



"Efficient Management of Wastewater, its Treatment and Reuse in the Mediterranean Countries"

EMWater project

www.emwater.org

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InWent, Capacity Building Int., GERMANY

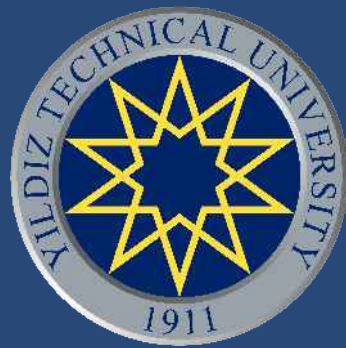


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Overview:-

- Introduction of InWEnt
- EMWater project objectives
- Activities
- Results of the capacity building program
- Conclusions



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InWEnt:

**Internationale Weiterbildung und
Entwicklung gGmbH**

**„Capacity Building International,
Germany“**

**Merger between
Carl Duisberg Gesellschaft (CDG)
and
German Foundation for International
Development (DSE)
in 2002**

**A German governmental organization for international
capacity building and sustainable development**



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Business Fields of InWEnt



- Domestic political Information in Germany
- Qualifications of German/EU professionals in Germany/EU
- International dialogue and exchange of experience
- Preparing of German experts for their foreign assignment for the German Development cooperation
- Qualification of experts from developing Countries

More than 35.000 participants every year



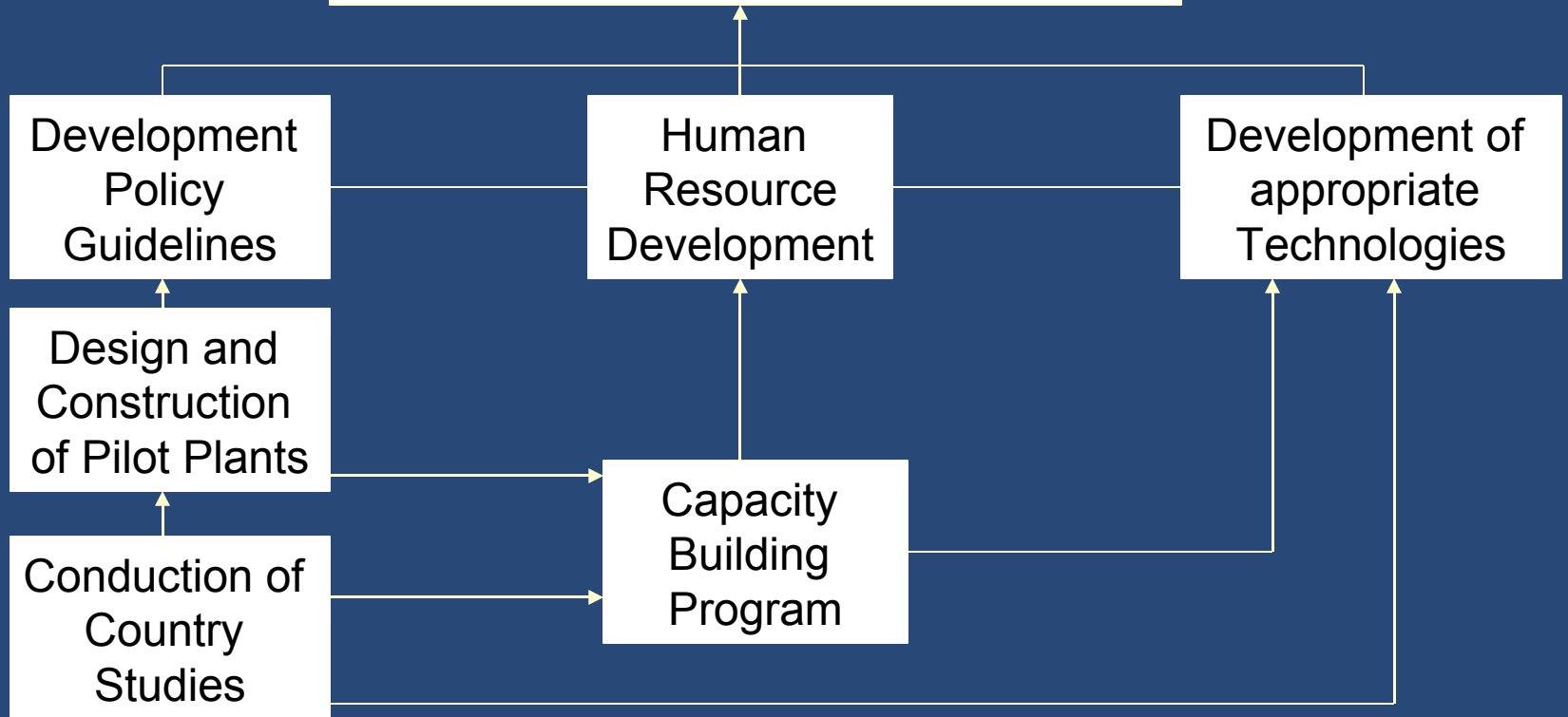
This Project is funded by the **15 Dec.,2005 EMWIS Seminer ANKARA**
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Objectives of the EMWater Project



