**Project no. 4CE439P3**

**URBAN_WFTP**

**Introduction of Water Footprint (WFTP) Approach in Urban Area to Monitor, Evaluate and Improve the Water Use**

# First Water footprint assessment - Model A results

# Vicenza

**Lead contractor for deliverable *D.3.3.3*: WUELS**

**Start date of project: 1 November 2012** **Duration: 25 months**

**Submission date: July 2013**

CONTENS

## Foreword

The present report was prepared within the context of the work package WP3 ('Water use and management baseline assessment according to Water Footprint approach and sharing of results among partners') of the URBAN_WFTP project (http://www.).

The preferred reference to the present document is as follows:

Thanks are due to all partners of the URBAN_WFTP project for fruitful discussion and provision of city level data.

## 1. INTRODUCTION

With the data described in the 'Description and representation of the basic modules' results for the global model of the city of Vicenza were calculated:
Taking into account that only about 1/3 of the municipality's area is habitable it was decided to set up 2 different models:

1. A global model including the whole area of the municipality
2. A global model excluding the arable area

The following results show the usage of slightly different input data.
The Grey Water Footprint in both models was calculated based on total nitrogen for the water discharges by the water treatment plants and based on total phosphorus for the water discharges by private treatment units (like imhoff) . For the calculation of the Grey Water Footprint Italian effluents' legal limits were considered with specific reference to nitrogen and phosphorus. Therefore, 30 mg/l was chosen for the maximum acceptable concentration $c_{max}$ of the nitrogen and 10 mg/l was chosen for the maximum acceptable concentration $c_{max}$ of the phosphorus.

## 2. MODEL A – WHOLE AREA

For the whole area following area values were used:

| | | | |
|---|---|---|---|
| Arable land area | $A_{ala}$ | $m^2$ | 4,073E+07 |
| Forest and woodlands area and alps | $A_{forest}$ | $m^2$ | 3,065E+06 |
| Water area | $A_{water}$ | $m^2$ | 9,083E+05 |
| Built-up area | $A_{built-up}$ | $m^2$ | 2,802E+07 |
| Built-up area (-roof surface area) | $A_{built-up\ cor}$ | $m^3$ | 2,482E+07 |
| Road area | $A_{road}$ | $m^2$ | 5,426E+06 |
| Green area | $A_{pubg}$ | $m^2$ | 1,563E+06 |
| Roof surface area | $A_{roof}$ | $m^2$ | 3,963E+06 |

The arable land area represents the largest part of the municipality. This is reflected by the large share of green water in the results reported in Fig. 1.

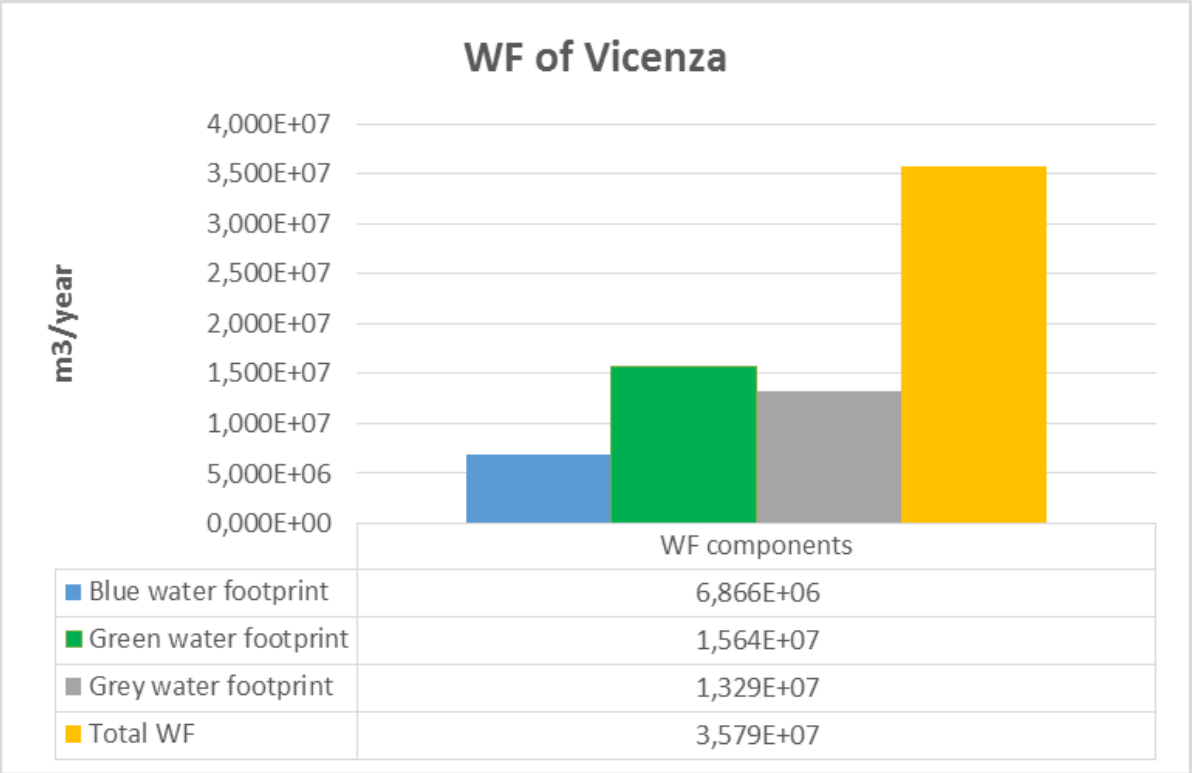


Fig. 1. Model A results – whole area

## 3. MODEL A – ARABLE AREA EXCLUDED

In this case the model A is applied to the city excluding the arable area.

| | | | |
|---|---|---|---|
| Arable land area | $A_{ala}$ | $m^2$ | 0 |
| Forest and woodlands area and alps | $A_{forest}$ | $m^2$ | 3,065E+06 |
| Water area | $A_{water}$ | $m^2$ | 9,083E+05 |
| Built-up area | $A_{built-up}$ | $m^2$ | 2,802E+07 |
| Built-up area (-roof surface area) | $A_{built-up\ cor}$ | $m^3$ | 2,482E+07 |
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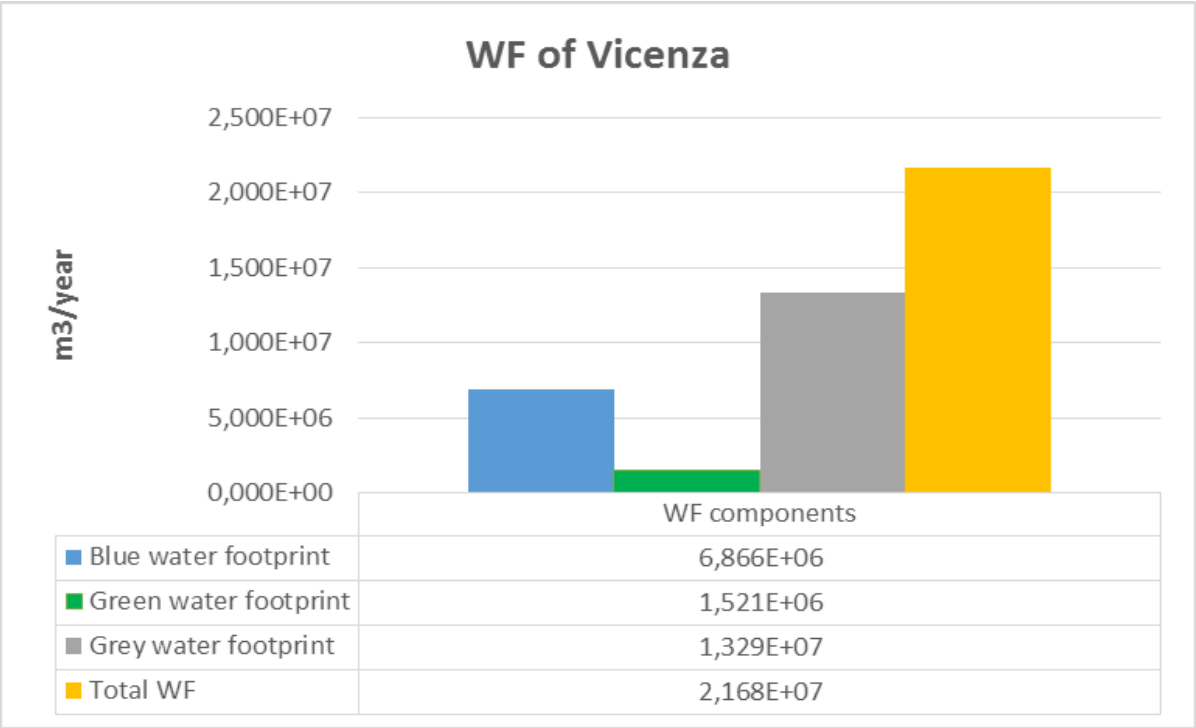


Fig. 2. results model A – arable area excluded

The major difference between the whole area model A in Fig. 1 and model A with the exclusion of the arable area in Fig. 2 is reflected through the amount of green water. When from the municipality area is excluded the arable area, the Green Water footprint reduces from $3.58*10^7$ to $1,521*10^6$ m³/year and from 43,7% to 7.02% of the total water footprint respectively.