

# Work package 1

## “Higher education in the field of water engineering”

- Final report -

10. Workshop at M&S Umweltprojekt GmbH Plauen/Germany  
22/03/2015 – 26/03/15

# WP1:      Lead partner:      TUD

<i>Lead Partner: TUD</i>	<i>Type of work package</i>	<i>Title of work package</i>	<i>Start</i>	<i>End</i>
WP.1	Development	Higher education in the field of water engineering	1	25
1.1	Kick-off Workshop (mit 1.3)	Events: Conferences and Seminars	DAM/MHE	2011-01-17
1.2	Comparison of higher education systems	Report		2011-01-17
1.3	Workshop	Events: Conferences and Seminars	TUD	2011-01-17
1.4	Development of hi. education structure for	Report		2011-05-16
1.5	Workshop	Events: Conferences and Seminars	BOKU	2011-05-16
1.6	Definition of the modules for the new education	Report		2011-12-15
1.7	Developing of teaching materials	Report		2011-12-15
1.8	Quality Management and Accreditation	Report		2011-12-15
1.9	Workshop	Events: Conferences and Seminars	ALBA/MHE	2012-01-31
1.10	Developing of professional training courses	Report		2012-10-31
1.11	Workshop (gemeinsam mit 3.2)	Events: Conferences and Seminars	AU	2013-01-31

<b>Number</b>	<b>Name</b>	<b>From</b>	<b>Until</b>	<b>Place</b>
1	Kick-Off-meeting	10/01/11	14/01/11	Damascus/Syria
2	Workshop	05/06/11	10/06/11	Dresden/Germany
3	Workshop	04/09/11	09/09/11	Vienna/Austria
4	Workshop	25/03/12	30/03/12	Prague/Cesky
5	Workshop	16/02/14	21/02/14	Prague/Cesky
6	Workshop	29/06/14	04/07/14	Plauen/Germany
7	Workshop	14/09/14	19/09/14	Dresden/Germany
8	Workshop	23/11/14	27/11/14	Vienna/Austria
9	Editorial Meeting	15/02/15	20/02/15	Dresden/Germany
10	Final Workshop	22/03/15	26/03/15	Plauen/Germany

# Description of work package (1)

- Higher education in the field of water engineering should be developed in the form of new structures for Syria.
- The Kick-off-Workshop is assigned to the WP1.
- As a basis of the development a comparison is carried out between the education systems in Syria and this one in the involved and other countries the EU.
- Questions of the student academic self-government also play a big role.
- The requirement profiles from the practice and research are considered to the education.
- After the definition which courses of studies in which university will should be set up the modules of the study courses define according to the Bologna system (e.g., ECTS-credit points.).
- The aspects of faculty-crossing, interdisciplinary and trans-disciplinal should be included to the study courses.
- The study courses must consider the special requirement for a sustainable water resource management under the economical, climatic, population conditions of Syria.

# Description of work package (2)

- New teaching materials, Internet platforms and e-Learning should be developed for the preparation of the new education structures. .
- Finally a system of the quality assurance and accreditation is to be developed.
- The results are summarized into suitable reports and are made available to the involved consortium members. In addition, this is held accessible in the Internet main entrance worldwide and is presented internationally to the final meeting.
- In the intermediate workshops the working groups tune her results.
- In addition to the workshop the involved institutions receive the possibility for bilateral working stays.
- Beside the education of young people strong attention is to be given to the further education and training courses of the graduates in practice. This happens by development of training courses by the universities for the society and by development of work accompanying further education program to the acquisition of other academic degrees.
- Also this is concluded with a workshop for the spreading of the results.

## **1.2 Comparison of higher education systems**

- The deliverable 1.2 is the report about different activities.
- In this one is include the analysis of the higher education structure at the cooperating Syrian as well as EU universities in Water engineering.
- In dependence from the analysis results a comparison of the different higher education systems will be described.
- Besides to the teaching process the student self-administration structure in the EU and Syria are investigated.

