



**Advisory Assistance Programme for Environmental Protection in  
the Countries of Central and Eastern Europe, the Caucasus and  
Central Asia**

**Technical Assistance for the  
Implementation of a National Training  
and Competence Centre (TCC) for the  
Water Sector in Karlovac, Croatia**

**Final Report March 2013**



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Countries of Central and Eastern Europe, the Caucasus and Central Asia

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## **Technical Assistance for the Implementation of a National Training and Competence Centre (TCC) for the Water Sector in Karlovac, Croatia**

**Project June 2011 - March 2013**

**Final Report March 2013**

by

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## List of Abbreviations

BDZ	Bildungs- und Demonstrationszentrum für dezentrale Abwasserbehandlung e.V. - Training and Demonstration Centre for Decentralized Sewage Treatment
BiH	Bosnia and Herzegovina
BMU	Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit – Federal Ministry for the Environment, Nature Protection and Nuclear Safety
C.E.O.	Chief Executive Officer
DWA	Deutsche Vereinigung für Wasserwirtschaft, Abwasser und Abfall e.V. – German Association for Water Management, Waste Water and Waste e.V.
GIS	Geographical Information System
GWP	German Water Partnership e.V.
HDZV	Hrvatsko Društvo za zaštitu voda – Croatian Water Pollution Control Society
HGViK	Hrvatska Grupacija Vodovoda i Kanalizacija – Croatian Association for Water Utility Companies
H&S	Health and Safety
MoU	Memorandum of Understanding
O/M	Operation and Maintenance
SC	Steering Committee
TCC	Training and Competence Centre
TVET	Technical Vocational Education and Training
UBA	Umweltbundesamt – Federal Environment Agency
ViK	Vodovod i Kanalizacija – water utility company
WLM	Water Loss Management
WWT	Waste Water Treatment
WWTP	Waste Water Treatment Plant

# 1 Summary

## 1.1 Pilot phase of TCC Karlovac

The idea of establishing a National Training and Competence Centre (TCC) for the Water Sector in Croatia was born during the visit of a GWP delegation in May 2010 to Karlovac. The following written project design envisioned a two-stage introduction of the centre. First, a pilot phase should raise awareness among actors of the Croatian water sector and clarify key questions about organisational matters and funding. Then, based on the findings from the pilot phase, an implementation proposal should be developed to secure the long-term viability of the centre. The present report describes the activities and results of the pilot phase, which was co-financed in equal parts by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) under technical supervision of the German Federal Environment Agency (UBA) and by the Croatian Ministry of Agriculture. The intention of this report is to transfer to the interested reader the approach and the results of the project implementation and the experiences gathered during implementation (lessons learnt).

During the pilot phase of TCC implementation the need to have a TCC in Croatia was assessed as far as possible, 21 Croatian trainers were trained and together with member companies of German Water Partnership (GWP) performed 9 test trainings to 7 water sector related topics, in which altogether 128 participants took part. Marketing activities were realised and the preparation of a Business Plan and of the official accreditation started. Besides the trained personnel of the Croatian water sector an output of the pilot phase is inter alia a manual for potential future trainers of TCC.

The pilot phase was completed with great success, in particular on operational level, and paved the way for a continuation of the activities. Unfortunately, the formal foundation of the TCC did not take place immediately after the pilot phase. Calculations to finance the start-up phase reveal that even in the case of optimistic calculated revenues more pre-investment is required, if the project objectives shall be achieved in a short time. This fact will slow down the implementation of the planned steps and rules out the immediate formation of an operating organization. In 2013 the association Hrvatsko Društvo za zaštitu voda (HDZV) will thus continue the TCC activities and organize together with GWP further measures within their financial possibilities. If possible HDZV will take over the operation for TCC in a separate department.

All involved stakeholders – the GWP members, HDZV, the Croatian project coordinator Mr. Veble, the local trainers, the Mayor of Karlovac and Mrs. Drmic of the Ministry of Agriculture – have been active above average in the pilot phase of the TCC project and thus made a significant contribution to its successful completion. The activities were warmly welcomed and highly appreciated by the beneficiaries of the TCC, in particular by the training participants. Some Croatian water utility companies have also contributed to the establishment of TCC by delegating staff to be trained to become local TCC trainers. The conference in December 2012 finally opened opportunities for regional cooperation with neighbouring countries.

TCC can be a success story and that's why activities will be continued in 2013.



## 1.2 Pilotphase eines TCC Karlovac

Die Idee zur Gründung eines Nationalen Trainings- und Kompetenzzentrums (TCC) für den Wassersektor in Kroatien wurde im Mai 2010 im Rahmen eines GWP- Delegationsbesuchs in Karlovac geboren. Der nachfolgend formulierte Projektentwurf sah eine zweistufige Einführung des Zentrums vor. Zuerst sollte eine Pilotphase (Phase I) das Bewusstsein unter den Akteuren der kroatischen Wasserwirtschaft erhöhen und Kernfragen zu organisatorischen Fragen und zur Finanzierung klären. Basierend auf den Erkenntnissen aus der Pilotphase sollte ein Durchführungsvorschlag entwickelt werden um die langfristige Nachhaltigkeit des Zentrums zu sichern. Der vorliegende Bericht beschreibt die Aktivitäten und Ergebnisse der Pilotphase, welche zu gleichen Teilen vom Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (BMU) unter technischer Überwachung des Umweltbundesamts (UBA) und vom kroatischen Ministerium für Landwirtschaft finanziert wurde. Die Intention dieses Berichts ist es, dem interessierten Leser das Konzept und die Ergebnisse der Projektabwicklung sowie die gesammelten Erfahrungen bei der Umsetzung näher zu bringen (lessons learnt).

Während der Abwicklung der TCC Pilotphase wurde der Bedarf eines TCC in Kroatien so weit als möglich bewertet, 21 kroatische Trainer wurden ausgebildet, die zusammen mit Mitgliedsfirmen von German Water Partnership (GWP) 9 Testtrainings zu 7 Themen des Wassersektors, mit insgesamt 128 Teilnehmern durchgeführt haben. Marketing Aktivitäten wurden realisiert und die Erstellung eines Businessplans und die offizielle Akkreditierung wurden gestartet. Neben dem geschulten Personal im kroatischen Wassersektor war ein weiteres Resultat der Pilotphase ein Handbuch für potenzielle zukünftige TCC Trainer.

