TWINNING CONTRACT

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Support to the State and Entity Statistical Institutions, phase VI



MISSION REPORT

on

Activity 2.3.1.1
Assessment of current situation. Introducing producer (output) prices in construction in BiH

Mission carried out by Sigrid Krogstrup Jensen, Statistic Denmark Jasna Pugar, Croatian Bureau of Statistics

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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

The main aim of the mission was to assess the current situation concerning introduction of the producer (output) prices in construction (hereinafter CPPI)¹ in BiH

The construction producer (output) price index has to reflect the evolution of prices of new Residential Building. The STS Regulation is output oriented thus it does not specified input for data compilation.

The preferred method for compilation could be finding within STS Methodological Manual from 2006 and OECD and other relevant documentation for CPPI.

Currently, within Statistical System in BiH which consists of three statistical institutions, one at state level: BHAS including Branch Office in Brcko District and two at entity level: FIS and RSIS, compilation of CPPI does not exist.

However, in FIS at entity level data collection exist for average price of new completed dwelling per m² for new Residential Building in semi-annual periodicity. It is concluded to use this type of data as a base for calculation of simple producer price index (CPPI) by using construction costs and constructor's profit margin as approximation.

It is concluded that redesigned K KPS GRAĐ-41 questionnaire (annex 3), drafted during the mission, accompanied with instructions for fulfilling will be implemented by all entities in 2015 as provisional solution on quarterly basis.

Regarding to the final solution for CPPI, main finding were following:

- ❖ The Standard Components Method (SCM) for compillation of the CPPI in BiH was suggested as the most appropriate for BiH
- ❖ Activities on introducing SCM for CPPI (frame definition, sample design, questionnaire design, choosing typical house, etc.) from 2nd mission onwards
- ❖ Pilot survey for 4th quarter of 2015 will be conducted
- * Regular survey will be carried out on regular quarterly basis in 2016.

More specific knowledge are needed for SCM since theoretically work categories Price Index of the Construction of New Residential Buildings, reflects the changes in the prices paid to the constructors for the different individual construction stages of new residential buildings (e.g. concrete, wall-building, plastering, etc.), when ordering the construction of the works.

In this regard it was suggested that prior to 2^{nd} mission all involved entities in BiH start with defining the standard components with the help of construction experts.

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¹ During the mission it was agreed by all participants to use abbreviation CPPI for Construction producer (output) price according to current EU terminology instead of PPIC

1. General comments

This mission report was prepared within the Twinning Project "Support to the State and Entity Statistical Institutions, phase VI". It was the first mission to be devoted to producer (output) prices in construction within Component 2.3.1.1 of the project.

The purposes of the mission were:

- Assessment on the current situation
- Overview over EU regulations and requirements in this area
- Presentation of the Croatian and Danish experiences for PPIC
- Frame analysis of reporting units for pilot for PPIC
- Analysis of different possible (available) sources for data collection on producer (output) prices in construction.
- Evaluation of the existing data.
- Preparation of general Activity Plan for development of PPIC statistics
- Discussion on draft of questionnaire and instruction for filling the questionnaire for pilot survey prepared by BHAS

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

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

2. Assessment and results

During the mission the following outputs have been achieved:

- Current situation concerning PPIC in BIH was assessed and evaluated
- Current and future (FRIBS package²) EU regulations and requirements concerning CPPI were presented, explained and discussed
- Croatian and Danish experiences on compiling CPPI were presented and discussed
- Recommended methods for compiling CPPI according to EU STS methodology and OECD Manual were overviewed, including MS practice
- Possibilities for CPPI data collection in BiH in accordance with EU/OECD recommended methods for compiling CPPI were discussed
- SCM for compiling CPPI was recommended and agreed as best solution for BiH
- General Activity Plan for development CPPI quarterly surveys suitable for compiling CPPI using standard components methods in BiH was agreed upon
- Frame of reporting units for CPPI data collection suitable for CPPI standard components methods were discussed and defined (but need to be further explored see topics for the next mission)
- Drafting questionnaires for pilot surveys suitable for CPPI compilation using standard components methods were agreed to be postponed for next mission (see topics for the next mission)

