecosystems

Principle 5. Financial stability of water management and the use of economic instruments

UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE
ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Integrated Water Resources Management
in Eastern Europe, the Caucasus and Central Asia



Principle 2. Intersectoral and vertical coordination of water management

Explanation of the principle

Managing water use is a complex challenge that needs to take into account different water users with different interests.

Horizontal coordination between all relevant sectors, such as drinking water supply, irrigated farming, power generation, industrial uses and recreation, as well as protection of ecosystems, is vital.

The domination of a centralized agency representing a single sector should be avoided. Regular coordination and joint planning involving different interests is important.

It is equally important that the coordination is well organized and functions well between different levels of management: from national to basin and sub-basin levels.

Examples of IWRM-Courses in Austria



Integrated Hydraulic Engineering in Practice

ÖWAV-Kurs „Integrativer Wasserbau - Umgang mit Dynamik in der Praxis“

Operation and Maintenance for Retention Basins for Flooding Control

15. ÖWAV-Ausbildungskurs „BeckenwärterInnen von Hochwasserrückhaltebecken“

ÖWAV-Kurs „Wartung und Betrieb von Hochwasserschutzanlagen“

River Manager and Wild River Manager

Ausbildungskurs zum/zur „Gewässerwärter/in“, Grundkurs I, gem. ÖWAV-Regelblatt 303

17. Ausbildungskurs zum/zur „ÖWAV-Wildbachaufseher/in“

Operation and Maintenance of Fish Ladders and Lifts

ÖWAV-Kurs „Wartung und Instandhaltung von Fischaufstiegshilfen“ gem. ÖWAV-Arbeitsbehelf 56

Qualified Person for Management of Neophytes

ÖWAV-Ausbildungskurs zur „Fachkraft für Neophytenmanagement“

Legal Issues: Water Law, Plant and Environmental Law

ÖWAV-Kurs „Das ABC des Wasserrechts“ Wasserrecht für PlanerInnen und TechnikerInnen

ÖWAV Ausbildungskurs „Anlagen- und Umweltrecht“ Basiswissen für die Praxis

Soil-Bioengineering in Practice

ÖWAV Baukurs „Ingenieurbiologie in der Praxis“

Sewer Operation and Maintenance & Wastewater Management (ca. 15 courses)

Conclusions

Universities should take an active role in contributing to societal challenges (“Third Mission”) ...

Research-led higher education needs applied research for practice-oriented professional qualifications

for applied research it is of importance to interact with all stakeholders especially with practitioners (transdisciplinary approach)

IWRM needs horizontal and vertical institutional structures containing education and training

Universities should play a vital role within these structures

Acknowledgement

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the Committee on Sewer Operation within the ÖWAV where the training courses are evaluated.

And more than 2500 participants in > 100 sewer courses since 1997 who gave me so much feedback from practice



zukunft
SEIT 1909
denken



Martin Waschak
Seminarmanager
Tel. +43-1-535 57 20-75
waschak(a)oewav.at



Christina Talafant
Assistentin Seminare
Tel. +43-1-535 57 20-78
talafant(a)oewav.at



Irene Resch
Seminarmanagerin
Tel. +43 1 535 57 20-88
resch(a)oewav.at



Elisabeth Job
Assistentin Seminare
Tel. +43 1 535 57 20-78
job(a)oewav.at



Christina Grassl (in Karenz)
Seminarmanagerin



Isabella Seebacher
Kursmanagerin, Betreuung der
Kanal- und Kläranlagen-
Nachbarschaften
Tel. +43-1-535 57 20-82
seebacher(a)oewav.at



Yvonne Nardon
Kursmanagerin
Tel. +43-1-535 57 20-92
nardon(a)oewav.at



Manuel Fohrafellner
Assistent Kurse
Tel. +43-1-535 57 20-87
fohrafellner(a)oewav.at

AUSSCHUSS
Kanalbetrieb
der Fachgruppe Abwassertechnik und Gewässers

Leitung: HR DI Alfred Trauner,
Univ.-Prof. DI Dr. Thomas Ertl

Betreuung: DI Philipp Novak
Kontakt: novak(a)oewav.at



DI Philipp Novak
Bereichsleiter
Abwasserwirtschaft
Tel. +43-1-535 57 20-63
novak(a)oewav.at

Faleminderit!
Thank you!



Univ.Prof. DI Dr. Thomas Ertl

Muthgasse 18, A-1190 Vienna
Tel.: +43 1 47654-81110,
GSM +43 664 4416716
Email: thomas.ertl@boku.ac.at

<http://www.wau.boku.ac.at/sig.html>