## 1.2 Comparison of higher education systems – Content of Final report (1)

- “Questioning the role of internationalization in the nationalization of higher education:  
the impact of the EU TEMPUS Programme on higher education in Syria”  
*by Rami M Ayoubi and Hiba K. Massoud, Ministry of Higher Education and Damascus University, Syrian Arab Republic, 2012*
- “HIGHER EDUCATION IN SYRIA” 2013  
– edited by  
*Education, Audiovisual and Culture Executive Agency (EACEA),  
Unit P10 - Tempus and Bilateral Cooperation with Industrialised Countries and National Tempus Office Syria*
- The Bologna process and structure

# **1.2 Comparison of higher education systems – Content of Final report (2)**

Questionnaire-Boku-evaluation



## **1.4 Development of higher education structure for Syria (1)**

- This deliverable proposes a modern higher education structure for water engineering in Syria in compliance with the results of deliverable no. 1.2.
- This modern higher education structure is equivalent to the structure of Lisbon agenda and the Bologna process.
- Second in this one a profile of requirements on a graduate in the field of water engineering/hydro sciences will be defined.
- These criteria are the requirements by practice and research.
- This structure is certifying by the MHE and 4 Syrian universities.

# **1.4 Development of higher education structure for Syria (2)**

Topics are:

1. Reforming of higher education in the field of water sciences by
  - Stronger linking between natural sciences, civil engineering and basic sciences
  - Greater involvement of research into the education
    - Implementation of research results into the practice
  - Short-term implementing of innovative solutions from practice into the education
  - Defragmentation; more intensively connection between faculties (Export-Import of education)

# 1.4 Development of higher education structure for Syria (3)

Topics are:

2 . Discussion about the new Higher Education structure in the participating Syrian universities in accordance with the Bologna process

- Reduction in the total study period of 5 years (Bachelor + Master)
- Modularization, awarding of ECTS
- Acceptance of certificates in the EU
- Introduction of Long Life Learning process

The majority of students should complete the master. This means that Syria needs to reduce his Bachelor degree to 3 years

Examples for the study construction at EU-universities was exemplified (TUD, BOKU, CULC, URO).

# **1.4 Development of higher education structure for Syria (4)**

Topics are:

3. Development of new structures of a higher education system for the 3 fields of studies

- Water Management
- Hydrology
- Soil-and Groundwater Science and Engineering

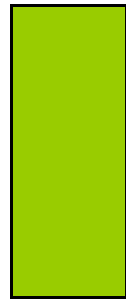
The work was carried out in working groups of Syrian and EU partners → Preparation of educational schemes for Bachelor and Master courses in the field of Water Engineering, Hydrology and Soil Sciences

<b>EDUWAT – Basic contents of the education profiles</b>		
<b>Water Engineering</b>	<b>Rural engineering, Hydraulic engineering</b>	<b>Water protection, Water management, Hydrology</b>
<b>Focus of work:</b> Water supply, urban waste water disposal, water protection areas, hazardous to water materials	<b>Focus of work</b> Agricultural irrigation and drainage, river engineering, storage engineering, water maintenance	<b>Focus of work:</b> water monitoring, water management, water remediation, storage management
<b>Application fields:</b> <ul style="list-style-type: none"> <li>• Water authorities</li> <li>• Public utilities</li> <li>• Industrial enterprises</li> <li>• Enterprises for planning, calculation and construction of plants</li> </ul>	<b>Application fields:</b> <ul style="list-style-type: none"> <li>• Agricultural and water authorities</li> <li>• Farms</li> <li>• Enterprises for planning, calculation and hydraulic engineering</li> </ul>	<b>Application fields:</b> <ul style="list-style-type: none"> <li>• Water authorities</li> <li>• Storage operator</li> <li>• Enterprises for planning, controlling, calculation and hydraulic engineering</li> </ul>

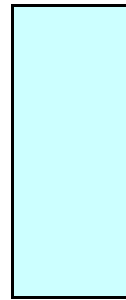
<b>EDUWAT – Basic contents of the education profiles</b>		
<b>Water Engineering</b>	<b>Rural engineering, Hydraulic engineering</b>	<b>Water protection, Water management, Hydrology</b>
<b>Main focus of education</b> <ul style="list-style-type: none"> <li>• Drinking water supply (water recovery, water treatment and water distribution)</li> <li>• Industrial water supply</li> <li>• Urban waste water disposal</li> <li>• Industrial waste water disposal</li> <li>• Water protection areas (for drinking and medicinal water)</li> <li>• Plants and regulations for handling with hazardous to water materials</li> <li>• Mining water engineering (mining and remediation)</li> <li>• Process engineering, plant construction, hydraulics, hydrochemistry, hydrobiology</li> </ul>	<b>Main focus of education</b> <ul style="list-style-type: none"> <li>• Agricultural irrigation systems</li> <li>• Agricultural drainage systems</li> <li>• River engineering</li> <li>• Flood protection</li> <li>• Storage engineering</li> <li>• Statics, construction, soil engineering, hydraulics, geohydrology, concrete construction, nature-orientated construction methods</li> <li>• Soil</li> <li>• Groundwater</li> </ul>	<b>Main focus of education</b> <ul style="list-style-type: none"> <li>• Water monitoring (sampling, valuation)</li> <li>• River, lake and storage management (quantitative and qualitative)</li> <li>• Groundwater management (quantitative and qualitative)</li> <li>• Remediation of rivers, lakes, storages and groundwater</li> <li>• Storage management (flood, low water and water quality)</li> <li>• Hydrology, hydrobiology, hydrochemistry, geohydrology</li> </ul>