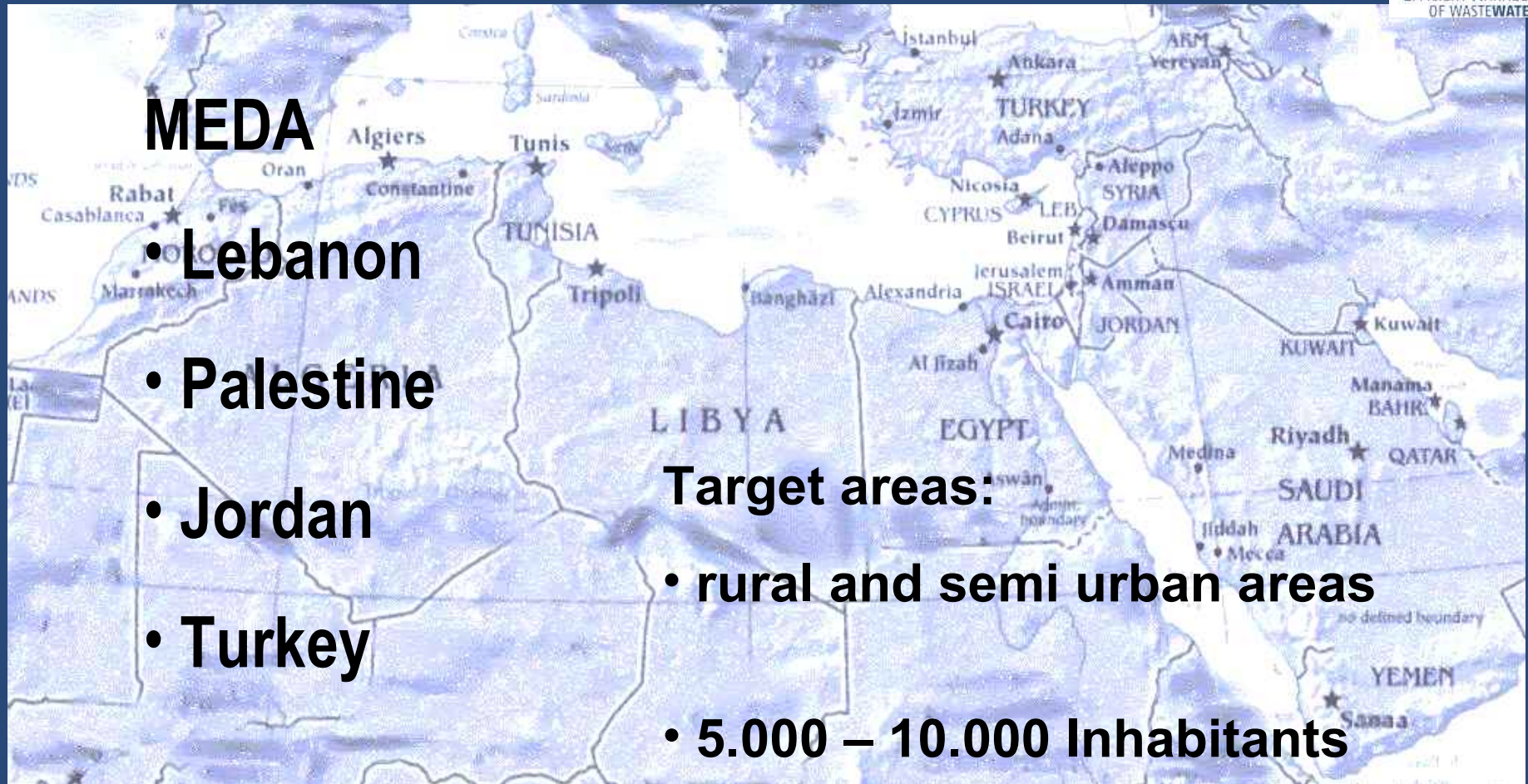
Efficient Management of Wastewater Treatment and Reuse in the MEDA Countries is increased