Die Pilotphase wurde insbesondere auf operativer Ebene mit großem Erfolg abgeschlossen und ebnete den Weg für eine Fortsetzung der Aktivitäten. Bedauerlicherweise konnte die formelle Gründung des TCC nicht sofort nach der Pilotphase erfolgen. Berechnungen zur Finanzierung der Start-up Phase zeigen, dass sogar im Falle optimistisch berechneter Einnahmen mehr Vorinvestitionen erforderlich sind, wenn die Projektziele in absehbarer Zeit erreicht werden sollen. Diese Tatsache wird die Durchführung der geplanten Schritte verlangsamen und verhindert die sofortige Gründung einer operativen Institution. Im Jahr 2013 wird also der Verband „Hrvatsko Društvo za zaštitu voda“ – Kroatische Vereinigung zum Schutz des Wassers- (HDZV) die TCC Aktivitäten fortsetzen und gemeinsam mit GWP weitere Maßnahmen im Rahmen ihrer finanziellen Möglichkeiten organisieren. Wenn möglich, übernimmt HDZV den Betrieb von TCC in einer separaten Fachabteilung.

Alle Projektbeteiligten – die GWP Mitglieder, HDZV, der kroatische Projektkoordinator Herr Veble, die lokalen Trainer, der Bürgermeister von Karlovac und Frau Drmic vom Agrarministerium – waren in der Pilotphase des TCC Projektes überdurchschnittlich aktiv und leisteten damit einen wesentlichen Beitrag zu ihrem erfolgreichen Abschluss. Die Aktivitäten wurden von den Adressaten des TCC und den Trainingsteilnehmern sehr begrüßt und außerordentlich geschätzt. Einige kroatische Wasserbetreiberfirmen haben durch die

Bereitstellung der Mitarbeiter zur Ausbildung zu lokalen TCC Trainern beigetragen. Die Konferenz im Dezember 2012 eröffnete letztlich Chancen für eine regionale Zusammenarbeit mit den Nachbarländern.

TCC kann eine Erfolgsgeschichte sein und wird deshalb seine Aktivitäten in 2013 fortsetzen.

### **1.3 Pilot faza TCC-a Karlovac**

Ideja o osnivanju Nacionalnog centra za obrazovanje djelatnika u vodno-komunalnom gospodarstvu (TCC) nastala je tijekom posjeta delegacije GWP Karlovcu u svibnju 2010.godine. Nacrt projekta koji je uslijedio predvidio je stvaranje centra u dvije faze. Prva, pilot faza (Faza 1) trebala bi podići svijest među akterima u vodnom sektoru Republike Hrvatske i razjasniti ključna pitanja vezana uz organizaciju i financiranje. Zatim bi se, na temelju nalaza iz pilot faze trebao razviti prijedlog provedbe koja bi osigurala dugoročnu održivost centra. Sadašnje izvješće opisuje aktivnosti i rezultate pilot faze, koja je u jednakom omjeru financirana od strane njemačkog Saveznog ministarstva za okoliš, zaštitu prirode i nuklearnu sigurnost (BMU) pod stručnim nadzorom njemačke savezne Agencije za zaštitu okoliša (UBA) i od strane Ministarstva poljoprivrede Republike Hrvatske. Namjera ovog izvješća jest prenijeti pristup i rezultate provedbe projekta, kao i iskustva prikupljena tijekom provedbe (naučene lekcije) zainteresiranom čitatelju.

Tijekom provedbe pilot faze TCC procijenjena je potreba za TCC-om u Republici Hrvatskoj, educiran je 21 hrvatski trener koji su zajedno sa tvrtkama članicama Udruženja njemačkog vodnog partnerstva (GWP) održali devet testnih treninga o 7 tema vezanih uz vodni sektor, a na kojima je educirano ukupno 128 sudionika. Provele su se i marketinške aktivnosti, izrađen je poslovni plan te je započeto sa službenim akreditiranjem. Osim educiranog osoblja iz vodnog sektora Republike Hrvatske, output pilot faze je, između ostalog, i priručnik za buduće trenere u TCC-u.

Pilot faza je završena s velikim uspjehom, posebice na operativnoj razini te je utrla put za nastavak aktivnosti. Nažalost, formalno osnivanje TCC-a nije uslijedilo odmah nakon pilot faze. Kalkulacije o financiranju početne faze otkrivaju da je, čak i u slučaju optimistično kalkuliranih prihoda, potrebna veća pred-investicija, ukoliko se želi da se ciljevi projekta izvrše u kratkom vremenskom razdoblju. Nažalost, niti nadležno ministarstvo niti Hrvatske vode nisu se obvezali nastaviti pružati financijsku potporu. Također, niti BMU trenutno nije u mogućnosti pružiti dodatna sredstva za financiranje nadolazećih aktivnosti. Ova činjenica će usporiti provedbu planiranih koraka i isključiti mogućnost neposrednog formiranja operativne organizacije. Unatoč navedenome, Hrvatsko društvo za zaštitu voda (HDZV) će nastaviti sa aktivnostima TCC i zajedno sa GWP organizirati dalje mjere u okviru svojih financijskih mogućnosti.

Ukoliko će biti moguće, HDZV će nastaviti rad i aktivnosti TCC-a u posebnom odjelu.

Svi uključeni dionici – tvrtke članice GWP, HDZV, koordinator projekta sa hrvatske strane, g. Veble, lokalni treneri, gradonačelnik Karlovca i gospođa Drmić iz Ministarstva poljoprivrede bili su iznadprosječno aktivni u pilot-fazi projekta TCC, čime je napravljen značajan doprinos njenom uspješnom završetku. Aktivnosti su srdačno dočekane i cijenjene od strane korisnika TCC-a, kao i sudionika treninga. Neka komunalna poduzeća u sektoru voda prepoznala su

potrebu za osnivanjem TCC-a, a neka od njih su također i pridonijela uspostavljanju TCC-a dodjeljujući na edukaciju svoje osoblje koje će biti osposobljeno da postanu lokalni TCC treneri. Konferencija održana u prosincu 2012 napokon je otvorila mogućnosti za regionalnu suradnju sa susjednim zemljama.

TCC može biti uspješna priča i to je razlog zašto će se aktivnosti nastaviti i u 2013.

## 2 Project background

### 2.1 Country background

Water is an essential good for life but also the basis for economic development of a society. In Croatia the water sector suffers from obsolete infrastructure and in the waste water sector there is almost no existent infrastructure. The reason for this bad state is an enormous investment delay caused by the Homeland War, the transition process and finally the financial crises. The planned accession to the EU requires modernisation and upgrading of the infrastructure mainly in the waste water sector in order to reach EU standards. For the operation of these facilities qualified personnel with specific process and maintenance knowledge is required.

