Doc. Name	UWFL guide
Date	22.11.2013

Project no. 4CE439P3

URBAN_WFTP

"URBAN_WFTP: Introduction of Water Footprint (WFTP) Approach In Urban Area To Monitor, Evaluate And Improve The Water Use"

JOINT URBAN WATER FOOTPRINT LAB GUIDE

Prepared by: alpS Ltd., Grabenweg 68, 6020 Innsbruck, Austria
Authors: Christin Haida
Katrin Schneider

This project is implemented through the CENTRAL EUROPE programme co-financed by the ERDF

Index

1. Introduction 1
2. Background 1
   2.1. Project description 1
   2.2. Water Footprint – a useful tool 2
3. Purpose and Goals of Urban Water Footprint Labs 3
   3.1. Why do we need an Urban Water Footprint Lab? 3
   3.2. Objectives 4
4. How to set up an Urban Water Footprint Lab 5
   4.1. Management and implementation of lab 5
   4.2. Challenges 6
   4.3. Review of implementation process 7
5. Examples of Urban Water Footprint Labs 8
   5.1. Innsbruck, Austria 8
      5.1.1. Identified Needs 8
      5.1.2. Goals and target group 9
      5.1.3. Set up 9
   5.2. Vicenza, Italy 10
      5.2.1. Identified Needs 11
      5.2.2. Goals 12
      5.2.3. Set up 13
   5.3. Wroclaw, Poland 14
      5.3.1. Identified Needs 14
      5.3.2. Goals and target group 14
      5.3.3. Set up 15

References 16

Appendix 17

UWFL check list 17

This project is implemented through the CENTRAL EUROPE programme co-financed by the ERDF

1. Introduction

Water is one of the most precious resources. By 2050, water demand is projected to increase by 30% to 50% and industries, agriculture and expanding cities might face scarcity problems. Urban areas, in particular, are hotspots of growing water consumption and pollution. In regions with high water availability, often water is taken for granted, with low value, and unnecessarily wasted whilst other regions struggle with limited water supply (regarding water quality and quantity) caused by weak infrastructure, conflicting user interests or general water scarcity. Climate change and population growth with changing water demand and consumption patterns increase the need for long-term, sustainable water management in urban areas. For the very reason that urban areas are hotspots of water consumption and pollution they have to become an object of improved water management. In this context not only direct water consumption has to be considered. Indirect water usage - i.e. so-called virtual water consumed through commodities - may not always affect water supply in the vicinity of urban areas, but has implications on water management on a national to global scale. In order to improve water management in urban areas of Central Europe, current direct and indirect water consumption has to be assessed. This guide provides a general approach to assess water management and implement Water Footprint Labs in urban areas. It will give examples of different Central European urban areas which face different challenges in water supply and demand and highlight the requirements specific to each of these regions.

First we outline the overall project and give a brief introduction to the water footprint concept. Next we describe the structure of urban water footprint labs, why they are useful and their goals. Chapter four is about how to set up a Lab, what is required and provides a detailed check list. The final chapter gives some examples about Labs which were implemented during the project.

2. Background

2.1. Project description

The Central Europe Program project „URBAN_WFTP - Introduction of Water Footprint (WFTP) approach in urban area to monitor, evaluate and improve the water use" focuses on local water management in urban areas in order to improve currently used technologies and to integrate innovative tools for monitoring and managing citizens' water use, water networks and wastewater treatment systems. To achieve these goals the Water Footprint approach represents an opportunity for better water management and use of water. The Water Footprint approach in urban areas is

This project is implemented through the CENTRAL EUROPE programme co-financed by the ERDF

CENTRAL EUROPE COOPERATING FOR SUCCESS. EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND

structured in three levels. The first level describes the water flows into and out of the city and thus allows a global assessment of the city's Water Footprint. On the second one the city is subdivided into areas of similar land use/land cover types. This level allows identifying Water Footprint hotspots. The third and most detailed level assesses the Water Footprint on the basis of separate buildings. This final model supports a better understanding of the influence of local policies on water use. Additionally the Virtual Water of products which are consumed in the city will be addressed. In so called Urban Water Footprint Labs this Water Footprint approach will be tested in three urban areas in Vicenza (Italy), Innsbruck (Austria) and Wroclaw (Poland). This enables an assessment of the effectiveness of the approach, the comparison of the achieved results and the creation of a Central Europe area which pays special attention to urban water management. The URBAN_WFTP project anticipates results on how the Water Footprint approach will enable municipalities to better define environmentally friendly policies, plans and strategies.

