



# D.T3.1.3. FUA-LEVEL SELF-ASSESSMENTS ON BACKGROUND CONDITIONS RELATED TO CIRCULAR WATER USE - SPLIT FUA

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Subtitle

Version 1  
MM YYYY

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## Sommario

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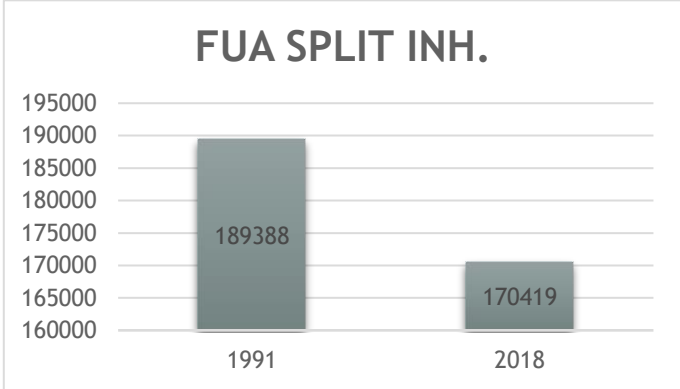
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# A. CLIMATE, ENVIRONMENT AND POPULATION

## A1) POPULATION

<b>1) Population living in the FUA in 2018 [inh.]</b>	
<p>According to the report from Croatian Bureau of Statistics, FUA Split in 2018. has 170.419 inhabitants. In addition to number of inhabitants it is worth to mention numbers of touristic visits during the year. According to available data for 2018 there were: 846.308 arrivals and 2.480.598 tourist nights.</p>	
<input type="checkbox"/> Measured at FUA level  <input checked="" type="checkbox"/> Estimated at FUA level	<p>Estimate procedure and hypotheses: Data sources The following surveys are the data sources for the population estimate of the Republic of Croatia: 2011 Census of Population, Households and Dwellings, birth statistics, death statistics, statistics of the internal migration of population, statistics of the international migration of population. Population estimate has been done on the basis of the census data collected in the 2011 Census of Population, Households and Dwellings. The data on births are collected through the Statistical Report on Births (DEM-1 form) for every entry in the State birth register. The data on deaths are collected through the Statistical Report on Deaths (DEM-2 form) for every entry in the State death register. The surveys on the internal and international migration of population are based on data collected by the Ministry of Interior. Data about tourist visits (arrivals and tourist nights) are provided by Tourist board of Split.</p>

<b>2) Population change in the last 20 years in the FUA [inh.]</b>							
<p>Table: Population has change for - 18.969 inhabitants.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>FUA SPLIT INH.</th> </tr> </thead> <tbody> <tr> <td>1991</td> <td>189388</td> </tr> <tr> <td>2018</td> <td>170419</td> </tr> </tbody> </table>			FUA SPLIT INH.	1991	189388	2018	170419
	FUA SPLIT INH.						
1991	189388						
2018	170419						
<p>Chart:</p> <div style="text-align: center;">  <p><b>FUA SPLIT INH.</b></p> <table border="1"> <thead> <tr> <th>Year</th> <th>Population (inh.)</th> </tr> </thead> <tbody> <tr> <td>1991</td> <td>189388</td> </tr> <tr> <td>2018</td> <td>170419</td> </tr> </tbody> </table> </div>		Year	Population (inh.)	1991	189388	2018	170419
Year	Population (inh.)						
1991	189388						
2018	170419						



<input type="checkbox"/> Measured at FUA level	Estimate procedure and hypotheses:
<input checked="" type="checkbox"/> Estimated at FUA level	<p>Data sources</p> <p>The following surveys are the data sources for the population estimate of the Republic of Croatia: 2011 Census of Population, Households and Dwellings, birth statistics, death statistics, statistics of the internal migration of population, statistics of the international migration of population.</p> <p>Population estimate has been done on the basis of the census data collected in the 2011 Census of Population, Households and Dwellings.</p> <p>The data on births are collected through the Statistical Report on Births (DEM-1 form) for every entry in the State birth register. The data on deaths are collected through the Statistical Report on Deaths (DEM-2 form) for every entry in the State death register. The surveys on the internal and international migration of population are based on data collected by the Ministry of Interior.</p>

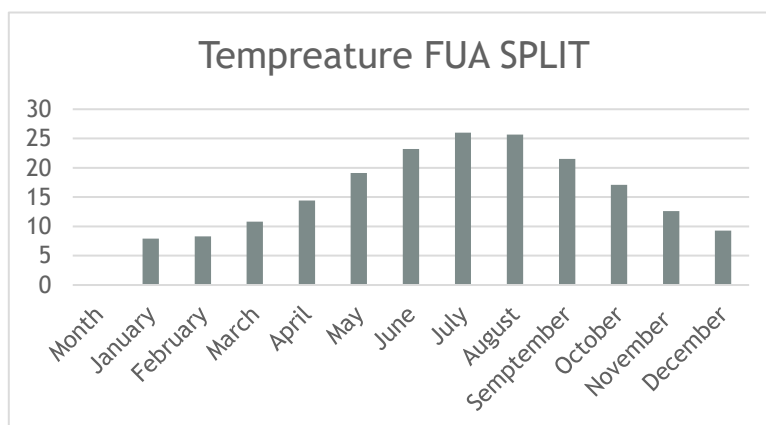
## A2) CLIMATE

### 3) Monthly average temperature (max and min) [ °C ]

Table:

Month	Temperature
	Split
January	7,9
February	8,3
March	10,8
April	14,4
May	19,1
June	23,2
July	26
August	25,7
September	21,5
October	17,1
November	12,6
December	9,3

Chart:



Measured at FUA level

Estimate procedure and hypotheses:



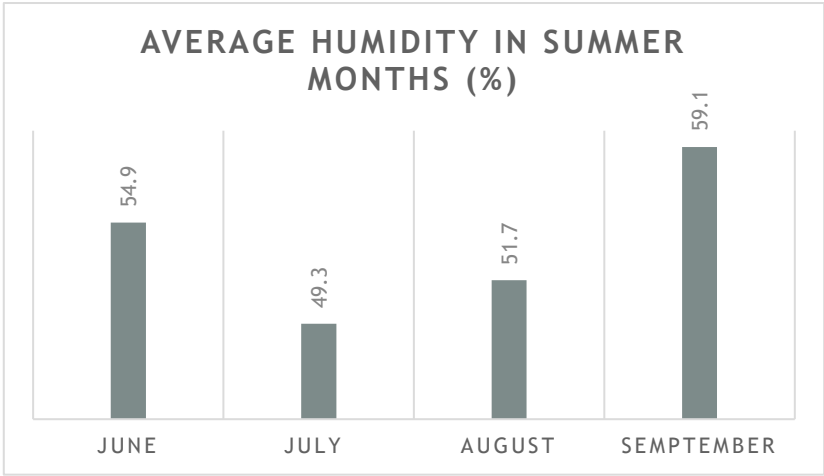
<input type="checkbox"/> Estimated at FUA level	Available data is from period 1948.-2018. (last 70 years). Data for last 20 years (1998.-2018.) is not available.
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**4) Average relative humidity in summer months [%]**

Table:  
Data is available for time scale 1971.-2000.  
Data from 1998.-2018. is not available.