However also in the water supply sector modernisation is required. An average of more than 40% of water losses (estimation by Hrvatske Vode) in Croatia caused by old and badly managed drinking water networks needs to be addressed urgently with modern management methods and specialised equipment. New technologies need to be explained and implemented for achieving better operative standards. Health and safety measures both in the waste water and the drinking water sector need to be improved. During 2012 four technicians died in sewerage systems due to poor application of health and safety measures in Croatia.

At present there is no specialised training in Croatia available, neither for technical staff (maintenance and operation) nor for management staff. Instead electricians or technicians without preparatory training are employed. A high demand for specialists in this sector will arise in the upcoming years, which makes it absolutely essential to invest in the training of such personnel.

### 2.2 Request for technical assistance by Croatian stakeholders and contributing German partners

The overall project's purpose is the implementation of a "National Training and Competence Centre for the water sector located in Karlovac, Croatia". The idea of such a centre, in short "TCC Karlovac", was a result of first agreements achieved in connection with the "German Croatian Forum of Economy" held in June 2010. The water utility company of Karlovac (ViK Karlovac) initiated the project idea to be subject of the German-Croatian cooperation in the water sector and requested assistance from the German association "German Water Partnership" (GWP) already in May 2010.

However the implementation of such a project which in the first years will not be profitable in financial terms is not easy to be organised and requires input from all stakeholders. The first phase of the project implementation has to focus on establishing the institutional framework, e.g. by identifying the responsible institution for operating such a training centre. The project proposal has been elaborated on a volunteer basis by Dr. Burghard-ibd, a GWP member company, whose head is directing the so called Country Forum Croatia within GWP. The association GWP supported the activities of the TCC Karlovac with technical assistance for coordinating and monitoring the activities and the stakeholders both on Croatian as on German side. Several members of GWP supported the project financially and in kind and thus contributed decisively to the success of the pilot phase which has been co-financed by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) with technical supervision of the German Federal Environment Agency (UBA) and by the Croatian Ministry of Agriculture, which became responsible for the water sector after the parliamentary elections in 2011.

### **2.3 Project objectives**

The overall objective is the improvement of the environmental standards for the water sector in Croatia. The sustainability of investments in the water sector shall improve because of an effective and efficient operation and management of all water related infrastructure.

The specific objective of the project is the creation of a training and competence centre for an improvement of the training situation and the provision of qualified personnel for companies in the water and waste water sector in Croatia and bordering countries (e.g. Bosnia and Herzegovina (BiH) and Serbia) with specific know-how for the operation of water supply and waste water facilities. Furthermore the training centre shall be a competence centre for the region, where experts can exchange state-of-the-art knowledge and innovative ideas.

The pilot phase of the TCC project implementation had as specific objectives the creation of awareness among the Croatian stakeholders of the need of such a specific training centre and the practical demonstration of methods and procedures for implementing such a centre. Furthermore a discussion on how to implement TCC on institutional and financial level should have led to a Business Plan for the long-term operation of TCC. The pilot phase was intended to create the basis for establishing the TCC in cooperation with Croatian stakeholders, thus strengthening the ownership for the long-term operation of TCC.

### **2.4 Planned results and output**

In general the final project output should be a functional educational institution, which guarantees education, qualification and training in the Croatian water sector on highest levels thus supporting the achievement of EU standards in a relatively short time. Cooperation with neighbouring countries whether EU members (e.g. Slovenia) or with prospects of EU

accession (e.g. BiH and Serbia) would be an asset for further networking in and strengthening of the region.

In order to achieve the afore-mentioned overall objective, during the pilot phase of the project the basic fundamentals needed to be created and existing models and templates needed to be matched to the specific situation in Croatia.

Main issues to be addressed in the pilot phase of the project were the future ownership and financing of TCC.

## **2.5 Planned activities and tasks in the pilot phase**

During the pilot phase all framework conditions of the training centre project were to be researched and analysed. The expected tasks of this phase were the following:

- Enquiry on training need defining the training needs both in quantity and in quality,
- Realisation of “train-the-trainer” courses for Croatian staff as multipliers (local trainers),
- Compilation of training contents and the training material for first test trainings,
- Realisation of test trainings with these local trainers in cooperation with experts from GWP member companies,
- Initiation of first steps for the accreditation of TCC (mainly in Steering Committee (SC) meetings and other stakeholder meetings),
- Preparation of a Business Plan for the implementation of the training centre,
- Performance of marketing activities for promoting the TCC nationally and regionally as a continuous awareness raising campaign.

## **3 Project implementation**

A grant for the project with funds of the BMU Advisory Assistance Programme was awarded by the German side in June 2011. In September 2011 the project started with an official kick-off meeting with all relevant stakeholders: ViK Karlovac, University of Applied Sciences Karlovac, Ministry of Regional Development, Forestry and Water Management, Hrvatske Vode, the national associations Hrvatsko Društvo za zaštitu voda (HDZV) and Hrvatska Grupacija Vodovoda i Kanalizacija (HGViK) and on the other side GWP.

After the promising start with 15 participants in the kick-off meeting the opening conference on 5<sup>th</sup> of October 2011 was planned and realised.

Two train-the-trainer workshops were realised in November 2011 and April 2012, were in total 21 local trainers were qualified with didactic knowledge and methods.

In December 2011 the national elections led to a political change in the Croatian government with all related changes in relevant positions within state institutions and therefore also in the delegates to the TCC SC meetings – and also with a change in the competence structure of the Ministries. The responsibility for the water sector was transferred from the Ministry of

Rural Development, Forestry and Water Management to the Ministry of Agriculture. The co-financing of the project agreed with the former Minister of Regional Development seemed to be endangered and the modalities for the financial transfer to ViK Karlovac, that was supposed to receive these funds, were more than unclear. In June 2012 a solution could be found, so that all remaining test trainings and other activities could be realised within the meanwhile prolonged time frame. In July 2012 also the co-financing issue was solved successfully: Political exchange with the German Ministry of Economy on one side and additional capacity building measures on the topic by GWP on the other side could help to solve this situation. Thus the financial and contractual requirements were explained. A model for the request for payment was created for the beneficiary ViK Karlovac. A sample of a grant contract was given to the Ministry of Agriculture.

After the political change in the Croatian government the identification of the now responsible Ministry of Agriculture with the TCC project was somewhat lower than the one of the former Ministry for Regional Development, Forestry and Water Management that was responsible for the water sector before, despite the very high interest of the water utility companies, the main beneficiaries of the project.

The eight test trainings were realised from June 2012 until November 2012. The final conference for presenting the results of this project phase of TCC implementation took place on 12<sup>th</sup> of December 2012 in Karlovac.