<b>EDUWAT – Basic contents of the education profiles</b>		
<b>Water Engineering</b>	<b>Rural engineering, Hydraulic engineering</b>	<b>Water protection, Water management, Hydrology</b>
<b>Basic education for all education profiles</b>		
Environmental law and water rights Hydro biology Waste water treatment Water management	Hydrology Water supply Land improvement Soil and groundwater sciences	Hydro chemistry Water treatment Hydraulic engineering (river engineering, storage engineering, agricultural hydraulic engineering)

## Bachelor



Modules in  
Natural  
Sciences  
25%



Modules  
in Technical  
Sciences  
25%

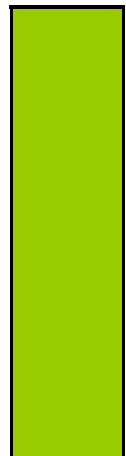


Modules in  
Economic &  
Social Sciences  
25%



Modules in  
Variable  
Sciences  
25%

## Master



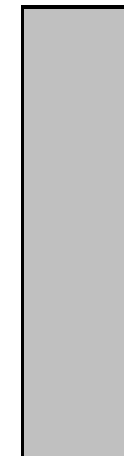
Modules in  
Natural  
Sciences  
10% - 25%



Modules  
in Technical  
Sciences  
10 - 25%



Modules in  
Economic &  
Social  
Sciences  
5% - 15%



Modules in  
Variable  
Sciences  
55% - 70%



University	Bachelor Course	Short cut	Master Course	Short cut
<b>Al Baath University Homs</b>	Water & Soil Engineering and Environment	BSGW	Water & Soil Engineering and Environment	MSGW
	Water Engineering	BWE	Water Engineering	MWE
<b>HIWM</b>			Water Management	MWM
<b>University of Aleppo</b>	Agricultural Water Management	BAWM	Agricultural Water Management	MAWM
	Water Engineering	BWE	Water Engineering	MWE
<b>Damascus University</b>	Hydrology - Science and Engineering	BHSE	Hydrology - Science and Engineering	MHSE
	Soil and Groundwater - Science and Engineering	BSGW	Soil and Groundwater - Science and Engineering	MSGW
	Water Engineering and Management	BWEM	Water Engineering and Management	MWEM
<b>Tishreen University Lattakia</b>	Water Engineering and Environment	BWE	Harbour Construction and Coastal Engineering	
			Sanitary Engineering	MHCCE
			Water Resources Management	MSE
			Water Structures	MWRM

## 1.6 Definition of the modules for the new education (1)

- The modules of the different study courses from 1.4 describe the content (adapted to the subjects and applications in Syria) and load work (credit points) of the lectures, exercises and practical training. This one has an interface to the curricular which is outside of this project.
- These modules are equivalent to the Lisbon and Bologna.
- Assembling of the new modules, overall faculties, according to the requirements out of the development objectives for the water sector in Syria
- Modules descriptions are developed for all courses (see annex)

## 1.7 Developing of teaching materials

- A modern education structure is combined with a modern teaching material.
- The modern teaching methods are formed by working groups, team working, project study and a big part of self-study.
- In this context teaching materials will be developed both in printed and in digital form.
- Implementation of Internet based learning methods.
- This material would be developed for selected universities and selected study courses

## **1.8 Quality Management and Accreditation**

- To enhance the quality and relevance of higher education in Syria a quality management for the monitoring of the new study structure would be established.
- A very important point for acceptance of the new study courses by the EU countries is the accreditation and the permanent quality management of the education system.
- Special guidelines are written and supervise by the EU universities.

# **1.10 Developing of professional training courses**

- This deliverable content the developing of training courses by the universities for the society.
- Therefore a strong cooperation between the universities and the enterprises is necessary.
- Besides it is necessary to develop extra occupational specialist trainings programs for graduated students (achievement of additional academic degrees).
- This one goes in the direction to Life Long Learning.
- In this context it is possible to study different sciences..