Average humidity in summer months				
	June	July	August	September
1971-2000 (%)	54.9	49.3	51.7	59.1

Chart:



<input checked="" type="checkbox"/> Measured at FUA level	Estimate procedure and hypotheses:
<input type="checkbox"/> Estimated at FUA level	

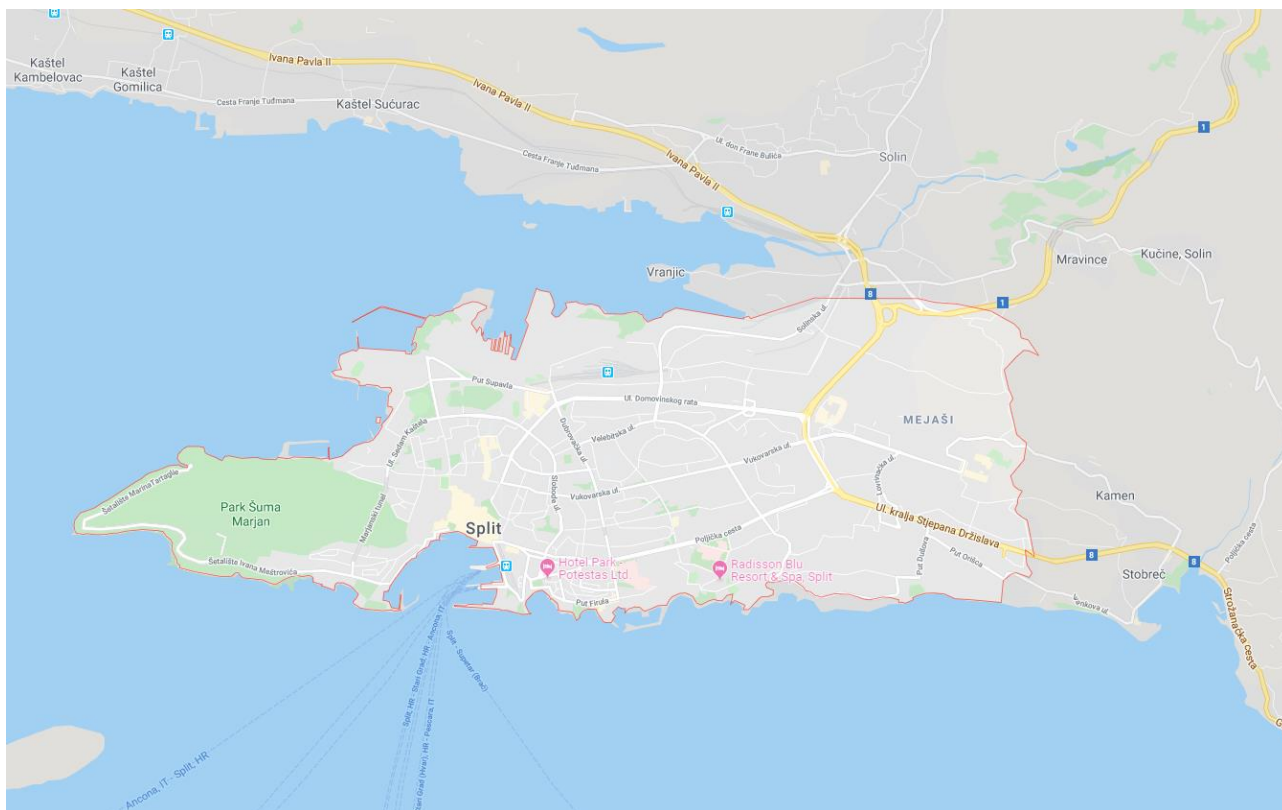


### A3) SEALING SOIL

#### 5) FUA total area [km<sup>2</sup>]

FUA total area is 79.38 km<sup>2</sup>.

Map:



Measured at FUA level

Estimated at FUA level

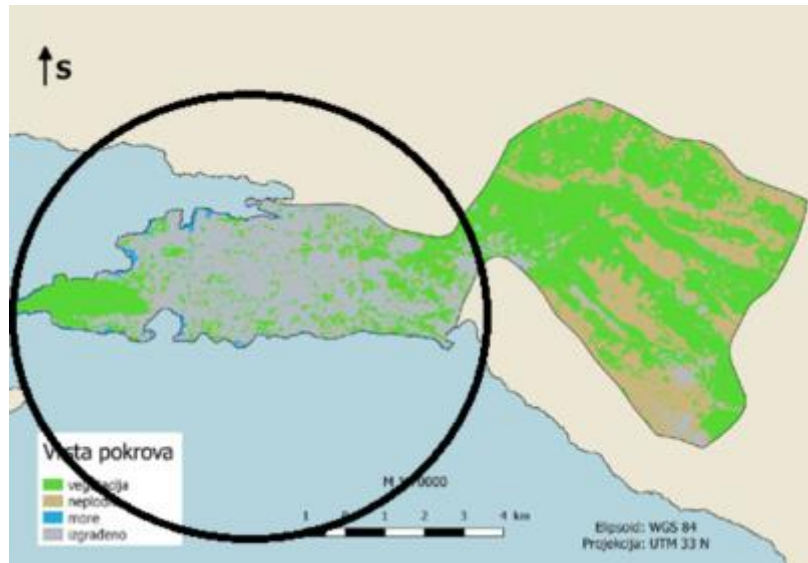
Estimate procedure and hypotheses:



## 6) Percentage of sealed soil [%]

From only available data percentage of sealed soil for FUA Split is 28.46 % (2016. Year).

Map:



Picture 2. Map with sealed soil

	vegetation
	barren soil
	sea
	buildings

\*note: Area inside of circle shows the area of FUA.

Measured at FUA level

Estimated at FUA level

Estimate procedure and hypotheses:





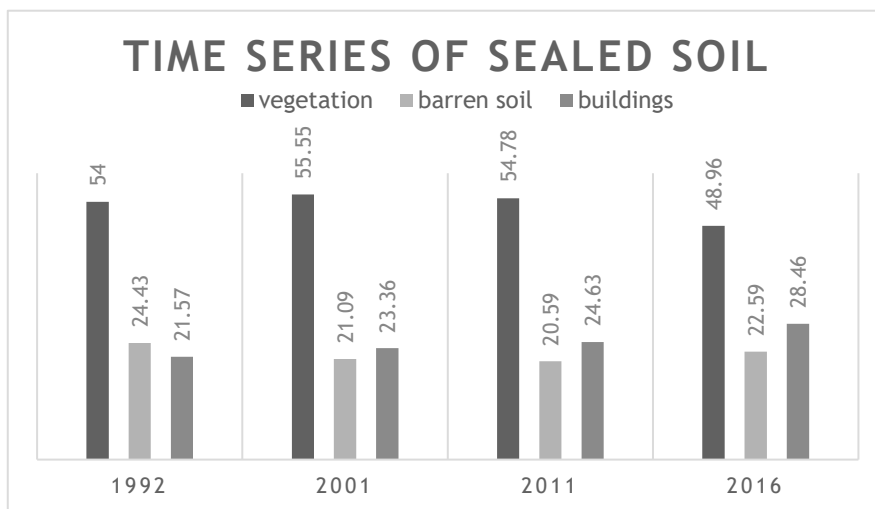
## 7) Time series of the percentage of sealed soil [%]

Table:

Available data for period 1992.-2016.