Because of the overwhelming success of the practical part of the project, namely the train-the-trainer workshops and the test trainings, it is planned to continue with SC meetings for solving mainly the financial challenges of the TCC foundation. The City of Karlovac is interested to found a communal company for this purpose, when the income situation will be clarified with the Ministry of Agriculture and Hrvatske Vode.

In the worst case of no financial support from political side the association HDZV would be ready to organise selected activities under the logo of TCC, such as short-term courses and neighbourhood meetings. However these activities would need to be realised with very low budgets and would depend on affordable contributions from the water utility companies and most probably would never lead to the achievement of the overall project objective in a reasonable planning horizon.

In the following all related activities of the project will be summarised giving a comprehensive but condensed overview of the project.

### **3.1 Conferences and meetings**

Numerous meetings and discussions with different stakeholders of the Croatian water sector took place in order to create awareness of the need of a training centre and in order to discuss the proper implementation of such a centre.

Mainly in SC meetings the related questions and challenges were discussed. The SC meetings defined a way of how to cooperate. The document defining the role of the SC is attached to the report. The document was created in order to clarify the task and obligations of SC members also in relation to the project coordinators and the project team. Ten SC meetings, including the kick-off meeting took place during the pilot phase.

**Tab.1: List of meetings**

Date	Description
08. September 2011	Presentation of TCC in Bihac (Bosnia and Herzegovina) on international environment fair (Ekobis)
09. September 2011	Kick-off Meeting
05. October 2011	Croatian-German Water Partnership Day and press conference
27. October 2011	Revelin Conference
02. November 2011	Steering Committee Meeting
21. November 2011	Meeting with Deputy President of HGViK in Rijeka – Mr. Mažar
22. December 2011	Meeting with C.E.O. of ZOV – Mr. Pavić
19. January 2012	Steering Committee Meeting
27. February 2012	Meeting with official representative and former President of HDZV – Mr Zmaic
28. February 2012	Meeting with C.E.O. of ZOV – Mr. Pavić
07. March 2012	Meeting with the new Director of Hrvatske Vode – Mr. Plišić
02. April 2012	Steering Committee Meeting
03. May 2012	Steering Committee Meeting
10. May 2012	Presentation of TCC in Panel Discussion about Capacity Building on IFAT and meetings with relevant GWP members
14. May 2012	Presentation of TCC at the conference “Mali Lošinj Days of Bioethics”
22. May	Meeting with Ms. Drmic – realisation of co-financing on Croatian side
23. May 2012	Meeting with C.E.O. of ZOV – Mr. Dr. Sichla
21. June 2012	Meeting with the Mayor of Karlovac – Mr. Jelic, Mr Uđbinac, Mr. Soppert
06. July 2012	Meeting with the new Assistant Minister of Ministry of Agriculture in charge of water management – Mr. Kurečić
06. July 2012	Meeting with the new Deputy Director of Hrvatske Vode – Mr. Mahmutspahic
09. July 2012	Steering Committee Meeting
03. September 2012	Steering Committee Meeting
05. September 2012	Press conference – Donation Seba KMT
26. October 2012	Steering Committee Meeting (During Revelin conference 2012)
22. November 2012	Steering Committee Meeting
10. December 2012	Steering Committee Meeting
12. December 2012	2. Croatian-German Water Partnership Day and press conference

The following subchapters give information about milestones of the project.

### Kick-off meeting

The official kick-off meeting was held on 09.09.2011 in Karlovac. All relevant stakeholders sent representatives and confirmed their engagement. 15 representatives attended the meeting. The presentation of TCC to these participants is enclosed with this report.

### Opening conference on 05.10.2011

During this event a Memorandum of Understanding (MoU) to declare the TCC project as a German-Croatian cooperation project was officially signed by all relevant stakeholders.



**Pic.1: Signing of the MoU** (Source: ViK Karlovac)

From right: Mr. Wasserbauer (University of Applied Sciences of Karlovac), Mr. Kezelj (President HGViK), Mr. Husaric (at that time Director of Hrvatske Vode), Mr. Pankretic (at that time Minister of Regional Development, Forestry and Water Management), Mr. Girod (C.E.O. of GWP), Dr. Burghard (Head of GWP Country Forum Croatia), Mr. Zmaic (HDZV President), Mr. Mrzljak (Director of ViK Karlovac)

In the background, from right: Mr. Krmek (at that time State Secretary of the Ministry of Regional Development, Forestry and Water Management), Ms. Kolaric (Deputy Mayor of Karlovac), Mr. Jelic (Mayor of Karlovac)

Of almost 150 participants 54 participants in the conference completed an evaluation form. The response was overwhelmingly positive:

**Tab.2: Evaluation Opening conference:**

Time and place			Topics		Organisation	
Right selection	Not adequate	proposal	Correct selection	note	satisfied	note
54			54		54	

### Revelin Conference on 26.-30.10.2011

The Revelin Conference is organized by HGViK on an annual basis and all important stakeholders of the Croatian water sector are present thus reaching a participation of several hundred visitors from Croatia and abroad. A presentation on the objectives and the planned activities of TCC was held immediately after the speech of the Ministry for Regional Development, Forestry and Water Management. The audience was still complete at that time and all Revelin participants (ca. 400 persons) got aware of the planned TCC project. Furthermore TCC was presented on an own booth in the accompanying exhibition.



In addition, a Croatian language project description brochure was distributed together with the official conference handout thus reaching all participants of the conference.

#### Press conference on 05.09.2012

The company Seba KMT donated equipment with a value of € 20,500 for the purpose of training realisation to TCC Karlovac. With this equipment professional leak detection and water loss management may be taught.



**Pic.2: Handing over of the equipment to TCC** (Source: ViK Karlovac)

Donation by the company Seba KMT on 05.09.2012 in the operations building of the WWTP

#### Final conference on 12.12.2012

The final conference summarised the experiences and presented the outcome of the TCC pilot phase to the public audience. This event was also a cooperation place with interested neighbouring countries. In the panel discussions representatives of Slovenia and Serbia participated and gave insight to their experiences with capacity building in the water sector. In the break some representatives from BiH were joining the discussion. Ca. 100 participants attended the conference.

The overall opinion and conclusion of the conference was that there is a broad acceptance of TCC among the water utility companies. Unfortunately the political institutions, beginning with the Ministry of Agriculture, Hrvatske Vode and the Croatian associations, move very slowly towards a common commitment.

Main interest for continuing with TCC activities has been shown by the City of Karlovac and HDZV. For the next year further SC meetings and further steps in cooperation with the representatives of the neighbouring countries were agreed during the conference.