2.2. Water Footprint – a useful tool

The water footprint is an indicator of freshwater use including direct water consumption of a consumer or producer and also the indirect water use related to the production and consumption of commodities. Regarded as a comprehensive indicator of freshwater the Water Footprint shows water consumption volumes (like source and polluted water) by type of pollution. It assesses and represents three aspects of water use called blue water, green water, and grey water. Blue water accounts for ground and surface water consumed (not returned to the same water basin in the same conditions); green water accounts for rain water and its use and management; grey water accounts for the volume of water polluted (e.g. from waste water discharge). In other words the Water Footprint gives spatio-temporally explicit information regarding how water is appropriated for various human purposes (Allan 1998; Hoekstra et al 2011).

This project is implemented through the CENTRAL EUROPE programme co-financed by the ERDF

CENTRAL EUROPE COOPERATING FOR SUCCESS. EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND

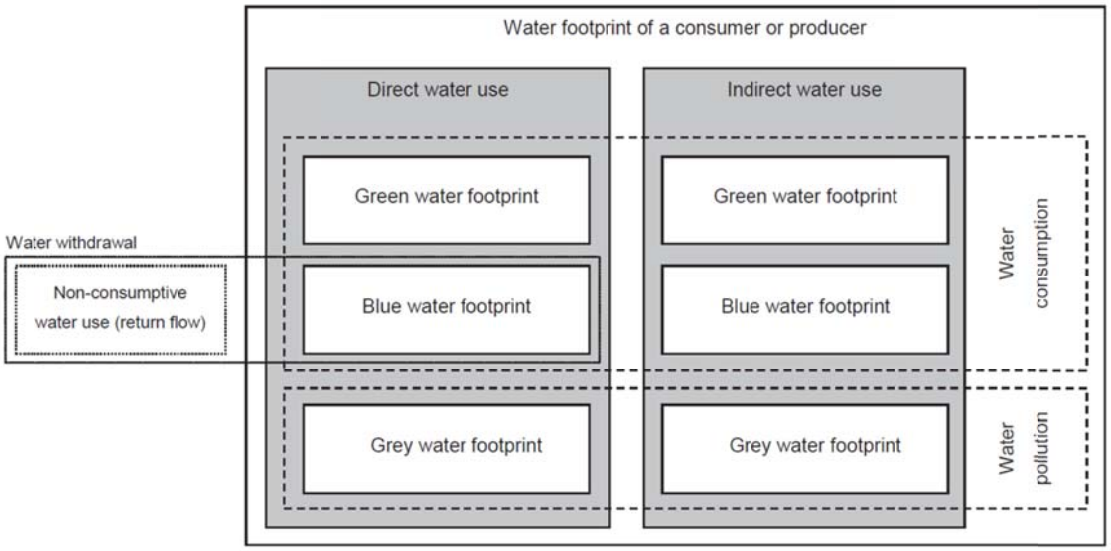


Figure 1: Schematic representation of the components of a water footprint. After Hoekstra et al. 2011, p 3.

3. Purpose and Goals of Urban Water Footprint Labs

In the EU ca. 70% of the population lives in cities and this share is likely to increase in future. This makes urbanized areas to hotspots of water consumption and pollution. Particularly in face of climate change and population growth water needs to be managed sustainably regarding water quality, water consumption, water supply networks and flood risk. However, often i) water treatment technologies in buildings and in the water network are obsolete and need be improved, ii) city inhabitants are not well informed on the importance of water and on how to use this resources sustainably, and iii) current technologies can be improved for a better monitoring and managing of water. To address these issues so called Urban Water Footprint Labs will help to support decision making processes with data and information to better manage and use water.

3.1. Why do we need an Urban Water Footprint Lab?

Urban Water Footprint Labs are the interface between water supply and water demand (Figure 2). The UWF Labs have the ability to continuously assess, evaluate and monitor changing behaviours, policies or technologies of consumers and water suppliers which might have an impact on the demand. Additionally the UWF Labs serve as communication platform and bring together water suppliers and users from various backgrounds and to raise awareness about sustainable water management or consumption. This approach supports the involvement of different stakeholder groups

This project is implemented through the CENTRAL EUROPE programme co-financed by the ERDF

CENTRAL EUROPE COOPERATING FOR SUCCESS. EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND

and avoids a top-down approach which may not stress actual challenges and requirements of a city's water management.

The flexible framework makes it possible to personalize the labs depending on the individual needs of the urban area.