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² FRIBS stands for Framework Regulation for Integrated Business Statistics

Assessment on the current situation

There is no established (developed) survey for data collecting on producer price indices for the state level according to EU STS Regulation. The survey on average price of new completed dwelling per m² is already carried out for new and completed dwellings by FIS. This price concept comprises land price, construction costs and constructor's profit margin and other costs. The survey does not fully meet the EU requirements but can be used as good temporary approximation of the construction producer price index (CPPI) by using construction costs and constructor's profit margin as output price.

However, the use of this method requires that construction activity included has to be homogenous. This is not the case for BiH, thus, the index will not be fully representative for construction in BiH and there is no quality adjustment in this type of index. Also, the index is valid only for each reference building, etc. as it was originally built and therefore lacks broader representativity.

Thus, the average price of new completed dwelling per m^2 - for compilation of the CPPI was recommended and agreed by all counterparts to be used as CPPI approximation in short run. For the purpose of calculation of CPPI as simple index - average price of new completed dwelling per m^2 - following results has been achieved:

- Existing FIS questionnaire suitable for approximation of CPPI in all of BiH was redesigned to the needs of compiling CPPI in transition phase towards recommended methods
- Instructions for fulfilling redesigned FBiH questionnaires was simplified, updated and redefined to be more align with respondents needs
- Redesigned FIS questionnaire (K KPS GRAĐ-41 form) accompanied with instructions
 was agreed to be used as common questionnaire by all entities in BiH for regular
 quarterly data collection for 2015

Experts recommend that an index following the Standard Components Method (SCM) should be established to replace the average price of new completed dwelling per m² in the long run. In this method construction output is regarded as bundles of standardized homogeneous components. Examples would be: the supply and laying of so many square metres of roofing tiles; installation of a hot water tank of a given capacity; construction of so many square metres of brick wall etc. The steps towards SCM are:

- One or more representative construction projects are selected
- The actual work entailed in its completion is broken down into precisely defined standard services or components
- A number of representative construction firms that have recently performed any of these services are surveyed to determine the prices of the components
- These indices are then aggregated for the buildings initially defined as the benchmarks
- The actual buildings are used only to define a selection of services and the corresponding weights
- To maintain representativity of the index re-specification of a number of the representative projects on a cyclical basis is necessary
- The standard component index incorporates productivity gains and changes in profit margins, as it reflects not only the cost of the factors, but also the price of the finished product paid by the customers of the construction firm

CPPI produced by using SCM will therefore be of better quality than an index based on average price of new completed dwelling per m². It can be transmitted to Eurostat and will be used as good deflator in National Accounts (NA). SCM will comply with best practice and Eurostat recommendations.

A pilot survey to be used as input for calculation of CPPI using SCM was agreed to be developed in parallel to ongoing data collection on average price of new finished dwelling per m² in 2015. An agreement was reached during the mission for following issues:

- Defining specific activities on introducing SCM for CPPI will be done on 2nd mission
- Pilot survey for 4th quarter of 2015 will be conducted in all entities of the BiH
- Regular quarterly survey will be carried out on regular quarterly basis in 2016

However, K KPS GRAĐ-41 survey on average price of new finished dwelling per m² may be kept for fulfilment of national needs, if it's really necessary.

Overview over EU regulations and requirements in this area

The EU regulation relevant for Construction price index is following:

- Council Regulation (EEC) No.1165/98 concerning short-term statistics and by the Regulation No.1158/05 (that amends the above Regulation) of the European Parliament and of the Council, for Annex B – Construction
- Commission Regulation (EC) No 1503/2006 of 28 September 2006 implementing and amending Council Regulation (EC) No 1165/98 concerning short-term statistics as regards definitions of variables, list of variables and frequency of data compilation