### 3.2 Marketing

#### Corporate Identity

Based on the project logo further documents were created. The following logo has been selected out of several proposals:



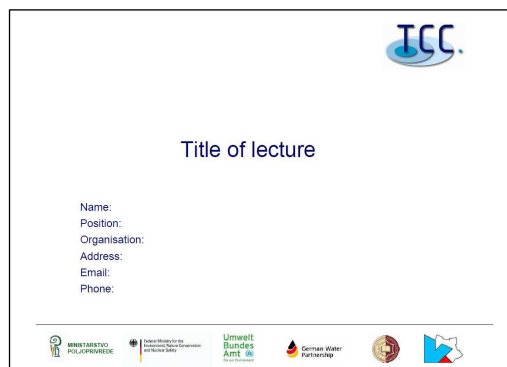
**Pic.3: TCC Logo**

The logo is available in different formats depending on the application. For the Croatian project team business cards were made, namely for the project coordinator Mr Veble and his deputy Ms Stepinac. This measure was sponsored by Dr. Burghard-ibd.



**Pic.4: TCC Business card**

Registration and evaluation forms for the courses were designed in the same style. Other documents in the project were also designed in accordance with this layout, such as the Power Point master:



**Pic.5: TCC Power Point master**

For the test trainings pens with the inscription “www.tcc-karlovac.org”, A4 note pads, as well as folders in the TCC layout were sponsored by the GWP member company KSB. Each training participant received a folder containing the handout, the note pad and the pen. After the change of the responsible Ministry the Ministry’s logo was exchanged accordingly on the documents.

Here, for example, the cover of the DIN A4 note pad:



**Pic.6: TCC Note pad**

### Flyer

A Flyer was designed presenting nine potential focus themes for trainings as well as the possibility to fill in alternative ideas. The flyer was sent to all water utility companies and to all HDZV members (a total of more than 600 directions). The mailing was realised by HDZV with an accompanying letter. The feedback was sent by fax directly to ViK Karlovac. In total 65 feedbacks could be gathered and helped to specify the need assessment (see Chapter 3.3).

### Webpage

The webpage is currently published in two languages under [www.tcc-karlovac.org](http://www.tcc-karlovac.org) in the World Wide Web. Currently the webpage is updated exclusively by the German side. End of October 2012 the one-year hosting expired and has been extended for another year sponsored by the German side. The webpage layout has been sponsored by ZOV (Zagrebacka Otpadnih Voda).

## **3.3 Need assessment**

Already in July 2011 a need assessment questionnaire was prepared and translated into Croatian language. DWA as GWP member and project participants helped on the basis of an existing document to develop the content of this questionnaire. Despite several mailings,

direct post sending and personal delivery in October 2011 at the Revelin Conference (see Chapter 3.1) to the present Directors of water utility companies the response was minimum. Some utility companies tried to explain that they did not have the requested information at hand and that the filling of the questionnaire would have been too time intensive. All parties emphasised that this was not because of a lack of interest towards TCC but due to internal organisational problems.

Because of the very low return of filled questionnaires a flyer (see Chapter 3.2) with 9 potential focus topics was designed and sent to the water utility companies. As this flyer was easy to be filled in by just crossing the proposed selection the feedback was better. In total 65 requests were filled and sent back. According to the analysis of the answers 7 topics for test trainings were selected. Two test trainings (one about pumping stations and one about sludge process) were offered twice because of the high number of registrations for the first training.

### 3.4 Qualification of local trainers (train-the-trainer)

Two "train-the-trainer" courses were realised with the support of DWA with the aim to train Croatian staff to local trainers for the planned test trainings. The participants were recruited mainly from different water utility companies, but also from other representatives of the water industry. Pre-conditions were an above-average knowledge in some areas of water management, English language skills, a positive open-minded attitude and the willingness to volunteer commitment.

**Tab. 3: Participants train-the-trainer courses**

N°	Date	Participants
1	28.-30.11.2011	12
2	02.-05.04.2012	9



**Pic.7: Group work Nov 2011**  
(Source: DWA)



**Pic.8: Group photo Nov 2011**  
(Source: DWA)



**Pic.9: Group work Apr 2012**  
(Source: Dr. Burghard-ibd)



**Pic.10: Group photo Apr 2012**  
(Source: ViK Karlovac)

**Pic.11: Geographical origin of the local trainers:** (Source: Dr. Burghard-ibd)







All local trainers participated on a volunteer basis with the approval of their companies' management. They committed themselves to work on the preparation of the training

materials together with the relevant GWP member companies (see Chapter 3.5) and to realise the three-days test training courses (see Chapter 3.6). After these steps the local trainers were qualified to be future TCC trainers.

For supporting the local trainers a document was created and delivered to all trainers: “Manual for TCC trainers – How to organise a training course”. This manual defines the steps for preparing a test training and makes all required forms and templates available. The manual guarantees common procedures and standards for the training courses’ preparation. The document is attached to the report.

The evaluation by the participants of the train-the-trainer workshops was very positive in both occasions. The following results are a compilation of both evaluations:

**Tab.4: Evaluation train-the-trainer courses**

Your opinion to the course		 poor	 acceptable	 good	 excellent	remark
Event Structure	Topic			1 x	19 x	
	Praxis			1 x	19 x	
	Handout			4 x	15 x	1 x no evaluation
Organisation	Organisation			7 x	13 x	No coffee table
	Rooms		1 x	5 x	11 x	3 x no evaluation
	Food		1 x		6 x	13 x no evaluation
	Hotel		1 x	1 x	1 x	17 x no evaluation
	Access		1 x	6 x	11 x	1 x no evaluation

Your opinion to the Trainer	Presentation*				Handout*				Expectation fulfilled*			
	1	2	3	4	1	2	3	4	1	2	3	4
Rüdiger Heidebrecht				20 x			1 x	19 x				20 x
<b>Remarks:</b> We don't like tests. We need more of these trainings. No critics! It was a pleasure to be part of this training. Thank you very much!!! Excellent! An excellent experience and exceptional training course Nice and useful training for different aspects in life, good base for becoming a trainer												
<b>Further topics:</b> More technical (with practical examples) Pumping stations, Process measuring, SCADA Systems Water supply based subjects, involvement of geodesy in all the processes												

\* 1=poor, 2=acceptable, 3=good, 4=excellent (according to Croatian system of school marks)

### 3.5 *Compilation of training material for test trainings*

The local trainers selected the technical topic in which they already had advanced technical knowledge. They were linked with the corresponding GWP member companies with the specific know-how and prepared as a team the training material for the respective test training course. First step was the concept for a programme of a three-days test training: the training schedule. Then they prepared Power Point presentations, exercises and tests for the test training. The training material has been made available mainly by the GWP member companies and is in their ownership. The material may be used only in the context of TCC trainings.

