

# TWINNING CONTRACT

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## Support to the reform of the statistics system in Bosnia and Herzegovina



## MISSION REPORT

**Activity 2.3.2:**  
**Planning for a pilot survey on CPPI for Civil Engineering**

**Component 2: Business Statistics**  
**Sub-component 2.3: Construction Producer Prices Index**

Mission carried out by  
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## List of Abbreviations

BHAS	Agency for Statistics of Bosnia and Herzegovina
BiH	Bosnia and Herzegovina
CBBH	Central Bank of Bosnia and Herzegovina
EC	European Commission
EU	European Union
FBiH	Federation of Bosnia and Herzegovina
FIS	Institute for Statistics of Federation of Bosnia and Herzegovina
MS	EU Member State
RSIS	Institute for Statistics of Republika Srpska
RTA	Resident Twinning Adviser
ToR	Terms of Reference

## Executive Summary

This was the second mission conducted under sub-component 2.3 Construction producer price index for civil engineering. The main aims of this mission were to assess the current status of the preparatory work for conducting a survey on civil engineering in BiH and to decide on practical aspects related to conducting a pilot survey followed by a regular survey on prices for construction of highways, main roads, bridges and tunnels.

This mission included a presentation and discussion of the bill of quantities which will form the background for drafting the questionnaire. Also, the bill of quantities was discussed in relation to the weights to be used in the compilation of the CPPI for civil engineering. The future pilot survey will give more input to the decision on which level the weights should be introduced.

Draft questionnaires and instructions to the reporting units were presented and discussed at the mission and it was agreed to harmonize the questionnaires with the one used for the survey on residential buildings.

Finally, rules for sample selection were discussed at the mission together with the target population. The entities from BiH will before next mission investigate if other reporting units should be added to the sample.

## 1. General comments

This mission report was prepared within the EU Twinning Project "Support to the reform of the statistics system in Bosnia and Herzegovina". It was the second mission to be devoted to the sub-component 2.3 within Component 2 of the project.

The purposes of the mission were:

- Results from initial research phase (feedback from the field)
- Adoption of a general plan for development of CPPI for Civil engineering incl. timetable of pilot survey
- General rules for sample selection agreed
- Frame for pilot survey defined and sample of reporting units selected
- Calculation of weighing structure for compilation of CPPI for Civil engineering by using Standard Component Method based on bill of quantities for 4 selected activities
- Preparation of final - questionnaire and supporting documents for pilot survey based on bill of quantities

The consultants would like to express our thanks to all officials and individuals met for the kind support and valuable information which we received during the stay in Bosnia-Herzegovina and which highly facilitated the work of the consultant.

This views and observations stated in this report are those of the consultant and do not necessarily correspond to the views of EU, BHAS, FIS, RSIS, CBBH, Statistics Denmark, INSEE, Statistics Finland and Croatian Bureau of Statistics.

## 2. Assessment and results

### Bill of quantities

Since the first mission in March 2018 an important issue from the initial research phase has been conducted – that is the production of bills of quantities for the relevant areas under civil engineering for which construction producer price indices (CPPI) are to be produced by the Bosnia and Herzegovinian

authorities. These bills of quantities are essential for drafting a questionnaire and for establishing the relevant weights to be used.

IPSA Institute d.o.o. Sarajevo which is an independent consulting firm specialising in construction issues has produced the bill of quantities for the four selected structures, that is:

- Roads (100 meters)
- Highways (100 meters)
- Bridges (20 meters)
- Tunnels (100 meters)

At the first mission it was agreed that these four structures were the most significant ones under the group 42 in NACE Rev. 2 (civil engineering). The bills of quantities are included in annex 4 (supplement to this report).

The bill of quantities contains descriptions of the most relevant workflows in the construction of a specified length of a road, highway, bridge or tunnel. The description of the different work items are divided into groups and sub-groups giving a comprehensive understanding of the workflows needed to construct the structures. For each item described, there is information on the unit measurement, quantity needed, unit price and the value for the item. From this it is possible to establish a ranking in terms of value for the selection of the work items relevant for a questionnaire – that is selecting the items with the highest value.