[%]	vegetation	barren soil	buildings
1992	54,00	24,43	21,57
2001	55,55	21,09	23,36
2011	54,78	20,59	24,63
2016	48,96	22,59	28,46

Chart:



Measured at FUA level

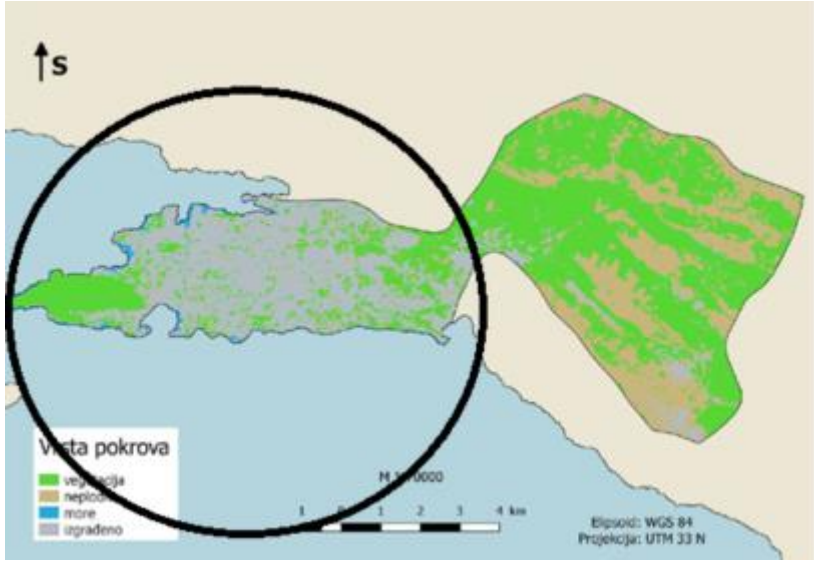
Estimated at FUA level

Estimate procedure and hypotheses:



## A4) GREEN SPACES IN URBANIZED AREAS

<b>8) Green area in the entire FUA [km<sup>2</sup>]</b>	
34,66 km <sup>2</sup>	
<input checked="" type="checkbox"/> Measured at FUA level  <input type="checkbox"/> Estimated at FUA level	Estimate procedure and hypotheses:

<b>9) Percentage of green spaces within urbanized areas [%]</b>	
48.96%	
Map:	
	
Picture 2. Map with green area within FUA.	
Description:	
<p>The FUA area is dominated by the Marjan Forest Park (on the edge of the peninsula) and several city parks that are mostly separate and disconnected. Some of the larger parks in the urbanized section are: J.J. Strossmayer Park, Emanuel Vidovic Park, Turkish Tower, Zvoncac, Sustipan, etc. In addition to these parks, there are small parks in separate districts within the FUA, which are generally located between buildings.</p>	
<input checked="" type="checkbox"/> Measured at FUA level  <input type="checkbox"/> Estimated at FUA level	Estimate procedure and hypotheses:



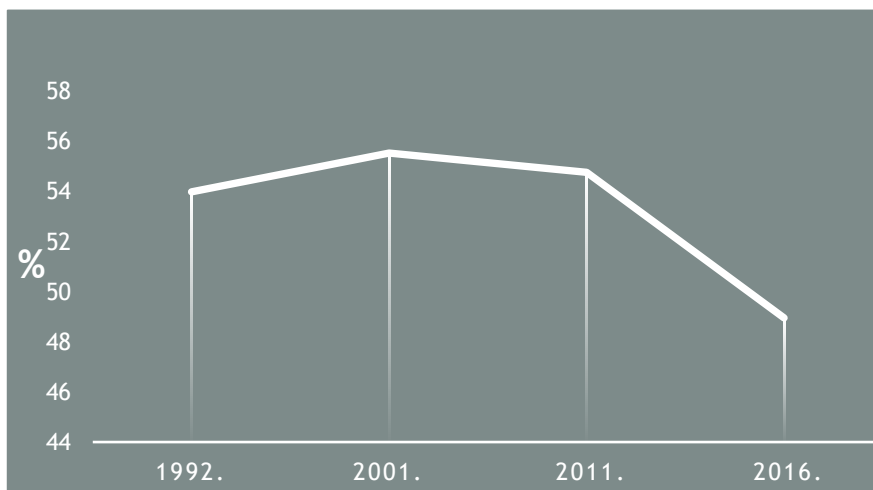
### 10) Time series of the percentage of green spaces within urbanized areas [%]

Table:

Available data for period 1992.-2016.

Green spaces within FUA by years				
	1992.	2001.	2011.	2016.
%	54	55,55	54,78	48,96

Chart:



Measured at FUA level

Estimated at FUA level

Estimate procedure and hypotheses:



## B. WATER RESOURCES

### B1) ANNUAL PRECIPITATION

#### 11) Average annual precipitation [mm]

Annual precipitation for 2018. year in FUA Split was 72,4 mm.

Measured at FUA level

Estimated at FUA level

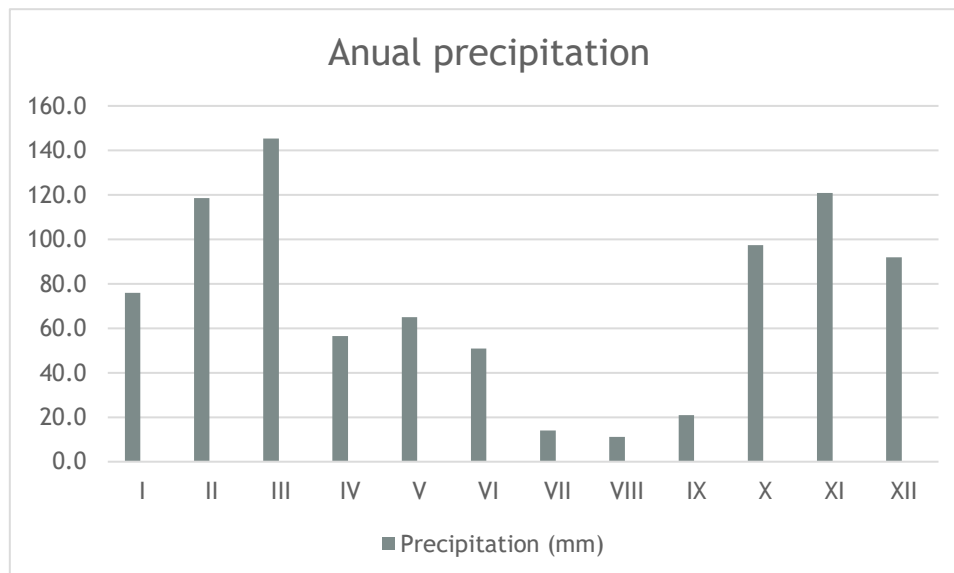
Estimate procedure and hypotheses:

#### 12) Monthly precipitation [mm]

Table:

FUA Split												
Month	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Precipitation (mm)	76,0	118,5	145,3	56,5	65,0	50,9	14,1	11,1	20,9	97,4	120,8	91,9

Chart:



Measured at FUA level

Estimated at FUA level

Estimate procedure and hypotheses:



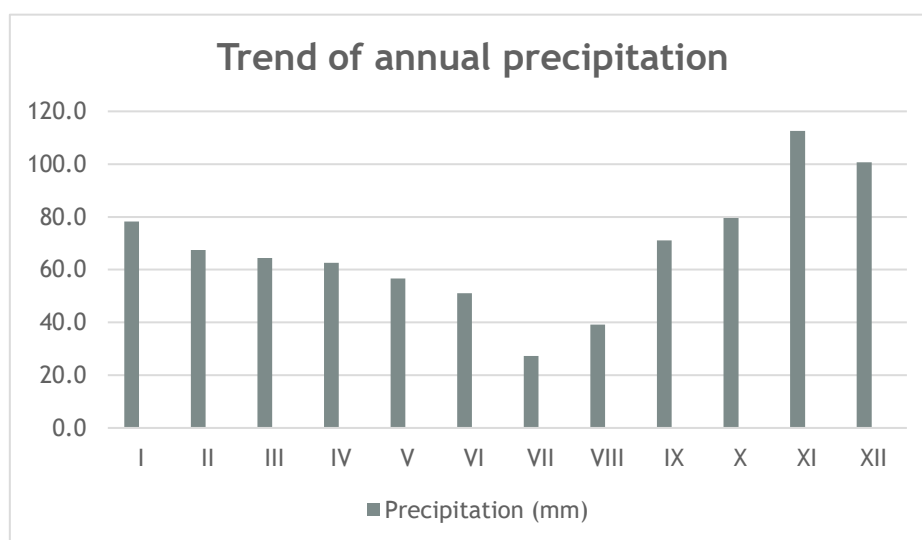
### 13) Trend of annual precipitation [mm]

Table:

Data are provided for time window 1948.-2018.

FUA Split												
Month	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Precipitation (mm)	78,3	67,5	64,4	62,6	56,6	51,1	27,3	39,2	71,1	79,6	112,6	100,7

Chart:



Measured at FUA level

Estimated at FUA level

Estimate procedure and hypotheses:



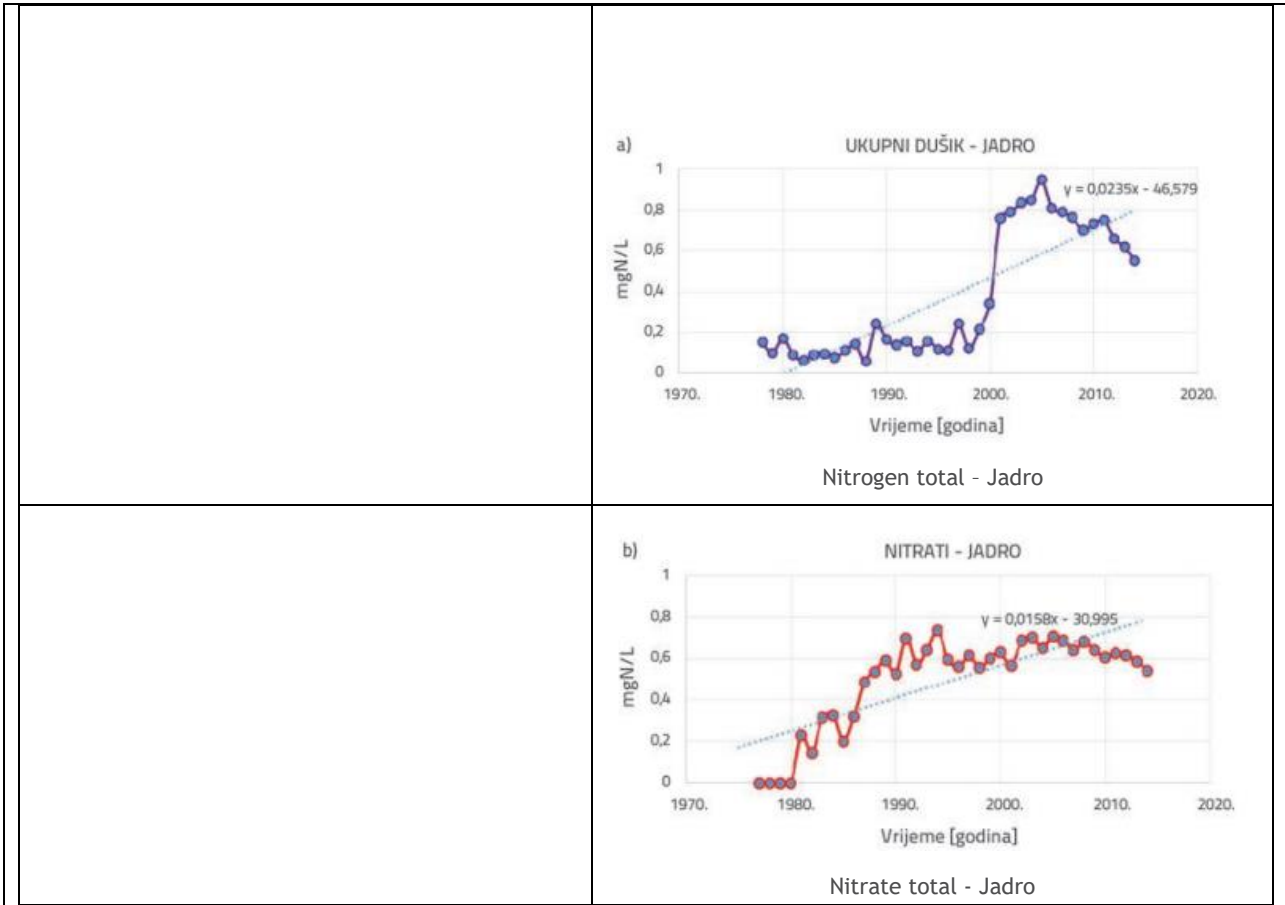
## B2) RIVER, CHANNELS AND LAKES

### 14) List of main rivers and channels within the FUA, and their flow rate (average 2018 and monthly flow 2018) [-]

Water body name	Flow rate [m <sup>3</sup> /s]			
River Jadro	8,18 m <sup>3</sup> /s average annual flow rate			
	Monthly average flow rate for 2018:			
	January	14,01 m <sup>3</sup> /s	July	2,89 m <sup>3</sup> /s
	February	16,91 m <sup>3</sup> /s	August	2,68 m <sup>3</sup> /s
	March	21,21 m <sup>3</sup> /s	September	2,31 m <sup>3</sup> /s
	April	9,26 m <sup>3</sup> /s	October	3,55 m <sup>3</sup> /s
	May	3,91 m <sup>3</sup> /s	November	8,35 m <sup>3</sup> /s
	June	3,43 m <sup>3</sup> /s	December	9,69 m <sup>3</sup> /s