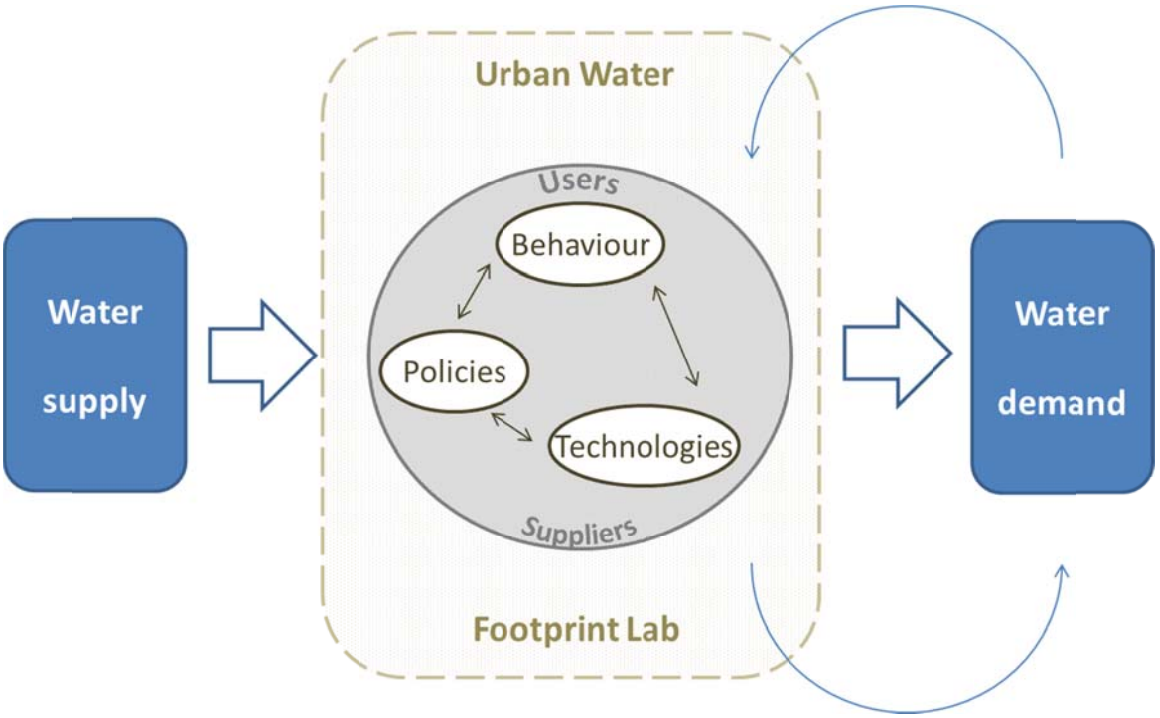


Figure 2: Schematic set-up of an Urban Water Footprint Lab.

3.2. Objectives

As a tool for sustainable water management the UWF Labs pursues the following objectives and sub targets:

- Setting up water use and management improvement plans:
  - Evaluating water use
  - Evaluating water distribution
  - Developing improvement plans, defining targets and appropriate actions
- Management actions to hit targets:
  - Monitoring water use
  - Monitoring water distribution
- Applicability of the approach:
  - for different areas
  - for different needs

This project is implemented through the CENTRAL EUROPE programme co-financed by the ERDF

- Monitoring of results
- Integrating possible changes of water supply into the evaluation
- Awareness creation
- Continuous improvement of performances

4. How to set up an Urban Water Footprint Lab

A step-wise approach for the development and implementation of the Urban Water Footprint Lab is recommended. This includes i) a definition of the general objectives and requirements specific to the selected urban area, and ii) the identification of required resources. The identified requirements can be monitored with a "Lab checklist", and the implementation process may be visualized in an organisational chart. The implementation of the Urban Water Footprint Lab has to be monitored and evaluated continuously.

4.1. Management and implementation of lab

Objectives of the Lab

A definition of the aims, scope and milestones of the Lab has to be developed. This includes general objectives, target groups and goals of the Lab. The objectives and according milestones can be listed, either with respect to the temporal progress of the project, or grouped thematically.

Key questions to be asked at this stage include:

- Which goal(s) does the Lab pursue?
- Who are the addressees of the Lab, which target group does the Lab address?
- Which milestones will result from the Lab?

Which actions are needed?