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Target Countries/Target Areas





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Partners



Europe



InWent Capacity Building International, Berlin Germany



Adelphi Research Berlin Germany



TUHH, Hamburg Germany



ENEA, Bologna Italy



American Lebanese University, Byblos Lebanon



University of Balamand, Tripoli Lebanon



YILDIZ Technical University, Istanbul Turkey

<http://www.birzeit.edu/image>

Birzeit University, Birzeit Palestine



Al al Bayt University, Al Mafrq Jordan



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Activities of EMWater Project

Planned 2003 – 2007



- Training needs assesment
- Conduction of country studies
- Conduction of Local, Regional, E-Learning and Public Awareness Programms
- Design and Construction Of Pilot Plants for WWTR
- Elaboration of Policy Guide Lines For WWTR
- Organization of a Regional Conference in 2006



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Activities of EMWater Project

Implemented Activities 2003 – 2005

- Training needs Analysis
- Country studies Conducted and Published
- Training Programs for 2004 were conducted
- Design and Construction of Pilot Plants have Started



Objectives of the Capacity Building Program

Increase capability of institutions/individuals

Action plan for Policy Guidelines development

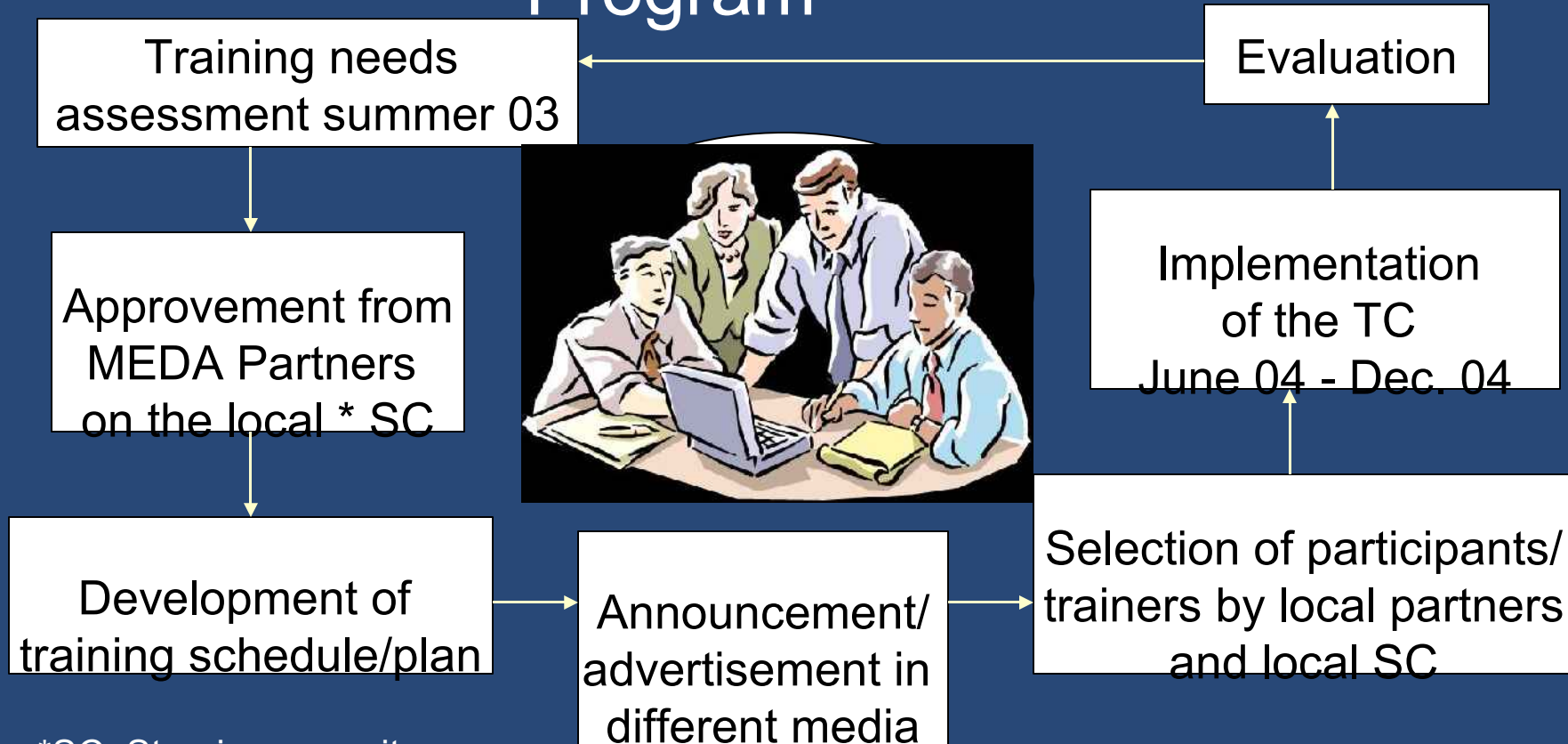
Interactive discussion between experts EU/MEDA