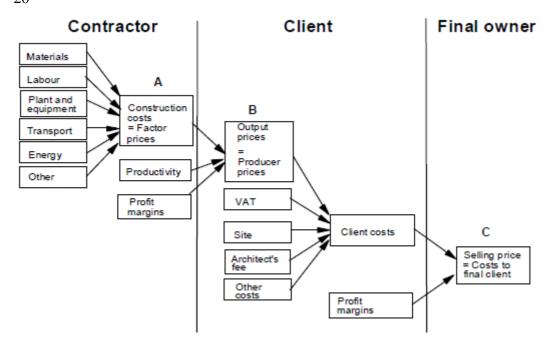
More specifically, STS Regulation in the Annex B, currently requires variables 320, 321, 322 – Construction Cost Indices (Input approach) that could be approximated by variable 310 - Output (producer) prices (Output approach).

The indicator is needed on a quarterly basis. Deadline is 90 days after the end of the reporting period. For small countries 15 additional days are allowed. It is required as index with base year 2010.

However, STS package **for FRIBS** foreseen new (opposite) requirement concerning Construction price index, i.e. the replacement of the construction costs index by the Producer (output) Price Index. The approximation of producer prices by construction costs could be allowed during the transitional period only. It is considered as acceptable for all of the member states.

This is the main reason behind why it was recommended to BiH to stop the introduction construction cost index and start with development of a producer (output) price index.

An index, represented by B in the figure, is what Eurostat recommends for producer prices in construction, 310:



In BiH the situation is special as the contractor and investor are sometimes the same company and sometimes not.

- If contractor and investor are the same, then the client and the final owner are the same C is equal to B
- If contractor and investor are not the same, then the client and the final owner are not the same either C is different from B

Presentation of the Croatian and Danish experiences for CPPI

Currently, Statistics Denmark only produces a construction cost (input price) index for new residential buildings. Due to Eurostat and user demands and demands for a better deflator for NA from the Danish Productivity Commission work has begun to establish a CPPI. For now only preliminary work has been carried out. Three methodologies have been considered for the Danish CPPI.

- **Standard components** (described above)

- o Used by Germany, Austria and Switzerland
- Uses market prices
- o Representativity is ensured by frequently updating the components

Matched models

- o Also used in Germany for PPI-purposes
- Uses actual producer prices
- Representativity is limited to standardized houses

- Hedonics

- o Used by Norway, Sweden and the Netherlands
- Uses producer prices
- o Representativity is ensured by frequently updating the model

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The **matched models** approach compares standard construction over time. Representative construction works are chosen. The houses should be standard houses so they are at least comparable across two periods. Prices are then collected from companies that sell prefabricated houses. The representativity of such an index is thus very limited. Therefore, the mathed models approach was ruled out for the Danish CPPI.

The **hedonic** approach has the premise that the house prices are set by the market and reflects the over-all prices for the different combinations of house characteristics. A hedonic regression model is specified:

$$P = a_0 + a_1 x_1 + \dots + a_n x_n + b_1(D_{t-1}) + \varepsilon$$

The dependent variable, P. is the price of the new residential building and the explanatory variables, x_i , are the building characteristics. The change in the price between two periods is estimated using a time dummy D_{t-1} . Model specification is quite complicated, and demands specially qualified staff with high level econometric skills. Furthermore, the model must be respecified every time the index is calculated, in this case on a quarterly basis.

In Denmark there are plans to produce a hedonic index for the producer price index for construction of residential buildings. However, producing a hedonic CPPI is only possible because Statistics Denmark has found the resources to hire specially qualified staff with high level econometric skills. If this was not the case an index using SCM, as described above, would have been the best alternative. Actually, SCM will be used for calculating deflators for repairs and maintenance in the Danish NA.

In Croatia a construction producer prices index based on producer price per m², similar to that of FIS, is produced but there are plans to revise the methodology by introducing a hedonics approach, since quality adjustments are missing from the current index.

Frame analysis of reporting units for pilot for CPPI

Experts recommend that the business register is used as a starting point in addition to data from building permits and construction companies used to adjust the frame for the purpose of the survey. Some preliminary results have already been obtained and it is possible to make a selection from the business register.