According to the definition of the objectives, milestones and target group, actions required for the preparation and implementation of the Lab have to be defined. These actions can be grouped into organisational and topical aspects, and have to be scheduled within a planning, implementation and monitoring phase:

- set up of workplan including workpackages, time frame, milestones
- definition of short-term and long-term actions to be taken
- definition of stakeholder groups

Time and effort

The time and resources required to execute the entire implementation of the UWF Lab have to be estimated. The duration of different planning and implementation steps

This project is implemented through the CENTRAL EUROPE programme co-financed by the ERDF

CENTRAL EUROPE COOPERATING FOR SUCCESS. EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND

depends on the actions required for the Lab. These may differ from Lab to Lab, e.g. recruitment of additional personnel may not always be necessary, but in some cases. Depending on existing resources and expertise, the planning, implementation and monitoring phases may vary between different Labs. An example of scheduling these phases is given below, but has to be adapted to each Lab individually. The time frame of the phases will also be reflected in a workplan where individual workpackages will be scheduled.

month	1	2	3	4	5	6	7	8	9	10	11	12
phase	P	P	P	I	I	I	I	I	I	I	M	M

P: preparation and planning phase
I: implementation phase
M: monitoring phase

Persons involved

In line with the actions to be taken, key persons and expertise have to be defined, contacted or recruited. The organisation of the Lab structure is most likely to happen inside the own institution. Therefore, personnel resources and required expertise that result from the actions to be taken have to be identified. Depending on the volume of work and expertise required, additional recruitment of personnel has to be considered. Besides in-house know-how for the development and realisation of the Lab, additional external expertise may be mandatory to secure access to water management know-how in the respective urban area, improve the chosen Lab set-up, provide external evaluation and monitoring of the Lab implementation, and to involve all relevant stakeholders in the water management sector, to name only a few. Key questions concerning personnel and expertise for the Lab include:

- Which personnel will be or should be involved in own organisation?
- Is additional recruitment of personnel/expertise necessary?
- Which stakeholders should be involved?
- Which persons have to be contacted?

4.2. Challenges

The successful implementation and sustainable set-up of the UWF Labs faces several challenges which have to be considered from the beginning on. These comprise **sustainability of labs**, **human resources**, **outreach and visibility** and the **organisational fixing** of the Lab.

This project is implemented through the CENTRAL EUROPE programme co-financed by the ERDF

The UWF Labs aim at persisting even after the discontinuation of the original funding sources. It is therefore necessary to develop a sustainable management and implementation plan in order to secure long-term resources which allow a continuation of the Labs. This may, e.g., comprise the procurement of additional/alternative funds, or multiplying effects generated through the Labs where the Labs are kept alive even without engagement of the initiators. The former is mainly subject to further engagement by the initialising institution, while the latter is most likely to happen when the outreach and visibility of the Lab is high, and third parties have identified the objectives and outputs of the Lab in particular useful. Therefore, options for a high visibility and outreach of the Labs have to be used of. The involvement of different stakeholder groups, continuous communication as well as high profile media presence has to be considered.

Furthermore, the organization of the Labs has to be allocated to the initialising or an outside institution. To provide distinct management structures and to position the Lab in an institutional set-up, the organisational fixing of the Lab has to be clearly defined and communicated to all persons involved. Depending on the institution in charge of the Lab implementation, human resources may (but must not necessarily) be a limiting factor. As stated before, the available resources and expertise have to be checked in advance in order to allow a successful development and implementation of the Lab.

4.3. Review of implementation process

In order to ensure a certain standard of quality it is useful to review the Lab after implementation and to evaluate the success, failures and lessons learned, e.g. have the predefined goals and target been fulfilled, have the anticipated results been obtained.

For a strategic evaluation and analysis we suggest carrying out a so-called SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis.

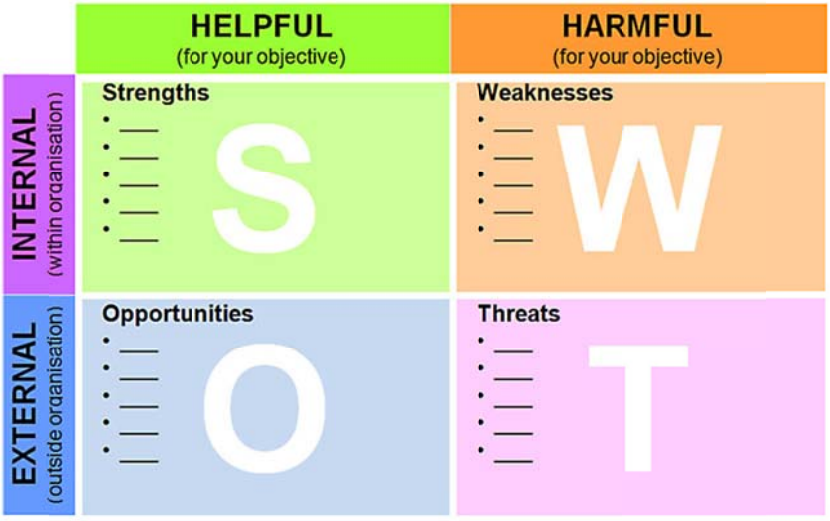


Figure 3: SWOT Matrix

This project is implemented through the CENTRAL EUROPE programme co-financed by the ERDF

Comprehensive guides on how to carry out such an analysis can be found here: Dealtry,T.R. 1992: Dynamic SWOT analysis. Developers guide. Birmingham.