Practical knowledge on WWT/Reus

Visions for innovative solutions

Strategy to solve WW Problems

Procedure for Preparation and Implementation of the Training Program



*SC: Steering commitees

**participants selection:
leading position
Experience**



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Implementation of the Training Modules

Local Training LTC

LTC Palestine
5 modules+8 days
(40 participants)

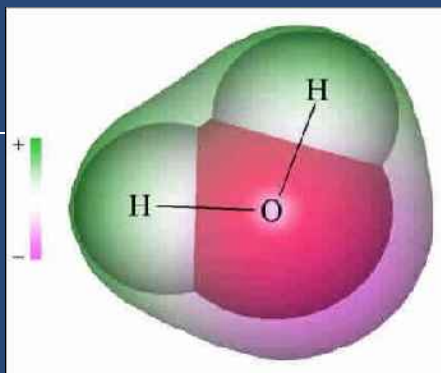
LTC Lebanon
4 modules+1-2 days
(129 participants)

LTC Jordan
4 modules+5 days
(78 participants)

LTC Turkey
6 modules+1-10 days
(330 participants)

571 participants

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Regional Training (RTC) and E-learning Courses

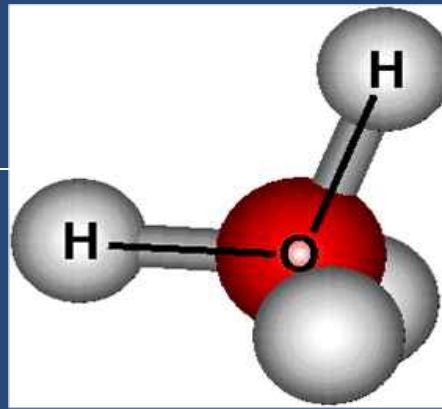
Regional Training Course in Jordan

3 modules, 3-5 days each, 39 Participants

E-learning Course,
4 modules,
16 participants

Total: 26 Modules, 626 participants

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Me too !

I love it,
I love it !

Tweeter tweet !
(means 'I Love Water'
in bird talk)

Me too !

Me too !

Me too !

Me too !

Go Forward

Go Back





Results of the Training Program



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Training Modules (June 04 – Dec. 04)

Modules	Jordan	Lebanon	Turkey	Palestine	Duration/ Trainers and Experts
➤ Wastewater and low-cost technology	x	x	x	x	2-5 days, local/EU
➤ Wastewater Quality Control	x	-	-	x	5 days, local
➤ Environ-mental impact assessment	x	-	-	-	5 days, local
➤ Efficient Management of wastewater treatment and reuse projects	x	x	x	x	1-5 days local/EU
➤ Development of policy guidelines	x	x	x	x	1 day interactive workshop
➤ Institutional and project Managment	-	-	-	x	5 days, local
➤ Awareness campaign	-	x	x	-	1 day, local
➤ Round table on WWT/reuse	-	-	x	-	3 days, local
➤ Wastewater training for Schools	-	-	x	-	7 days, local