### 3.6 *Test trainings as three-days workshops*

In total nine test trainings were carried out for seven different topics of water management where in total 128 participants were registered. All participants had to demonstrate a continuous presence during the three days and to pass a test at the end of the course. Each successful participant received a TCC certificate.

**Tab.5: List of test trainings:**

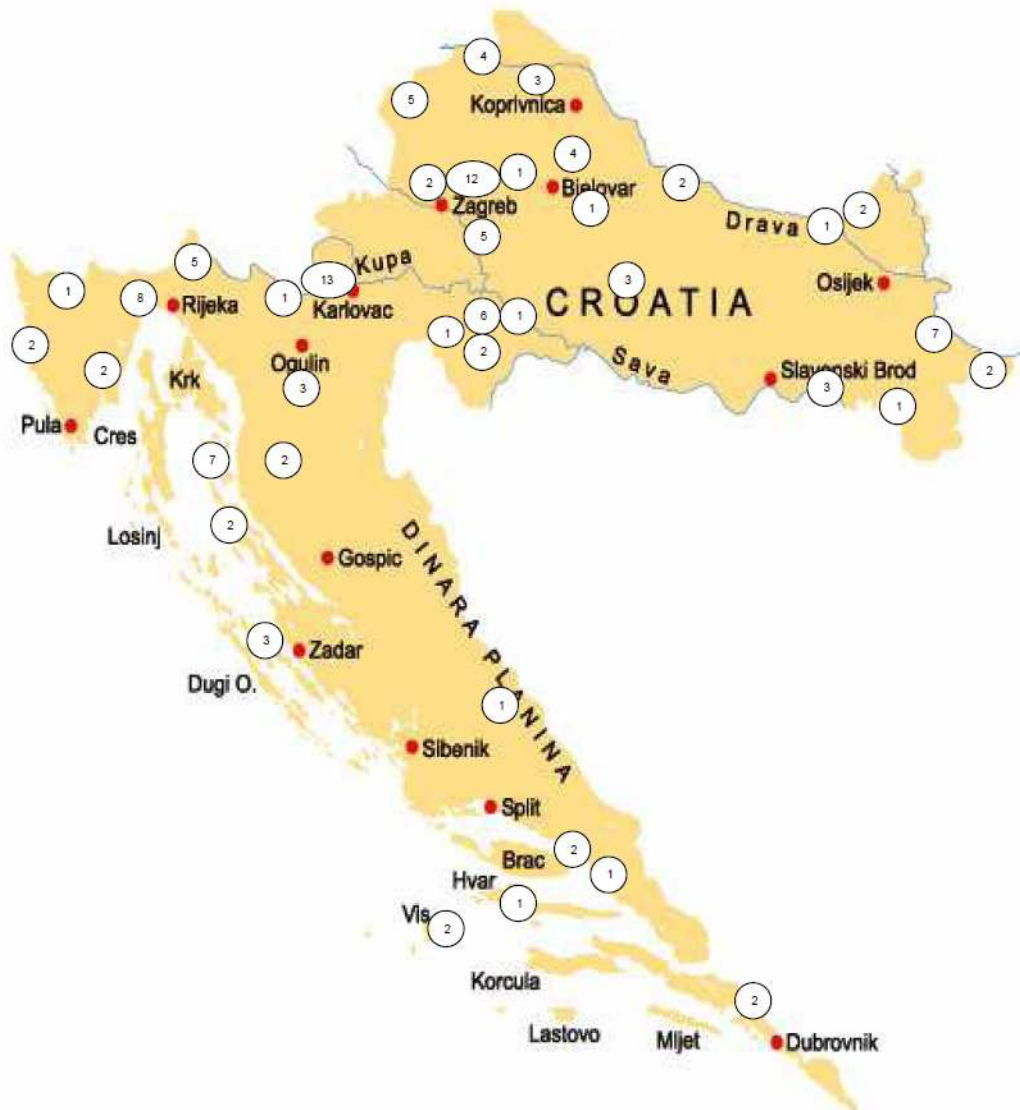
N°	Topic	Date
1	Health and safety for sewer maintenance	19.-20.06.2012
2	Water loss management and leak detection	03.-05.07.2012
3	De-central WWTPs and membrane applications for WW	04.-06.09.2012
4	Pump and pumping station maintenance with practical training	17.-19.09.2012
	Pump and pumping station maintenance with practical training	20.-22.11.2012
5	Sludge process on WWTPs with different technical options and optimisation of sludge dewatering process	01.-02.10.2012
	Sludge process on WWTPs with different technical options and optimisation of sludge dewatering process	04.-05.10.2012
6	Sewerage management (inspection, damage analysis, prioritisation of rehabilitation measures and realisation of rehabilitation)	15.-17.10.2012
7	Laboratory for waste water analyses and process control	05.-07.11.2012

**Tab.6: Participants of the test trainings:**

Test training topic N°	Participants	Participants together
1	13	128
2	14	
3	15	
4	31	
5	27	
6	15	
7	13	

**Pic.12: Geographical origin of the participants of the test trainings:**

(Source: Dr. Burghard-ibd)



Each test training and each trainer were evaluated by all participants at the end of the corresponding training with very good results. The last two trainings were evaluated with the highest average scores, which is also a result of the gained routine in training preparation and logistics. Many of the participants commented that the courses should have a longer duration and should address more details of daily work with more case studies. Lessons learnt will be presented in Chapter 1 of this report.

The following photos give an impression of the test trainings to the different topics.



Health and safety for sewer maintenance, 19.-20.06.2012



**Pic.13: During training H&S**

(Source: Dr. Burghard-ibd)



**Pic.14: Group photo H&S**

(Source: Dr. Burghard-ibd)

Water loss management and leak detection, 02.-04.07.2012



**Pic.15: During training WLM**

(Source: Dr. Burghard-ibd)



**Pic.16: Group photo WLM**

(Source: Dr. Burghard-ibd)

Decentral WWTPs and membrane applications for WW, 04.-06.09.2012



**Pic.17: During training De-central WWTPs**

(Source: Dr. Burghard-ibd)



**Pic.18: Group photo De-central WWTPs**

(Source: Dr. Burghard-ibd)

Pump and pumping station maintenance with practical training, 17.-19.09.2012



**Pic.19: During training Pump stations**  
(Source: Dr. Burghard-ibd)



**Pic.20: Group photo Pump stations**  
(Source: Dr. Burghard-ibd)

Pump and pumping station maintenance, 20.-22.11.2012



**Pic.21: During training Pump stations**  
(Source: Dr. Burghard-ibd)



**Pic.22: During training Pump stations**  
(Source: Dr. Burghard-ibd)

Sludge process on WWTPs with different technical options and optimisation of sludge dewatering process, 01.-02.10.2012 in Karlovac