### 15) Synthetic water quality evaluation (ecological and chemical status) for each of the rivers and channels identified (include quantitative parameters, if available) [-]

Water body name	Water quality																								
River Jadro	<p>Monitoring of water quality of river Jadro is carried out once a month and on the basis of these data the average, minimum and maximum annual values of concentrations or contents of selected water quality indicators are extracted. The result of chemical analyses of water quality indicators in the period from 1975 to 2014 were statically analysed for the assessment of the spring water of Jadro and were compared with the prescribed limit values (maximum allowable concentrations - MAC). On the basis of these data sets it is evident that the spring water of Jadro is most heavily polluted by occasional bacteriological contamination (expressed as the number of coliforms in 100 mL of solution- code NBK/100 mL and the number of fecal coliforms - code NBFK/100 mL), while the maximum chemical consumption of oxygen (code KPK) indicate the frequent occurrence of oxidizable substances in spring water, probably of organic origin. The deterioration of the water quality of the soil is also affected by the increase in concentrations of nutrients of nitrogen, especially nitrates and the number of coliform bacteria.</p> <table border="1"> <thead> <tr> <th colspan="6">Microbiological indicators (&gt;MDK, MDK = 0)</th> </tr> <tr> <th colspan="3">Number of coliform bacteria</th> <th colspan="3">Number of fecal coliform</th> </tr> <tr> <th>Minimum</th> <th>average</th> <th>maximum</th> <th>Minimum</th> <th>average</th> <th>maximum</th> </tr> </thead> <tbody> <tr> <td>25</td> <td>121</td> <td>224</td> <td>9</td> <td>47</td> <td>184</td> </tr> </tbody> </table>	Microbiological indicators (>MDK, MDK = 0)						Number of coliform bacteria			Number of fecal coliform			Minimum	average	maximum	Minimum	average	maximum	25	121	224	9	47	184
Microbiological indicators (>MDK, MDK = 0)																									
Number of coliform bacteria			Number of fecal coliform																						
Minimum	average	maximum	Minimum	average	maximum																				
25	121	224	9	47	184																				



16) List of main lakes and reservoirs within the FUA, an their water storage (average 2018 and monthly variation 2018) [-]

Water body name	Water storage [m <sup>3</sup> ]
Not applicable	Not applicable



**17) Synthetic water quality evaluation (ecological and chemical status) for each of the main lakes and reservoirs identified (include quantitative parameters, if available) [-]**

Water body name	Water quality
Not applicable	Not applicable

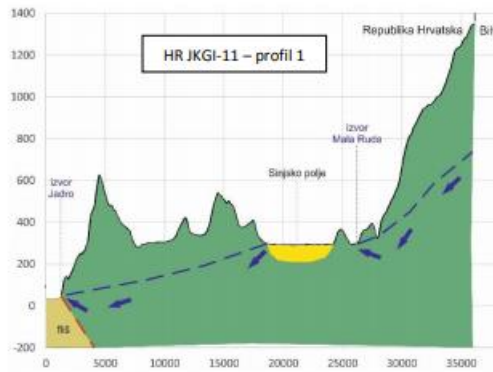
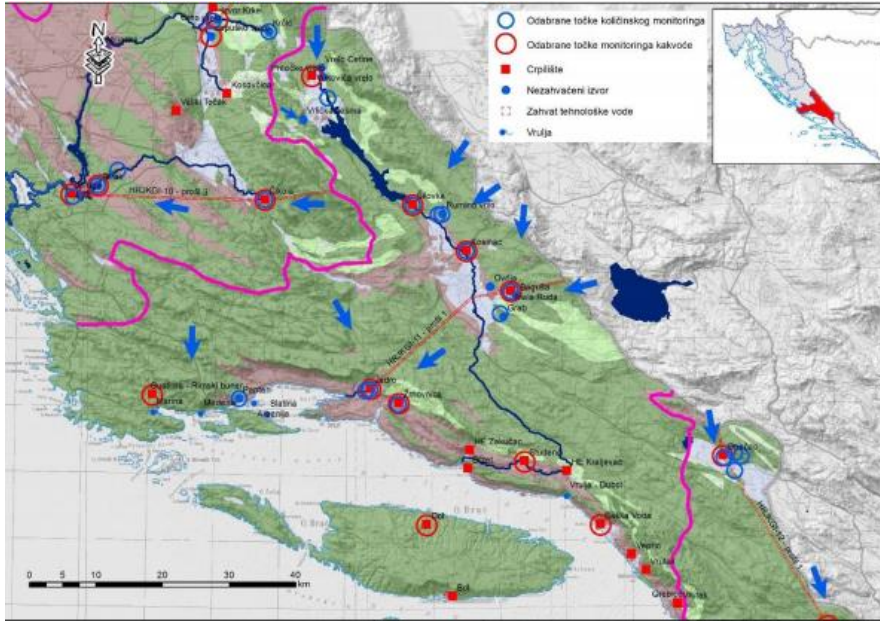




### B3) GROUND WATER

#### 18) Trend of water level of ground water [m]

Table:

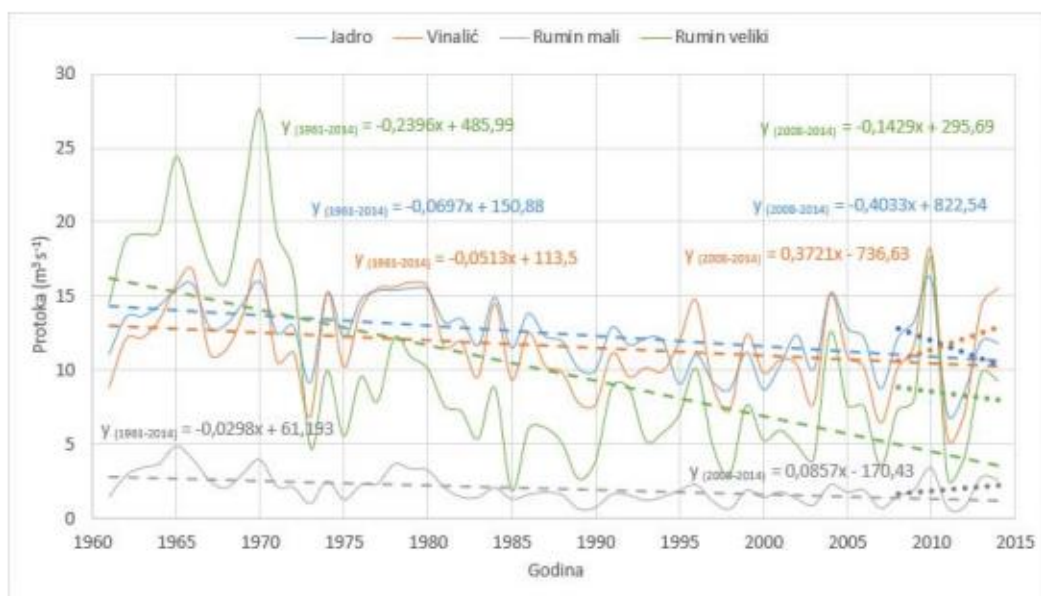


Chemical, biological and physical parameters of ground water quality FUA Split

T	pH	CND	HCO3	O2	O2	COD-Mn	NH4	NO2	NO3	PO43	Number of coliform bacteria	Number of fecal coliform bacteria	Number of fecal streptococci	Number of aerobic bacteria
°C		µS/cm	mg/l	mg/l	%	mgO2/l	mg/l	mg/l	mg/l	mgP/l	NBK/100ml	NBFK/100ml	FS/100ml	BK/ml 370C
12,8 2	7,78	386, 51	203,3 1	10,0 5	93,91	1,71	0,01 2	<0,00 5	2,87	0,008	8195,38	210,66	-	3989,06
Cu	Zn	Cd	Cr	Ni	Pb	Hg	Fe	Mn						
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l						
3,24	14,74	0,28	0,86	0,43	2,66	<0,1	16,45	2,93						



Chart:



Slika 9-18. Prikaz hoda srednjih godišnjih protok i njihovih karakterističnih trendova za odabrane hidrološke postaje CPV Cetina (1961. – 2014.)

Picture 9-18, Flow chart of average annual flows and their characteristic trends for the selected CPV Cetina hydrological station (1961-2014)



## C. INFRASTRUCTURES

### C1) WATER DISTRIBUTION SYSTEM - POPULATION WITH ACCESS TO FRESH WATER

<b>19) Percentage of population with access to the water supply network [%]</b>	
93%	
<input checked="" type="checkbox"/> Measured at FUA level  <input type="checkbox"/> Estimated at FUA level	Estimate procedure and hypotheses:

<b>20) What kind of water purification/treatment are in use, what is planned? [-]</b>
<p>Croatian Waters co-financed drinking water disinfection facilities at the spring of the Jadro river.</p> <p>The existing chlorination system was based on gas chlorine (Cl<sub>2</sub>). Due to problems with the merging of new bottles, increasingly stringent handling measures have raised the question of its acceptability. Therefore, in Water supply and Sewerage LTD Split, decided to start installing new technology for disinfected water, using sodium hypochlorite (NaOCl), a method of membrane electrolysis from fresh water and tableted salts.</p> <p>Here it is important to recharge that hypochlorite, such as yarrow salt, is practically harmless, produces on-site hypochlorite, and the device is flexible and adapted to the current needs of the system (of course, with the necessary reserves in the capacity of the produced hypochlorite).</p> <p>It was purchased with two electrolysis devices, operating in 1 + 1 mode (working + spare), and the size and importance of the area located in the Jadro are absorbed by water (supply of Split, Solin, Kastela and Trogir). A test run of the devices has been completed, tuned with each parameterization required, so that the full operational drive of the new devices is expected after consumption of current gas chlorine supplies.</p>



## 21) Tap water quality - lab test results

- PH [-] - **7,29**
- Fixed residue 180 ° C [mg/l] - **data not available**
- Hardness [°F] - **data not available**
- Conductivity [ $\mu$ S/cm a 20°C] - **426,29**
- Calcium [mg/l] - **data not available**
- Magnesium [mg/l] - **data not available**
- Ammonium [mg/l] - **0,019**
- Chlorides [mg/l] - **18,42**
- Sulphates [mg/l] - **12,18**
- Potassium [mg/l] - **data not available**
- Sodium [mg/l] - **data not available**
- Arsenic [mg/l] - **data not available**
- Bicarbonate [mg/l] - **data not available**
- Residual chlorine [mg/l] - **0,32**
- Fluorides [mg/l] - **data not available**
- Nitrates [mg/l] - **2,89**
- Nitrites [mg/l] - **0,01**
- Manganese [mg/l] - **data not available**

add other parameters you consider meaningful in the FUA area:

- Number of colonies at 22° C [100 number/1 ml] - **0,17**
- Number of colonies at 36° C [100 number/1 ml] - **0,42**
- E. coli [number/1 ml] - **0**
- Total of coliform [number/1 ml] - **0**
- E. coli [number/1 ml] - **0**
- Enterococci [number/1 ml] - **0**
- Clostridium perfringens [number/1 ml] - **0**
- Pseudomonas aeruginosa [number/1 ml] - **0**
- Consumption of  $KMnO_4$  [5 mg/l O<sub>2</sub>] - **0,86**
- Temperature [°C] - **22,22**
- Turbidity [4 o NTU] - **1,25**

<input checked="" type="checkbox"/> Measured at FUA level  <input type="checkbox"/> Estimated at FUA level	Estimate procedure and hypotheses:
--	------------------------------------



## C2) WATER DISTRIBUTION SYSTEM LOSS

<b>22) Percentage of loss in the water supply network [%]</b>	
58,2 %	
<input checked="" type="checkbox"/> Measured at FUA level  <input type="checkbox"/> Estimated at FUA level	Estimate procedure and hypotheses:

## C3) DUAL WATER DISTRIBUTION SYSTEM

<b>23) Description of eventual dual system water supply network within the FUA [-]</b>	
Not applicable.	
<input checked="" type="checkbox"/> Measured at FUA level  <input type="checkbox"/> Estimated at FUA level	Estimate procedure and hypotheses:



## C4) FIRST FLUSH RAINWATER COLLECTION

24) Qualitative description of the first flush rainwater collection technique implemented, if any [-]

Not applicable.

Is your description representative of the entire FUA? Please give a short explanation.

## C5) WASTEWATER COLLECTION

25) Percentage of households and percentage of industries, connected to the wastewater collection network [%]

- Households - 78%
- Industries - data not available

Measured at FUA level

Estimated at FUA level

Estimate procedure and hypotheses:



## C6) DUAL WASTEWATER COLLECTION SYSTEM

### 26) Description of eventual dual system wastewater collection network within the FUA [-]

On the FUA Split area there is sewerage system that is mostly made for combined type of sewer, on some parts it is envisaged to modify and build a dual sewerage system for wastewater and rainwater.

Measured at FUA level

Estimated at FUA level

Estimate procedure and hypotheses:

## C7) WASTEWATER TREATMENT PLANTS

### 27) List of wastewater treatment plants and their population equivalent capacity compared to the actual population [-]

Wastewater treatment plants	Inhabitant equivalent (IE)
Treatment plant <i>Katalinića brig</i>	110.000 IE
Treatment plant <i>Stupe</i>	135.000 IE
Treatment plant <i>Duilovo</i>	5.000 IE

Comment:

Treatment plant *Katalinića brig* currently is 110.000 IE with the plan of expansion up to 160.000 IE

Treatment plant *Stupe* currently is 135.000 IE with the plan of expansion up to 250.000 IE

Measured at FUA level

Estimated at FUA level

Estimate procedure and hypotheses:



**28) What kind of wastewater treatment is realised, what is planned? [-]**

Wastewater treatment plant Katalinića brig is located near Bačvice beach in Split, and it is designed to receive and treat the wastewater from southern basin of Split, with a capacity for 110.000 population equivalents. The average flowrate around 42.000 m<sup>3</sup>/day with some oscillations during the year. The treated wastewater is discharged by a pumping station through submarine outfall with a diffuser. The total length is 1570 m (100 m on land, 1470 m underwater), with a discharge depth of 43 m. Submarine discharge pipe has diameter of 800 mm. WWTP Katalinića brig consist of pre-treatment channel, two groups of coarse grids, two fine grids, a pump station consisting of a 75 kW four-pump, a flowmeter, a disinfection pool, a submarine discharge. The key problems are related to poor treatment technology with no biological treatment, no nutrient or sludge removal. In addition, the system combines rainfall runoff and sewage wastewater. As a separate system within the Southern Basin is the Duilovo sub-basin, which covers the area of Pazdigrad and Žnjan settlements. In this area a separate sewerage system is built, which collects stormwater from separate channels and connects it to the Duilovo stream. Sanitary wastewater is taken to WWTP Duilovo and then discharged into the sea by a long submarine discharge. WWTP consist of mechanical pre-treatment equipment of a coarse and fine grille and pumping station with very fine automatic grate. The existing solution represents only a transitional phase. Namely, the long-term solution according to the project documentation envisages that this subsystem be connected to the Stobreč drainage system and taken to the UPOV Stupe. The average flowrate around 4.000 m<sup>3</sup>/day with some oscillations during the year. Wastewater treatment plant Stupe is located in the eastern part of Split, and it is designed to receive and treat the wastewater coming from north-eastern part of Split as well surrounding municipalities (Solin, Podstrana, Klis, Dugopolje). Design capacity is equal to 135.000 population equivalents. Average inflow is equal to approximately 37.500 m<sup>3</sup>/day with significant oscillations. WWTP Stupe consist of two groups of automatic grilles, two fine grilles, two-chamber aerated grits and masts, a sand separator, a grease and oil separator, a flowmeter. The treated wastewater is discharged through submarine outfall with diffuser, total length is 2750 m (1850 m on land, 900 m underwater), discharge depth 37 m. The key problems are related to poor treatment technology with no biological treatment, no nutrient or sludge removal. In addition, wastewater from septic tanks with unknown content is received at the facility.

According to the Feasibility Study for the Split-Solin agglomeration project (major project implemented within NSRF 2014-2020) there are several plans for upgrading and reconstruction of wastewater drainage systems such as: a) reconstruction and optimization of existing drainage system (construction of 7 retention pools, construction and reconstruction of 6 rainwater overflows, construction of 3 pumping stations, construction of 6.265 meters of pipeline, reconstruction 16.565 meters of existing channels due to poor condition), b) Construction of compound objects for unique system of drainage and wastewater treatment ( construction of 9.875 meters of collectors and construction of 4 pumping plants), c) Upgrading the Stupe WWTP by upgrading wastewater treatment to biological (secondary) treatment, d) Installation of additional submarine discharge pipeline for WWTP Stupe.

Measured at FUA level

Estimated at FUA level

Estimate procedure and hypotheses:

**C8) TREATED EFFLUENT**

**29) Annual volume of waste water treated by the wastewater plants [m<sup>3</sup>]**

*UPOV Stupe* - average by day 37.500 m<sup>3</sup>/day -> 13.687.500 m<sup>3</sup>/year

*UPOV Katalinića brig* - average by day 42.000 m<sup>3</sup>/day -> 15.512.500 m<sup>3</sup>/year

*UPOV Duilovo* - average by day 4.000 m<sup>3</sup>/day -> 1.460.000 m<sup>3</sup>/year

Measured at FUA level

Estimated at FUA level

Estimate procedure and hypotheses:





## D. WATER CONSUMPTION

### D1) FRESHWATER EXTRACTED

30) Annual volume of freshwater extracted from the ground, surface water, other sources.  
(Specify sources) [m<sup>3</sup>]

55.755.423,00 m<sup>3</sup>

Measured at FUA level

Estimated at FUA level

Estimate procedure and hypotheses:

### D2) FRESHWATER USED/CONSUMED BY POPULATION

31) Daily volume of freshwater used by each person for civil uses [l/day per capita]

149.95 l/day per capita

Measured at FUA level

Estimated at FUA level

Estimate procedure and hypotheses:



<b>32) Consumption of bottled water for drinking purposes [l/day per capita]</b>	
Data not available.	
<input type="checkbox"/> Measured at FUA level  <input type="checkbox"/> Estimated at FUA level	Estimate procedure and hypotheses:

<b>33) Initiatives to reduce consumption of bottled water [-]</b>	
Association for environmental, nature and sustainable development SUN- Municipality Split	
<p>  </p>	
Initiative have a goal to reduce a consumption of plastic bottles.	
Please specify which municipalities within the FUA are involved in these initiatives.	



### D3) WATER USE SHARES (CIVIL, INDUSTRY, AGRICULTURE, ...)

#### 34) Percentages of water used by the civil, industry, and agriculture sectors [%]

Table

Data not available.

Chart

Data not available.

Measured at FUA level

Estimated at FUA level

Estimate procedure and hypotheses:



## D4) WATER STRESS INDICATOR

### 35) Class of water stress of the FUA according to Falkenmark Indicator (water availability per capita per year within the FUA) [-]

Falkenmark Indicator: based on the measure of water availability per capita per year within the FUA.

Index (m <sup>3</sup> /capita/year)	Class
>1,700	No stress
1,000 - 1,700	Stress
500 - 1,000	Scarcity
< 500	Absolute scarcity

Data not available.

Measured at FUA level

Estimated at FUA level

Estimate procedure and hypotheses:



## D5) WATER MANAGEMENT COMPANIES

36) List of the private/public companies that manage the anthropic water cycle (extraction, sanitation, distribution, collection, depuration) [-]

Companies	Area served	Public/private	Function
Vodovod i kanalizacija d.o.o. Split	Water supply and sewerage Ltd. Split served an area for inhabitants of city of Split, Solin, Kaštela and Trogir.	Public	Water supply and sewerage.
Water supply and sewerage Ltd. Split	Municipality's of Podstrana, Marina, Okrug, Seget, Klis, Muć, Dugopolje, Lećeivca and Šolta.		

Is the list complete at FUA level? Yes



## E. CLIMATE CHANGE

### E1) ISSUES ARISING DUE TO CLIMATE CHANGE

#### 37) Description of the issues, if any, raised by climate change (e.g. floods, high temperature, water scarcity, ...) [-]

In light of climate change, the Functional Urban Area of Split records significant changes that will affect not only the lives of residents but also the economy, especially tourism.