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Training Modules (June 04 – Dec. 04)

Modules	Jordan	Lebanon	Turkey	Palestine	Duration/ Trainers and Experts
➤ Wastewater treatment for rural managers and decision-makers	-	-	x	-	1-4 days, local/EU
➤ Operation and maintenance of wastewater treatment plants	x	x	x	x	1-10 days, local/EU
➤ Planning and design of WWTP	x	x	x	x	1-5 days, local/EU
➤ Wastewater management in rural and suburban areas	x	x	x	x	1-5 days, local/EU
➤ <u>E-learning:</u> ➤ - Wastewater characteristics ➤ - Sustainable concepts ➤ - Economic aspects ➤ - Construction and design of WWTP ➤ - Wastewater reuse	x	x	x	x	40 hours/TUHH



Summary of main topics offered by the different modules:

- **Operation and Maintenance of WWTP**
- **Low Cost Technology of WWTP**
- **Wastewater Quality Control**
- **Environmental Impact Assessment**
- **Institutional and Project Management**
- **Reuse Aspects / Policy Guidelines**



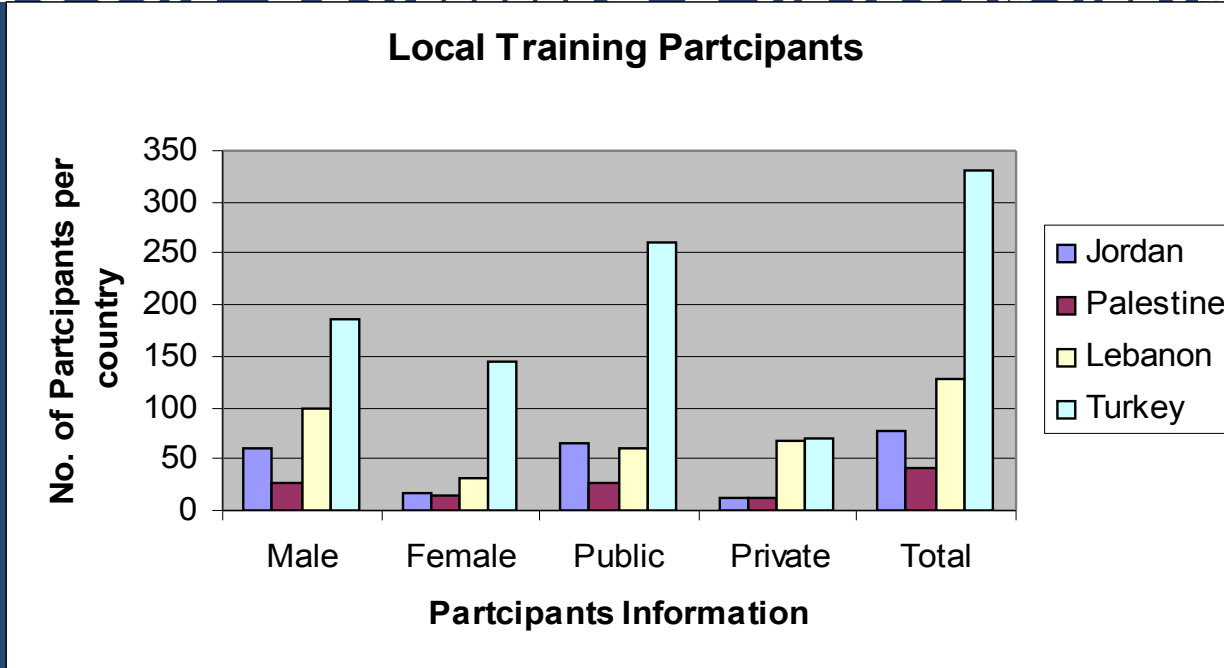
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Number and Distribution of Participants