Activities in NACE Rev. 2 F4110, F4120 should be chosen in the business register. KAU's should also be included (for example S7110, etc.). In addition criteria for selection should be defined and used for cut off-sampling. These criteria are regarding number of persons employed and turnover.

Analysis of different possible (available) sources for data

There is no administrative data for this purpose, so data collection is needed as mentioned above.

It was agreed that all three statistical institutions in BiH will collect the data on average price of new finished dwelling per m² in 2015 on regular quarterly Data will be collected from construction companies and investors using a questionnaire in a classical survey.

In parallel, all activities on introducing SCM for CPPI (frame definition, sample design, questionnaire design, choosing typical house, etc.) should be done during 2015. Pilot survey for 4th quarter of 2015 will be conducted. Based on this Pilot, regular survey will be carried out on regular quarterly basis in

2016. Data for CPPI with the SCM should be collected from companies performing construction activities, e.g. roofers, plumbers, carpenters, etc.

Evaluation of the existing data

A quick overview was given of the existing questionnaires, used for average price of new finished dwelling per m², from both Croatia and FIS. An adjustment (redesign) of the questionnaire from FIS was conducted to make it suitable for data collection in all of three statistical institutes in 2015 on regular quarterly basis, see Annex 3.

Preparation of general Activity Plan for development of CPPI statistics

See Annex 4

Discussion on draft of questionnaire and instruction for filling the questionnaire for prepared by BHAS

The questionnaire was adjusted and can be used for data collection for average price of new finished dwelling per m². This price includes part which can be used as temporary approximation of CPPI. As in FIS, the Brcko District and Republika Srpska will also start with data collecting from the beginning of 2015.

For the CPPI with the standard components method the questionnaire has yet to be drafted in the second mission. Inspiration can be drawn from the Danish SPPI questionnaire, Annex 5, and the German questionnaire (must be obtained from German expert). This questionnaire will form the basis for a pilot survey starting with 2015Q4. From the 1st quarter of 2016 CPPI will be calculated for the entities and the state level in a unique way by using SCM and this will fulfil EU requirements at all.

3. Conclusions and recommendations

Recommendations related to development of CPPI in BiH during first mission are in correlation to assessment of current situation in BiH concerning availability of data for compilation of CPPI from one side EU regulations and requirements from other side.

- Experts strongly recommend that a producer (output) price index for residential buildings for BiH should be compiled using the standard components method
 - The producer (output) price index for residential buildings can be approximated by an index based on average price of new completed dwelling per m² until the SCM-index has been developed
 - All activities on introducing SCM for CPPI (frame definition, sample design, questionnaire design, choosing typical house, etc.) should be done during 2015.
 - The survey on average price of new finished dwelling per m² may be kept for fulfilment of national needs, if it's really necessary.
- For an index compiled with SCM a new questionnaire should be developed
 - o Pilot survey for 4th quarter of 2015 will be conducted
 - o For the average price of new completed dwelling per m² and adjusted version of the questionnaire, already in FBiH, can be used

- Is was agreed that all three statistical institutions in BiH will collect the data on average price of new finished dwelling per m² in 2015 on regular quarterly basis by using redesigned questionnaire
- For the frame, experts recommend that the business register is used as a starting point in addition to data from building permits and construction companies used to adjust the frame for the purpose of the survey.
 - o This goes for both surveys
 - Data for CPPI with the standard components method should be collected from companies performing construction activities, e.g. roofers, plumbers, carpenters, etc.

Actions needed for moving forward as well as for preparing the next mission –add rows as needed.