Since the bill of quantities will be used for weighting and selection of relevant items to enter a survey (questionnaire) the issue of updating the bill of quantities were discussed. Over time the unit price for some quantities may change more than for others and at the same time other items may be replaced by new ways of construction and therefore an update of the bill of quantities can be crucial for the consistency of the CPPI with reality. CPPI for residential building (quarterly survey) operates with updating the bill of quantities after 3-5 years. For the CPPI for civil engineering – which is an annual survey - an update every 5 year should be sufficient.

With the bill of quantities at hand it was possible to continue the preparation of a pilot survey with the aim of collecting relevant prices from a sample of the population under NACE Rev.2 42 (civil engineering). The relevant institutions in BiH – together with the MS experts - has already decided that the standard component method (SCM) will be the method used for the CPPI for civil engineering. SCM will rely on a comprehensive description of the items to be priced by the reporting units in order to provide a weighted average of the price changes for the four structures: road, highway, bridge and tunnel.

During the mission, it was discussed what should be the threshold in relation to how many item descriptions to include from the bill of quantities – that is: should a work item which only correspond to 0.2 pct. of the total value (the total price for the structure) be included. It was concluded that for the pilot survey, all work items in the top 80 percent of the total price should be included (using a top-down approach). So by sorting the weights for each structure (highways, roads, bridges and tunnels) it will be possible to select the work items with the biggest weights until 80 pct. coverage has been reached. This will be done by the entities in BiH before the 3<sup>rd</sup> mission. The resulting number of work items for the different structures using this approach is expected to differ significantly (e.g. the road structure may only contain six or seven work items while the tunnel structure could end up with more than 30 work items). During the pilot survey, there might be an adjustment of the number of work items to be included.

Also during the pilot it will be explored at which level the weights should be applied. There are three possibilities:

1. Apply them on the lowest level – that is for the work items (price level)
2. Apply them on the sub-group level – that is for close related work items
3. Apply them on the group level – that is for a few general groups under each structure

At the mission it was discussed what would be the most feasible level to apply the weights. Given that BiH has the weights on the level of the prices it is of course appealing to introduce the weights at this level. On the other hand, if the items included in the sample changes often, then the weights would have to be updated often, and that could introduce an extensive workload, which would not be feasible for the entities in BiH. Furthermore, there is the risk of some work items having too much/too little significance if the weights are misplaced when new items enter the sample or when existing items leave the sample, which would cause errors in the weights. Therefore, the MS experts strongly recommend that the entities in BiH use the pilot survey to make an assessment of the most feasible level to introduce the weights.

### **Draft questionnaire**

Once the work with the bill of quantities is finalized, BiH will send a finalized version of the draft questionnaire to be used for the pilot survey (before the third mission). This draft questionnaire will be discussed with a selection of potential reporting units.

As a consequence, BiH provided a partial version of the draft questionnaire during the meeting (in Bosnian language) to the MS experts.

The draft questionnaire will be in fact divided into four parts. One for each of the main works in civil engineering identified: highways, main roads, bridges and tunnels. It will rely on the final version (=reduced) of the bill of quantities for the input prices nomenclature, the questionnaire of the pilot survey will be pre-filled from the details from the bill of quantities. And it will rely too on the questionnaire of the producer price index for residential buildings for the blueprint (data on reporting company, instructions before filling the questionnaire, example of filling the data etc.).

On what was presented, BiH and MS experts agreed first on the global structure of the instructions (reported companies will read these information before filling the prices in the different group of works):

- the aim of the survey is to collect a market price;
- on two consecutive years;
- if the reported company had several market prices for a same precise type of work, it will have to select the price that will refer to the most relevant performed work. If it is not possible, BiH and MS experts agreed that the average price would be a good alternative;
- market price is expressed in national currency (KM) and VAT excluded.

More generally, MS experts advocate to produce synthetic enclosed instructions, understandable by all the reporting companies. They will have to see directly the purpose of the survey, and not as an additional administrative burden.

Then, BiH explained that a notification letter would be sent both for the pilot and the regular survey together with the questionnaires.

Furthermore, two questions will be in the pilot survey (and not necessary in the regular survey):

1. A question about the status of the reporting company: is it a contractor of the civil engineering work or a sub-contractor. This question in the pilot survey will enable BiH to have a better understanding of who really do the construction works;
2. A question about to know if it is a price on construction work or on reconstruction work. This question in the pilot survey will enable BiH to get an idea of the proportion of reported companies that are doing new construction and those that are only rebuilding.