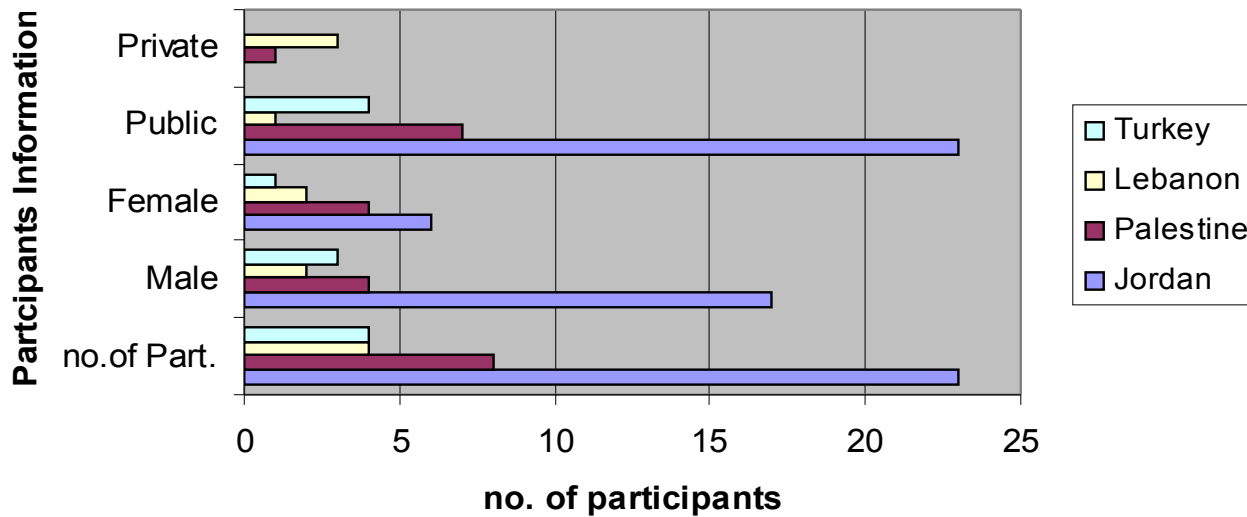
Country	Male	Female	Total	Institution		
				Public	Private	Position/ Qualification
Jordan	61	17	78	66	12	Municipality WW-Engineers/Civil Engineers
Palestine	26	14	40	27	13	Municipality WW-Engineers/Civil Engineers
Lebanon	98	31	129	61	68	Municipality WW-Engineers/Civil Engineers
Turkey	185	145	330	261	69	Municipality WW-Engineers/Decision-makers/Ministries/Schools

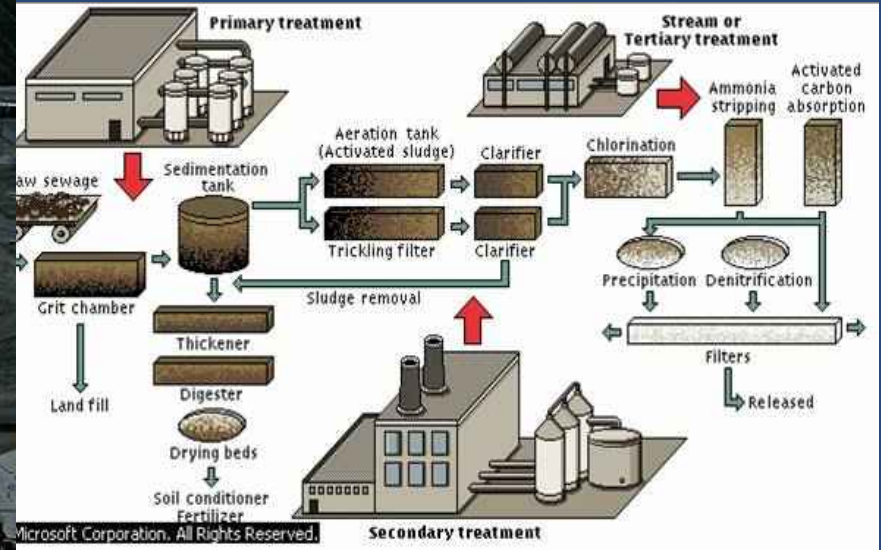
Local Training Participants



RTC Participants

Regional Training Participants





• Pilot Plants in MEDA Countries



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Design and Construction of the Pilot Plants Lebanon and Jordan