Action	Deadline	Responsible person
Analyse building permits data and decide on a	Before 2 nd mission	BHAS, FIS and RSIS
representative building for the SCM-index		
Define the standard components with the help of	Before 2 nd mission	BHAS, FIS and RSIS
construction experts		
Analyse reporting units for CPPI survey from	Before 2 nd mission	BHAS, FIS and RSIS
business register		

4. Topics for the next mission concerning the standard components model

Action	Deadline	Responsible person
Definition of the target population - observation units	During 2 nd mission	BiH Counterpart + Experts
Sample frame for CPPI pilot survey determined	During 2 nd mission	BiH Counterpart + Experts
Detailed Activity plan including Timetable with deadlines for Pilot survey (data collection, entering, processing, etc.)	During 2 nd mission	BiH Counterpart + Experts
Preparation of draft version of questionnaire for pilot	During 2 nd mission	BiH Counterpart + Experts
Instructions for filling in the questionnaire prepared	During 2 nd mission	BiH Counterpart + Experts

Annex 1. Terms of Reference

EU Twinning Project BA-12-IB-ST-01

Terms of Reference

Component: 2.3.1 Short-Term Statistics 6th – 10th October 2014 Sarajevo, Ferhadija 11, V floor

Activity

2.3.1.1 Assessment of current situation. Introducing producer (output) prices in construction in BiH

Benchmarks

- Plan for development of PPIC done by 2nd project quarter
- Draft questionnaires and supporting documentation prepared by 2nd project quarter
- Pilot surveys for PPIC conducted 3rd project quarter
- First results analyzed and questionnaires redesigned by 6th project quarter
- Methodological document developed by 8th project quarter

Purpose of activity

The expected activities are:

- Assessment on the current situation
- Overview over EU regulations and requirements in this area
- Presentation of the Croatian and Danish experiences for PPIC
- Frame analysis of reporting units for pilot for PPIC
- Analysis of different possible (available) sources for data collection on producer (output) prices in construction.
- Evaluation of the existing data.
- Preparation of general Activity Plan for development of PPIC statistics
- Discussion on draft of questionnaire and instruction for filling the questionnaire for pilot survey prepared by BHAS

Expected output

- EU regulations, Croatian and Danish experiences presented
- Possibilities for data collection discussed
- Frame of reporting units defined
- · General Activity Plan for PPIC surveys agreed
- Draft questionnaires for pilot surveys adopted

List of Participants

Experts

Sigrid Krogstrup Jensen, Statistics Denmark

Jasna Pugar, Croatian Bureau of Statistics

Agency for Statistics of BiH

Fahir Kanlić, Head of Department for Industry and Construction Statistics

Radomir Mutabdžija, Senior officer in Department for Industry and Construction Statistics

Anita Brković, Senior officer in Department for Industry and Construction Statistics

Institute for Statistics of Federation of BiH (FIS)

Nusreta Imamović-Kaljanac, Head of Department for Industry, Construction and Energy Statistics

Edina Dulić, Senior adviser for Construction Statistics

Institute for Statistics of Republika Srpska (RSIS)

Biljana Đukić, Head of Department for Industry, Construction and Energy Statistics

Želimir Radišić, Senior officer for Construction Statistics

Twinning Project Administration

Søren Leth-Sørensen, RTA

Djemka Sahinpašic, RTA Assistant

Agenda

Location: Sarajevo

Time	Day	Place	Event	Purpose / Detail of event		
10:00-12:00	Monday, morning		BC experts briefning with the RTA	To discuss the mission, introduce the experts to each other, discuss previous experience		
13:00-15:30	Monday, afternoon		Workshop with BC Experts	Welcome and Introduction Assessment on the current situation Overview over EU regulations in this area BC participants and IPA experts		
	Tuesday, morning		Workshop with BC Experts	Presentation of the Croatian and Danish experiences (methodology and practical examples)		
8:30-15:30				IPA experts		
	Tuesday, afternoon		Workshop with BC Experts	Frame analysis of reporting units for pilot survey for PPIC Evaluation of the existing data BC participants and IPA experts		
	Wednesday, morning		Workshop with BC Experts	Analysis of different possibilities for data collection on producer (output) prices in construction.		
				IPA experts and BC participants		
8:30-15:30	Wednesday, afternoon		Workshop with BC Experts	Preparation of general Activity Plan for development of PPIC statistics		
8:30-15:30	Thursday, morning		Workshop with BC Experts	Presentations of draft questionnaire for pilot survey (BHAS) Discussion and agreement on draft questionnaire for PPIC		
	Thursday, afternoon		Workshop with BC Experts	Preparation for the next mission (list of activities to be done before the next mission)		
8:30-13:00	Friday, morning		Meeting with BC Experts	Presentation of results, Agreement on report. Implications for the next activities (missions);		