Jyothi, B.N., Babu, G.R., Murali Krishna, I.V. 2008: Object oriented and multi-scale image analysis: Strengths, Weaknesses, Opportunities and Threats: A Review. Journal of Computer Science (4)9, 706-712.

5. Examples of Urban Water Footprint Labs

To show some examples of Urban Water Footprint Labs, this section describes three Labs which were set up and implemented in the course of this project in three different cities across Central Europe: Innsbruck (Austria), Vicenza (Italy), Wroclaw (Poland).

5.1. Innsbruck, Austria

Innsbruck is situated in the heart of the Alps in Tyrol surrounded by high mountains rising up to 2600m. Covering an area of in total 10.500 ha the majority is covered by forests and uncultivated land on the mountains. Because of the relief settlement area is scarce (32.3%) and therefore characterized by a high housing density and few open green spaces. The 125.000 inhabitants predominantly settle along the flat bottom of the Inn valley stretching along this west-east axis. The river Tiroler Inn, with an annual discharge of 173 m^3/s is heavily dammed in order to protect the city from seasonal flooding in summer caused by melting snow and ice from glaciers. Mean annual precipitation is 904 mm with a distinct summer maximum in July and minimum in February. Mean temperatures range from 18.1°C in July to a minimum of -1.7°C in January, with an annual mean of 8.5°C. Almost all buildings are connected to the water and sewer system. For a more detailed description of Innsbruck please read the report *"Description and representation of the elementary modules Innsbruck"* (2013).

5.1.1. Identified Needs

The analyses of the report *"Description and representation of the elementary modules Innsbruck"* (2013) and an assessment of the urban water footprint Innsbruck did not reveal any problems concerning the direct water footprint. Despite increasing inhabitants fresh water supply in Innsbruck is guaranteed all year round because of high annual precipitation, only minor "water pipe losses" and migration of industry with high water consumption (e.g. brewery). Additionally, in case of emergency a back-up system is installed and water intakes from surrounding communities can cover the

This project is implemented through the CENTRAL EUROPE programme co-financed by the ERDF

CENTRAL EUROPE COOPERATING FOR SUCCESS. EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND

water demand of the city. The water supply and sewage infrastructure is well established and maintained.

One of the main issues in Innsbruck is virtual water consumption, which is many times higher than direct water consumption. However, only limited data about this indirect water consumption are available. For that reason the Innsbruck UWF Lab focusses on virtual water use.

5.1.2. Goals and target group

The main goals in the UWF Lab Innsbruck are:

- to collect exemplary virtual water data on household level
- to monitor water consumption
- to create awareness about virtual water "hidden" in products
- to create awareness about water consumption
- to develop measure and strategies to improve the individual water footprint
- to evaluate if implemented measures and strategies achieved their anticipated results

The Innsbruck lab concentrates on the end-consumer of virtual water, which is mostly the private individual. It is particularly important to start at young age to raise awareness about environmental friendly and sustainable water consumption. In this context it is most promising to achieve long-lasting changes in water consumption and behavioural pattern when working with teenagers.

5.1.3. Set up

The UWF Lab consists of 4 workshops with school students (age 16-18) and is structured as follows:

WS 1: Introduction and assignment of tasks

Introducing the water footprint approach

Assigning tasks:

1. The students monitor their personal water consumption for 4 weeks, including direct and virtual water
2. Based on these data they calculate their water footprint

WS 2: Presentation and interpretation of results

The students present their water footprint in small groups:

1. Interpretation of the results

This project is implemented through the CENTRAL EUROPE programme co-financed by the ERDF

CENTRAL EUROPE COOPERATING FOR SUCCESS. EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND

2. Developing of ideas on how to reduce the water footprint

WS 3: Development of measures to improve the WFTP

Inviting external experts

1. The students present their previously developed ideas
2. Together with external experts developing/adjusting measure on how to best reduce the water footprint
3. Deciding on 1-3 measures each student tries to implement within the next 6 weeks

WS 4: Evaluation

Review about the measure implemented:

1. Has the water footprint changed?
2. What measures were difficult/easy to carry out?

5.2. Vicenza, Italy

Vicenza, a city of about 115,000 inhabitants in northeastern Italy, in Veneto Region, is located 39 meters above sea level (min 26, max 183) and is bordered by the Berici Hills to the south and by foothills to the west. The historic city center lies at the confluence of the Bacchiglione River and its Retrone tributary, although the medieval city walls include areas beyond these rivers. The Astichello River also courses through the area.
Vicenza is perhaps best known as the city of architect Andrea Palladio, who designed many of the buildings, and in 1994 the city took its place on the list of UNESCO World Heritage Sites, which since 1996 has also included the Palladian villas of the Veneto region. Today it is an important place for art and is a destination for cultural tourism, welcoming visitors from both Italy and abroad. Vicenza is also an important industrial center and the heart of a vibrant province that has many small and medium-sized businesses. Exports are strong, thanks to engineering, textiles and especially gold, which makes up a major portion of the country's jewelry exports. The municipality includes not only the urban area, which has greatly expanded during the 20th century, but also suburbs, rural spaces, and the area around Monte Berico, which dominates the city from above.
The city of Vicenza has become vulnerable to flooding after heavy rains, due to the nature of the area's waterways and man-made changes in the area's topography. The water quality of Vicenza's major rivers reflects to a great extent the burdens of its population and industrial development, but the area's many irrigation systems and

This project is implemented through the CENTRAL EUROPE programme co-financed by the ERDF

CENTRAL EUROPE COOPERATING FOR SUCCESS. EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND

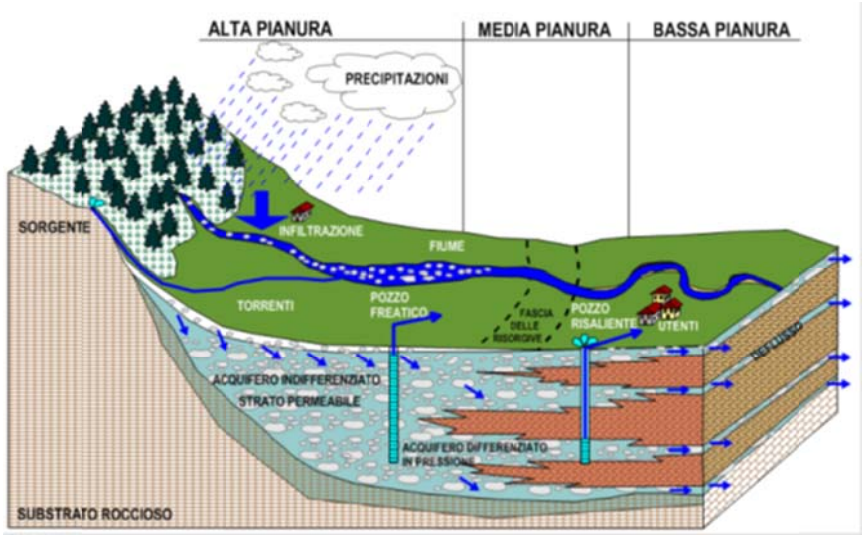
natural springs somewhat mitigate these effects. All potable water for the city comes from groundwater, which is pumped through various well fields or production areas and distributed to the city and surrounding areas. The municipality has 6 supply areas with a total of 32 wells, as well as other local water sources with 21 operating wells.
The municipal water network has a total length of approximately 137 km of supply, and 288 km of distribution, which fully covers the territory and connects 100% of the population. The Vicenza water system is in good condition, so interventions other than normal maintenance are seldom required. The municipal sewage system is comprised of three different purification plants, discharging into three different basins, from which the treated water is returned to receiving water bodies downstream, completing the natural water cycle. The public sewer network serves 83% of the residents of Vicenza. This reveals that approximately 19,000 residents are not currently being served. Because of its push into industrialization over the last 30 years, Vicenza has been subject to some level of groundwater pollution, which on occasion has directly affected the municipal territory's water system and has resulted in the closure of some public and private water wells which were producing potable water.

5.2.1. Identified Needs

As you can see from the figure below, from the hydro geological point of view the plain subsoil on which the city of Vicenza stands is influenced by grain size and structural characteristics of the alluvial mattress and by different distribution of high permeability materials. The whole area of the city of Vicenza, and its surrounding, enjoys a great availability of water, much of which drinking and good/excellent quality. From this area the water is exported to cover the water requirements of other towns and cities of the Veneto Region such as Padova. The need to preserve over time qualitative and quantitative characteristic of this wealth, makes it necessary to start first by knowledge of the urban water footprint that is, along with agricultural and industrial uses, one of the major sources of resource consumption.
Only knowledge will give to local administrators the option of starting with targeted assessments and action plans which take account of the real situation of the territory with regard to water consumption and encourage citizens to increase their awareness.