Otherwise, BiH and MS experts agreed about two other points concerning the draft questionnaire:

1. between the different group of works, there will be blanks in order to allow the company to fill it with a description of their work, if the work they perform is not proposed in the list of construction works;

2. if a company does a construction work in a given year but stop performing that kind of work in the following years, it will be necessary to complete another type of construction work (if possible).

### Sample selection

The frame for the sampling is based on data from the Statistical Business Register (SBR). The data covers enterprises within NACE Rev. 2 41 (construction of buildings), 42 (civil engineering) and 43 (specialised construction activities) and contains information on turnover for the enterprises and number of persons employed. From this data a sampling population to be used for the sampling can be withdrawn – that is NACE Rev. 2 42.11 and 42.13 (highway/roads and bridges/tunnels). The entities in BiH may add enterprises to this sampling population following further investigations of who performs construction works within these areas (enterprises under other NACE-codes may have significant activities related to construction of roads, bridges etc.).

The entities in BiH uses the variables turnover and number of employees as stratification variables when selecting relevant samples for their surveys. The stratification variables are sorted into six classes (1-6) where class 1 represents enterprises with the lowest number of employees (0-9 persons employed) and lowest turnover (0 – 99.999 KM). While the classes 5 and 6 represents the enterprises with the highest number of employees (5 = 250 persons or more) and highest turnover (5 = 20.000.000 – 99.999.999 KM and 6 = 100.000.000 KM and more).

BiH and MS experts agreed on the following criteria for selection of units in the sample:

- 10 and more persons employed (which means employment classes from 2 to 5)
- 500 000 KM financial turnover and more (which means financial turnover classes from 3 to 6)
- enterprises registered in class 42.11 and 42.13 (NACE Rev. 2)

The total number of units selected in the sample is 94, with 63 in Federation of BiH, 27 in Republika Srpska and 4 units in Brcko District BiH. Detailed overview of the sample is shown in table below:

Region	Number of units in the sample	Number of units in the population
FBiH	63	1343
RS	27	602
BD BiH	4	76
Total for BiH	94	2021

Notes: Population = number of units in 2016 in the business register of BiH for the classes in construction field (41+42+43 NACE Rev. 2 sectors)

By the end of July 2018 at the latest, the SBR data will be updated with 2017 information on the enterprises.

### Pilot Survey

Before the actual establishment of the pilot survey, BiH will implement a pre-pilot survey (during the summer 2018) with ten companies (ten companies for each of the three regions institutes in BiH when it is possible) in order to test some questions of the draft questionnaire and the input prices nomenclature. The results of this small study will be presented during the third mission.

The pilot survey will take place from mid to the end of January 2019 for results available and usable at the end of March 2019 (for the fourth mission).

### Timetable and Activity plan

During the mission the general activity plan and timetable was discussed and updated. See annex 3.

### 3. Conclusions and recommendations

The four bill of quantities (BoQ) performed by IPSA Institut d.o.o Sarajevo should be used for selecting the specific items to be used for constructing the Producer Price Index for Civil Engineering, and therefore also as a basis for the questionnaires and the weighting structure.

For the pilot survey the items of construction work should be selected for each of the main groups in civil engineering: Highways, roads, tunnels and bridges, so that the coverage of each sub-group will be at least 70-80 percent. This coverage should also be the goal for the regular survey, but the results from the pilot survey may cause some necessary adjustments.

It is advisable to consider pros and cons regarding weights at the most detailed level. The results of the pilot survey should be used for the final decision concerning the level of weights.

The bill of quantities should be updated at least every five year.

It is advised and decided to use the same template for civil engineering as for residential buildings with a few modifications described in this report. After the pilot survey, the questionnaire should be revised. A pre-pilot survey should take place before the third mission. Each of the entities should visit, if possible, 10 civil engineering companies for feedback on the questionnaires.

The sample of civil engineering companies should have a turnover value of at least 500.000 KM, at least 10 employees, and be engaged in the relevant construction work (NACE 42.11 and 42.13). The sample should be updated after July 2018, when the SBR for 2017 is ready.

