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

Wroclaw

Lead contractor for deliverable *D.3.1.4*: WUELS

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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.urban-wftp.eu).

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 Wroclaw were calculated:

Taking in to account that only about 1/2 (~42%) of the municipality's area is habitable it was decided to set up 2 different cases:

1. A global model including the whole area of the municipality
2. A global model including only the habitable area

This following results show the usage of slightly different input data.

The Grey Water Footprint in both cases was calculated based on total nitrogen. Polish legislation and guidelines do not provide immission based pollutant limits for the river Odra, the receiving water in the city of Wroclaw. Therefore 10 mg/l were chosen for the maximum acceptable nitrogen concentration c_{max}.

2. MODEL A – WHOLE AREA

For the whole city following area values were used:

Land use	**Label**	**Unit**	**Value**
Arable land area	A_{ala}	m^2	125010000
Forest and woodlands area	A_{forest}	m^2	17140000
water area	A_{water}	m^2	9590000
built-up area	$A_{built-up}$	m^2	89420000
road area	A_{road}	m^2	30540000
green area	A_{pubg}	m^2	21120000
roof surface area	A_{roof}	m^2	15136710

As can be seen arable lands state the largest part of the municipality area. This is reflected by the large share of green water in the results visualized in Fig. 1.

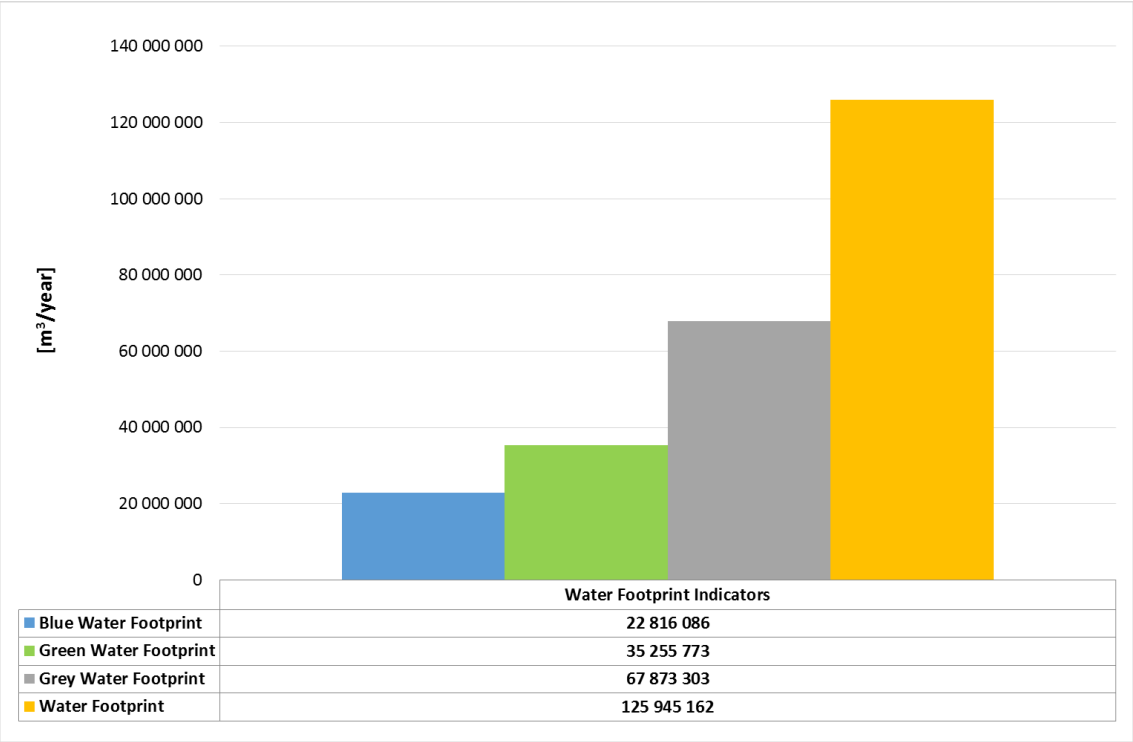

Fig. 1. Model A results – whole area

3. MODEL A – HABITABLE AREA

In the case where only urbanized area is taken into account during calculation of Water Footprint indicators the values of arable land, forest and woodland area and water area were assumed to be equal zero:

Land use	Label	Unit	Value
Arable land area	A_{ala}	m^2	0
Forest and woodlands area	A_{forest}	m^2	0
water area	A_{water}	m^2	0
built-up area	$A_{built-up}$	m^2	89420000
road area	A_{road}	m^2	30540000
green area	A_{pubg}	m^2	21120000
roof surface area	A_{roof}	m^2	15136710

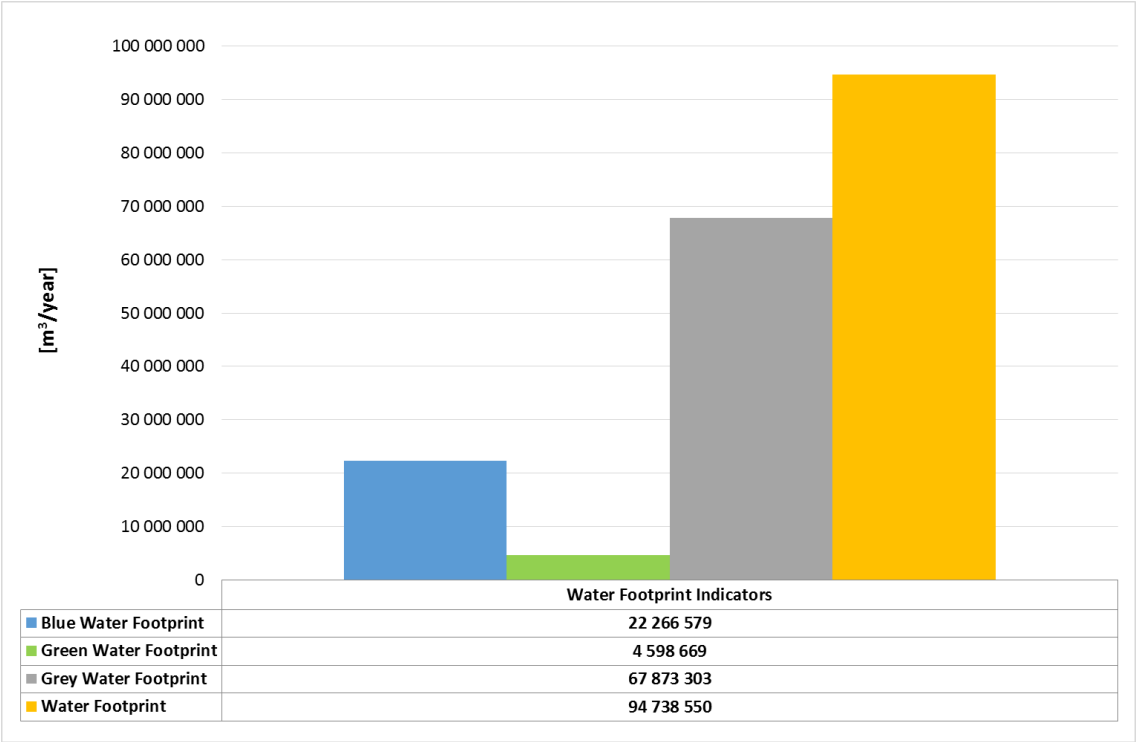

Fig. 2. Model A results - habitable area

As can be seen the major difference between the results calculated for the whole city area using model A (Fig. 1) and results for habitable area only (Fig. 2) is reflected through the amount of green water. When replacing the total area of the city by the urbanized area, the bigest change occours for the green water footprint which reduces from $35.3*10^6$ to $4.6*10^6$ m³/year. It means that the green water footprint was reduced by 86%. In contrast the blue water footprint was reduced only by 2.4% and grey water footprint did not change at all. The total water footprint was redused by 24.8%.