**Pic.23: During training Sludge process in Karlovac** (Source: Dr. Burghard-ibd)



**Pic.24: Group photo Sludge process in Karlovac** (Source: Dr. Burghard-ibd)

Sludge process on WWTPs with different technical options and optimisation of sludge dewatering process, 04.-05.10.2012 in Vinkovci



**Pic.25: During training Sludge process in Vinkovci** (Source: Dr. Burghard-ibd)



**Pic.26: during training Sludge process in Vinkovci** (Source: Dr. Burghard-ibd)

Sewerage management (inspection, damage analysis, prioritisation of rehabilitation measures and realisation of rehabilitation), 15.-17.10.2012



**Pic.27: During training Sewerage Management**

(Source: Dr. Burghard-ibd)



**Pic.28: Group photo Sewerage Management**

(Source: Dr. Burghard-ibd)

Laboratory for waste water analyses and process control, 05.-07.11.2012



**Pic.29: During training Laboratory**

(Source: Dr. Burghard-ibd)



**Pic.30: Group photo Laboratory**

(Source: Dr. Burghard-ibd)

### **3.7 Accreditation of training centre and courses**

Several activities to prepare the accreditation were performed. The SC meetings were used to increase the awareness about the need of TCC among relevant stakeholders of the water sector and of politics. Furthermore information was obtained about the prerequisites for an accreditation. The list of the realised meetings can be found under Chapter 3.1.

Among the activities to prepare the accreditation the translation of the German standard DWA-M 1000 (Requirements to qualification and organisation of operators of waste water facilities) into Croatian language was handed over to the Ministry of Agriculture with the recommendation to adopt a similar regulation in Croatia. The Croatian Water Act is generally in line with the EU-Acquis, but some details are still under revision and adaptation, so that the obligation for minimum qualification of staff in relevant positions could be incorporated there. This process is ongoing.

The German qualification schedules and contents of the curriculum of the profession “sewage engineering technician” has also been translated into Croatian language and was handed over to the Ministry of Agriculture and Hrvatske Vode. The establishment of environmental professions as realised in Germany ten years ago was recommended.

The Ministry of Science, Education and Sports (Ministarstvo znanosti, obrazovanja i sporta) is the responsible institution to give the accreditation as educational institution to TCC. The application needs to comprise a curriculum of a training course (minimum duration 150 h). The trainers also need to pass a special qualification procedure at the Agency for Vocational Education and Training and Adult Education (Agencija za strukovno obrazovanje i obrazovanje odraslih).

The relevant contacts have been established and a cooperation with the private school POUKA will help to achieve a smooth realisation of the accreditation procedure.

### **3.8 Preparation of a Business Plan**

Different options for the establishment of a TCC operating organisation were presented and discussed in SC meetings. First ideas shall make the start to prepare a Business Plan. The Business Plan can be completed when the relevant basic decisions will be taken by the Croatian stakeholders.

## 4 Project Evaluation

### 4.1 Project results and deviations

As described previously the project achieved almost all objectives of the pilot phase even if the whole project suffered some delays due to the change of government and due to unclear co-financing modalities on Croatian side. This circumstance led to the situation that much more input from project management side had to be performed for keeping the project in line, e.g. additional consultancy was required for assisting the procedure of co-financing.

The following output was created:

- TCC logo, marketing flyer and webpage
- TCC corporate design: business cards, note pads, pens, TCC folders (250 each)
- Master documents: TCC letterhead, Power Point master
- Manual for TCC trainers
- 21 trained local trainers by DWA
- 128 trainees passed test trainings (from 47 different water utility companies)
- training schedules, training material and nine test-trainings for seven different topics
- Draft document to prepare a Business Plan
- Extract of the German curriculum "Vocational Training, Environmental Engineering occupation, Volume 2, Sewage Engineering Technician" in Croatian language as an example for a curriculum in TVET.

The project was finalised very successfully with only slight deviations from the planned results and outputs.

### 4.2 Evaluation in respect to previous project objectives

The pilot phase of TCC achieved almost all objectives set out in the project proposal. Now the pre-conditions for the foundation of TCC are clear and it is up to the Croatian stakeholders to take over the initiative and to continue as described in the draft document to prepare a Business Plan.

In order to achieve the overall objective of the project further input from the German side is needed. The Croatian stakeholders have neither the institutional strength to organise a training centre for the water sector like TCC by themselves nor the experience for developing the training modules with the necessary state-of-the-art contents. GWP and the member companies are still available and interested for further cooperation in this field.

### 4.3 Assessment of achieved impact

In the very beginning the TCC approach has been observed very sceptically by Croatian stakeholders. Prior to the TCC project there have been some similar activities by other organisations which ended up because not enough energy was focused on raising

awareness among the beneficiaries and because the political commitment to make the responsible decision makers act was not high enough. Learning from these experiences TCC pilot phase was accompanied by conferences, meetings and press releases. Furthermore the political commitment was gained by elevating the project onto bi-lateral government cooperation level. These two factors were key factors for the success of the TCC pilot phase. However from the grass roots, which are the concerned water utility companies, there was always a lively interest in the TCC activities, especially from those who already implemented or are shortly before implementation of new infrastructure (e.g. Opatija, Poreč, Sisak and Slavonski Brod). These companies sent some of their qualified personnel to become local trainers on a volunteer basis and participated actively in the test trainings with one or even more participants. Water utility companies like from Opatija and from Slavonski Brod sent to all test trainings staff for qualification. The announcement of the test trainings were published ca. two weeks before realisation and even with this short registration period always some participants had to be rejected because of overbooking.

The final conference was visited by ca. 100 participants and the audience was clearly in favour of the continuation of TCC. The Director of the water utility company of Opatija who presented his point of view of the experiences made with TCC was very much convinced that the test trainings had not only an impact on the knowledge of his staff but also on the motivation to do a better job. Additionally the networking with other colleagues within the sector is also a very important side effect of TCC trainings.

The pilot phase had a promising impact in the Croatian water sector even if the pilot phase was limited to only nine test trainings. The whole water sector is sensitised for the importance of capacity building especially in the context of big investments in water related infrastructure like now, shortly before the EU accession of Croatia.

Now it is the right moment for the establishment of a TCC. The Croatian-German cooperation will remain a key success factor for the future of TCC.

#### **4.4 Evaluation of project activities by beneficiaries**

The evaluation of all trainings (whether train-the-trainer course or test training) was made by the participants at the end of each training. The results were very positive and encouraging. The very positive evaluation results demonstrate that the realised activities met the needs of the participants. On the basis of these evaluation results a ranking could be realised by calculating the average scores of each test training (see following table).