This project is implemented through the CENTRAL EUROPE programme co-financed by the ERDF

CENTRAL EUROPE COOPERATING FOR SUCCESS. EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND



Alta pianura: High Plains
Fiume: River
Media Pianura: Plain media
Torrenti: Torrents
Bassa Pianura: Lowlands
Pozzo freatico: Unconfined pit
Precipitazioni: Precipitation
Fascia delle risorgive: Springs Belt
Sorgente: Spring
Pozzo risalente: Well dating
Substrato roccioso: Bedrock
Utenti:: Users
Infiltrazione: Infiltration
Strato permeabile: Permeable layer
Acquifero indifferenziato: Undifferentiated aquifer
Acquifero differenziato in pressione: Differential pressure aquifer

Figure 4: Profile of the hydro geological conditions of Vicenza and surrounding

5.2.2. Goals

Previously, data will be collected on models provided by the University of Padua referred both to the entire city and a neighbourhood chosen as sample for a survey to be made more precise with specially instructed personnel.

The main objectives of the UWF Lab Vicenza are:

1. Perform an analysis of the behaviours declared by the sample of citizens involved in the compilation of a questionnaire prepared for the purpose;
2. Disseminate within citizens the results of analysis on individual and collective consumption of water resources;
3. Increase knowledge and awareness of citizens about the supply and wastewater treatment system, the method of water treatment and distribution management, about individual practices and technical solutions designed to save water as well as to information on innovative technologies to be applied to the reuse of water;
4. Produce briefings at primary and junior high schools;
5. Implement efforts to contain the water consumption in municipal buildings;
6. Elaborate draft rules to be proposed to public administrators in order to include them in municipal and urban planning regulations;
7. To become a reference point for other municipalities and stakeholders about information on the application of U_WFTP indicator experience;
8. Update for the next 3 years the data base for the purposes of a forthcoming monitoring;

This project is implemented through the CENTRAL EUROPE programme co-financed by the ERDF

9. Processing of a SWOT analysis with the support of the University of Padua.

The Vicenza lab aims on one hand, to enable a system of connections with citizens, including awareness of younger generations between 9 and 18 years, to increase the knowledge/awareness on the importance of protecting water resources; on the other hand will focus on structural character and proposals for the adoption of innovative technologies that local administrators can translate into regulation rules for the construction of new buildings, or as forecast for territorial planning.

5.2.3. Set up

The Vicenza lab will schedule the following actions:

Public meeting

1 public meeting will be held addressing trade, professionals (architects, engineers and surveyors), associations and other stakeholders. The main aims of this meeting are to give an introduction to the project and to the application of the U_WFTP indicator. Additionally the results of the collection and processing of data (according to objective 1 and 2) will be presented;

Meeting with schools and technical/professional institutes

2 meetings will be held, one at a primary school or middle school and one with a technical/professional institute. The aim is to inform and train about urban water management;

Dissemination of water footprint information

A brochure and flyer with information about the water footprint and water saving will be spread widely among citizens through different forms of dissemination, such as the WEB, united systems while sending of billing, distribution in places of public access, etc.

Participation at water related fairs, exhibitions and events

The aim is to inform about U_WFTP in fairs, exhibitions and events on environmental issues on the local, regional or national level. Such events could be "Ecomondo" or "Festambiente".

This project is implemented through the CENTRAL EUROPE programme co-financed by the ERDF

5.3. Wroclaw, Poland

Wrocław is the historic capital of Lower Silesia. It is one of the largest (ca. 630 thousand inhabitants), one of the oldest, and also one of the most dynamically developing cities in Poland. Almost 42% of the city area is urbanized (housing, industry, services and recreation facilities). Wrocław is situated in the south-western Poland on the Silesian Lowlands, at the altitude from 105 to 155 m above sea level. The Odra river crosses the city, from the south-east to the north-west. Most green spaces are located at the river side. The water supply for the city mostly comes from the Sudeten mountains and is taken from the Oława river supplied by the Eastern Neisse. Due to a large number of bridges the city is called Venice of the North. Mean annual precipitation is 569 mm, while the average temperatures range from 18.1°C in July to a minimum of 0.9°C in January, with an annual mean of 8.7°C. The data are an average for the 30-year period 1971-2000. More data on Wrocław can be found in the "Statistical Yearbook of the Republic of Poland 2012". Almost all buildings are connected to the water and sewer system. There are two water treatment plants and one main waste water treatment plant.