#### Actions needed for moving forward as well as for preparing the next mission:

Action	Deadline	Responsible person
Prepare the final version of the questionnaires for the pilot survey.	Before 3 <sup>rd</sup> mission	BHAS, FIS and RSIS
Update the sample for the pilot survey using SBR 2017 for all three entities.	Before 3 <sup>rd</sup> mission	BHAS, FIS and RSIS
Pre-pilot survey; Each entity visits, if possible, 10 companies for testing the questionnaires.	Before 3 <sup>rd</sup> mission	BHAS, FIS and RSIS
Finalise the weighting structure using the bill of quantities.	Before 3 <sup>rd</sup> mission	BHAS, FIS and RSIS



#### 4. Topics for the next mission

Action	Deadline	Responsible person
Presentation of final questionnaire and results/thoughts from the pre-pilot survey.	During 3 <sup>rd</sup> mission	BiH counterpart
Discussion about final questionnaire and pre-pilot survey.	During 3 <sup>rd</sup> mission	BiH counterpart +MS experts
Presentation of updated sample for the pilot survey.	During 3 <sup>rd</sup> mission	BiH counterpart
Discussion about updated sample for the pilot survey.	During 3 <sup>rd</sup> mission	BiH counterpart +MS experts
Presentation of final weighting structure.	During 3 <sup>rd</sup> mission	BiH counterpart
Discussion about final weighting structure.	During 3 <sup>rd</sup> mission	BiH counterpart +MS experts
Detailed timetable for pilot survey in January 2019.	During 3 <sup>rd</sup> mission	BiH counterpart +MS experts
Discuss how to implement CPPI in the new IT application.	During 3 <sup>rd</sup> mission	BiH counterpart +MS experts
Start discussion on how to calculate the producer price index for civil engineering. Incl. how to do chain linking.	During 3 <sup>rd</sup> mission	BiH counterpart +MS experts

## **Annex 1. Terms of Reference**

### **Terms of Reference**

**EU Twinning Project BA 15 IPA ST 01 17**

**Component 2: Business Statistics**

**Sub-component 2.3: Construction Producer Price Index**

**04-07 June 2018**

**Hosting institution: FIS – Institute for Statistics of the Federation of BiH**

#### **Activity 2.3.2: Planning for a pilot survey on CPPI for Civil Engineering**

##### **1. Mandatory result and benchmarks for the component**

Mandatory result:

- Construction producer price index for division F42 – Civil engineering works produced by 8<sup>th</sup> project quarter

Benchmarks:

- Plan for development of producer price index produced by 1st project quarter
- Draft questionnaire and supporting documents for pilot survey prepared by 1st project quarter
- Pilot survey conducted by 2nd project quarter
- Results of pilot survey analyzed by 2nd project quarter
- Criteria for an IT application defined by 2nd project quarter
- Plan for regular production developed by 4th project quarter
- Index compiled by 5th project quarter
- Index made available to users by 6th project quarter
- Methodological document on producer prices in construction developed by 8th project quarter
- Quality report for producer prices in construction developed by 8th project quarter

##### **2. Purpose of the activity**

- Results from initial research phase (feedback from the field)
- Adoption of general plan for development of CPPI for Civil engineering incl. timetable of pilot survey
- General rules for sample selection agreed
- Frame for pilot survey defined and sample of reporting units selected

- Calculation of weighing structure for compilation of CPPI for Civil engineering by using Standard Component Method based on bill of quantities for 4 selected activities
- Preparation of final - questionnaire and supporting documents for pilot survey based on bill of quantities

### **3. Expected output of the activity**

- Results from initial research phase presented
- Final design and plan for pilot survey developed
- General plan for development of CPPI for Civil engineering adopted
- Supporting documents for pilot survey prepared
- Pilot questionnaire finalized
- Input provided to the ToR of next activity

## **Annex 2. Persons met**

### **Agency for Statistics of BiH (BHAS)**

Fahir Kanlic, BHAS

Dženita Babić, BHAS

Anita Brković, BHAS

### **Institute for Statistics of Federation of BiH (FIS)**

Nusreta Imamovic-Kaljanac, FIS

### **Institute for Statistics of Republika Srpska (RSIS)**

Danica Babić, RSIS

### **MS Experts**

Martin Ausker, Statistics Denmark

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### **Twinning Project Administration**