According to the European Centre for Medium Term Weather Forecasting (ECMWF), it clearly indicates that, compared to the last century, temperatures in major European cities are increasing significantly. Data were collected from a variety of sources - weather stations, meteorological balloons and buoys and satellite data. As an example, the number of days in the city of Split increased by an average temperature of 27 ° C from less than a year in the 20th century to 14 days in the 21st century. As a result, the city of Split is warmer by 1.3 ° C.

According to the lecture of Dr. Ivica Vilibić, Scientific Advisor for the Institute of Oceanography and Fisheries, there is a possibility and an estimate that the sea level could be raised by half a meter by 2100. This estimate would significantly affect the population of the city of Split as well as tourism itself as a key economic branch in the form of rising sea levels and the increasing frequency of floods in the Riva and Diocletian's cellars (key tourist sites in the city of Split).

Climate change will also affect other industries that are vital to the FUA Split area. In the midst of longer and more frequent droughts (especially in the summer), there will be an increase in the need for water in terms of irrigation and a shortening of the vegetation period with a lower yield of all crops in agriculture.

In the midst of reducing the availability of water caused by climate change, hydropower problems can potentially be caused by extreme hydrological conditions, droughts and floods. The aforementioned problem will also be affected by unfavorable rainfall distribution (lower availability in summer, higher availability in winter).

This increase in temperature will also affect fisheries. A potential problem is the disappearance of some of the fish species as well as the reduction of freshwater fish. An increase in sea temperature or an increase in sea acidity in some areas will make it impossible to grow shellfish.



## F. RULES, LAWS AND GOOD PRACTICES

### F1) PRICING SYSTEM FOR WATER

#### 38) Pricing system for different water uses (e.g. Irrigation, Civil, Industrial) [€/m<sup>3</sup>]

Pricing system for different water use is specified by next data:

- Category 1- Housing purposes 1m<sup>3</sup>= 3.50 kn =0.47 €
- Category 1a - Clinic hospital centre Split 1m<sup>3</sup>= 3.50 kn =0.47 €
- Category 1b - Socially disadvantage citizens 1m<sup>3</sup>= 1.40 kn =0.19 €
- Category 2 - Industry 1m<sup>3</sup>= 6.0 kn =0.80 €
- Category 2a - Consumers of water covered by point 2 (industry) who do not charge a water protection fee under the current Water Act 1m<sup>3</sup>= 6.0 kn =0.80 €

\*kn - HRK (Hrvatska kuna- Croatian kuna)- Croatian currency. Currency list 1 kn= 0.13 €.

\*\* listed prices above are valid from 01. April 2018.

\*\*\* the above water prices include only water supply, the price does not include sewerage and wastewater treatment as well as levies such as: development fee, ECO project development fee, water management fees and VAT.

For example, water user from category 1 including the price for water supply and all levies, pays in total 11.60 kn per 1 m<sup>3</sup> equivalent to 1.56 € per 1 m<sup>3</sup>.

#### B) VARIJABILNI DIO CIJENE – NAKNADA ZA VODNE USLUGE

C J E N I K od 01.04.2018. godine

za uslugu vodoopskrbe, odvodnje i pročišćavanja otpadnih voda po područjima Gradova i Općina, kategorijama potrošača i elementima cijena (strukturni)  
-u kn po m<sup>3</sup>-

Red. br.	Grad – općina Kategorija potrošača	Cijena za vodne usluge			Ukupna cijena za vodne usluge (r.br.3+4+5)	Naknada za razvoj	Naknada za razvoj za rješavanje imov.pravnih odnosa	Naknada za razvoj za fin. EKO Projekta	Vodoprivredne naknade za		Naknade ukupno (r.br.9+10+11)	PDV 13% na red.br. 6	Ukupno varijabilni dio (r.br. 12+13)
		Vodoopsk.	Odvodnje	Pročišćavanje otpadnih voda					korisćenje voda	zaštitu voda			
1	2	3	4	5	6	7	8	9	10	11	12	13	14
<b>A PODRUČJE EKO PROJEKTA</b>													
<b>I SPLIT</b>													
1.	Kategorija 1	3,50	0,55	0,29	4,34	0,50	-	2,00	2,85	1,35	11,04	0,56	11,60
2.	Kategorija 1 a (KBC–Split)	3,50	0,55	0,29	4,34	0,50	-	2,00	2,85	-	9,69	0,56	10,25
3.	Kategorija 1 b	1,40	0,22	0,12	1,74	0,50	-	2,00	2,85	1,35	8,44	0,23	8,67
4.	Kategorija 2	6,00	1,05	0,55	7,60	0,50	-	2,00	2,85	1,35	14,30	0,99	15,29
5.	Kategorija 2a	6,00	1,05	0,55	7,60	0,50	-	2,00	2,85	-	12,95	0,99	13,94

Pricing list from Water supply and sewerage Ltd. Split

Is the pricing system described above valid for the entire FUA? Please specify

Yes.

The price depends on the pipe profile and depends on whether the facility is connected to the drainage system.



## F2) RESTRICTION IN WATER USE

39) Description of restrictions in water use, if any [-]

Not applicable.

Are the restrictions described above valid for the entire FUA? Please specify

## F3) LEGISLATION ABOUT DUAL WATER DISTRIBUTION SYSTEM

40) Description of the legislation about dual water distribution system, if any [-]

Not applicable.

Is the legislation described above valid for the entire FUA? Please specify





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## F4) LEGISLATION ABOUT WATER REUSE

<b>41) Description of the legislation about water reuse, if any [-]</b>
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Under the current Law on water services (NN 66/19) by Article 13, a public water service provider may not perform activities other than water services. Exceptionally, the supply of water treated on a wastewater treatment plant for the purpose of reuse, including sale, is permitted.

A proposal for a regulation of the European Parliament and Council on minimum requirements for the reuse of water. 28. May 2018., Brussels, 2018/0169 (COD).

<p>Is the legislation described above valid for the entire FUA? Please specify</p> <p>Yes, the law applies throughout the Republic of Croatia, including FUA Split.</p>
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## F5) LEGISLATION ABOUT FIRST FLUSH RAINWATER COLLECTION (e.g. streets)

<b>42) Description of the legislation about first rainwater collection, if any [-]</b>
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Not applicable.


<p>Is the legislation described above valid for the entire FUA? Please specify</p>
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## F6) RULES FOR GREEN SPACES IRRIGATION

<p><b>43) Description of the rules about urban green spaces irrigation, if any [-]</b></p> <p>Not applicable.</p>
<p>Are the rules described above valid for the entire FUA? Please specify</p>

## F7) DIFFUSION OF WATER SAVING GOOD PRACTICES

<p><b>44) List of good practices in place for water saving [-]</b></p>
<div style="text-align: center;">  </div> <p>County Chamber Split- Conference “Energy and water efficiency” about efficiency in energetics and water management.</p> <p>The Split-Solin agglomeration project involves certain interventions on the water supply system, which will lead to a significant reduction of losses (58 % to 35 %) and consequently to an increase of efficiency on the FUA Split water supply system. Furthermore, it involves extension of water supply network in order to cover about 10% of population that is currently not connected to water supply.</p>