Tab.7: Rating of individual training courses:

N°	TOPIC	Training course logistics						Training course general						Final score
		Administrative realisation (secretary services for registration, etc.)	Room and training material / equipment was appropriate	Accessibility of training room	Hotel arrangement	Coffee breaks and lunch	Dinner	Training was of benefit	Training met my expectations	Training will be useful for my professional needs	Duration of training was adequate	Training presented ideas and competencies useful for daily work	Overall evaluation of course	
1	Pump and pumping station maintenance with practical training (Wilo)	4,00	3,91	4,00	3,78	3,91	4,00	4,00	4,00	4,00	3,64	4,00	4,00	3,94
2	Laboratory plus process control	4,00	3,90	4,00	4,00	4,00	3,80	4,00	3,90	3,80	3,80	3,90	3,90	3,92
3	Health and Safety for sewer maintenance	3,91	3,75	4,00	4,00	4,00	4,00	4,00	4,00	3,82	3,42	3,83	4,00	3,89
4	Pump and pumping station maintenance with practical training (KSB)	4,00	3,93	3,94	3,93	4,00	4,00	3,88	3,75	3,81	3,75	3,75	3,88	3,88
5	Decentral WWTPs and membrane applications for WW	3,97	3,92	4,00	4,00	4,00	4,00	3,84	3,74	3,79	3,79	3,71	3,84	3,88
6	Sludge dewatering and optimisation with polimers	3,91	3,92	3,92	3,92	3,92	3,94	3,92	3,71	3,83	3,88	3,83	3,88	3,88
7	Water loss management and leak detection	3,94	3,94	3,94	4,00	3,94	3,92	4,00	3,81	3,69	3,63	3,81	3,94	3,88
8	Sewerage management (inspection, damage analysis, prioritisation of rehabilitation measures and realisation of rehabilitation)	3,93	3,86	3,93	4,00	4,00	4,00	3,93	3,73	3,80	3,67	3,67	3,93	3,87

## 5 Lessons learnt & prospects

The TCC pilot phase fully demonstrated that this kind of practical education is necessary for the water sector in Croatia. The approach was fully supported by the involved water utility companies (those recruiting local trainers and those participating in the test trainings). Those companies gave and give positive testimonial of the benefit of TCC and most probably transfer this opinion to other ViKs. A stronger financial and institutional support from the Croatian national authorities and institutions (Ministry of Agriculture and Hrvatske Vode) is welcome, because the TCC implementation needs both supports: from the grass roots and from the political level.

The location of the waste water treatment plant Karlovac has been proven as an excellent place for training activities. The training room is big enough and well equipped. The whole plant is new with adequate equipment. However also de-central training events in other places are recommended for overcoming the inhibition of ViKs who have a long travelling to Karlovac. The cost for travelling is taken into account by the management of ViKs and could impede the participation of staff on technical or operational level, especially when the training is offered at a cost-covering fee. The organisation of a test training in Vinkovci was very successful and participants from other water utility companies could be reached and involved in TCC activities.

The questionnaire for analysing the training needs of the water utility companies was too complicated and too time consuming for the water utility companies. In the future such questionnaires should be more focused on specific training needs. The completion of the questionnaire should be possible in less than 30 minutes for not overstressing the water utility companies. The water utility companies are organised in different departments and often the exchange between water and waste water department is not too intensive. The questionnaire should be client-friendly and be addressed to the respective department for guaranteeing the proper feedback.

Trained local trainers of all nine test trainings received high marks of evaluation by the participants. It is expected, that the trained local trainers will continuously improve their performance in the course of time by losing nervousness and gaining experience and routine.

The test trainings were limited to three days also because of limited financial resources. Therefore not all problems and questions could be addressed adequately (e.g. sewer management). The elaboration of longer-term courses is needed for more complicated topics for covering their complexity and for connecting them with daily situations in the field. The courses should be organised as several modules, because long absences of technical staff cannot be organised easily by the water utility companies.



The cost of the training courses needs to be paid by the beneficiaries. If those are not able to afford such activities then this cost has to be included in project costs as additional investment for successful implementation of new infrastructure. The EU financing gives room to finance such horizontal measures during project implementation. Hrvatske Vode as implementation agency for internationally financed projects has the responsibility to take the necessary steps. In January 2013 another meeting is planned to ask for the input of Hrvatske Vode in this field. For the near future already 36 investment projects are planned to be implemented with grants from EU.

Croatia will soon be a member state of the EU, but it is still in process of transition. Therefore the progress of project implementation was much slower than German partners had expected. This was in particular the case after the parliamentary elections of 2011. Furthermore the stakeholders needed to gain trust in the cooperation partners. This is why the implementation period for future activities is recommended to be estimated with a time reserve of minimum 100%. More time reserves may avoid stress situations on both sides.

As there is currently no further funding available for a comprehensive second phase of TCC implementation, TCC needs to be implemented in a step-by-step manner with smaller steps for achieving the required impact and sustainability on a long-term basis:

First step:

- Education and training for existing staff in operational field (waste water, drinking water, horizontal topics like health and safety, GIS)

Second step:

- Implementation of a neighbourhood system for the counties/regions
- Education and training for management staff and decision makers

Third step:

- Development of new professions: sewer engineering technician and drinking water engineering technician in cooperation with vocational schools, Ministries, associations.

Despite the overwhelming success of the TCC pilot phase on operational level, the institutional and financial implication of TCC establishment could not be solved during 1,5 years of project implementation. The success of the pilot phase has not yet convinced the state institutions to extent the financial and political support for the establishment of TCC on professional level. The personal motivation of each decision maker plays a key role. The mere necessity of education or the benefit to the society is not a decisive motivation factor. For the second phase of TCC implementation the initiative has to be organised from the grass roots. The beneficiaries and the existing interest group HDZV will play the key role.

Croatian water utility companies still depend very much on local governments and are politically influenced. The excellence of operation of a water utility company is still not considered to be very important and other social questions like employment and public health have a higher priority. In this environment it is impossible to offer the courses on cost-covering basis. The minimum fee for a three-days course is calculated to be 300

€/participants, not including any profit. Travelling, accommodation and expenses for the participants are additional costs to be borne by the water utility companies. Longer courses which are especially indispensable for the waste water sector will be more cost-intensive. The TCC operating organisation should be a non-profit organisation for keeping the price level low. But nevertheless TCC will need additional financial support for the first three years of operation as minimum.

## 6 Project documentation

- Presentation Kick-off meeting on 09.09.2011
- TCC Flyer with presentation of relevant training subjects
- Manual for TCC trainers – How to organise a training course