Katja Møller Hjelvang, RTA

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Amela Kurtović, Interpreter

### Annex 3. Activity plan (by main activity and by mission)

Activity Plan for development of Quarterly CPPI for F42 Civil Engineering						
Component 2: Business Statistics						
Sup-component 2.3: Construction Producer Price Index						
No	Main Activity	Components of main Activity	Est. date of realization (provisional)	Participants	Responsible institution	Note
1	ACTIVITY PLAN AND TIMETABLE	1. Draft activity plan for CPPI survey agreed	End of 1st mission			
		2. Updated activity plan for CPPI survey agreed	Continuously			
2	SAMPLE	1. Selection of main activity groups (CPA)	End of 1st mission			
		2. Definition of components (EA) and weights (incl consultation with independent institution for bill of quantities)	Before the 2nd mission			
		3. Define target population (All enterprises in the chosen 4 digit NACE groups)	Before the 2nd mission			
		4. Draw sample (reporting units) for the pilot survey based on the criteria defined for F41	Before 3rd mission			
3	QUESTIONNAIRE	1. Preparation of draft version of questionnaire	Before 2nd mission			
		2. Review and proposed changes of the questionnaire	2nd mission			
		3. Final version adopted	3rd mission			
		4. Instructions for filling in the questionnaire prepared	2nd mission			
4	DATA COLLECTION	1. Timetable with deadlines for conducting the pilot survey on CPPI (delivery og questionnaires to reporting units, data collection, process, data entry ect.)	3rd mission			
5	DATA EDITING AND PROCESSING	1. List of controls for micro data checking	After pilot survey. (4th mission)			
		2. Data editing				
		3. Non response treatment				
		4. Imputation methods				
		5. Outlier checking and treatments				
		6. Discussion with MS experts about 1.-5. and topics/questions related to the results of the pilot study				
6	CALCULATION AND ANALYSIS OF RESULTS	0. Begin the descussion on calculation theory	3rd mission			
		1. Determination of methods for calculation of CPPI indices	5th mission			
		2. Procedures for calculation of indices				
		3. Quality indicators				
		4. Calculation og indices based on data from pilot survey				
		5. Discussion with MS experts about results from calculations				
7	REVISION POLICY	1. Revision of input data and output results	7th mission			
		2. Data confidentiality treatments				
8	PREPARATION OF REGULAR CPPI SURVEY FOR F42	1. Implementation of experiences from the development phase to actual production (adjustments in questionnaire, preparation of data for base year etc.)	6th mission			
		2. Plan for regular survey	5th and 6th mission			
		3. Preparation of output tables	6th mission			
		4. Preparation for publication	6th mission			
9	DOCUMENTATION	1. Prepare methodology paper (in accordance with EU standards)	7th mission			
		2. How to do quality indicators and how to select the list of quality indicators				
		3. Preparation of quality report.				
10	IT APPLICATION	1. How to use the new IT application for Civil Engineering	3rd mission			

<b>Activity Plan for development of Quarterly CPPI for F42 Civil Engineering</b>					
<b>Component 2: Business Statistics</b>					
Sup-component 2.3: Construction Producer Price Index					
<b>Mission</b>	<b>Est. date of realization (provisional)</b>	<b>Activities</b>	<b>Participants MS Experts</b>	<b>Participants BC Experts</b>	<b>Note</b>
1st	March 2018	- Draft activity plan	Janni Stavac, DST		
		- Selection of main activity groups (CPA)	Martin Ausker, DST		
2nd	June 2018	- Bill of quantities (components and weights)			
		- Draft questionnaire			
		- Sample selection (theory)			
Study Visit	Beg. Sept 2018	-			
		-			
3rd	October	- Sample for pilot study (reporting units)			
		- Timetable for pilot survey			
		- Final version of questionnaire			
		- Begin the discussion on how to do calculations			
		- How to use the new IT application for Civil Engineering			
4th	February/ March 2019	- Data editing and processing (incl imputations): How to do this (general rules)			
		- Actual look at data (results) from pilot study			
		-			
5th	April 2019	- Methods for calculation of CPPI indices			
		- Quality indicators			
		- Plan for regular survey			
6th	June 2019	- Plan for regular survey continued			
		- Preparation for regular survey			
		- Output tables			
		- General preparation for publication			
7th	September 2019	- Revision policy			
		- Documentation			
		- Quality indicators			

## Signatures

For the approval of the contents of this report, representatives from BHAS, FIS and RSIS as well as MS experts and the RTA sign here:

Date: 7<sup>th</sup> of June 2018

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Component leader, BHAS

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Component leader, FIS

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Component leader, RSIS

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RTA

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MS Expert

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MS Expert

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MS Expert