Country	Treatment Technology	Details of Treatment
Lebanon 2 x pp	Contact Stabilization Sludge	<pre> graph LR A[Aeration 1-24] --> B[Screening Tank Gravel Steel] B --> C[Balancing Tank] C --> D[Contact Aeration Tank] D --> E[Setting Tank] E --> F[Chlorination] F --> G[Sand Filter] G --> H[Active Carbon Filters- Reuse Purposes] E --> I[Sludge Re-aeration] I --> J[Sludge Aerobic Digester] J --> H H -- red arrow --> A </pre>
Jordan 1 x pp	Activated Sludge Treatment	<pre> graph LR A[Sanitary sewer network] --> B[Screening Unit] B --> C[Biological Treatment] C --> D[Sludge stabilization tank] D --> E[Filtration tank] E --> F[Chlorination] F --> G[Irrigation tank] C --> C1[Pre-Dinitrification] C1 --> C2[Aeration] E --> E1[Rapid filter 15 m³/m²] E1 --> E2[Option: Wetland filtration] F --> F1[Option: UV-light] </pre>

Design and Construction of the Pilot Plants Turkey and Palestine

Country	Treatment Technology	Details of Treatment
<p>Turkey</p> <p>1 x pp</p>	<p>Anaerobic Baffled Reactor Followed by Rotating Biological Reactor (ABR – RBC)</p>	<pre> graph LR ABR["*UASB Principle ABR Reactor"] --> RBC["RBC Reactor"] RBC --> ST["Settlement Tank"] ST --> TWT["Tertiary Treatment Wetland - Reuse Purposes"] RBC -.-> ABR </pre>
<p>Palestine</p> <p>1 x pp</p>	<p>Ditto</p>	<p>Ditto</p> <pre> graph LR TTSF["Tertiary Treatment Sand Filtration"] </pre>

UASB: Upflow Anaerobic Sludge Blanket



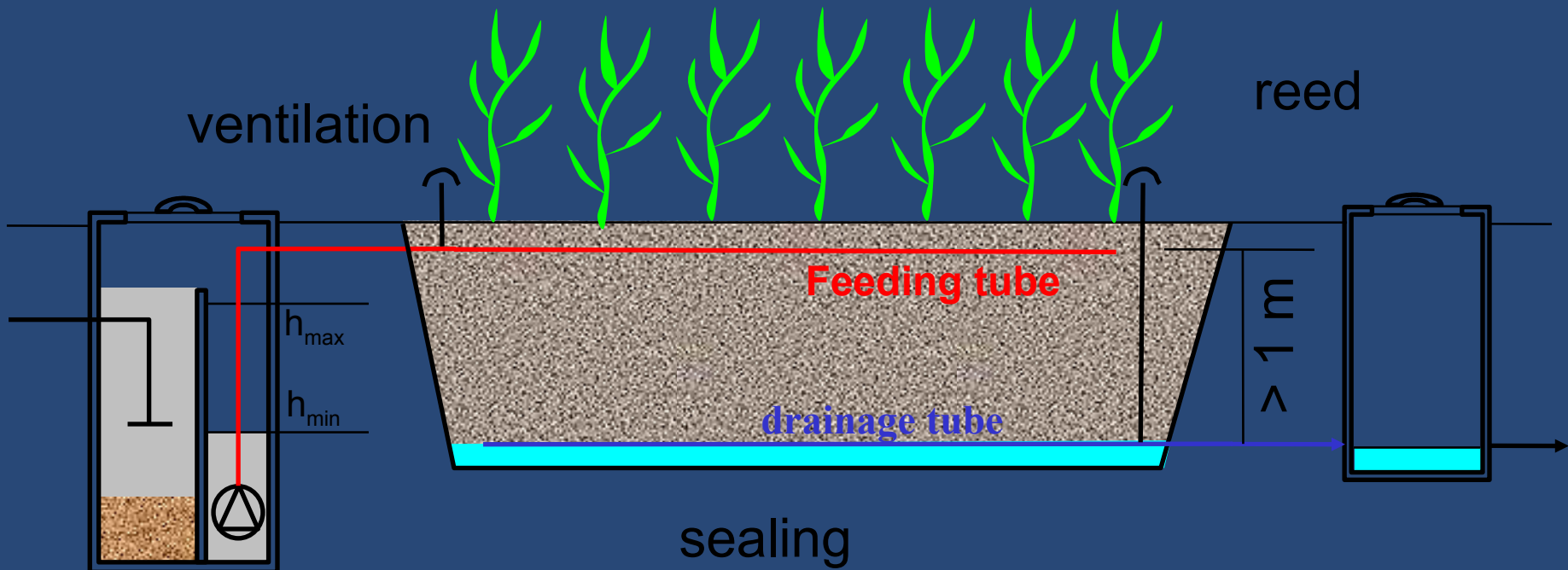
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Constructed wetland - vertical view

pump well and
solid separation

inspection and
effluent chamber





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TUHH

Technical University Hamburg-Harburg





Conclusions:

- Training program design was based on the specific situation in the MEDA countries: public awareness in Lebanon and Turkey, project management in Palestine, environment and effluent standards/irrigation standards in Jordan.
- Around 626 participants from the region have attended the training courses, target group mostly municipality wastewater engineers
- Trainers were mostly from the MEDA region. EU partners provided excellent support

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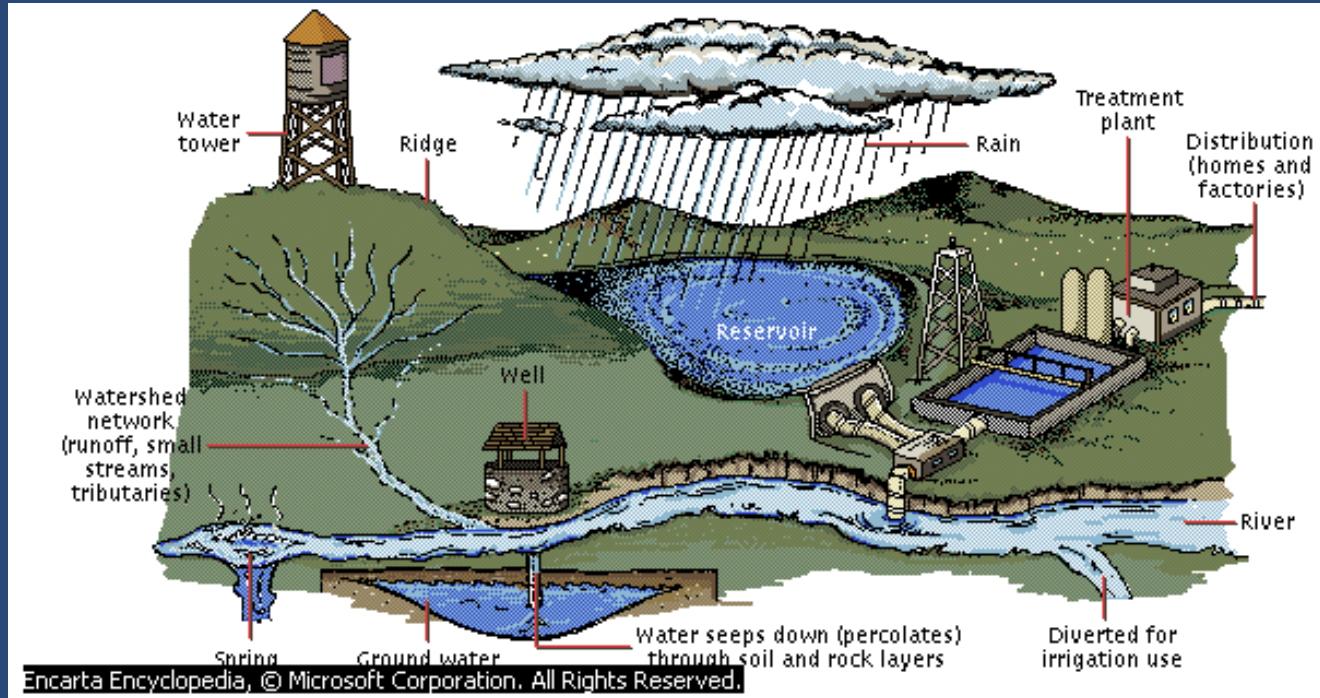


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- **We have got good involvement of stakeholders and NGOs in the planning of training courses**
- **Quite good number of females attended the training courses (25 – 30 %)**
- **Training courses were practical and interactive oriented**
- **There was a good mix between presence training courses and the online training**
- **Good experience exchange between experts in the MEDA countries through the regional training course and the online training has been achieved.**

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Islam SADIKER

Teşekkür ederim



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