Annex 2. Persons met

Agency for Statistics of BiH (BHAS):

Fahir Kanlić, Head of Department for Industry and Construction Statistics

Anita Brković, Senior officer in Department for Industry and Construction Statistics

Institute for Statistics of Federation of BiH (FIS):

Nusreta Imamović-Kaljanac, Head of Department for Industry, Construction and Energy Statistics

Edina Dulić, Senior adviser for Construction Statistics

Institute for Statistics of Republika Srpska (RSIS):

Želimir Radišić, Senior officer for Construction Statistics

Twinning Project Administration:

Søren Leth-Sørensen

Djemka Sahinpasic

Experts

Sigrid Krogstrup Jensen, Statistics Denmark

Jasna Pugar, Croatian Bureau of Statistics

Annex 3. K KPS GRAĐ-41 questionnaire

See separate Excel sheet

Annex 4. Activity Plan

No.	MAIN ACTIVITY	COMPONENTS OF MAIN ACTIVITY*	DATE OF REALIZATION* *	PARTICI PANTS	RESPONSIB LE INSTITUTIO N	BENCH MARK	NOTE
1	COVERAGE	Definition of the target population - observation units Sample frame for CPPI pilot survey determined	beginning of 2nd mission				*Activities proposed in General Plan could be changed in Detail Plan **Proposed dates are provisional
2	SAMPLE DESIGN	 Determination of the criteria for sample design Sample design Sample selection 	beginning of 3rd mission				
3	ACTIVITY PLAN WITH TIMETABLE	1. General Activity Plan for CPPI survey agreed 2. Detailed Activity plan including Timetable with deadlines for Pilot survey (data collection, entering, processing, etc.)	agreed on 1st mission 2nd mission (SCM_2015)				
4	QUESTIONNAIR E FOR PILOT SURVEY	1. Preparation of draft version of questionnnaire 2. Review and proposed changes of the questionnaire 3. Final version adopted 4. Instructions for filling in the questionnaire prepared	1st draft will be adopted after the end of 2nd mission				
5	DATA COLLECTION	Timetable with deadlines for conducting Pilot survey on CPPI (delivery of questionnaires to reporting units, data collection process, data entry, etc.)	after the end of 3rd mission				

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6	DATA EDITING AND PROCESSING	 List of controls for micro data checking Data editing Non response treatment Imputation methods Outlier checking and treatment 	after conducting Pilot survey (February 2016)				
7	CALCULATION AND ANALYSIS OF RESULTS	 Determination of the method for calculation of CPPI indicies Procedures for calculation of indicies Quality indicators 	will be precised on 3rd mission (depending on data quality from Pilot survey for reference IV quarter 2015)				
8	IT SUPPORT	Development of IT application (IT WG, data entry module, list of formal and logical controls, etc.)	end of January 2016				
9	REVISION POLICY	 Revision of input data and output results Data confidentiality treatment 	Continuously				
10	PREPARATION OF REGULAR CPPI SURVEY	1. Implementation of Pilot survey in 2015, IV quarter 2. Preparation of data for base year (2015) 3. Redesigned quarterly CPPI survey for 2016 - Amended methods for the regular survey on CPPI, based on the experiences from the Pilot survey - Preparation of final questionnaire for a regular production - Preparation of output tables (publication forms, transmission formats, etc.) - Plan for a regular surveys	mid of March 2016				

11	CPPI METHODOLOGY	 Methodology developed in accordance with EU standards Preparation of Quality report for regular survey 			
			BC experts, Sample experts, IT experts, IPA experts	BHAS FIS RSIS	In accordance with mandatory results through IPA 2012 Twinning Project

Annex 5. Danish questionnaire for SCM

See separate Excel sheet