5.3.1. Identified Needs

The assessment of the urban water footprint Wrocław did not reveal any significant problems concerning the direct water footprint, however obtaining the results for other cities will allow for comparison and better characterization of the water situation. The water supply and capacity of the water treatment plants have some reserves and manage to serve the constantly increasing number of customers (private sector, services and industry), associated with the development of the city and migration of people. The water supply from the Eastern Neisse to the Oława river (from which the water is taken) is regulated by retention tanks (artificial lakes). The water supply and sewage infrastructure is generally properly operating, however it requires constant maintenance and gradual renovation to improve its efficiency and reduce the water loses.

The initial calculations reveal that the consumption of the virtual water is seven times greater than of the real water, however further studies will concentrate on the real water usage as it is more realistic to reduce. Wrocław UWF lab is aiming at determining the usage of real water with regards to different types of city areas and buildings in order to recognize some trends, and promote the most efficient.

5.3.2. Goals and target group

The main goals of the UWF Lab Wrocław are:

- to familiarize participants with the idea and main aims of the project

This project is implemented through the CENTRAL EUROPE programme co-financed by the ERDF

- to create awareness about virtual and real water consumption
- to introduce Models A, B and C for water footprint calculation
- to gather essential data for assessing the urban water footprint using Models
- to summarize and discuss the results
- to improve the Models if required
- to discuss the application of the Models
- to work out the strategy of urban water footprint reduction

The Wrocław Lab is addressed to the decision-makers, such as water and sewage companies as well as politicians and planners, which have an influence on the investments and policies associated with water consumption, usage and treatment. It is important to raise their awareness about the global water scarcity and motivate them to choose environmentally friendly and sustainable solutions. Their decisions have an impact on behaviors and choices of large number of people.

5.3.3. Set up

The UWF Lab consists of workshops and discussions involving the Waterworks Companies' representatives from the Polish provincial cities and the Lower Silesia region.

WS1: Introducing the project and analysing the collected data

The invitation to the workshop will include the data gathering sheet for assessing the urban water footprint using Model A, which the participants will be asked to fill in and bring to the workshop. The duration of this workshop will be 2 days.

Aims and agenda:

1. The participants will be informed about the project idea and main aims
2. Models A, B and C for urban water footprint calculation will be presented and explained to them
3. The information obtained from Model A will be presented and analysed with the help of experts
4. The data will be discussed
5. The Model will be improved if required (which data were difficult/impossible to obtain?)
6. The application of the Model will be discussed
7. The possibilities of urban water footprint reduction will be discussed

This project is implemented through the CENTRAL EUROPE programme co-financed by the ERDF

WS2: Summing up results and drawing conclusions

The workshop will be organized or the data will be discussed via email/phone.

The invitation to the workshop/discussion will include the data gathering sheet for assessing the urban water footprint using improved Model A, which the participants will be asked to fill in and bring to the workshop or send to the Lab coordinator.

1. The information obtained from improved Model A will be presented
2. The observations will be exchanged

Participation at water related fairs, exhibitions and events

The aim is to inform about URBAN_WFTP in fairs, exhibitions and events on environmental issues on the local, regional or national level.

References

Allan J (1998) Virtual water: A strategic resource global solutions to regional deficits. Ground Water, vols 36

Hoekstra AY, Aldaya MM, Mekonnen MM (2011) The water footprint assessment manual: Setting the global standard. Earthscan, London, Washington, DC

This project is implemented through the CENTRAL EUROPE programme co-financed by the ERDF

CENTRAL EUROPE COOPERATING FOR SUCCESS. EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND

Appendix

UWFL check list

According to the management and implementation requirements listed in chapter 4.1, this UWFL check list makes sure that all necessary actions are considered.

Objectives of the Lab

- Which goal(s) does the Lab pursue?
- Who are the addressees of the Lab, which target group does the Lab address?
- Which milestones will result from the Lab?
- What is the result you anticipate?

Which actions are needed?

- Have we set up a work plan?
- Have we defined work packages, with milestones and deliverables?
- Have we defined which short-term and long-term actions are to be taken?
- Have we defined stakeholder group(s)?
- Have we defined a time frame?

Time and effort

- For how long is the Lab supposed to run for?
- How much time is needed for the planning and preparation phase?
- For how long will the Lab be implemented?
- How much time is needed for the monitoring and evaluation phase?
- When (time of the year) is the best time?

Persons involved

- How many people will be needed?
- What will be their main tasks?
- Which personnel will be or should be involved from our own organisation?
- Is additional recruitment of personnel/expertise necessary?
- Which stakeholders should be involved?
- Which persons have to be contacted?

This project is implemented through the CENTRAL EUROPE programme co-financed by the ERDF

CENTRAL EUROPE COOPERATING FOR SUCCESS. EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND